INTERNATIONAL STANDARD

ISO/IEC 9506-1

First edition
1990-10-15

AMENDMENT 2
1995-12-15

Industrial automation systems — Manufacturing Message Specification —

Part 1:
Service definition

AMENDMENT 2: Conditioned service response

Systèmes d'automatisation industrielle — Spécification de messagerie industrielle —

Partie 1: Définition de service

AMENDEMENT 2: Réponse conditionnelle de service

Reference number
ISO/IEC 9506-1:1990/Amd.2:1995(E)

Contents

Annexes

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Amendment 2 to International Standard ISO/IEC 9506-1:1990 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration,* Subcommittee SC 5, *Architecture and communications.*

Introduction

This amendment details the changes to ISO/IEC 9506-1 to support conditioned service response. In developing these changes, it is assumed that the changes from the inclusion of the Data Exchange Service, ISO/IEC 9506-1/Amd.1, and the changes from technical corrigendum ISO/IEC 9506-1/Cor.1, have already been applied to the base document. All clause number references refer to the document as amended and corrected; page number references refer to the base document.

This amendment adds a new object, an Access Control List, to the structure of the MMS VMD. The VMD references one such object that provides conditions that constrain the successful access of any object within the VMD by an MMS Client. In addition, each named object within a VMD references some Access Control List object, and the conditions expressed in that Access Control List object constrain the use of the parent object by an MMS Client. The present MMS system allows an MMS Server to support or deny support for any MMS service to an MMS Client for all object instances within its implementation; this amendment allows an MMS Server to offer support for a MMS service to an MMS Client for some object instances but not for others. If support of object specific access control is negotiated in the Initiate dialogue, the MMS client may examine and manipulate the Access Control List object of individual object instances.

The attribute MMS Deletable is removed from the object description of all MMS objects. In its place, a derivation rule is provided such that services that report MMS Deletable can do so in a manner consistent with implementations not employing this amendment.

There are seven classes of constraint, called Service Classes, that are covered by this amendment. These classes are Read, Write, Load, Store, Execute, Delete, and Edit. Not all classes are applicable to all objects. The Edit class describes the ability to change the Access Control List characteristics of any object.

This amendment makes use of the Authentication Unit of the Association Control Service Element (ACSE) now available as an implementation option. It does so by allowing the conditions expressed in the Access Control List to depend on the Authentication Value present in the A-ASSOCIATE service primitives. Such use of the Authentication Unit is not required, however, to make use of the Access Control List mechanism.

By using the mechanisms present in this amendment, an implementation can restrict access to an object (for reading, writing, loading, storing, execution, deletion, or other modification) to MMS Clients that either (1) attempt access from known network nodes, (2) provide proper authentication (passwords), (3) have synchronized their use with other MMS Clients through use of the semaphores, or (4) an arbitrary combination of these methods. The specification of passwords requires the use of the Authentication Unit of ACSE.

This amendment also modifies the MMS Service model by adding an explicit Object Model for an Application Association. This model should be present in the basic MMS Object Model, independent of the use of Access Control Lists. Its omission in the base document should be considered an oversight, corrected by this amendment.

The introduction of an object model for the application association allows one to move the list of transactions objects from the VMD to the application association, thereby allowing the invoke ID to be the sole key attribute of the transaction. The case of processing of Event Actions, however, requires us to introduce a new attribute to the VMD, namely a list of transactions associated with Event Action processing that are not bound (necessarily) to an association.

Industrial automation systems — Manufacturing Message Specification

Part 1:
Service definition

AMENDMENT 2: Conditioned service response

1. Scope

(This amendment makes no changes to clause 1 of ISO/IEC 9506-1.)

2. Normative references

Immediately following the reference to ISO 8650, page 2, add the following:

ISO 8649:1988/Amd.1:1990, *Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element Amendment 1: Authentication during association establishment.*

ISO 8650:1988/Amd.1:1990, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element Amendment 1: Authentication during association establishment.*

Immediately following the reference to ISO/IEC 9506-2, add the following:

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/Cor.1:1995, *Industrial Automation Systems - Manufacturing Message Specification - Part 1: Service definition Technical corrigendum 1.*

3. Definitions

(This amendment makes no changes to clause 3 of ISO/IEC 9506-1.)

4. Abbreviations

(This amendment makes no changes to clause 4 of ISO/IEC 9506-1.)

5. Conventions

(This amendment makes no changes to clause 5 of ISO/IEC 9506-1.)

6. MMS in the OSI Environment

(This amendment makes no changes to clause 6 of ISO/IEC 9506-1.)

7. The Virtual Manufacturing Device

In 7.2, page 19, in the VMD object model replace the line

Attribute: List of Transaction Objects

with

Attribute: List of Event Action Transaction Objects
Attribute: List of Application Associations

In 7.2, page 19, in the VMD object model, insert

Attribute: Reference to Access Control List

immediately before the line

Attribute: Additional Detail

In 7.2.6.2, page 20, insert

GetAccessControlListAttributes

into the list of services between Cancel and GetAlarmEnrollmentSummary, and insert

ReportAccessControlledObjects

into the list of services between ReadJournal and ReportEventActionStatus.

At the end of 7.2.10 on page 22, add new subclauses 7.2.11 and 7.2.12:

7.2.11 List of Event Action Transaction Objects

This attribute identifies those transaction objects (see 7.2.13) that do not explicitly depend on an application association. Such transactions occur through the processing of Event Actions (see 15.1.4.2.5). In all other respects, they are normal transaction objects.

7.2.12 Application Association

The Application Association identifies a specific instance of communication of the VMD with an MMS client.

Object: Application Association
Key Attribute: Application Association Identifier
Attribute: Application Reference of MMS Client
Attribute: AP Title of MMS Client
Attribute: AE Qualifier of MMS Client
Attribute: AP Invocation-identifier of MMS Client

Attribute: AE Invocation-identifier of MMS Client
Attribute: Authentication Employed (TRUE, FALSE)
Constraint: Authentication Employed = TRUE
Attribute: Authentication Value
Attribute: List of AA-Specific Named Objects
Attribute: List of Transaction Objects
Attribute: List of services supported
Attribute: List of parameter CBBs supported
Attribute: Nesting Level

Application Association Identifier

This attribute identifies the application association. Since this attribute is never communicated, its form is a local matter.

Application Reference of MMS Client

This attribute, which serves to identify the AE within the MMS Client with whom the association has been established. It is composed of the AP Title, the AE Qualifier, the AP Invocation-identifier, and the AE Invocation-identifier. (See 6.6.)

AP Title of MMS Client

This attribute, derived from application association establishment information (See ISO/IEC 9506-2, clause 17), identifies the MMS client present on this association.

AE Qualifier of MMS Client

This attribute, derived from application association establishment information (See ISO/IEC 9506-2, clause 17), identifies the MMS client present on this association.

AP Invocation-identifier of MMS Client

This attribute, derived from application association establishment information (See ISO/IEC 9506-2, clause 17), identifies the MMS client present on this association.

AE Invocation-identifier of MMS Client

This attribute, derived from application association establishment information (See ISO/IEC 9506-2, clause 17), identifies the MMS client present on this association.

Authentication Employed

This attribute indicates whether (true) or not (false) authentication (See ISO/IEC 9506-2, clause 17) was used in establishing this association. If this attribute is true, the following attribute also appears.

Authentication Value

This attribute is the value of the Authentication Value as presented by the MMS Client at application association establishment. This attribute may be either a character string (Graphic String), a bit string, or an external. The choice 'ANY DEFINED BY mechanism-name' shall not be used.

List of AA-Specific Named Objects

This attribute contains a list of all the named objects within the VMD that are declared to have AA-specific scope and identify this Application Association.

