ISO/CCITT and Internet Management Coexistence (IIMC):

ISO/CCITT to Internet Management Security

(IIMCSEC)

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Status of this Memo

This document provides information to the network and systems management community. This document is intended as a contribution to on going work in the area of multi-protocol management coexistence and interworking. This document is part of a package; see also [IIMCIMIBTRANS] [IIMCMIB-II] [IIMCPROXY] and [IIMCOMIBTRANS]. Distribution of this document is unlimited. Comments should be sent to the Network Management Forum IIMC working group (iimc@thumper.bellcore.com).

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Abstract

This document is intended to facilitate the multi-protocol management coexistence and interworking for networks that are managed using the ISO/CCITT Common Management Information Protocol (CMIP) and networks that are managed using the Internet Simple Network Management Protocol (SNMP). This document defines the end-to-end security architecture, services, and mechanisms for use with ISO/CCITT-Internet proxies. This document also contains the ISO/CCITT GDMO definition and registration of the SNMP Parties MIB, derived from the Internet SNMP Parties MIB [RFC1447] according to the procedures defined in "Translation of Internet MIBs to ISO/CCITT GDMO MIBs" [IIMCIMIBTRANS].

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Revision History

Draft 0 - October 9, 1992
Initial draft of this document (previously entitled "IIMC: Translation of Internet Party MIB (RFC1353) to ISO/CCITT GDMO MIB" [IIMCPARTY]).

Draft 1 - March 26, 1993
Previous draft of this document (replaced Draft 0).

Draft 2 - May 26, 1993
Previous draft of this document (replaced Draft 1).

Draft 3 - August 5, 1993
Current draft of this document (replaces Draft 2). This draft will undergo QA review and then be published as Issue 1.0. OID values and MOCS proformas will be added prior to publication.

Major Changes Since Last Revision

1. Aligned templates with changes as per [IIMCIMIBTRANS].
   - Added unique naming attributes for all classes.
   - Removed conceptual table classes.
   - Modified DELETEATT and DELETEVALUE keywords and corresponding attribute properties.
   - Added Conformance section.
2. A security mechanism was specified for use in protecting passwords using the MD5 hash algorithm.
3. Added IIMC ACL MIB definitions.
4. Applied several text changes identified during review of Draft 2.

1. Introduction

This section provides an overview of ISO/CCITT and Internet Management Coexistence (IIMC) activities, insight into the problem being addressed by IIMC, and a brief introduction to the strategy adopted by IIMC: use of translated MIBs in either a proxy or native implementation. The section concludes by describing the scope of this document, and terms and conventions used by this document.

1.1 Problem Statement

The need for enterprise network management has been addressed by development of network management standards within various communities, most notably the ISO/CCITT and Internet communities.

- The ISO/CCITT community developed the Common Management Information Protocol (CMIP) [ISO9596-1], and related SMI documents [ISO10165-1,2,4].

- The Internet community developed the Simple Network Management Protocol (SNMP) [RFC1157], and its successor, SNMPv2 [RFC1448]. The Internet SMI is defined in [RFC1155] and [RFC1442].

These standards share a nearly common management model, but diverge due to differing management philosophies. Although functionally similar, the Internet and ISO/CCITT protocols and SMIs differ in terms of their complexity and specific operations. Business requirements for end-to-end enterprise management include the need to integrate the management of many different devices, potentially owned or administered by many independent organizations. This requires components to be accessed by ISO/CCITT management, Internet management, and proprietary management mechanisms in a manner which presents a unified view of the network, despite protocol and SMI differences.

For example, many telecommunications and computer vendors, represented by organizations such as the Network Management Forum (NMF), and the U.S. government, as specified in the Government Network Management Profile (GNMP), have based their enterprise management model on the ISO/CCITT management model. These organizations are particularly interested in integrated management of devices that use the Internet management. This interest is primarily due to the widespread commercial implementation and use of such devices, especially devices that use the Internet TCP/IP protocol suite.

1.2 Overview of IIMC

This document is part of a package of ISO/CCITT and Internet Management Coexistence (IIMC) drafts. Documents included in this package are:

[IIMCIMIBTRANS]	Translation of Internet MIBs to ISO/CCITT GDMO MIBs
[IIMCOMIBTRANS]	Translation of ISO/CCITT GDMO MIBs to Internet MIBs
[IIMCMIB-II]	Translation of Internet MIB-II (RFC1213) to ISO/CCITT GDMO MIB
[IIMCPROXY]	ISO/CCITT to Internet Management Proxy
[IIMCSEC]	ISO/CCITT to Internet Management Security

These documents together comprise a package aimed at integrating ISO/CCITT-based and Internet-based management systems. These documents represent coexistence and interworking efforts underway within the IIMC working group, chartered under the auspices of the Network Management Forum Architecture Integration ISO/Internet (AIII) technical team.

The IIMC intends to address the problem that end-to-end management requires an integrated, unified view of the managed network, despite differences in management protocol and information structure. Integrated management can be facilitated by the development of "proxy" mechanisms which translate between functionally equivalent service, protocol, and SMI differences to create this unified view. MIB translation procedures can be used to support proxy management, as well as to take advantage of existing MIB definition and avoid duplication of effort. In this way, commercial investment in both ISO/CCITT and Internet-based management technologies can be preserved through deployment of common methods and tools which support integration.

This overall strategy was outlined in a joint publication developed by the NM Forum and X/Open entitled "ISO/CCITT and Internet Management: Coexistence and Interworking Strategy" [NMFTR107]. The documents included in the IIMC package are the next level of detailed specifications which implement several of the methodologies identified in the strategy. Additional specifications may be defined in the future.

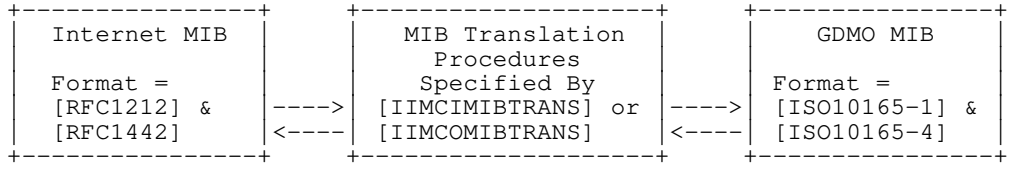
1.3 MIB Translation Procedures

The foundation of IIMC is provided by a pair of Management Information Base (MIB) translation procedures.

- [IIMCIMIBTRANS] specifies translation procedures for converting MIBs from Internet MIB macro format into ISO/CCITT GDMO template format.

- [IIMCOMIBTRANS] specifies translation procedures for converting MIBs from ISO/CCITT GDMO template format into Internet MIB macro format.

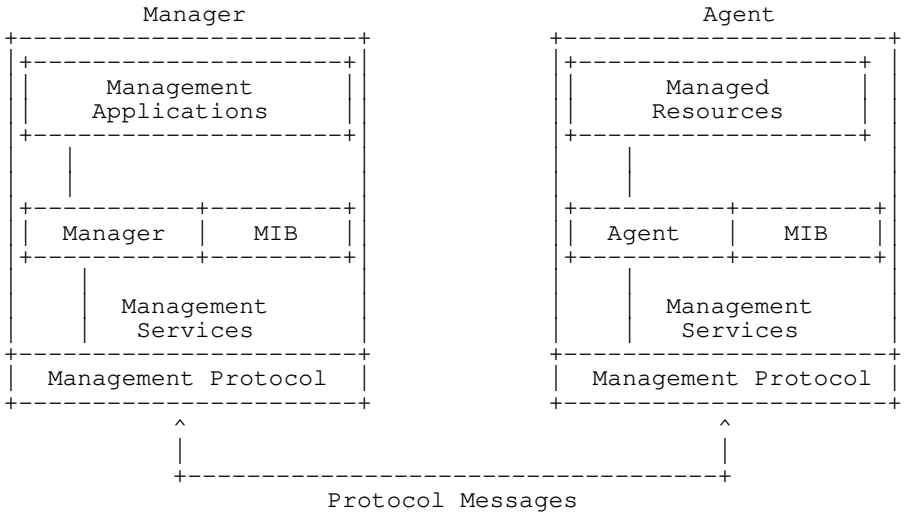
The IIMC approach is to specify direct translation procedures which yield a pair of functionally-equivalent MIBs, as shown in the following figure.



MIBs translated by these procedures may be used to take advantage of existing MIB definitions when business needs require deployment in a different management environment. Translated MIBs may also be used to provide uniformity when multiple management environments are supported by a single system (e.g., dual stack managers). Finally, IIMC MIB translation procedures may be used to support service emulation by a proxy.

1.4 Native Management Model

The basic model for ISO/CCITT and Internet management is illustrated in the following diagram.

