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WORKSHOP

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AGREEMENT

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**Extensions for Financial Services (XFS) interface specification -
Release 3.10 - Part 13: Alarm 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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Foreword

This CWA is revision 3.10 of the XFS interface specification.

The CEN/ISSS XFS Workshop gathers suppliers as well as banks and other financial service companies. A list of companies participating in this Workshop and in support of this CWA is available from the CEN/ISSS Secretariat.

This CWA was formally approved by the XFS Workshop meeting on 2007-11-29. The specification is continuously reviewed and commented in the CEN/ISSS Workshop on XFS. It is therefore expected that an update of the specification will be published in due time as a CWA, superseding this revision 3.10.

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

Parts 19 - 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

Parts 48 - 60 are reserved for future use.

Part 61: Application Programming Interface (API) - Service Provider Interface (SPI) - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 62: Printer Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 63: Identification Card Device Class Interface - Migration from Version 3.02 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 64: Cash Dispenser Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 65: PIN Keypad Device Class Interface - Migration from Version 3.03 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 66: Check Reader/Scanner Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 67: Depository Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 68: Text Terminal Unit Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 69: Sensors and Indicators Unit Device Class Interface - Migration from Version 3.01 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 70: Vendor Dependent Mode Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 71: Camera Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 72: Alarm Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 73: Card Embossing Unit Device Class Interface - Migration from Version 3.0 (CWA 14050) to Version 3.10 (this CWA) - Programmer's Reference

Part 74: Cash-In Module Device Class Interface - Migration from Version 3.02 (CWA 14050) to Version 3.10 (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 <http://www.cen.eu/iss/Workshop/XFS>.

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

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN : AENOR, AFNOR, ASRO, BDS, BSI, CSNI, CYS, DIN, DS, ELOT, EVS, IBN, IPQ, IST, LVS, LST, MSA, MSZT, NEN, NSAI, ON, PKN, SEE, SIS, SIST, SFS, SN, SNV, SUTN and UNI.

Comments or suggestions from the users of the CEN Workshop Agreement are welcome and should be addressed to the CEN Management Centre.

Revision History:

3.0	October 18, 2000	Initial Release.
3.10	November 29, 2007	For a description of changes see CWA 15748-72:2007 ALM Migration from Version 3.0 to Version 3.10.

1. Introduction

1.1 Background to Release 3.10

The CEN/ISSS 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/ISSS (European Committee for Standardization/Information Society Standardization System) Workshop environment. CEN/ISSS Workshops aim to arrive at a European consensus on an issue that can be published as a CEN Workshop Agreement (CWA).

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

Release 3.10 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 XFS specification has been prompted by a series of factors.

There has been a technical imperative to extend the scope of the existing specification to include new devices, such as the Barcode Reader, Card Dispenser and Item Processing Module.

Similarly, there has also been pressure, through implementation experience and additional requirements, to extend the functionality and capabilities of the existing devices covered by the specification.

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 is returned to the calling application. An example would be a request from an application to a cash dispenser to dispense coins; the Service Provider recognizes the command but, since the cash dispenser it is managing dispenses only notes, 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 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 `WFS_ERR_UNSUPP_COMMAND` error returns to make decisions as to how to use the service.

2. Alarms

This specification describes the functionality of the services provided by Alarms (ALM) under XFS, by defining the service-specific commands that can be issued, using the **WFSGetInfo**, **WFSAsyncGetInfo**, **WFSExecute** and **WFSAsyncExecute** functions. This section describes the functionality of an Alarm (ALM) service that applies to both attended and unattended (self-service) devices.

The Alarm device class is provided as a separate service due to the need to set or reset an Alarm when one or more logical services associated with an attended CDM or unattended (self-service) device are locked. Because logical services can be locked by the application the Alarm is implemented in a separate device class to ensure that a set (trigger) or reset operation can be performed at any time.

3. References

- | |
|--|
| 1. XFS Application Programming Interface (API)/Service Provider Interface (SPI), Programmer's Reference
Revision 3.10 |
|--|

4. Info Commands

4.1 WFS_INF_ALM_STATUS

Description This command is used to request the Alarm status.

Input Param None.

Output Param LPWFSALMSTATUS lpStatus;

```
typedef struct _wfs_alm_status
{
    WORD          fwDevice;
    BOOL          bAlarmSet;
    LPSTR         lpszExtra;
} WFSALMSTATUS, *LPWFSALMSTATUS;
```

fwDevice

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

Value	Meaning
WFS_ALM_DEVONLINE	The device is present, powered on and online (i.e. operational, not busy processing a request and not in an error state).
WFS_ALM_DEVOFFLINE	The device is offline (e.g. the operator has taken the device offline by turning a switch or pulling out the device).
WFS_ALM_DEVPOWEROFF	The device is powered off or physically not connected.
WFS_ALM_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_ALM_DEVUSERERROR	The device is present but a person is preventing proper device operation. The application should suspend the device operation or remove the device from service until the Service Provider generates a device state change event indicating the condition of the device has changed e.g. the error is removed (WFS_ALM_DEVONLINE) or a permanent error condition has occurred (WFS_ALM_DEVHWERROR).
WFS_ALM_DEVHWERROR	The device is present but inoperable due to a hardware fault that prevents it from being used.
WFS_ALM_DEVBUSY	The device is busy and unable to process an execute command at this time.
WFS_ALM_DEVFRAUDATTEMPT	The device is present but has detected a fraud attempt.

bAlarmSet

Specifies the state of the Alarm as either Reset (FALSE) or Set (TRUE).

