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Extensions for Financial Services (XFS) interface specification Release 3.40 - Part 3: Printer and Scanning Device Class Interface - Programmer's Reference

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European Foreword

This CEN Workshop Agreement has been developed in accordance with the CEN-CENELEC Guide 29 "CEN/CENELEC Workshop Agreements – The way to rapid consensus" and with the relevant provisions of CEN/CENELEC Internal Regulations - Part 2. It was approved by a Workshop of representatives of interested parties on 2019-10-08, the constitution of which was supported by CEN following several public calls for participation, the first of which was made on 1998-06-24. However, this CEN Workshop Agreement does not necessarily include all relevant stakeholders.

The final text of this CEN Workshop Agreement was provided to CEN for publication on 2019-12-12.

The following organizations and individuals developed and approved this CEN Workshop Agreement:

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The CWA is published as a multi-part document, consisting of:

Part 1: Application Programming Interface (API) - Service Provider Interface (SPI) - Programmer's Reference

Part 2: Service Classes Definition - Programmer's Reference

Part 3: Printer and Scanning Device Class Interface - Programmer's Reference

Part 4: Identification Card Device Class Interface - Programmer's Reference

Part 5: Cash Dispenser Device Class Interface - Programmer's Reference

Part 6: PIN Keypad Device Class Interface - Programmer's Reference

Part 7: Check Reader/Scanner Device Class Interface - Programmer's Reference

Part 8: Depository Device Class Interface - Programmer's Reference

Part 9: Text Terminal Unit Device Class Interface - Programmer's Reference

Part 10: Sensors and Indicators Unit Device Class Interface - Programmer's Reference

Part 11: Vendor Dependent Mode Device Class Interface - Programmer's Reference

Part 12: Camera Device Class Interface - Programmer's Reference

Part 13: Alarm Device Class Interface - Programmer's Reference

Part 14: Card Embossing Unit Device Class Interface - Programmer's Reference

Part 15: Cash-In Module Device Class Interface - Programmer's Reference

Part 16: Card Dispenser Device Class Interface - Programmer's Reference

Part 17: Barcode Reader Device Class Interface - Programmer's Reference

Part 18: Item Processing Module Device Class Interface - Programmer's Reference

Part 19: Biometrics Device Class Interface - Programmer's Reference

Parts 20 - 28: Reserved for future use.

Parts 29 through 47 constitute an optional addendum to this CWA. They define the integration between the SNMP standard and the set of status and statistical information exported by the Service Providers.

Part 29: XFS MIB Architecture and SNMP Extensions - Programmer’s Reference

Part 30: XFS MIB Device Specific Definitions - Printer Device Class

Part 31: XFS MIB Device Specific Definitions - Identification Card Device Class

Part 32: XFS MIB Device Specific Definitions - Cash Dispenser Device Class

Part 33: XFS MIB Device Specific Definitions - PIN Keypad Device Class

Part 34: XFS MIB Device Specific Definitions - Check Reader/Scanner Device Class

Part 35: XFS MIB Device Specific Definitions - Depository Device Class

Part 36: XFS MIB Device Specific Definitions - Text Terminal Unit Device Class

Part 37: XFS MIB Device Specific Definitions - Sensors and Indicators Unit Device Class

Part 38: XFS MIB Device Specific Definitions - Camera Device Class

Part 39: XFS MIB Device Specific Definitions - Alarm Device Class

Part 40: XFS MIB Device Specific Definitions - Card Embossing Unit Class

Part 41: XFS MIB Device Specific Definitions - Cash-In Module Device Class

Part 42: Reserved for future use.

Part 43: XFS MIB Device Specific Definitions - Vendor Dependent Mode Device Class

Part 44: XFS MIB Application Management

Part 45: XFS MIB Device Specific Definitions - Card Dispenser Device Class

Part 46: XFS MIB Device Specific Definitions - Barcode Reader Device Class

Part 47: XFS MIB Device Specific Definitions - Item Processing Module Device Class

Part 48: XFS MIB Device Specific Definitions - Biometrics Device Class

Parts 49 - 60 are reserved for future use.

Part 61: Application Programming Interface (API) - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Service Provider Interface (SPI) - Programmer's Reference

Part 62: Printer and Scanning Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 63: Identification Card Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 64: Cash Dispenser Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 65: PIN Keypad Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 66: Check Reader/Scanner Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 67: Depository Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 68: Text Terminal Unit Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 69: Sensors and Indicators Unit Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 70: Vendor Dependent Mode Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

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Part 72: Alarm Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 73: Card Embossing Unit Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 74: Cash-In Module Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 75: Card Dispenser Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 76: Barcode Reader Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

Part 77: Item Processing Module Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference

In addition to these Programmer's Reference specifications, the reader of this CWA is also referred to a complementary document, called Release Notes. The Release Notes contain clarifications and explanations on the CWA specifications, which are not requiring functional changes. The current version of the Release Notes is available online from: https://www.cen.eu/work/Sectors/Digital_society/Pages/WSXFS.aspx.

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1. Introduction

1.1 Background to Release 3.40

The CEN XFS Workshop aims to promote a clear and unambiguous specification defining a multi-vendor software interface to financial peripheral devices. The XFS (eXtensions for Financial Services) specifications are developed within the CEN (European Committee for Standardization/Information Society Standardization System) Workshop environment. CEN Workshops aim to arrive at a European consensus on an issue that can be published as a CEN Workshop Agreement (CWA).

The CEN XFS Workshop encourages the participation of both banks and vendors in the deliberations required to create an industry standard. The CEN XFS Workshop achieves its goals by focused sub-groups working electronically and meeting quarterly.

Release 3.30 of the XFS specification is based on a C API and is delivered with the continued promise for the protection of technical investment for existing applications. This release of the specification extends the functionality and capabilities of the existing devices covered by the specification. Notable enhancements include:

- Common API level based 'Service Information' command to report Service Provider information, data and versioning.
- Common API level based events to report changes in status and invalid parameters.
- Support for Advanced Encryption Standard (AES) in PIN.
- VDM Entry Without Closing XFS Service Providers.
- Addition of a Biometrics device class.
- CDM/CIM Note Classification List handling.
- Support for Derived Unique Key Per Transaction (DUKPT) in PIN.
- Addition of Transaction Start/End commands.
- Addition of explicit CIM Prepare/Present commands.

1.2 XFS Service-Specific Programming

The service classes are defined by their service-specific commands and the associated data structures, error codes, messages, etc. These commands are used to request functions that are specific to one or more classes of Service Providers, but not all of them, and therefore are not included in the common API for basic or administration functions.

When a service-specific command is common among two or more classes of Service Providers, the syntax of the command is as similar as possible across all services, since a major objective of XFS is to standardize function codes and structures for the broadest variety of services. For example, using the **WFSExecute** function, the commands to read data from various services are as similar as possible to each other in their syntax and data structures.

In general, the specific command set for a service class is defined as a superset of the specific capabilities likely to be provided by the developers of the services of that class; thus any particular device will normally support only a subset of the defined command set.

There are three cases in which a Service Provider may receive a service-specific command that it does not support:

The requested capability is defined for the class of Service Providers by the XFS specification, the particular vendor implementation of that service does not support it, and the unsupported capability is ***not*** considered to be fundamental to the service. In this case, the Service Provider returns a successful completion, but does no operation. An example would be a request from an application to turn on a control indicator on a passbook printer; the Service Provider recognizes the command, but since the passbook printer it is managing does not include that indicator, the Service Provider does no operation and returns a successful completion to the application.

The requested capability is defined for the class of Service Providers by the XFS specification, the particular vendor implementation of that service does not support it, and the unsupported capability ***is*** considered to be fundamental to the service. In this case, a WFS_ERR_UNSUPP_COMMAND error for Execute commands or

WFS_ERR_UNSUPP_CATEGORY error for Info commands is returned to the calling application. An example would be a request from an application to a cash dispenser to retract items where the dispenser hardware does not have that capability; the Service Provider recognizes the command but, since the cash dispenser it is managing is unable to fulfil the request, returns this error.

The requested capability is ***not*** defined for the class of Service Providers by the XFS specification. In this case, a WFS_ERR_INVALID_COMMAND error for Execute commands or WFS_ERR_INVALID_CATEGORY error for Info commands is returned to the calling application.

This design allows implementation of applications that can be used with a range of services that provide differing subsets of the functionalities that are defined for their service class. Applications may use the **WFSGetInfo** and **WFSAsyncGetInfo** commands to inquire about the capabilities of the service they are about to use, and modify their behavior accordingly, or they may use functions and then deal with error returns to make decisions as to how to use the service.

2. Banking Printers

This specification describes the functionality of the services provided by banking printers and scanning devices under XFS, focusing on the following areas:

- application programming for printing
- print document definition
- integration with the Windows architecture
- scanning images for devices such as check scanners

These descriptions include definitions of the service-specific commands that can be issued, using the **WFSAsyncExecute**, **WFSExecute, WFSGetInfo** and **WFSAsyncGetInfo** functions.

The requirements for printing in banking applications are significantly different from those of the conventional PC environment, and the XFS support delivers the foundation for financial application printing, including:

- **Controlled access to shared printers**

  The banking printers can be shared between workstations and the XFS layer provides the ability for the application to manage ownership of a print device. This allows an application to identify the operator granted control of the printer, and to ensure that a teller printing multiple documents is not interrupted by work for other applications.

- **Application controlled printing**

  In the banking environment, it is necessary for the application to receive positive feedback on the availability of print devices, and the success or failure of individual print operations. The XFS printer support provides a standard mechanism for application retrieval of this status information.

- **Management of printing peripherals**

  Distributed banking networks require the ability to track the availability and failure of printing peripherals on a branch and system-wide basis. Through the XFS **WFSRegister** function monitoring programs can collect error alerts from the banking printers.

- **Vendor independent API and document definition**

  All of the XFS peripheral implementations are designed around a standardized family of APIs to allow application code portability across vendor hardware platforms. With printers, it is also recognized that banks invest a significant amount of resource in the authoring of print documents. The XFS printer service class is implemented around a forms model which also standardizes the basic document definition. This extends the investment protection provided by XFS compliant systems to include this additional part of the application development.

- **Windows printing integration**

  It is possible for a banking printer to offer printing capabilities that can be accessed by non-banking specific applications, such as general office productivity packages. This would not, for example, be true for a receipt printer, but it could be the case for a device with document printing capabilities. A vendor may choose an XFS implementation that allows both types of applications (XFS and Windows applications using the Windows printing subsystem) to share the printing devices. The vendor should specify any impact this approach has on XFS subsystem operation, such as error reporting.

Full implementation of the above features depends on the individual vendor-supplied Service Providers. This specification outlines the functionality and requirements for applications using the XFS printer and scanning services, and for the development of those services.

3. Banking Printer Types

The XFS printer service defines and supports five types of banking printers through a common interface:

- **Receipt Printer**

  The receipt printer is used to print cut sheet documents. It may or may not require insert or eject operations, and often includes an operator identification device, e.g. Teller A and Teller B lights, for shared operation.

- **Journal Printer**

  The journal is a continuous form device used to record a hardcopy audit trail of transactions, and for certain report printing requirements.

- **Passbook Printer**

  The passbook device is physically and functionally the most complex printer. The XFS definition supports automatic positioning of the book, as well as read/write capability for an optional integrated magnetic stripe. The implementation also manages the book geometry - i.e. the margins and centerfolds - presenting the simplest possible application interface while delivering the full range of functionality.

  Some passbook devices also support the dispensing of new passbooks from up to four passbook paper sources (upper, aux, aux2, lower). Some passbook devices may also be able to place a full passbook in a parking station, print the new passbook and return both to the customer. Passbooks can only be dispensed or moved from the parking station if there is no other media in the print position or in the entry/exit slot.

- **Document Printer**

  Document printing is similar to receipt printing - a set of fields are positioned on one or more inserted sheets of paper - but the focus is on full-size forms. It should be noted that the XFS environment supports the printing of text and graphic fields from the application. The electronic printing of the form image (the template portion of the form which is usually pre-printed with dot-matrix style printers) may also be printed by the application.

- **Scanner Printer**

  The scanner printer is a device incorporating both the capabilities to scan inserted documents and optionally to print on them. These devices may have more than one area where documents may be retained.

Additional hardware components, like scanners, stripe readers, OCR readers, and stamps, normally attached directly to the printer are also controlled through this interface. Additionally the Printer and Scanning class interface can also be used for devices that are capable of scanning without necessarily printing. This includes devices such as Check Scanners.

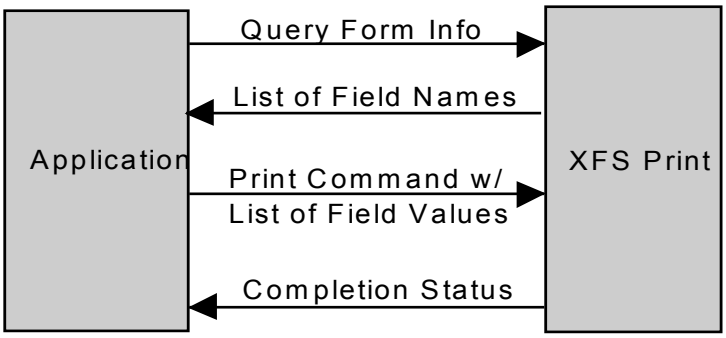
The specification refers to the terms paper and media. When the term paper is used this refers to paper that is situated in a paper supply attached to the device. The term media is used for media that is inserted by the customer (e.g. check and other material that is scanned) or that is issued to the customer (e.g. a receipt or statement). Receipt, document printers and also passbook printers with white passbook dispensing capability have both. As soon as the paper gets printed it becomes media. Scanners only have media. The term media does not apply to journal printers. When paper is in the print position it is classified as media, on some printers that maintain paper under the print head there will always be both media and paper.

4. Forms Model

The XFS printing class functionality is based on a “forms” model for printing. Banking documents are represented as a series of text and/or graphic fields output from the application, and positioned on the document by the XFS printing system.

The form is an object which includes the positioning and presentation information for each of the fields in the document. The application selects a form, and supplies only the field data and the control parameters to fully define the print document.

The form objects are owned and managed by the XFS printing service. To optimize maintainability of the system, the application can query the service for the list of fields required to print a given form. Through this mechanism, it is not necessary to duplicate the field contents of forms in application authoring data. The figure below outlines the printing process from the application's view.



The XFS implementation recognizes that the form object must be supported by job-specific data to fully address printing requirements. As an example, a form defining a passbook print line will need to have its origin defined externally in order to be reused for different passbook lines. These job specific parameters are supplied on the call to the **WFSExecute**: WFS_CMD_PTR_PRINT_FORM command.

In some cases, the application wants to print a block of data without considering it as a series of separate fields. One example is a line of journal data, fully formatted by the application. This can be handled by defining a one field form, or by use of the **WFSExecute**: WFS_CMD_PTR_RAW_DATA command.

The document definition under XFS printing is standardized to provide portability across vendor implementations. The standard has been defined at the source language level for the document definition, allowing vendor differences at the runtime level to manage implementation specific dependencies, providing several areas where vendors can provide value-added extensions. As an example, a vendor providing a graphical form definition tool can produce the field definition object format directly. The XFS requirements for portability are:

- A vendor must be able to export print format in the standardized field definition source format for portability to other systems.
- A vendor must be able to import document formats produced on other systems in the standardized field definition source format.
- A vendor can extend the field definition source language, but any verbs included in the standard must be implemented strictly as defined by the standard. Import and export facilities must be tolerant of source language extensions, reporting but ignoring the exceptions.

The document definition also recognizes that unique hardware restrictions may require tuning of field positioning from one vendor's platform to another. To enhance portability, the XFS document format has specifically been defined to allow a single reference adjustment for all fields to avoid forcing the customer to reposition each field.

5. References

1. XFS Application Programming Interface (API)/Service Provider Interface (SPI), Programmer's Reference Revision 3.40

6. Command Overview

The basic operation of the print devices is managed using the **WFSGetInfo/WFSAsyncGetInfo** and **WFSExecute/WFSAsyncExecute** functions, with two primary commands:

WFS_INF_PTR_QUERY_FORM
This command retrieves the form header information, and the list of fields. It is performed using **WFSGetInfo**, which means that it can be performed even when the service is locked by another user.

WFS_CMD_PTR_PRINT_FORM
This command is performed using **WFSExecute**, and includes as parameter data the name of the form to select and the required field data values.

This approach combines in the most efficient manner the four logical steps required to print a form:

- Selecting a document form object.
- Querying the service for the list of fields.
- Supplying the data for each field.
- Issuing the print command.

By using a **WFSGetInfo** command for retrieval of the list of field names, rather than **WFSExecute** (which is blocked when the service is locked by another application), it is possible for an application to assemble the required set of fields for a form before locking the service. This minimizes the time that each application request ties up the service. Using **WFSGetInfo**, it is also possible to query the attributes of a particular field. This command is generally not required for most applications.

The combination of form selection, field value presentation, and the print action into an atomic command - the **WFSExecute**: WFS_CMD_PTR_PRINT_FORM command - makes it possible to express a complete print operation with one API call. This implementation allows an application to perform a print operation without locking and subsequently unlocking the service (although locking may still be desirable for other reasons). To do multiple print operations without allowing other applications to intersperse their print requests, it is still necessary to use the lock functions. Where these multiple print functions represent a series of passbook lines (using the INDEX capability in the field definition), the **WFSExecute**: WFS_CMD_PTR_PRINT_FORM command provides support for management of the print line number. Note that if a form contains a tabular field (i.e. one with a non-zero INDEX value), and data is not supplied for some of the lines in the “table”, then those lines are left blank.

For printers with the capability to read from a passbook (OCR, MICR and/or magnetic stripe), the data is read with the **WFSExecute**: WFS_CMD_PTR_READ_FORM command. The data is written using the **WFSExecute**: WFS_CMD_PTR_PRINT_FORM command. Since these devices are usable only for passbook operations, they are not defined as separate logical devices.

Finally, the **WFSExecute**: WFS_CMD_PTR_PRINT_RAW_FILE command can be used to print a file that contains a complete print job in the native printer language. This file will have been created through the Windows GDI.

7. Info Commands

7.1 WFS_INF_PTR_STATUS

Description This command is used to request status information for the device.

Input Param None.

Output Param LPWFSPTRSTATUS lpStatus;

```
typedef struct _wfs_ptr_status
     {
     WORD                 fwDevice;
     WORD                 fwMedia;
     WORD                 fwPaper[WFS_PTR_SUPPLYSIZE];
     WORD                 fwToner;
     WORD                 fwInk;
     WORD                 fwLamp;
     LPWFSPTRRETRACTBINS  *lppRetractBins;
     USHORT               usMediaOnStacker;
     LPSTR                lpszExtra;
     DWORD                dwGuidLights[WFS_PTR_GUIDLIGHTS_SIZE];
     WORD                 wDevicePosition;
     USHORT               usPowerSaveRecoveryTime;
     WORD                 wPaperType[WFS_PTR_SUPPLYSIZE];
     WORD                 wAntiFraudModule;
     WORD                 wBlackMarkMode;
     } WFSPTRSTATUS, *LPWFSPTRSTATUS;
```

fwDevice
Specifies the state of the print device as one of the following flags:

Value	Meaning
WFS_PTR_DEVONLINE	The device is online (i.e. powered on and operable).
WFS_PTR_DEVOFFLINE	The device is offline (e.g. the operator has taken the device offline by turning a switch).
WFS_PTR_DEVPOWEROFF	The device is powered off or physically not connected.
WFS_PTR_DEVNODEVICE	There is no device intended to be there; e.g. this type of self service machine does not contain such a device or it is internally not configured.
WFS_PTR_DEVHWERROR	The device is inoperable due to a hardware error.
WFS_PTR_DEVUSERERROR	The device is present but a person is preventing proper device operation.
WFS_PTR_DEVBUSY	The device is busy and unable to process an execute command at this time.
WFS_PTR_DEVFRAUDATTEMPT	The device is present but is inoperable because it has detected a fraud attempt.
WFS_PTR_DEVPOTENTIALFRAUD	The device has detected a potential fraud attempt and is capable of remaining in service. In this case the application should make the decision as to whether to take the device offline.

fwMedia
Specifies the state of the print media (i.e. receipt, statement, passbook, etc.) as one of the following values. This field does not apply to journal printers:

Value	Meaning
WFS_PTR_MEDIAPRESENT	Media is in the print position, on the stacker or on the transport (i.e. a passbook in the parking station is not considered to be present). On devices with continuous paper supplies, this value is set when paper is under the print head. On devices with no supply or individual sheet supplies, this value is set when paper/media is successfully inserted/loaded.
WFS_PTR_MEDIANOTPRESENT	Media is not in the print position or on the stacker.
WFS_PTR_MEDIAJAMMED	Media is jammed in the device.
WFS_PTR_MEDIANOTSUPP	The capability to report the state of the print media is not supported by the device.
WFS_PTR_MEDIAUNKNOWN	The state of the print media cannot be determined with the device in its current state.
WFS_PTR_MEDIAENTERING	Media is at the entry/exit slot of the device.
WFS_PTR_MEDIARETRACTED	Media was retracted during the reset operation.

fwPaper […]
Specifies the state of the paper supplies. A number of paper supplies are defined below. Vendor specific paper supplies are defined starting from the end of the array. The maximum paper index is WFS_PTR_SUPPLYMAX.

fwPaper [WFS_PTR_SUPPLYUPPER]
Specifies the state of the only paper supply or the upper paper supply, if more than one, as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper supply is full.
WFS_PTR_PAPERLOW	The paper supply is low.
WFS_PTR_PAPEROUT	The paper supply is empty.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The paper supply is jammed.

fwPaper [WFS_PTR_SUPPLYLOWER]
*S*pecifies the state of the lower paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper supply is full.
WFS_PTR_PAPERLOW	The paper supply is low.
WFS_PTR_PAPEROUT	The paper supply is empty.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The paper supply is jammed.

fwPaper [WFS_PTR_SUPPLYEXTERNAL]
Specifies the state of the external paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper supply is full.
WFS_PTR_PAPERLOW	The paper supply is low.
WFS_PTR_PAPEROUT	The paper supply is empty.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The paper supply is jammed.

fwPaper [WFS_PTR_SUPPLYAUX]
Specifies the state of the auxiliary paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper supply is full.
WFS_PTR_PAPERLOW	The paper supply is low.
WFS_PTR_PAPEROUT	The paper supply is empty.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The paper supply is jammed.

fwPaper [WFS_PTR_SUPPLYAUX2]
Specifies the state of the second auxiliary paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper supply is full.
WFS_PTR_PAPERLOW	The paper supply is low.
WFS_PTR_PAPEROUT	The paper supply is empty.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The paper supply is jammed.

fwPaper [WFS_PTR_SUPPLYPARK]
Specifies the state of the parking station as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The parking station is busy.
WFS_PTR_PAPEROUT	The parking station is free.
WFS_PTR_PAPERNOTSUPP	Capability not supported by device.
WFS_PTR_PAPERUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_PAPERJAMMED	The parking station is jammed.

fwToner
Specifies the state of the toner or ink supply or the state of the ribbon as one of the following values:

Value	Meaning
WFS_PTR_TONERFULL	The toner or ink supply is full or the ribbon is OK.
WFS_PTR_TONERLOW	The toner or ink supply is low or the print contrast with a ribbon is weak.
WFS_PTR_TONEROUT	The toner or ink supply is empty or the print contrast with a ribbon is not sufficient any more.
WFS_PTR_TONERNOTSUPP	Capability not supported by device.
WFS_PTR_TONERUNKNOWN	Status of toner or ink supply or the ribbon cannot be determined with device in its current state.

fwInk
Specifies the status of the stamping ink in the printer as one of the following values:

Value	Meaning
WFS_PTR_INKFULL	Ink supply in device is full.
WFS_PTR_INKLOW	Ink supply in device is low.
WFS_PTR_INKOUT	Ink supply in device is empty.
WFS_PTR_INKNOTSUPP	Capability not supported by device.
WFS_PTR_INKUNKNOWN	Status of the stamping ink supply cannot be determined with device in its current state.

fwLamp
Specifies the status of the printer imaging lamp as one of the following values:

Value	Meaning
WFS_PTR_LAMPOK	The lamp is OK.
WFS_PTR_LAMPFADING	The lamp should be changed.
WFS_PTR_LAMPINOP	The lamp is inoperative.
WFS_PTR_LAMPNOTSUPP	Capability not supported by device.
WFS_PTR_LAMPUNKNOWN	Status of the imaging lamp cannot be determined with device in its current state.

lppRetractBins
Pointer to a NULL terminated array of pointers to WFSPTRRETRACTBINS structures (one for each supported bin). The first pointer holds the structure for bin one, the second for bin two and so on. A NULL pointer is returned if no retract bin is supported.

```
typedef struct _wfs_ptr_retract_bins
     {
     WORD            wRetractBin;
     USHORT          usRetractCount;
     } WFSPTRRETRACTBINS, *LPWFSPTRRETRACTBINS;
```

wRetractBin
Specifies the state of the printer retract bin as one of the following values:

Value	Meaning
WFS_PTR_RETRACTBINOK	The retract bin of the printer is in a healthy state.
WFS_PTR_RETRACTBINFULL	The retract bin of the printer is full.
WFS_PTR_RETRACTUNKNOWN	Status cannot be determined with device in its current state.
WFS_PTR_RETRACTBINHIGH	The retract bin of the printer is nearly full.
WFS_PTR_RETRACTBINMISSING	The retract bin is missing.

usRetractCount
The number of media retracted to this bin. This value is persistent; it may be reset to zero by the WFS_CMD_PTR_RESET_COUNT command.

usMediaOnStacker
The number of media on stacker; applicable only to printers with stacking capability.

lpszExtra
Pointer to a list of vendor-specific, or any other extended, information. The information is returned as a series of *"key=value"* strings so that it is easily extensible by Service Providers. Each string is null-terminated, with the final string terminating with two null characters. An empty list may be indicated by either a NULL pointer or a pointer to two consecutive null characters.

dwGuidLights [...]
Specifies the state of the guidance light indicators. A number of guidance light types are defined below. Vendor specific guidance lights are defined starting from the end of the array. The maximum guidance light index is WFS_PTR_GUIDLIGHTS_MAX.

Specifies the state of the guidance light indicator as WFS_PTR_GUIDANCE_NOT_AVAILABLE, WFS_PTR_GUIDANCE_OFF or a combination of the following flags consisting of one type B, optionally one type C, and optionally one type D.

