

**CEN**

**CWA 16926-12**

**WORKSHOP**

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**AGREEMENT**

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English version

**Extensions for Financial Services (XFS) interface  
specification Release 3.40 - Part 12: Camera Device Class  
Interface - Programmer's Reference**

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

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Ref. No.:CWA 16926-12:2020 E

## Table of Contents

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<b>European Foreword</b> .....	<b>3</b>
<b>1. Introduction</b> .....	<b>7</b>
1.1 Background to Release 3.40 .....	7
1.2 XFS Service-Specific Programming .....	7
<b>2. Banking Cameras</b> .....	<b>9</b>
<b>3. References</b> .....	<b>10</b>
<b>4. Info Commands</b> .....	<b>11</b>
4.1 WFS_INF_CAM_STATUS.....	11
4.2 WFS_INF_CAM_CAPABILITIES .....	14
<b>5. Execute Commands</b> .....	<b>16</b>
5.1 WFS_CMD_CAM_TAKE_PICTURE .....	16
5.2 WFS_CMD_CAM_RESET.....	17
5.3 WFS_CMD_CAM_TAKE_PICTURE_EX.....	18
5.4 WFS_CMD_CAM_SYNCHRONIZE_COMMAND .....	20
<b>6. Events</b> .....	<b>21</b>
6.1 WFS_USRE_CAM_MEDIATHRESHOLD.....	21
6.2 WFS_EXEE_CAM_INVALIDDATA.....	22
<b>7. C - Header file</b> .....	<b>23</b>

## European Foreword

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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
- Part 71: Camera Device Class Interface - Migration from Version 3.30 (CWA 16926) to Version 3.40 (this CWA) - Programmer's Reference
- 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

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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](https://www.cen.eu/work/Sectors/Digital_society/Pages/WSXFS.aspx).

The information in this document represents the Workshop's current views on the issues discussed as of the date of publication. It is provided for informational purposes only and is subject to change without notice. CEN makes no warranty, express or implied, with respect to this document.

# 1. Introduction

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## 1.1 Background to Release 3.40

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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 3.40 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

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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

## CWA 16926-12:2020 (E)

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 Cameras

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This specification describes the functionality of the services provided by the Camera (CAM) services under XFS, by defining the service-specific commands that can be issued, using the **WFSGetInfo**, **WFSAsyncGetInfo**, **WFSExecute** and **WFSAsyncExecute** functions.

Banking camera systems usually consist of a recorder, a video mixer and one or more cameras. If there are several cameras, each camera focuses a special place within the self-service area (e.g. the room, the customer or the cash tray). By using the video mixer it can be decided, which of the cameras should take the next photo. Furthermore data can be given to be inserted in the photo (e.g. date, time or bank code).

If there is only one camera that can switch to take photos from different positions, it is presented by the Service Provider as a set of cameras, one for each of its possible positions.

### 3. References

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

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### 4.1 WFS\_INF\_CAM\_STATUS

---

**Description** This command reports the full range of information available, including the information that is provided by the Service Provider.

**Input Param** None.

**Output Param** LPWFSCAMSTATUS lpStatus;

```
typedef struct _wfs_cam_status
{
    WORD                fwDevice;
    WORD                fwMedia[WFS_CAM_CAMERAS_SIZE];
    WORD                fwCameras[WFS_CAM_CAMERAS_SIZE];
    USHORT              usPictures[WFS_CAM_CAMERAS_SIZE];
    LPSTR               lpzExtra;
    WORD                wAntiFraudModule;
} WFS_CAM_STATUS, *LPWFSCAMSTATUS;
```

*fwDevice*

Specifies the state of the Camera device as one of the following flags:

Value	Meaning
WFS_CAM_DEVONLINE	The device is online (i.e. powered on and operable).
WFS_CAM_DEVOFFLINE	The device is offline (e.g. the operator has taken the device offline by turning a switch).
WFS_CAM_DEVPOWEROFF	The device is powered off or physically not connected.
WFS_CAM_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_CAM_DEVHWERROR	The device is inoperable due to a hardware error.
WFS_CAM_DEVUSERERROR	The device is inoperable because a person is preventing proper operation.
WFS_CAM_DEVBUSY	The device is busy and not able to process an execute command at this time.
WFS_CAM_DEVFRAUDATTEMPT	The device is present but is inoperable because it has detected a fraud attempt.
WFS_CAM_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 recording media of the cameras. A number of indexes are defined below. The maximum *fwMedia* index is WFS\_CAM\_CAMERAS\_MAX. For a device which stores pictures on a hard disk drive or other general-purpose storage, the value of the *fwMedia* field should be WFS\_CAM\_MEDIANOTSUPP.

*fwMedia [WFS\_CAM\_ROOM]*

Specifies the state of the recording media of the camera that monitors the whole self-service area. Specified as one of the following flags:

Value	Meaning
WFS_CAM_MEDIAOK	The media is in a good state.
WFS_CAM_MEDIAHIGH	The media is almost full (threshold).
WFS_CAM_MEDIAFULL	The media is full.
WFS_CAM_MEDIANOTSUPP	The device does not support sensing the media level.

WFS\_CAM\_MEDIAUNKNOWN Due to a hardware error or other condition, the state of the media cannot be determined.

*fwMedia [WFS\_CAM\_PERSON]*

Specifies the state of the recording media of the camera that monitors the person standing in front of the self-service machine. Specified as one of the following flags:

Value	Meaning
WFS_CAM_MEDIAOK	The media is in a good state.
WFS_CAM_MEDIAHIGH	The media is almost full (threshold).
WFS_CAM_MEDIAFULL	The media is full.
WFS_CAM_MEDIANOTSUPP	The device does not support sensing the media level.
WFS_CAM_MEDIAUNKNOWN	Due to a hardware error or other condition, the state of the media cannot be determined.

*fwMedia [WFS\_CAM\_EXITSLOT]*

Specifies the state of the recording media of the camera that monitors the exit slot(s) of the self-service machine. Specified as one of the following flags:

Value	Meaning
WFS_CAM_MEDIAOK	The media is in a good state.
WFS_CAM_MEDIAHIGH	The media is almost full (threshold).
WFS_CAM_MEDIAFULL	The media is full.
WFS_CAM_MEDIANOTSUPP	The device does not support sensing the media level.
WFS_CAM_MEDIAUNKNOWN	Due to a hardware error or other condition, the state of the media cannot be determined.

*fwCameras [...]*

Specifies the state of the cameras. A number of cameras are defined below. The maximum camera index is WFS\_CAM\_CAMERAS\_MAX.

*fwCameras [WFS\_CAM\_ROOM]*

Specifies the state of the camera that monitors the whole self-service area. Specified as one of the following flags:

Value	Meaning
WFS_CAM_CAMNOTSUPP	The camera is not supported.
WFS_CAM_CAMOK	The camera is in a good state.
WFS_CAM_CAMINOP	The camera is inoperative.
WFS_CAM_CAMUNKNOWN	Due to a hardware error or other condition, the state of the camera cannot be determined.

*fwCameras [WFS\_CAM\_PERSON]*

Specifies the state of the camera that monitors the person standing in front of the self-service machine. Specified as one of the following flags:

Value	Meaning
WFS_CAM_CAMNOTSUPP	The camera is not supported.
WFS_CAM_CAMOK	The camera is in a good state.
WFS_CAM_CAMINOP	The camera is inoperative.
WFS_CAM_CAMUNKNOWN	Due to a hardware error or other condition, the state of the camera cannot be determined.

*fwCameras [WFS\_CAM\_EXITSLOT]*

Specifies the state of the camera that monitors the exit slot(s) of the self-service machine. Specified as one of the following flags:

Value	Meaning
WFS_CAM_CAMNOTSUPP	The camera is not supported.
WFS_CAM_CAMOK	The camera is in a good state.
WFS_CAM_CAMINOP	The camera is inoperative.
WFS_CAM_CAMUNKNOWN	Due to a hardware error or other condition, the state of the camera cannot be determined.