List of Transaction Objects

This attribute is the list of transaction objects (see 7.2.13) associated with this application association.

List of services supported

This attribute contains a list of all the MMS services supported as given in the MMS Initiate procedure (see 8.3.2 and 8.2.4).

List of parameter CBBs supported

This attribute contains a list of all the MMS parameter CBBs that have been negotiated in the MMS Initiate procedure (see 8.2.4).

Nesting Level

This attribute contains the value of the Nesting Level that was negotiated in the MMS Initiate procedure (see 8.2.1.2.4).

In (old) 7.2.11, bottom of page 22, in the Object Model, replace the line:

Key Attribute: Application Association Identifier

with:

Attribute: Application Association Identifier

In (old) 7.2.11, top of page 23, add the following sentence after the description of Application Association Identifier:

If no such application association exists, this attribute shall have the value NONE.

In (old) 7.2.11.2, replace the first paragraph with:

A transaction object shall be created either upon receipt of an indication service primitive for an MMS confirmed service or as part of the processing of an event occurrence (see). The transaction object shall be deleted after the MMS-user issues a response service primitive for that service instance. The number of transaction objects that may exist at any time is governed by the negotiated maximum number of services outstanding (see 8.2).

Renumber 7.2.11, 7.2.12, and 7.2.13 to be 7.2.13, 7.2.14, and 7.2.15 respectively. Renumber 7.2.11.1 and 7.2.11.2 to be 7.2.13.1 and 7.2.13.2 respectively.

Add a new subclause 7.2.16 as follows:

7.2.16 Reference to Access Control List

This attribute is a reference to an Access Control List object that specifies necessary (but not sufficient) conditions for an MMS service to succeed. The conditions specified in this Access Control List object shall be satisfied for the service class corresponding to the requested service in order for the service to succeed. Additional conditions for success may be imposed by an Access Control List object referenced by the object of the service request. If no other specification has been provided, this attribute should reference 'M_NonDeletable' (see 18.3.1.5).

Renumber 7.2.14 and 7.2.15 to be 7.2.17 and 7.2.18 respectively.

In 7.3.2, page 25, add a new entry at the end of table 1

Access Control List Objects	X			21

Replace the second sentence of 7.3.5, page 26, with the following:

Static objects usually may not be deleted through the use of MMS services, and dynamic objects usually may be deleted, but there may be exceptions to either rule.

Replace the first sentence of 7.3.6, page 26, with the following:

All MMS objects subordinate to the VMD may be deleted from the VMD through appropriate MMS service requests if such requests are permitted (see 7.3.8).

Replace the last sentence of 7.3.6, page 26, with the following:

This is true regardless of any conditions specified in the Access Control List object referenced by the object subordinate to the Domain.

Add the following new subclause after 7.3.7, page 26.

7.3.8 Control of Access to MMS Objects

MMS provides explicit control for the ability to access or alter MMS named objects. Each named object within an MMS implementation contains a reference to an access control object that specifies the conditions under which services directed at the named object may succeed. For the purposes of specifying the control conditions, services are grouped into seven classes, read, write, load, store, execute, delete, and edit. The control conditions include possession of a semaphore, identity of user (Application Reference), and the submission of a password (which may be arbitrarily complex). These conditions are necessary but not sufficient for the success of the service. If the conditions are not satisfied, the service is required to fail; the service may always fail for reasons beyond the scope of this standard. These conditions may be combined in arbitrary ways. Conditions may be specified separately for individual objects and for all objects of the VMD. Conditions restricting creation of objects can only be specified for the entire VMD.

The reference to Access Control List attribute of named objects replaces the MMS Deletable attribute of the earlier version of MMS. For backward compatibility, a derivation rule from the Access Control List is provided for services that report the value of the MMS Deletable attribute. Using this rule, implementations of earlier versions of MMS will be able to interwork with implementations of this version of MMS as long as the additional services specified in this version are not employed.

A parameter CBB named ACO is used to indicate whether or not the object reporting services shall report attributes related to the use of access control lists.

7.3.8.1 Access Control List Object Model

Object: Access Control List
Key Attribute: Access Control List Name
Attribute: Reference to Access Control List
Attribute: List of Access Control Elements
  Attribute: Service Class (READ, WRITE, LOAD, STORE, EXECUTE, DELETE, EDIT)
    Attribute: Access Condition (NEVER, SEMAPHORE, USER, PASSWORD, JOINT, ALTERNATE)
Constraint: Access Condition = SEMAPHORE
      Attribute: Semaphore Name
Constraint: Access Condition = USER
      Attribute: Application Reference
Constraint: Access Condition = PASSWORD
      Attribute: Password Value
Constraint: Access Condition = JOINT
      Attribute: List of Access Condition
Constraint: Access Condition = ALTERNATE
      Attribute: List of Access Condition
List of References to Access Controlled Objects

7.3.8.2 Access Control List Name

The Access Control List Name attribute uniquely identifies the Access Control List object within the VMD. The name shall be a VMD-specific Object Name formed according to the rules for MMS Object Names as specified in 7.4.

7.3.8.3 Reference to Access Control List

Each Access Control List object is itself subject to access control. This reference identifies the Access Control List object that governs access to this object.

7.3.8.4 List of Access Control Elements

An Access Control List may contain zero or more Access Control Elements. Each element shall identify one Service Class and provide one Access Condition. An Access Control List shall not contain more than one Access Control Element that identifies the same Service Class.

NOTE — Since there are only seven Service Classes, this means that there are at most seven Access Control Elements in the List of Access Control Elements. However, since most MMS objects do not use each class of access control, the number of Access Control Elements applicable to any object class will usually be less than seven. Access Control Objects may be used to apply to multiple object classes which means that in some cases an object may reference an Access Control List object that contains Access Control Elements that do not apply to the referencing object.

7.3.8.4.1 Access Control Service Classes

Each Access Control Element identifies the service class to which it applies. There are seven such service classes as follows:

a) Read - Services that obtain individual values associated with objects. These are:

i) Read
ii) Output

b) Store Services that obtain grouped values associated with objects. These are:

i) ReadJournal
ii) InitiateUploadSequence
iii) StoreDomainContent

c) Write - Services that change the individual value of an MMS object. These are:

i) Write
ii) Input
iii) ExchangeData

d) Load - Services that change the values or other attributes of an MMS object. These are:

i) InitiateDownloadSequence*

ii) LoadDomainContent*
iii) CreateProgramInvocation*
iv) DefineNamedVariable*
v) DefineScatteredAccess*
vi) DefineNamedVariableList*
vii) DefineNamedType*
viii) DefineSemaphore*
ix) TakeControl
xi) DefineEventCondition*
xii) DefineEventAction*
xiii) DefineEventEnrollment*
xiv) TriggerEvent
xv) AlterEventConditionMonitoring
xvi) AlterEventEnrollment
xvii) AcknowledgeEventNotification
xviii) CreateJournal*
xix) InitializeJournal
xx) WriteJournal
xxi) DefineAccessControlList*

* Since these services create the respective objects, the services can only be affected by the Access Control List referenced by the VMD.

e) Execute - Services that change the state of Program Invocation objects. These are:

i) Start
ii) Stop
iii) Resume
iv) Reset
v) Kill

f) Delete - Services that delete MMS objects. These are:

i) DeleteDomain
ii) DeleteProgramInvocation
iii) DeleteVariableAccess
iv) DeleteNamedVariableList
v) DeleteNamedType
vi) DeleteSemaphore
vii) DeleteEventCondition
viii) DeleteEventAction
ix) DeleteEventEnrollment
x) DeleteJournal
xi) DeleteAccessControlList

g) Edit - Services that change the value of the Reference to Access Control List attribute of the object or its attributes. These are:

i) ChangeAccessControl (New Service)
ii) Rename

7.3.8.4.2 Access Condition

This attribute specifies a condition that, if not satisfied, will require the MMS service to fail. Each condition shall specify one of the following types:

a) NEVER - This condition indicates that the class of service specified in the Service Class attribute shall always fail.

b) SEMAPHORE - This condition indicates that if the named semaphore is not owned by the MMS service requester, the class of service specified in the Service Class shall fail.

c) USER - This condition indicates that the class of service specified shall fail unless the Application Reference of the client matches the value of this field.

d) PASSWORD - This condition indicates that the class of service specified shall fail unless the client has provided the authentication values that match the value of this field.

e) JOINT - This Access Condition succeeds if all of the conditions in the List of Access Conditions succeed; otherwise this Access Condition fails.

f) ALTERNATE - This Access Condition succeeds if any of the conditions in the List of Access Conditions succeed; otherwise this Access Condition fails.

