

INTERNATIONAL
STANDARDIZED
PROFILE

**ISO/ISP
14226-3**

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**Industrial automation systems —
International Standardized Profile AMM11:
MMS General Applications Base Profile —**

Part 3:
Specific MMS requirements

*Systèmes d'automatisation industrielle — Profil normalisé international
AMM11: Profil de base pour applications générales MMS —*

Partie 3: Prescriptions spécifiques pour MMS



Reference number
ISO/ISP 14226-3:1996(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/ISP 14226-3 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 5, *Architecture and communications*, with the collaboration of

- Asia-Oceania Workshop (AOW);
- European Workshop for Open Systems (EWOS);
- Open Systems Environment Implementors' Workshop (OIW).

ISO/ISP 14226 consists of the following parts, under the general title *Industrial automation systems - International Standardized Profile AMM11: MMS General Applications Base Profile*:

- *Part 1: Specification of ACSE, Presentation and Session protocols for use by MMS*
- *Part 2: Common MMS requirements*
- *Part 3: Specific MMS requirements*

Annex A forms an integral part of this part of ISO/ISP 14226.

Introduction

ISO/ISP 14226 is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a basis for the development of uniform, internationally recognized system tests.

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Industrial automation systems – International Standardized Profile AMM11: MMS General Applications Base Profile –

Part 3:

Specific MMS requirements

1 Scope

1.1 General

This part of ISO/ISP 14226 specifies the MMS requirements specific to ISO/ISP 14226. This part of ISO/ISP 14226, when used in conjunction with ISO/ISP 14226-1 and ISO/ISP 14226-2, forms the AMM11 Profile that specifies how the MMS standard shall be used to provide MMS functions required by general applications.

1.2 Position within the Taxonomy

This part of ISO/ISP 14226 is the third part of a multi-part ISP identified in ISO/IEC TR 10000-2 as "AMM11, MMS General Applications Base Profile".

It may be combined with any T-Profile specifying the OSI connection-mode transport service.

2 Normative References

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/ISP 14226. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/ISP 14226 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO/IEC 9506-1:1990, *Industrial automation systems - Manufacturing Message Specification -- Part 1: Service definition*.

ISO/IEC 9506-1:1990/Amd.1:1993, *Industrial automation systems - Manufacturing Message Specification - Part 1: Service definition AMENDMENT 1: Data exchange*.

ISO/IEC 9506-1:1990/Amd.2:1995, *Industrial automation systems - Manufacturing Message Specification - Part 1: Service definition AMENDMENT 2: Conditioned service response*.

ISO/IEC 9506-1:1990/Cor.1:1995, *Industrial automation systems - Manufacturing Message Specification - Part 1: Service definition TECHNICAL CORRIGENDUM 1*.

ISO/IEC 9506-1:1990/Cor.2:1995, *Industrial automation systems - Manufacturing Message Specification - Part 1: Service definition TECHNICAL CORRIGENDUM 2.*

ISO/IEC 9506-2:1990, *Industrial automation systems -- Manufacturing Message Specification -- Part 2: Protocol specification.*

ISO/IEC 9506-2:1990/Amd.1:1993, *Industrial automation systems - Manufacturing Message Specification - Part 2: Protocol specification AMENDMENT 1: Data exchange.*

ISO/IEC 9506-2:1990/Amd.2:1995, *Industrial automation systems - Manufacturing Message Specification - Part 2: Protocol specification AMENDMENT 2: Conditioned service response.*

ISO/IEC 9506-2:1990/Cor.1:1995, *Industrial automation systems - Manufacturing Message Specification - Part 2: Protocol specification TECHNICAL CORRIGENDUM 1.*

ISO/IEC 9506-2:1990/Cor.2:1995, *Industrial automation systems - Manufacturing Message Specification - Part 2: Protocol specification TECHNICAL CORRIGENDUM 2.*

ISO/IEC TR 10000-1:1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: General principles and documentation framework.*

ISO/IEC TR 10000-2:1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and Taxonomy for OSI profiles.*

ISO/IEC ISP 10607-3:1995, *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 3: AFT11 - Simple File Transfer Service (unstructured).*

ISO/ISP 14226-1:1996, *Industrial automation systems - International Standardized Profile AMM11: MMS General Applications Base Profile - Part 1: Specification of ACSE, Presentation, and Session protocols for use by MMS.*

ISO/ISP 14226-2:1996, *Industrial automation systems - International Standardized Profile AMM11: MMS General Applications Base Profile - Part 2: Common MMS requirements.*

3 Definitions

For the purposes of this part of ISO/ISP 14226, the definitions given in ISO/ISP 14226-2 apply.