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.

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_ALM_DEVPOWEROFF when the device has been removed or WFS_ALM_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_ALM_CAPABILITIES

Description This command is used to retrieve the capabilities of the Alarm.

Input Param None.

Output Param LPWFSALMCAPS lpCaps;

```
typedef struct _wfs_alm_caps
{
    WORD                wClass;
    BOOL                bProgrammaticallyDeactivate;
    LPSTR               lpszExtra;
} WFSALMCAPS, *LPWFSALMCAPS;
```

wClass

Specifies the logical service class as WFS_SERVICE_CLASS_ALM.

bProgrammaticallyDeactivate

Specifies whether the Alarm can be programmatically deactivated (TRUE) or can not be programmatically deactivated (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.

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.

5. Execute Commands

5.1 WFS_CMD_ALM_SET_ALARM

Description This command is used to trigger an Alarm.

Input Param None.

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 as a result of this command:

Value	Meaning
WFS_SRVE_ALM_DEVICE_SET	The alarm device has been triggered.

Comments None.

5.2 WFS_CMD_ALM_RESET_ALARM

Description This command is used to reset an Alarm.

Input Param None.

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 as a result of this command:

Value	Meaning
WFS_SRVE_ALM_DEVICE_RESET	The alarm device has been reset.

Comments None.

5.3 WFS_CMD_ALM_RESET

Description	Sends a service reset to the Service Provider.
Input Param	None.
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	This command is used by an application control program to cause a device to reset itself to a known good condition.

6. Events

6.1 WFS_SRVE_ALM_DEVICE_SET

Description	The Alarm has been set (triggered) by an external event or a programmatic request to set (trigger) the Alarm.
Event Param	None.
Comments	None.

6.2 WFS_SRVE_ALM_DEVICE_RESET

Description	The Alarm has been manually or programmatically reset.
Event Param	None.
Comments	None.

7. C - Header file

```

/*****
*
* xfsalm.h      XFS - Alarm (ALM) definitions
*
*              Version 3.10  (29/11/2007)
*
*****/

#ifndef __INC_XFSALM_H
#define __INC_XFSALM_H

#ifdef __cplusplus
extern "C" {
#endif

#include <xfsapi.h>

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

/* values of WFSALMCAPS.wClass */

#define WFS_SERVICE_CLASS_ALM (11)
#define WFS_SERVICE_CLASS_VERSION_ALM 0x0A03 /*Version 3.10 */
#define WFS_SERVICE_CLASS_NAME_ALM "ALM"

#define ALM_SERVICE_OFFSET (WFS_SERVICE_CLASS_ALM * 100)

/* ALM Info Commands */

#define WFS_INF_ALM_STATUS (ALM_SERVICE_OFFSET + 1)
#define WFS_INF_ALM_CAPABILITIES (ALM_SERVICE_OFFSET + 2)

/* ALM Execute Commands */

#define WFS_CMD_ALM_SET_ALARM (ALM_SERVICE_OFFSET + 1)
#define WFS_CMD_ALM_RESET_ALARM (ALM_SERVICE_OFFSET + 2)
#define WFS_CMD_ALM_RESET (ALM_SERVICE_OFFSET + 3)

/* ALM Messages */

#define WFS_SRVE_ALM_DEVICE_SET (ALM_SERVICE_OFFSET + 1)
#define WFS_SRVE_ALM_DEVICE_RESET (ALM_SERVICE_OFFSET + 2)

/* values of WFSALMSTATUS.fwDevice */

#define WFS_ALM_DEVONLINE WFS_STAT_DEVONLINE
#define WFS_ALM_DEVOFFLINE WFS_STAT_DEVOFFLINE
#define WFS_ALM_DEVPPOWEROFF WFS_STAT_DEVPPOWEROFF
#define WFS_ALM_DEVNODEVICE WFS_STAT_DEVNODEVICE
#define WFS_ALM_DEVHWERROR WFS_STAT_DEVHWERROR
#define WFS_ALM_DEVUSERERROR WFS_STAT_DEVUSERERROR
#define WFS_ALM_DEVBUSY WFS_STAT_DEVBUSY
#define WFS_ALM_DEVFRAUDATTEMPT WFS_STAT_DEVFRAUDATTEMPT

/*=====*/
/* ALM Info Command Structures */
/*=====*/

typedef struct _wfs_alm_status
{
    WORD fwDevice;
    BOOL bAlarmSet;
    LPSTR lpszExtra;
} WFSALMSTATUS, *LPWFSALMSTATUS;

```

```
typedef struct _wfs_alm_caps
{
    WORD                wClass;
    BOOL                bProgrammaticallyDeactivate;
    LPSTR               lpszExtra;
} WFSALMCAPS, *LPWFSALMCAPS;

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

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