Value	Meaning	Type
WFS_PTR_GUIDANCE_NOT_AVAILABLE	The status is not available.	A
WFS_PTR_GUIDANCE_OFF	The light is turned off.	A
WFS_PTR_GUIDANCE_SLOW_FLASH	The light is blinking slowly.	B
WFS_PTR_GUIDANCE_MEDIUM_FLASH	The light is blinking medium frequency.	B
WFS_PTR_GUIDANCE_QUICK_FLASH	The light is blinking quickly.	B
WFS_PTR_GUIDANCE_CONTINUOUS	The light is turned on continuous (steady).	B
WFS_PTR_GUIDANCE_RED	The light is red.	C
WFS_PTR_GUIDANCE_GREEN	The light is green.	C
WFS_PTR_GUIDANCE_YELLOW	The light is yellow.	C

WFS_PTR_GUIDANCE_BLUE	The light is blue.	C
WFS_PTR_GUIDANCE_CYAN	The light is cyan.	C
WFS_PTR_GUIDANCE_MAGENTA	The light is magenta.	C
WFS_PTR_GUIDANCE_WHITE	The light is white.	C
WFS_PTR_GUIDANCE_ENTRY	The light is in the entry state.	D
WFS_PTR_GUIDANCE_EXIT	The light is in the exit state.	D

dwGuidLights [WFS_PTR_GUIDANCE_PRINTER]
Specifies the state of the guidance light indicator on the printer unit.

wDevicePosition
Specifies the device position. The device position value is independent of the *fwDevice* value, e.g. when the device position is reported as WFS_PTR_DEVICENOTINPOSITION, *fwDevice* can have any of the values defined above (including WFS_PTR_DEVONLINE or WFS_PTR_DEVOFFLINE). If the device is not in its normal operating position (i.e. WFS_PTR_DEVICEINPOSITION) then media may not be presented through the normal customer interface. This value is one of the following values:

Value	Meaning
WFS_PTR_DEVICEINPOSITION	The device is in its normal operating position, or is fixed in place and cannot be moved.
WFS_PTR_DEVICENOTINPOSITION	The device has been removed from its normal operating position.
WFS_PTR_DEVICEPOSUNKNOWN	Due to a hardware error or other condition, the position of the device cannot be determined.
WFS_PTR_DEVICEPOSNOTSUPP	The physical device does not have the capability of detecting the position.

usPowerSaveRecoveryTime
Specifies the actual number of seconds required by the device to resume its normal operational state from the current power saving mode. This value is zero if either the power saving mode has not been activated or no power save control is supported.

wPaperType […]
Specifies the type of paper loaded in the device. A number of paper types are defined below. Vendor specific paper types are defined starting from the end of the array. The maximum paper index is WFS_PTR_SUPPLYMAX.

wPaperType [WFS_PTR_SUPPLYUPPER]
Specifies the type of paper loaded in the only paper supply or the upper paper supply, if more than one, as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wPaperType [WFS_PTR_SUPPLYLOWER]
Specifies the type of paper loaded in the lower paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wPaperType [WFS_PTR_SUPPLYEXTERNAL]
Specifies the type of paper loaded in the external paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wPaperType [WFS_PTR_SUPPLYAUX]
Specifies the type of paper loaded in the auxiliary paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wPaperType [WFS_PTR_SUPPLYAUX2]
Specifies the type of paper loaded in the second auxiliary paper supply as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wPaperType [WFS_PTR_SUPPLYPARK]
Specifies the type of paper in the parking station as one of the following values:

Value	Meaning
WFS_PTR_PAPERSINGLESIDED	The paper can be printed on only one side.
WFS_PTR_PAPERDUALSIDED	The paper can be printed on both sides.
WFS_PTR_PAPERTYPEUNKNOWN	No paper is loaded, reporting of this paper type is not supported (fwPaper[…]=WFS_PTR_PAPERNOTSUPP) or the paper type cannot be determined.

wAntiFraudModule
Specifies the state of the anti-fraud module as one of the following values:

Value	Meaning
WFS_PTR_AFMNOTSUPP	No anti-fraud module is available.
WFS_PTR_AFMOK	Anti-fraud module is in a good state and no foreign device is detected.
WFS_PTR_AFMINOP	Anti-fraud module is inoperable.
WFS_PTR_AFMDEVICEDETECTED	Anti-fraud module detected the presence of a foreign device.
WFS_PTR_AFMUNKNOWN	The state of the anti-fraud module cannot be determined.

wBlackMarkMode
Specifies the status of the black mark detection and associated functionality:

Value	Meaning
WFS_PTR_BLACKMARKDETECTIONNOTSUPP	Black mark detection is not supported.
WFS_PTR_BLACKMARKDETECTIONON	Black mark detection and associated functionality is switched on.
WFS_PTR_BLACKMARKDETECTIONOFF	Black mark detection and associated functionality is switched off.

WFS_PTR_BLACKMARKDETECTIONUNKNOWN
The status of the black mark detection cannot be determined.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Comments Applications which require or expect specific information to be present in the *lpszExtra* parameter may not be device or vendor-independent.

In the case where communications with the device has been lost, the *fwDevice* field will report WFS_PTR_DEVPOWEROFF when the device has been removed or WFS_PTR_DEVHWERROR if the communications are unexpectedly lost. All other fields should contain a value based on the following rules and priority:

1. Report the value as unknown.
2. Report the value as a general h/w error.
3. Report the value as the last known value.

7.2 WFS_INF_PTR_CAPABILITIES

Description This command is used to request device capability information.

Input Param None.

Output Param LPWFSPTRCAPS lpCaps;

```
typedef struct _wfs_ptr_caps
     {
     WORD                wClass;
     WORD                fwType;
     BOOL                bCompound;
     WORD                wResolution;
     WORD                fwReadForm;
     WORD                fwWriteForm;
     WORD                fwExtents;
     WORD                fwControl;
     USHORT              usMaxMediaOnStacker;
     BOOL                bAcceptMedia;
     BOOL                bMultiPage;
     WORD                fwPaperSources;
     BOOL                bMediaTaken;
     USHORT              usRetractBins;
     LPUSHORT            lpusMaxRetract;
     WORD                fwImageType;
     WORD                fwFrontImageColorFormat;
     WORD                fwBackImageColorFormat;
     WORD                fwCodelineFormat;
     WORD                fwImageSource;
     WORD                fwCharSupport;
     BOOL                bDispensePaper;
     LPSTR               lpszExtra;
     DWORD               dwGuidLights[WFS_PTR_GUIDLIGHTS_SIZE];
     LPSTR               lpszWindowsPrinter;
     BOOL                bMediaPresented;
     USHORT              usAutoRetractPeriod;
     BOOL                bRetractToTransport;
     BOOL                bPowerSaveControl;
     WORD                fwCoercivityType;
     WORD                fwControlPassbook;
     WORD                wPrintSides;
     BOOL                bAntiFraudModule;
     DWORD               dwControlEx;
     BOOL                bBlackMarkModeSupported;
     LPDWORD             lpdwSynchronizableCommands;
     } WFSPTRCAPS, *LPWFSPTRCAPS;
```

wClass
Specifies the logical service class as WFS_SERVICE_CLASS_PTR.

fwType
Specifies the type(s) of the physical device driven by the logical service, as a combination of the following flags:

Value	Meaning
WFS_PTR_TYPERECEIPT	Device is a receipt printer.
WFS_PTR_TYPEPASSBOOK	Device is a passbook printer.
WFS_PTR_TYPEJOURNAL	Device is a journal printer.
WFS_PTR_TYPEDOCUMENT	Device is a document printer.
WFS_PTR_TYPESCANNER	Device is a scanner that may have printing capabilities.

bCompound
Specifies whether the logical device is part of a compound physical device.

wResolution
Specifies at which resolution(s) the physical device can print. Used by the application to select the level of print quality desired (e.g. as in Word for Windows); does not imply any absolute level of resolution, only relative. Specified as a combination of the following flags:

Value	Meaning
WFS_PTR_RESLOW	Can print with low resolution.
WFS_PTR_RESMED	Can print with medium resolution.
WFS_PTR_RESHIGH	Can print with high resolution.
WFS_PTR_RESVERYHIGH	Can print with very high resolution.

fwReadForm
Specifies whether the device can read data from media, as a combination of the following flags (zero if none of the choices is supported):

Value	Meaning
WFS_PTR_READOCR	Device has OCR capability.
WFS_PTR_READMICR	Device has MICR capability.
WFS_PTR_READMSF	Device has MSF capability.
WFS_PTR_READBARCODE	Device has Barcode capability.
WFS_PTR_READPAGEMARK	Device has Page Mark capability.
WFS_PTR_READIMAGE	Device has imaging capability.
WFS_PTR_READEMPTYLINE	Device has capability to detect empty print lines for passbook printing.

fwWriteForm
Specifies whether the device can write data to the media, as a combination of the following flags (zero if none of the choices is supported):

Value	Meaning
WFS_PTR_WRITETEXT	Device has Text capability.
WFS_PTR_WRITEGRAPHICS	Device has Graphics capability.
WFS_PTR_WRITEOCR	Device has OCR capability.
WFS_PTR_WRITEMICR	Device has MICR capability.
WFS_PTR_WRITEMSF	Device has MSF capability.
WFS_PTR_WRITEBARCODE	Device has Barcode capability.
WFS_PTR_WRITESTAMP	Device has stamping capability.

fwExtents
Specifies whether the device is able to measure the inserted media, as a combination of the following flags (zero if none of the choices is supported):

Value	Meaning
WFS_PTR_EXTHORIZONTAL	Device has horizontal size detection capability.
WFS_PTR_EXTVERTICAL	Device has vertical size detection capability.

fwControl
Specifies the manner in which media can be controlled, as a combination of the following flags (zero if none of the choices is supported). This field is deprecated. The values for *fwControl* are reported using the *dwControlEx* field.

Value	Meaning
WFS_PTR_CTRLEJECT	Device can eject media.
WFS_PTR_CTRLPERFORATE	Device can perforate media.
WFS_PTR_CTRLCUT	Device can cut media.
WFS_PTR_CTRLSKIP	Device can skip to mark.
WFS_PTR_CTRLFLUSH	Device can be sent data that is buffered internally, and flushed to the printer on request.
WFS_PTR_CTRLRETRACT	Device can retract media under application control.
WFS_PTR_CTRLSTACK	Device can stack media items before ejecting as a bundle.
WFS_PTR_CTRLPARTIALCUT	Device can partially cut the media.

WFS_PTR_CTRLALARM	Device can ring a bell, beep or otherwise sound an audible alarm.
WFS_PTR_CTRLATPFORWARD	Capability to turn one page forward.
WFS_PTR_CTRLATPBACKWARD	Capability to turn one page backward.
WFS_PTR_CTRLTURNMEDIA	Device can turn inserted media.
WFS_PTR_CTRLSTAMP	Device can stamp on media.
WFS_PTR_CTRLPARK	Device can park a document into the parking station.
WFS_PTR_CTRLEXPEL	Device can expel media out of the exit slot.
WFS_PTR_CTRLEJECTTOTRANSPORT	Device can move media to a position on the transport just behind the exit slot.

usMaxMediaOnStacker
Specifies the maximum number of media items that the stacker can hold (zero if not available).

bAcceptMedia
Specifies whether the device is able to accept media while no execute command is running that is waiting explicitly for media to be inserted. Its value is either TRUE or FALSE.

bMultiPage
Specifies whether the device is able to support multiple page print jobs. Its value is either TRUE or FALSE.

fwPaperSources
Specifies the Paper sources available for this printer as a combination of the following flags:

Value	Meaning
WFS_PTR_PAPERUPPER	Indicates an upper paper source is available; devices with only one paper supply must indicate WFS_PTR_PAPERUPPER as being available.
WFS_PTR_PAPERLOWER	Indicates a lower paper source is available.
WFS_PTR_PAPEREXTERNAL	Indicates an external paper source (such as envelope tray or single sheet feed) is available.
WFS_PTR_PAPERAUX	An auxiliary paper source is available.
WFS_PTR_PAPERAUX2	A second auxiliary paper source is available.
WFS_PTR_PAPERPARK	A parking station is available.

bMediaTaken
Specifies whether the device is able to detect when the media is taken from the exit slot. If FALSE, the WFS_SRVE_PTR_MEDIATAKEN event is not fired. Its value is either TRUE or FALSE.

usRetractBins
Specifies the number of retract bins (zero if not supported).

lpusMaxRetract
Pointer to an array of the length *usRetractBins* with the maximum number of media items that each retract bin can hold (one count for each supported bin, starting from zero for bin number one to *usRetractBins*-1 for bin number *usRetractBins*). NULL pointer if the device has no retract bin.

fwImageType
Specifies the image format supported by this device, as a combination of following flags (zero if not supported):

Value	Meaning
WFS_PTR_IMAGETIF	The device can return scanned images in TIFF 6.0 format.
WFS_PTR_IMAGEWMF	The device can return scanned images in WMF (Windows Metafile) format.
WFS_PTR_IMAGEBMP	The device can return scanned images in Windows BMP format.
WFS_PTR_IMAGEJPG	The device can return scanned images in JPG format.

fwFrontImageColorFormat
Specifies the front image color formats supported by this device, as a combination of following flags (zero if not supported):

Value	Meaning
WFS_PTR_IMAGECOLORBINARY	The device can return scanned images in binary (image contains two colors, usually the colors black and white).
WFS_PTR_IMAGECOLORGRAYSCALE	The device can return scanned images in gray scale (image contains multiple gray colors).
WFS_PTR_IMAGECOLORFULL	The device can return scanned images in full color (image contains colors like red, green, blue etc.).

fwBackImageColorFormat
Specifies the back image color formats supported by this device, as a combination of following flags (zero if not supported):

Value	Meaning
WFS_PTR_IMAGECOLORBINARY	The device can return scanned images in binary (image contains two colors, usually the colors black and white).
WFS_PTR_IMAGECOLORGRAYSCALE	The device can return scanned images in gray scale (image contains multiple gray colors).
WFS_PTR_IMAGECOLORFULL	The device can return scanned images in full color (image contains colors like red, green, blue etc.).

fwCodelineFormat
Specifies the code line (MICR data) formats supported by this device, as a combination of following flags (zero if not supported):

Value	Meaning
WFS_PTR_CODELINECMC7	The device can read CMC7 code lines.
WFS_PTR_CODELINEE13B	The device can read E13B code lines.
WFS_PTR_CODELINEOCR	The device can read code lines using Optical Character Recognition.

fwImageSource
Specifies the source for the read image command supported by this device, as a combination of the following flags (zero if not supported):

Value	Meaning
WFS_PTR_IMAGEFRONT	The device can scan the front image of the document.
WFS_PTR_IMAGEBACK	The device can scan the back image of the document.
WFS_PTR_CODELINE	The device can recognize the code line.

fwCharSupport
One or more flags specifying the character sets, in addition to single byte ASCII, that is supported by the Service Provider:

Value	Meaning
WFS_PTR_ASCII	ASCII is supported for XFS forms.
WFS_PTR_UNICODE	UNICODE is supported for XFS forms.

For *fwCharSupport,* a Service Provider can support ONLY ASCII forms or can support BOTH ASCII and UNICODE forms. A Service Provider cannot support UNICODE forms without also supporting ASCII forms.

bDispensePaper
Specifies whether the device is able to dispense paper. Its value is either TRUE or FALSE.

lpszExtra
Pointer to a list of vendor-specific, or any other extended, information. The information is returned as a series of *"key=value"* strings so that it is easily extensible by Service Providers. Each string is null-terminated, with the final string terminating with two null characters. An empty list may be indicated by either a NULL pointer or a pointer to two consecutive null characters.

dwGuidLights [...]
Specifies which guidance lights are available. A number of guidance light types are defined below. Vendor specific guidance lights are defined starting from the end of the array. The maximum guidance light index is WFS_PTR_GUIDLIGHTS_MAX.

In addition to supporting specific flash rates and colors, some guidance lights also have the capability to show directional movement representing "entry" and "exit". The "entry" state gives the impression of leading a user to place media into the device. The "exit" state gives the impression of ejection from a device to a user and would be used for retrieving media from the device.

The elements of this array are specified as a combination of the following flags and indicate all of the possible flash rates (type B, colors (type C) and directions (type D) that the guidance light indicator is capable of handling. If the guidance light indicator only supports one color then no value of type C is returned. If the guidance light indicator does not support direction then no value of type D is returned. A value of WFS_PTR_GUIDANCE_NOT_AVAILABLE indicates that the device has no guidance light indicator or the device controls the light directly with no application control possible.

Value	Meaning	Type
WFS_PTR_GUIDANCE_NOT_AVAILABLE	There is no guidance light control available at this position.	A
WFS_PTR_GUIDANCE_OFF	The light can be off.	B
WFS_PTR_GUIDANCE_SLOW_FLASH	The light can blink slowly.	B
WFS_PTR_GUIDANCE_MEDIUM_FLASH	The light can blink medium frequency.	B
WFS_PTR_GUIDANCE_QUICK_FLASH	The light can blink quickly.	B
WFS_PTR_GUIDANCE_CONTINUOUS	The light can be continuous (steady).	B
WFS_PTR_GUIDANCE_RED	The light can be red.	C
WFS_PTR_GUIDANCE_GREEN	The light can be green.	C
WFS_PTR_GUIDANCE_YELLOW	The light can be yellow.	C
WFS_PTR_GUIDANCE_BLUE	The light can be blue.	C
WFS_PTR_GUIDANCE_CYAN	The light can be cyan.	C
WFS_PTR_GUIDANCE_MAGENTA	The light can be magenta.	C
WFS_PTR_GUIDANCE_WHITE	The light can be white.	C
WFS_PTR_GUIDANCE_ENTRY	The light can be in the entry state.	D
WFS_PTR_GUIDANCE_EXIT	The light can be in the exit state.	D

dwGuidLights [WFS_PTR_GUIDANCE_PRINTER]
Specifies whether the guidance light indicator on the printer unit is available.

lpszWindowsPrinter
Specifies the name of the default logical Windows printer that is associated with this Service Provider. Applications should use this printer name to generate native printer files (i.e. .PRN) to be printed through the WFS_CMD_PTR_PRINT_RAW_FILE command. This value will be NULL if the Service Provider does not support the WFS_CMD_PTR_PRINT_RAW_FILE command.

bMediaPresented
Specifies whether the device is able to detect when the media is presented to the user for removal. If TRUE, the WFS_EXEE_PTR_MEDIAPRESENTED event is fired. If FALSE, the WFS_EXEE_PTR_MEDIAPRESENTED event is not fired.

usAutoRetractPeriod
Specifies the number of seconds before the device will automatically retract the presented media. If the command that generated the media is still active when the media is automatically retracted, the command will complete with a WFS_ERR_PTR_MEDIARETRACTED error. If the device does not retract media automatically this value will be zero.

bRetractToTransport
Specifies whether the device is able to retract the previously ejected media to the transport. Its value is either TRUE or FALSE.

bPowerSaveControl
Specifies whether power saving control is available. This can either be TRUE if available or FALSE if not available.

fwCoercivityType
Specifies the form write modes supported by this device, as a combination of the following flags:

Value	Meaning
WFS_PTR_COERCIVITYNOTSUPP	This device cannot write the magnetic stripe.
WFS_PTR_COERCIVITYLOW	This device can write the magnetic stripe by low coercivity mode.
WFS_PTR_COERCIVITYHIGH	This device can write the magnetic stripe by high coercivity mode.
WFS_PTR_COERCIVITYAUTO	The Service Provider or the device is capable of automatically determining whether low or high coercivity magnetic stripe should be written.

fwControlPassbook
Specifies how the passbook can be controlled with the WFS_CMD_PTR_CONTROL_PASSBOOK command, as a combination of the following flags:

Value	Meaning
WFS_PTR_PBKCTRLNOTSUPP	The device is not capable of turning multiple pages of the passbook or closing the passbook.
WFS_PTR_PBKCTRLTURNFORWARD	The device can turn forward multiple pages of the passbook.
WFS_PTR_PBKCTRLTURNBACKWARD	The device can turn backward multiple pages of the passbook.
WFS_PTR_PBKCTRLCLOSEFORWARD	The device can close the passbook forward.
WFS_PTR_PBKCTRLCLOSEBACKWARD	The device can close the passbook backward.

wPrintSides
Specifies on which sides of the media this device can print as one of the following values:

Value	Meaning
WFS_PTR_PRINTSIDESNOTSUPP	The device is not capable of printing on any sides of the media.
WFS_PTR_PRINTSIDESSINGLE	The device is capable of printing on one side of the media.
WFS_PTR_PRINTSIDESDUAL	The device is capable of printing on two sides of the media.

bAntiFraudModule
Specifies whether the anti-fraud module is available. This can either be TRUE if available or FALSE if not available.

dwControlEx
Specifies the manner in which media can be controlled, as a combination of the following flags (zero if none of the choices is supported). For backwards compatibility the *fwControl* field is preserved. The definitions for the *fwControl* field are included as this field supersedes the *fwControl* field.

Value	Meaning
WFS_PTR_CTRLEJECT	Device can eject media.
WFS_PTR_CTRLPERFORATE	Device can perforate media.
WFS_PTR_CTRLCUT	Device can cut media.
WFS_PTR_CTRLSKIP	Device can skip to mark.

WFS_PTR_CTRLFLUSH	Device can be sent data that is buffered internally, and flushed to the printer on request.
WFS_PTR_CTRLRETRACT	Device can retract media under application control.
WFS_PTR_CTRLSTACK	Device can stack media items before ejecting as a bundle.
WFS_PTR_CTRLPARTIALCUT	Device can partially cut the media.
WFS_PTR_CTRLALARM	Device can ring a bell, beep or otherwise sound an audible alarm.
WFS_PTR_CTRLATPFORWARD	Capability to turn one page forward.
WFS_PTR_CTRLATPBACKWARD	Capability to turn one page backward.
WFS_PTR_CTRLTURNMEDIA	Device can turn inserted media.
WFS_PTR_CTRLSTAMP	Device can stamp on media.
WFS_PTR_CTRLPARK	Device can park a document into the parking station.
WFS_PTR_CTRLEXPEL	Device can expel media out of the exit slot.
WFS_PTR_CTRLEJECTTOTRANSPORT	Device can move media to a position on the transport just behind the exit slot.
WFS_PTR_CTRLROTATE180	Device can rotate media 180 degrees in the printing plane.
WFS_PTR_CTRLCLEARBUFFER	The Service Provider can clear buffered data.

bBlackMarkModeSupported
Specifies if setting the black mark mode with the command WFS_CMD_PTR_SET_BLACK_MARK_MODE is supported. This can either be TRUE if supported or FALSE if not supported.

lpdwSynchronizableCommands
Pointer to a zero-terminated list of DWORDs which contains the execute command IDs that can be synchronized. If no execute command can be synchronized then this parameter will be NULL.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Comments Applications which require or expect specific information to be present in the *lpszExtra* parameter may not be device or vendor-independent.

7.3 WFS_INF_PTR_FORM_LIST

Description This command is used to retrieve the list of forms available on the device.

Input Param None.

Output Param LPSTR lpszFormList;

lpszFormList
Pointer to a list of null-terminated form names, with the final name terminating with two null characters.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Comments None.

7.4 WFS_INF_PTR_MEDIA_LIST

Description This command is used to retrieve the list of media definitions available on the device.

Input Param None.

Output Param LPSTR lpszMediaList;

lpszMediaList
Pointer to a list of null-terminated media names, with the final name terminating with two null characters.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Comments None.

7.5 WFS_INF_PTR_QUERY_FORM

Description This command is used to retrieve details of the definition of a specified form.

Input Param LPSTR lpszFormName;

lpszFormName
Points to the null-terminated form name on which to retrieve details.

Output Param LPWFSFRMHEADER lpHeader;

```
typedef struct _wfs_frm_header
     {
     LPSTR                lpszFormName;
     WORD                 wBase;
     WORD                 wUnitX;
     WORD                 wUnitY;
     WORD                 wWidth;
     WORD                 wHeight;
     WORD                 wAlignment;
     WORD                 wOrientation;
     WORD                 wOffsetX;
     WORD                 wOffsetY;
     WORD                 wVersionMajor;
     WORD                 wVersionMinor;
     LPSTR                lpszUserPrompt;
     WORD                 fwCharSupport;
     LPSTR                lpszFields;
     WORD                 wLanguageID;
     } WFSFRMHEADER, *LPWFSFRMHEADER;
```

lpszFormName
Specifies the null-terminated name of the form.

wBase
Specifies the base unit of measurement of the form and can be one of the following:

Value	Meaning
WFS_FRM_INCH	The base unit is inches.
WFS_FRM_MM	The base unit is millimeters.
WFS_FRM_ROWCOLUMN	The base unit is rows and columns.

wUnitX
Specifies the horizontal resolution of the base units as a fraction of the *wBase* value. For example, a value of 16 applied to the base unit WFS_FRM_INCH means that the base horizontal resolution is 1/16".

wUnitY
Specifies the vertical resolution of the base units as a fraction of the *wBase* value. For example, a value of 10 applied to the base unit WFS_FRM_MM means that the base vertical resolution is 0.1 mm.

wWidth
Specifies the width of the form in terms of the base horizontal resolution.

wHeight
Specifies the height of the form in terms of the base vertical resolution.

wAlignment
Specifies the relative alignment of the form on the media and can be one of the following values:

Value	Meaning
WFS_FRM_TOPLEFT	The form is aligned relative to the top and left edges of the media.
WFS_FRM_TOPRIGHT	The form is aligned relative to the top and right edges of the media.
WFS_FRM_BOTTOMLEFT	The form is aligned relative to the bottom and left edges of the media.

WFS_FRM_BOTTOMRIGHT	The form is aligned relative to the bottom and right edges of the media.

wOrientation
Specifies the orientation of the form and can be one of the following values:

Value	Meaning
WFS_FRM_PORTRAIT	The orientation of the form is portrait.
WFS_FRM_LANDSCAPE	The orientation of the form is landscape.

wOffsetX
Specifies the horizontal offset of the position of the top-left corner of the form, relative to the left or right edge specified by *wAlignment*. This value is specified in terms of the base horizontal resolution and is always positive.

wOffsetY
Specifies the vertical offset of the position of the top-left corner of the form, relative to the top or bottom edge specified by *wAlignment*. This value is specified in terms of the base vertical resolution and is always positive.

wVersionMajor
Specifies the major version of the form. If the version is not specified in the form, then zero is returned.

wVersionMinor
Specifies the minor version of the form. If the version is not specified in the form, then zero is returned.

lpszUserPrompt
Pointer to a null-terminated user prompt string. NULL will be returned if the form does not define a value for the user prompt.

fwCharSupport
A single flag specifying the Character Set in which the form is encoded:

Value	Meaning
WFS_PTR_ASCII	ASCII is supported for XFS forms initial data values and FORMAT strings.
WFS_PTR_UNICODE	UNICODE is supported for XFS forms initial data values and FORMAT strings.

lpszFields
Pointer to a list of null-terminated field names, with the final name terminating with two null characters.

wLanguageID
Specifies the language identifier for the form.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FORMNOTFOUND	The specified form cannot be found.
WFS_ERR_PTR_FORMINVALID	The specified form is invalid.

Comments None.

7.6 WFS_INF_PTR_QUERY_MEDIA

Description This command is used to retrieve details of the definition of a specified media.

Input Param LPSTR lpszMediaName;

lpszMediaName
Pointer to the null-terminated media name about which to retrieve details.

Output Param LPWFSFRMMEDIA lpMedia;

```
typedef struct _wfs_frm_media
     {
     WORD                fwMediaType;
     WORD                wBase;
     WORD                wUnitX;
     WORD                wUnitY;
     WORD                wSizeWidth;
     WORD                wSizeHeight;
     WORD                wPageCount;
     WORD                wLineCount;
     WORD                wPrintAreaX;
     WORD                wPrintAreaY;
     WORD                wPrintAreaWidth;
     WORD                wPrintAreaHeight;
     WORD                wRestrictedAreaX;
     WORD                wRestrictedAreaY;
     WORD                wRestrictedAreaWidth;
     WORD                wRestrictedAreaHeight;
     WORD                wStagger;
     WORD                wFoldType;
     WORD                wPaperSources;
     } WFSFRMMEDIA, *LPWFSFRMMEDIA;
```

fwMediaType
Specifies the type of media as one of the following values:

Value	Meaning
WFS_FRM_MEDIAGENERIC	The media is a generic media, i.e. a single sheet.
WFS_FRM_MEDIAPASSBOOK	The media is a passbook media.
WFS_FRM_MEDIAMULTIPART	The media is a multi part media.

wBase
Specifies the base unit of measurement of the form and can be one of the following values:

Value	Meaning
WFS_FRM_INCH	The base unit is inches.
WFS_FRM_MM	The base unit is millimeters.
WFS_FRM_ROWCOLUMN	The base unit is rows and columns.

wUnitX
Specifies the horizontal resolution of the base units as a fraction of the *wBase* value. For example, a value of 16 applied to the base unit WFS_FRM_INCH means that the base horizontal resolution is 1/16".

wUnitY
Specifies the vertical resolution of the base units as a fraction of the *wBase* value. For example, a value of 10 applied to the base unit WFS_FRM_MM means that the base vertical resolution is 0.1 mm.

wSizeWidth
Specifies the width of the media in terms of the base horizontal resolution.

wSizeHeight
Specifies the height of the media in terms of the base vertical resolution.

wPageCount
Specifies the number of pages in a media of type WFS_FRM_MEDIAPASSBOOK.

wLineCount
Specifies the number of lines on a page for a media of type WFS_FRM_MEDIAPASSBOOK.

wPrintAreaX
Specifies the horizontal offset of the printable area relative to the top left corner of the media in terms of the base horizontal resolution.

wPrintAreaY
Specifies the vertical offset of the printable area relative to the top left corner of the media in terms of the base vertical resolution.

wPrintAreaWidth
Specifies the printable area width of the media in terms of the base horizontal resolution.

wPrintAreaHeight
Specifies the printable area height of the media in terms of the base vertical resolution.

wRestrictedAreaX
Specifies the horizontal offset of the restricted area relative to the top left corner of the media in terms of the base horizontal resolution.

wRestrictedAreaY
Specifies the vertical offset of the restricted area relative to the top left corner of the media in terms of the base vertical resolution.

wRestrictedAreaWidth
Specifies the restricted area width of the media in terms of the base horizontal resolution.

wRestrictedAreaHeight
Specifies the restricted area height of the media in terms of the base vertical resolution.

wStagger
Specifies the staggering from the top in terms of the base vertical resolution for a media of type WFS_FRM_MEDIAPASSBOOK.

wFoldType
Specified the type of fold (vertical, horizontal or none) for a media of type WFS_FRM_MEDIAPASSBOOK as one of the following values:

Value	Meaning
WFS_FRM_FOLDNONE	Passbook has no fold.
WFS_FRM_FOLDHORIZONTAL	Passbook has a horizontal fold.
WFS_FRM_FOLDVERTICAL	Passbook has a vertical fold.

wPaperSources
Specifies the Paper sources to use when printing forms using this media as a combination of the following flags:

Value	Meaning
WFS_PTR_PAPERANY	Use any paper source.
WFS_PTR_PAPERUPPER	Use the only or the upper paper source.
WFS_PTR_PAPERLOWER	Use the lower paper source.
WFS_PTR_PAPEREXTERNAL	Use the external paper source.
WFS_PTR_PAPERAUX	Use the auxiliary paper source.
WFS_PTR_PAPERAUX2	Use the second auxiliary paper source.
WFS_PTR_PAPERPARK	Use the parking station.