4 Abbreviations

For the purposes of this part of ISO/ISP 14226, the abbreviations given in ISO/ISP 14226-2 apply.

5 Conformance Requirements

This part of ISO/ISP 14226 states requirements upon implementations to achieve interworking. A claim of conformance to this part of ISO/ISP 14226 is a claim that all requirements in the relevant base standards are satisfied, and that all requirements in the following subclauses and in annex A are satisfied. Annex A states the relationship between these requirements and those of base standards.

The conformance requirements of this part of ISO/ISP 14226 are described in terms of "Client Conformance Requirements (Client-CR)" and "Server Conformance Requirements (Server-CR)" for each service.

An MMS implementation compliant with the Client-CR for all services in this part of ISO/ISP 14226 is called a "Client Implementation".

An MMS implementation compliant with the Server-CR for all services in this part of ISO/ISP 14226 is called a "Server Implementation".

5.1 General Requirements for use of all parts of MMS

An MMS implementation compliant with this part of ISO/ISP 14226 shall be required to support only the abstract syntax defined in clause 19 of ISO/IEC 9506-2:1990.

5.2 Service-specific Requirements

There are no requirements additional to those in ISO/ISP 14226-2.

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Annex A
(normative)
ISPICS Requirements List

A.1 General

This annex describes the specific MMS requirements in terms of tables which were derived from the base standard and ISO/ISP 14226-2. They are intended to give a precise specification of requirements for general MMS applications.

A.2 Classification of Requirements

Throughout this annex, to specify the level of support for each feature, the following classification is used.

Client-CR : Client Conformance Requirement

Server-CR : Server Conformance Requirement

A.2.1 Base Column

The "Base" column reflects the definitions and specifications in ISO/IEC 9506-1:1990 and ISO/IEC 9506-2:1990. Each entry in this column is chosen from the following list:

mandatory; m : That feature shall be supported, i.e. its syntax and procedures shall be implemented as specified in the base standard.

However, it is not a requirement that the feature shall be used in all instances of communication, unless mandated by the base standard .

optional; o : Any feature denoted by "o" is left to the implementation as to whether that feature is implemented or not.

If a parameter is optionally supported, then the syntax shall be implemented, but it is left to each implementation whether the procedures are implemented or not.

A.2.2 F/S Column

The "F/S" column reflects the requirements of this Functional Standard. Each entry in this column is chosen from the following terminology:

supported; m : Any feature denoted by "m" is mandatory or optional in the base standard. That feature shall be supported, i.e. its syntax and procedures shall be implemented as specified in the base standard or in this part of ISO/ISP 14226 by all implementations claiming conformance to this part of ISO/ISP 14226.

However, it is not a requirement that the feature shall be used in all instances of communication, unless mandated by the base standard or stated otherwise in this part of this A-Profile.

optionally supported; o : Any feature denoted by "o" is left to the implementation as to whether that feature is implemented or not.

If a parameter is optionally supported, then the syntax shall be implemented, but it is left to each implementation whether the procedures are implemented or not.

conditionally supported; c : Any feature denoted by "c<n>" shall be supported under the condition referenced c<n> specified in this part of ISO/ISP 14226, where <n> stands for a number. If these conditions are not met, the feature is outside the scope of this part of ISO/ISP 14226.

excluded; x : Any feature denoted by "x" is excluded in this part of ISO/ISP 14226, i.e. an implementation shall behave as if the feature is not implemented.

outside of scope; i : Any feature denoted by "i" is outside the scope of this part of ISO/ISP 14226, i.e. it may be ignored, and will therefore not be subject of an ISP conformance test. However the syntax of all parameters of supported PDUs shall be implemented, even if the procedures are not (i.e. the Receiver shall be able to decode the PDU).

A.2.3 Value/Reference

The "Value/Ref." column specifies constraints on values for the parameter and/or contains references to text in this or other documents.

A.2.4 Conditional MACROs

The following MACROs are used in the F/S Column.

STR1 : Any feature denoted by "STR1" is conditioned on the support of STR1 Parameter CBB.

STR2 : Any feature denoted by "STR2" is conditioned on the support of STR2 Parameter CBB.

VADR : Any feature denoted by "VADR" is conditioned on the support of VADR Parameter CBB.

VNAM : Any feature denoted by "VNAM" is conditioned on the support of VNAM Parameter CBB.

VLIS : Any feature denoted by "VLIS" is conditioned on the support of VLIS Parameter CBB.

VSCA : Any feature denoted by "VSCA" is conditioned on the support of VSCA Parameter CBB.

VALT : Any feature denoted by "VALT" is conditioned on the support of VALT Parameter CBB.

REAL : Any feature denoted by "REAL" is conditioned on the support of REAL Parameter CBB.