*usPictures* [...]

Specifies the number of pictures stored on the recording media of the cameras.

A number of indexes are defined below. The maximum *usPictures* index is

WFS\_CAM\_CAMERAS\_MAX. For a device which stores pictures on a hard disk drive or other general-purpose storage, the value of the *usPictures* field should be zero.

Index	Meaning
WFS_CAM_ROOM	The camera that monitors the whole self-service area.
WFS_CAM_PERSON	The camera that monitors the person standing in front of the self-service machine.
WFS_CAM_EXITSLOT	The camera that monitors the exit slot(s) of the self-service machine.

*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.

*wAntiFraudModule*

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

Value	Meaning
WFS_CAM_AFMNOTSUPP	No anti-fraud module is available.
WFS_CAM_AFMOK	Anti-fraud module is in a good state and no foreign device is detected.
WFS_CAM_AFMINOP	Anti-fraud module is inoperable.
WFS_CAM_AFMDEVICEDETECTED	Anti-fraud module detected the presence of a foreign device.
WFS_CAM_AFMUNKNOWN	The state of the anti-fraud module 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\_CAM\_DEVPOWEROFF when the device has been removed or WFS\_CAM\_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.

## 4.2 WFS\_INF\_CAM\_CAPABILITIES

---

**Description** This command is used to retrieve the capabilities of the camera system.

**Input Param** None.

**Output Param** LPWFSCAMCAPS lpCaps;

```
typedef struct _wfs_cam_caps
{
    WORD                wClass;
    WORD                fwType;
    WORD                fwCameras[WFS_CAM_CAMERAS_SIZE];
    USHORT              usMaxPictures;
    WORD                fwCamData;
    USHORT              usMaxDataLength;
    WORD                fwCharSupport;
    LPSTR               lpszExtra;
    BOOL                bPictureFile;
    BOOL                bAntiFraudModule;
    LPDWORD              lpdwSynchronizableCommands;
} WFS_CAMCAPS, *LPWFSCAMCAPS;
```

*wClass*

Specifies the logical service class as WFS\_SERVICE\_CLASS\_CAM.

*fwType*

Specifies the type of the camera device; only current value is:

Value	Meaning
WFS_CAM_TYPE_CAM	Camera system.

*fwCameras [...]*

Specifies which cameras are available. A number of cameras are defined below. The maximum camera index is WFS\_CAM\_CAMERAS\_MAX.

*fwCameras [WFS\_CAM\_ROOM]*

Specifies whether the camera that monitors the whole self-service area is available. Specified as one of the following flags:

Value	Meaning
WFS_CAM_NOT_AVAILABLE	This camera is not available.
WFS_CAM_AVAILABLE	This camera is available.

*fwCameras [WFS\_CAM\_PERSON]*

Specifies whether the camera that monitors the person standing in front of the self-service machine is available. Specified as one of the following flags:

Value	Meaning
WFS_CAM_NOT_AVAILABLE	This camera is not available.
WFS_CAM_AVAILABLE	This camera is available.

*fwCameras [WFS\_CAM\_EXITSLOT]*

Specifies whether the camera that monitors the exit slot(s) of the self-service machine is available. Specified as one of the following flags:

Value	Meaning
WFS_CAM_NOT_AVAILABLE	This camera is not available.
WFS_CAM_AVAILABLE	This camera is available.

*usMaxPictures*

Specifies the maximum number of pictures that can be stored on the recording media.

*fwCamData*

Specifies, if data can be added to the picture. Specified as a combination of the following flags:

Value	Meaning
WFS_CAM_NOTADD	No data can be added to the picture.
WFS_CAM_AUTOADD	Data is added automatically to the picture.

WFS\_CAM\_MANADD

Data can be added manually to the picture using the field *lpzCamData* in the WFS\_CMD\_CAM\_TAKE\_PICTURE command.

*usMaxDataLength*

Specifies the maximum length of the data that is displayed on the photo. Zero, if data cannot be manually added to the picture.

