

CONTRIBUTION TO SONET INTEROPERABILITY FORUM

SIF PROJECT: SIF Remote Login Subgroup

TITLE: Profiling XAP for OS/CIT Systems

SOURCE: ATOS (former Sligos Marben)

CONTACTS: Marc Degieux ATOS (former Sligos Marben)
Tel: (33) 1 41 28 43 34
E-mail: mdegieux@clamart.marben.fr

Jerome Moisand Lucent Technologies
Tel: (508) 960 4637
E-mail: j.moisand@lucent.com

DATE: June 16, 1997

DISTRIBUTION: SIF

ABSTRACT

This contribution specifies the use of XAP as the ACSE/Presentation API for applications located on a CIT or an OS system.

The way to precisely define profiles of XAP is described. Then a profile defined as the « Core Profile » is detailed.

NOTICE

This contribution has been prepared to assist SIF. This document is offered to SIF as a basis for discussion and is not a binding proposal on ATOS (former Sligos Marben) or any other company. The requirements presented in this document are subject to change in form and numerical value after more study. ATOS (former Sligos Marben) specifically reserves the right to add to, amend, or withdraw the statements contained herein.

This document has received the approval of the SONET Interoperability Forum (SIF).
August 28, 1997

1. INTRODUCTION 3

1.1 PURPOSE OF THIS DOCUMENT..... 3

1.2 REFERENCES 3

1.3 ACRONYMS AND ABBREVIATIONS..... 3

1.4 REVISION HISTORY 5

2. OVERVIEW 6

2.1 “CORE” PROFILE..... 6

2.2 “SYNCHRONIZATION SERVICES” PROFILE 6

2.3 “CORE WITH AUTHENTICATION” PROFILE..... 6

3. HOW TO DEFINE A PROFILE 7

4. “CORE” PROFILE 7

4.1 XAP FUNCTION CALLS 7

4.1.1 *Functions not supported*..... 7

4.1.2 *Functions supported*..... 8

4.1.3 *ap_bind*..... 8

4.1.4 *ap_error* 8

4.1.5 *ap_poll* 8

4.2 XAP OSI PRIMITIVES 9

4.2.1 *Primitives not supported* 9

4.2.2 *Primitives supported* 9

4.2.3 *A_ASSOC_xxx* 9

4.2.4 *P_DATA_xxx* 10

4.2.5 *A_RELEASE_xxx* 10

4.2.6 *A_ABORT_xxx*..... 10

4.3 XAP ENVIRONMENT ATTRIBUTES 10

4.4 XAP COMMANDS AND FILE FORMATS..... 11

4.5 MISCELLANEOUS..... 11

4.5.1 *Multithreading* 11

4.5.2 *Use of an XAP Instance*..... 11

5. OTHER PROFILES 12

5.1 “CORE WITH AUTHENTICATION” PROFILE..... 12

5.2 “SYNCHRONIZATION SERVICES” PROFILE 12

6. REQUIREMENTS FOR CONFORMING IMPLEMENTATIONS 12

1. Introduction

1.1 Purpose of this document

This specification complements the SIF specification [SOFT-ARCH] for Management Systems like Craft Interface Terminal (CIT) systems or Operation Systems (OS).

This specification requires the use of XAP (as defined in [XAP]) on such systems as the standardized API when building applications making a direct use of ACSE/Presentation services, and details reduced profiles for the XAP programming interface.

Use of XAP on another kind of SONET system (e.g. Network Element) is not precluded, although not part of this specification.

The objectives of defining such reduced profiles are the following :

- define very precisely a common subset of the XAP programming interface, in order to increase portability of vendor-specific applications, independently of the origin of a platform component like the XAP library and the corresponding OSI stack.
- define a reduced subset of the XAP programming interface, in order to simplify implementability of the XAP library and corresponding OSI stack for a CIT/OS, and therefore to reduce the time to market of such a platform.

In order to reach these objectives, some reasonable assumptions on the vendor-specific applications that will make use of the XAP API will be made.