TPY : Any feature denoted by "TPY" is conditioned on the support of TPY Parameter CBB.

MOD : Any feature denoted by "MOD" is conditioned on the support of MMS modifiers.

A.3 Supported MMS PDU's

A.3.1 Environment and General Management

Ref	MMS PDU	Client-CR				Server-CR			
		Sending		Receiving		Sending		Receiving	
		Base	F/S	Base	F/S	Base	F/S	Base	F/S
1	InitiateRequest	o	m	o	o	o	o	m	m
2	InitiateResponse	o	o	o	m	m	m	o	o
3	InitiateError	o	o	o	m	m	m	o	o
4	ConcludeRequest	o	m	o	o	o	o	m	m
5	ConcludeResponse	o	o	o	m	m	m	o	o
6	ConcludeError	o	o	o	m	m	m	o	o
7	CancelRequest	o	o	o	o	o	o	o	o
8	CancelResponse	o	o	o	o	o	o	o	o
9	CancelError	o	o	o	o	o	o	o	o
10	Reject	m	m	m	m	m	m	m	m

Note: Abort service is provided by ACSE.

A.3.2 MMS Modifiers

Ref	Modifier	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	attachToEventCondition	o	i	o	i
2	attachToSemaphore	o	i	o	i

A.3.3 Parameter CBBs

Ref	Parameter	Base	Client-CR		Server-CR	
			F/S	Value/Ref.	F/S	Value/Ref.
1	str1	o	o		o	
2	str2	o	o		o	
3	vnam	o	c1		c1	
4	valt	o	o		o	

5	vadr	o	c1		c1	
6	vsca	o	i		i	
7	tpy	o	o		o	
8	vlis	o	o		o	
9	real	o	i		i	
10	cei	o	i		i	

c1: See ISO/ISP 14226-2:1996, subclause 5.2.5.4 to determine the requirements for these CBBs.

A.3.4 VMD Support

In this subclause and the following subclauses of clause A.3 the column "MMS PDU's" contains one single entry for each MMS service. In case of a confirmed service this single entry stands for the corresponding Request-, Response- and Error-PDU'S. In case of an unconfirmed service it stands for the corresponding Request-PDU.

For responder role service CBBs, the Client-CR column indicates the support of sending the Request-PDU and receiving the Response-PDU and Error-PDU, whereas, the Server-CR column indicates the support of receiving the Request-PDU and sending the Response-PDU and Error-PDU.

For requester role service CBBs, the Client-CR column indicates the support of receiving the Request-PDU and (in case of a confirmed service) sending the Response-PDU and Error-PDU, whereas, the Server-CR column indicates the support of sending the Request-PDU and (in case of a confirmed service) receiving the Response-PDU and Error-PDU.

NOTE - As an example, the 'm' in the Server-CR column for the Identify service means that the Server implementation has to support the receiving of the Identify-Request PDU and the sending of the Identify-Response PDU and the Identify-Error PDU, whereas the 'o' in the Client-CR column means that the Client implementation may or may not support the sending of the Identify-Request PDU and the receiving of the Identify-Response PDU and the Identify-Error PDU.

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	Status	o	m	o	m
2	UnsolicitedStatus	o	o	o	o
3	GetNameList	o	o	o	o
4	Identify	o	m	m	m
5	Rename	o	i	o	i
6	GetCapabilityList	o	o	o	o

A.3.5 Domain Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	InitiateDownloadSequence	0	0	0	0
2	DownloadSegment	0	0	0	0
3	TerminateDownloadSequence	0	0	0	0
4	InitiateUploadSequence	0	0	0	0
5	UploadSegment	0	0	0	0
6	TerminateUploadSequence	0	0	0	0
7	RequestDomainDownload	0	0	0	0
8	RequestDomainUpload	0	0	0	0
9	LoadDomainContent	0	0	0	0
10	StoreDomainContent	0	0	0	0
11	DeleteDomain	0	0	0	0
12	GetDomainAttributes	0	0	0	0

A.3.6 Program Invocation Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	CreateProgramInvocation	0	0	0	0
2	DeleteProgramInvocation	0	0	0	0
3	Start	0	0	0	0
4	Stop	0	0	0	0
5	Resume	0	0	0	0
6	Reset	0	0	0	0
7	Kill	0	0	0	0
8	GetProgramInvocationAttributes	0	0	0	0