7.3.8.5 List of References to Access Controlled Objects

This attribute is a list of references to named objects that reference this Access Control List object. The following MMS objects may be governed by Access Control Lists. Following each object is a specification of the service classes that may be applied to that object. An Access Control List object may specify a service class that does not apply to the object for which the Access Control List is an attribute. In such cases, the conditions associated with that service class have no effect on that object. Note that while Unnamed Variables may have Access Control Lists as attributes, they are necessarily pre-defined since the only services provided in Clause 21 assume that the objects to be modified have names.

a) Domain (LOAD, STORE, DELETE, EDIT)

b) Program Invocation (LOAD, EXECUTE, DELETE, EDIT)

c) Named Variable (READ, WRITE, DELETE, EDIT)

d) Unnamed Variable (READ, WRITE)

e) Named Variable List (READ, WRITE, DELETE, EDIT)

f) Scattered Access (READ, WRITE, DELETE, EDIT)

g) Named Type (DELETE, EDIT)

h) Semaphore (LOAD, DELETE, EDIT)

i) Operator Station (READ, WRITE, EDIT)

j) Event Condition (LOAD, DELETE, EDIT)

k) Event Action (LOAD, DELETE, EDIT)

l) Event Enrollment (LOAD, DELETE, EDIT)

m) Journal (LOAD, STORE, DELETE, EDIT)

n) Data Exchange (WRITE, EDIT)

o) Access Control List (DELETE, EDIT)

8. Environment And General Management Services

In 8.1.2.4, on page 29 in the first sentence change

8 to 16 and 20

to

8 to 16 and 20 to 21

9. VMD Support Services

In 9.4.1.1.1, on the top of page 49, add the line:

Access Control List

In 9.6.1.1.1.1, on the bottom of page 52, add the line:

Access Control List

In 9.6.2, page 53, insert a new sentence following the first sentence:

It shall verify that any conditions specified for Service Class = EDIT are satisfied in the Access Control List object referenced by the VMD. It shall verify that any conditions specified for Service Class = EDIT are satisfied in the Access Control List object referenced by this object.

10. Domain Management Services

In 10.1.1, middle of page 55, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 10.1.1, on page 56, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Domain may not be uploaded, deleted, or have its access control or name changed.

In 10.2.2, page 62, replace the second sentence with:

It shall verify that any conditions specified for Service Class = LOAD are satisfied in the Access Control List object referenced by the VMD. If these conditions are met, the MMS server shall create a suitable Domain and place it in LOADING state. The MMS server shall set its Reference to Access Control List attribute to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 10.5.2, page 66, insert two new sentences immediately after the first sentence:

It shall verify that any conditions specified for Service Class = STORE are satisfied in the Access Control List object referenced by the VMD. It shall verify that any conditions specified for Service Class = STORE are satisfied in the Access Control List object referenced by this object.

In 10.5.2, page 66, in the (old) second sentence, change

'this condition is'

to

'these conditions are'

In 10.10.2, page 74, insert a new item b):

b) Verify that any conditions specified for Service Class = LOAD are satisfied in the Access Control List object referenced by the VMD.

In 10.10.2, page 74, reletter items b) through e) as c) through f).

In 10.11.2, page 77, add a new first paragraph:

The responding MMS-user shall verify that any conditions specified for Service Class = STORE are satisfied in the Access Control List object referenced by the VMD. It shall verify that any conditions specified for Service Class = STORE are satisfied in the Access Control List object referenced by this Domain. Otherwise, a Result(-) response shall be returned.

In 10.12.2, page 78, replace the first sentence with the following text:

The MMS server shall:

a) verify that specified Domain exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Domain are satisfied for the service class = DELETE (see 21.1.2);

d) verify that the Domain is in the READY state;

e) verify that there are no uploads in progress for this Domain.

In 10.12.2, page 78, change the third sentence to read:

As part of this action, it shall delete all objects subordinate to the Domain regardless of the state of the Access Control List object referenced by these subordinate objects, and it shall set the reference attribute of objects that refer to objects subordinate to this Domain to UNDEFINED.

In 10.12.2, page 78, insert the following sentence in the paragraph just before the last sentence in the first paragraph:

Remove the reference to this Domain from the List of References to Access Controlled Objects attribute of the referenced Access Control List. For each element of the List of Subordinate Objects of this Domain, remove the reference to that object from the List of References to Access Controlled Objects attribute of the referenced Access Control List.

In table 27, on page 78, add a new line immediately after Upload in Progress:

Access Control List			C	C(=)	ACO

In 10.13.1.2.3, page 79, add the following sentence after the present text:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 10.13.1.2.7 on page 79:

10.13.1.2.7 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Domain. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

11. Program Invocation Management Services

In 11.1.1, middle of page 80, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 11.1.1, on page 81, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Program Invocation may be executed, deleted, or have its access control changed, or any combination of the above.

In 11.1.1, on page 82, under Event Condition Reference, change item g) to:

g) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.1.1, on page 82, under Event Action Reference, change item b) to:

b) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.1.1, on the top of page 83, under Event Enrollment Reference, change item b) to:

b) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.2.2, on page 87, replace item d) with:

d) verify that any conditions specified for Service Class = LOAD are satisfied in the Access Control List object referenced by the VMD. Otherwise, and error shall be returned.

e) create a Program Invocation object initialized as follows:

1) set its Program Invocation Name attribute equal to the Program Invocation Name parameter;

2) set its State attribute equal to IDLE;

3) set its Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

4) set the Reusable attribute to the Reusable parameter;

5) set the Monitor attribute equal to true if the Monitor parameter is specified; otherwise false;

6) set the Execution Argument attribute equal to a string of length zero.

In 11.2.2, on page 88, change item g) 1) ii) to:

ii) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.2.2, on page 88, change item g) 2) ii) to:

ii) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.2.2, on page 88, change item g) 3) ii) to:

ii) set the Reference to Access Control List to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 11.2.2, on page 88, reletter items e) through g) to be f) through h).

In 11.3.2, page 90, change the first sentence to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class DELETE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class DELETE (see 21.1.2);

d) verify that the Program Invocation is in the IDLE, STOPPED or UNRUNNABLE state;

In 11.3.2, page 90, insert the following sentence in the paragraph just before the last two sentences in the first paragraph:

Remove the reference to this Program Invocation from the List of References to Access Controlled Objects attribute of the referenced Access Control List.

In 11.4.2, page 91, change the first three sentences to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class EXECUTE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class EXECUTE (see 21.1.2);

d) verify that the Program Invocation is in the IDLE state;

If any of these conditions is not met, a Result(-) shall be returned.

In 11.5.2, page 93, change the first three sentences to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class EXECUTE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class EXECUTE (see 21.1.2);

d) verify that the Program Invocation is in the RUNNING state;

If any of these conditions is not met, a Result(-) shall be returned.