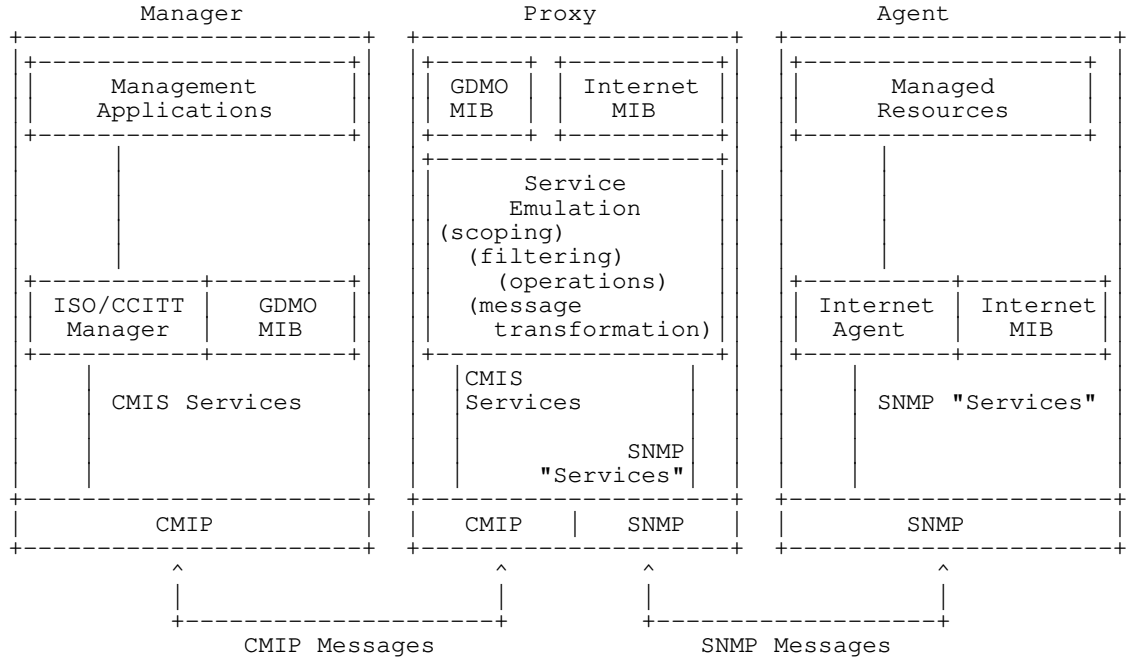


Within IIMC documents, this model is referred to as the "native" management model. MIBs translated using IIMC procedures can be used by "native" agent implementations. For example, an ISO/CCITT agent can make visible TCP/IP managed

resources using the translated GDMO version of the Internet MIB-II [RFC1213] specified by [IIMCMIB-II]. Dual-stack managers or agents may also be implemented which support both the original MIB and the translated MIB generated using IIMC-specified procedures.

1.5 Proxy Management Model

The basic model for ISO/CCITT to Internet proxy management is illustrated in the following diagram. This proxy is specified by [IIMCPROXY]. A similar approach could also be taken to specify an Internet to ISO/CCITT proxy, although no such IIMC document is currently specified.



This ISO/CCITT to Internet proxy provides emulation of CMIS services by mapping to the corresponding SNMP message(s) necessary to carry out the service request. The service emulation allows management of Internet objects by an ISO/CCITT manager. The left hand side of the proxy behaves like an ISO/CCITT agent, communicating with the ISO/CCITT manager using CMIP protocols. The right hand side of the proxy behaves like an Internet manager, communicating with the Internet agent using SNMP protocols.

The proxy relies on the existence of a pair of directly-related MIB definitions, where the Internet MIB has been translated into ISO/CCITT GDMO using the procedures specified in [IIMCIMIBTRANS]. The proxy uses these MIB definitions and rules to provide run-time translation of management information carried in service requests and responses.

The proxy is designed with a specified interface between the

proxy and the underlying protocol stacks, and so deals primarily in terms of CMIS services and SNMP "services". The proxy emulates services such as CMIS scoping and filtering, processing of CMIS operations, and forwarding/logging of CMIS notifications by performing a mapping process which must be tailored for each protocol (for example, SNMPv1 and SNMPv2 are variants of the same protocol mapping process).

1.6 Scope of this Document

One of the IIMC objectives is to provide for the secure end-to-end management of resources managed using ISO/CCITT and Internet management services, protocols and SMI. Security and management by their very nature are entwined such that each needs the services of the other. Security services are required to protect management services. Management services are required to monitor and control security services.

This document (IIMCSEC) defines the security architecture for end-to-end security between an ISO/CCITT manager and an Internet agent via proxies such as that defined in [IIMCPROXY]. The architecture requires that information required to support Internet security mechanisms from an end-to-end perspective, and to manage it, be translated into the ISO/CCITT SMI. This document applies the procedures described in [IIMCIMIBTRANS] to the translation and registration of the Internet SNMP Parties MIB defined in [RFC1447].

This document primarily addresses issues concerning security architecture and interoperability of security mechanisms. Issues concerning trusted implementations, although important, are beyond the scope of this document.

1.7 Terms and Conventions

This document assumes that the reader is familiar with ISO/CCITT management and Internet management, and the terminology of each. The term "SNMP" is used throughout this document to indicate either SNMPv1 or SNMPv2, unless a distinction needs to be made.

This document assumes that the reader is familiar with the ISO/CCITT and Internet management security services, protocols and mechanisms.

This document assumes that the reader is familiar with the Internet to SMI translation procedures defined in [IIMCIMIBTRANS].

Other terms and conventions used throughout this document are defined in Section 2.

2. Security and Management Considerations

Security and management are entwined by their very nature such that each needs the services of the other. Security services are needed to protect management services. Management services are needed to monitor and control security services. These considerations are briefly presented in this section.

2.1 General Considerations

2.1.1 Security of Management

Management is most vulnerable to security attacks at the manager user interface, the communications path over which management messages are transmitted, and at the managed system that contains the resources being managed. Accordingly, management's security considerations are to overcome these threats by:

- Preventing unauthorized operator access to manager applications and associated management information contained in a manager workstation,

- Protecting management information in transit between managers and agents, and

- Enforcing management policy regarding access to information within the managed system.

Preventing unauthorized access to manager applications is beyond the scope of this document, and therefore will not be discussed. The characterization of the security threats in relation to the other two vulnerable areas are discussed more fully in the following sections.

2.1.2 Management of Security

Security requires management support for three basic activities:

- monitoring and control of security mechanisms,
- detection of security related events through security alarm generation, reporting and audit trail analysis, and
- damage assessment and recovery from a security attack.

Security mechanisms and algorithm resources are modeled as managed objects and the management information is stored in a secure portion of the management information base. The same management and security mechanisms used to manage non-security managed objects may be applied to the management of security objects, and the generation of security notifications associated with their operation.

2.1.3 Threat Characterization

Security threats for management are the same as for any distributed application. Security threats can be characterized as being active or passive. Active threats to a management system may effect changes to the state or operation of the managed resource Examples of active threats are malicious changes to the routing tables of a system, or to the objects used to control decisions related to policies, such as security policies relating to resource access.

Active threats include:

- masquerade,
- modification and fabrication of messages and stored data,
- replay and reordering of messages, and
- denial of management services.

Passive threats are those which, if realized, would not result in any modifications to information contained in the system, e.g., management information, and where neither the operation nor the state of the system is changed.

Passive threats include:

- disclosure of message contents and stored data,
- traffic analysis, and
- repudiation.

2.1.3.1 Communications Path Security

The threats to the communications path used for manager to agent communications, and applicable security services include:

- modification and fabrication of management messages
  * integrity

- disclosure of management message data
  * confidentiality, selective field confidentiality

- replay and reordering of messages
  * integrity

- denial of management services
  * continuity of operations

- traffic analysis
  * confidentiality

Note that the communications path from the manager to an agent may be direct, or indirect via the management applications of an intermediate manager or proxy. In the indirect case, the

portion of the message that must be exposed in the intermediate manager for the purpose of application layer relaying is subject to unauthorized disclosure and modification. Such entities must be trusted not to perform such modifications or to disclose the contents of the management messages. Selective field confidentially services may be needed if intermediate managers or proxies are acting as application layer relays in the path. Such selective field services allow only the information in management messages needed for application layer routing to be unprotected while preventing other fields in the message from disclosure or modification.

2.1.3.2 Managed System Security

The threats to the managed system include:

- masquerade of a manager application or operator
  * peer authentication, data origin authentication

- modification and fabrication of data residing in the management information base
  * access control, data integrity

- disclosure of management data in the managed system
  * access control, confidentiality

- repudiation of management requests at destination
  * non-repudiation at destination.

Non-repudiation services may be provided in circumstances where such accountability is needed. While the non-repudiation service does nothing to protect the network, it does provide the capability to trace the entities that are to be blamed for mis-management.