1.2 References

The following documents are referenced in this document :

[SOFT-ARCH]	SIF-DN-9706-045 : SIF OS/CIT Software Platform Architecture Specification
[GR-253]	Bellcore GR-253-CORE (1995) : Generic Requirements : SONET Transport Systems : Common Generic Criteria.
[XAP]	X/Open CAE Specification (1993) : ACSE/Presentation API (XAP)
[XOSI]	SIF-116-0895R3 : Remote Login Implementation Requirements Specification, Issue 1

1.3 Acronyms and Abbreviations

ACSE	Association Control Service Element
API	Application Programming Interface
CAE	Common Application Environment
CIT	Craft Interface Terminal

**This document has received the approval of the SONET Interoperability Forum (SIF).
August 28, 1997**

CMIP	Common Management Information Protocol
DAP	(ITU-T X.500) Directory Access Protocol
FTAM	File Transfer, Access and Management
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
LAN	Local Area Network
NE	Network Element
NSAP	Network Service Access Point
PSAP	Presentation Service Access Point
OS	Operations System
OSI	Open Systems Interconnection
ROSE	Remote Operations Service Element
RPC	Remote Procedure Call
RRP	(ANSI T1.245) Registration Request Protocol
TL1	Transaction Language 1
XAP	X/Open ACSE/Presentation services API
XTP	X Terminal Protocol
WAN	Wide Area Network

1.4 Revision History

ISSUE	DATE	SUMMARY OF CHANGES
First Draft	10-Feb-1997	Very early draft
Second Draft	15-Apr-1997	Document completed Remove initiator-only variant
Third Draft	9-May-1997	Reviewed following Baltimore SIF meeting (April 1997)
Fourth Draft	28-May-1997	Reviewed following RL phone conference meeting (27-May-1997)
Fifth Draft	16-Jun-1997	Minor changes following Woodland Hills SIF meeting (June 1997)
Voted document	28-Aug-1997	Voted during Ypsilanti SIF plenary meeting (August 1997)

2. Overview

2.1 “Core” Profile

This profile targets applications making use of :

- association establishment (without authentication)
- full duplex data exchanges
- orderly release (only “normal” variant)
- association abort

Examples of such applications are :

- ROSE-based applications (e.g. CMIP, X.500 DAP, T1.245 RRP)
- TL1-based applications
- various kinds of RPCs built on top of full duplex data exchange
- X.11 XTP protocol mapping over OSI (cf. [XOSI])

Support of this « Core » profile is mandatory.

2.2 “Synchronization services” profile

This profile complements the « Core » profile, adding support of Session synchronization services. This may be useful when building on top of XAP :

- FTAM processing providing recovery services (an FTAM application service element and/or an FTAM monitor)
- transaction-processing making use of Session synchronization services

It has to be emphasized that OSI stack vendors may choose the option of providing such kind of application-layer service element bundled with the Presentation/ACSE stack (with or without internally making use of some XAP flavor). Therefore, when using the FTAM application service element, a CIT/OS application will typically make use of a higher-level API (an “FTAM API”) or make use of an FTAM monitor, and not make a direct use of the XAP API.

This is why providing the “synchronization services” profile is optional ; not having it doesn’t preclude making use of FTAM services.

2.3 “Core with Authentication” profile

This optional profile complements the “Core” profile, adding support of authentication mechanisms, through the ACSE authentication functional unit.

3. How to define a profile

The XAP library mechanisms are mainly defined by :

- XAP function calls
- XAP OSI primitives
- XAP environment attributes
- XAP commands

Therefore, giving the list of such XAP mechanisms, with relevant comments on each topic, will help to precisely define an XAP profile.

Being conformant to such a profile doesn't preclude a software vendor providing a product having additional capabilities, but allows defining common, minimal subsets that can be relied on.

4. "Core" Profile

This profile refines the [XAP] specification, and targets applications making use of :

- association establishment (without authentication)
- full duplex data exchanges
- orderly release (only "normal" variant)
- association abort

As a consequence :

- only Kernel functional unit is required at the ACSE level
- only Kernel functional unit is required at the Presentation level
- only Kernel and Duplex functional units are required at the Session level

4.1 XAP function calls

4.1.1 Functions not supported

Support for the following XAP functions is not required :

- `ap_init_env`
- `ap_ioctl`
- `ap_look`
- `ap_save`
- `ap_restore`

4.1.2 Functions supported

Support for the following XAP functions is required :

- ap_bind
- ap_close
- ap_error
- ap_free
- ap_get_env
- ap_open
- ap_poll
- ap_rcv
- ap_set_env
- ap_snd

4.1.3 ap_bind

The optional NSAP wildcard mechanism is required in order to help application designers to avoid having to parameterize their software with an NSAP address, whose value changes from one system to another.