In 11.6.2, page 94, change the first three sentences to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class EXECUTE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class EXECUTE (see 21.1.2);

d) verify that the Program Invocation is in the STOPPED state;

If any of these conditions is not met, a Result(-) shall be returned.

In 11.7.2, page 95, change the first three sentences to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class EXECUTE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class EXECUTE (see 21.1.2);

d) verify that the Program Invocation is in the STOPPED state;

If any of these conditions is not met, a Result(-) shall be returned.

In 11.8.2, page 97, change the first two sentences to the following text:

The MMS server shall:

a) verify that specified Program Invocation exists;

b) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for the service class EXECUTE (see 21.1.2);

c) verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Program Invocation are satisfied for the service class EXECUTE (see 21.1.2);

If any of these conditions is not met, a Result(-) shall be returned.

In table 35, on page 97, add a new line immediately after Execution Argument:

Access Control List			C	C(=)	ACO

In 11.9.1.2.3, page 98, replace the sentence with:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 11.9.1.2.7 on page 98:

11.9.1.2.7 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Program Invocation. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

12. Variable Access Services

In 12.1.1.2.1, page 100, add the following text at the end of the first paragraph:

Failure of the conditions specified in the Access Control List object(s) for service class = READ requires the access of the MMS variable to fail.

In 12.1.1.2.2, page 100, add the following text at the end of the first paragraph:

Failure of the conditions specified in the Access Control List object(s) for service class = WRITE requires the access of the MMS variable to fail.

In 12.1.1.3, page 100, add a new second sentence.

These protection requirements are combined with the explicit protection requirements of the Access Control List object for service class = READ or WRITE as appropriate.

In 12.1.1.4.1, middle of page 101, replace the line

Attribute: MMS Deletable (FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control list

In 12.1.1.4.1, on page 101, replace the text of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Unnamed Variable may be read or written.

In 12.1.1.5.1, middle of page 102, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 12.1.1.5.1, on page 102, replace the text of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Named Variable may be read, written, deleted, or have its access control changed.

In 12.1.2.1.1, middle of page 104, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 12.1.2.1.1, on page 104, replace the text of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Scattered Access Object may be read, written, deleted, or have its access control changed.

In 12.1.2.2.1, middle of page 106, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 12.1.2.2.1, on page 106, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Named Variable List Object may be read, written, deleted, or have its access control changed.

In 12.1.3.1, bottom of page 107, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 12.1.3.1, on page 108, replace the text of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see 7.3.8.1) that provides conditions under which this Named Type Object may be deleted or have its access control changed.

In 12.6.2, page 125, replace the paragraph with the following:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = READ. If the Variable Access Specification parameter specifies a Named Variable List object, the MMS server shall verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Named Variable List object are satisfied for the service class = READ (see). If these conditions are not satisfied, the service request fails and a Result(-) shall be returned.

For each item of the Variable Specification (whether included in a Named Variable List object or specified individually) the MMS server shall verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of that item are satisfied for the service class = READ. Otherwise, the read operation fails for that component and the Data Access Error OBJECT-ACCESS-DENIED shall be returned as the corresponding component of the Access Result Parameter.

In 12.7.2, bottom of page 126, insert the following text after the second sentence:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = WRITE. If the Variable Access Specification parameter specifies a Named Variable List object, the MMS server shall verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of the Named Variable List object are satisfied for the service class = WRITE (see 21.1.2). If these conditions are not satisfied, the service request fails and a Result(-) shall be returned.

In 12.7.2, bottom of page 126, insert the following text before the last sentence:

For each item of the Variable Specification (whether included in a Named Variable List object or specified individually) the MMS server shall verify that all the conditions in the Access Control List specified by the Reference to Access Control List attribute of that item are satisfied. Otherwise, the write operation fails for that component and the Data Access Error OBJECT-ACCESS-DENIED shall be returned as the corresponding component of the Data Access Error Parameter.

In table 47, on page 128, add a new line immediately after Type Specification:

Access Control List			C	C(=)	ACO

In 12.9.1.2.1, top of page 129, replace the paragraph with:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 12.9.1.2.4 on page 129:

12.9.1.2.4 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Variable. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 12.10.2, page 130, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

In 12.10.2, page 130, replace item b) in the list with the following:

b) Initialize the Reference to Access Control List attribute to reference 'M_Deletable' (see 18.3.1.4).

In 12.11.2, page 132, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

In 12.11.2, page 132, replace item a) 3) ii) in the list with the following:

ii) initialize the Reference to Access Control List attribute to reference M_Deletable (see 18.3.1.4);

In 12.11.2, page 132, replace item a) 4) ii) in the list with the following:

ii) initialize the Reference to Access Control List attribute to reference M_Deletable (see 18.3.1.4);

In table 50, on page 133, add a new line immediately after Scattered Access Description:

Access Control List			C	C(=)	ACO

In 12.12.1.2.1, page 133, add the following sentence to the end of the subclause:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 12.12.1.2.3 on the bottom of page 133:

12.12.1.2.3 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Scattered Access object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 12.12.2, page 134, replace the first sentence of the first paragraph:

The MMS server shall locate the specified Scattered Access object and shall return the MMS Deletable parameter and the List of Component parameter of the Scattered Access Description parameter. Section specifies the value to be returned by the MMS Deletable parameter. The List of Component attribute provides the value of the List of Component parameter.

In 12.13, bottom of page 134, replace the sentence with:

The purpose for the DeleteVariableAccess service is to allow a client MMS-user to request that a VMD delete one or more Named Variable or Scattered Access objects for which deletion is permitted.

In 12.13.1.1.1, page 135, replace all of the text following the first sentence with:

SPECIFIC - Specifies that the specific Named Variable objects or Scattered Access objects (in any combination) having Variable Name or Scattered Access Name attributes (as applicable) equal to the Name parameters of the List of Name parameter for which deletion is permitted are to be deleted.

AA-SPECIFIC - Specifies that all Named Variable and Scattered Access objects within the scope of the current application association for which deletion is permitted are to be deleted.

DOMAIN - Specifies that all Named Variable and Scattered Access objects within the scope of the specified Domain for which deletion is permitted are to be deleted.

VMD - Specifies that all Named Variable and Scattered Access objects having VMD scope for which deletion is permitted are to be deleted.

In 12.13.1.1.3, bottom of page 135, replace the last sentence with the following:

It gives the name of the Domain for which all Named Variable and Scattered Access objects for which deletion is permitted are to be deleted.

In 12.13.1.2.2, page 136, replace the note with the following:

NOTE — The difference between the Number Matched and Number Deleted parameters indicate the number of objects that were not deleted, either because the conditions specified in the referenced Access Control List object(s) were not satisfied for Service Class = DELETE, or for other reasons.

In 12.13.2, page 136, replace the first paragraph with:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

If the request is acceptable, the MMS server shall prepare a list of objects to be deleted. If SPECIFIC was selected as the Scope of Delete parameter, the List of Name parameter identifies the objects to be deleted. Otherwise, all Named Variable and Scattered Access Objects of the indicated scope are to be deleted. For each object on the list, if the conditions in the Access Control List specified by the Reference to Access Control List attribute of the object to be deleted are satisfied, the MMS server shall delete the object and make its name (Variable Name or Scattered Access Name) available for immediate redefinition.

In 12.13.2, page 136, fifth paragraph, replace the last sentence with:

Failure to delete an object because the conditions specified in the referenced Access Control List object were not satisfied shall not be deemed an error.

In 12.14.2, page 138, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

In 12.14.2, page 138, replace the third paragraph with the following:

Initialize the Reference to Access Control List attribute to reference an Access Control List object that will report the value of MMS Deletable as true (see). The predefined symbol 'M_Deletable' (see 21.1.3) may be used for this purpose.