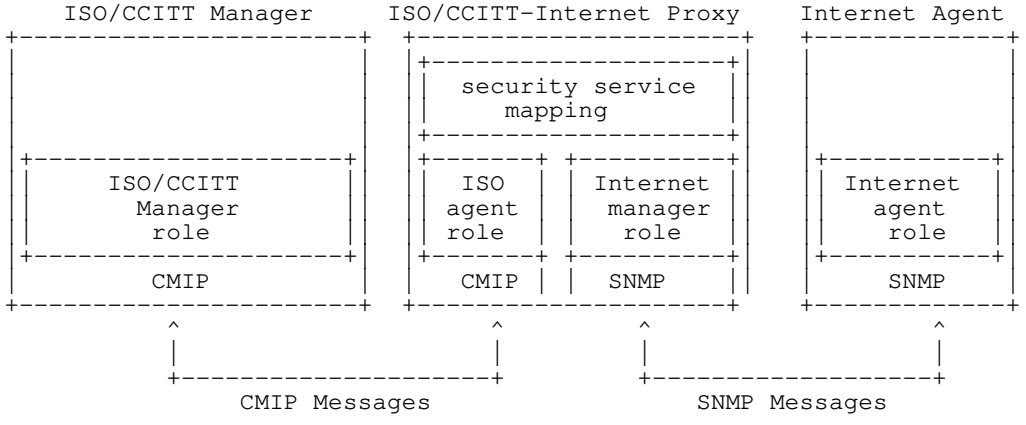
2.2 ISO/CCITT to Internet Security Environment

2.2.1 Security Model

The model for IIMC end-to-end security is illustrated in the following figure. The objective is to provide continuity of security services from the ISO/CCITT Manager through to the Internet Agent. The end-to-end solution is constrained by the security services available at the Internet agent and those available at the ISO/CCITT Manager. The mapping of security services is provided by the ISO/CCITT-Internet proxy. The mapping of those services at the proxy will depend upon the availability of the services and the compatibility of the mechanisms used to provide the services.

This figure illustrates the proxy in a separate device from the manager or the agent. If the proxy function is performed in the manager, then how the manager's internal security mechanisms map to Internet security services is beyond the

scope of this document. If ISO management services and protocol are provided in the managed device (native CMIP agent), the ISO security services apply at the managed system. The mapping of any ISO security services that may still possibly apply at the internal proxy to Internet agent interface into equivalent Internet services, e.g., authentication and access control, is beyond the scope of this document.



- ISO peer authentication
- ISO data origin authentication*
- ISO integrity, confidentiality*
- Internet access control
- ISO access control+

- Internet data origin authentication#
- Internet integrity, confidentiality#
- Internet access control#

* OSI application layer standards [ISO11586-1,2,3,4] are in progress. These services may also be provided by lower layers in some environments, e.g., transport and network

SNMPv1 and SNMPv2 have different mechanisms (or none)

+ ISO access control may be applied by the proxy to GDMO objects, if enforcement is at the proxy.

IIMC End-to-end Security Model

All security services do not have to be provided at the same layers in the protocol suites on the two external proxy interfaces. For example, integrity and confidentiality services may be applied at the transport or network layer at the interface to the ISO/CCITT manager, and at the application layer at the interface to the Internet agent. However, authentication and access control services should be provided at the application layer so that the same granularity of control may be achieved on both sides of the interface. For example, access should be controlled to the application user, and to the level of individual attributes within OSI objects.

Depending on the environment, and the security policy, some security services may not be needed at a proxy's interface to the ISO/CCITT manager. For example, data origin authentication and confidentiality services may not be needed if the two devices are close together and physical security is adequate to

satisfy the security policy.

2.2.2 Supported Security Capabilities

The basic security capabilities to be met by the architecture for providing end-to-end security services are support for:

- enforcement of SNMPv1 security services at the agent (community string, and possibly source node address),

- enforcement of SNMPv2 security services at the agent (party/context based),

- enforcement of access control at the proxy using OSI access control mechanisms [ISO10164-9] for the ISO/CCITT managed objects derived from Internet objects for all proxied agents, and for the MIB specific to the proxy [IIMCPROXY],

- OSI security services between the ISO/CCITT manager and the proxy, e.g., those provided by [ISO11586-1.2.3.4], and

- mapping of OSI security services into Internet security services, where possible, and forwarding from the ISO/CCITT manager of information needed for Internet security mechanisms.

2.2.3 Internet Management Security

The security services for Internet management differs depending on the version of SNMP (SNMPv1 or SNMPv2) used.

2.2.3.1 SNMPv1 Security

The SNMPv1 security relies on the transfer of an unprotected community string that represents the capabilities that the initiator has with respect to operations on a set of objects.

2.2.3.2 SNMPv2 Security

The SNMPv2 security architecture relies on the identification of distinct, globally unique, entities, called "parties", for peers that exchange SNMP messages [RFC1445]. Multiple parties may exist at the manager and at the agent.

Each distinct SNMPv2 peer is identified by a "party identifier", an OID. Associated with the party identifier are it's agent address, and parameters for access control, authentication, integrity and confidentiality services which may be used when communicating with other parties. Since parties form a peer relationship, these security service parameters for peer parties must be compatible.

The peer relationship between SNMPv2 parties is established via an associated "context", identified by an OID, which provides a means to identify constraints on valid management operations and access to associated resources (MIB objects). The context also specifies whether the constraints apply to local resources or to remote resources via a (yet another) proxy relationship.

The minimal SNMPv2 security service allowed is access control as specified by the source (srcParty), destination party (dstParty), and context identifiers. SNMPv2 requests that do not contain all three identifiers are discarded.

As discussed in 2.2.5, the access control scheme used by SNMP security can be considered a form of capability scheme.

2.2.4 Constraints on Mapping Security Services

The mapping of security services end-to-end is primarily constrained by the security services available at the Internet agent. The possible application level security services at Internet agents is well defined for SNMPv1, and for SNMPv2 (currently proposed draft standard). However, it cannot be assumed that all Internet agents will implement the full range of their defined security services, or that they are all required for any given environment.

Given the known potential availability of Internet security services at Internet agents, and at the Internet proxy, three major problems arise in proxy situations:

a) Selection from the security services available at the Internet proxy to Internet agent interface of those services that are appropriate to the threats at that interface, according to the established security policy.

b) Providing security services at the ISO manager to Internet proxy interface that are appropriate to the threats at that interface, according to the established security policy.

c) Transfer to the Internet proxy from the ISO manager of security parameters required for Internet proxy to Internet agent security.

Note: An exact mapping of security services between both Internet proxy interfaces may not be required. The environments at the two interfaces may be completely different, e.g., the manager and proxy may be in the same room while the agents are geographically distributed.

Assume the following environment and constraints.

i) The ISO/CCITT-Internet proxy is geographically remote from both the ISO/CCITT manager and the Internet agents,

and the threats at both interfaces are the same.

ii) Only application level security services are used.

iii) The Internet agents and Internet proxy support the full range of security services defined for them. They include, for the respective SNMP versions:

Service	**SNMPv1**	**SNMPv2**
Peer Authentication	-	X
Data Origin Authentication	-	X
Access Control	x	X
Connectionless Integrity	-	X
Connectionless Confidentiality	-	X
Replay, Reorder Protection	-	X

The first problem (a) can be solved by configuring the security parameters of the Internet agents and Internet proxy, either through local or remote management mechanisms.

The second problem (b) can be solved by implementing the appropriate OSI management services in the ISO/CCITT manager and ISO/CCITT-Internet proxy, and configuring the mechanisms to provide the service. This problem is complicated by the current lack of Stable OSI security standards for data origin authentication, integrity, confidentiality, and access control. Future documents will describe how the stable versions of [ISO10164-9], Objects and Attributes for Access Control, will be applied to access control at the proxy, and [ISO11586-1,2,3,4], Generic Upper Layer Security, will be applied to provide data origin authentication, integrity, and confidentiality services between the ISO/CCITT manager and the proxy.

The third problem (c) can be solved by using an access control certificate to transfer the Internet security parameters. This problem is complicated by the current lack of a stable standard for access control certificates. Given the necessity for such transfers in proxy situations, an preliminary ACC will have to be used. However, an attempt should be made to align as closely as possible with proposed ISO standards.

2.2.5 ISO Access Control Framework and SNMP Security

The SNMP access control schemes can be most nearly categorized as capability schemes using the definitions in the ISO Access Control Framework [ISO10181-3]. A capability defines a set of allowed operations that the initiator of the operation is allowed to perform on an identified set of targets.

The SNMPv1 scheme is a very weak capability scheme which uses the community string to identify which operations are permitted

or not permitted on a set of objects. However the community string is not bound to the initiator, i.e., it may possibly be changed in transit. Proof of its authenticity can be inferred from the fact that the SNMPv1 agent is configured to have knowledge of the capabilities represented by the community string. In that sense, the person that configured the community string, either via local mechanisms, or via remote management mechanisms can be considered to provide the third party level of authenticity which is acceptable for the environment. However, if security management parameters, exchanged between the manager and the agent, or proxy, are not protected, then authenticity is not guaranteed since the community string may have been compromised.