Error Codes

In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_MEDIANOTFOUND	The specified media definition cannot be found.
WFS_ERR_PTR_MEDIAINVALID	The specified media definition is invalid.

Comments

None.

7.7 WFS_INF_PTR_QUERY_FIELD

Description This command is used to retrieve details of the definition of a single or all fields on a specified form.

Input Param LPWFSPTRQUERYFIELD lpQueryField;

```
typedef struct _wfs_ptr_query_field
     {
     LPSTR                lpszFormName;
     LPSTR                lpszFieldName;
     } WFSPTRQUERYFIELD, *LPWFSPTRQUERYFIELD;
```

lpszFormName
Pointer to the null-terminated form name.

lpszFieldName
Pointer to the null-terminated name of the field about which to retrieve details. If the value of *lpszFieldName* is NULL, then details are retrieved for all fields on the form. Depending upon whether the form is encoded in UNICODE representation either the *lpszInitialValue* or *lpszUNICODEInitialValue* output fields are used to retrieve the field Initial Value.

Output Param LPWFSFRMFIELD *lppFields;

lppFields
Pointer to a null-terminated array of pointers to WFSFRMFIELD structures:

```
typedef struct _wfs_frm_field
     {
     LPSTR                lpszFieldName;
     WORD                 wIndexCount;
     WORD                 fwType;
     WORD                 fwClass;
     WORD                 fwAccess;
     WORD                 fwOverflow;
     LPSTR                lpszInitialValue;
     LPWSTR               lpszUNICODEInitialValue;
     LPSTR                lpszFormat;
     LPWSTR               lpszUNICODEFormat;
     WORD                 wLanguageID;
     WORD                 wCoercivity;
     } WFSFRMFIELD, *LPWFSFRMFIELD;
```

lpszFieldName
Pointer to the null-terminated field name.

wIndexCount
Specifies the number of entries for an index field. A value of zero indicates that this field is not an index field. Index fields are typically used to present information in a tabular fashion.

fwType
Specifies the type of field and can be one of the following values:

Value	Meaning
WFS_FRM_FIELDTEXT	The field is a text field.
WFS_FRM_FIELDMICR	The field is a Magnetic Ink Character Recognition field.
WFS_FRM_FIELDOCR	The field is an Optical Character Recognition field.
WFS_FRM_FIELDMSF	The field is a Magnetic Stripe Facility field.
WFS_FRM_FIELDBARCODE	The field is a Barcode field.
WFS_FRM_FIELDGRAPHIC	The field is a Graphic field.
WFS_FRM_FIELDPAGEMARK	The field is a Page Mark field.

fwClass
Specifies the class of the field and can be one of the following values:

Value	Meaning
WFS_FRM_CLASSSTATIC	The field data cannot be set by the application.
WFS_FRM_CLASSOPTIONAL	The field data can be set by the application.
WFS_FRM_CLASSREQUIRED	The field data must be set by the application.

fwAccess
Specifies whether the field is to be used for input, output, or both and can be a combination of the following flags:

Value	Meaning
WFS_FRM_ACCESSREAD	The field is used for input.
WFS_FRM_ACCESSWRITE	The field is used for output.

fwOverflow
Specifies how an overflow of field data should be handled and can be one of the following values:

Value	Meaning
WFS_FRM_OVFTERMINATE	Return an error and terminate printing of the form.
WFS_FRM_OVFTRUNCATE	Truncate the field data to fit in the field.
WFS_FRM_OVFBESTFIT	Fit the text in the field.
WFS_FRM_OVFOVERWRITE	Print the field data beyond the extents of the field boundary.
WFS_FRM_OVFWORDWRAP	If the field can hold more than one line the text is wrapped around. Wrapping is performed, where possible, by splitting the line on a space character or a hyphen character or any other character which is used to join two words together.

lpszInitialValue
The initial value of the field. When the form is printed (using WFS_CMD_PTR_PRINT_FORM), this value will be used if another value is not provided. This value can be NULL if the parameter is not specified in the field definition or the form is encoded in UNICODE.

lpszUNICODEInitialValue
The initial value of the field when form is encoded in UNICODE. When the form is printed (using WFS_CMD_PTR_PRINT_FORM), this value will be used if another value is not provided. This value can be NULL if the parameter is not specified in the field definition or the form is not encoded in UNICODE.

lpszFormat
Format string as defined in the form for this field. This value can be NULL if the parameter is not specified in the field definition or the form is encoded in UNICODE.

lpszUNICODEFormat
Format string as defined in the form for this field when form is encoded in UNICODE. This value can be NULL if the parameter is not specified in the field definition or the form is not encoded in UNICODE.

wLanguageID
Specifies the language identifier for the field.

wCoercivity
Specifies the coercivity to be used for writing the magnetic stripe.

Value	Meaning
WFS_FRM_COERCIVITYAUTO	The coercivity is decided by the Service Provider or the hardware.
WFS_FRM_COERCIVITYLOW	A low coercivity is to be used for writing the magnetic stripe.
WFS_FRM_COERCIVITYHIGH	A high coercivity is to be used for writing the magnetic stripe.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FORMNOTFOUND	The specified form cannot be found.
WFS_ERR_PTR_FIELDNOTFOUND	The specified field cannot be found.
WFS_ERR_PTR_FORMINVALID	The specified form is invalid.
WFS_ERR_PTR_FIELDINVALID	The specified field is invalid.

Comments None.

7.8 WFS_INF_PTR_CODELINE_MAPPING

Description This command is used to retrieve the byte code mapping for the special banking symbols defined for image processing (e.g. check processing). This mapping must be reported as there is no standard for the fonts defined below.

Input Param LPWFSPTRCODELINEMAPPING lpCodelineMapping;

```
typedef struct _wfs_ptr_codeline_mapping
     {
     WORD                wCodelineFormat;
     } WFSPTRCODELINEMAPPING, *LPWFSPTRCODELINEMAPPING;
```

wCodeLineFormat
Specifies the code-line format that the mapping for the special characters is required for. This field can be one of the following values:

Value	Meaning
WFS_PTR_CODELINECMC7	Report the CMC7 mapping.
WFS_PTR_CODELINEE13B	Report the E13B mapping.

Output Param LPWFSPTRCODELINEMAPPINGOUT lpCodelineMapping;

```
typedef struct _wfs_ptr_codeline_mapping_out
     {
     WORD                wCodelineFormat;
     LPWFSPTRXDATA       lpxCharMapping;
     } WFSPTRCODELINEMAPPINGOUT, *LPWFSPTRCODELINEMAPPINGOUT;
```

wCodeLineFormat
Specifies the code-line format that is being reported.

lpxCharMapping
Defines the mapping of the font specific symbols to byte values. These byte values are used to represent the font specific characters when the code line is read through the WFS_CMD_PTR_READ_IMAGE command. The font specific meaning of each index is defined in the following tables:

E13B

Index	0	1	2	3	4
Symbol that byte value represents					N/A
Meaning	Transit	Amount	On Us	Dash	Reject / Unreadable

CMC7

Index	0	1	2	3	4	5
Symbol						N/A
Meaning	S1 - Start of Bank Account	S2 - Start of the Amount field	S3 - Terminate Routing	S4 - Unused	S5 - Transit / Routing	Reject / Unreadable

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Comments None.

8. Execute Commands

8.1 WFS_CMD_PTR_CONTROL_MEDIA

Description This command is used to control a form drawn in by the device (e.g. after reading or in case of termination of an application request).

If an eject operation is specified, it completes when the media is moved to the exit slot. A service event is generated when the media has been taken by the user (only if field *bMediaTaken* defined in structure WFSPTRCAPS is equal to TRUE).

Input Param LPDWORD lpdwMediaControl;

lpdwMediaControl
Pointer to a value which specifies the manner in which the media should be handled, as a combination of the following bit-flags:

Value	Meaning
WFS_PTR_CTRLEJECT	Flush any data to the printer that has not yet been printed from previous WFS_CMD_PTR_PRINT_FORM or WFS_CMD_PTR_PRINT_RAW_FILE commands, then eject the media.
WFS_PTR_CTRLPERFORATE	Flush data as above, then perforate the media.
WFS_PTR_CTRLCUT	Flush data as above, then cut the media. For printers which have the ability to stack multiple cut sheets and deliver them as a single bundle to the customer, cut causes the media to be stacked and eject causes the bundle to be moved to the exit slot.
WFS_PTR_CTRLSKIP	Flush data as above, then skip the media to mark.
WFS_PTR_CTRLFLUSH	Flush any data to the printer that has not yet been physically printed from previous WFS_CMD_PTR_PRINT_FORM or WFS_CMD_PTR_PRINT_RAW_FILE commands. This will synchronize the application with the device to ensure that all data has been physically printed.
WFS_PTR_CTRLRETRACT	Flush data as above, then retract the media to retract bin number one, for devices with more than one bin the command WFS_CMD_PTR_RETRACT_MEDIA should be used if the media should be retracted to another bin than bin number one.
WFS_PTR_CTRLSTACK	Flush data as above, then move the media item on the internal stacker.
WFS_PTR_CTRLPARTIALCUT	Flush the data as above, then partially cut the media.
WFS_PTR_CTRLALARM	Cause the printer to ring a bell, beep, or otherwise sound an audible alarm.
WFS_PTR_CTRLATPFORWARD	Flush the data as above, then turn one page forward.
WFS_PTR_CTRLATPBACKWARD	Flush the data as above, then turn one page backward.
WFS_PTR_CTRLTURNMEDIA	Flush the data as above, then turn inserted media.
WFS_PTR_CTRLSTAMP	Flush the data as above, then stamp on inserted media.
WFS_PTR_CTRLPARK	Park the media in the parking station.

WFS_PTR_CTRLEXPEL	Flush the data as above, then throw the media out of the exit slot.
WFS_PTR_CTRLEJECTTOTRANSPORT	Flush the data as above, then move the media to a position on the transport just behind the exit slot.
WFS_PTR_CTRLROTATE180	Flush the data as above, then rotate media 180 degrees in the printing plane.
WFS_PTR_CTRLCLEARBUFFER	Clear any data that has not yet been physically printed from previous WFS_CMD_PTR_PRINT_FORM or WFS_CMD_PTR_PRINT_RAW_FILE commands.

It is not possible to combine the flags WFS_PTR_CTRLEJECT, WFS_PTR_CTRLRETRACT, WFS_PTR_CTRLPARK, WFS_PTR_CTRLEXPEL and WFS_PTR_CTRLEJECTTOTRANSPORT with each other otherwise the command completes with WFS_ERR_INVALID_DATA.

It is not possible to combine the flag WFS_PTR_CTRLCLEARBUFFER with any other flags, otherwise the command completes with WFS_ERR_INVALID_DATA.

An application should be aware that the sequence of the actions is not guaranteed if more than one flag is specified in this parameter.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_NOMEDIAPRESENT	The control action could not be completed because there is no media in the device, the media is not in a position where it can be controlled, or (in the case of WFS_PTR_CTRLRETRACT) has been removed.
WFS_ERR_PTR_FLUSHFAIL	The device was not able to flush data.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full. No more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_STACKERFULL	The internal stacker is full. No more media can be moved to the stacker.
WFS_ERR_PTR_PAGETURNFAIL	The device was not able to turn the page.
WFS_ERR_PTR_MEDIATURNFAIL	The device was not able to turn the inserted media.
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.
WFS_ERR_PTR_PAPEROUT	The paper supply is empty.
WFS_ERR_PTR_INKOUT	No stamping possible, stamping ink supply empty.
WFS_ERR_PTR_TONEROUT	Toner or ink supply is empty or printing contrast with ribbon is not sufficient.
WFS_ERR_PTR_SEQUENCEINVALID	Programming error. Invalid command sequence (e.g. WFS_PTR_CTRLPARK and the parking station is busy).
WFS_ERR_PTR_MEDIARETAINED	Media has been retracted in attempts to eject it. The device is clear and can be used.
WFS_ERR_PTR_BLACKMARK	Black mark detection has failed, nothing has been printed.

WFS_ERR_PTR_MEDIARETRACTED	Presented media was automatically retracted before all wads could be presented and before the command could complete successfully.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is high or full; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes high or full. It is sent with WFS_PTR_RETRACTBINHIGH or WFS_PTR_RETRACTBINFULL status.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_PAPERTHRESHOLD	The paper supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_PAPERLOW or WFS_PTR_PAPEROUT status.
WFS_USRE_PTR_TONERTHRESHOLD	The toner or ink supply is low or empty or the printing contrast with ribbon is weak or not sufficient; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_TONERLOW or WFS_PTR_TONEROUT status.
WFS_USRE_PTR_INKTHRESHOLD	The stamping ink supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_INKLOW or WFS_PTR_INKOUT status.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.
WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.

Comments None.

8.2 WFS_CMD_PTR_PRINT_FORM

Description This command is used to print a form by merging the supplied variable field data with the defined form and field data specified in the form. If no media is present, the device waits for the period of time specified by the *dwTimeOut* parameter in the **WFSExecute** call for media to be inserted from the external paper source.

Input Param LPWFSPTRPRINTFORM lpPrintForm;

```
typedef struct _wfs_ptr_print_form
     {
     LPSTR                lpszFormName;
     LPSTR                lpszMediaName;
     WORD                 wAlignment;
     WORD                 wOffsetX;
     WORD                 wOffsetY;
     WORD                 wResolution;
     DWORD                dwMediaControl;
     LPSTR                lpszFields;
     LPWSTR               lpszUNICODEFields;
     WORD                 wPaperSource;
     } WFSPTRPRINTFORM, *LPWFSPTRPRINTFORM;
```

lpszFormName
Pointer to the null-terminated form name.

lpszMediaName
Pointer to the null-terminated media name. *lpszMediaName* is NULL if no media definition applies.

wAlignment
Specifies the alignment of the form on the physical media, as one of the following values:

Value	Meaning
WFS_PTR_ALNUSEFORMDEFN	Use the alignment specified in the form definition.
WFS_PTR_ALNTOPLEFT	Align form to top left of physical media.
WFS_PTR_ALNTOPRIGHT	Align form to top right of physical media.
WFS_PTR_ALNBOTTOMLEFT	Align form to bottom left of physical media.
WFS_PTR_ALNBOTTOMRIGHT	Align form to bottom right of physical media.

wOffsetX
Specifies the horizontal offset of the form, relative to the horizontal alignment specified in *wAlignment*, in horizontal resolution units (from form definition); always a positive number (i.e. if aligned to the right side of the media, means offset the form to the left). A value of WFS_PTR_OFFSETUSEFORMDEFN indicates that the *xoffset* value from the form definition should be used.

wOffsetY
Specifies the vertical offset of the form, relative to the vertical alignment specified in *wAlignment*, in vertical resolution units (from form definition); always a positive number (i.e. if aligned to the bottom of the media, means offset the form upward). A value of WFS_PTR_OFFSETUSEFORMDEFN indicates that the *yoffset* value from the form definition should be used.

wResolution
Specifies the resolution in which to print the form. Possible values are:

Value	Meaning
WFS_PTR_RESLOW	Print form with low resolution.
WFS_PTR_RESMED	Print form with medium resolution.
WFS_PTR_RESHIGH	Print form with high resolution.
WFS_PTR_RESVERYHIGH	Print form with very high resolution.

dwMediaControl
Specifies the manner in which the media should be handled after the printing is done, as a combination of the flags described under WFS_CMD_PTR_CONTROL_MEDIA. A zero value of this parameter means to do none of these actions, as when printing multiple forms on a single page. When zero is specified and the device does not support the WFS_PTR_CTRLFLUSH capability, the data will be printed immediately. If the device supports WFS_PTR_CTRLFLUSH, the data may be buffered and the WFS_CMD_PTR_CONTROL_MEDIA command should be used to synchronize the application with the device to ensure that all data has been physically printed. WFS_PTR_CTRLCLEARBUFFER is not applicable to this command, in this case WFS_ERR_INVALID_DATA will be returned.

lpszFields
Pointer to a series of "<FieldName>=<FieldValue>" strings, where each string is null-terminated with the entire field string terminating with two null characters. If the field is an index field, then the syntax of the string is instead "<FieldName>[<index>]=<FieldValue>", where <index> specifies the zero-based element of the index field.

lpszUNICODEFields
Pointer to a series of "<FieldName>=<FieldValue>" UNICODE strings, where each string is null-terminated with the entire field string terminating with two null characters. If the field is an index field, then the syntax of the string is instead "<FieldName>[<index>]=<FieldValue>", where <index> specifies the zero-based element of the index field.

The *lpszUNICODEFields* field should only be used if the form is encoded in UNICODE representation. This can be determined with the WFS_INF_PTR_QUERY_FORM command.

wPaperSource
Specifies the Paper source to use when printing this form. When the value is zero, then the paper source is determined from the media definition. This parameter is ignored if there is already paper in the print position. Possible values are:

Value	Meaning
WFS_PTR_PAPERANY	Any paper source can be used; it is determined by the service.
WFS_PTR_PAPERUPPER	Use the only paper source or the upper paper source, if there is more than one paper supply.
WFS_PTR_PAPERLOWER	Use the lower paper source.
WFS_PTR_PAPEREXTERNAL	Use the external paper source (such as envelope tray or single sheet feed).
WFS_PTR_PAPERAUX	Use the auxiliary paper source.
WFS_PTR_PAPERAUX2	Use the second auxiliary paper source.
WFS_PTR_PAPERPARK	Use the parking station.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FORMNOTFOUND	The specified form definition cannot be found.
WFS_ERR_PTR_FLUSHFAIL	The device was not able to flush data.
WFS_ERR_PTR_MEDIAOVERFLOW	The form overflowed the media.
WFS_ERR_PTR_FIELDSPECFAILURE	The syntax of the *lpszFields* member is invalid.
WFS_ERR_PTR_FIELDERROR	An error occurred while processing a field, causing termination of the print request. An execute event WFS_EXEE_PTR_FIELDERROR is posted with the details.
WFS_ERR_PTR_MEDIANOTFOUND	The specified media definition cannot be found.
WFS_ERR_PTR_MEDIAINVALID	The specified media definition is invalid.
WFS_ERR_PTR_FORMINVALID	The specified form definition is invalid.

WFS_ERR_PTR_MEDIASKEWED	The media skew exceeded the limit in the form definition.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full. No more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_STACKERFULL	The internal stacker is full. No more media can be moved to the stacker.
WFS_ERR_PTR_PAGETURNFAIL	The device was not able to turn the page.
WFS_ERR_PTR_MEDIATURNFAIL	The device was not able to turn the inserted media.
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.
WFS_ERR_PTR_CHARSETDATA	Character set(s) supported by Service Provider is inconsistent with use of *lpszFields* or *lpszUNICODEFields* fields.
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.
WFS_ERR_PTR_PAPEROUT	The paper supply is empty.
WFS_ERR_PTR_INKOUT	No stamping possible, stamping ink supply empty.
WFS_ERR_PTR_TONEROUT	Toner or ink supply is empty or printing contrast with ribbon is not sufficient.
WFS_ERR_PTR_SEQUENCEINVALID	Programming error. Invalid command sequence (e.g. *dwMediaControl* = WFS_PTR_CTRLPARK and park position is busy).
WFS_ERR_PTR_SOURCEINVALID	The selected paper source is not supported by the hardware.
WFS_ERR_PTR_MEDIARETAINED	Media has been retracted in attempts to eject it. The device is clear and can be used.
WFS_ERR_PTR_BLACKMARK	Black mark detection has failed, nothing has been printed.
WFS_ERR_PTR_MEDIASIZE	The media entered has an incorrect size and the media remains inside the device.
WFS_ERR_PTR_MEDIAREJECTED	The media was rejected during the insertion phase and no data has been printed. The WFS_EXEE_PTR_MEDIAREJECTED execute event is posted with the details. The device is still operational.
WFS_ERR_PTR_MEDIARETRACTED	Presented media was automatically retracted before all wads could be presented and before the command could complete successfully.
WFS_ERR_PTR_MSFERROR	An error occurred while writing the magnetic stripe data.
WFS_ERR_PTR_NOMSF	No magnetic stripe found; media may have been inserted or pulled through the wrong way.

Events

In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_EXEE_PTR_NOMEDIA	No media is present in the device.
WFS_EXEE_PTR_MEDIAINSERTED	Media has been inserted into the device.
WFS_EXEE_PTR_FIELDERROR	A fatal error occurred while processing a field.
WFS_EXEE_PTR_FIELDWARNING	A non-fatal error occurred while processing a field.

WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is full; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes full. It is sent with WFS_PTR_RETRACTBINFULL or WFS_PTR_RETRACTBINHIGH status.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_PAPERTHRESHOLD	The paper supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_PAPERLOW or WFS_PTR_PAPEROUT status.
WFS_USRE_PTR_TONERTHRESHOLD	The toner or ink supply is low or empty or the printing contrast with ribbon is weak or not sufficient; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_TONERLOW or WFS_PTR_TONEROUT status.
WFS_USRE_PTR_INKTHRESHOLD	The stamping ink supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_INKLOW or WFS_PTR_INKOUT status.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.
WFS_EXEE_PTR_MEDIAREJECTED	The media has been rejected and presented back to the user. It is available at the entry/exit slot. When the media is removed, a WFS_SRVE_PTR_MEDIATAKEN event will be sent.
WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.

Comments

All error codes (except WFS_ERR_PTR_NOMEDIAPRESENT) and events listed under the WFS_CMD_PTR_CONTROL_MEDIA command description can also occur on this command.

An invalid field name is treated as a WFS_EXEE_PTR_FIELDWARNING event with WFS_PTR_FIELDNOTFOUND status. A WFS_EXEE_PTR_FIELDWARNING event is returned with WFS_PTR_FIELDOVERFLOW status if the data overflows the field, and the field definition OVERFLOW value is TRUNCATE, BESTFIT, OVERWRITE or WORDWRAP. Other field-related problems generate a field error return and event.

The application will use *lpszFields* or *lpszUNICODEFields* as an input parameter, depending upon the Service Provider capabilities. Legacy (non-UNICODE aware) applications will only use the *lpszFields* field. UNICODE applications can use either the *lpszFields* or *lpszUNICODEFields* fields, provided the Service Provider is UNICODE compliant.

8.3 WFS_CMD_PTR_READ_FORM

Description This command is used to read data from input fields on the specified form. These input fields may consist of MICR, OCR, MSF, BARCODE, or PAGEMARK input fields. These input fields may also consist of TEXT fields for purposes of detecting available passbook print lines with passbook printers supporting such capability. If no media is present, the device waits for the period of time specified by the *dwTimeOut* parameter in the **WFSExecute** call for media to be inserted.

Input Param LPWFSPTRREADFORM lpReadForm;

```
typedef struct _wfs_ptr_read_form
     {
     LPSTR                lpszFormName;
     LPSTR                lpszFieldNames;
     LPSTR                lpszMediaName;
     DWORD                dwMediaControl;
     } WFSPTRREADFORM, *LPWFSPTRREADFORM;
```

lpszFormName
Pointer to the null-terminated name of the form.

lpszFieldNames
Pointer to a list of null-terminated field names from which to read input data, with the final name terminating with two null characters. If this value is NULL, then read data from all input fields on the form.

lpszMediaName
Pointer to the null-terminated media name. *lpszMediaName* is NULL if no media definition applies.

dwMediaControl
Specifies the manner in which the media should be handled after the reading was done and can be a combination of the flags described under WFS_CMD_PTR_CONTROL_MEDIA. WFS_PTR_CTRLCLEARBUFFER is not applicable to this command, in this case WFS_ERR_INVALID_DATA will be returned.

Output Param LPWFSPTRREADFORMOUT lpReadFormOut;

```
typedef struct _wfs_ptr_read_form_out
     {
     LPSTR                lpszFields;
     LPWSTR               lpszUNICODEFields;
     } WFSPTRREADFORMOUT, *LPWFSPTRREADFORMOUT;
```

lpszFields
Pointer to a series of "<FieldName>=<FieldValue>" strings, where each string is null-terminated with the entire field string terminating with two null characters. If the field is an index field, then the syntax of the string is instead "<FieldName>[<index>]=<FieldValue>", where <index> specifies the zero-based element of the index field. An empty list may be indicated by either a NULL pointer or a pointer to two consecutive null characters.

lpszUNICODEFields
Pointer to a series of "<FieldName>=<FieldValue>" UNICODE strings, where each string is null-terminated with the entire field string terminating with two null characters. If the field is an index field, then the syntax of the string is instead "<FieldName>[<index>]=<FieldValue>", where <index> specifies the zero-based element of the index field. An empty list may be indicated by either a NULL pointer or a pointer to two consecutive null characters.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FORMNOTFOUND	The specified form cannot be found.
WFS_ERR_PTR_READNOTSUPPORTED	The device has no read capability.
WFS_ERR_PTR_FIELDSPECFAILURE	The syntax of the *lpszFieldNames* member is invalid.

WFS_ERR_PTR_FIELDERROR	An error occurred while processing a field, causing termination of the print request. An execute event WFS_EXEE_PTR_FIELDERROR is posted with the details.
WFS_ERR_PTR_MEDIANOTFOUND	The specified media definition cannot be found.
WFS_ERR_PTR_MEDIAINVALID	The specified media definition is invalid.
WFS_ERR_PTR_FORMINVALID	The specified form definition is invalid.
WFS_ERR_PTR_MEDIASKEWED	The media skew exceeded the limit in the form definition.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full. No more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed.
WFS_ERR_PTR_INKOUT	No stamping possible, stamping ink supply empty.
WFS_ERR_PTR_LAMPINOP	Imaging lamp is inoperative.
WFS_ERR_PTR_SEQUENCEINVALID	Programming error. Invalid command sequence (e.g. *dwMediaControl* = WFS_PTR_CTRLPARK and park position is busy).
WFS_ERR_PTR_MEDIASIZE	The media entered has an incorrect size.
WFS_ERR_PTR_MEDIAREJECTED	The media was rejected during the insertion phase. The WFS_EXEE_PTR_MEDIAREJECTED execute event is posted with the details. The device is still operational.
WFS_ERR_PTR_MSFERROR	The MSF read operation specified by the forms definition could not be completed successfully due to invalid magnetic stripe data.
WFS_ERR_PTR_NOMSF	No magnetic stripe found; media may have been inserted or pulled through the wrong way.

Events

In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_EXEE_PTR_NOMEDIA	No media is present in the device.
WFS_EXEE_PTR_MEDIAINSERTED	Media has been inserted into the device.
WFS_EXEE_PTR_FIELDERROR	A fatal error occurred while processing a field.
WFS_EXEE_PTR_FIELDWARNING	A non-fatal error occurred while processing a field.
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is full; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes full. It is sent with WFS_PTR_RETRACTBINFULL or WFS_PTR_RETRACTBINHIGH status.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_INKTHRESHOLD	The stamping ink supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_INKLOW or WFS_PTR_INKOUT status.

