EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

WORKSHOP AGREEMENT

CWA 14050-11

November 2000

ICS 35.200; 35.240.40

Extensions for Financial Services (XFS) interface specification - Release 3.0 - Part 11: Vendor Dependent Mode Class Interface

This CEN Workshop Agreement can in no way be held as being an official standard as developed by CEN National Members.

Ref. No CWA 14050-11:2000 E

Rue de Stassart, 36 • B-1050 Bruxelles
Tel : +32 2 550 08 11 • Fax : +32 2 550 08 19

Table of Contents

Foreword

This CWA is revision 3.0 of the XFS interface specification.

The move from an XFS 2.0 specification (CWA 13449) to a 3.0 specification has been prompted by a series of factors.

Initially, there has been a technical imperative to extend the scope of the existing specification of the XFS Manager to include new devices, such as the Card Embossing Unit.

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

Finally, it is also clear that our customers and the market are asking for an update to a specification, which is now over 2 years old. Increasing market acceptance and the need to meet this demand is driving the Workshop towards this release.

The clear direction of the CEN/ISSS XFS Workshop, therefore, is the delivery of a new Release 3.0 specification based on a C API. It will be delivered with the promise of the protection of technical investment for existing applications and the design to safeguard future developments.

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 2000-10-18. 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 3.0.

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 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 Class Interface - Programmer's Reference

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

Part 16: Application Programming Interface (API) - Service Provider Interface (SPI) - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 17: Printer Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 18: Identification Card Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 19: Cash Dispenser Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 20: PIN Keypad Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 21: Depository Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 22: Text Terminal Unit Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 23: Sensors and Indicators Unit Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 24: Camera Device Class Interface - Migration from Version 2.0 (see CWA 13449) to Version 3.0 (this CWA) - Programmer's Reference

Part 25: Identification Card Device Class Interface - PC/SC Integration Guidelines

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.cenorm.be/isss/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.

Revision History:

2.00	November 11, 1996	Initial release
3.00	October 18, 2000	Updated for XFS version 3.00

1. Introduction

1.1 Background to Release 3.0

The CEN XFS Workshop is a continuation of the Banking Solution Vendors Council workshop and maintains a technical commitment to the Win 32 API. However, the XFS Workshop has extended the franchise of multi vendor software by encouraging the participation of both banks and vendors to take part in the deliberations of the creation of an industry standard. This move towards opening the participation beyond the BSVC's original membership has been very succesful with a current membership level of more than 20 companies.

The fundamental aims of the XFS Workshop are to promote a clear and unambiguous specification for both service providers and application developers. This has been achieved to date by sub groups working electronically and quarterly meetings.

The move from an XFS 2.0 specification to a 3.0 specification has been prompted by a series of factors. Initially, there has been a technical imperative to extend the scope of the existing specification of the XFS Manager to include new devices, such as the Card Embossing Unit.

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

Finally, it is also clear that our customers and the market are asking for an update to a specification, which is now over 2 years old. Increasing market acceptance and the need to meet this demand is driving the Workshop towards this release.

The clear direction of the XFS Workshop, therefore, is the delivery of a new Release 3.0 specification based on a C API. It will be delivered with the promise of the protection of technical investment for existing applications and the design to safeguard future developments.

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 the Extensions for Financial Services is to standardize command 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 the union 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_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. Vendor Dependent Mode

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

In all device classes there needs to be some method of going into a vendor specific mode to allow for capabilities which go beyond the scope of the current XFS specifications. A typical usage of such a mode might be to handle some configuration or diagnostic type of function or perhaps perform some 'off-line' testing of the device. These functions are normally available on Self-Service devices in a mode traditionally referred to as Maintenance Mode or Supervisor Mode and usually require operator intervention. It is those vendor-specific functions not covered by (and not required to be covered by) XFS Service Providers that will be available once the device is in Vendor-Dependent mode.

This service provides the mechanism for switching to and from Vendor Dependent Mode. The VDM Service Provider can be seen as the central point through which all Enter and Exit VDM requests are synchronised.