The SNMPv2 scheme is a stronger capability scheme, tied to a strong source authentication mechanism, which uses the combination of SNMPv2 srcParty, dstParty, and context identifiers to identify which operations are permitted or not-permitted on a set of objects. The srcParty binds it to the initiator of the request. Proof of its authenticity can be inferred from the fact that the SNMPv2 agent is configured to have knowledge of the capabilities represented by the interrelated parameters. In that sense, the person that configured the Internet Party MIB, either via local mechanisms, or via remote management mechanisms can be considered to provide the third party level of authenticity which is acceptable for the environment. However, if security management parameters, exchanged between the manager and the agent, or proxy, are not protected, then authenticity is not guaranteed since the security parameters may have been compromised.

Capabilities may be carried in access control tokens or access control certificates (ACC). Tokens and certificates are similar. A token differs from a certificate in that it is not created by an entity which is a security authority, and it does not necessarily contain an indication of the time period for which it is valid. The sealing of the ACC by a security authority and the provision of a time period for which it is valid provides third party proof of its authenticity.

3. Security Specifications

3.1 ISO Manager to ISO/CCITT-Internet Proxy Security

OSI data origin authentication services, integrity services, confidentiality services, and access control services are currently beyond the scope of this document due to the lack of stable relevant ISO security standards. Specifications for these services, based on [ISO10164-9] and [ISO11586-1,2,3,4], will be defined in a future Issue when the relevant base standards become International Standards.

3.1.1 Peer Authentication Services

OSI peer authentication services shall be supported in accordance with OMNIPoint 1 security specifications in [NMF016] Annex B. The authentication class supported shall be Class 2, as defined in [NMF016] Annex G. The minimum requirements for Class 2 authentication are support for the use of simple authentication with protected password as specified in [NMF016] Annex B.2.

The authentication value for Class 2 authentication shall include the ASN.1 SimpleCredentials definition contained in [NMF016] Annex B.2, including the name field (an ASN.1 DistinguishedName), the validity field with sub-field time1 included, and the password field with the choice of PROTECTED OCTET STRING that contains the OID for the MD5 hashing function and a transformed password.

The procedure for producing the transformed password shall be as follows:

1) Insert the initiator Distinguished Name into the name field of the SimpleCredentials construct.

2) Insert the current time into the validity.time1 field of the SimpleCredentials construct.

3) Insert the password value into the password field of the SimpleCredentials construct.

4) Encode the SimpleCredentials construct using the Distinguished Encoding Rules as specified in [NISTSTABLE], Part 12, clause 7.14.1.

5) Apply the MD5 algorithm to the encoded SimpleCredentials to produce the MD5 hash value, i.e., the transformed password.

The password field of the SimpleCredentials construct shall be an octet string formatted as:

<alphanumeric MD5 OID> || "@" || <transformed password>

where

<alphanumeric MD5 OID> - the alphanumeric form of the OID that contains the OID sub-identifiers represented as decimal integers separated by decimal points, i.e., the familiar "dot" notation.

3.1.2 Transfer of SNMP Security Parameters

Support shall be provided for the transfer of Internet security service parameters from the ISO/CCITT manager to an ISO/CCITT-Internet proxy at the time of management association

establishment, and with CMIP requests. Access control security parameters shall be transferred as security attributes of an Access Control Certificate (ACC), also referred to as a Privilege Attribute Certificate (PAC). Implementations shall support the ACC defined in OMNIPoint 1 [NMF016] Annex K, and the associated PICS in Annex E.8.8.

To allow for later inclusion of security attributes for OSI access control, the ACC transferred to an ISO/CCITT-Internet proxy shall be a compound ACC, with the first ACC in the sequence of contained ACCs being the ACC with the SNMP security attributes. The containing ACC of the compound ACC transferred to an ISO/CCITT-Internet proxy shall contain the privilegeAttributes sequence, in accordance with [NMF016] Annex E.8.8. The privilegeAttributes sequence may be empty.

The Internet security parameters shall be transferred using the security attributes defined by [ECMA138]. The security attributes are defined in the Security-Services-Attributes module in [ECMA138] using the attribute macro defined for the ISO Directory Services [ISO9594]. For ease of use, these definitions are repeated below; in the event of transcription error, the original source specifications are normative.

The security parameters to be transferred in the ACC shall include the Security-capability-type-1 attribute as defined in [ECMA138].

The Security-capability-type-1 attribute grants access of the type accessType to the object(s) defined by objectDefiner.

```
Security-capability-type-1 ::= ATTRIBUTE
     WITH ATTRIBUTE-SYNTAX CapabilityType1
     SINGLE VALUE

CapabilityType1 ::= SEQUENCE {
     objectDefiner  ObjectDefiner,
     accessType     AccessDefiner}

ObjectDefiner ::= IntegerOrString
AccessDefiner ::= IntegerOrString

IntegerOrString ::= CHOICE {
     integerPart    INTEGER,
     stringPart     IA5String}
```

The IntegerOrString choice shall be IA5String.

The Security-capability-type-1 attribute is registered as:

```
desd-att-capability-type-1 OBJECT IDENTIFIER ::=
                    {iso(1) identified-organization(3)
                    icd-ecma(0012) standard(0)
                    desd(138)
```

attributeIdentifiers(3) 4}

The Security-capability-type-1 attribute shall be used for proxy to SNMPv1 agents to carry the community string indicating the accessType. The objectDefiner shall be undefined and represented as an empty string (''H).

The Security-capability-type-1 attribute shall be used for proxy to SNMPv2 agents to carry the srcParty and dstParty as the objectDefiners, and the context identifier as the accessType.

The contents of the Security-capability-type-1 attribute shall be as described below.

[ECMA138] Security Attribute	SNMPv2 Security Parameter	SNMPv1 Security Parameter
Security-capability -type-1		
objectDefiner	src/dst Parties	""H
accessType	context	community string

The src/dst Parties are the srcParty and dstParty SNMPv2 parameters separated by a slash (/). The SNMPv2 parameters shall be ASN.1 object identifiers represented using the "dot" notation convention, where the OID sub-identifiers are represented in decimal character form and separated by decimal points. For example, {1 3 6 1 6 3 3 2 3 1 1 3} is represented as "1.3.6.1.6.3.3.2.3.1.1.3".

3.1.3 ISO/CCITT-Internet Proxy Party MIB

The ISO/CCITT-Internet proxy shall maintain the security parameters used for communicating with the ISO/CCITT manager in a partyEntry managed object within the Party MIB instantiated in the proxy..

The OID for the MD5 mechanism used for authentication shall be as defined in [NISTSTABLE], clause 7.10.4.1, and shall be contained in the partyAuthProtocol object.

The password used for authentication shall be contained in the partyAuthPrivate columnar object, and shall be stored and updated in accordance with the procedures defined for the object, i.e., the exclusive OR mechanism.

The partyAuthLifetime object shall contain the value, in seconds, to be added to the time1 value contained in the SimpleCredentials construct passed to the proxy by the manager. If the value of time1, augmented by the partyAuthLifetime

value, is less than the proxy's local notion of time, then the authentication shall be considered invalid.

3.2 ISO/CCITT-Internet Proxy to Internet Agent Security

An ISO/CCITT-Internet proxy that supports SNMPv1 shall support the community string security services as defined in [RFC1157].

An ISO/CCITT-Internet proxy that supports SNMPv2 shall support the security services as defined in [RFC1447], with minimal support for the "Party No Privacy" compliance level specified by clause 3.7.1 of [RFC1447].

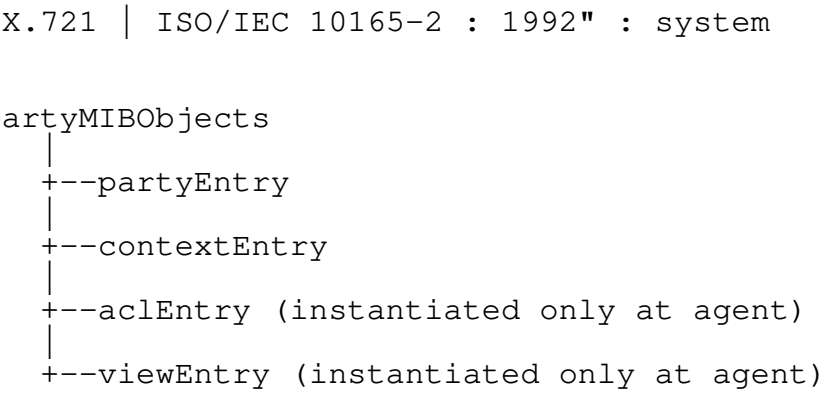
3.3 ISO/CCITT-Internet Proxy Access Control Enforcement

Access control enforcement at the ISO/CCITT-Internet proxy is currently beyond the scope of this document. However, access control enforcement at the proxy will be based on OSI access control for management as defined in [ISO10164-9] when it becomes an International Standard.

4. IIMC Party MIB

Support for the SNMPv2 security services requires that some of the Internet Party MIB [RFC1447] be instantiated in the ISO/CCITT-Internet proxy, and SNMPv2 agents. The IIMC Party MIB is derived from the Internet Party MIB defined in [RFC1447]. Adjustments have been made to the behavior of some elements in the MIB to accommodate SNMPv1 community string based security.