A.3.7 Variable Access

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	Read	0	0	0	0
2	Write	0	0	0	0
3	InformationReport	0	0	0	0
4	GetVariableAccessAttributes	0	0	0	0
5	DefineNamedVariable	0	0	0	0
6	DefineScatteredAccess	0	i	0	i
7	GetScatteredAccessAttributes	0	i	0	i
8	DeleteVariableAccess	0	0	0	0
9	DefineNamedVariableList	0	0	0	0
10	GetNamedVariableListAttributes	0	0	0	0
11	DeleteNamedVariableList	0	0	0	0
12	DefineNamedType	0	0	0	0
13	GetNamedTypeAttributes	0	0	0	0
14	DeleteNamedType	0	0	0	0

A.3.8 Semaphore Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	TakeControl	0	i	0	i
2	RelinquishControl	0	i	0	i
3	DefineSemaphore	0	i	0	i
4	DeleteSemaphore	0	i	0	i
5	ReportSemaphoreStatus	0	i	0	i
6	ReportPoolSemaphoreStatus	0	i	0	i
7	ReportSemaphoreEntryStatus	0	i	0	i

A.3.9 Operator Communication

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	Input	o	o	o	o
2	Output	o	o	o	o

A.3.10 Event Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	DefineEventCondition	o	i	o	i
2	DeleteEventCondition	o	i	o	i
3	GetEventConditionAttributes	o	i	o	i
4	ReportEventConditionStatus	o	i	o	i
5	AlterEventConditionMonitoring	o	i	o	i
6	TriggerEvent	o	i	o	i
7	DefineEventAction	o	i	o	i
8	DeleteEventAction	o	i	o	i
9	GetEventActionAttributes	o	i	o	i
10	ReportEventActionStatus	o	i	o	i
11	DefineEventEnrollment	o	i	o	i
12	DeleteEventEnrollment	o	i	o	i
13	GetEventEnrollmentAttributes	o	i	o	i
14	ReportEventEnrollmentStatus	o	i	o	i
15	AlterEventEnrollment	o	i	o	i
16	EventNotification	o	i	o	i
17	AcknowledgeEventNotification	o	i	o	i
18	GetAlarmSummary	o	i	o	i
19	GetAlarmEnrollmentSummary	o	i	o	i

A.3.11 Journal Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	ReadJournal	o	i	o	i
2	WriteJournal	o	i	o	i
3	InitializeJournal	o	i	o	i
4	ReportJournalStatus	o	i	o	i
5	CreateJournal	o	i	o	i
6	DeleteJournal	o	i	o	i

A.3.12 File Access

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	ObtainFile	o	i	o	i

A.3.13 File Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	FileOpen	o	i	o	i
2	FileRead	o	i	o	i
3	FileClose	o	i	o	i

A.3.14 Data Exchange Management

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	GetDataExchangeAttributes	o	i	o	i
2	ExchangeData	o	i	o	i

A.3.15 Additional PDUs

Ref	MMS PDU	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	Additional PDU	o	x	o	x

A.4 PDU-Specific Requirements

This clause contains tables for all PDUs which have been marked as 'm' or 'o' in the F/S columns of clause A.3. Some of the PDU parameters represent complex structures which are described using the following conventions:

- If a parameter with label <x> is a CHOICE type, the corresponding alternatives are listed below this parameter, using the sub-labels <x>.a, <x>.b, <x>.c, etc.
- If a parameter with label <x> is a SEQUENCE or SEQUENCE OF SEQUENCE type, the sequence members are listed below that parameter using the sub-labels <x>.1, <x>.2, <x>.3, etc.
- Some of the complex parameters are described in separate tables. In these cases, parameter names start with an upper case letter, otherwise parameters start with a lower case letter.

A.4.1 Environment and General Management**A.4.1.1 Initiate Request PDU**

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	localDetailCalling	o	m	Part 2, 5.2.1.1.3	m	m	
2	proposedMaxServOutstandingCal	m	m	Part 2, 5.2.1.1.2	m	m	
3	proposedMaxServOutstandingCal	m	m	Part2, 5.2.1.1.2	m	m	
4	proposedDataStructureNestingLe	m	m		m	m	
5	initiateRequestDetail	m	m		m	m	
5.1	proposedVersionNumber	m	m		m	m	
5.2	proposedParameterCBB	m	m		m	m	
5.3	servicesSupportedCalling	m	m		m	m	

A.4.1.2 Initiate Response PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	localDetailCalled	o	m	Part2, 5.2.1.1.4	m	m	
2	negotiatedMaxServOutstandingC	m	m	Part2, 5.2.1.1.2	m	m	
3	negotiatedMaxServOutstandingC	m	m	Part2, 5.2.1.1.2	m	m	
4	negotiatedDataStructureNestingL	m	m		m	m	
5	initiateResponseDetail	m	m		m	m	
5.1	negotiatedVersionNumber	m	m		m	m	
5.2	negotiatedParameterCBB	m	m		m	m	
5.3	servicesSupportedCalled	m	m		m	m	

A.4.1.3 Initiate Error PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	errorClass	m	m		m	m	
2	errorCode	m	m		m	m	
3	additionalCode	o	o		o	m	
4	additionalDescription	o	o		o	m	

A.4.1.4 Conclude Request PDU

No parameter.