The selector wildcard mechanism is not required, since Presentation/Session/Transport selectors are well defined by [GR253] for the SONET environment.

4.1.4 ap_error

Only support for the English language is required.

4.1.5 ap_poll

Since the use of expedited (out of band) data is not required, the requirements about the processing of the « events » fields are reduced to :

- AP_POLLIN (AP_POLLRDNORM being then equivalent)
- AP_POLLOUT (AP_POLLWRNORM being then equivalent)

4.2 XAP OSI primitives

4.2.1 Primitives not supported

Support for the following XAP primitives is not required :

- A_PABORT_REQ
- P_ACTxxx
- P_CDATA_xxx
- P_CTRLGIVE_xxx
- P_RESYNC_xxx
- P_SYNCMINOR_xxx
- P_SYNCMAJOR_xxx
- P_TDATA_xxx
- P_TOKENGIVE_xxx
- P_TOKENPLEASE_xxx
- P_XDATA_xxx
- P_PXREPORT_xxx
- P_UXREPORT_xxx

4.2.2 Primitives supported

Support for the following XAP primitives is required :

- A_ABORT_xxx
- A_ASSOC_xxx
- A_PABORT_IND
- A_RELEASE_xxx
- P_DATA_xxx

4.2.3 A_ASSOC_xxx

The encoded user data size shall be consistent with an underlying Session layer restricting Session user data to no more than 10240 octets.

See also the section about environment attributes that reduces the requirements about association establishment.

4.2.4 P_DATA_xxx

Support for user data size up to 65535 is required (cf. [GR253]).

Token processing is not required.

Flow control processing (sending and receiving side) is required.

4.2.5 A_RELEASE_xxx

Support for user data size up to 65535 is required.

Only support for normal release request is required (cf. `cdata->rsn` field).

When processing a release indication, it shall be accepted (cannot be rejected).

4.2.6 A_ABORT_xxx

Support for user data size up to 65535 is required.

4.3 XAP environment attributes

Only support for the environment attributes described in the following section is required :

- AP_BIND_PADDR
- AP_CLD_AEID
- AP_CLD_AEQ
- AP_CLD_APID
- AP_CLD_APT
- AP_CLG_AEID
- AP_CLG_AEQ
- AP_CLG_APID
- AP_CLG_APT
- AP_CNTX_NAME
- AP_DCS
- AP_DPCN
- AP_DPCR
- AP_FLAGS
- AP_LCL_PADDR
- AP_LIB_SEL
- AP_PCDL

- AP_PCDRL
- AP_QLEN
- AM_REM_PADDR
- AP_ROLE_ALLOWED
- AP_ROLE_CURRENT
- AP_RSP_AEID
- AP_RSP_AEQ
- AP_RSP_APID
- AP_RSP_APT

Note that in Presentation addresses, support for multiple NSAP addresses is not required.

4.4 XAP commands and file formats

Support of the `ap_osic` command is not required.

As a consequence, support of environment initialization files is not required.

4.5 Miscellaneous

4.5.1 Multithreading

The implementation of XAP has to be safe against applications making use of multithreading techniques.

But as a simplifying hypothesis, it may be assumed that no concurrent operations will be performed on a given XAP instance (therefore on a given « fd »).

4.5.2 Use of an XAP Instance

Use of an XAP instance is limited to one association.

Support of XAP instance reuse is not required (nor recommended).

5. Other profiles

5.1 “Core with Authentication” profile

This is left for further study.

5.2 “Synchronization services” profile

This is left for further study.

6. Requirements for Conforming Implementations

The following table describes the specific items that implementations claiming conformance to these requirements must support.

Optional requirements are tagged with an “O” mark ; mandatory requirements are tagged with an “M” mark.

Such requirements may be strengthened for a given platform type (e.g. in a document like [SOFT-ARCH]), only the minimal requirements shared by every platform are defined here.

No	Description	M/O	Reference
R1	XAP “Core” Profile	M	Section 4.