A Naming Tree diagram for IIMC Party MIB managed object classes is illustrated below. The IIMC Party MIB is subordinate to the ISO/CCITT system managed object that represents the Internet agent or proxy.



The IIMC Party MIB elements that are specific to the proxy, i.e., local instantiations of partyMIBGroup, partyEntry and contextEntry, should be instantiated under the ISO system object that is specific to the proxy. The IIMC MIB elements

that are specific to each SNMP agent are actually instantiated in the SNMP agent. Duplicates of MIB elements instantiated in the SNMP agent should not be instantiated in the proxy if a stateless approach to proxy is used as described in [IIMCPROXY].

The GDMO templates and ASN.1 modules are included here in one section to facilitate automated processing. Comments and subsection headers are included in the form of ASN.1 comments, i.e., preceded by "--".

This document (IIMCSEC) is allocated the following registration identifier for purposes of referencing material contained herein.

```
     iimcIIMCSEC OBJECT IDENTIFIER ::={iimcManagementDocMan 4}
```

-- 4.1 Party MIB GDMO Templates

-- 4.1.1 Party MIB Managed Object Classes

```
aclEntry  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992" :top;
     CHARACTERIZED BY
     aclEntryPkg PACKAGE
     BEHAVIOUR
          aclEntryPkgBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This managed object class maps to
                    aclEntry object in [RFC1447].!!;
          DESCRIPTION
          !!The access privileges for a particular requesting
          SNMP party in accessing a particular target SNMP
          party.!!;
          INDEX     SNMPv2-Party-MIB.aclTarget,
                    SNMPv2-Party-MIB.aclSubject,
                    SNMPv2-Party-MIB.aclResources;
          ENDPARSE!;;
          ATTRIBUTES
               aclEntryId                    GET,
               aclTarget                     GET,
               aclSubject                    GET,
               aclResources                  GET,
               aclPrivileges
                    DEFAULT VALUE IIMCPartyMIB.c-aclPrivileges
                    GET-REPLACE,
               aclStorageType
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTStorageType
                    GET-REPLACE,
               aclStatus                     GET-REPLACE;;;
```

```
REGISTERED AS  {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1};

contextEntry  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992" :top;
     CHARACTERIZED BY
     contextEntryPkg PACKAGE
     BEHAVIOUR
          contextEntryPkgBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This managed object class maps to
                    contextEntry object in [RFC1447].!!;
          DESCRIPTION
          !!Locally held information about a particular
          SNMPv2 context.!!;
          INDEX     IMPLIED SNMPv2-Party-MIB.contextIdentity;
          ENDPARSE!;;
          ATTRIBUTES
               contextEntryId           GET,
               contextIdentity          GET,
               contextIndex             GET-REPLACE,
               contextLocal
                    DEFAULT VALUE
                    IIMCPartyMIB.c-contextLocal
                    GET-REPLACE,
               contextViewIndex         GET-REPLACE,
               contextLocalEntity
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTNullString
                    GET-REPLACE,
               contextLocalTime
                    DEFAULT VALUE
                    IIMCPartyMIB.c-contextLocalTime
                    GET-REPLACE,
               contextProxyDstParty     GET-REPLACE,
               contextProxySrcParty     GET-REPLACE,
               contextProxyContext      GET-REPLACE,
               contextStorageType
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTStorageType
                    GET-REPLACE,
               contextStatus            GET-REPLACE;;;
REGISTERED AS  {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1};

partyEntry  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992":top;
     CHARACTERIZED BY
     partyEntryPkg PACKAGE
     BEHAVIOUR
          partyEntryPkgBehaviour BEHAVIOUR
          DEFINED AS
          !REFERENCE !!This managed object class maps to
                    partyEntry object in [RFC1447].!!;
          DESCRIPTION
```

```
          !!Locally held information about a particular
          SNMPv2 party.!!;
          INDEX     IMPLIED SNMPv2-Party-MIB.partyIdentity;
          ENDPARSE!;;
          ATTRIBUTES
               partyEntryId              GET,
               partyIdentity             GET,
               partyIndex                GET,
               partyTDomain
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyTDomain
                    GET-REPLACE,
               partyTAddress
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyTAddress
                    GET-REPLACE,
               partyMaxMessageSize
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyMaxMessageSize
                    GET-REPLACE,
               partyLocal
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyLocal
                    GET-REPLACE,
               partyAuthProtocol
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyAuthProtocol
                    GET-REPLACE,
               partyAuthClock
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyAuthClock
                    GET-REPLACE,
               partyAuthPrivate
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTNullString
                    GET-REPLACE,
               partyAuthPublic
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTNullString
                    GET-REPLACE,
               partyAuthLifetime
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyAuthLifetime
                    GET-REPLACE,
               partyPrivProtocol
                    DEFAULT VALUE
                    IIMCPartyMIB.c-partyPrivProtocol
                    GET-REPLACE,
               partyPrivPrivate
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTNullString
                    GET-REPLACE,
               partyPrivPublic
                    DEFAULT VALUE
```

```
                    IIMCPartyMIB.c-DEFAULTNullString
                    GET-REPLACE,
               partyCloneFrom          GET-REPLACE,
               partyStorageType
                    DEFAULT VALUE
                    IIMCPartyMIB.c-DEFAULTStorageType
                    GET-REPLACE,
               partyStatus             GET-REPLACE;;;
REGISTERED AS  {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1};

partyMIBObjects  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992" :top;
     CHARACTERIZED BY
     partyMIBObjectsPkg PACKAGE
     BEHAVIOUR
          partyMIBObjectsPkgBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This managed object class maps to
               partyMIBObjects group OID in [RFC1447].!!;
          DESCRIPTION
          !!This group contains the security related parameters
          needed for communicating with SNMP agents.  The
          security services to which these parameters apply are
          authentication, integrity, confidentiality, and access
          control.

          This object class contains only the naming
          attribute.!!
          ENDPARSE!;;
          ATTRIBUTES
               partyMIBObjectsId            GET;;;
REGISTERED AS  {iimcAutoTrans 1 3 6 1 6 3 3 2};

viewEntry  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992" :top;
     CHARACTERIZED BY
     viewEntryPkg PACKAGE
     BEHAVIOUR
          viewEntryPkgBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This managed object class maps to
                    viewEntry object in [RFC1447].!!;
          INDEX     SNMPv2-Party-MIB.viewIndex,
                    IMPLIED SNMPv2-Party-MIB.viewSubtree;
          DESCRIPTION
          !!Information on a particular family of view
          subtrees included in or excluded from a particular
          SNMPv2 context's MIB view.

          Each SNMPv2 context which is locally accessible has a
          single MIB view which is defined by two collections
          of view subtrees: the included view subtrees, and the
```

excluded view subtrees. Every such subtree, both included and excluded, is defined in an entry.

To determine if a particular object instance is in a particular MIB view, compare the object instance's OBJECT IDENTIFIER with each of the MIB view's entries. If none match, then the object instance is not in the MIB view. If one or more match, then the object instance is included in, or excluded from, the MIB view according to the value of viewType in the entry whose value of viewSubtree has the most sub-identifiers. If multiple entries match and have the same number of sub-identifiers, then the lexicographically greatest instance of viewType determines the inclusion or exclusion.

An object instance's OBJECT IDENTIFIER X matches an entry when the number of sub- identifiers in X is at least as many as in the value of viewSubtree for the entry, and each sub- identifier in the value of viewSubtree matches its corresponding sub-identifier in X. Two sub identifiers match either if the corresponding bit of viewMask is zero (the 'wild card' value), or if they are equal.

Due to this 'wild card' capability, we introduce the term, a 'family' of view subtrees, to refer to the set of subtrees defined by a particular combination of values of viewSubtree and viewMask. In the case where no 'wild card' is defined in viewMask, the family of view subtrees reduces to a single view subtree.