A.4.1.5 Conclude Response PDU

No parameter.

A.4.1.6 Conclude Error PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	errorClass	m	m		m	m	
2	errorCode	m	m		m	m	
3	additionalCode	o	o		o	m	
4	additionalDescription	o	o		o	m	

A.4.1.7 Cancel Request PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	originalInvokeID	m	m		m	m	

A.4.1.8 Cancel Response PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	originalInvokeID	m	m		m	m	

A.4.1.9 Cancel Error PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	originalInvokeID	m	m		m	m	
2	errorClass	m	m		m	m	
3	errorCode	m	m		m	m	
4	additionalCode	o	o		o	m	
5	additionalDescription	o	o		o	m	

A.4.1.10 Reject PDU

Ref	Parameter	Sending			Receiving		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	originalInvokeID	m	m		m	m	
2	rejectReason	m	m		m	m	

A.4.2 VMD Support**A.4.2.1 Status Request PDU**

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	extendedDerivation	m	m		m	m	
4	csStatusRequest	o	x		o	x	

A.4.2.2 Status Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	vmdLogicalStatus	m	m		m	m	
3	vmdPhysicalStatus	m	m		m	m	
4	localDetail	o	m		o	o	
5	csStatusResponse	o	x		o	x	

A.4.2.3 Status Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.2.4 Unsolicited Status PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	vmdLogicalStatus	m	m		m	m	
2	vmdPhysicalStatus	m	m		m	m	
3	localDetail	o	m		o	o	
4	csStatusResponse	o	x		o	x	

A.4.2.5 GetNameList Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	objectClass	m	m		m	m	
4	csObjectClass	o	x		o	x	
5	objectScope	m	m		m	m	
6	continueAfter	m	m		m	m	
7	csGetNameListRequest	o	x		o	x	

A.4.2.6 GetNameList Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfIdentifier	m	m		m	m	
3	moreFollows	m	m		m	m	
4	csGetNameListResponse	o	x		o	x	

A.4.2.7 GetNameList Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.2.8 Identify Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	

A.4.2.9 Identify Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	vendorName	m	m		m	m	

3	modelName	m	m		m	m	
4	revision	m	m		m	m	
5	listOfAbstractSyntaxes	o	m		m	m	

A.4.2.10 Identify Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.2.11 GetCapabilityList Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	continueAfter	m	m		m	m	
4	csGetCapabilityListRequest	o	x		o	x	

A.4.2.12 GetCapabilityList Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfCapabilities	m	m		m	m	Part2, 5.2.3.1
3	moreFollows	m	m		m	m	
4	csGetCapabilityListResponse	o	x		o	x	

A.4.2.13 GetCapabilityList Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3 Domain Management**A.4.3.1 InitiateDownloadSequence Request PDU**

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	listOfCapabilities	m	m	Part2, 5.2.3.1	m	m	
5	sharable	m	m		m	m	
6	csInitiateDownloadSequenceRequ	o	x		o	x	

A.4.3.2 InitiateDownloadSequence Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csInitiateDownloadSequenceResp	o	x		o	x	

A.4.3.3 InitiateDownloadSequence Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.4 DownloadSegment Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	csDownloadSegmentRequest	o	x		o	x	

A.4.3.5 DownloadSegment Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	loadData	m	m		m	m	
2.a	non-coded	o	m		o	m	
2.b	coded	o	i		o	i	
3	moreFollows	m	m		m	m	
4	csDownloadSegmentResponse	o	x		o	x	

A.4.3.6 DownloadSegment Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	o		o	m	
6	additionalDescription	o	o		o	m	

A.4.3.7 TerminateDownloadSequence Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	discard	m	m		o	o	
4.1	errorClass	m	m		m	m	
4.2	errorCode	m	m		m	m	
4.3	additionalCode	o	m		o	o	
4.4	additionalDescription	o	m		o	o	
5	csTerminateDownloadSeqRequest	o	x		o	x	

A.4.3.8 TerminateDownloadSequence Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csTerminateDownloadSeqRespon	o	x		o	x	

A.4.3.9 TerminateDownloadSequence Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	o		o	m	
6	additionalDescription	o	o		o	m	

A.4.3.10 InitiateUploadSequence Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	csInitiateUploadSequenceRequest	o	x		o	x	

A.4.3.11 InitiateUploadSequence Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	ulsmID	m	m		m	m	
3	listOfCapabilities	m	m		m	m	Part2, 5.2.3.1
4	csInitiateUploadSequenceRespons	o	x		o	x	