*fwCharSupport*

One or more flags specifying the Character Set supported by the Service Provider:

Value	Meaning
WFS_CAM_ASCII	ASCII is supported for execute command data values.
WFS_CAM_UNICODE	UNICODE is supported for execute command data values.

*lpzExtra*

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.

*bPictureFile*

Specifies whether the WFS\_CMD\_CAM\_TAKE\_PICTURE\_EX command, which enables applications to specify the file path and name of a picture to be taken, is supported.

*bAntiFraudModule*

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

*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 *lpzExtra* parameter may not be device or vendor-independent.

## 5. Execute Commands

### 5.1 WFS\_CMD\_CAM\_TAKE\_PICTURE

**Description** This command is used to start the recording of the camera system. It is possible to select which camera or which camera position should be used to take a picture. Data to be displayed on the photo can be specified using the *lpzCamData* or *lpzUNICODECamData* parameter.

**Input Param** LPWFSCAMTAKEPICT lpTakePict;

```
typedef struct _wfs_cam_take_picture
{
    WORD                wCamera;
    LPSTR               lpzCamData;
    LPWSTR              lpzUNICODECamData;
} WFS_CAMTAKEPICT, *LPWFSCAMTAKEPICT;
```

*wCamera*

Specifies the camera that should take the photo as one of the following flags:

Value	Meaning
WFS_CAM_ROOM	Monitors the whole self-service area.
WFS_CAM_PERSON	Monitors the person standing in front of the self-service machine.
WFS_CAM_EXITSLOT	Monitors the exit slot(s) of the self-service machine.

*lpzCamData*

Specifies the text string to be displayed on the photo. If the maximum text length is exceeded it will be truncated. In this case or if the text given is invalid an execute event WFS\_EXEE\_CAM\_INVALIDDATA is generated. Nevertheless the picture is taken.

*lpzUNICODECamData*

Specifies the UNICODE text string to be displayed on the photo. If the maximum text length is exceeded, it will be truncated. In this case or if the text given is invalid an execute event WFS\_EXEE\_CAM\_INVALIDDATA is generated. Nevertheless the picture is taken.

The *lpzUNICODECamData* field should only be used if the Service Provider supports UNICODE. The *lpzCamData* and *lpzUNICODECamData* fields are mutually exclusive.

**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_CAM_CAMNOTSUPP	The specified camera is not supported.
WFS_ERR_CAM_MEDIAFULL	The recording media is full.
WFS_ERR_CAM_CAMINOP	The specified camera is inoperable.
WFS_ERR_CAM_CHARSETNOTSUPP	Character set(s) supported by Service Provider is inconsistent with use of <i>lpzCamData</i> or <i>lpzUNICODECamData</i> fields.
WFS_ERR_CAM_FILEIOERROR	Directory does not exist or File IO error while storing the image to the hard disk.

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

Value	Meaning
WFS_USRE_CAM_MEDIATHRESHOLD	The state of the recording media reached a threshold.
WFS_EXEE_CAM_INVALIDDATA	The text string given is too long or in some other way invalid.

**Comments** None.



## 5.2 WFS\_CMD\_CAM\_RESET

---

<b>Description</b>	Sends a service reset to the Service Provider.
<b>Input Param</b>	None.
<b>Output Param</b>	None.
<b>Error Codes</b>	Only the generic error codes defined in [Ref. 1] can be generated by this command.
<b>Events</b>	Only the generic events defined in [Ref. 1] can be generated by this command.
<b>Comments</b>	This command is used by an application control program to cause a device to reset itself to a known good condition.

### 5.3 WFS\_CMD\_CAM\_TAKE\_PICTURE\_EX

---

**Description** This command is used to start the recording of the camera system. It is possible to select which camera or which camera position should be used to take a picture. Data to be displayed on the photo can be specified using the *lpzCamData* or *lpzUNICODECamData* parameter.