Implementations must not restrict the number of families of view subtrees for a given MIB view, except as dictated by resource constraints on the overall number of entries in the viewTable.!!;
INDEX viewIndex, viewSubtree;
ENDPARSE!;;
ATTRIBUTES
```
     viewEntryId                GET,
     viewIndex                  GET,
     viewSubtree                GET,
     viewMask
          DEFAULT VALUE
          IIMCPartyMIB.c-DEFAULTNullString
          GET-REPLACE,
     viewType
          DEFAULT VALUE
          IIMCPartyMIB.c-viewType
          GET-REPLACE,
     viewStorageType
          DEFAULT VALUE
          IIMCPartyMIB.c-DEFAULTStorageType
```

```
                    GET-REPLACE,
               viewStatus                GET-REPLACE;;;
REGISTERED AS  {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1};
```

-- 4.1.2 Party MIB Attribute Types

```
party ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
               IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the type defined
                    in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!Denotes a SNMPv2 party identifier.  Note that
          agents may impose implementation limitations on the
          length of OIDs used to identify Parties. As such,
          management stations creating new parties should be
          aware that using an excessively long OID may result
          in the agent refusing to perform the set operation
          and instead returning the appropriate error response,
          e.g., noCreation.!!;
          ENDPARSE!;;;

tAddress ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
               IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          tAddressBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the type defined
                    in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!Denotes a transport service address.  For
          snmpUDPDomain, a TAddress is 6 octets long,
          the initial 4 octets containing the IP-address in
          network-byte order and the last 2 containing the
          UDP port in network-byte order.  Consult [RFC1448]
          for further information on snmpUDPDomain.!!;
          ENDPARSE!;;;

clock ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:clock;
     BEHAVIOUR
          clockBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the type defined
                    in [RFC1447] by the same name.!!;
```

```
          DESCRIPTION
          !!A party's authentication clock - a non-negative
          integer which is incremented as specified/allowed
          by the party's Authentication Protocol.  For
          noAuth, a party's authentication clock is
          unused and its value is undefined.

          For v2md5AuthProtocol, a party's authentication
          clock is a relative clock with 1-second
          granularity.!!;
          ENDPARSE!;;;

context ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
               IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the type defined
                    in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!Denotes a SNMPv2 context identifier. Note that
          agents may impose implementation limitations on the
          length of OIDs used to identify Parties. As such,
          management stations creating new parties should be
          aware that using an excessively long OID may result
          in the agent refusing to perform the set operation
          and instead returning the appropriate error response,
          e.g., noCreation.!!;
          ENDPARSE!;;;


storageType ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
               IIMCPartyMIB.StorageType;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          storageTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the type defined
                    in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!Describes the memory realization of a conceptual
          row.  A row which is volatile(2) is lost upon
          reboot.  A row which is nonVolatile(3) is backed
          up by stable storage.  A row which is permanent(4)
          cannot be changed nor deleted.!!;
          ENDPARSE!;;;
```