A.4.3.12 InitiateUploadSequence Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.13 UploadSegment Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	ulsmID	m	m		m	m	
4	csUploadSegmentRequest	o	x		o	x	

A.4.3.14 UploadSegment Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	loadData	m	m		m	m	
2.a	non-coded	o	m		o	m	
2.b	coded	o	i		o	i	
3	moreFollows	m	m		m	m	
4	csUploadSegmentResponse	o	x		o	x	

A.4.3.15 UploadSegment Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.16 TerminateUploadSequence Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	ulsmID	m	m		m	m	
4	csTerminateUploadSequenceRequest	o	x		o	x	

A.4.3.17 TerminateUploadSequence Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csTerminateUploadSeqResponse	o	x		o	x	

A.4.3.18 TerminateUploadSequence Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	

3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.19 RequestDomainDownload Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	listOfCapabilities	m	m		m	m	Part 2, 5.2.3.1
5	sharable	m	m		m	m	
6	filename	m	m		m	m	
7	csRequestDomainDownloadReque	o	x		o	x	

A.4.3.20 RequestDomainDownload Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csRequestDomainDownloadRespo	o	x		o	x	

A.4.3.21 RequestDomainDownload Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	

5	additionalCode	o	o		o	m	
6	additionalDescription	o	o		o	m	

A.4.3.22 RequestDomainUpload Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	filename	m	m		m	m	
5	csRequestDomainUploadRequest	o	x		o	x	

A.4.3.23 RequestDomainUpload Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csRequestDomainUploadRespon	o	x		o	x	

A.4.3.24 RequestDomainUpload Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	o		o	m	
6	additionalDescription	o	o		o	m	

A.4.3.25 LoadDomainContent Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	listOfCapabilities	m	m	Part 2, 5.2.3.1	m	m	
5	sharable	m	m		m	m	
6	filename	m	m		m	m	
7	thirdParty	o	TPY		o	TPY	
8	csLoadDomainContentRequest	o	x		o	x	

A.4.3.26 LoadDomainContent Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csLoadDomainContentResponse	o	x		o	x	

A.4.3.27 LoadDomainContent Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.28 StoreDomainContent Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	filename	m	m		m	m	
5	thirdParty	o	TPY		o	TPY	
6	csStoreDomainContentRequest	o	x		o	x	

A.4.3.29 StoreDomainContent Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csStoreDomainContentResponse	o	x		o	x	

A.4.3.30 StoreDomainContent Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.31 DeleteDomain Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	domainName	m	m		m	m	
4	csDeleteDomainRequest	o	x		o	x	

A.4.3.32 DeleteDomain Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csDeleteDomainResponse	o	x		o	x	

A.4.3.33 DeleteDomain Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.3.34 GetDomainAttributes Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	

3	domainName	m	m		m	m	
4	csGetDomainAttributesRequest	o	x		o	x	

A.4.3.35 GetDomainAttributes Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfCapabilities	m	m		m	m	Part 2, 5.2.3.1
3	state	m	m		m	m	
4	mmsDeletable	m	m		m	m	
5	sharable	m	m		m	m	
6	listOfProgramInvocations	m	m		m	m	
7	uploadInProgress	m	m		m	m	
8	csGetDomainAttributesResponse	o	x		o	x	

A.4.3.36 GetDomainAttributes Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.4 Program Invocation Management

A.4.4.1 CreateProgramInvocation Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	listOfDomainNames	m	m		m	m	
5	reusable	m	m		m	m	
6	monitorType	o	i		o	i	
7	csCreateProgramInvocationReque	o	x		o	x	

A.4.4.2 CreateProgramInvocation Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csCreateProgramInvocationResponse	o	x		o	x	

A.4.4.3 CreateProgramInvocation Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.4.4 DeleteProgramInvocation Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	csDeleteProgramInvocationReque	o	x		o	x	

A.4.4.5 DeleteProgramInvocation Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csDeleteProgramInvocationResponse	o	x		o	x	

A.4.4.6 DeleteProgramInvocation Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.4.7 Start Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	

3	programInvocationName	m	m		m	m	
4	executionArgument	o	m		o	m	
4.a	simpleString	o	m		o	m	
4.b	encodedString	o	i		o	i	
5	csStartRequest	o	x		o	x	

A.4.4.8 Start Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csStartResponse	o	x		o	x	

A.4.4.9 Start Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	
7	serviceSpecificInformation	m	m		m	m	Part2, 5.2.4.1

A.4.4.10 Stop Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	csStopRequest	o	x		o	x	

A.4.4.11 Stop Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csStopResponse	o	x		o	x	

A.4.4.12 Stop Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	
7	serviceSpecificInformation	m	m		m	m	Part2, 5.2.4.2