**Input Param** LPWFSCAMTAKEPICTEX lpTakePictEx;

```
typedef struct _wfs_cam_take_picture_ex
{
    WORD                wCamera;
    LPSTR               lpzCamData;
    LPWSTR              lpzUNICODECamData;
    LPSTR               lpzPictureFile;
} WFS_CAMTAKEPICTEX, *LPWFSCAMTAKEPICTEX;
```

*wCamera*

Specifies the camera that should take the photo as one of the following flags:

Value	Meaning
WFS_CAM_ROOM	Monitors the whole self-service area.
WFS_CAM_PERSON	Monitors the person standing in front of the self-service machine.
WFS_CAM_EXITSLOT	Monitors the exit slot(s) of the self-service machine.

*lpzCamData*

Specifies the text string to be displayed on the photo. If the maximum text length is exceeded it will be truncated. In this case or if the text given is invalid an execute event WFS\_EXEE\_CAM\_INVALIDDATA is generated. Nevertheless the picture is taken.

*lpzUNICODECamData*

Specifies the UNICODE text string to be displayed on the photo. If the maximum text length is exceeded, it will be truncated. In this case or if the text given is invalid an execute event WFS\_EXEE\_CAM\_INVALIDDATA is generated. Nevertheless the picture is taken.

The *lpzUNICODECamData* field should only be used if the Service Provider supports UNICODE. The *lpzCamData* and *lpzUNICODECamData* fields are mutually exclusive.

*lpzPictureFile*

Specifies the full path and file name of the image to be taken by a camera device. The file name includes the image format specific file extension. The Service Provider is responsible for converting the image into the required format.

This value is terminated with a single null character and cannot contain UNICODE characters.

**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_CAM_CAMNOTSUPP	The specified camera is not supported.
WFS_ERR_CAM_MEDIACFULL	The recording media is full.
WFS_ERR_CAM_CAMINOP	The specified camera is inoperable.
WFS_ERR_CAM_CHARSETNOTSUPP	Character set(s) supported by Service Provider is inconsistent with use of <i>lpzCamData</i> or <i>lpzUNICODECamData</i> fields.
WFS_ERR_CAM_FILEIOERROR	Directory does not exist or File IO error while storing the image to the hard disk.

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

Value	Meaning
WFS_USRE_CAM_MEDIATHRESHOLD	The state of the recording media reached a threshold.

WFS\_EXEE\_CAM\_INVALIDDATA

The text string given is too long or in some other way invalid.

**Comments**      None.

## 5.4 WFS\_CMD\_CAM\_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\_CAM\_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\_CAM\_SYNCHRONIZE\_COMMAND again in order to start a synchronization.

**Input Param** LPWFSCAMSYNCHRONIZECOMMAND lpSynchronizeCommand;

```
typedef struct _wfs_cam_synchronize_command
{
    DWORD dwCommand;
    LPVOID lpCmdData;
} WFS_CAMSYNCHRONIZECOMMAND, *LPWFSCAMSYNCHRONIZECOMMAND;
```

*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\_CAM\_TAKE\_PICTURE then *lpCmdData* will point to a WFSCAMTAKEPICT structure. 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_CAM_COMMANDUNSUPP	The command specified in the <i>dwCommand</i> field is not supported by the Service Provider.
WFS_ERR_CAM_SYNCHRONIZEUNSUPP	The preparation for the command specified in the <i>dwCommand</i> with the parameter specified in the <i>lpCmdData</i> is not supported by the Service Provider.

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

**Comments** None.

## 6. Events

---

### 6.1 WFS\_USRE\_CAM\_MEDIATHRESHOLD

---

**Description** This user event is used to specify that the state of the recording media reached a threshold.

**Event Param** LPWORD lpwMediaThreshold;

*lpwMediaThreshold*

Specified as one of the following flags:

Value	Meaning
WFS_CAM_MEDIAOK	The recording media is a good state.
WFS_CAM_MEDIAHIGH	The recording media is almost full.
WFS_CAM_MEDIAFULL	The recording media is full.

**Comments** None.

**6.2 WFS\_EXEE\_CAM\_INVALIDDATA**

---

<b>Description</b>	This execute event is used to specify that the text string given was too long or in some other way invalid.
<b>Event Param</b>	None.
<b>Comments</b>	None.