WFS_USRE_PTR_LAMPTHRESHOLD	The imaging lamp is fading or inoperative; operator intervention is required. Note that this event is sent only once, at the point at which the threshold is reached. It is sent with WFS_PTR_LAMPFADING or WFS_PTR_LAMPINOP status.
WFS_EXEE_PTR_MEDIAREJECTED	The media has been rejected and presented back to the user. It is available at the entry/exit slot. When the media is removed, a WFS_SRVE_PTR_MEDIATAKEN event will be sent.

Comments

All error codes (except WFS_ERR_PTR_NOMEDIAPRESENT) and events listed under the WFS_CMD_PTR_CONTROL_MEDIA command description can also occur on this command.

The application will use *lpszFieldNames* as an input parameter. The Service Provider will return the data in *lpszUNICODEFields* or *lpszFields* depending on the capabilities of the Service Provider and form definition.

For passbook usage of the *lpszFields* and *lpszUNICODEFields* fields the following applies:

If the media type is PASSBOOK, and the field(s) type is TEXT, and the Service Provider and the underlying passbook printer are capable of detecting available passbook print lines, then the field(s) will be returned without a value, in the format "<FieldName>" or "<FieldName>[<index>]", if the field is available for passbook printing. Field(s) unavailable for passbook printing will not be returned. The Service Provider will examine the passbook text field(s) supplied in the *lpszFieldNames* string, and with the form/fields definition and the underlying passbook printer capability determine which fields should be available for passbook printing.

To illustrate when media type is PASSBOOK, if a form named PSBKTST1 contains 24 fields, one field per line, and the field names are LINE1 through LINE24 (same order as printing), and after execution of this command *lpszFields* contains fields LINE13 through LINE24, then the first print line available for passbook printing is line 13.

To illustrate another example when media type is PASSBOOK, if a form named PSBKTST2 contains 24 fields, one field per line, and the field names are LINE1 through LINE24 (same order as printing), and after execution of this command *lpszFields* contains fields LINE13, and LINE20 through LINE24 then the first print line available for passbook printing is line 13, however lines 14-19 are <u>not</u> also available, so if the application is attempting to determine the first available print line after which all subsequent print lines are also available then line 20 is a better choice.

8.4 WFS_CMD_PTR_RAW_DATA

Description This command is used to send raw data (a byte string of device dependent data) to the physical device.

Input Param LPWFSPTRRAWDATA lpRawData;

```
typedef struct _wfs_ptr_raw_data
     {
     WORD                wInputData;
     ULONG               ulSize;
     LPBYTE              lpbData;
     } WFSPTRRAWDATA, *LPWFSPTRRAWDATA;
```

wInputData
Specifies that input data from the device is expected in response to sending the raw data (i.e. the data contains a command requesting data). Possible values are:

Value	Meaning
WFS_PTR_NOINPUTDATA	No input data is expected.
WFS_PTR_INPUTDATA	Input data is expected.

ulSize
Specifies the size of the byte string passed to the device.

lpbData
Points to the byte string holding the device dependent data.

Output Param LPWFSPTRRAWDATAIN lpRawDataIn;

[used only if *wInputData* is set to WFS_PTR_INPUTDATA]

```
typedef struct _wfs_ptr_raw_data_in
     {
     ULONG               ulSize;
     LPBYTE              lpbData;
     } WFSPTRRAWDATAIN, *LPWFSPTRRAWDATAIN;
```

ulSize
Specifies the size of the byte string received from the device.

lpbData
Points to the byte string received from the device.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed.
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.
WFS_ERR_PTR_PAPEROUT	The paper supply is empty.
WFS_ERR_PTR_TONEROUT	Toner or ink supply is empty or printing contrast with ribbon is not sufficient.
WFS_ERR_PTR_MEDIARETAINED	Media has been retracted in attempts to eject it. The device is clear and can be used.
WFS_ERR_PTR_BLACKMARK	Black mark detection has failed, nothing has been printed.
WFS_ERR_PTR_MEDIARETRACTED	Presented media was automatically retracted before all wads could be presented and before the command could complete successfully.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is full or high; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes full or high. It is sent with WFS_PTR_RETRACTBINFULL or WFS_PTR_RETRACTBINHIGH status.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_PAPERTHRESHOLD	The paper supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_PAPERLOW or WFS_PTR_PAPEROUT status.
WFS_USRE_PTR_TONERTHRESHOLD	The toner or ink supply is low or empty or the printing contrast with ribbon is weak or not sufficient; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_TONERLOW or WFS_PTR_TONEROUT status.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.
WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.

Comments

Applications which send raw data to a device will typically not be device or vendor independent. Problems with the use of this command include:

1. The data sent to the device can include commands that change the state of the device in unpredictable ways (in particular, in ways that the Service Provider may not be aware of).
2. Usage of this command will not be portable.
3. This command violates the XFS forms model that is the basis of XFS printer access.

Thus usage of this command should be avoided whenever possible. If it is used, the usage should be carefully isolated from all other XFS access to the service by at least the **WFSLock** and **WFSUnlock** commands.

8.5 WFS_CMD_PTR_MEDIA_EXTENTS

Description This command is used to get the extents of the media inserted in the physical device. The input parameter specifies the base unit and fractions in which the media extent values will be returned. If no media is present, the device waits for the period of time specified by the *dwTimeOut* parameter in the **WFSExecute** call for media to be inserted.

Input Param LPWFSPTRMEDIAUNIT lpMediaUnit;

```
typedef struct _wfs_ptr_media_unit
     {
     WORD                wBase;
     WORD                wUnitX;
     WORD                wUnitY;
     } WFSPTRMEDIAUNIT, *LPWFSPTRMEDIAUNIT;
```

wBase
Specifies the base unit of measurement of the media and can be one of the following values:

Value	Meaning
WFS_FRM_INCH	The base unit is inches.
WFS_FRM_MM	The base unit is millimeters.
WFS_FRM_ROWCOLUMN	The base unit is rows and columns.

wUnitX
Specifies the horizontal resolution of the base units as a fraction of the *wBase* value. For example, a value of 16 applied to the base unit WFS_FRM_INCH means that the base horizontal resolution is 1/16".

wUnitY
Specifies the vertical resolution of the base units as a fraction of the *wBase* value. For example, a value of 10 applied to the base unit WFS_FRM_MM means that the base vertical resolution is 0.1 mm.

Output Param LPWFSPTRMEDIAEXT lpMediaExt;

```
typedef struct _wfs_ptr_media_ext
     {
     ULONG               ulSizeX;
     ULONG               ulSizeY;
     } WFSPTRMEDIAEXT, *LPWFSPTRMEDIAEXT;
```

ulSizeX
Specifies the width of the media in terms of the base horizontal resolution.

ulSizeY
Specifies the height of the media in terms of the base vertical resolution.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_EXTENTNOTSUPPORTED	The device cannot report extent(s).
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed.
WFS_ERR_PTR_LAMPINOP	Imaging lamp is inoperative.
WFS_ERR_PTR_MEDIASIZE	The media entered has an incorrect size and the media remains inside the device.
WFS_ERR_PTR_MEDIAREJECTED	The media was rejected during the insertion phase. The WFS_EXEE_PTR_MEDIAREJECTED execute event is posted with the details. The device is still operational.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_EXEE_PTR_NOMEDIA	No media is present in the device.
WFS_EXEE_PTR_MEDIAINSERTED	Media has been inserted into the device.

WFS_EXEE_PTR_MEDIAREJECTED	The media has been rejected and presented back to the user. It is available at the entry/exit slot. When the media is removed, a WFS_SRVE_PTR_MEDIATAKEN event will be sent.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.

Comments None.

8.6 WFS_CMD_PTR_RESET_COUNT

Description This function resets the present value for number of media items retracted to zero. The function is possible only for printers with retract capability.

The number of media items retracted is controlled by the service and can be requested before resetting via the info command WFS_INF_PTR_STATUS.

Input Param LPUSHORT lpusBinNumber;

lpusBinNumber
Pointer to the number of the retract bin for which the retract count should be reset to zero. This number has to be between one and the number of bins on the device. If this pointer is NULL all bins will be set to zero.

Output Param None.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The status of the retract bin has changed from high or full to a good state. The event is sent with WFS_PTR_RETRACTBINOK status.

Comments None.

8.7 WFS_CMD_PTR_READ_IMAGE

Description This function returns image data from the current media. If no media is present, the device waits for the period of time specified by the *dwTimeOut* parameter in the **WFSExecute** call for media to be inserted.

Input Param LPWFSPTRIMAGEREQUEST lpImageRequest;

```
typedef struct _wfs_ptr_image_request
     {
     WORD                wFrontImageType;
     WORD                wBackImageType;
     WORD                wFrontImageColorFormat;
     WORD                wBackImageColorFormat;
     WORD                wCodelineFormat;
     WORD                fwImageSource;
     LPSTR               lpszFrontImageFile;
     LPSTR               lpszBackImageFile;
     } WFSPTRIMAGEREQUEST, *LPWFSPTRIMAGEREQUEST;
```

wFrontImageType
Specifies the format of the front image returned by this command as one of the following flags (zero if source not selected):

Value	Meaning
WFS_PTR_IMAGETIF	The returned image is in TIF 6.0 format.
WFS_PTR_IMAGEWMF	The returned image is in WMF (Windows Metafile) format.
WFS_PTR_IMAGEBMP	The returned image is in BMP format.
WFS_PTR_IMAGEJPG	The returned image is in JPG format.

wBackImageType
Specifies the format of the back image returned by this command as one of the following flags (zero if source not selected):

Value	Meaning
WFS_PTR_IMAGETIF	The returned image is in TIF 6.0 format.
WFS_PTR_IMAGEWMF	The returned image is in WMF (Windows Metafile) format.
WFS_PTR_IMAGEBMP	The returned image is in BMP format.
WFS_PTR_IMAGEJPG	The returned image is in JPG format.

wFrontImageColorFormat
Specifies the color format of the requested front image as one of the following flags (zero if source not selected):

Value	Meaning
WFS_PTR_IMAGECOLORBINARY	The scanned images has to be returned in binary (image contains two colors, usually the colors black and white).
WFS_PTR_IMAGECOLORGRAYSCALE	The scanned images has to be returned in gray scale (image contains multiple gray colors).
WFS_PTR_IMAGECOLORFULL	The scanned images has to be returned in full color (image contains colors like red, green, blue etc.).

wBackImageColorFormat
Specifies the color format of the requested back image as one of the following flags (zero if source not selected):

Value	Meaning
WFS_PTR_IMAGECOLORBINARY	The scanned images has to be returned in binary (image contains two colors, usually the colors black and white).

WFS_PTR_IMAGECOLORGRAYSCALE	The scanned images has to be returned in gray scale (image contains multiple gray colors).
WFS_PTR_IMAGECOLORFULL	The scanned images has to be returned in full color (image contains colors like red, green, blue etc.).

wCodelineFormat
Specifies the code line (MICR data) format, as one of the following flags (zero if source not selected):

Value	Meaning
WFS_PTR_CODELINECMC7	Read CMC7 code line.
WFS_PTR_CODELINEE13B	Read E13B code line.
WFS_PTR_CODELINEOCR	Read code line using OCR.

fwImageSource
Specifies the source as a combination of the following flags:

Value	Meaning
WFS_PTR_IMAGEFRONT	The front image of the document is requested.
WFS_PTR_IMAGEBACK	The back image of the document is requested.
WFS_PTR_CODELINE	The code line of the document is requested.

lpszFrontImageFile
File specifying where to store the front image, e.g. “C:\Temp\FrontImage.bmp”. If a NULL pointer is supplied then the front image data will be returned in the output parameter. This value is terminated with a single null character and cannot contain UNICODE characters.

To reduce the size of data sent between the Application and the Service Provider it is recommended to make use of this parameter.

lpszBackImageFile
File specifying where to store the back image, e.g. “C:\Temp\BackImage.bmp”. If a NULL pointer is supplied then the back image data will be returned in the output structure. This value is terminated with a single null character and cannot contain UNICODE characters.

To reduce the size of data sent between the application and the Service Provider it is recommended to make use of this parameter.

Output Param LPWFSPTRIMAGE *lppImage;

Pointer to a NULL-terminated array of pointers to WFSPTRIMAGE structures, one array element for each image source requested.

```
typedef struct _wfs_ptr_image
     {
     WORD                wImageSource;
     WORD                wStatus;
     ULONG               ulDataLength;
     LPBYTE              lpbData;
     } WFSPTRIMAGE, *LPWFSPTRIMAGE;
```

wImageSource
Specifies the source of the data returned by this command as one of the following flags:

Value	Meaning
WFS_PTR_IMAGEFRONT	The front image of the document is requested.
WFS_PTR_IMAGEBACK	The back image of the document is requested.
WFS_PTR_CODELINE	The code line of the document is requested.

wStatus
Status of reading the image data. Possible values are:

Value	Meaning
WFS_PTR_DATAOK	The data is OK.

WFS_PTR_DATASRCNOTSUPP	The data source to read from is not supported by the Service Provider.
WFS_PTR_DATASRCMISSING	The data source to read from is missing, e.g. the Service Provider is unable to get the code line.

ulDataLength
Count of bytes of the following *lpbData*. Zero if the image source is WFS_PTR_IMAGEFRONT or WFS_PTR_IMAGEBACK and the image data has been stored to the hard disk (file name provided).

lpbData
Points to the image or codeline data. NULL pointer if the image source is WFS_PTR_IMAGEFRONT or WFS_PTR_IMAGEBACK and the image data has been stored to the hard disk (file name provided).

If the image source is WFS_PTR_CODELINE, *lpbData* contains characters in the ASCII range. If the code line was read using the OCR-A font then the ASCII codes will conform to Figure E1 in ANSI X3.17-1981. If the code line was read using the OCR-B font then the ASCII codes will conform to Figure C2 in ANSI X3.49-1975. In both these cases unrecognized characters will be reported as the REJECT code, 0x1A. The E13B and CMC7 fonts use the ASCII equivalents for the standard characters and use the byte values as reported by the WFS_INF_PTR_CODELINE_MAPPING command for the symbols that are unique to MICR fonts.

Error Codes

In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.
WFS_ERR_PTR_FILE_IO_ERROR	Directory does not exist or a File IO error occurred while storing the image to the hard disk.
WFS_ERR_PTR_LAMPINOP	Imaging lamp is inoperative.
WFS_ERR_PTR_MEDIASIZE	The media entered has an incorrect size and the media remains inside the device.
WFS_ERR_PTR_MEDIAREJECTED	The media was rejected during the insertion phase. The WFS_EXEE_PTR_MEDIAREJECTED execute event is posted with the details. The device is still operational.

Events

In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_EXEE_PTR_NOMEDIA	No media is present in the device.
WFS_EXEE_PTR_MEDIAINSERTED	Media has been inserted into the device.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_LAMPTHRESHOLD	The imaging lamp is fading or inoperative; operator intervention is required. Note that this event is sent only once, at the point at which the threshold is reached. It is sent with WFS_PTR_LAMPFADING or WFS_PTR_LAMPINOP status.
WFS_EXEE_PTR_MEDIAREJECTED	The media has been rejected and presented back to the user. It is available at the entry/exit slot. When the media is removed, a WFS_SRVE_PTR_MEDIATAKEN event will be sent.

WFS_SRVE_PTR_MEDIAAUTORETRACTED
The presented media has been automatically retracted.

Comments If the returned image data is in Windows bitmap format (BMP) and a file path for storing the image is not supplied, then the first byte of data will be the start of the Bitmap Info Header (this bitmap format is known as DIB, Device Independent Bitmap). The Bitmap File Info Header, which is only present in file versions of bitmaps, will NOT be returned. If the returned image data is in bitmap format (BMP) and a file path for storing the image is supplied, then the first byte of data in the stored file will be the Bitmap File Info Header.

8.8 WFS_CMD_PTR_RESET

Description

This command is used by the application to perform a hardware reset which will attempt to return the PTR device to a known good state. This command does not over-ride a lock obtained on another application or service handle.

The device will attempt to retract or eject any items found anywhere within the device. This may not always be possible because of hardware problems. The WFS_SRVE_PTR_MEDIADETECTED event will inform the application where items were actually moved to.

Input Param

LPWFSPTRRESET lpReset;

Specifies where media should be moved to that is found in the device. If the application does not wish to specify a position it can set *lpReset* to NULL. In this case the Service Provider will determine where to move any items found.

```
typedef struct _wfs_ptr_reset
     {
     DWORD                dwMediaControl;
     USHORT               usRetractBinNumber;
     } WFSPTRRESET, *LPWFSPTRRESET;
```

dwMediaControl
Specifies the manner in which the media should be handled, as one of the following bit-flags:

Value	Meaning
WFS_PTR_CTRLEJECT	Eject the media.
WFS_PTR_CTRLRETRACT	Retract the media to retract bin as specified in *usRetractBinNumber*.
WFS_PTR_CTRLEXPEL	Throw the media out of the exit slot.

usRetractBinNumber
Number of the retract bin the media is retracted to. This number has to be between one and the number of bins supported by this device. It is only relevant if *dwMediaControl* equals WFS_PTR_CTRLRETRACT.

Output Param

None.

Error Codes

In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full; no more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.

Events

In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_SRVE_PTR_MEDIADETECTED	A media is detected in the device during a reset operation.
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is full or high; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes full or high. It is sent with WFS_PTR_RETRACTBINFULL or WFS_PTR_RETRACTBINHIGH status.

WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.

Comments This command is used by an application control program to cause a device to reset itself to a known good condition.

8.9 WFS_CMD_PTR_RETRACT_MEDIA

Description The media is removed from its present position (media inserted into device, media entering, unknown position) and stored in one of the retract bins. An event is sent if the storage capacity of the specified retract bin is reached. If the bin is already full and the command cannot be executed, an error is returned and the media remains in its present position.

Input Param LPUSHORT lpusBinNumber;

lpusBinNumber
Pointer to the number of one of the retract bins. This number has to be between one and the number of bins supported by this device. If *lpusBinNumber* points to a zero value, the media will be retracted to the transport. After it has been retracted to the transport, in a subsequent operation the media can be ejected again, or retracted to one of the retract bins.

Output Param LPUSHORT lpusBinNumber;

lpusBinNumber
Pointer to the number of the retract bin where the media has actually been deposited.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_NOMEDIAPRESENT	No media present on retract. Either there was no media present (in a position to be retracted from) when the command was called or the media was removed during the retract.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full; no more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is full; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes full. It is sent with WFS_PTR_RETRACTBINFULL or WFS_PTR_RETRACTBINHIGH status.

Comments If a retract request is received for a device with no retract capability, the WFS_ERR_UNSUPP_COMMAND error is returned.

8.10 WFS_CMD_PTR_DISPENSE_PAPER

Description This command is used to move paper (which can also be a new passbook) from a paper source into the print position.

Input Param LPWORD lpwPaperSource;

lpwPaperSource
Pointer to the paper source to dispense from. Possible values are:

Value	Meaning
WFS_PTR_PAPERANY	Any paper source can be used; it is determined by the service.
WFS_PTR_PAPERUPPER	Use the only paper source or the upper paper source, if there is more than one paper supply.
WFS_PTR_PAPERLOWER	Use the lower paper source.
WFS_PTR_PAPEREXTERNAL	Use the external paper.
WFS_PTR_PAPERAUX	Use the auxiliary paper source.
WFS_PTR_PAPERAUX2	Use the second auxiliary paper source.
WFS_PTR_PAPERPARK	Use the parking station paper source.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.
WFS_ERR_PTR_PAPEROUT	The paper supply is empty.
WFS_ERR_PTR_SEQUENCEINVALID	Programming error. Invalid command sequence (e.g. there is already media in the print position).
WFS_ERR_PTR_SOURCEINVALID	The selected paper source is not supported by the hardware.
WFS_ERR_PTR_MEDIARETRACTED	Presented media was automatically retracted before all wads could be presented and before the command could complete successfully.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_PAPERTHRESHOLD	The paper supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_PAPERLOW or WFS_PTR_PAPEROUT status.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.
WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.

Comments None.

8.11 WFS_CMD_PTR_SET_GUIDANCE_LIGHT

Description This command is used to set the status of the PTR guidance lights. This includes defining the flash rate, the color and the direction. When an application tries to use a color or direction that is not supported then the Service Provider will return the generic error WFS_ERR_UNSUPP_DATA.

Input Param LPWFSPTRSETGUIDLIGHT lpSetGuidLight;

```
typedef struct _wfs_ptr_set_guidlight
     {
     WORD                wGuidLight;
     DWORD               dwCommand;
     } WFSPTRSETGUIDLIGHT, *LPWFSPTRSETGUIDLIGHT;
```

wGuidLight
Specifies the index of the guidance light to set as one of the values defined within the capabilities section.

dwCommand
Specifies the state of the guidance light indicator as WFS_PTR_GUIDANCE_OFF or a combination of the following flags consisting of one type B, optionally one type C, and optionally one type D. If no value of type C is specified then the default color is used. The Service Provider determines which color is used as the default color.

Value	Meaning	Type
WFS_PTR_GUIDANCE_OFF	The light indicator is turned off.	A
WFS_PTR_GUIDANCE_SLOW_FLASH	The light indicator is set to flash slowly.	B
WFS_PTR_GUIDANCE_MEDIUM_FLASH	The light indicator is set to flash medium frequency.	B
WFS_PTR_GUIDANCE_QUICK_FLASH	The light indicator is set to flash quickly.	B
WFS_PTR_GUIDANCE_CONTINUOUS	The light indicator is turned on continuously (steady).	B
WFS_PTR_GUIDANCE_RED	The light indicator color is set to red.	C
WFS_PTR_GUIDANCE_GREEN	The light indicator color is set to green.	C
WFS_PTR_GUIDANCE_YELLOW	The light indicator color is set to yellow.	C
WFS_PTR_GUIDANCE_BLUE	The light indicator color is set to blue.	C
WFS_PTR_GUIDANCE_CYAN	The light indicator color is set to cyan.	C
WFS_PTR_GUIDANCE_MAGENTA	The light indicator color is set to magenta.	C
WFS_PTR_GUIDANCE_WHITE	The light indicator color is set to white.	C
WFS_PTR_GUIDANCE_ENTRY	The light indicator is set to the entry state.	D
WFS_PTR_GUIDANCE_EXIT	The light indicator is set to the exit state.	D

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_INVALID_PORT	An attempt to set a guidance light to a new value was invalid because the guidance light does not exist.

Events Only the generic events defined in [Ref. 1] can be generated by this command.

Comments Guidance light support was added into the PTR primarily to support guidance lights for workstations where more than one instance of a PTR is present. The original SIU guidance light mechanism was not able to manage guidance lights for workstations with multiple PTRs. This command can also be used to set the status of the PTR guidance lights when only one instance of a PTR is present.

The slow and medium flash rates must not be greater than 2.0 Hz. It should be noted that in order to comply with American Disabilities Act guidelines only a slow or medium flash rate must be used.

8.12 WFS_CMD_PTR_PRINT_RAW_FILE

Description This command is used to print a file that contains a complete print job in the native printer language. This file will have been created through the Windows GDI print sub-system. The contents of this file are printer specific.

If no media is present, the device waits for the period of time specified by the *dwTimeOut* parameter in the **WFSExecute** call for media to be inserted from the external paper source.

This command must not complete until all pages have been presented to the customer.

Input Param LPWFSPTRPRINTRAWFILE lpPrintRawFile;

```
typedef struct _wfs_ptr_print_raw_file
     {
     LPSTR                lpszFileName;
     DWORD                dwMediaControl;
     DWORD                dwPaperSource;
     } WFSPTRPRINTRAWFILE, *LPWFSPTRPRINTRAWFILE;
```

lpszFileName
Pointer to the null-terminated file name. This is the full path and file name of the file to be printed. This value is terminated with a single null character and cannot contain UNICODE characters.

dwMediaControl
Specifies the manner in which the media should be handled after each page is printed, as a combination of the flags described under WFS_CMD_PTR_CONTROL_MEDIA. A zero value of this parameter means to do none of these actions, as when printing multiple pages on a single media item. WFS_PTR_CTRLCLEARBUFFER is not applicable to this command, in this case WFS_ERR_INVALID_DATA will be returned.

dwPaperSource
Specifies the paper source to use when printing. When the value is zero the Service Provider will determine the paper source that will be used. This parameter is ignored if there is already paper in the print position. Possible values are:

Value	Meaning
WFS_PTR_PAPERANY	Any paper source can be used; it is determined by the service.
WFS_PTR_PAPERUPPER	Use the only paper source or the upper paper source, if there is more than one paper supply.
WFS_PTR_PAPERLOWER	Use the lower paper source.
WFS_PTR_PAPEREXTERNAL	Use the external paper source (such as envelope tray or single sheet feed).
WFS_PTR_PAPERAUX	Use the auxiliary paper source.
WFS_PTR_PAPERAUX2	Use the second auxiliary paper source.
WFS_PTR_PAPERPARK	Use the parking station.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FILENOTFOUND	The specified file cannot be found.
WFS_ERR_PTR_SHUTTERFAIL	Open or close of the shutter failed due to manipulation or hardware error.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed; operator intervention is required.
WFS_ERR_PTR_PAPERJAMMED	The paper is jammed.
WFS_ERR_PTR_PAPEROUT	The paper supply is empty.
WFS_ERR_PTR_TONEROUT	Toner or ink supply is empty or printing contrast with ribbon is not sufficient.
WFS_ERR_PTR_FILE_IO_ERROR	Directory does not exist or a File IO error occurred while processing the file.

WFS_ERR_PTR_NOMEDIAPRESENT	No media is present in the device.
WFS_ERR_PTR_FLUSHFAIL	The device was not able to flush data.
WFS_ERR_PTR_RETRACTBINFULL	The retract bin is full. No more media can be retracted. The current media is still in the device.
WFS_ERR_PTR_STACKERFULL	The internal stacker is full. No more media can be moved to the stacker.
WFS_ERR_PTR_PAGETURNFAIL	The device was not able to turn the page.
WFS_ERR_PTR_MEDIATURNFAIL	The device was not able to turn the inserted media.
WFS_ERR_PTR_INKOUT	No stamping possible, stamping ink supply empty.
WFS_ERR_PTR_SEQUENCEINVALID	Programming error. Invalid command sequence (e.g. WFS_PTR_CTRLPARK and the parking station is busy).
WFS_ERR_PTR_MEDIAOVERFLOW	The print request has overflowed the print media (e.g. print on a single sheet printer exceeded one page).
WFS_ERR_PTR_MEDIARETAINED	Media has been retracted in attempts to eject it. The device is clear and can be used.
WFS_ERR_PTR_BLACKMARK	Black mark detection has failed, nothing has been printed.
WFS_ERR_PTR_SOURCEINVALID	The selected paper source is not supported by the hardware.
WFS_ERR_PTR_MEDIAREJECTED	The media was rejected during the insertion phase and no data has been printed. The WFS_EXEE_PTR_MEDIAREJECTED execute event is posted with the details. The device is still operational.
WFS_ERR_PTR_MEDIARETRACTED	Presented media was automatically retracted before all wads could be presented and before the command could complete successfully.

Events

In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_EXEE_PTR_NOMEDIA	No media is present in the device.
WFS_EXEE_PTR_MEDIAINSERTED	Media has been inserted into the device.
WFS_EXEE_PTR_MEDIAPRESENTED	Media has been presented for removal. See section 11 for further details.
WFS_SRVE_PTR_MEDIATAKEN	The media has been taken by the user.
WFS_USRE_PTR_PAPERTHRESHOLD	The paper supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_PAPERLOW or WFS_PTR_PAPEROUT status.
WFS_USRE_PTR_TONERTHRESHOLD	The toner or ink supply is low or empty or the printing contrast with ribbon is weak or not sufficient; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_TONERLOW or WFS_PTR_TONEROUT status.