Entry into, or exit from, Vendor Dependent Mode can be initiated either by an application or by the VDM Service Provider itself. If initiated by an application, then this application needs to issue the appropriate command to request entry or exit. If initiated by the VDM Service Provider i.e. some vendor dependent switch, then these request commands are in-appropriate and not issued.

Once the entry request has been made, all registered applications will be notified of the entry request by an event message. These applications must attempt to close all open sessions with XFS Service Providers as soon as possible and then issue an acknowledgement command to the VDM Service Provider when ready. Once all applications have acknowledged, the VDM Service Provider will issue event messages to these applications to indicate that the System is in Vendor Dependent Mode.

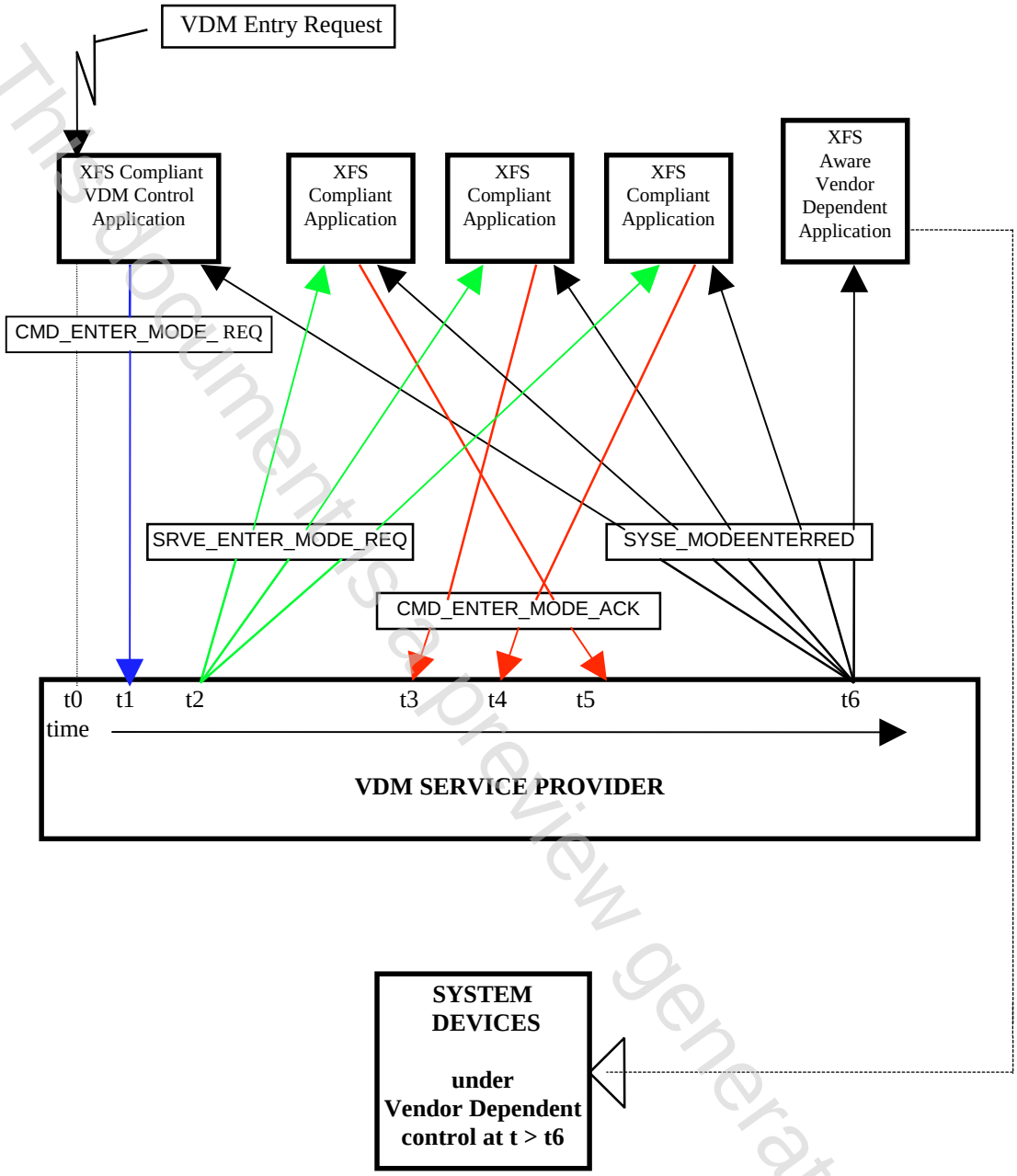
Similarly, once the exit request has been made all registered applications will be notified of the exit request by an event message. These applications must then issue an acknowledgement command to the VDM Service Provider immediately. Once all applications have acknowledged, the VDM Service Provider will issue event messages to these applications to indicate that the System has exited from Vendor Dependent Mode.