-- 4.1.3 Party MIB Attributes

```
aclEntryId ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.AclEntryIdValue;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          aclEntryIdBehaviour BEHAVIOUR
          DEFINED AS
          !The naming attribute for object class aclEntry!;;
REGISTERED AS {iimcManagementName 1 3 6 1 6 3 3 2 3 1 1};

aclPrivileges ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.AclPrivileges;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          aclPrivilegesBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The access privileges which govern what
           management operations a particular target party
           may perform with respect to a particular SNMPv2
           context when requested by a particular subject
           party.  These privileges are specified as a sum of
           values, where each value specifies a SNMPv2 PDU
           type by which the subject party may request a
           permitted operation.  The value for a particular
           PDU type is computed as 2 raised to the value of
           the ASN.1 context-specific tag for the appropriate
           SNMPv2 PDU type.  The values (for the tags defined
           in [RFC1448]) are defined in [RFC1445] as:

                       Get         :   1
                       GetNext     :   2
                       Response    :   4
                       Set         :   8
                       unused      :  16
                       GetBulk     :  32
                       Inform      :  64
                       SNMPv2-Trap : 128

           The null set is represented by the value zero.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 4};

aclResources ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          aclResourcesBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
```

```
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The value of an instance of this object
           identifies a SNMPv2 context in an access control
           policy, and has the same value as the instance of
           the contextIndex object for that SNMPv2 context.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 3};

aclStatus ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:rowStatus;
     BEHAVIOUR
          aclStatusBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The status of this conceptual row in the
             aclTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 6};

aclStorageType ATTRIBUTE
     DERIVED FROM storageType;
     BEHAVIOUR
          aclStorageTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The storage type for this conceptual row in the
           aclTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 5};

aclSubject ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          aclSubjectBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The value of an instance of this object
           identifies a SNMPv2 party which is the subject of
           an access control policy, and has the same value
           as the instance of the partyIndex object for that
           SNMPv2 party.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 2};
```

```
aclTarget ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          aclTargetBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The value of an instance of this object
           identifies a SNMPv2 party which is the target of
           an access control policy, and has the same value
           as the instance of the partyIndex object for that
           party.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 3 1 1 1};

contextEntryId ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ContextEntryIdValue;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          contextEntryIdBehaviour BEHAVIOUR
          DEFINED AS
          !The naming attribute for object class
contextEntry!;;
REGISTERED AS {iimcManagementName 1 3 6 1 6 3 3 2 2 1 1};

contextIdentity ATTRIBUTE
     DERIVED FROM context;
     BEHAVIOUR
          contextIdentityBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A context identifier uniquely identifying a
           particular SNMPv2 context.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 1};

contextIndex ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextIndexBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A unique value for each SNMPv2 context. The
```

```
          value for each SNMPv2 context must remain constant
          at least from one re-initialization of the
          entity's network management system to the next
          re-initialization.!!;
        ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 2};

contextLocal ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:truthValue;
     BEHAVIOUR
          contextLocalBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!An indication of whether this context is realized
           by this SNMPv2 entity.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 3};

contextViewIndex ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextViewIndexBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of an instance of this object is
           zero, then this corresponding conceptual row in
           the contextTable refers to a SNMPv2 context which
           identifies a proxy relationship; the values of the
           corresponding instances of the
           contextProxyDstParty, contextProxySrcParty, and
           contextProxyContext objects provide further
           information on the proxy relationship.

           Otherwise, if the value of an instance of this
           object is greater than zero, then this
           corresponding conceptual row in the contextTable
           refers to a SNMPv2 context which identifies a MIB
           view of a locally accessible entity; the value of
           the instance identifies the particular MIB view
           which has the same value of viewIndex; and the
           value of the corresponding instances of the
           contextLocalEntity and contextLocalTime objects
           provide further information on the local entity
           and its temporal domain.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 4};
```

```
contextLocalEntity ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextLocalEntityBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of the corresponding instance of the
           contextViewIndex is greater than zero, then the
           value of an instance of this object identifies the
           local entity whose management information is in
           the SNMPv2 context's MIB view.  The empty string
           indicates that the MIB view contains the SNMPv2
           entity's own local management information;
           otherwise, a non-empty string indicates that the
           MIB view contains management information of some
           other local entity, e.g.,'Repeater1'.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 5};

contextLocalTime ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextLocalTimeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of the corresponding instance of the
           contextViewIndex is greater than zero, then the
           value of an instance of this object identifies the
           temporal context of the management information in
           the MIB view.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 6};

contextProxyDstParty ATTRIBUTE
     DERIVED FROM party;
     BEHAVIOUR
          contextProxyDstPartyBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of the corresponding instance of the
           contextViewIndex is equal to zero, then the value
           of an instance of this object identifies a SNMPv2
           party which is the proxy destination of a proxy
```

```
          relationship.

          If the value of the corresponding instance of the
          contextViewIndex is greater than zero, then the
          value of an instance of this object is zero.!!;
         ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 7};

contextProxySrcParty ATTRIBUTE
     DERIVED FROM party;
     BEHAVIOUR
          contextProxySrcPartyBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of the corresponding instance of the
           contextViewIndex is equal to zero, then the value
           of an instance of this object identifies a SNMPv2
           party which is the proxy source of a proxy
           relationship.

           Interpretation of an instance of this object
           depends upon the value of the transport domain
           associated with the SNMPv2 party used as the proxy
           destination in this proxy relationship.

           If the value of the corresponding instance of the
           contextViewIndex is greater than zero, then the
           value of an instance of this object is zero.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 8};

contextProxyContext ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          contextProxyContextBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of the corresponding instance of the
           contextViewIndex is equal to zero, then the value
           of an instance of this object identifies the
           context of a proxy relationship.

           Interpretation of an instance of this object
           depends upon the value of the transport domain
           associated with the SNMPv2 party used as the proxy
           destination in this proxy relationship.
```

```
          If the value of the corresponding instance of the
          contextViewIndex is greater than zero, then the
          value of an instance of this object is { 0 0 }.!!;
        ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 9};

contextStorageType ATTRIBUTE
     DERIVED FROM storageType;
     BEHAVIOUR
          contextStorageTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The storage type for this conceptual row in the
           contextTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 10};

contextStatus ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:rowStatus;
     BEHAVIOUR
          contextStatusBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The status of this conceptual row in the
           contextTable.

           A context is not qualified for activation until
           instances of all corresponding columns have the
           appropriate value.  In  particular, if the
           context's contextViewIndex is greater than zero,
           then the viewStatus column of the associated
           conceptual row(s) in the viewTable must have the
           value `active'.  Until instances of all
           corresponding columns are appropriately
           configured, the value of the corresponding
           instance of the contextStatus column is
           `notReady'.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 2 1 1 11};

partyAuthClock ATTRIBUTE
     DERIVED FROM clock;
     BEHAVIOUR
          partyAuthClockBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
```

```
          DESCRIPTION
          !!The authentication clock which represents the
          local notion of the current time specific to the
          party.  This value must not be decremented unless
          the party's secret information is changed
          simultaneously, at which time the party's nonce
          and last-timestamp values must also be reset to
          zero, and the new value of the clock,
          respectively.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 8};

partyAuthLifetime ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.PartyAuthLifetime;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyAuthLifetimeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The lifetime (in units of seconds) which
          represents an administrative upper bound on
          acceptable delivery delay for protocol messages
          generated by the party.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 11};

partyAuthPrivate ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
          IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, SUBSTRINGS;
     BEHAVIOUR
          partypartyAuthPrivateBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
          defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!If the value of partyAuthProtocol is
          {snmpv1CommString} then this attribute contains the
          community string to be used with SNMPv1 security.

          If the value of partyAuthProtocol is not
          {snmpv1CommString} then this attribute contains an
          encoding of the party's private authentication  key
          which may be needed to support the authentication
          protocol.  Although the value of  this variable may
          be altered by a management  operation (e.g., a SNMPv2
          Set-Request), its value  can never be retrieved by a
          management operation:  when read, the value of this
          variable is the zero  length OCTET STRING.
```

```
          The private authentication key is NOT directly
          represented by the value of this variable, but
          rather it is represented according to an encoding.
          This encoding is the bitwise exclusive-OR of the old
          key with the new key, i.e., of the old private
          authentication key (prior to the alteration) with
          the new private authentication key (after the
          alteration).  Thus, when processing a received
          protocol Set operation, the new private
          authentication key is obtained from the value of
          this variable as the result of a bitwise exclusive-
          OR of the variable's value and the old private
          authentication key.  In calculating the exclusive-
          OR, if the old key is shorter than the new key,
          zero-valued padding is appended to the old key.  If
          no value for the old key exists, a zero-length OCTET
          STRING is used in the calculation.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 9};

partyAuthProtocol ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
          IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          partypartyAuthProtocolBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The authentication protocol by which all messages
          generated by the party are authenticated as to
          origin and integrity.  In this context, the value
          { noAuth } signifies that messages generated by
          the party are not authenticated.

          The value {snmpv1CommString} indicates that SNMPv1
          community string is to be used.  The community
          string shall be present in partyAuthPrivate!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 7};

partyAuthPublic ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          partyAuthPublicBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A publicly-readable value for the party.
```

```
          Depending on the party's authentication protocol,
          this value may be needed to support the party's
          authentication protocol.  Alternatively, it may be
          used by a manager during the procedure for
          altering secret information about a party.  (For
          example, by altering the value of an instance of
          this object in the same SNMP Set-Request used to
          update an instance of partyAuthPrivate, a
          subsequent Get-Request can determine if the Set-
          Request was successful in the event that no
          response to the Set-Request is received, see RFC1446.)

          The length of the value is dependent on the
          party's authentication protocol.  If not used by
          the authentication protocol, it is recommended
          that agents support values of any length up to and
          including the length of the corresponding
          partyAuthPrivate object.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 10};

partyCloneFrom ATTRIBUTE
     DERIVED FROM party;
     BEHAVIOUR
          partyCloneFromBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The identity of a party to clone authentication
           and privacy parameters from.  When read, the value
           { 0 0 } is returned.

           This value can only be written when the associated
           instance of partyStatus either does not exist or
           has the value `notReady'.  When written, the value
           identifies a party, the cloning party, whose
           status column has the value `active'.  The cloning
           party is used in two ways.

           One, if instances of the following objects do not
           exist for the party being created, then they are
           created with values identical to those of the
           corresponding objects for the cloning party:

               partyAuthProtocol
               partyAuthPublic
               partyAuthLifetime
               partyPrivProtocol
               partyPrivPublic

           Two, instances of the following objects are
           updated using the corresponding values of the
```

```
            cloning party:

                partyAuthPrivate
                partyPrivPrivate

            (e.g., the value of the cloning party's instance
            of the partyAuthPrivate object is XOR'd with the
            value of the partyAuthPrivate instances of the
            party being created.)!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 15};

partyEntryId ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.PartyEntryIdValue;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          partyEntryIdBehaviour BEHAVIOUR
          DEFINED AS
          !The naming attribute for object class partyEntry!;;
REGISTERED AS {iimcManagementName 1 3 6 1 6 3 3 2 1 1 1};

partyIdentity ATTRIBUTE
     DERIVED FROM party;
     BEHAVIOUR
          partyIdentityBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A party identifier uniquely identifying a
          particular SNMP party.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 1};

partyIndex ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyIndexBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A unique value for each SNMPv2 party.  The value
           for each SNMPv2 party must remain constant at
           least from one re-initialization of the entity's
           network management system to the next re-
           initialization.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 2};

partyLocal ATTRIBUTE
```

```
     DERIVED FROM {iimcIIMCIMIBTRANS}:truthValue;
     BEHAVIOUR
          partyLocalBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!An indication of whether this party executes at
           this SNMPv2 entity.  If this object has a value of
           true(1), then the SNMPv2 entity will listen for
           SNMPv2 messages on the partyTAddress associated
           with this party.  If this object has the value
           false(2), then the SNMPv2 entity will not listen
           for SNMPv2 messages on the partyTAddress
           associated with this party.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 6};

partyMaxMessageSize ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
                    IIMCPartyMIB.PartyMaxMessageSize;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyMaxMessageSizeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The maximum length in octets of a SNMP message
          which this party will accept.  For parties which
          execute at an agent, the agent initializes this
          object to the maximum length supported by the
          agent, and does not let the object be set to any
          larger value.  For parties which do not execute at
          the agent, the agent must allow the manager to set
          this object to any legal value, even if it is
          larger than the agent can generate.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 5};

partyMIBObjectsId ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
IIMCPartyMIB.PartyMIBObjectsIdValue;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          partyMIBObjectsIdBehaviour BEHAVIOUR
          DEFINED AS
          !The naming attribute for object class
          partyMIBObjects!;;
REGISTERED AS {iimcManagementName 1 3 6 1 6 3 3 2};

partyPrivProtocol ATTRIBUTE
```

```
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyPrivProtocolBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The privacy protocol by which all protocol
          messages received by the party are protected from
          disclosure.  In this context, the value { noPriv }
          signifies that messages received by the party are
          not protected.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 12};

partyPrivPrivate ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyPrivPrivateBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!An encoding of the party's private encryption key
           which may be needed to support the privacy
           protocol.  Although the value of this variable may
           be altered by a management operation (e.g., a
           SNMPv2 Set-Request), its value can never be
           retrieved by a management operation: when read,
           the value of this variable is the zero length
           OCTET STRING.

           The private encryption key is NOT directly
           represented by the value of this variable, but
           rather it is represented according to an encoding.
           This encoding is the bitwise exclusive-OR of the
           old key with the new key, i.e., of the old private
           encryption key (prior to the alteration) with the
           new private encryption key (after the alteration).
           Thus, when processing a received protocol Set
           operation, the new private encryption key is
           obtained from the value of this variable as the
           result of a bitwise exclusive-OR of the variable's
           value and the old private encryption key.  In
           calculating the exclusive-OR, if the old key is
           shorter than the new key, zero-valued padding is
           appended to the old key.  If no value for the old
           key exists, a zero-length OCTET STRING is used in
           the calculation.!!;
          ENDPARSE!;;
```

```
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 13};

partyPrivPublic ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          partyPrivPublicBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A publicly-readable value for the party.
          Depending on the party's privacy protocol, this
          value may be needed to support the party's privacy
          protocol.  Alternatively, it may be used by a
          manager as a part of its procedure for altering
          secret information about a party.  (For example,
          by altering the value of an instance of this
          object in the same SNMP Set-Request used to update
          an instance of partyPrivPrivate, a subsequent
          Get-Request can determine if the Set-Request was
          successful in the event that no response to the
          Set-Request is received, see RFC 1446.)

          The length of the value is dependent on the
          party's privacy protocol.  If not used by the
          privacy protocol, it is recommended that agents
          support values of any length up to and including
          the length of the corresponding partyPrivPrivate
          object.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 14};

partyStatus ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:rowStatus;
     BEHAVIOUR
          partyStatusBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The status of this conceptual row in the
           partyTable.

           A party is not qualified for activation until
           instances of all columns of its partyEntry row
           have an appropriate value.  In particular:

           A value must be written to the Party's
           partyCloneFrom object.

           If the Party's partyAuthProtocol object has the
```

```
            value md5AuthProtocol,
            then the corresponding instance of
            partyAuthPrivate must contain a secret of the
            appropriate length.  Further, at least one
            management protocol set operation updating the
            value of the party's partyAuthPrivate object
            must be successfully processed, before the
            partyAuthPrivate column is considered
            appropriately configured.

            If the Party's partyPrivProtocol object has the
            value desPrivProtocol,
            then the corresponding instance of
            partyPrivPrivate must contain a secret of the
            appropriate length.  Further, at least one
            management protocol set operation updating the
            value of the party's partyPrivPrivate object
            must be successfully processed, before the
            partyPrivPrivate column is considered
            appropriately configured.

            Until instances of all corresponding columns are
            appropriately configured, the value of the
            corresponding instance of the partyStatus column is
            `notReady'.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 17};

partyStorageType ATTRIBUTE
     DERIVED FROM storageType;
     BEHAVIOUR
          partyStorageTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The storage type for this conceptual row in the
           partyTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 16};

partyTAddress ATTRIBUTE
     DERIVED FROM tAddress;
     BEHAVIOUR
          partyTAddressBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The transport service address by which the party
          receives network management traffic, formatted
          according to the corresponding value of
```

```
          partyTDomain.  For rfc1351Domain, partyTAddress is
          formatted as a 4-octet IP Address concatenated
          with a 2-octet UDP port number.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 4};

partyTDomain ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
               IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          partyTDomainBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!Indicates the kind of transport service by which
          the party receives network management traffic. An
          example of a transport domain is 'rfc1351Domain'
          (SNMP over UDP).!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 1 1 1 3};

viewEntryId ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ViewEntryIdValue;
     MATCHES FOR      EQUALITY;
     BEHAVIOUR
          viewEntryIdBehaviour BEHAVIOUR
          DEFINED AS
          !The naming attribute for object class viewEntry!;;
REGISTERED AS {iimcManagementName 1 3 6 1 6 3 3 2 4 1 1};

viewIndex ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.Index;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          viewIndexBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A unique value for each MIB view.  The value for
           each MIB view must remain constant at least from
           one re-initialization of the entity's network
           management system to the next re-initialization.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 1};

viewMask ATTRIBUTE
     WITH ATTRIBUTE SYNTAX
                    IIMCPartyMIB.ViewMask;
     MATCHES FOR      EQUALITY, ORDERING;
```

```
     BEHAVIOUR
          viewMaskBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The bit mask which, in combination with the
           corresponding instance of viewSubtree, defines a
           family of view subtrees.

           Each bit of this bit mask corresponds to a sub-
           identifier of viewSubtree, with the most
           significant bit of the i-th octet of this octet
           string value (extended if necessary, see below)
           corresponding to the (8*i - 7)-th sub-identifier,
           and the least significant bit of the i-th octet of
           this octet string corresponding to the (8*i)-th
           sub-identifier, where i is in the range 1 through 16.

           Each bit of this bit mask specifies whether or not
           the corresponding sub-identifiers must match when
           determining if an OBJECT IDENTIFIER is in this
           family of view subtrees; a '1' indicates that an
           exact match must occur; a '0' indicates 'wild
           card', i.e., any sub-identifier value matches.
           Thus, the OBJECT IDENTIFIER X of an object
           instance is contained in a family of view subtrees
           if the following criteria are met:

           for each sub-identifier of the value of
           viewSubtree, either:

                       the i-th bit of viewMask is 0, or

                       the i-th sub-identifier of X is equal to
                       the i-th sub-identifier of the value of
                       viewSubtree.

           If the value of this bit mask is M bits long and
           there are more than M sub-identifiers in the
           corresponding instance of viewSubtree, then the
           bit mask is extended with 1's to be the required
           length.

           Note that when the value of this object is the
           zero-length string, this extension rule results in
           a mask of all-1's being used (i.e., no 'wild
           card'), and the family of view subtrees is the one
           view subtree uniquely identified by the
           corresponding instance of viewSubtree.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 3};
```

```
viewStatus ATTRIBUTE
     DERIVED FROM {iimcIIMCIMIBTRANS}:rowStatus;
     BEHAVIOUR
          viewStatusBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The status of this conceptual row in the
           viewTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 6};

viewStorageType ATTRIBUTE
     DERIVED FROM storageType;
     BEHAVIOUR
          viewStorageTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The storage type for this conceptual row in the
           viewTable.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 5};

viewSubtree ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ObjectIdentifier;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          viewSubtreeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!A MIB subtree.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 2};

viewType ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.ViewType;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          viewTypeBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          REFERENCE !!This corresponds to the object type
           defined in [RFC1447] by the same name.!!;
          DESCRIPTION
          !!The status of a particular family of view
           subtrees within the particular SNMPv2 context's
```

```
            MIB view.  The value 'included(1)' indicates that
            the corresponding instances of viewSubtree and
            viewMask define a family of view subtrees included
            in the MIB view.  The  value 'excluded(2)'
            indicates that the corresponding instances of
            viewSubtree and viewMask define a family of view
            subtrees excluded from the MIB view.!!;
          ENDPARSE!;;
REGISTERED AS {iimcAutoTrans 1 3 6 1 6 3 3 2 4 1 1 4};
```