WFS_USRE_PTR_RETRACTBINTHRESHOLD	The retract bin is high or full; operator intervention is required. Note that this event is sent only once, at the point at which the bin becomes high or full. It is sent with WFS_PTR_RETRACTBINHIGH or WFS_PTR_RETRACTBINFULL status.
WFS_USRE_PTR_INKTHRESHOLD	The stamping ink supply is low or empty; operator intervention is required. Note that this event is sent only once, at the point at which the supply becomes low or empty. It is sent with WFS_PTR_INKLOW or WFS_PTR_INKOUT status.
WFS_EXEE_PTR_MEDIAREJECTED	The media has been rejected and presented back to the user. It is available at the entry/exit slot. When the media is removed, a WFS_SRVE_PTR_MEDIATAKEN event will be sent.
WFS_SRVE_PTR_MEDIAAUTORETRACTED	The presented media has been automatically retracted.

Comments Printing of multiple pages is handled as described in section 11.

8.13 WFS_CMD_PTR_LOAD_DEFINITION

Description This command is used to load a form (including sub-forms and frames) or media definition into the list of available forms. Once a form or media definition has been loaded through this command it can be used by any of the other form/media definition processing commands. Forms and media definitions loaded through this command are persistently available across re-boots. When a form or media definition is loaded a WFS_SRVE_PTR_DEFINITIONLOADED event is generated to inform applications that a form or media definition has been added or replaced.

Input Param LPWFSPTRLOADDEFINITION lpLoadDefinition;

```
typedef struct _wfs_ptr_load_definition
     {
     LPSTR                lpszFileName;
     BOOL                 bOverwrite;
     } WFSPTRLOADDEFINITION, *LPWFSPTRLOADDEFINITION;
```

lpszFileName
Pointer to the null-terminated file name. This is the full path and file name of the file to be loaded. This value is terminated with a single null character and cannot contain UNICODE characters. The file contains the form (including sub-forms and frames) or media definition in text format as described in the section 10 (ASCII or UNICODE). Only one form or media definition can be defined in the file.

bOverwrite
Specifies if an existing form or media definition with the same name is to be replaced. If this flag is TRUE then an existing form or media definition with the same name will be replaced, unless the command fails with an error, where the definition will remain unchanged. If this flag is FALSE this command will fail with an error if the form or media definition already exists.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_FILENOTFOUND	The specified file cannot be found.
WFS_ERR_PTR_FORMINVALID	The form is invalid.
WFS_ERR_PTR_MEDIAINVALID	The media definition is invalid.
WFS_ERR_PTR_DEFINITIONEXISTS	The specified form or media definition already exists and the *bOverwrite* flag was FALSE.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_SRVE_PTR_DEFINITIONLOADED	A form or media definition has been loaded; an existing definition may have been modified by replacement.

Comments None.

8.14 WFS_CMD_PTR_SUPPLY_REPLENISH

Description After the supplies have been replenished, this command is used to indicate that one or more supplies have been replenished and are expected to be in a healthy state.

Hardware that cannot detect the level of a supply and reports on the supply's status using metrics (or some other means), must assume the supply has been fully replenished after this command is issued. The appropriate threshold event must be broadcast.

Hardware that can detect the level of a supply must update its status based on its sensors, generate a threshold event if appropriate, and succeed the command even if the supply has not been replenished. If it has already detected the level and reported the threshold before this command was issued, the command must succeed and no threshold event is required.

Input Param LPWFSPTRSUPPLYREPLEN lpSupplyReplen;

```
typedef struct _wfs_ptr_supply_replen
     {
     WORD                 fwSupplyReplen;
     } WFSPTRSUPPLYREPLEN, *LPWFSPTRSUPPLYREPLEN;
```

fwSupplyReplen
Specifies the supply that was replenished as a combination of the following flags:

Value	Meaning
WFS_PTR_REPLEN_PAPERUPPER	The only paper supply or the upper paper supply was replenished.
WFS_PTR_REPLEN_PAPERLOWER	The lower paper supply was replenished.
WFS_PTR_REPLEN_PAPERAUX	The auxiliary paper supply was replenished.
WFS_PTR_REPLEN_PAPERAUX2	The second auxiliary paper supply was replenished.
WFS_PTR_REPLEN_TONER	The toner supply was replenished.
WFS_PTR_REPLEN_INK	The ink supply was replenished.
WFS_PTR_REPLEN_LAMP	The imaging lamp was replaced.

Output Param None.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_USRE_PTR_PAPERTHRESHOLD	This user event is used to specify that the state of the paper supply threshold has been cleared.
WFS_USRE_PTR_TONERTHRESHOLD	This user event is used to specify that the state of the toner (or ink) supply threshold has been cleared.
WFS_USRE_PTR_INKTHRESHOLD	This user event is used to specify that the state of the stamping ink supply threshold has been cleared.
WFS_USRE_PTR_LAMPTHRESHOLD	This user event is used to specify that the state of the imaging lamp threshold has been cleared.

Comments If any one of the specified supplies is not supported by a Service Provider, WFS_ERR_UNSUPP_DATA should be returned, and no replenishment actions will be taken by the Service Provider.

8.15 WFS_CMD_PTR_POWER_SAVE_CONTROL

Description This command activates or deactivates the power-saving mode.

If the Service Provider receives another execute command while in power saving mode, the Service Provider automatically exits the power saving mode, and executes the requested command. If the Service Provider receives an information command while in power saving mode, the Service Provider will not exit the power saving mode.

Input Param LPWFSPTRPOWERSAVECONTROL lpPowerSaveControl;

```
typedef struct _wfs_ptr_power_save_control
     {
     USHORT               usMaxPowerSaveRecoveryTime;
     } WFSPTRPOWERSAVECONTROL, *LPWFSPTRPOWERSAVECONTROL;
```

usMaxPowerSaveRecoveryTime
Specifies the maximum number of seconds in which the device must be able to return to its normal operating state when exiting power save mode. The device will be set to the highest possible power save mode within this constraint. If *usMaxPowerSaveRecoveryTime* is set to zero then the device will exit the power saving mode.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_POWERSAVETOOSHORT	The power saving mode has not been activated because the device is not able to resume from the power saving mode within the specified *usMaxPowerSaveRecoveryTime* value.
WFS_ERR_PTR_POWERSAVEMEDIAPRESENT	The power saving mode has not been activated because media is present inside the device.

Events In addition to the generic events defined in [Ref. 1], the following events can be generated by this command:

Value	Meaning
WFS_SRVE_PTR_POWER_SAVE_CHANGE	The power save recovery time has changed.

Comments None.

8.16 WFS_CMD_PTR_CONTROL_PASSBOOK

Description This command can turn the pages of a passbook inserted in the printer by a specified number of pages in a specified direction and it can close the passbook. The *fwControlPassbook* field returned by WFS_INF_PTR_CAPABILITIES specifies which functionality is supported. This command flushes the data before the pages are turned or the passbook is closed.

Input Param LPWFSPTRCONTROLPASSBOOK lpControlPassbook;

```
typedef struct _wfs_ptr_control_passbook
     {
     WORD                wAction;
     USHORT              usCount;
     } WFSPTRCONTROLPASSBOOK, *LPWFSPTRCONTROLPASSBOOK;
```

wAction
Specifies the direction of the page turn as one of the following values:

Value	Meaning
WFS_PTR_PBKCTRLTURNFORWARD	Turns forward the pages of the passbook.
WFS_PTR_PBKCTRLTURNBACKWARD	Turns backward the pages of the passbook.
WFS_PTR_PBKCTRLCLOSEFORWARD	Close the passbook forward.
WFS_PTR_PBKCTRLCLOSEBACKWARD	Close the passbook backward.

usCount
Specifies the number of pages to be turned. In the case where *wAction* is WFS_PTR_PBKCTRLCLOSEFORWARD or WFS_PTR_PBKCTRLCLOSEBACKWARD, this field will be ignored.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_NOMEDIAPRESENT	No media present in a position where it should be or the media was removed during the operation.
WFS_ERR_PTR_PAGETURNFAIL	The device was not able to turn the page.
WFS_ERR_PTR_MEDIAJAMMED	The media is jammed. Operator intervention is required.
WFS_ERR_PTR_PASSBOOKCLOSED	There were fewer pages left than specified to turn. As a result of the operation, the passbook has been closed.
WFS_ERR_PTR_LASTORFIRSTPAGEREACHED	The printer cannot close the passbook because there were fewer pages left than specified to turn. As a result of the operation, the last or the first page has been reached and is open.
WFS_ERR_PTR_MEDIASIZE	The media has an incorrect size.

Events Only the generic events defined in [Ref. 1] can be generated by this command.

Comments None.

8.17 WFS_CMD_PTR_SET_BLACK_MARK_MODE

Description This command switches the black mark detection mode and associated functionality on or off. The black mark detection mode is persistent. If the selected mode is already active this command will complete with WFS_SUCCESS. The *bBlackMarkModeSupported* field returned by WFS_INF_PTR_CAPABILITIES specifies if this functionality is supported.

Input Param LPWFSPTRSETBLACKMARKMODE lpSetBlackMarkMode;

```
typedef struct _wfs_ptr_set_black_mark_mode
     {
     WORD                wBlackMarkMode;
     } WFSPTRSETBLACKMARKMODE, *LPWFSPTRSETBLACKMARKMODE;
```

wBlackMarkMode
Specifies the desired black mark detection mode:

Value	Meaning
WFS_PTR_BLACKMARKDETECTIONON	Turns the black mark detection and associated functionality on.
WFS_PTR_BLACKMARKDETECTIONOFF	Turns the black mark detection and associated functionality off.

Output Param None.

Error Codes Only the generic error codes defined in [Ref. 1] can be generated by this command.

Events Only the generic events defined in [Ref. 1] can be generated by this command.

Comments None.

8.18 WFS_CMD_PTR_SYNCHRONIZE_COMMAND

Description This command is used to reduce response time of a command (e.g. for synchronization with display) as well as to synchronize actions of the different device classes. This command is intended to be used only on hardware which is capable of synchronizing functionality within a single device class or with other device classes.

The list of execute commands which this command supports for synchronization is retrieved in the *lpdwSynchronizableCommands* parameter of the WFS_INF_PTR_CAPABILITIES.

This command is optional, i.e., any other command can be called without having to call it in advance. Any preparation that occurs by calling this command will not affect any other subsequent command. However, any subsequent execute command other than the one that was specified in the *dwCommand* input parameter will execute normally and may invalidate the pending synchronization. In this case the application should call the WFS_CMD_PTR_SYNCHRONIZE_COMMAND again in order to start a synchronization.

Input Param LPWFSPTRSYNCHRONIZECOMMAND lpSynchronizeCommand;

```
typedef struct _wfs_ptr_synchronize_command
     {
     DWORD                     dwCommand;
     LPVOID                    lpCmdData;
     } WFSPTRSYNCHRONIZECOMMAND, *LPWFSPTRSYNCHRONIZECOMMAND;
```

dwCommand
The command ID of the command to be synchronized and executed next.

lpCmdData
Pointer to data or a data structure that represents the parameter that is normally associated with the command that is specified in *dwCommand*. For example, if *dwCommand* is WFS_CMD_PTR_RETRACT_MEDIA then *lpCmdData* will point to a LPUSHORT. This parameter can be NULL if no command input parameter is needed or if this detail is not needed to synchronize for the command.

It will be device-dependent whether the synchronization is effective or not in the case where the application synchronizes for a command with this command specifying a parameter but subsequently executes the synchronized command with a different parameter. This case should not result in an error; however, the preparation effect could be different from what the application expects. The application should, therefore, make sure to use the same parameter between *lpCmdData* of this command and the subsequent corresponding execute command.

Output Param None.

Error Codes In addition to the generic error codes defined in [Ref. 1], the following error codes can be generated by this command:

Value	Meaning
WFS_ERR_PTR_COMMANDUNSUPP	The command specified in the *dwCommand* field is not supported by the Service Provider.
WFS_ERR_PTR_SYNCHRONIZEUNSUPP	The preparation for the command specified in the *dwCommand* with the parameter specified in the *lpCmdData* is not supported by the Service Provider.

Events Only the generic events defined in [Ref. 1] can be generated by this command.

Comments For sample flows of this synchronization see the [Ref 1] Appendix C.

9. Events

9.1 WFS_EXEE_PTR_NOMEDIA

Description This event specifies that the physical media must be inserted into the device in order for the execute command to proceed.

Event Param LPSTR lpszUserPrompt;

lpszUserPrompt
Pointer to a null-terminated user prompt string from the form definition. NULL will be returned if either a form does not define a value for the user prompt or the event is being generated as the result of a command that does not use forms.

Comments The application may use the *lpszUserPrompt* in any manner it sees fit, for example it might display the string to the operator, along with a message that the media should be inserted.

9.2 WFS_EXEE_PTR_MEDIAINSERTED

Description This event specifies that the physical media has been inserted into the device.

Event Param None.

Comments The application may use this event to, for example, remove a message box from the screen telling the user to insert a form.

9.3 WFS_EXEE_PTR_FIELDERROR

Description This event specifies that a fatal error has occurred while processing a field.

Event Param LPWFSPTRFIELDFAIL lpFieldFail;

```
typedef struct _wfs_ptr_field_failure
     {
     LPSTR                lpszFormName;
     LPSTR                lpszFieldName;
     WORD                 wFailure;
     } WFSPTRFIELDFAIL, *LPWFSPTRFIELDFAIL;
```

lpszFormName
Points to the null-terminated form name.

lpszFieldName
Points to the null-terminated field name.

wFailure
Specifies the type of failure and can be one of the following values:

Value	Meaning
WFS_PTR_FIELDREQUIRED	The specified field must be supplied by the application.
WFS_PTR_FIELDSTATICOVWR	The specified field is static and thus cannot be overwritten by the application.
WFS_PTR_FIELDOVERFLOW	The value supplied for the specified fields is too long.
WFS_PTR_FIELDNOTFOUND	The specified field does not exist.
WFS_PTR_FIELDNOTREAD	The specified field is not an input field.
WFS_PTR_FIELDNOTWRITE	An attempt was made to write to an input field.
WFS_PTR_FIELDHWERROR	The specified field uses special hardware (e.g. OCR, Low/High coercivity, etc) and an error occurred.
WFS_PTR_FIELDTYPENOTSUPPORTED	The form field type is not supported with device.
WFS_PTR_FIELDGRAPHIC	The specified graphic image could not be printed.
WFS_PTR_CHARSETFORM	Service Provider does not support character set specified in form.

Comments None.

9.4 WFS_EXEE_PTR_FIELDWARNING

Description This event is used to specify that a non-fatal error has occurred while processing a field.

Event Param LPWFSPTRFIELDFAIL lpFieldFail;

As defined in the section describing WFS_EXEE_PTR_FIELDERROR.

Comments None.

9.5 WFS_USRE_PTR_RETRACTBINTHRESHOLD

Description This event specifies that the status of the retract bin holding the retracted media has changed.

Event Param LPWFSPTRBINTHRESHOLD lpBinThreshold;

```
typedef struct _wfs_ptr_bin_threshold
     {
     USHORT              usBinNumber;
     WORD                wRetractBin;
     } WFSPTRBINTHRESHOLD, *LPWFSPTRBINTHRESHOLD;
```

usBinNumber
Number of the retract bin for which the status has changed.

wRetractBin
Specifies the current state of the retract bin as one of the following values:

Value	Meaning
WFS_PTR_RETRACTBINOK	The retract bin of the printer is in a good state.
WFS_PTR_RETRACTBINFULL	The retract bin of the printer is full.
WFS_PTR_RETRACTBINHIGH	The retract bin of the printer is high.

Comments None.

9.6 WFS_SRVE_PTR_MEDIATAKEN

Description This event is sent when the media is taken from the exit slot following the completion of a successful eject operation or following a WFS_EXEE_PTR_MEDIAREJECTED event. For devices that do not physically move media, this event may also be generated when the media is taken from the device.

Event Param None.

Comments Note that since this event can occur after the completion of a function that includes a media eject, it is not an execute event.

9.7 WFS_USRE_PTR_PAPERTHRESHOLD

Description This user event is used to specify that the state of the paper reached a threshold. There is no threshold defined for the parking station as this can contain only one paper item.

Event Param LPWFSPTRPAPERTHRESHOLD lpPaperThreshold;

```
typedef struct _wfs_ptr_paper_threshold
     {
     WORD                wPaperSource;
     WORD                wPaperThreshold;
     } WFSPTRPAPERTHRESHOLD, *LPWFSPTRPAPERTHRESHOLD;
```

wPaperSource
Specifies the paper sources as one of the following values:

Value	Meaning
WFS_PTR_PAPERUPPER	The only paper source or the upper paper source, if there is more than one paper supply.
WFS_PTR_PAPERLOWER	The lower paper source.
WFS_PTR_PAPEREXTERNAL	The external paper source (such as envelope tray or single sheet feed).
WFS_PTR_PAPERAUX	The auxiliary paper source.
WFS_PTR_PAPERAUX2	The second auxiliary paper source.

wPaperThreshold
Specifies the current state of the paper source as one of the following values:

Value	Meaning
WFS_PTR_PAPERFULL	The paper in the paper source is in a good state.
WFS_PTR_PAPERLOW	The paper in the paper source is low.
WFS_PTR_PAPEROUT	The paper in the paper source is out.

Comments None.

9.8 WFS_USRE_PTR_TONERTHRESHOLD

Description This user event is used to specify that the state of the toner (or ink) reached a threshold.

Event Param LPWORD lpwTonerThreshold;

lpwTonerThreshold
Specifies the current state of the toner (or ink) as one of the following values:

Value	Meaning
WFS_PTR_TONERFULL	The toner (or ink) in the printer is in a good state.
WFS_PTR_TONERLOW	The toner (or ink) in the printer is low.
WFS_PTR_TONEROUT	The toner (or ink) in the printer is out.

Comments None.

9.9 WFS_SRVE_PTR_MEDIAINSERTED

Description This event specifies that the physical media has been inserted into the device without any read or print execute commands being executed. This event is only generated when media is entered in an unsolicited manner.

Event Param None.

Comments None.

9.10 WFS_USRE_PTR_LAMPTHRESHOLD

Description This user event is used to specify that the state of the imaging lamp reached a threshold.

Event Param LPWORD lpwLampThreshold;

lpwLampThreshold
Specifies the current state of the imaging lamp as one of the following values:

Value	Meaning
WFS_PTR_LAMPOK	The imaging lamp is in a good state.
WFS_PTR_LAMPFADING	The imaging lamp is fading and should be changed.
WFS_PTR_LAMPINOP	The imaging lamp is inoperative.

Comments None.

9.11 WFS_USRE_PTR_INKTHRESHOLD

Description This user event is used to specify that the state of the stamping ink reached a threshold.

Event Param LPWORD lpwInkThreshold;

lpwInkThreshold
Specifies the current state of the stamping ink as one of the following values:

Value	Meaning
WFS_PTR_INKFULL	The stamping ink in the printer is in a good state.
WFS_PTR_INKLOW	The stamping ink in the printer is low.
WFS_PTR_INKOUT	The stamping ink in the printer is out.

Comments None.

9.12 WFS_SRVE_PTR_MEDIADETECTED

Description This event is generated when a media is detected in the device during a reset operation.

Event Param LPWFSPTRMEDIADETECTED lpMediaDetected;

```
typedef struct _wfs_ptr_media_detected
     {
     WORD                wPosition;
     USHORT              usRetractBinNumber;
     } WFSPTRMEDIADETECTED, *LPWFSPTRMEDIADETECTED;
```

wPosition
Specifies the media position after the reset operation, as one of the following values:

Value	Meaning
WFS_PTR_MEDIARETRACTED	The media was retracted during the reset operation.
WFS_PTR_MEDIAPRESENT	The media is in the print position or on the stacker.
WFS_PTR_MEDIAENTERING	The media is in the exit slot.
WFS_PTR_MEDIAJAMMED	The media is jammed in the device.
WFS_PTR_MEDIAUNKNOWN	The media is in an unknown position.
WFS_PTR_MEDIAEXPELLED	The media was expelled during the reset operation.

usRetractBinNumber
Number of the retract bin the media was retracted to. This number has to be between one and the number of bins supported by this device. It is only relevant if *wPosition* equals WFS_PTR_MEDIARETRACTED.

Comments None.

9.13 WFS_SRVE_PTR_RETRACTBINSTATUS

Description This event specifies that the status of the retract bin has changed.

Event Param LPWFSPTRBINSTATUS lpBinStatus;

```
typedef struct _wfs_ptr_bin_status
     {
     USHORT              usBinNumber;
     WORD                wRetractBin;
     } WFSPTRBINSTATUS, *LPWFSPTRBINSTATUS;
```

usBinNumber
Number of the retract bin for which the status has changed.

wRetractBin
Specifies the current state of the retract bin as one of the following values:

Value	Meaning
WFS_PTR_RETRACTBININSERTED	The retract bin has been inserted.
WFS_PTR_RETRACTBINREMOVED	The retract bin has been removed.

Comments None.

9.14 WFS_EXEE_PTR_MEDIAPRESENTED

Description This event is used to indicate when media has been presented to the customer for removal.

Event Param LPWFSPTRMEDIAPRESENTED lpMediaPresented;

```
typedef struct _wfs_ptr_media_presented
     {
     USHORT               usWadIndex;
     USHORT               usTotalWads;
     } WFSPTRMEDIAPRESENTED, *LPWFSPTRMEDIAPRESENTED;
```

usWadIndex
Specifies the index (starting from one) of the presented wad, where a Wad is a bunch of one or more pages presented as a bunch.

usTotalWads
Specifies the total number of wads in the print job, zero if the total number of wads is not known.

Comments None.

9.15 WFS_SRVE_PTR_DEFINITIONLOADED

Description This event is used to indicate when a form or media definition has successfully been loaded via the WFS_CMD_PTR_LOAD_DEFINITION command.

Event Param LPWFSPTRDEFINITIONLOADED lpDefinitionLoaded;

```
typedef struct _wfs_ptr_definition_loaded
     {
     LPSTR                lpszDefinitionName;
     DWORD                dwDefinitionType;
     } WFSPTRDEFINITIONLOADED, *LPWFSPTRDEFINITIONLOADED;
```

lpszDefinitionName
Specifies the name of the form or media just loaded.

dwDefinitionType
Specifies the type of definition loaded. This field can be one of the following values:

Value	Meaning
WFS_PTR_FORMLOADED	The form identified by *lpszDefinitionName* has been loaded.
WFS_PTR_MEDIALOADED	The media identified by *lpszDefinitionName* has been loaded.

Comments None.

9.16 WFS_EXEE_PTR_MEDIAREJECTED

Description This event is generated as a result of physical media that is rejected whenever an attempt is made to insert media into the physical device. Rejection of the media will cause the command currently executing to complete with a WFS_ERR_PTR_MEDIAREJECTED error, at which point the media should be removed.

Event Param LPWFSPTRMEDIAREJECTED lpMediaRejected;

```
typedef struct _wfs_ptr_media_rejected
     {
     WORD                wMediaRejected;
     } WFSPTRMEDIAREJECTED, *LPWFSPTRMEDIAREJECTED;
```

wMediaRejected
Specifies the reason for rejecting the media as one of the following values:

Value	Meaning
WFS_PTR_REJECT_SHORT	The rejected media was too short.
WFS_PTR_REJECT_LONG	The rejected media was too long.
WFS_PTR_REJECT_MULTIPLE	The media was rejected due to insertion of multiple documents.
WFS_PTR_REJECT_ALIGN	The media could not be aligned and was rejected.
WFS_PTR_REJECT_MOVETOALIGN	The media could not be transported to the align area and was rejected.
WFS_PTR_REJECT_SHUTTER	The media was rejected due to the shutter failing to close.
WFS_PTR_REJECT_ESCROW	The media was rejected due to problems transporting media to the escrow position.
WFS_PTR_REJECT_THICK	The rejected media was too thick.
WFS_PTR_REJECT_OTHER	The media was rejected due to a reason other than those listed above.

Comments The application may use this event to (for example) display a message box on the screen indicating why the media was rejected, and telling the user to remove and reinsert the media.

9.17 WFS_SRVE_PTR_MEDIAPRESENTED

Description This event is used to indicate when media has been presented to the customer for removal as a result of a print operation through some non XFS interface.

Event Param LPWFSPTRMEDIAPRESENTED lpMediaPresented;

```
typedef struct _wfs_ptr_media_presented
     {
     USHORT              usWadIndex;
     USHORT              usTotalWads;
     } WFSPTRMEDIAPRESENTED, *LPWFSPTRMEDIAPRESENTED;
```

usWadIndex
Specifies the index (starting from one) of the presented wad, where a Wad is a bunch of one or more pages presented as a bunch.

usTotalWads
Specifies the total number of wads in the print job, zero if the total number of wads is not known.

Comments None.

9.18 WFS_SRVE_PTR_MEDIAAUTORETRACTED

Description This event indicates when media has been automatically retracted by the device. Support for this event is indicated when the *usAutoRetractPeriod* field of the WFS_INF_PTR_CAPABILITIES output structure is non-zero. The event can be generated as the result of any command that presents media to the customer.

Event Param LPWFSPTRMEDIARETRACTED lpMediaRetracted

```
typedef struct _wfs_ptr_media_retracted
     {
     WORD                wRetractResult;
     USHORT              usBinNumber;
     } WFSPTRMEDIARETRACTED, *LPWFSPTRMEDIARETRACTED;
```

wRetractResult
Specifies the result of the automatic retraction, as one of the following values:

Value	Meaning
WFS_PTR_AUTO_RETRACT_OK	The media was retracted successfully.
WFS_PTR_AUTO_RETRACT_MEDIAJAMMED	The media is jammed.

usBinNumber
Number of the retract bin the media was retracted to or zero if the media is retracted to the transport. This number has to be between zero and the number of bins supported by this device. This value is also zero if *wRetractResult* is WFS_PTR_AUTO_RETRACT_MEDIAJAMMED.

Comments None.

9.19 WFS_SRVE_PTR_DEVICEPOSITION

Description This service event reports that the device has changed its position status.

Event Param LPWFSPTRDEVICEPOSITION lpDevicePosition;

```
typedef struct _wfs_ptr_device_position
     {
     WORD                 wPosition;
     } WFSPTRDEVICEPOSITION, *LPWFSPTRDEVICEPOSITION;
```

wPosition
Position of the device as one of the following values:

Value	Meaning
WFS_PTR_DEVICEINPOSITION	The device is in its normal operating position.
WFS_PTR_DEVICENOTINPOSITION	The device has been removed from its normal operating position.
WFS_PTR_DEVICEPOSUNKNOWN	The position of the device cannot be determined.

Comments None.

9.20 WFS_SRVE_PTR_POWER_SAVE_CHANGE

Description This service event specifies that the power save recovery time has changed.

Event Param LPWFSPTRPOWERSAVECHANGE lpPowerSaveChange;

```
typedef struct _wfs_ptr_power_save_change
     {
     USHORT               usPowerSaveRecoveryTime;
     } WFSPTRPOWERSAVECHANGE, *LPWFSPTRPOWERSAVECHANGE;
```

usPowerSaveRecoveryTime
Specifies the actual number of seconds required by the device to resume its normal operational state. This value is zero if the device exited the power saving mode.

Comments If another device class compounded with this device enters into a power saving mode this device will automatically enter into the same power saving mode and this event will be generated.

10. Form, Sub-Form, Field, Frame, Table and Media Definitions

This section outlines the format of the definitions of forms, the fields within them, optional tables and fields within the form, and the media on which they are printed.

10.1 Definition Syntax

The syntactic rules for form, field and media definitions are as follows:

- White space — space, tab
- Line continuation — backslash (\)
- Line termination — CR, LF, CR/LF; line termination ends a “keyword section” (a keyword and its value[s])
- Keywords — must be all upper case
- Names — (field/media/font names) any case; case is preserved; Service Providers are case sensitive
- Strings — all strings must be enclosed in double quote characters ("); standard C escape sequences are allowed.
- Comments — start with two forward slashes (//), end at line termination

Other notes:

- The values of a keyword are separated by commas.
- If a keyword is present, all its values must be specified; default values are used only if the keyword is absent.
- Values that are character strings are marked with asterisks in the definitions below, and must be quoted as specified above.
- The order of attributes within the forms is not mandatory and the attributes may be defined in any order.
- All forms can be represented using either ISO 646 (ANSI) or UNICODE character encoding. If the UNICODE representation is used then all Names and Strings are restricted to an internal representation of ISO 646 (ANSI) characters. Only the INITIALVALUE and FORMAT keyword values can have double byte values outside of the ISO 646 (ANSI) character set.
- If forms character encoding is UNICODE then, consistent with the UNICODE standard, the file prefix must be in Little Endian (0xFFFE) or Big Endian (0xFEFF) notation, such that UNICODE encoding is recognized.
- A form and its optional subforms that have multiple XFSFIELDs with the same *fieldname* are invalid. The WFS_ERR_PTR_FORMINVALID error will be returned if specified in the input to the command.
- A form that has multiple XFSSUBFORMs with the same *subformname* is invalid. The WFS_ERR_PTR_FORMINVALID error will be returned if specified in the input to the command.
- A form and its optional subforms that have multiple XFSFRAMEs with the same *framename* are invalid. The WFS_ERR_PTR_FORMINVALID error will be returned if specified in the input to the command.