In 12.14.2, page 138, in item a) 3), delete the phrase:

its MMS Deletable attribute equal to true,

in the first sentence. Add a new sentence immediately following this sentence:

Its Reference to Access Control List attribute shall be set to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 12.14.2, page 138, in item a) 4) ii), replace this line with:

ii) the Reference to Access Control List attribute shall be initialized to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In table 53, on page 139, add a new line immediately after Alternate Access:

Access Control List			C	C(=)	ACO

In 12.15.1.2.1, page 139, add the following sentence to the end of the subclause:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 12.15.1.2.3 on page 140:

12.15.1.2.3 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Named Variable List object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 12.15.2, page 140, replace the first sentence of the first paragraph:

The MMS server shall locate the specified Named Variable List object and shall return the MMS Deletable parameter and the List of Variable parameter as specified below. Section specifies the value to be returned by the MMS Deletable parameter. The List of Variable attribute provides the value of the List of Variable parameter.

In 12.16.2, page 142, replace the first paragraph with:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

If the request is acceptable, the MMS server shall prepare a list of objects to be deleted. If SPECIFIC was selected as the Scope of Delete parameter, the List of Name parameter identifies the objects to be deleted. Otherwise, all Named Variable List Objects of the indicated scope are to be deleted. For each object on the list, if the conditions in the Access Control List specified by the Reference to Access Control List attribute of the object are satisfied for Service Class = DELETE, the MMS server shall delete the Named Variable List object and make its name available for immediate redefinition. The MMS server shall remove the reference to this object from the List of References to Access Controlled Objects attribute of the Access Control List referenced by the Reference to Access Control List attribute of this object.

In 12.16.2, bottom of page 142, replace the last sentence of the fifth paragraph with:

Failure to delete an object for which the conditions in the Access Control List object referenced by the Reference to Access Control List attribute are not satisfied for service class = DELETE shall not be deemed an error.

In 12.17.2, near the top of page 144, replace the first paragraph with:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

The MMS server shall create a Named Type object and initialize its Type Name and Type Description attributes from the Type Name and Type Specification parameter, respectively. Its Reference to Access Control List attribute shall be set to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In table 56, on page 144, add a new line immediately after Type Specification:

Access Control List			C	C(=)	ACO

In 12.18.1.2.1, top of page 145, add the following sentence to the end of the subclause:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 12.18.1.2.3 on page 145:

12.18.1.2.3 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Named Type. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 12.18.2, page 145, replace the paragraph with:

The VMD shall return the parameters associated with this Named Type object. Subclause 21.1.13 specifies the value to be returned by the MMS Deletable parameter.

In 12.19.2, page 147, replace the first paragraph with:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If this condition is not satisfied, the service request fails and a Result(-) shall be returned.

If the request is acceptable, the MMS server shall prepare a list of objects to be deleted. If SPECIFIC was selected as the Scope of Delete parameter, the List of Name parameter identifies the objects to be deleted. Otherwise, all Named Type Objects of the indicated scope are to be deleted. For each object on the list, if the conditions in the Access Control List specified by the Reference to Access Control List attribute of the object are satisfied for Service Class = DELETE, the MMS server shall delete the Named Type object and make its name available for immediate redefinition. The MMS server shall remove the reference to this Named Type object from the List of References to Access Controlled Objects attribute of the Access Control List object referenced by the Reference to Access Control List attribute of this Named Type object.

In 12.19.2, page 147, third paragraph, replace the last sentence with:

Failure to delete an object because the conditions specified in the referenced Access Control List object were not satisfied shall not be deemed an error.

13. Semaphore Management Services

In 13.1.1, top of page 152, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following lines:

Attribute: Reference to Access Control List

In 13.1.1, on page 152, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Semaphore may be controlled by a Client, deleted, or have its access control changed.

In 13.1.1, bottom of page 152, in the text following Event Condition Reference, change the phrase:

> whose MMS Deletable attribute value is false

to:

> whose Reference to Access Control List attribute references an Access Control List object that specifies NEVER for service class = DELETE

In 13.2.2, page 160, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the semaphore are satisfied for the service class = LOAD. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 13.4.2, page 163, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 13.4.2, page 163, in item b), replace this line with:

> b) Its Reference to Access Control List attribute shall be initialized to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.5) may be used for this purpose.

In 13.4.2, page 163, in item g) 2), replace this line with:

> 2) Its Reference to Access Control List attribute shall be initialized to reference an Access Control List object that will report the value of MMS Deletable as false (see 21.1.3). The predefined symbol 'M_NonDeletable' (see 18.3.1.5) may be used for this purpose.

In 13.5, page 164 replace the sentence with:

The DeleteSemaphore service may be used by an MMS-user in order to delete a semaphore if such deletion is permitted.

In 13.5.2, bottom of page 164, replace the text with the following:

The MMS server shall verify that the semaphore exists and has no active owner. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the semaphore are satisfied for the service class = DELETE. If these conditions are not satisfied, the service request fails and a Result(-) shall be returned.

The MMS server shall remove the reference to this semaphore from the List of References to Access Controlled Objects attribute of the Access Control List referenced by the Reference to Access Control List attribute of the semaphore. Finally, it shall delete the specified semaphore and the Event Condition Object referenced by the Event Condition Reference attribute of the semaphore. Return a Result(+).

In table 62, on page 165, add a new line immediately after Number Of Hung Tokens:

Access Control List			C	C(=)	ACO

In 13.6.1.2.1, page 165, add the following sentence at the end of the paragraph:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 13.6.1.2.6 on page 166:

13.6.1.2.6 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Semaphore. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 13.9.2, page 172, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. It shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the semaphore are satisfied for Service Class = LOAD. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

14. Operator Communication Services

In 14.1, add the following sentence to the end of the note:

The MMS Server may require the use of a semaphore by specifying it as a condition in an Access Control List for accepting input and output to the Operator Station.

In 14.1.1, page 174, in the object model, immediately after line

Key Attribute: Operator Station Name

insert a new line:

Attribute: Reference to Access Control List

In 14.1.1, in the text following the object model, before the line

Station Type

insert the new text:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Operator Station may be read, written, or have its access control changed.

In 14.2.2, page 178, insert new items b) and c) into the list. Renumber the remaining items accordingly.

b) the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are not satisfied for the service class = WRITE,

c) the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Operator Stations are not satisfied for the service class = WRITE,

In 14.3.2, page 179, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = READ. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the semaphore are satisfied for Service Class = READ. Otherwise the service shall fail and a Result(-) shall be returned.

15. Event Management Services

In 15.1.1.1, page 181, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following line:

Attribute: Reference to Access Control List

In 15.1.1.1, on page 181, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Event Condition may have its monitoring attributes modified, may be triggered (if a NETWORK-TRIGGERED Event Condition), have its access control changed, or be deleted.

In 15.1.2.1, page 184, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following line:

Attribute: Reference to Access Control List

In 15.1.2.1, bottom of page 184, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Event Action object may be deleted or have its access control changed.

In 15.1.3.1, top of page 186, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following line:

Attribute: Reference to Access Control List

In 15.1.3.1, page 186, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Event Enrollment object may have its attributes changed, may be deleted, or have its access control changed.

In 15.1.4.2.4, page 194, item b) change the reference to 7.2.13.2.

In 15.1.4.2.5, page 194, first paragraph, change the reference to 7.2.13.

In 15.1.4.2.5, page 194, item b), replace this line with:

b) the value NONE for the Application Association Identifier;

In 15.1.4.2.5, page 194, second paragraph, change the reference to 7.2.13.2.

In 15.2.2, page 199, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.2.2, page 199, in item b), replace this line with:

b) Reference to Access Control List - initialized to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 15.3.1.2.1, page 201, replace the last phrase of this sentence

or a value of false in the MMS Deletable attribute

with:

or because deletion was not permitted.