A.4.4.13 Resume Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	executionArgument	o	m		o	m	
4.a	simpleString	o	m		o	m	
4.b	encodedString	o	i		o	i	
5	csResumeRequest	o	x		o	x	

A.4.4.14 Resume Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csResumeResponse	o	x		o	x	

A.4.4.15 Resume Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	
7	serviceSpecificInformation	m	m		m	m	part 2, 5.2.4.3

A.4.4.16 Reset Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	csResetRequest	o	x		o	x	

A.4.4.17 Reset Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csResetResponse	o	x		o	x	

A.4.4.18 Reset Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	
7	serviceSpecificInformation	m	m		m	m	part 2, 5.2.4.4

A.4.4.19 Kill Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	csKillRequest	o	x		o	x	

A.4.4.20 Kill Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	csKillResponse	o	x		o	x	

A.4.4.21 Kill Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	
7	serviceSpecificInformation	m	m		m	m	Part2, 5.2.4.5

A.4.4.22 GetProgramInvocationAttributes Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	programInvocationName	m	m		m	m	
4	csGetPIAttributesRequest	o	x		o	x	

A.4.4.23 GetProgramInvocationAttributes Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	State	m	m		m	m	
3	listOfDomainNames	m	m		m	m	
4	mmsDeletable	m	m		m	m	
5	reusable	m	m		m	m	
6	monitor	m	m		m	m	
7	executionArgument	m	m		m	m	
7.a	simpleString	o	m		o	m	
7.b	encodedString	o	i		o	i	
8	csGetPIAttributesResponse	o	x		o	x	

A.4.4.24 GetProgramInvocationAttributes Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.5 Variable Access**A.4.5.1 Read Request PDU**

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	specificationWithResult	m	m		m	m	
4	VariableAccessSpecification	m	m	A.4.5.1.1.	m	m	A.4.5.1.1.

A.4.5.1.1 VariableAccessSpecification

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	listOfVariable	o	m		m	m	
1.a.1	VariableSpecification	m	m	A.4.5.1.2.	m	m	A.4.5.1.2.
1.a.2	AlternateAccess	o	VALT	A.4.5.1.8.	o	VALT	A.4.5.1.8.
1.b	variableListName	o	VLIS		o	VLIS	

A.4.5.1.2 VariableSpecification

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	name	o	VNAM		o	VNAM	
1.b	Address	o	VADR	A.4.5.1.6.	o	VADR	A.4.5.1.6.
1.c	variableDescription	o	VADR		o	VADR	
1.c.1	Address	m	m	A.4.5.1.6.	m	m	A.4.5.1.6.
1.c.2	TypeSpecification	m	m	A.4.5.1.7.	m	m	A.4.5.1.7.
1.d	scatteredAccessDescription	o	VSCA		o	VSCA	
1.e	invalidated	m	m		m	m	

A.4.5.1.3 Named Variable Object

Ref.	Parameter	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	VMD	0	m	0	c.1
2	Domain	0	m	0	c.1
3	AA-Specific	0	0	0	0

c.1: If VNAM is supported, then either VMD or Domain scope shall be supported.

A.4.5.1.4 Named Variable List Object

Ref.	Parameter	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	VMD	0	0	0	0
2	Domain	0	0	0	0
3	AA-Specific	0	0	0	0

A.4.5.1.5 Named Types Object

Ref.	Parameter	Client-CR		Server-CR	
		Base	F/S	Base	F/S
1	VMD	0	0	0	0
2	Domain	0	0	0	0
3	AA-Specific	0	0	0	0

A.4.5.1.6 Address

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	numericAddress	0	m		0	c1	
1.b	symbolicAddress	0	m		0	c1	
1.c	unconstrainedAddress	0	0		0	0	

c1: At least one of these address types must be supported (see ISO ISP 14226-2:1996, subclause 5.2.5.6).

A.4.5.1.7 TypeSpecification

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	typeName	o	o		o	o	
1.b	array	o	STR1		o	STR1	
1.b.1	packed	m	m		m	m	
1.b.2	numberOfElements	m	m		m	m	
1.b.3	TypeSpecification	m	m		m	m	
1.c	structure	o	STR2		o	STR2	
1.c.1	packed	m	m		m	m	
1.c.2	components	m	m		m	m	
1.c.2.1	componentName	o	VALT		o	VALT	
1.c.2.2	TypeSpecification	m	m		m	m	
1.d	boolean	o	m		o	c1	
1.e	bit-string	o	m		o	c1	
1.f	integer	o	m		o	c1	
1.g	unsigned	o	m		o	c1	
1.h	floatingPoint	o	m		o	c1	
1.i	real	o	REAL		o	REAL	
1.j	octet-string	o	o		o	o	
1.k	visible-string	o	m		o	c1	
1.l	generalized-time	o	m		o	c1	
1.m	binary-time	o	o		o	o	
1.n	bcd	o	o		o	o	
1.o	objId	o	o		o	o	

c1: Each server implementation shall be capable of supporting at least one of the data types marked as c1.