10.2 Form and Media Measurements

The UNIT keyword sections of the form and media definitions specify the base horizontal and vertical resolution as follows:

- The *base* value specifies the base unit of measurement.
- The *x* and *y* values specify the horizontal and vertical resolution as fractions of the base value (e.g. an *x* value of 10 and a base value of MM means that the base horizontal resolution is 0.1mm).

The base resolutions thus defined by the UNIT keyword section of the XFSFORM definition are used as the units of the form definition keyword sections:

- SIZE (*width* and *height* values)
- ALIGNMENT (*xoffset* and *yoffset* values)

and of the sub-form definition keyword sections:

- POSITION (*x* and *y* values)
- SIZE (*width* and *height* values)

and of the field definition keyword sections:

- POSITION (*x* and *y* values)
- SIZE (*width* and *height* values)
- INDEX (*xoffset* and *yoffset* values)

and of the frame definition keyword sections:

- POSITION (*x* and *y* values)
- SIZE (*width* and *height* values)
- REPEATONX (x*offset* value)
- REPEATONY (*yoffset* value)

The base resolutions thus defined by the UNIT keyword section of the XFSMEDIA definition are used as the units of the media definition keyword sections:

- SIZE (*width* and *height* values)
- PRINTAREA (*x*, *y*, *width* and *height* values)
- RESTRICTED (*x*, *y*, *width* and *height* values)

NOTE: The origin for coordinate based systems is (0,0). The origin for row/column based systems can be (0,0) or (1,1) and must be configurable within the Service Provider.

10.3 Form Definition [1]

XFSFORM		*formname**	
BEGIN			
(required)	**UNIT**	*base,* *x,* *y*	Base resolution unit for form definition: MM INCH ROWCOLUMN Horizontal base unit fraction Vertical base unit fraction
(required)	**SIZE**	*width,* *height*	Width of form Height of form
	ALIGNMENT	*alignment,* *xoffset,* *yoffset*	Alignment of the form on the physical media: TOPLEFT (default) TOPRIGHT BOTTOMLEFT BOTTOMRIGHT This option allows the positioning of a form onto a physical page relative to any combination of the edges of the physical media, to support the variations in how devices sense the edge of page for positioning purposes. Horizontal offset relative to the horizontal alignment specified by alignment. Always specified as a positive value (i.e. if aligned to the right side of the media, means offset the form to the left). (default = 0) Vertical offset relative to the vertical alignment specified by alignment. Always specified as a positive value (i.e. if aligned to the bottom of the media, means offset the form upward). (default = 0)
	ORIENTATION	*type*	Orientation of form: PORTRAIT (default) LANDSCAPE
	SKEW	*skewfactor*	Maximum skew factor in degrees (default = 0)
	VERSION	*major,* *minor,* *date*,* *author**	Major version number Minor version number Creation/modification date Author of form
(required)	**LANGUAGE**	*languageID*	Language used in this form - a 16 bit value (LANGID) which is a combination of a primary (10 bits) and a secondary (6 bits) language ID (This is the standard language ID in the Win32 API; standard macros support construction and decomposition of this composite ID)
	CPI	*cpi*	Characters per inch. This value specifies the default CPI within the form. When the ROWCOLUMN unit is used, the form CPI and LPI are used to calculate the position and size of all fields within a form, irrespective of the CPI and LPI of the fields themselves.
	LPI	*lpi*	Lines per inch. This value specifies the default LPI within the form. When the ROWCOLUMN unit is used, the form CPI and LPI are used to calculate the position and size of all fields within a form, irrespective of the CPI and LPI of the fields themselves.
	POINTSIZE	*pointsize*	This value specifies the default POINTSIZE within the form.
	COPYRIGHT	*copyright**	Copyright entry
	TITLE	*title**	Title of form
	COMMENT	*comment**	Comment section
	USERPROMPT	*prompt**	Prompt string for user interaction

[1] Attributes are not required in any mandatory order within a Form definition.

	[XFSFIELD **BEGIN** **. . .** **END]**	*fieldname**	One field definition (as defined in the next section) for each field in the form. The *fieldname* within a form and its optional subforms must be unique
	[XFSFRAME **BEGIN** **. . .** **END]**	*framename**	One frame definition (as defined in the next section) for each frame in the form. The *framename* within a form and its optional subforms must be unique
	[XFSSUBFORM **BEGIN** **. . .** **END]**	*subformname**	One subform definition (as defined in the next section) for each subform in the form. The *subformname* within a form must be unique.
END			

10.4 SubForm Definition [2]

XFSSUBFORM		*subformname**	The subformname within a form must be unique.
BEGIN			
(required)	**POSITION**	*X,* *Y or (Y, Z)*	Horizontal position (relative to left side of form) Vertical position (relative to top of form). Format (Y, Z) is used to indicate vertical positioning relative to top of form when top of form is other than 1st page of form, where Z indicates page number (relative to 0) and Y indicates base resolution units relative to top of the form page number (as indicated by Z). Format Y is used to indicate vertical positioning relative to top of the 1st form page.
(required)	**SIZE**	*width,* *height*	Width of subform. Width must not exceed width of form. Height of subform. Height must not exceed height of form.
	[XFSFIELD **BEGIN** **. . .** **END]**	*fieldname**	One field definition (as defined in the next section) for each field in the subform. The fieldname within a form and its optional subforms must be unique.
	[XFSFRAME **BEGIN** **. . .** **END]**	*framename**	One frame definition (as defined in the next section) for each frame in the subform. The framename within a form and its optional subforms must be unique.
END			

The XFSSUBFORM definition provides a means to isolate a selected area of a form where the user may want to have a select group of fields, frames, and/or running headers and footers. All field and frame definitions within a subform are relative to the POSITION of the subform. A form definition with an imbedded subform will have a series of statements illustrated as follows:

```
XFSFORM
BEGIN
  *
  *
  XFSSUBFORM
  BEGIN
    XFSFIELD
    BEGIN
      *
      *
    END
    XFSFIELD
    BEGIN
      *
      *
    END
  END
END
```

[2] Attributes are not required in any mandatory order within a SubForm definition.

10.5 Field Definition [3]

XFSFIELD		*fieldname**	The *fieldname* within a form and its optional subforms must be unique.
BEGIN			
(required)	**POSITION**	*X,* *Y or (Y, Z)*	Horizontal position (relative to left side of form/subform). Vertical position (relative to top of form/subform). Format (Y, Z) is used to indicate vertical positioning relative to top of form/subform when top of form/subform is other than 1st page of form/subform, where Z indicates page number (relative to 0) and Y indicates base resolution units relative to top of the form/subform page number (as indicated by Z). Format Y is used to indicate vertical positioning relative to top of the 1st form/subform.
	FOLLOWS	*fieldname**	Print this field directly following the field with the name <fieldname>; positioning information is ignored. See the description of WFS_CMD_PTR_PRINT_FORM. If FOLLOWS is omitted then fields are printed in the order that they appear in the form definition.
	HEADER	*N* *N-N* *ALL*	This field is either a form/subform header field. N represents a form/subform page number (relative to 0) the header field is to print within. N-N represents a form/subform page number range the header field is to print within. Combinations of N and N-N may exist separated by commas. ALL indicates that header field is to be printed on all pages of form/subform. The form/subform page number is intended to supplement the Z parameter of the POSITION keyword. For example 0,2-4,6 indicates that the header field is to print on relative form/subform pages 0, 2, 3, 4, and 6.
	FOOTER	*N* *N-N* *All*	This field is either a form/subform footer field. N represents a form/subform page number (relative to 0) the footer field is to print within. N-N represents a form/subform page number range the footer field is to print within. Combinations of N and N-N may exist separated by commas. ALL indicates that footer field is to be printed on all pages of form/subform. The form/subform page number is intended to supplement the Z parameter of the POSITION keyword. For example 0,2-4,6 indicates that the footer field is to print on relative form/subform pages 0, 2, 3, 4, and 6.
	SIDE	*side*	Side of form where field is positioned: FRONT (default) BACK
(required)	**SIZE**	*width,* *height*	Field width Field height
	INDEX	*repeatcount,* *xoffset,* *yoffset*	Count how often this field is repeated in the form, INDEX fields are fixed length. (default is no INDEX field) Horizontal offset for next field Vertical offset for next field

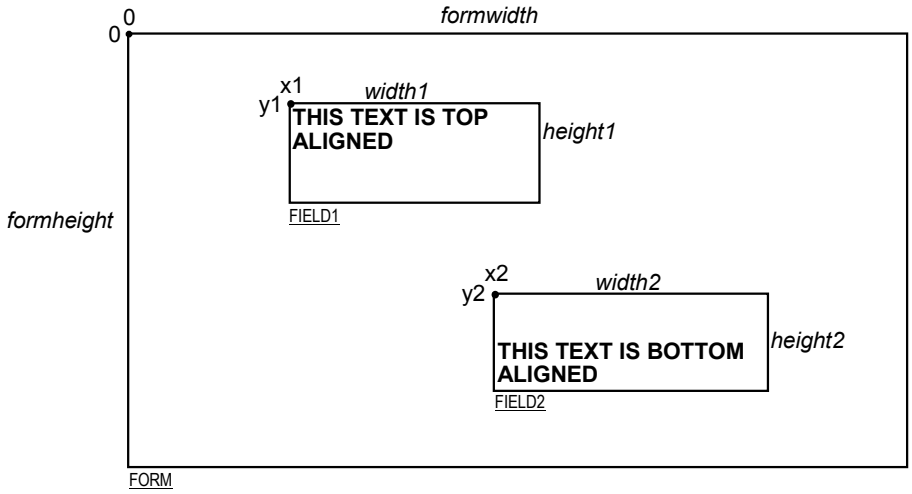
[3] Attributes are not required in any mandatory order within a Field definition.

	TYPE	*fieldtype*	Type of field: TEXT (default) MICR OCR MSF BARCODE GRAPHIC PAGEMARK
	SCALING	*scalingtype*	Information on how to size the GRAPHIC within the field: BESTFIT (default) scale to size indicated ASIS render at native size MAINTAINASPECT scale as close as possible to size indicated while maintaining the aspect ratio and not losing graphic information. SCALING is only relevant for GRAPHIC field types.
	BARCODE	*hriposition*	Position of the HRI (Human Readable Interpretation) characters: NONE (default) ABOVE BELOW BOTH The type of barcode to print is defined in the FONT field.
	COERCIVITY	*coercivity*	Coercivity to be used for writing to the magnetic stripe: AUTO (default) decided by the Service Provider or the hardware LOW low coercivity HIGH high coercivity COERCIVITY is only relevant for MSF field types.
	CLASS	*class*	Field class: OPTIONAL (default) STATIC REQUIRED
	ACCESS	*access*	Access rights of field: WRITE (default) READ READWRITE
	OVERFLOW	*overflow*	Action on field overflow: TERMINATE (default) TRUNCATE BESTFIT (the Service Provider fits the data into the field as well as it can) OVERWRITE (a contiguous write) WORDWRAP

	STYLE	*style*	Display attributes as a combination of the following, ORed together using the "|" operator: NORMAL (default) BOLD ITALIC UNDER (single underline) DOUBLEUNDER (double underline) DOUBLE (double width) TRIPLE (triple width) QUADRUPLE (quadruple width) STRIKETHROUGH ROTATE90 (rotate 90 degrees clockwise) ROTATE270 (rotate 270 degrees clockwise) UPSIDEDOWN (upside down) PROPORTIONAL (proportional spacing) DOUBLEHIGH TRIPLEHIGH QUADRUPLEHIGH CONDENSED SUPERSCRIPT SUBSCRIPT OVERSCORE LETTERQUALITY NEARLETTERQUALITY DOUBLESTRIKE OPAQUE (If omitted then default attribute is transparent) Some of these Styles may be mutually exclusive, or may combine to provide unexpected results.
	CASE	*case*	Convert field contents to: NOCHANGE (default) UPPER LOWER
	HORIZONTAL	*justify*	Horizontal alignment of field contents: LEFT (default) RIGHT CENTER JUSTIFY
	VERTICAL	*justify*	Vertical alignment of field contents: BOTTOM (default) CENTER TOP
	COLOR	*color*	Color name: BLACK (default) WHITE GRAY RED BLUE GREEN YELLOW
	RGBCOLOR	*R, G, B*	Color in RGB 8 bits per color format: R - Red portion of the RGB value 0-255. G - Green portion of the RGB value 0-255. B - Blue portion of the RGB value 0-255. RGBCOLOR overrides the COLOR attribute.
	LANGUAGE	*languageID*	Language used in this field - a 16 bit value (LANGID) which is a combination of a primary (10 bits) and a secondary (6 bits) language ID (This is the standard language ID in the Win32 API; standard macros support construction and decomposition of this composite ID). If unspecified defaults to form definition LANGUAGE specification.

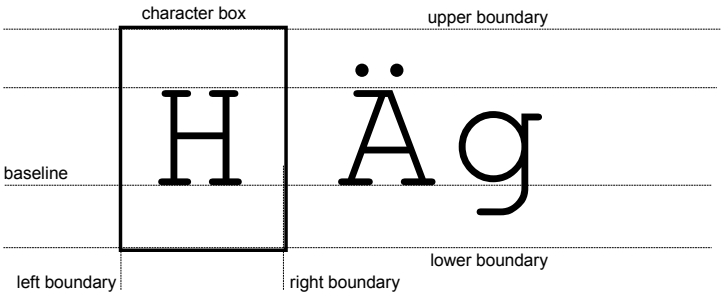
	FONT	*fontname**	Font name: This attribute is interpreted by the Service Provider. In some cases it may indicate printer resident fonts, and in others it may indicate the name of a downloadable font. For BARCODE fields it represents the barcode font name. In some cases this predefines the following parameters:
	POINTSIZE	*pointsize*	Point size. If unspecified, the point size defaults to the POINTSIZE defined for the form.
	CPI	*cpi*	Characters per inch. If unspecified, the CPI defaults to the CPI defined for the form.
	LPI	*lpi*	Lines per inch. If unspecified, the LPI defaults to the LPI defined for the form.
	FORMAT	*formatstring**	This is an application defined input field describing how the application should format the data. This may be interpreted by the Service Provider.
	INITIALVALUE	*value**	Initial value. For GRAPHIC type fields, this value may contain the filename of the graphic image. The type of this graphic will be determined by the file extension (e.g. BMP for Windows Bitmap). Graphic file name may be full or partial path. For example “C:\BSVC\BSVCLOGO.BMP” illustrates use of full path name. A file name specification of “LOGO.BMP” illustrates partial path name. In this instance file is obtained from current directory. Graphic contents can be changed dynamically at run-time and the new content will be printed on the next print action.
END			

The following diagrams illustrate the positioning and sizing of text fields on a form, and, in particular, the vertical alignment of text within a field using **VERTICAL=TOP** and **VERTICAL=BOTTOM** values in the field definition.



VERTICAL=TOP	the upper boundary of the character drawing box (shown below) is positioned vertically to the upper field boundary.
VERTICAL=BOTTOM	the baseline of the character drawing box (shown below) is positioned vertically to the lower field boundary.

Definition of the character drawing box:



When more than one line of text is to be printed in a field, and the definition includes **VERTICAL=BOTTOM,** the vertical position of the first line is calculated using the specified (or implied) **LPI** value.

10.6 Frame Definition [4]

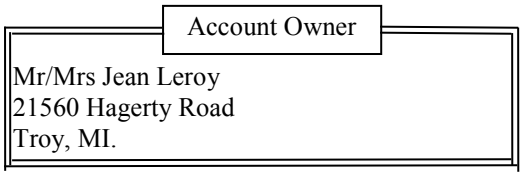
XFSFRAME		*framename**	
BEGIN			
(required)	**POSITION**	*X,* *Y or (Y, Z)*	Horizontal position of top left corner of the frame (relative to left side of form/subform). Vertical position of top left corner of frame (relative to top of form/subform). Format (Y, Z) is used to indicate vertical positioning of the top left corner of the frame relative to top of form/subform when top of form/subform is other than 1st page of form/subform, where Z indicates page number (relative to 0) and Y indicates base resolution units relative to top of the form/subform page number (as indicated by Z). Format Y is used to indicate vertical positioning of the left corner of frame relative to top of the 1st form/subform.
	FRAMES	*fieldname**	Frames the field with the name <fieldname>, positioning and size information are ignored. The frame surrounds the complete field, not just the printed data. If the field is repeated, the frame surrounds the first and last fields that are printed.
	HEADER	 *N* *N-N* *ALL*	This frame is either a form/subform header frame. N represents a form/subform page number (relative to 0) the header frame is to print within. N-N represents a form/subform page number range the header frame is to print within. Combinations of N and N-N may exist separated by commas. ALL indicates that header frame is to be printed on all pages of form/subform. The form/subform page number is intended to supplement the Z parameter of the POSITION keyword. For example 0,2-4,6 indicates that the header frame is to print on relative form/subform pages 0, 2, 3, 4, and 6.
	FOOTER	 *N* *N-N* *ALL*	This field is either a form/subform footer frame. N represents a form/subform page number (relative to 0) the footer frame is to print within. N-N represents a form/subform page number range the footer frame is to print within. Combinations of N and N-N may exist separated by commas. ALL indicates that footer frame is to be printed on all pages of form/subform. The form/subform page number is intended to supplement the Z parameter of the POSITION keyword. For example 0,2-4,6 indicates that the footer frame is to print on relative form/subform pages 0, 2, 3, 4, and 6.
	SIDE	*side*	Side of form where this frame is positioned: FRONT (default) BACK
(required)	**SIZE**	*width,* *height*	Frame width in base horizontal units for the form Frame height in base vertical units for the form
	REPEATONX	*repeatcount,* *xoffset*	Count how often this frame is repeated horizontally in the form. Horizontal offset for next frame in base horizontal units.
	REPEATONY	*repeatcount,* *yoffset*	Count how often this frame is repeated vertically in the form. Vertical offset for next frame in base vertical units.

[4] Attributes are not required in any mandatory order within a Frame definition.

	TYPE	*frametype*	Type of frame: RECTANGLE (default) ROUNDED_CORNER ELLIPSE
	CLASS	*class*	Frame class: STATIC (default) OPTIONAL (The frame is printed only if its name appears in the list of field names given as parameter to the WFSExecute command. In this case, the name of the frame must be different from all the names of the fields.)
	OVERFLOW	*overflow*	Action on frame overflowing the form: TERMINATE (default) TRUNCATE BESTFIT (the Service Provider fits the frame into the media as well as it can)
	STYLE	*style*	Frame line attributes: SINGLE_THIN (default) DOUBLE_THIN SINGLE_THICK DOUBLE_THICK DOTTED
	COLOR	*color*	Color name for frame lines: BLACK (default) WHITE GRAY RED BLUE GREEN YELLOW
	RGBCOLOR	*R, G, B*	Color in RGB 8 bits per color format: R - Red portion of the RGB value 0-255. G - Green portion of the RGB value 0-255. B - Blue portion of the RGB value 0-255. RGBCOLOR overrides the COLOR attribute.
	FILLCOLOR	*color*	Color name for interior of frame: BLACK WHITE (default) GRAY RED BLUE GREEN YELLOW
	RGBFILLCOLOR	*R, G, B*	Color in RGB 8 bits per color format: R - Red portion of the RGB value 0-255. G - Green portion of the RGB value 0-255. B - Blue portion of the RGB value 0-255. RGBFILLCOLOR overrides the FILLCOLOR attribute.

	FILLSTYLE	*style*	Style for filling the interior of frame: NONE (default) SOLID Solid color BDIAGONAL Downward hatch (left to right) at 45 degrees CROSS Horizontal and vertical crosshatch DIAGCROSS Crosshatch at 45 degrees FDIAGONAL Upward hatch (left to right) at 45 degrees HORIZONTAL Horizontal hatch VERTICAL Vertical hatch
	SUBSTSIGN	*substitute sign*	Character that is used as substitute sign when a character in a read field cannot be read
	TITLE	*fieldname**	Uses the field with the name <fieldname> as the title of the frame. Positioning information of the field is ignored.
	HORIZONTAL	*justify*	Horizontal alignment of the frame title: LEFT (default) CENTER RIGHT
	VERTICAL	*justify*	Vertical alignment of the frame title: TOP (default) BOTTOM
END			

The **XFSFRAME** definition provides a means for framing a **XFSFIELD** text field. The basic concept of a **XFSFRAME** definition and corresponding **XFSFIELD** definition is illustrated as follows:



When the **XFSFRAME** frames a field, its positioning and size information are ignored. Instead, Service Providers should position the top left corner of the frame one horizontal base unit to the left and one vertical base unit to the top of the top left corner of the field. Similarly, Service Providers should size the frame so that it bottom right corner is one base unit below and to the right to the field. For instance, if the form units are **ROWCOLUMN**, and a **XFSFRAME** “A” is said to frame the **XFSFIELD** “B” which is positioned at row 1, column 1 with a size of 1 row and 20 columns, the frame will be drawn from row 0, column 0 to row 3, column 22.

The horizontal and vertical positioning of a frame title overrides the position of the named **XFSFIELD**. For instance, if a **XFSFRAME** “A” is said to have the **XFSFIELD** “B” as its title, with the default horizontal and vertical title justification, it is just as if **XFSFIELD** “B” had been positioned at the top left corner of the frame. Note that the **SIZE** information for the title field still is meaningful; it gives the starting and/or ending positions of the frame lines.

The **SIDE** attributes of the **XFSFRAME** and the **XFSFIELD**s it refers to must agree.

The width of the lines and the interval between the lines of doubled frames are vendor specific. Whether the lines are drawn using graphics printing or using pseudo-graphic is vendor specific. However, Service Providers are responsible for rendering intersecting frames.

Depending on the printer technology, framing of fields can substantially slow down the print process.

Support of framing by a Service Provider or the device it controls is not mandatory to be XFS compliant.

Sample 1: Simple framing

```
XFSFORM "Multiple Balances"

BEGIN
  UNIT INCH, 16, 16
  SIZE 91, 64
  VERSION 1, 0, "13/09/96", "XFS"
  LANGUAGE 0x0409
XFSFIELD "Account Title"
  BEGIN
    POSITION 15, 4
    SIZE 30, 4

    CLASS STATIC

    HORIZONTAL CENTER

    INITIALVALUE "Account"
  END
  XFSFIELD "Balance Title"

  BEGIN
    POSITION 45, 4
    SIZE 30, 4
    CLASS STATIC
    HORIZONTAL CENTER
    INITIALVALUE "Balance"
```

When printed with the following field list:
Account[0]=0123456789123001
Account[1]=0123456789123002
Account[2]=0123456789123003
Balance[0]=$17465.12
Balance[1] =$2458.23
Balance[2]=$6542.78
Will print:

Account	Balance
0123456789123001	$17465.12
0123456789123002	$2458.23
0123456789123003	$6542.78

When printed with the following field list:
Account[0]=0123456789123001
Balance[0]=$17465.12
Will print:

Account	Balance
0123456789123001	$17465.12

```
  END

  XFSFIELD "Account"
  BEGIN
    POSITION 15, 8
    SIZE 30, 4
    INDEX 10, 0, 3
  END //"Account"
  XFSFIELD "Balance"
  BEGIN
    POSITION 45, 8
    SIZE 30, 4
    INDEX 10, 0, 3
    HORIZONTAL RIGHT
  END //"Balance"
  XFSFRAME "Account Title"
  BEGIN
    POSITION 15, 4
    FRAMES "Account Title"
    SIZE 30, 4
    STYLE DOUBLE_THIN
  END
  XFSFRAME "Balance Title"
  BEGIN
     POSITION 45, 4
     FRAMES "Balance Title"
     SIZE 30, 4
     STYLE DOUBLE_THIN
  END
  XFSFRAME "Account"
  BEGIN
     POSITION 15, 8
     FRAMES "Account"
     SIZE 30, 34
     STYLE DOUBLE_THIN
  END
  XFSFRAME "Balance"
  BEGIN
     POSITION 45, 8
     FRAMES "Balance"
     SIZE 30, 34
     STYLE DOUBLE_THIN
  END
END
```

Sample 2: Framing with title

```
XFSFORM "Bank Details"

BEGIN
  UNIT INCH, 16, 16
  SIZE 121, 64
  VERSION 1, 0, "13/09/96", "XFS Editor"
  LANGUAGE 0x0409
  XFSFIELD "Owner Frame Title"
  BEGIN
    POSITION 24, 9
    SIZE 27, 3

    CLASS STATIC

    HORIZONTAL CENTER
```

When printed with the following field list:
Owner = Mr/Mrs Jean Leroy
21560 Hagerty Road
Troy, MI.

will print:

```
Account Owner
Mr/Mrs Jean
Leroy
21560 Hagerty
Road
Troy, MI.
```

```
    VERTICAL CENTER
    INITIALVALUE "Account Owner"
  END
  XFSFIELD "Owner"
  BEGIN
    POSITION 20, 11
    SIZE 35, 9
    CLASS REQUIRED
    VERTICAL TOP
 END //"Owner"
  XFSFRAME "Owner Frame"
  BEGIN
    POSITION 19, 10
    FRAMES "Owner"
    SIZE 37, 11
    TITLE "Owner Frame Title"
    HORIZONTAL CENTER
 END
END
```

Sample 3: Framing with filled interior

```
XFSFORM "Bank Details"

BEGIN
  UNIT INCH, 16, 16
  SIZE 121, 64
  VERSION 1, 0, "13/09/96", "XFS Editor"
  LANGUAGE 0x0409
  XFSFIELD "Owner"
  BEGIN
    POSITION 20, 11
    SIZE 35, 9
    CLASS REQUIRED

     VERTICAL TOP

  END
  XFSFRAME "Owner Frame"
  BEGIN
    POSITION 19, 10
    FRAMES "Owner"
    SIZE 37, 11
    FILLCOLOR GRAY
    FILLSTYLE CROSS
  END
END
```

When printed with the following field list:
Owner = Mr/Mrs Jean Leroy
21560 Hagerty Road
Troy, MI.

will print:

```
Mr/Mrs Jean
Leroy
21560 Hagerty
Road
Troy, MI.
```

Sample 4: Repeated Framing

```
XFSFORM "Smart Account Number"

BEGIN
  UNIT INCH, 16, 16
  SIZE 121, 64
  VERSION 1, 0, "13/09/96", "XFS Editor"
   LANGUAGE 0x0409
  XFSFIELD "Account Number"
  BEGIN
    POSITION 20, 8
    SIZE 4, 4
    INDEX 12, 4, 0
```

When printed with the following field list:
Account Number[0]=0
Account Number[1]=1
Account Number[2]=2
Account Number[3]=3
Account Number[4]=4
Account Number[5]=5
Account Number[6]=6
Account Number[7]=7
Account Number[8]=8
Account Number[9]=9

```
      HORIZONTAL CENTER
      VERTICAL CENTER
    END
    XFSFRAME "A/N Frame"
    BEGIN
       POSITION 20, 8
       SIZE 4, 4
       REPEATONX 12, 4
     END
  END
```

Account Number[10]=0
Account Number[11]=1

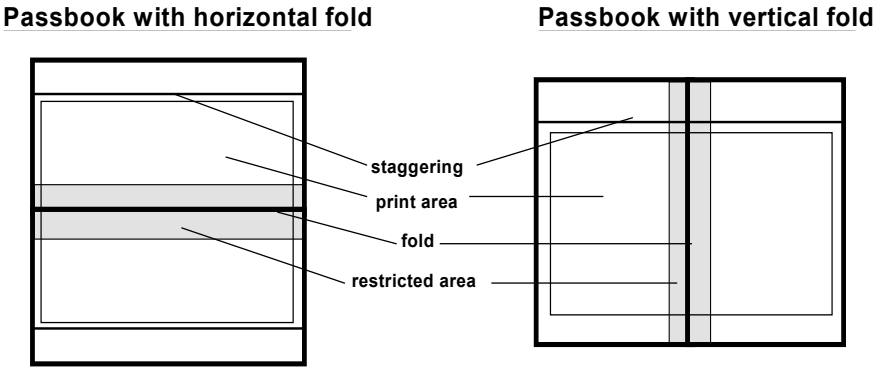
will print

0	1	2	3	4	5	6	7	8	9	0	1

10.7 Media Definition [5]

The media definition determines those characteristics that result from the combination of a particular media type together with a particular vendor's printer. The aim is to make it easy to move forms between different vendors' printers which might have different constraints on how they handle a specific media type. It is the Service Provider's responsibility to ensure that the form definition does not specify the printing of any fields that conflict with the media definition. An example of such a conflict might be that the form definition asks for a field to be printed in an area that the media definition defines as an unprintable area.