In 15.3.2, page 202, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.3.2, page 202, in the second sentence of the first paragraph, replace the phrase

or if the MMS Deletable attribute has the value false

with:

or if the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Condition object were not satisfied for Service Class = DELETE,

In 15.3.2, page 202, add a new sentence following the second sentence of the first paragraph:

Remove the reference to this Event Condition object from the List of References to Access Controlled Objects attribute of the Access Control List object referenced by the Reference to Access Control List attribute of the Event Condition object.

In 15.3.2, page 202, in the second paragraph, replace the last phrase of this sentence

or a value of FALSE in the MMS Deletable attribute.

with:

or if the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Condition object were not satisfied for Service Class = DELETE.

In table 70, on page 202, add a new line immediately after Evaluation Interval:

Access Control List			C	C(=)	ACO

In 15.4.1.2.1, page 203, add the following sentence at the end of the paragraph:

Section specifies the value to be returned by this parameter.

Add a new subclause 15.4.1.2.8 on the bottom of page 203:

15.4.1.2.8 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Event Condition object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 15.6.2, page 207, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Event Condition object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 15.7.2, page 208, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Event Condition object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 15.8.2, page 210, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If

these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.8.2, page 210, replace the line

MMS Deletable - Initialized to the value true

with:

Reference to Access Control List - Initialized to refer to an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 15.9.1.1.1, page 211, replace all of the text following the first two sentences with:

SPECIFIC - Designates the Event Action objects identified by the value of the Event Action Names parameters as candidates for deletion.

AA-SPECIFIC - Designates all Event Action objects whose scope is the current application association as candidates for deletion.

DOMAIN - Designates all Event Action objects whose scope is the specified Domain as candidates for deletion.

VMD - Designates all Event Action objects whose scope is VMD as candidates for deletion.

Only those candidate Event Action objects that have satisfied the conditions in the Access Control List object referenced by the Reference to Access Control List attribute for Service Class = DELETE shall be deleted.

In 15.9.1.2.1, page 211, in the first sentence, replace the last phrase of this sentence

or a value of false for the MMS Deletable attribute.

with:

or because the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Action object were not satisfied for Service Class = DELETE.

In 15.9.2, page 211, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.9.2, bottom of page 211, replace the second sentence with:

If not empty, or if the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Action object are not satisfied for Service Class = DELETE, the MMS server shall count the Event Action object as a Candidate Not Deleted, and shall not delete the Event Action object.

In 15.9.2, bottom of page 211, add a new sentence to the end of the first paragraph:

Remove the reference to this Event Action object from the List of References to Access Controlled Objects attribute of the Access Control List object referenced by the Reference to Access Control List attribute of the Event Action object.

In 15.9.2, in the second paragraph added by ISO/IEC 9506-1/Cor.1, replace the last sentence with:

Failure to delete an object because the conditions specified in the referenced Access Control List object were not satisfied shall not be deemed an error.

In table 76, on page 212, add a new line immediately after Confirmed Service Request:

Access Control List			C	C(=)	ACO

In 15.10.1.2.1, page 213, add the following sentence at the end of the paragraph:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 15.10.1.2.4 on page 213:

15.10.1.2.4 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Event Action object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 15.12.2, page 216, add a new condition e) as follows:

e) Verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.12.2, page 217, item b), replace the line:

b) MMS Deletable - Initialized to the value true

with:

b) Reference to Access Control List - Initialized to refer to an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 15.13.1.2.1, page 219, in the first sentence, replace the last phrase of this sentence

due to a value of false in the MMS Deletable attribute

with:

because the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Enrollment object are not satisfied for Service Class = DELETE.

In 15.13.2, page 220, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 15.13.2.1, page 220, replace item b) with:

b) satisfies the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Enrollment object for Service Class = DELETE

In 15.13.2.2, page 220, replace item b) with:

b) satisfies the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Enrollment object for Service Class = DELETE

In 15.13.2.2, page 220, delete the last phrase in the last sentence:

due to the presence of the value FALSE in the MMS Deletable attribute.

In 15.13.2.3, page 220, in the second sentence, replace the phrase

for which the value of the MMS Deletable attribute is equal to true.

with:

for which the conditions in the Access Control List referenced by the Reference to Access Control List attribute of the Event Enrollment object are satisfied for Service Class = DELETE.

In 15.13.2.3, page 220, delete the last phrase in the last sentence of the first paragraph:

due to the presence of the value FALSE in the MMS Deletable attribute.

In 15.13.2.4, bottom of page 220, add a new sentence to the end of the first paragraph:

Remove the reference to this Event Enrollment object from the List of References to Access Controlled Objects attribute of the Access Control List object referenced by the Reference to Access Control List attribute of the Event Enrollment object.

In table 80, on page 221, add the following line immediately before More Follows:

Access Control List			C	C(=)	ACO

In 15.14.1.2.1.5, bottom of page 223, add the following sentence at the end of the paragraph:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 15.14.1.2.1.11 on page 224:

15.14.1.2.1.11 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Event Enrollment object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 15.16.2, page 229, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Event Enrollment object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 15.18.2, page 234, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Event Enrollment object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 15.18.2, page 234, add the following phrase at the end of the second sentence:

provided that such triggering is allowed according to the service procedure of 15.7.2.

In 15.21.2, page 243, item e), change the reference to the Transaction object:

:... and reference a Transaction object (see).

16. Journal Management Services

In 16.1.1.1, bottom of page 250, replace the line

Attribute: MMS Deletable (TRUE, FALSE)

in the Object Model with the following line:

Attribute: Reference to Access Control List

In 16.1.1.1, bottom of page 250, replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List object (see) that provides conditions under which this Journal may be read, written, deleted, or have its access control changed.

In 16.2.2, page 257, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = STORE. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Journal object are satisfied for the service class = STORE. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 16.3.2, page 263, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Journal object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 16.4.2, page 265, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Journal object are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In table 91, on page 265, add a new line immediately after MMS Deletable:

Access Control List			C	C(=)	ACO

In 16.5.1.2.2, page 266, add the following sentence at the end of the paragraph:

Subclause 21.1.3 specifies the value to be returned by this parameter.

Add a new subclause 16.5.1.2.3 on page 266:

16.5.1.2.3 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Journal object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

In 16.6.2, page 267, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In 16.6.2, page 267, item b), replace the line

b) MMS Deletable - Initialized to the value true

with:

b) Reference to Access Control List - Initialized to refer to an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose.

In 16.7.2, page 268, add a new first paragraph:

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = DELETE. The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the Journal are satisfied for the service class = DELETE. If these conditions are not satisfied, a Result(-) shall be returned with an error class = ACCESS and error code = OBJECT-ACCESS-DENIED. The remainder of this procedure shall be skipped.

In 16.7.2, page 268, add a new sentence to the end of the paragraph:

Remove the reference to this Journal object from the List of References to Access Controlled Objects attribute of the Access Control List object referenced by the Reference to Access Control List attribute of the Journal object.

17. Errors

(This amendment makes no changes to clause 17 of ISO/IEC 9506-1.)

18. MMS Standardized Names

In 18.3.1.1 replace the line

Attribute: MMS Deletable = FALSE

in the object model with the lines:

Attribute: Reference to Access Control List = 'M_ReadOnly'

In 18.3.1.2 replace the line

Attribute: MMS Deletable = FALSE

in the object model with the lines:

Attribute: Reference to Access Control List = 'M_ReadOnly'

In 18.3.1.3 replace the line

Attribute: MMS Deletable = FALSE

in the object model with the lines:

Attribute: Reference to Access Control List = 'M_NonDeletable'

After 18.3.1.3, page 278, add the following new subclauses:

18.3.1.4 M_Deletable

This standardized Access Control List object may be used for objects that may be deleted by use of the appropriate MMS Delete service.