Thus, XFS compliant applications that do not need the system to be in Vendor Dependent Mode, must comply with the following:

- Every XFS application should open a session with the VDM ServiceProvider passing a valid ApplId and then register for all VDM entry and exit notices.
- Before opening any session with any other XFS Service Provider, check the status of the VDM Service Provider. If Vendor Dependent Mode is not “Inactive”, do not open a session.
- When getting a VDM entry notice, close all open sessions with all other XFS Service Providers as soon as possible and issue an acknowledgement for the entry to VDM.
- When getting a VDM exit notice, acknowledge at once.
- When getting a VDM exited notice, re-open any required sessions with other XFS Service Providers.

This is mandatory for self-service but optional for branch.

VDM Entry triggered by XFS Application

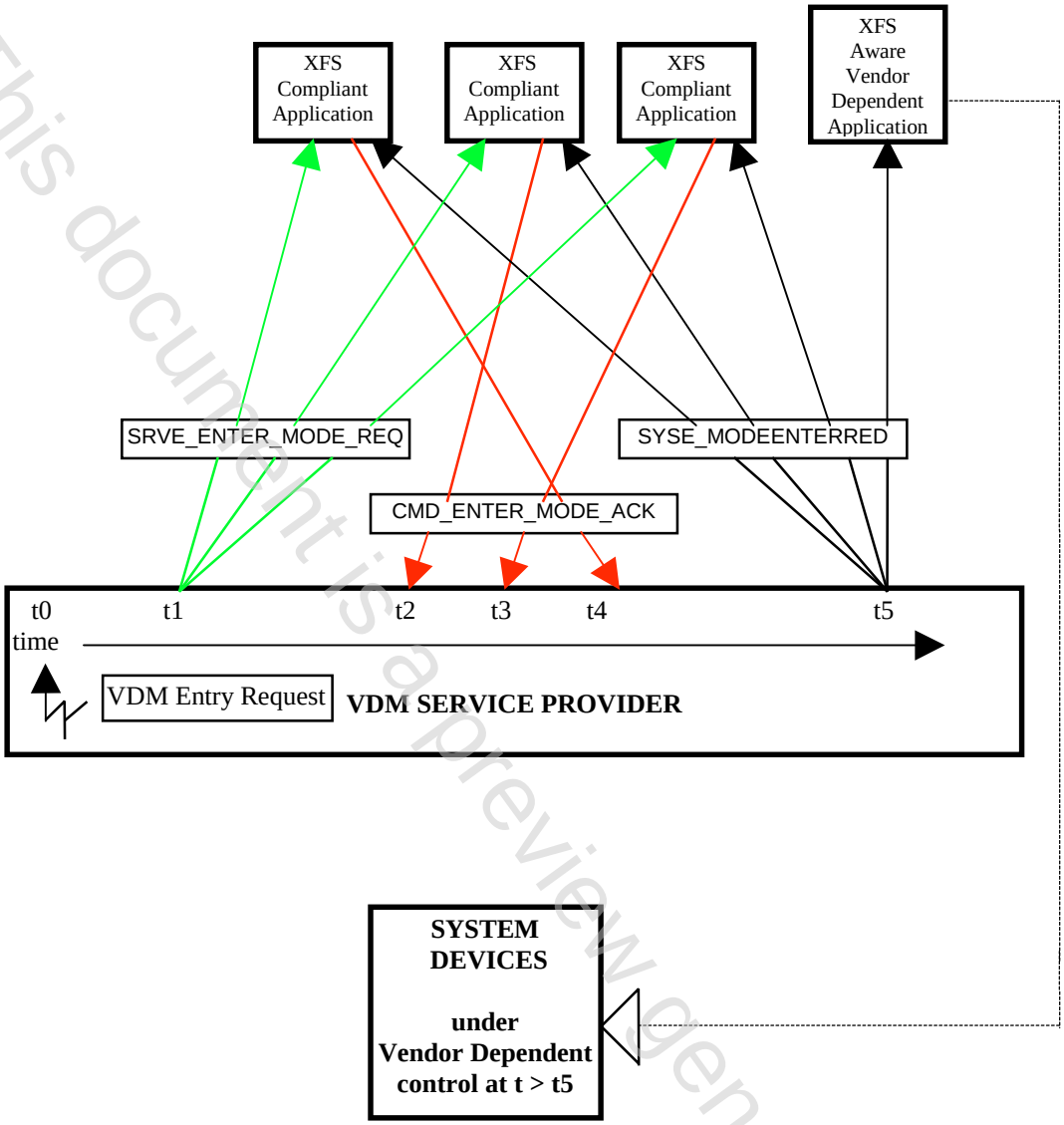


At time t0, status is “Inactive” and a request to Enter VDM arises from within the Application system.

At time t1, an Application Process/Thread/Function issues the CMD_ENTER_MODE_REQ Execute cmd.
Status then becomes “Enter Pending”.
At time t2, the VDM Service Provider issues the SRVE_ENTER_MODE_REQ Event to all registered applications.
At time t3, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom a XFS Compliant Application
At time t4, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom another XFS Compliant Application
At time t5, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom the last XFS Compliant Application
At time t6, the VDM Service Provider issues the SYSE_MODEENTERED Event to all registered applications
Status then becomes “Active”.

The system is now in Vendor Dependent Mode and the Vendor Dependent Application can exclusively use the system devices in a Vendor Dependent manner.