The media definition is also intended to provide the capability of defining media types that are specific to the financial industry. An example is a passbook as shown below.



XFSMEDIA		*medianame**	
BEGIN			
	TYPE	*type*	Predefined media types are: GENERIC (default) MULTIPART PASSBOOK
	SOURCE	*source*	Paper source: ANY (default) UPPER LOWER EXTERNAL (envelope tray or single sheet feed tray) AUX AUX2 PARK
(required)	**UNIT**	*base,* *x,* *y*	Base resolution unit for media definition: MM INCH ROWCOLUMN Horizontal base unit fraction Vertical base unit fraction
(required)	**SIZE**	*width,* *height*	Width of physical media Height of physical media (0 = unlimited, i.e. roll paper)
	PRINTAREA	*x,* *y,* *width,* *height*	Printable area relative to top left corner of physical media (default = physical size of media)
	RESTRICTED	*x,* *y,* *width,* *height*	Restricted area relative to top left corner of physical media (default = no restricted area)
	FOLD	*fold*	Type of passbook: HORIZONTAL (default) VERTICAL

[5] Attributes are not required in any mandatory order within a Media definition.

	STAGGERING	*staggering*	Staggering of passbook from top (default = 0)
	PAGE	*count*	Number of pages in passbook (default = 0)
	LINES	*count*	Number of printable lines (default = 0)
END			

10.8 XFS Form/Media Definition Files in Multi-Vendor Environments

Although for most Service Providers directory location and extension of XFS form/media definition files are configurable through the registry, the capabilities of Service Providers and or actual hardware may vary. Therefore the following considerations should be taken into account when applications use XFS form definition files with the purpose of running in a multi-vendor environment:

- Physical print area dimensions of printers are not identical.
- Graphic printout may not be supported, which may limit the use of the FONT, CPI and LPI keywords.
- Some printers may have a resolution of dots/mm rather than dots/inch, which may result in printouts with a specific CPI/LPI font resolution to be slightly off size.
- Some form/media definition keywords may not be supported due to limitations of the hardware or software.

11. Command and Event Flows during Single and Multi Page / Wad Printing

It is possible to print a number of pages or bunches of pages (wads) through the XFS Service Provider. The following sections describe how this is achieved.

11.1 Single Page / Single Wad Printing with immediate Media Control

This table illustrates the command and event flows in a successful print command (i.e. WFS_CMD_PTR_PRINT_RAW_FILE, WFS_CMD_PTR_PRINT_FORM and WFS_CMD_PTR_RAW_DATA) where the following conditions apply:

- A single page or single wad of pages is presented.
- The *bMediaPresented* Capability flag is TRUE (indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event can be generated).
- The *dwMediaControl* flag in the command data is set to WFS_PTR_CTRLEJECT.

The WFS_CMD_PTR_PRINT_RAW_FILE command is used as an example.

Step	End-User	Application	XFS Service Provider	PTR Hardware
1.	User wants a statement printed.			
2.		Win32 used to print statement to a native printer file.		
3.		WFS_CMD_PTR_PRINT_-RAW_FILE command issued (with *dwMediaControl* set to WFS_PTR_CTRLEJECT).		
4.			One wad or page is required.	
5.				Wad or page presented.
6.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
7.		WFS_CMD_PTR_PRINT_-RAW_FILE completes successfully.		
8.	User takes wad/page.			
9.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

11.2 Single Page / Single Wad Printing with separate Media Control

This table illustrates the command and event flows in a successful print command (i.e. WFS_CMD_PTR_PRINT_RAW_FILE, WFS_CMD_PTR_PRINT_FORM and WFS_CMD_PTR_RAW_DATA) where the following conditions apply:

- A single page or single wad of pages is presented.
- The *bMediaPresented* Capability flag is TRUE (indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event can be generated).
- The *dwMediaControl* flag in the command data is set to zero.
- The media is presented to the user through a WFS_CMD_PTR_CONTROL_MEDIA command, with the *lpdwMediaControl* flag set to WFS_PTR_CTRLEJECT.

The WFS_CMD_PTR_PRINT_RAW_FILE command is used as an example.

Step	End-User	Application	XFS Service Provider	PTR Hardware
1.	User wants a statement printed.			
2.		Win32 used to print statement to a native printer file.		
3.		WFS_CMD_PTR_PRINT_-RAW_FILE command issued (with *dwMediaControl* set to zero).		
4.		WFS_CMD_PTR_PRINT_-RAW_FILE completes successfully.		
5.		WFS_CMD_PTR_-CONTROL_MEDIA (with *lpdwMediaControl* set to WFS_PTR_CTRLEJECT).		
6.			One wad or page is required.	
7.				Wad or page presented.
8.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
9.		WFS_CMD_PTR_-CONTROL_MEDIA completes successfully.		
10.	User takes wad/page.			
11.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

11.3 Multi Page / Multi Wad Printing with immediate Media Control

This table illustrates a successful WFS_CMD_PTR_PRINT_RAW_FILE command where multiple page / wads are presented (and the *bMediaPresented* Capability flag indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event can be generated). In addition, the previous page/wad must be removed before subsequent pages/wads can be printed.

This table illustrates the command and event flows in a successful print command (i.e. WFS_CMD_PTR_PRINT_RAW_FILE, WFS_CMD_PTR_PRINT_FORM and WFS_CMD_PTR_RAW_DATA) where the following conditions apply:

- Multiple pages or multiple wads of pages are presented.
- The *bMediaPresented* Capability flag is TRUE (indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event can be generated).
- The *dwMediaControl* flag in the command data is set to WFS_PTR_CTRLEJECT.
- The previous page/wad must be removed before subsequent pages/wads can be presented.

The WFS_CMD_PTR_PRINT_RAW_FILE command is used as an example.

Step	End-User	Application	XFS Service Provider	PTR Hardware
1.	User wants a statement printed.			
2.		Win32 used to print statement to a native printer file.		
3.		WFS_CMD_PTR_PRINT_-RAW_FILE command issued (with *dwMediaControl* set to WFS_PTR_CTRLEJECT).		
4.			Three wads or pages are required.	
5.				First wad or page presented.
6.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
7.	User takes wad/page.			
8.			WFS_SRVE_PTR_MEDIATAKEN event generated.	
9.				Second wad or page presented.
10.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
11.	User takes wad/page.			
12.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

Step	End-User	Application	XFS Service Provider	PTR Hardware
13.				Final wad or page presented.
14.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
15.		WFS_CMD_PTR_PRINT_-RAW_FILE completes successfully.		
16.	User takes wad/page.			
17.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

11.4 Multi Page / Multi Wad Printing with separate Media Control

This table illustrates the command and event flows in a successful print command (i.e. WFS_CMD_PTR_PRINT_RAW_FILE, WFS_CMD_PTR_PRINT_FORM and WFS_CMD_PTR_RAW_DATA) where the following conditions apply:

- Multiple pages or multiple wads of pages are presented.
- The *bMediaPresented* Capability flag is TRUE (indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event can be generated).
- The *dwMediaControl* flag in the command data is set to zero.
- The media is presented to the user through a WFS_CMD_PTR_CONTROL_MEDIA command, with the *lpdwMediaControl* flag set to WFS_PTR_CTRLEJECT.
- The previous page/wad must be removed before subsequent pages/wads can be presented.

The WFS_CMD_PTR_PRINT_FORM command is used as a specific example.

Step	End-User	Application	XFS Service Provider	PTR Hardware
1.	User wants a statement printed.			
2.		WFS_CMD_PTR_PRINT_-FORM command issued (with *dwMediaControl* set to zero).		
3.		WFS_CMD_PTR_PRINT_-FORM completes successfully.		
4.		WFS_CMD_PTR_-CONTROL_MEDIA (with *lpdwMediaControl* set to WFS_PTR_CTRLEJECT).		
5.			Three wads or pages are required.	
6.				First wad or page presented.
7.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
8.	User takes wad/page.			
9.			WFS_SRVE_PTR_MEDIATAKEN event generated.	
10.				Second wad or page presented.
11.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
12.	User takes wad/page.			
13.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

Step	End-User	Application	XFS Service Provider	PTR Hardware
14.				Final wad or page presented.
15.			WFS_EXEE_PTR_MEDIA-PRESENTED event generated.	
16.		WFS_CMD_PTR_-CONTROL_MEDIA completes successfully.		
17.	User takes wad/page.			
18.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

11.5 Printing with immediate Media Control and *bMediaPresented* == FALSE

This table illustrates the command and event flows in a successful print command (i.e. WFS_CMD_PTR_PRINT_RAW_FILE, WFS_CMD_PTR_PRINT_FORM and WFS_CMD_PTR_RAW_DATA) where the following conditions apply:

- One or more pages or wads of pages is presented (it is the same flow for one or a number of pages).
- The *bMediaPresented* Capability flag is FALSE (indicates that the WFS_EXEE_PTR_MEDIAPRESENTED event cannot be generated).
- The *dwMediaControl* flag in the command data is set to WFS_PTR_CTRLEJECT.

The WFS_CMD_PTR_PRINT_RAW_FILE command is used as an example.

Step	End-User	Application	XFS Service Provider	PTR Hardware
1.	User wants a statement printed.			
2.		Win32 used to print statement to a native printer file.		
3.		WFS_CMD_PTR_PRINT_-RAW_FILE command issued (with *dwMediaControl* set to WFS_PTR_CTRLEJECT).		
4.			One or more wads/pages are required.	
5.				One or more wad or page presented.
7.		WFS_CMD_PTR_PRINT_-RAW_FILE completes successfully.		
8.	User takes wads/pages.			
9.			WFS_SRVE_PTR_MEDIATAKEN event generated.	