Object: Access Control List
Key Attribute: Access Control List Name = 'M_Deletable'
Attribute: Reference to Access Control List = 'M_Never'
Attribute: List of Access Control Elements = empty

Attribute: List of References to Access Controlled Objects =

18.3.1.5 M_NonDeletable

This standardized Access Control List object may be used for objects that may not be deleted by use of the appropriate MMS Delete service.

Object: Access Control List
Key Attribute: Access Control List Name = 'M_NonDeletable'
Attribute: Reference to Access Control List = 'M_Never'
Attribute: List of Access Control Elements =
{ Attribute: Service Class = DELETE,
Attribute: Access Condition = NEVER }
Attribute: List of References to Access Controlled Objects =

18.3.1.6 M_ReadOnly

M_ReadOnly is a predefined Access Control List object that may be used in the definition of Variable objects.

Object: Access Control List
Key Attribute: Access Control List Name = 'M_ReadOnly'
Attribute: Reference to Access Control List = 'M_Never'
Attribute: List of Access Control Elements =
{ Attribute: Service Class = WRITE,
Attribute: Access Condition = NEVER },
{ Attribute: Service Class = DELETE,
Attribute: Access Condition = NEVER },
{ Attribute: Service Class = EDIT,
Attribute: Access Condition = NEVER }
Attribute: List of References to Access Controlled Objects =

18.3.1.7 M_Never

M_Never is a predefined Access Control List object that is used in the definition of other Access Control List objects.

Object: Access Control List
Key Attribute: Access Control List Name = 'M_Never'
Attribute: Reference to Access Control List = 'M_Never'
Attribute: List of Access Control Elements =
{ Attribute: Service Class = DELETE,
Attribute: Access Condition = NEVER },
{ Attribute: Service Class = EDIT,
Attribute: Access Condition = NEVER }
Attribute: List of References to Access Controlled Objects =

18.3.2 Event Condition Objects

M_Violation is a predefined Event Condition that occurs whenever a Client attempts an access to an object for which it does not have access rights. Enrollments naming this Event Condition will be notified when such attempts occur.

Object: Event Condition
Key Attribute: Event Condition Name = 'M_Violation'
Attribute: Reference to Access Control List = 'M_Never'
Attribute: Event Condition Class = NETWORK-TRIGGERED
Attribute: State = ACTIVE
Attribute: Priority = normalPriority
Attribute: Severity = normalSeverity
Attribute: Additional Detail =
Attribute: List of Event Enrollment References =

19. Conformance

In 19.2.1.2, page 280, insert

DefineAccessControlList
GetAccessControlListAttributes
ReportAccessControlledObjects
DeleteAccessControlList
ChangeAccessControl

into the list between ExchangeData and FileOpen.

In 19.2.2, page 280, change the last part of the second sentence to:

...except TPY (described below), CEI (described in clause 15), and ACO (described in clause 21).

In 19.2.2, page 280, add the following entry to the end of the list:

ACO

20. Data Exchange Management Services

In 20.1.2.1 replace the line

Attribute: MMS Deletable (FALSE)

in the Data Exchange Object Model with the following lines:

Attribute: Reference to Access Control List = 'M_NonDeletable'

In 20.1.2.1 replace the description of MMS Deletable with:

Reference to Access Control List

The Reference to Access Control List is a reference to an Access Control List Object (see) that provides conditions under which this Data Exchange object may not be written, or have its access control changed.

In 20.2.2, immediately after the first sentence, insert the following text:

The MMS Server shall verify that the conditions specified in the Access Control List specified by the Reference to Access Control List attribute of the VMD are satisfied for Service Class = WRITE. The MMS Server shall verify that the conditions specified in the Access Control List specified by the Reference to Access Control List attribute of the Data Exchange object are satisfied for Service Class = WRITE. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

In table 96, in ISO/IEC 9506-1/Amd.1, add a new line immediately after Program Invocation:

Access Control List			C	C(=)	ACO

Add a new subclause 20.3.1.2.5:

20.3.1.2.5 Access Control List

This parameter, of type Identifier, shall indicate the name of the Access Control List object that controls access to this Data Exchange object. This parameter shall not appear unless the ACO parameter CBB has been negotiated.

Add the following new clause:

21. Conditioned service response

21.1 General

21.1.1 Introduction

This clause provides facilities in MMS that allow the specification of conditions under which certain MMS services are required to fail. Such facilities may be required, for example, to allow use of some MMS services by one client to the exclusion of other clients. This clause is consistent with the general MMS specification that does not require any MMS service request to succeed, but may require a service request to fail. Success is always dependent on conditions beyond the scope of MMS; failure may be required by the MMS service procedures.

The facilities of the Access Control List have been designed to permit interoperation with implementations conforming to earlier versions of this standard. The external manifestations of the Access Control List objects is (1) the reporting of the name of the Access Control List object referenced by a given object in its Get Attributes service, and (2) the use of the additional services specified in this clause. The first manifestation is governed by the negotiation of the ACO parameter CBB; the second is governed by the corresponding service CBBs.

21.1.2 MMS Access services

For each of the affected services, the service procedure shall be modified to begin with the following steps:

a) If the Access Control List specified by the Reference to Access Control List attribute of the VMD contains an Access Control Element whose Service Class attribute matches the service class of the requested service, the Access Condition of that Access Control Element shall be evaluated. If the Access Condition does not succeed, the service shall fail, returning an error of class ACCESS and an error code of OBJECT-ACCESS-DENIED.

b) If the Access Control List specified by the Reference to Access Control List attribute of the object of the service (if any) contains an Access Control Element whose Service Class attribute matches the service class of the requested service, the Access Condition of that Access Control Element shall be evaluated. If the Access Condition does not succeed, the service shall fail, returning an error of class ACCESS and an error code of OBJECT-ACCESS-DENIED.

c) The remainder of the service procedure shall be performed.

The evaluation of the Access Condition shall be performed as follows:

a) If the Access Condition = NEVER, the Access Condition fails.

b) If the Access Condition = SEMAPHORE, the semaphore specified by the Semaphore Name attribute of the Access Condition shall be examined. If the Application Reference of any owner of the semaphore matches the Application Reference of the application association indicated by the Application Association Identifer attribute of the transaction object, the Access Condition shall succeed; otherwise it shall fail. If the Application Association Identifier attribute of the transaction object = NONE, the Access Condition shall fail.

c) If the Access Condition = USER, the Application Reference attribute of the application association indicated by the Application Association Identifier attribute of the transaction object shall be compared to the Application Reference attribute of the Access Condition. If they match, the Access Condition shall succeed; otherwise it shall fail. The Application Reference attribute of the application association indicated by the Application Association Identifier attribute of the transaction object may contain the value NONE if the transaction object was created in response to the processing of an Event Action (see 15.1.4.2.5). In this case, a match will only occur if the Event Condition also specifies the value NONE for USER.

d) If the Access Condition = PASSWORD, the Authentication Unit employed attribute of the application association is TRUE, and the value of the Authentication Value attribute of the application association matches the Password attribute of the Access Condition, the Access Condition shall succeed; otherwise it shall fail. For the Authentication Value to match the Password Value, both values shall represent the same choice in the Authentication-value type (see ISO 8650/AM 1). If the charstring choice has been selected, a match condition shall mean the equality of the character strings, both as to the length of the string and the identity of the characters. If the bitstring choice has been selected, a match condition shall mean that both bitstrings have the same length and the same pattern of 1's and 0's. If the external choice is made, the meaning of a match condition shall be specified by the agency specifying the form of the external. If the application association attribute of the transaction object is NONE, the Access Condition fails.

e) If the Access Condition = JOINT, the Access Conditions specified in the List of Access Condition attribute shall be evaluated. If all of the Access Conditions in the list succeed, this Access Condition shall succeed; otherwise this Access Condition shall fail. The order of evaluation of the Access Conditions of the List of Access Condition attribute shall be a local matter.

f) If the Access Condition = ALTERNATE, the Access Conditions specified in the List of Access Condition attribute shall be evaluated. If any of the Access Conditions succeed, this Access Condition shall succeed; otherwise this Access Condition shall fail. The order of evaluation of the Access Conditions of the List of Access Condition attribute shall be a local matter.