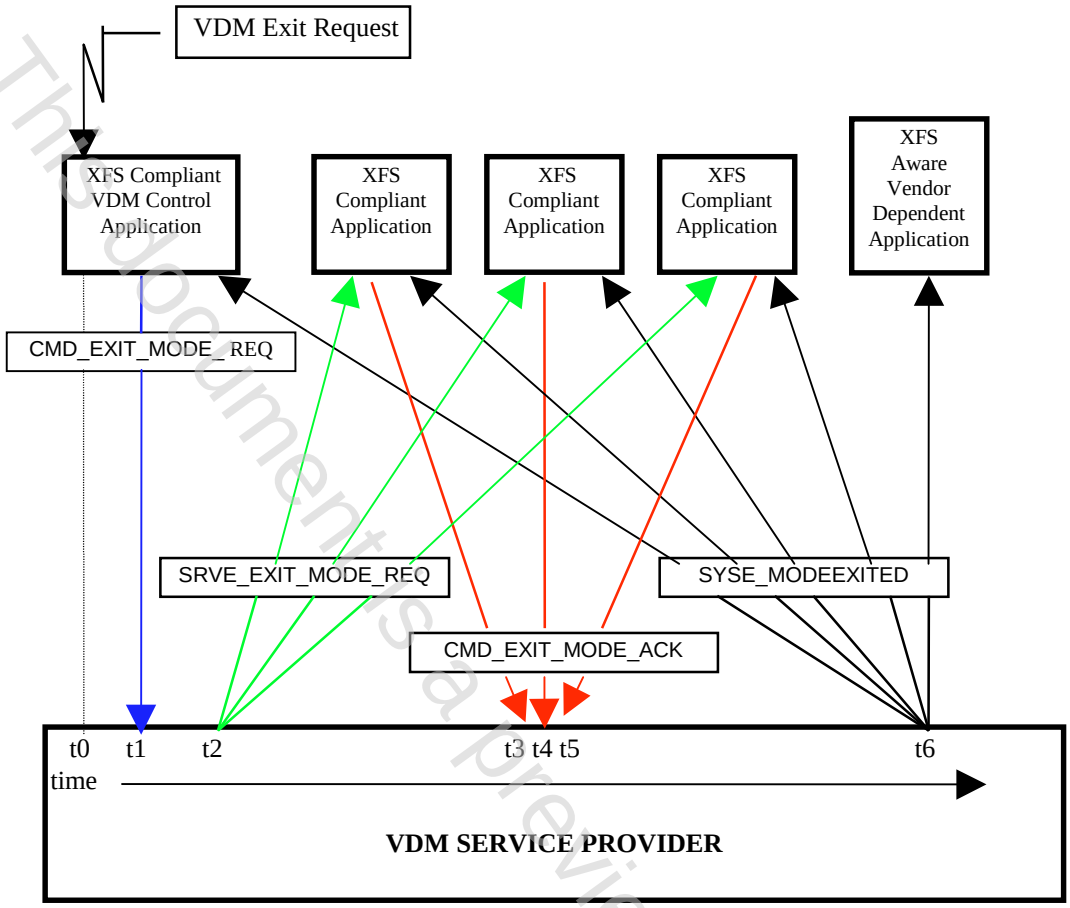
VDM Entry triggered by Vendor Dependent Switch



At time t0, status is “Inactive” and a request to Enter VDM arises from within the Vendor System. Status then becomes “Enter Pending”.
At time t1, the VDM Service Provider issues the SRVE_ENTER_MODE_REQ Event to all registered applications.
At time t2, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom a XFS Compliant Application
At time t3, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom another XFS Compliant Application
At time t4, the VDM Service Provider receives a CMD_ENTER_MODE_ACK Execute Commandfrom the last XFS Compliant Application
At time t5, the VDM Service Provider issues the SYSE_MODEENTERED Event to all registered applications
Status then becomes “Active”.

The system is now in Vendor Dependent Mode and the Vendor Dependent Application can exclusively use the system devices in a Vendor Dependent manner.