12. C-Header File

```
/******************************************************************************
*                                                                             *
* xfsptr.h    XFS - Banking Printer (PTR) definitions                         *
*               (receipt, journal, passbook and document printer)             *
*                                                                             *
*             Version 3.40  (December 6 2019)                                 *
*                                                                             *
******************************************************************************/

#ifndef __INC_XFSPTR__H
#define __INC_XFSPTR__H

#ifdef __cplusplus
extern "C" {
#endif

#include <xfsapi.h>

/* be aware of alignment */
#pragma pack(push,1)

/* value of WFSPTRCAPS.wClass */

#define     WFS_SERVICE_CLASS_PTR             (1)
#define     WFS_SERVICE_CLASS_VERSION_PTR     (0x2803) /* Version 3.40 */
#define     WFS_SERVICE_CLASS_NAME_PTR        "PTR"

#define     PTR_SERVICE_OFFSET                (WFS_SERVICE_CLASS_PTR * 100)

/* PTR Info Commands */

#define     WFS_INF_PTR_STATUS                (PTR_SERVICE_OFFSET + 1)
#define     WFS_INF_PTR_CAPABILITIES          (PTR_SERVICE_OFFSET + 2)
#define     WFS_INF_PTR_FORM_LIST             (PTR_SERVICE_OFFSET + 3)
#define     WFS_INF_PTR_MEDIA_LIST            (PTR_SERVICE_OFFSET + 4)
#define     WFS_INF_PTR_QUERY_FORM            (PTR_SERVICE_OFFSET + 5)
#define     WFS_INF_PTR_QUERY_MEDIA           (PTR_SERVICE_OFFSET + 6)
#define     WFS_INF_PTR_QUERY_FIELD           (PTR_SERVICE_OFFSET + 7)
#define     WFS_INF_PTR_CODELINE_MAPPING      (PTR_SERVICE_OFFSET + 8)

/* PTR Execute Commands */

#define     WFS_CMD_PTR_CONTROL_MEDIA         (PTR_SERVICE_OFFSET + 1)
#define     WFS_CMD_PTR_PRINT_FORM            (PTR_SERVICE_OFFSET + 2)
#define     WFS_CMD_PTR_READ_FORM             (PTR_SERVICE_OFFSET + 3)
#define     WFS_CMD_PTR_RAW_DATA              (PTR_SERVICE_OFFSET + 4)
#define     WFS_CMD_PTR_MEDIA_EXTENTS         (PTR_SERVICE_OFFSET + 5)
#define     WFS_CMD_PTR_RESET_COUNT           (PTR_SERVICE_OFFSET + 6)
#define     WFS_CMD_PTR_READ_IMAGE            (PTR_SERVICE_OFFSET + 7)
#define     WFS_CMD_PTR_RESET                 (PTR_SERVICE_OFFSET + 8)
#define     WFS_CMD_PTR_RETRACT_MEDIA         (PTR_SERVICE_OFFSET + 9)
#define     WFS_CMD_PTR_DISPENSE_PAPER        (PTR_SERVICE_OFFSET + 10)
#define     WFS_CMD_PTR_SET_GUIDANCE_LIGHT    (PTR_SERVICE_OFFSET + 11)
#define     WFS_CMD_PTR_PRINT_RAW_FILE        (PTR_SERVICE_OFFSET + 12)
#define     WFS_CMD_PTR_LOAD_DEFINITION       (PTR_SERVICE_OFFSET + 13)
#define     WFS_CMD_PTR_SUPPLY_REPLENISH      (PTR_SERVICE_OFFSET + 14)
#define     WFS_CMD_PTR_POWER_SAVE_CONTROL    (PTR_SERVICE_OFFSET + 15)
#define     WFS_CMD_PTR_CONTROL_PASSBOOK      (PTR_SERVICE_OFFSET + 16)
#define     WFS_CMD_PTR_SET_BLACK_MARK_MODE   (PTR_SERVICE_OFFSET + 17)
#define     WFS_CMD_PTR_SYNCHRONIZE_COMMAND   (PTR_SERVICE_OFFSET + 18)

/* PTR Messages */

#define     WFS_EXEE_PTR_NOMEDIA              (PTR_SERVICE_OFFSET + 1)
#define     WFS_EXEE_PTR_MEDIAINSERTED        (PTR_SERVICE_OFFSET + 2)
#define     WFS_EXEE_PTR_FIELDERROR           (PTR_SERVICE_OFFSET + 3)
#define     WFS_EXEE_PTR_FIELDWARNING         (PTR_SERVICE_OFFSET + 4)
```

```
#define     WFS_USRE_PTR_RETRACTBINTHRESHOLD  (PTR_SERVICE_OFFSET + 5)
#define     WFS_SRVE_PTR_MEDIATAKEN           (PTR_SERVICE_OFFSET + 6)
#define     WFS_USRE_PTR_PAPERTHRESHOLD       (PTR_SERVICE_OFFSET + 7)
#define     WFS_USRE_PTR_TONERTHRESHOLD       (PTR_SERVICE_OFFSET + 8)
#define     WFS_SRVE_PTR_MEDIAINSERTED        (PTR_SERVICE_OFFSET + 9)
#define     WFS_USRE_PTR_LAMPTHRESHOLD        (PTR_SERVICE_OFFSET + 10)
#define     WFS_USRE_PTR_INKTHRESHOLD         (PTR_SERVICE_OFFSET + 11)
#define     WFS_SRVE_PTR_MEDIADETECTED        (PTR_SERVICE_OFFSET + 12)
#define     WFS_SRVE_PTR_RETRACTBINSTATUS     (PTR_SERVICE_OFFSET + 13)
#define     WFS_EXEE_PTR_MEDIAPRESENTED       (PTR_SERVICE_OFFSET + 14)
#define     WFS_SRVE_PTR_DEFINITIONLOADED     (PTR_SERVICE_OFFSET + 15)
#define     WFS_EXEE_PTR_MEDIAREJECTED        (PTR_SERVICE_OFFSET + 16)
#define     WFS_SRVE_PTR_MEDIAPRESENTED       (PTR_SERVICE_OFFSET + 17)
#define     WFS_SRVE_PTR_MEDIAAUTORETRACTED   (PTR_SERVICE_OFFSET + 18)
#define     WFS_SRVE_PTR_DEVICEPOSITION       (PTR_SERVICE_OFFSET + 19)
#define     WFS_SRVE_PTR_POWER_SAVE_CHANGE    (PTR_SERVICE_OFFSET + 20)

/* values of WFSPTRSTATUS.fwDevice */

#define     WFS_PTR_DEVONLINE                 WFS_STAT_DEVONLINE
#define     WFS_PTR_DEVOFFLINE                WFS_STAT_DEVOFFLINE
#define     WFS_PTR_DEVPOWEROFF               WFS_STAT_DEVPOWEROFF
#define     WFS_PTR_DEVNODEVICE               WFS_STAT_DEVNODEVICE
#define     WFS_PTR_DEVHWERROR                WFS_STAT_DEVHWERROR
#define     WFS_PTR_DEVUSERERROR              WFS_STAT_DEVUSERERROR
#define     WFS_PTR_DEVBUSY                   WFS_STAT_DEVBUSY
#define     WFS_PTR_DEVFRAUDATTEMPT           WFS_STAT_DEVFRAUDATTEMPT
#define     WFS_PTR_DEVPOTENTIALFRAUD         WFS_STAT_DEVPOTENTIALFRAUD

/* values of WFSPTRSTATUS.fwMedia and
             WFSPTRMEDIADETECTED.wPosition */

#define     WFS_PTR_MEDIAPRESENT              (0)
#define     WFS_PTR_MEDIANOTPRESENT           (1)
#define     WFS_PTR_MEDIAJAMMED               (2)
#define     WFS_PTR_MEDIANOTSUPP              (3)
#define     WFS_PTR_MEDIAUNKNOWN              (4)
#define     WFS_PTR_MEDIAENTERING             (5)
#define     WFS_PTR_MEDIARETRACTED            (6)

/* additional values for WFSPTRMEDIADETECTED.wPosition */
#define     WFS_PTR_MEDIAEXPELLED             (7)

/* Size and max index of WFSPTRSTATUS.fwPaper and
                         WFSPTRSTATUS.wPaperType */

#define     WFS_PTR_SUPPLYSIZE                (16)
#define     WFS_PTR_SUPPLYMAX                 (WFS_PTR_SUPPLYSIZE - 1)

/* Indices of WFSPTRSTATUS.fwPaper [...] */

#define     WFS_PTR_SUPPLYUPPER               (0)
#define     WFS_PTR_SUPPLYLOWER               (1)
#define     WFS_PTR_SUPPLYEXTERNAL            (2)
#define     WFS_PTR_SUPPLYAUX                 (3)
#define     WFS_PTR_SUPPLYAUX2                (4)
#define     WFS_PTR_SUPPLYPARK                (5)

/* values of WFSPTRSTATUS.fwPaper and
             WFSPTRPAPERTHRESHOLD.wPaperThreshold */

#define     WFS_PTR_PAPERFULL                 (0)
#define     WFS_PTR_PAPERLOW                  (1)
#define     WFS_PTR_PAPEROUT                  (2)
#define     WFS_PTR_PAPERNOTSUPP              (3)
#define     WFS_PTR_PAPERUNKNOWN              (4)
#define     WFS_PTR_PAPERJAMMED               (5)

/* values of WFSPTRSTATUS.fwToner */
```

```
#define     WFS_PTR_TONERFULL                 (0)
#define     WFS_PTR_TONERLOW                  (1)
#define     WFS_PTR_TONEROUT                  (2)
#define     WFS_PTR_TONERNOTSUPP              (3)
#define     WFS_PTR_TONERUNKNOWN              (4)

/* values of WFSPTRSTATUS.fwInk */

#define     WFS_PTR_INKFULL                   (0)
#define     WFS_PTR_INKLOW                    (1)
#define     WFS_PTR_INKOUT                    (2)
#define     WFS_PTR_INKNOTSUPP                (3)
#define     WFS_PTR_INKUNKNOWN                (4)

/* values of WFSPTRSTATUS.fwLamp */

#define     WFS_PTR_LAMPOK                    (0)
#define     WFS_PTR_LAMPFADING                (1)
#define     WFS_PTR_LAMPINOP                  (2)
#define     WFS_PTR_LAMPNOTSUPP               (3)
#define     WFS_PTR_LAMPUNKNOWN               (4)

/* values of WFSPTRRETRACTBINS.wRetractBin and
             WFSPTRBINTHRESHOLD.wRetractBin */

#define     WFS_PTR_RETRACTBINOK              (0)
#define     WFS_PTR_RETRACTBINFULL            (1)
#define     WFS_PTR_RETRACTNOTSUPP            (2) /* Deprecated */
#define     WFS_PTR_RETRACTUNKNOWN            (3)
#define     WFS_PTR_RETRACTBINHIGH            (4)

/* additional values of WFSPTRRETRACTBINS.wRetractBin */

#define     WFS_PTR_RETRACTBINMISSING         (5)

/* Size and max index of dwGuidLights array */

#define     WFS_PTR_GUIDLIGHTS_SIZE           (32)
#define     WFS_PTR_GUIDLIGHTS_MAX            (WFS_PTR_GUIDLIGHTS_SIZE - 1)

/* Indices of WFSPTRSTATUS.dwGuidLights [...]
              WFSPTRCAPS.dwGuidLights [...] */

#define     WFS_PTR_GUIDANCE_PRINTER          (0)

/* Values of WFSPTRSTATUS.dwGuidLights [...]
             WFSPTRCAPS.dwGuidLights [...] */

#define     WFS_PTR_GUIDANCE_NOT_AVAILABLE    (0x00000000)
#define     WFS_PTR_GUIDANCE_OFF              (0x00000001)
#define     WFS_PTR_GUIDANCE_SLOW_FLASH       (0x00000004)
#define     WFS_PTR_GUIDANCE_MEDIUM_FLASH     (0x00000008)
#define     WFS_PTR_GUIDANCE_QUICK_FLASH      (0x00000010)
#define     WFS_PTR_GUIDANCE_CONTINUOUS       (0x00000080)
#define     WFS_PTR_GUIDANCE_RED              (0x00000100)
#define     WFS_PTR_GUIDANCE_GREEN            (0x00000200)
#define     WFS_PTR_GUIDANCE_YELLOW           (0x00000400)
#define     WFS_PTR_GUIDANCE_BLUE             (0x00000800)
#define     WFS_PTR_GUIDANCE_CYAN             (0x00001000)
#define     WFS_PTR_GUIDANCE_MAGENTA          (0x00002000)
#define     WFS_PTR_GUIDANCE_WHITE            (0x00004000)
#define     WFS_PTR_GUIDANCE_ENTRY            (0x00100000)
#define     WFS_PTR_GUIDANCE_EXIT             (0x00200000)


/* values of WFSPTRSTATUS.wDevicePosition
             WFSPTRDEVICEPOSITION.wPosition */

#define     WFS_PTR_DEVICEINPOSITION          (0)
#define     WFS_PTR_DEVICENOTINPOSITION       (1)
```

```
#define     WFS_PTR_DEVICEPOSUNKNOWN          (2)
#define     WFS_PTR_DEVICEPOSNOTSUPP          (3)

/* values of WFSPTRSTATUS.wPaperType */

#define     WFS_PTR_PAPERSINGLESIDED          (0)
#define     WFS_PTR_PAPERDUALSIDED            (1)
#define     WFS_PTR_PAPERTYPEUNKNOWN          (2)

/* values of WFSPTRSTATUS.wAntiFraudModule */

#define     WFS_PTR_AFMNOTSUPP                (0)
#define     WFS_PTR_AFMOK                     (1)
#define     WFS_PTR_AFMINOP                   (2)
#define     WFS_PTR_AFMDEVICEDETECTED         (3)
#define     WFS_PTR_AFMUNKNOWN                (4)

/* values of WFSPTRCAPS.fwType */

#define     WFS_PTR_TYPERECEIPT               (0x0001)
#define     WFS_PTR_TYPEPASSBOOK              (0x0002)
#define     WFS_PTR_TYPEJOURNAL               (0x0004)
#define     WFS_PTR_TYPEDOCUMENT              (0x0008)
#define     WFS_PTR_TYPESCANNER               (0x0010)

/* values of WFSPTRCAPS.wResolution,
             WFSPTRPRINTFORM.wResolution */

#define     WFS_PTR_RESLOW                    (0x0001)
#define     WFS_PTR_RESMED                    (0x0002)
#define     WFS_PTR_RESHIGH                   (0x0004)
#define     WFS_PTR_RESVERYHIGH               (0x0008)

/* values of WFSPTRCAPS.fwReadForm */

#define     WFS_PTR_READOCR                   (0x0001)
#define     WFS_PTR_READMICR                  (0x0002)
#define     WFS_PTR_READMSF                   (0x0004)
#define     WFS_PTR_READBARCODE               (0x0008)
#define     WFS_PTR_READPAGEMARK              (0x0010)
#define     WFS_PTR_READIMAGE                 (0x0020)
#define     WFS_PTR_READEMPTYLINE             (0x0040)

/* values of WFSPTRCAPS.fwWriteForm */

#define     WFS_PTR_WRITETEXT                 (0x0001)
#define     WFS_PTR_WRITEGRAPHICS             (0x0002)
#define     WFS_PTR_WRITEOCR                  (0x0004)
#define     WFS_PTR_WRITEMICR                 (0x0008)
#define     WFS_PTR_WRITEMSF                  (0x0010)
#define     WFS_PTR_WRITEBARCODE              (0x0020)
#define     WFS_PTR_WRITESTAMP                (0x0040)

/* values of WFSPTRCAPS.fwExtents */

#define     WFS_PTR_EXTHORIZONTAL             (0x0001)
#define     WFS_PTR_EXTVERTICAL               (0x0002)

/* values of WFSPTRCAPS.fwControl,
             WFSPTRCAPS.dwControlEx, dwMediaControl */

#define     WFS_PTR_CTRLEJECT                 (0x0001)
#define     WFS_PTR_CTRLPERFORATE             (0x0002)
#define     WFS_PTR_CTRLCUT                   (0x0004)
#define     WFS_PTR_CTRLSKIP                  (0x0008)
#define     WFS_PTR_CTRLFLUSH                 (0x0010)
#define     WFS_PTR_CTRLRETRACT               (0x0020)
#define     WFS_PTR_CTRLSTACK                 (0x0040)
#define     WFS_PTR_CTRLPARTIALCUT            (0x0080)
#define     WFS_PTR_CTRLALARM                 (0x0100)
```

```
#define     WFS_PTR_CTRLATPFORWARD            (0x0200)
#define     WFS_PTR_CTRLATPBACKWARD           (0x0400)
#define     WFS_PTR_CTRLTURNMEDIA             (0x0800)
#define     WFS_PTR_CTRLSTAMP                 (0x1000)
#define     WFS_PTR_CTRLPARK                  (0x2000)
#define     WFS_PTR_CTRLEXPEL                 (0x4000)
#define     WFS_PTR_CTRLEJECTTOTRANSPORT      (0x8000)

/* values of WFSPTRCAPS.dwControlEx, dwMediaControl */

#define     WFS_PTR_CTRLROTATE180             (0x00010000)
#define     WFS_PTR_CTRLCLEARBUFFER           (0x00020000)

/* values of WFSPTRCAPS.fwPaperSources,
             WFSFRMMEDIA.wPaperSources,
             WFSPTRPRINTFORM.wPaperSource and
             WFSPTRPAPERTHRESHOLD.wPaperSource */

#define     WFS_PTR_PAPERANY                  (0x0001)
#define     WFS_PTR_PAPERUPPER                (0x0002)
#define     WFS_PTR_PAPERLOWER                (0x0004)
#define     WFS_PTR_PAPEREXTERNAL             (0x0008)
#define     WFS_PTR_PAPERAUX                  (0x0010)
#define     WFS_PTR_PAPERAUX2                 (0x0020)
#define     WFS_PTR_PAPERPARK                 (0x0040)

/* values of WFSPTRCAPS.fwControlPassbook
             WFSPTRCONTROLPASSBOOK.wAction */

#define     WFS_PTR_PBKCTRLNOTSUPP            (0x0000)
#define     WFS_PTR_PBKCTRLTURNFORWARD        (0x0001)
#define     WFS_PTR_PBKCTRLTURNBACKWARD       (0x0002)
#define     WFS_PTR_PBKCTRLCLOSEFORWARD       (0x0004)
#define     WFS_PTR_PBKCTRLCLOSEBACKWARD      (0x0008)

/* values of WFSPTRCAPS.fwImageType,
             WFSPTRIMAGEREQUEST.wFrontImageType and
             WFSPTRIMAGEREQUEST.wBackImageType */

#define     WFS_PTR_IMAGETIF                  (0x0001)
#define     WFS_PTR_IMAGEWMF                  (0x0002)
#define     WFS_PTR_IMAGEBMP                  (0x0004)
#define     WFS_PTR_IMAGEJPG                  (0x0008)

/* values of WFSPTRCAPS.fwFrontImageColorFormat,
             WFSPTRCAPS.fwBackImageColorFormat,
             WFSPTRIMAGEREQUEST.wFrontImageColorFormat and
             WFSPTRIMAGEREQUEST.wBackImageColorFormat */

#define     WFS_PTR_IMAGECOLORBINARY          (0x0001)
#define     WFS_PTR_IMAGECOLORGRAYSCALE       (0x0002)
#define     WFS_PTR_IMAGECOLORFULL            (0x0004)

/* values of WFSPTRCAPS.fwCodelineFormat and
             WFSPTRIMAGEREQUEST.wCodelineFormat */

#define     WFS_PTR_CODELINECMC7              (0x0001)
#define     WFS_PTR_CODELINEE13B              (0x0002)
#define     WFS_PTR_CODELINEOCR               (0x0004)

/* values of WFSPTRCAPS.fwImageSource,
             WFSPTRIMAGEREQUEST.fwImageSource and
             WFSPTRIMAGE.wImageSource */

#define     WFS_PTR_IMAGEFRONT                (0x0001)
#define     WFS_PTR_IMAGEBACK                 (0x0002)
#define     WFS_PTR_CODELINE                  (0x0004)

/* values of WFSPTRCAPS.fwCharSupport,
             WFSFRMHEADER.fwCharSupport */
```

```
#define     WFS_PTR_ASCII                       (0x0001)
#define     WFS_PTR_UNICODE                     (0x0002)

/* values of WFSPTRCAPS.fwCoercivityType */

#define     WFS_PTR_COERCIVITYNOTSUPP           (0x0001)
#define     WFS_PTR_COERCIVITYLOW               (0x0002)
#define     WFS_PTR_COERCIVITYHIGH              (0x0004)
#define     WFS_PTR_COERCIVITYAUTO              (0x0008)

/* values of WFSPTRCAPS.wPrintSides */

#define     WFS_PTR_PRINTSIDESNOTSUPP           (0x0000)
#define     WFS_PTR_PRINTSIDESSINGLE            (0x0001)
#define     WFS_PTR_PRINTSIDESDUAL              (0x0002)

/* values of WFSFRMHEADER.wBase,
             WFSFRMMEDIA.wBase,
             WFSPTRMEDIAUNIT.wBase */

#define     WFS_FRM_INCH                        (0)
#define     WFS_FRM_MM                          (1)
#define     WFS_FRM_ROWCOLUMN                   (2)

/* values of WFSFRMHEADER.wAlignment */

#define     WFS_FRM_TOPLEFT                     (0)
#define     WFS_FRM_TOPRIGHT                    (1)
#define     WFS_FRM_BOTTOMLEFT                  (2)
#define     WFS_FRM_BOTTOMRIGHT                 (3)

/* values of WFSFRMHEADER.wOrientation */

#define     WFS_FRM_PORTRAIT                    (0)
#define     WFS_FRM_LANDSCAPE                   (1)

/* values of WFSFRMMEDIA.fwMediaType */

#define     WFS_FRM_MEDIAGENERIC                (0)
#define     WFS_FRM_MEDIAPASSBOOK               (1)
#define     WFS_FRM_MEDIAMULTIPART              (2)

/* values of WFSFRMMEDIA.wFoldType */

#define     WFS_FRM_FOLDNONE                    (0)
#define     WFS_FRM_FOLDHORIZONTAL              (1)
#define     WFS_FRM_FOLDVERTICAL                (2)

/* values of WFSFRMFIELD.fwType */

#define     WFS_FRM_FIELDTEXT                   (0)
#define     WFS_FRM_FIELDMICR                   (1)
#define     WFS_FRM_FIELDOCR                    (2)
#define     WFS_FRM_FIELDMSF                    (3)
#define     WFS_FRM_FIELDBARCODE                (4)
#define     WFS_FRM_FIELDGRAPHIC                (5)
#define     WFS_FRM_FIELDPAGEMARK               (6)

/* values of WFSFRMFIELD.fwClass */

#define     WFS_FRM_CLASSSTATIC                 (0)
#define     WFS_FRM_CLASSOPTIONAL               (1)
#define     WFS_FRM_CLASSREQUIRED               (2)

/* values of WFSFRMFIELD.fwAccess */

#define     WFS_FRM_ACCESSREAD                  (0x0001)
#define     WFS_FRM_ACCESSWRITE                 (0x0002)
```

```
/* values of WFSFRMFIELD.fwOverflow */

#define     WFS_FRM_OVFTERMINATE              (0)
#define     WFS_FRM_OVFTRUNCATE               (1)
#define     WFS_FRM_OVFBESTFIT                (2)
#define     WFS_FRM_OVFOVERWRITE              (3)
#define     WFS_FRM_OVFWORDWRAP               (4)

/* values of WFSFRMFIELD.wCoercivity */

#define     WFS_FRM_COERCIVITYAUTO            (0)
#define     WFS_FRM_COERCIVITYLOW             (1)
#define     WFS_FRM_COERCIVITYHIGH            (2)

/* values of WFSPTRFIELDFAIL.wFailure */

#define     WFS_PTR_FIELDREQUIRED             (0)
#define     WFS_PTR_FIELDSTATICOVWR           (1)
#define     WFS_PTR_FIELDOVERFLOW             (2)
#define     WFS_PTR_FIELDNOTFOUND             (3)
#define     WFS_PTR_FIELDNOTREAD              (4)
#define     WFS_PTR_FIELDNOTWRITE             (5)
#define     WFS_PTR_FIELDHWERROR              (6)
#define     WFS_PTR_FIELDTYPENOTSUPPORTED     (7)
#define     WFS_PTR_FIELDGRAPHIC              (8)
#define     WFS_PTR_CHARSETFORM               (9)

/* values of WFSPTRPRINTFORM.wAlignment */

#define     WFS_PTR_ALNUSEFORMDEFN            (0)
#define     WFS_PTR_ALNTOPLEFT                (1)
#define     WFS_PTR_ALNTOPRIGHT               (2)
#define     WFS_PTR_ALNBOTTOMLEFT             (3)
#define     WFS_PTR_ALNBOTTOMRIGHT            (4)

/* values of WFSPTRPRINTFORM.wOffsetX and
             WFSPTRPRINTFORM.wOffsetY */

#define     WFS_PTR_OFFSETUSEFORMDEFN         (0xffff)

/* values of WFSPTRRAWDATA.wInputData */

#define     WFS_PTR_NOINPUTDATA               (0)
#define     WFS_PTR_INPUTDATA                 (1)

/* values of WFSPTRIMAGE.wStatus */

#define     WFS_PTR_DATAOK                    (0)
#define     WFS_PTR_DATASRCNOTSUPP            (1)
#define     WFS_PTR_DATASRCMISSING            (2)

/* values of WFSPTRBINSTATUS.wRetractBin */

#define     WFS_PTR_RETRACTBININSERTED        (1)
#define     WFS_PTR_RETRACTBINREMOVED         (2)

/* values of WFSPTRDEFINITIONLOADED.dwDefinitionType */

#define     WFS_PTR_FORMLOADED                (0x00000001)
#define     WFS_PTR_MEDIALOADED               (0x00000002)

/* values of WFSPTRSUPPLYREPLEN.fwSupplyReplen */

#define     WFS_PTR_REPLEN_PAPERUPPER         (0x0001)
#define     WFS_PTR_REPLEN_PAPERLOWER         (0x0002)
#define     WFS_PTR_REPLEN_PAPERAUX           (0x0004)
#define     WFS_PTR_REPLEN_PAPERAUX2          (0x0008)
#define     WFS_PTR_REPLEN_TONER              (0x0010)
#define     WFS_PTR_REPLEN_INK                (0x0020)
#define     WFS_PTR_REPLEN_LAMP               (0x0040)
```

```
/* values of WFSPTRMEDIAREJECTED.wMediaRejected */

#define     WFS_PTR_REJECT_SHORT              (0)
#define     WFS_PTR_REJECT_LONG               (1)
#define     WFS_PTR_REJECT_MULTIPLE           (2)
#define     WFS_PTR_REJECT_ALIGN              (3)
#define     WFS_PTR_REJECT_MOVETOALIGN        (4)
#define     WFS_PTR_REJECT_SHUTTER            (5)
#define     WFS_PTR_REJECT_ESCROW             (6)
#define     WFS_PTR_REJECT_THICK              (7)
#define     WFS_PTR_REJECT_OTHER              (8)

/* values of WFSPTRMEDIARETRACTED.wRetractResult */

#define     WFS_PTR_AUTO_RETRACT_OK           (0)
#define     WFS_PTR_AUTO_RETRACT_MEDIAJAMMED  (1)

/* values of WFSPTRSTATUS.wBlackMarkMode and
             WFSPTRSETBLACKMARKMODE.wBlackMarkMode */

#define     WFS_PTR_BLACKMARKDETECTIONNOTSUPP (0)
#define     WFS_PTR_BLACKMARKDETECTIONON      (1)
#define     WFS_PTR_BLACKMARKDETECTIONOFF     (2)
#define     WFS_PTR_BLACKMARKDETECTIONUNKNOWN (3)

/* XFS PTR Errors */

#define WFS_ERR_PTR_FORMNOTFOUND              (-(PTR_SERVICE_OFFSET + 0))
#define WFS_ERR_PTR_FIELDNOTFOUND             (-(PTR_SERVICE_OFFSET + 1))
#define WFS_ERR_PTR_NOMEDIAPRESENT            (-(PTR_SERVICE_OFFSET + 2))
#define WFS_ERR_PTR_READNOTSUPPORTED          (-(PTR_SERVICE_OFFSET + 3))
#define WFS_ERR_PTR_FLUSHFAIL                 (-(PTR_SERVICE_OFFSET + 4))
#define WFS_ERR_PTR_MEDIAOVERFLOW             (-(PTR_SERVICE_OFFSET + 5))
#define WFS_ERR_PTR_FIELDSPECFAILURE          (-(PTR_SERVICE_OFFSET + 6))
#define WFS_ERR_PTR_FIELDERROR                (-(PTR_SERVICE_OFFSET + 7))
#define WFS_ERR_PTR_MEDIANOTFOUND             (-(PTR_SERVICE_OFFSET + 8))
#define WFS_ERR_PTR_EXTENTNOTSUPPORTED        (-(PTR_SERVICE_OFFSET + 9))
#define WFS_ERR_PTR_MEDIAINVALID              (-(PTR_SERVICE_OFFSET + 10))
#define WFS_ERR_PTR_FORMINVALID               (-(PTR_SERVICE_OFFSET + 11))
#define WFS_ERR_PTR_FIELDINVALID              (-(PTR_SERVICE_OFFSET + 12))
#define WFS_ERR_PTR_MEDIASKEWED               (-(PTR_SERVICE_OFFSET + 13))
#define WFS_ERR_PTR_RETRACTBINFULL            (-(PTR_SERVICE_OFFSET + 14))
#define WFS_ERR_PTR_STACKERFULL               (-(PTR_SERVICE_OFFSET + 15))
#define WFS_ERR_PTR_PAGETURNFAIL              (-(PTR_SERVICE_OFFSET + 16))
#define WFS_ERR_PTR_MEDIATURNFAIL             (-(PTR_SERVICE_OFFSET + 17))
#define WFS_ERR_PTR_SHUTTERFAIL               (-(PTR_SERVICE_OFFSET + 18))
#define WFS_ERR_PTR_MEDIAJAMMED               (-(PTR_SERVICE_OFFSET + 19))
#define WFS_ERR_PTR_FILE_IO_ERROR             (-(PTR_SERVICE_OFFSET + 20))
#define WFS_ERR_PTR_CHARSETDATA               (-(PTR_SERVICE_OFFSET + 21))
#define WFS_ERR_PTR_PAPERJAMMED               (-(PTR_SERVICE_OFFSET + 22))
#define WFS_ERR_PTR_PAPEROUT                  (-(PTR_SERVICE_OFFSET + 23))
#define WFS_ERR_PTR_INKOUT                    (-(PTR_SERVICE_OFFSET + 24))
#define WFS_ERR_PTR_TONEROUT                  (-(PTR_SERVICE_OFFSET + 25))
#define WFS_ERR_PTR_LAMPINOP                  (-(PTR_SERVICE_OFFSET + 26))
#define WFS_ERR_PTR_SOURCEINVALID             (-(PTR_SERVICE_OFFSET + 27))
#define WFS_ERR_PTR_SEQUENCEINVALID           (-(PTR_SERVICE_OFFSET + 28))
#define WFS_ERR_PTR_MEDIASIZE                 (-(PTR_SERVICE_OFFSET + 29))
#define WFS_ERR_PTR_INVALID_PORT              (-(PTR_SERVICE_OFFSET + 30))
#define WFS_ERR_PTR_MEDIARETAINED             (-(PTR_SERVICE_OFFSET + 31))
#define WFS_ERR_PTR_BLACKMARK                 (-(PTR_SERVICE_OFFSET + 32))
#define WFS_ERR_PTR_DEFINITIONEXISTS          (-(PTR_SERVICE_OFFSET + 33))
#define WFS_ERR_PTR_MEDIAREJECTED             (-(PTR_SERVICE_OFFSET + 34))
#define WFS_ERR_PTR_MEDIARETRACTED            (-(PTR_SERVICE_OFFSET + 35))
#define WFS_ERR_PTR_MSFERROR                  (-(PTR_SERVICE_OFFSET + 36))
#define WFS_ERR_PTR_NOMSF                     (-(PTR_SERVICE_OFFSET + 37))
#define WFS_ERR_PTR_FILENOTFOUND              (-(PTR_SERVICE_OFFSET + 38))
#define WFS_ERR_PTR_POWERSAVETOOSHORT         (-(PTR_SERVICE_OFFSET + 39))
#define WFS_ERR_PTR_POWERSAVEMEDIAPRESENT     (-(PTR_SERVICE_OFFSET + 40))
#define WFS_ERR_PTR_PASSBOOKCLOSED            (-(PTR_SERVICE_OFFSET + 41))
```

```
#define WFS_ERR_PTR_LASTORFIRSTPAGEREACHED    (-(PTR_SERVICE_OFFSET + 42))
#define WFS_ERR_PTR_COMMANDUNSUPP             (-(PTR_SERVICE_OFFSET + 43))
#define WFS_ERR_PTR_SYNCHRONIZEUNSUPP         (-(PTR_SERVICE_OFFSET + 44))

/*=================================================================*/
/* PTR Info Command Structures */
/*=================================================================*/

typedef struct _wfs_ptr_retract_bins
{
    WORD                wRetractBin;
    USHORT              usRetractCount;
} WFSPTRRETRACTBINS, *LPWFSPTRRETRACTBINS;

typedef struct _wfs_ptr_status
{
    WORD                fwDevice;
    WORD                fwMedia;
    WORD                fwPaper[WFS_PTR_SUPPLYSIZE];
    WORD                fwToner;
    WORD                fwInk;
    WORD                fwLamp;
    LPWFSPTRRETRACTBINS *lppRetractBins;
    USHORT              usMediaOnStacker;
    LPSTR               lpszExtra;
    DWORD               dwGuidLights[WFS_PTR_GUIDLIGHTS_SIZE];
    WORD                wDevicePosition;
    USHORT              usPowerSaveRecoveryTime;
    WORD                wPaperType[WFS_PTR_SUPPLYSIZE];
    WORD                wAntiFraudModule;
    WORD                wBlackMarkMode;
} WFSPTRSTATUS, *LPWFSPTRSTATUS;

typedef struct _wfs_ptr_caps
{
    WORD                wClass;
    WORD                fwType;
    BOOL                bCompound;
    WORD                wResolution;
    WORD                fwReadForm;
    WORD                fwWriteForm;
    WORD                fwExtents;
    WORD                fwControl;
    USHORT              usMaxMediaOnStacker;
    BOOL                bAcceptMedia;
    BOOL                bMultiPage;
    WORD                fwPaperSources;
    BOOL                bMediaTaken;
    USHORT              usRetractBins;
    LPUSHORT            lpusMaxRetract;
    WORD                fwImageType;
    WORD                fwFrontImageColorFormat;
    WORD                fwBackImageColorFormat;
    WORD                fwCodelineFormat;
    WORD                fwImageSource;
    WORD                fwCharSupport;
    BOOL                bDispensePaper;
    LPSTR               lpszExtra;
    DWORD               dwGuidLights[WFS_PTR_GUIDLIGHTS_SIZE];
    LPSTR               lpszWindowsPrinter;
    BOOL                bMediaPresented;
    USHORT              usAutoRetractPeriod;
    BOOL                bRetractToTransport;
    BOOL                bPowerSaveControl;
    WORD                fwCoercivityType;
    WORD                fwControlPassbook;
    WORD                wPrintSides;
    BOOL                bAntiFraudModule;
    DWORD               dwControlEx;
    BOOL                bBlackMarkModeSupported;
```

```
    LPDWORD                 lpdwSynchronizableCommands;
} WFSPTRCAPS, *LPWFSPTRCAPS;

typedef struct _wfs_frm_header
{
    LPSTR                   lpszFormName;
    WORD                    wBase;
    WORD                    wUnitX;
    WORD                    wUnitY;
    WORD                    wWidth;
    WORD                    wHeight;
    WORD                    wAlignment;
    WORD                    wOrientation;
    WORD                    wOffsetX;
    WORD                    wOffsetY;
    WORD                    wVersionMajor;
    WORD                    wVersionMinor;
    LPSTR                   lpszUserPrompt;
    WORD                    fwCharSupport;
    LPSTR                   lpszFields;
    WORD                    wLanguageID;
} WFSFRMHEADER, *LPWFSFRMHEADER;

typedef struct _wfs_frm_media
{
    WORD                    fwMediaType;
    WORD                    wBase;
    WORD                    wUnitX;
    WORD                    wUnitY;
    WORD                    wSizeWidth;
    WORD                    wSizeHeight;
    WORD                    wPageCount;
    WORD                    wLineCount;
    WORD                    wPrintAreaX;
    WORD                    wPrintAreaY;
    WORD                    wPrintAreaWidth;
    WORD                    wPrintAreaHeight;
    WORD                    wRestrictedAreaX;
    WORD                    wRestrictedAreaY;
    WORD                    wRestrictedAreaWidth;
    WORD                    wRestrictedAreaHeight;
    WORD                    wStagger;
    WORD                    wFoldType;
    WORD                    wPaperSources;
} WFSFRMMEDIA, *LPWFSFRMMEDIA;

typedef struct _wfs_ptr_query_field
{
    LPSTR                   lpszFormName;
    LPSTR                   lpszFieldName;
} WFSPTRQUERYFIELD, *LPWFSPTRQUERYFIELD;

typedef struct _wfs_frm_field
{
    LPSTR                   lpszFieldName;
    WORD                    wIndexCount;
    WORD                    fwType;
    WORD                    fwClass;
    WORD                    fwAccess;
    WORD                    fwOverflow;
    LPSTR                   lpszInitialValue;
    LPWSTR                  lpszUNICODEInitialValue;
    LPSTR                   lpszFormat;
    LPWSTR                  lpszUNICODEFormat;
    WORD                    wLanguageID;
    WORD                    wCoercivity;
} WFSFRMFIELD, *LPWFSFRMFIELD;

typedef struct _wfs_ptr_hex_data
{
```

```
    USHORT                usLength;
    LPBYTE                lpbData;
} WFSPTRXDATA, *LPWFSPTRXDATA;

/* WFS_INF_PTR_CODELINE_MAPPING input and output structures */

typedef struct _wfs_ptr_codeline_mapping
{
    WORD                  wCodelineFormat;
} WFSPTRCODELINEMAPPING, *LPWFSPTRCODELINEMAPPING;

typedef struct _wfs_ptr_codeline_mapping_out
{
    WORD                  wCodelineFormat;
    LPWFSPTRXDATA         lpxCharMapping;
} WFSPTRCODELINEMAPPINGOUT, *LPWFSPTRCODELINEMAPPINGOUT;

/*=================================================================*/
/* PTR Execute Command Structures */
/*=================================================================*/

typedef struct _wfs_ptr_print_form
{
    LPSTR                 lpszFormName;
    LPSTR                 lpszMediaName;
    WORD                  wAlignment;
    WORD                  wOffsetX;
    WORD                  wOffsetY;
    WORD                  wResolution;
    DWORD                 dwMediaControl;
    LPSTR                 lpszFields;
    LPWSTR                lpszUNICODEFields;
    WORD                  wPaperSource;
} WFSPTRPRINTFORM, *LPWFSPTRPRINTFORM;

typedef struct _wfs_ptr_read_form
{
    LPSTR                 lpszFormName;
    LPSTR                 lpszFieldNames;
    LPSTR                 lpszMediaName;
    DWORD                 dwMediaControl;
} WFSPTRREADFORM, *LPWFSPTRREADFORM;

typedef struct _wfs_ptr_read_form_out
{
    LPSTR                 lpszFields;
    LPWSTR                lpszUNICODEFields;
} WFSPTRREADFORMOUT, *LPWFSPTRREADFORMOUT;

typedef struct _wfs_ptr_raw_data
{
    WORD                  wInputData;
    ULONG                 ulSize;
    LPBYTE                lpbData;
} WFSPTRRAWDATA, *LPWFSPTRRAWDATA;

typedef struct _wfs_ptr_raw_data_in
{
    ULONG                 ulSize;
    LPBYTE                lpbData;
} WFSPTRRAWDATAIN, *LPWFSPTRRAWDATAIN;

typedef struct _wfs_ptr_media_unit
{
    WORD                  wBase;
    WORD                  wUnitX;
    WORD                  wUnitY;
} WFSPTRMEDIAUNIT, *LPWFSPTRMEDIAUNIT;

typedef struct _wfs_ptr_media_ext
```

```
{
    ULONG                ulSizeX;
    ULONG                ulSizeY;
} WFSPTRMEDIAEXT, *LPWFSPTRMEDIAEXT;

typedef struct _wfs_ptr_image_request
{
    WORD                 wFrontImageType;
    WORD                 wBackImageType;
    WORD                 wFrontImageColorFormat;
    WORD                 wBackImageColorFormat;
    WORD                 wCodelineFormat;
    WORD                 fwImageSource;
    LPSTR                lpszFrontImageFile;
    LPSTR                lpszBackImageFile;
} WFSPTRIMAGEREQUEST, *LPWFSPTRIMAGEREQUEST;

typedef struct _wfs_ptr_image
{
    WORD                 wImageSource;
    WORD                 wStatus;
    ULONG                ulDataLength;
    LPBYTE               lpbData;
} WFSPTRIMAGE, *LPWFSPTRIMAGE;

typedef struct _wfs_ptr_reset
{
    DWORD                dwMediaControl;
    USHORT               usRetractBinNumber;
} WFSPTRRESET, *LPWFSPTRRESET;

typedef struct _wfs_ptr_set_guidlight
{
    WORD                 wGuidLight;
    DWORD                dwCommand;
} WFSPTRSETGUIDLIGHT, *LPWFSPTRSETGUIDLIGHT;

typedef struct _wfs_ptr_print_raw_file
{
    LPSTR                lpszFileName;
    DWORD                dwMediaControl;
    DWORD                dwPaperSource;
} WFSPTRPRINTRAWFILE, *LPWFSPTRPRINTRAWFILE;

typedef struct _wfs_ptr_load_definition
{
    LPSTR                lpszFileName;
    BOOL                 bOverwrite;
} WFSPTRLOADDEFINITION, *LPWFSPTRLOADDEFINITION;

typedef struct _wfs_ptr_supply_replen
{
    WORD                 fwSupplyReplen;
} WFSPTRSUPPLYREPLEN, *LPWFSPTRSUPPLYREPLEN;

typedef struct _wfs_ptr_power_save_control
{
    USHORT               usMaxPowerSaveRecoveryTime;
} WFSPTRPOWERSAVECONTROL, *LPWFSPTRPOWERSAVECONTROL;

typedef struct _wfs_ptr_control_passbook
{
    WORD                 wAction;
    USHORT               usCount;
} WFSPTRCONTROLPASSBOOK, *LPWFSPTRCONTROLPASSBOOK;

typedef struct _wfs_ptr_set_black_mark_mode
{
    WORD                 wBlackMarkMode;
} WFSPTRSETBLACKMARKMODE, *LPWFSPTRSETBLACKMARKMODE;
```

```
typedef struct _wfs_ptr_synchronize_command
{
    DWORD                dwCommand;
    LPVOID               lpCmdData;
} WFSPTRSYNCHRONIZECOMMAND, *LPWFSPTRSYNCHRONIZECOMMAND;


/*=================================================================*/
/* PTR Message Structures */
/*=================================================================*/

typedef struct _wfs_ptr_field_failure
{
    LPSTR                lpszFormName;
    LPSTR                lpszFieldName;
    WORD                 wFailure;
} WFSPTRFIELDFAIL, *LPWFSPTRFIELDFAIL;

typedef struct _wfs_ptr_bin_threshold
{
    USHORT               usBinNumber;
    WORD                 wRetractBin;
} WFSPTRBINTHRESHOLD, *LPWFSPTRBINTHRESHOLD;

typedef struct _wfs_ptr_paper_threshold
{
     WORD                wPaperSource;
     WORD                wPaperThreshold;
} WFSPTRPAPERTHRESHOLD, *LPWFSPTRPAPERTHRESHOLD;

typedef struct _wfs_ptr_media_detected
{
    WORD                 wPosition;
    USHORT               usRetractBinNumber;
} WFSPTRMEDIADETECTED, *LPWFSPTRMEDIADETECTED;

typedef struct _wfs_ptr_bin_status
{
    USHORT               usBinNumber;
    WORD                 wRetractBin;
} WFSPTRBINSTATUS, *LPWFSPTRBINSTATUS;

typedef struct _wfs_ptr_media_presented
{
    USHORT               usWadIndex;
    USHORT               usTotalWads;
} WFSPTRMEDIAPRESENTED, *LPWFSPTRMEDIAPRESENTED;

typedef struct _wfs_ptr_definition_loaded
{
    LPSTR                lpszDefinitionName;
    DWORD                dwDefinitionType;
} WFSPTRDEFINITIONLOADED, *LPWFSPTRDEFINITIONLOADED;

typedef struct _wfs_ptr_media_rejected
{
    WORD                 wMediaRejected;
} WFSPTRMEDIAREJECTED, *LPWFSPTRMEDIAREJECTED;

typedef struct _wfs_ptr_media_retracted
{
    WORD                 wRetractResult;
    USHORT               usBinNumber;
} WFSPTRMEDIARETRACTED, *LPWFSPTRMEDIARETRACTED;

typedef struct _wfs_ptr_device_position
{
    WORD                 wPosition;
} WFSPTRDEVICEPOSITION, *LPWFSPTRDEVICEPOSITION;
```

```
typedef struct _wfs_ptr_power_save_change
{
    USHORT               usPowerSaveRecoveryTime;
} WFSPTRPOWERSAVECHANGE, *LPWFSPTRPOWERSAVECHANGE;

/* restore alignment */
#pragma pack(pop)

#ifdef __cplusplus
} /*extern "C"*/
#endif
#endif /* __INC_XFSPTR__H */
```