## 7. C - Header file

```

/*****
*
* xfscam.h      XFS - Camera (CAM) definitions
*
*              Version 3.40   (December 6 2019)
*
*****/

#ifndef __INC_XFSCAM_H
#define __INC_XFSCAM_H

#ifdef __cplusplus
extern "C" {
#endif

#include <xfssapi.h>

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

/* values of WFSCAMCAPS.wClass */

#define      WFS_SERVICE_CLASS_CAM                (10)
#define      WFS_SERVICE_VERSION_CAM            (0x2803) /* Version 3.40 */
#define      WFS_SERVICE_NAME_CAM               "CAM"

#define      CAM_SERVICE_OFFSET                 (WFS_SERVICE_CLASS_CAM * 100)

/* CAM Info Commands */

#define      WFS_INF_CAM_STATUS                  (CAM_SERVICE_OFFSET + 1)
#define      WFS_INF_CAM_CAPABILITIES           (CAM_SERVICE_OFFSET + 2)

/* CAM Execute Commands */

#define      WFS_CMD_CAM_TAKE_PICTURE           (CAM_SERVICE_OFFSET + 1)
#define      WFS_CMD_CAM_RESET                  (CAM_SERVICE_OFFSET + 2)
#define      WFS_CMD_CAM_TAKE_PICTURE_EX       (CAM_SERVICE_OFFSET + 3)
#define      WFS_CMD_CAM_SYNCHRONIZE_COMMAND    (CAM_SERVICE_OFFSET + 4)

/* CAM Messages */

#define      WFS_USRE_CAM_MEDIATHRESHOLD        (CAM_SERVICE_OFFSET + 1)
#define      WFS_EXEE_CAM_INVALIDDATA           (CAM_SERVICE_OFFSET + 2)

/* values of WFSCAMSTATUS.fwDevice */

#define      WFS_CAM_DEVONLINE                  WFS_STAT_DEVONLINE
#define      WFS_CAM_DEVOFFLINE                 WFS_STAT_DEVOFFLINE
#define      WFS_CAM_DEVPPOWEROFF               WFS_STAT_DEVPPOWEROFF
#define      WFS_CAM_DEVNODEVICE                WFS_STAT_DEVNODEVICE
#define      WFS_CAM_DEVHWERROR                 WFS_STAT_DEVHWERROR
#define      WFS_CAM_DEVUSERERROR              WFS_STAT_DEVUSERERROR
#define      WFS_CAM_DEVBUSY                    WFS_STAT_DEVBUSY
#define      WFS_CAM_DEVFRAUDATTEMPT           WFS_STAT_DEVFRAUDATTEMPT
#define      WFS_CAM_DEVPOTENTIALFRAUD         WFS_STAT_DEVPOTENTIALFRAUD

/* number of cameras supported/length of WFSCAMSTATUS.fwCameras field */

#define      WFS_CAM_CAMERAS_SIZE              (8)
#define      WFS_CAM_CAMERAS_MAX                (WFS_CAM_CAMERAS_SIZE - 1)

/* indices of WFSCAMSTATUS.fwMedia[...]
   WFSCAMSTATUS.fwCameras [...]
   WFSCAMSTATUS.usPictures[...]
   WFSCAMCAPS.fwCameras [...]
   WFSCAMTAKEPICT.wCamera
*/