VDM Exit triggered by XFS Application



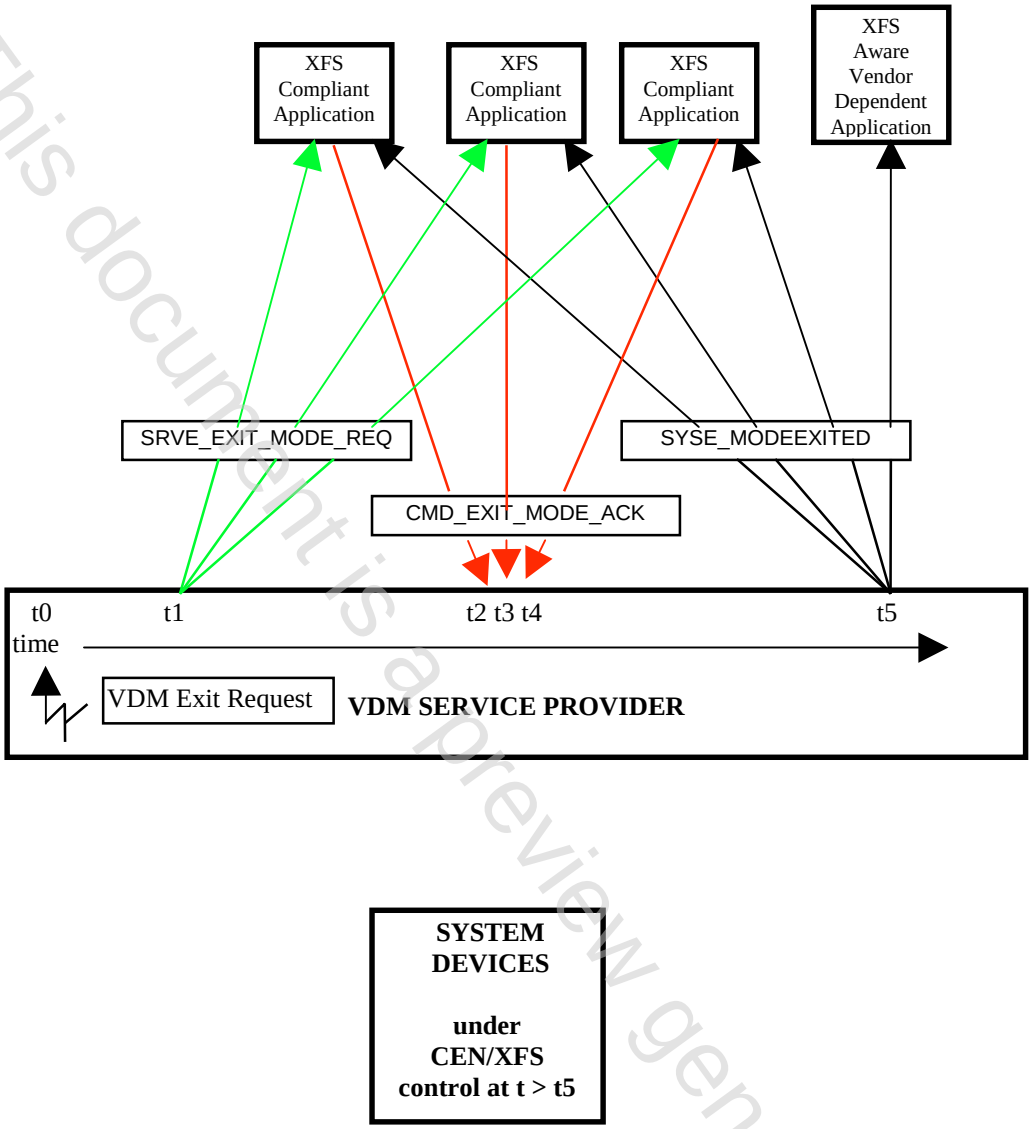
SYSTEM DEVICES

under CEN/XFS control at t > t6

At time t0, status is “Active” and a request to Exit VDM arises from within the Application system.
At time t1, an Application Process/Thread/Function issues the CMD_EXIT_MODE_REQ Execute cmd.
Status then becomes “Exit Pending”.
At time t2, the VDM Service Provider issues the SRVE_EXIT_MODE_REQ Event to all registered applications.
At time t3, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom a XFS Compliant Application
At time t4, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom another XFS Compliant Application
At time t5, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom the last XFS Compliant Application
At time t6, the VDM Service Provider issues the SYSE_MODEEXITED Event to all registered applications
Status then becomes “Inactive”.

The system is now no longer in Vendor Dependent Mode and the XFS Compliant Applications can re-open any required services with other XFS Service Providers.

VDM Exit triggered by Vendor Dependent Switch



At time t0, status is “Active” and a request to Exit VDM arises from within the Vendor System.
Status then becomes “Exit Pending”.
At time t1, the VDM Service Provider issues the SRVE_EXIT_MODE_REQ Event to all registered applications.
At time t2, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom a XFS Compliant Application
At time t3, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom another XFS Compliant Application
At time t4, the VDM Service Provider receives a CMD_EXIT_MODE_ACK Execute Commandfrom the last XFS Compliant Application
At time t5, the VDM Service Provider issues the SYSE_MODEEXITED Event to all registered applications.
Status then becomes “Inactive”.

The system is now no longer in Vendor Dependent Mode and the XFS Compliant Applications can re-open any required services with other XFS Service Providers.

3. References

1. XFS Application Programming Interface (API)/Service Provider Interface (SPI), Programmer's Reference Revision 3.00, October 18, 2000