A.4.5.1.8 AlternateAccess

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	unnamed	o	STR1		o	STR1	
1.a.1	selectAlternateAccess	m	m		m	m	

1.a.1.1	AccessSelection	m	m	A.4.5.1.9.	m	m	A.4.5.1.9.
1.a.1.2	AlternateAccess	m	m		m	m	
1.a.2	SelectAccess	m	m	A.4.5.1.10.	m	m	A.4.5.1.10.
1.b	named	o	STR2		o	STR2	
1.b.1	componentName	m	m		m	m	
1.b.2	AlternateAccessSelection	m	m		m	m	
1.b.2.1	selectAlternateAccess	o	m		m	m	
1.b.2.2	SelectAccess	o	m	A.4.5.1.10.	m	m	A.4.5.1.10.

A.4.5.1.9 AccessSelection

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	component	o	STR2		o	STR2	
1.b	index	o	STR1		o	STR1	
1.c	IndexRange	o	STR1	A.4.5.1.11.	o	STR1	A.4.5.1.11.
1.d	allElements	o	STR1		o	STR1	

A.4.5.1.10 SelectAccess

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1.a	component	o	STR2		o	STR2	
1.b	index	o	STR1		o	STR1	
1.c	IndexRange	o	STR1	A.4.5.1.11.	o	STR1	A.4.5.1.11.
1.d	allElements	o	STR1		o	STR1	

A.4.5.1.11 IndexRange

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	lowIndex	m	m		m	m	
2	numberOfElements	m	m		m	m	

A.4.5.2 Read Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	VariableAccessSpecification	m	m	A.4.5.1.1.	m	m	A.4.5.1.1.
3	listOfAccessResult	m	m		m	m	
3.a	failure	m	m		m	m	
3.b	Data	m	m	A.4.5.2.1.	m	m	A.4.5.2.1.

A.4.5.2.1 Data

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
a	array	o	STR1		o	STR1	
b	structure	o	STR2		o	STR2	
c	boolean	o	m		o	c1	
d	bit-string	o	m	n2	o	c1	
e	integer	o	m	n1	o	c1	
f	unsigned	o	m	n1	o	c1	
g	floating-point	o	m		o	c1	
h	real	o	REAL		o	REAL	
i	octet-string	o	o	n2	o	o	
j	visible-string	o	m	n2	o	c1	
k	generalized-time	o	m		o	c1	
l	binary-time	o	o		o	o	

m	bcd	o	o		o	o	
n	booleanArray	o	o		o	o	
o	objectId	o	o		o	o	

c1: Each server implementation shall be capable of supporting at least one of the data types marked as c1.

n1: Client implementations shall be capable of supporting a DataSize parameter of value 32.

n2: Client implementations shall be capable of supporting a DataSize parameter the value of which is determined by the InitiateResponse PDU localDetailCalled parameter.

A.4.5.3 Read Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.5.4 Write Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	VariableAccessSpecification	m	m	A.4.5.1.1.	m	m	A.4.5.1.1.
4	listOfData	m	m	A.4.5.2.1.	m	m	A.4.5.2.1.

A.4.5.5 Write Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfWriteResult	m	m		m	m	
2.a	dataAccessError	m	m		m	m	
2.b	success	m	m		m	m	

A.4.5.6 Write Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	

A.4.5.7 InformationReport PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	VariableAccessSpecification	m	m	A.4.5.1.1.	m	m	A.4.5.1.1.
2	listOfAccessResult	m	m		m	m	
2.a	failure	m	m		m	m	
2.b	Data	m	m	A.4.5.2.1.	m	m	A.4.5.2.1.

A.4.5.8 GetVariableAccessAttributes Request PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	listOfModifier	o	MOD		o	MOD	
3	variableName	o	VNAM		o	VNAM	
4	variableAddress	o	VADR		o	VADR	

A.4.5.9 GetVariableAccessAttributes Response PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	mmsDeletable	m	m		m	m	
3	Address	o	VADR		o	VADR	
4	TypeSpecification	m	m		m	m	

A.4.5.10 GetVariableAccessAttributes Error PDU

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/Ref.	Base	F/S	Value/Ref.
1	invokeID	m	m		m	m	
2	modifierPosition	o	MOD		o	MOD	
3	errorClass	m	m		m	m	
4	errorCode	m	m		m	m	
5	additionalCode	o	m		o	o	
6	additionalDescription	o	m		o	o	