```

## CWA 16926-12:2020 (E)

```
#define WFS_CAM_ROOM (0)
#define WFS_CAM_PERSON (1)
#define WFS_CAM_EXITSLOT (2)

/* values of WFSCAMSTATUS.fwMedia */

#define WFS_CAM_MEDIAOK (0)
#define WFS_CAM_MEDIAHIGH (1)
#define WFS_CAM_MEDIAFULL (2)
#define WFS_CAM_MEDIAUNKNOWN (3)
#define WFS_CAM_MEDIANOTSUPP (4)

/* values of WFSCAMSTATUS.fwCameras */

#define WFS_CAM_CAMNOTSUPP (0)
#define WFS_CAM_CAMOK (1)
#define WFS_CAM_CAMINOP (2)
#define WFS_CAM_CAMUNKNOWN (3)

/* values of WFSCAMCAPS.fwType */

#define WFS_CAM_TYPE_CAM (1)

/* values of WFSCAMCAPS.fwCameras */

#define WFS_CAM_NOT_AVAILABLE (0)
#define WFS_CAM_AVAILABLE (1)

/* values of WFSCAMCAPS.fwCamData */

#define WFS_CAM_NOTADD (0)
#define WFS_CAM_AUTOADD (1)
#define WFS_CAM_MANADD (2)

/* values of WFSCAMCAPS.fwCharSupport */

#define WFS_CAM_ASCII (0x0001)
#define WFS_CAM_UNICODE (0x0002)

/* values of WFSCAMSTATUS.wAntiFraudModule */

#define WFS_CAM_AFMNOTSUPP (0)
#define WFS_CAM_AFMOK (1)
#define WFS_CAM_AFMINOP (2)
#define WFS_CAM_AFMDEVICEDETECTED (3)
#define WFS_CAM_AFMUNKNOWN (4)

/* XFS CAM Errors */

#define WFS_ERR_CAM_CAMNOTSUPP (- (CAM_SERVICE_OFFSET + 0))
#define WFS_ERR_CAM_MEDIAFULL (- (CAM_SERVICE_OFFSET + 1))
#define WFS_ERR_CAM_CAMINOP (- (CAM_SERVICE_OFFSET + 2))
#define WFS_ERR_CAM_CHARSETNOTSUPP (- (CAM_SERVICE_OFFSET + 3))
#define WFS_ERR_CAM_FILEIOERROR (- (CAM_SERVICE_OFFSET + 4))
#define WFS_ERR_CAM_COMMANDUNSUPP (- (CAM_SERVICE_OFFSET + 5))
#define WFS_ERR_CAM_SYNCHRONIZEUNSUPP (- (CAM_SERVICE_OFFSET + 6))

/*=====*/
/* CAM Info Command Structures */
/*=====*/

typedef struct _wfs_cam_status
{
    WORD fwDevice;
    WORD fwMedia[WFS_CAM_CAMERAS_SIZE];
    WORD fwCameras[WFS_CAM_CAMERAS_SIZE];
    USHORT usPictures[WFS_CAM_CAMERAS_SIZE];
    LPSTR lpszExtra;
    WORD wAntiFraudModule;
};
```



```

} WFSCAMSTATUS, *LPWFSCAMSTATUS;

typedef struct _wfs_cam_caps
{
    WORD            wClass;
    WORD            fwType;
    WORD            fwCameras[WFS_CAM_CAMERAS_SIZE];
    USHORT         usMaxPictures;
    WORD            fwCamData;
    USHORT         usMaxDataLength;
    WORD            fwCharSupport;
    LPSTR          lpszExtra;
    BOOL           bPictureFile;
    BOOL           bAntiFraudModule;
    LPDWORD        lpdwSynchronizableCommands;
} WFSCAMCAPS, *LPWFSCAMCAPS;

/*=====*/
/* CAM Execute Command Structures */
/*=====*/

typedef struct _wfs_cam_take_picture
{
    WORD            wCamera;
    LPSTR           lpszCamData;
    LPWSTR          lpszUNICODECamData;
} WFSCAMTAKEPICT, *LPWFSCAMTAKEPICT;

typedef struct _wfs_cam_take_picture_ex
{
    WORD            wCamera;
    LPSTR           lpszCamData;
    LPWSTR          lpszUNICODECamData;
    LPSTR           lpszPictureFile;
} WFSCAMTAKEPICTEX, *LPWFSCAMTAKEPICTEX;

typedef struct _wfs_cam_synchronize_command
{
    DWORD           dwCommand;
    LPVOID          lpCmdData;
} WFSCAMSYNCHRONIZECOMMAND, *LPWFSCAMSYNCHRONIZECOMMAND;

/* restore alignment */
#pragma pack (pop)

#ifdef __cplusplus
} /*extern "C"*/
#endif

#endif /* __INC_XFSCAM_H */

```