21.1.3 Reporting services

For those services that return a value of the MMS Deletable parameter, the service shall return a value 'FALSE' if the Access Control List object describing this object contains any Access Control Element specifying Service Class = DELETE and Access Condition = NEVER. Otherwise, these services shall return a value of 'TRUE'. The value shall not depend on the Access Control List object referenced by the VMD. These services include:

a) GetDomainAttributes
b) GetProgramInvocationAttributes
c) GetVariableAccessAttributes
d) GetScatteredAccessAttributes
e) GetNamedVariableListAttributes
f) GetNamedTypeAttributes
g) ReportSemaphoreStatus
h) GetEventConditionAttributes
i) GetEventActionAttributes
j) GetEventEnrollmentAttributes
k) ReportJournalStatus
l) GetDataExchangeAttributes
m) GetAccessControlAttributes

21.2 Access Condition parameter

The Access Condition parameter is a parameter common to several Access Control services. It expresses a condition required to be satisfied if the service is to be allowed to proceed.

The structure of the component parameters is shown in table 97.

Table 97 — Access Condition parameter

Parameter Name	Req/Rsp	Ind/Cnf
Access Condition	M	M(=)
Never	S	S(=)
Semaphore	S	S(=)
User	S	S(=)
Password	S	S(=)
Joint	S	S(=)
List of Access Condition	M	M(=)
Alternate	S	S(=)
List of Access Condition	M	M(=)

21.2.1 Access Condition

This parameter shall convey the condition to be satisfied. One of the following parameters shall be selected.

21.2.1.1 Never

Selection of this parameter shall indicate that the service class identified in this Access Control Element shall always fail, i.e. it shall never succeed.

21.2.1.2 Semaphore

Selection of this parameter shall indicate that the service class identified in this Access Control Element shall fail if the MMS Client requesting this service does not own the named semaphore. The value of this parameter is the name of the semaphore so identified.

21.2.1.3 User

Selection of this parameter shall indicate that the service class identified in the Access Control Element shall fail unless the MMS Client requesting this service has the Application Reference identified in this parameter. This parameter may also specify NONE in which case the service shall fail unless the transaction was initiated as an Event Action, i.e. as the result of the occurrence of an event.

21.2.1.4 Password

Selection of this parameter shall indicate that the service class identified in this Access Control Element shall fail unless the MMS Client requesting this service has provided the ACSE Authentication value identified in this parameter.

21.2.1.5 Joint

Selection of this parameter shall indicate that this condition shall succeed if all of the Access Conditions in the List of Access Conditions that follow succeed. If this parameter is selected, the following parameter shall appear.

21.2.1.5.1 List of Access Condition

This parameter shall contain one or more Access Conditions as described in 21.2.

21.2.1.6 Alternate

Selection of this parameter shall indicate that this condition shall succeed if any of the Access Conditions in the List of Access Conditions that follow succeed. If this parameter is selected, the following parameter shall appear.

21.2.1.6.1 List of Access Condition

This parameter shall contain one or more Access Conditions as described in 21.2.

21.3 Define Access Control List

The Define Access Control List service allows the MMS Client to define a set of conditions that will govern access to MMS objects.

21.3.1 Structure

The structure of the component service primitives is shown in table 98.

Table 98 — DefineAccessControlList

Parameter Name	Req	Ind	Rsp	Cnf	CBB
Argument	M	M(=)			
Access Control List Name	M	M(=)			
List of Access Control Element	M	M(=)			
Service Class	M	M(=)			
Access Condition	M	M(=)			
Result(+)			S	S(=)	
Result(-)			S	S(=)	
Error Type			M	M(=)	

21.3.1.1 Argument

This parameter shall convey the parameters of the DefineAccessControlList service request.

21.3.1.1.1 Access Control List Name

This parameter, of type Identifier, shall specify the name of a Access Control List. Access Control List objects always have VMD-specific scope.

21.3.1.1.2 List of Access Control Element

This parameter shall contain zero or more values describing an access control element. Each such element shall consist of a Service Class parameter indicating which set of MMS services the element constrains, and an Access Condition parameter indicating the condition that, if not satisfied, shall require the services identified by the first parameter to fail.

21.3.1.1.2.1 Service Class

This parameter shall indicate which service class shall be represented in this Access Control Element. The possible values are READ, WRITE, LOAD, STORE, EXECUTE, DELETE and EDIT.

21.3.1.1.2.2 Access Condition

This parameter shall identify the condition that shall be satisfied to allow the service to proceed.

21.3.1.2 Result(+)

The Result(+) parameter shall indicate that the service request succeeded. When success is indicated, no service specific parameter shall be returned.

21.3.1.3 Result(-)

This parameter shall indicate that the service request failed. The Error Type parameter, which is defined in detail in clause 17, provides the reason for the failure.

21.3.2 Service Procedure

The MMS server shall verify that all the conditions in the Access Control List object referenced by the Reference to Access Control List attribute of the VMD are satisfied for the service class = LOAD. If these conditions are not satisfied, the service shall fail and a Result(-) shall be returned.

The responding MMS-user shall create an Access Control List object and assign it attributes as indicated by the parameter list. The Reference to Access Control List attribute shall be initialized to reference an Access Control List object that will report the value of MMS Deletable as true (see 21.1.3). The predefined symbol 'M_Deletable' (see 18.3.1.4) may be used for this purpose. The Reference to Access Controlled Objects attribute shall be initialized to an empty list. If an object with the same name already exists, a Result(-) shall be returned. Otherwise, a Result(+) shall be returned.

21.4 Get Access Control List Attributes

The Get Access Control List Attributes service returns the attributes of the Access Control List object, either the object directly identified, or the object that is referenced by the Reference to Access Control List attribute of the identified object.

21.4.1 Structure

The structure of the component service primitives is shown in table 99.

Table 99 — GetAccessControlListAttributes

Parameter Name	Req	Ind	Rsp	Cnf	CBB
Argument	M	M(=)			
Access Control List Name	S	S(=)			
VMD	S	S(=)			
Specific Object	S	S(=)			
Object Class	M	M(=)			
Object Name	M	M(=)			
Result(+)			S	S(=)	
Access Control List Name			M	M(=)	
List of Access Control Element			M	M(=)	
Service Class			M	M(=)	
Access Condition			M	M(=)	
VMD Use			M	M(=)	
Counts of Controlled Objects			C	C(=)	
Object Class			C	C(=)	
Object Count			C	C(=)	
Access Control List			C	C(=)	ACO
Result(-)			S	S(=)	
Error Type			M	M(=)	

21.4.1.1 Argument

This parameter shall convey the parameters of the GetAccessControlListAttributes service request. One of the following parameters shall be chosen.

21.4.1.1.1 Access Control List Name

This parameter, of type Identifier, shall specify the name of a Access Control List whose attributes are to be returned. Access Control List objects always have VMD-specific scope.

21.4.1.1.2 VMD

This parameter shall specify that the Access Control List object referenced by the Reference to Access Control List attribute of the VMD is the Access Control List object whose attributes are to be returned.

21.4.1.1.3 Specific Object

This parameter shall specify that the Access Control List object referenced by the parameters that follow is the Access Control List object whose attributes are to be returned. If this parameter is chosen, the following parameters shall appear.