-- 4.1.4 Party MIB Name Bindings

```
aclEntry-partyMIBObjectsNB  NAME BINDING
          SUBORDINATE OBJECT CLASS      aclEntry
                                             AND SUBCLASSES;
          NAMED BY SUPERIOR OBJECT CLASS     partyMIBObjects
                                             AND SUBCLASSES;
              WITH ATTRIBUTE
                                        aclEntryId;
          BEHAVIOUR
          aclEntry-partyMIBObjectsNBBehaviour     BEHAVIOUR
               DEFINED AS
               !BEGINPARSE
               INDEX     SNMPv2-Party-MIB.aclTarget,
                    SNMPv2-Party-MIB.aclSubject,
                    SNMPv2-Party-MIB.aclResources;
               DELETEATT aclStatus;
               DELETEVALUE SNMPV2ROWSTATUS;
               ENDPARSE!;;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
REGISTERED AS {iimcManagementNB 1 3 6 1 6 3 3 2 3 1 1};

contextEntry-partyMIBObjectsNB  NAME BINDING
              SUBORDINATE OBJECT CLASS  contextEntry
                                             AND SUBCLASSES;
              NAMED BY SUPERIOR OBJECT CLASS
                                        partyMIBObjects
                                             AND SUBCLASSES;
              WITH ATTRIBUTE
                                        contextEntryId;
          BEHAVIOUR
          contextEntry-partyMIBObjectsNBBehaviour BEHAVIOUR
               DEFINED AS
               !BEGINPARSE
               INDEX IMPLIED SNMPv2-Party-MIB.contextIdentity;
               DELETEATT contextStatus;
               DELETEVALUE SNMPV2ROWSTATUS;
               ENDPARSE!;;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
```

```
REGISTERED AS {iimcManagementNB 1 3 6 1 6 3 3 2 2 1 1};

partyEntry-partyMIBObjectsNB  NAME BINDING
          SUBORDINATE OBJECT CLASS  partyEntry
                                          AND SUBCLASSES;
          NAMED BY SUPERIOR OBJECT CLASS      partyMIBObjects
                                          AND SUBCLASSES;
              WITH ATTRIBUTE
                                          partyEntryId;
          BEHAVIOUR
          partyEntry-partyMIBObjectsNBBehaviour BEHAVIOUR
               DEFINED AS
               !BEGINPARSE
               INDEX IMPLIED SNMPv2-Party-MIB.partyIdentity;
               DELETEATT partyStatus;
               DELETEVALUE SNMPV2ROWSTATUS;
               ENDPARSE!;;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
REGISTERED AS {iimcManagementNB 1 3 6 1 6 3 3 2 1 1 1};

viewEntry-partyMIBObjectsNB  NAME BINDING
          SUBORDINATE OBJECT CLASS  viewEntry
                                          AND SUBCLASSES;
          NAMED BY SUPERIOR OBJECT CLASS
                                          partyMIBObjects
                                          AND SUBCLASSES;
          WITH ATTRIBUTE
                                               viewEntryId;
          BEHAVIOUR
          viewEntry-partyMIBObjectsNBBehaviour BEHAVIOUR
               DEFINED AS
               !BEGINPARSE
               INDEX     SNMPv2-Party-MIB.viewIndex,
                    IMPLIED SNMPv2-Party-MIB.viewSubtree;
          DELETEATT viewStatus;
               DELETEVALUE SNMPV2ROWSTATUS;
               ENDPARSE!;;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
REGISTERED AS {iimcManagementNB 1 3 6 1 6 3 3 2 4 1 1};

partyMIBObjects-systemNB  NAME BINDING
          SUBORDINATE OBJECT CLASS partyMIBObjects
                                   AND SUBCLASSES;
          NAMED BY SUPERIOR OBJECT CLASS
          "Rec. X.721 | ISO/IEC 10165-2 : 1992":system
                                   AND SUBCLASSES;
          WITH ATTRIBUTE
                                        partyMIBObjectsId;
          BEHAVIOUR
          partyMIBObjects-systemNBBehaviour BEHAVIOUR
```

```
               DEFINED AS
               !BEGINPARSE
               INDEX     NULL;
               ENDPARSE!;;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
REGISTERED AS {iimcManagementNB 1 3 6 1 6 3 3 2};
```

-- 4.2 Party MIB ASN.1 Modules

```
IIMCPartyMIB {iimcManagementModMan 4}
DEFINITIONS IMPLICIT TAGS ::= BEGIN
IMPORTS
          UInteger32, snmpv2, MODULE-IDENTITY
               FROM SNMPv2-SMI
          partyAdmin, partyProtocols, noAuth,
          desPrivProtocol, v2md5AuthProtocol,
          temporalDomains, currentTime,
          restartTime, cacheTime, initialPartyId,
          initialContextId
               FROM SNMPv2-Party-MIB
          snmpUDPDomain
               FROM SNMPv2-TM
          iimcManagementDocMan, iimcManagementModMan,
          iimcAutoTrans, iimcManagementNB,
          iimcIIMCIMIBTRANS, iimcIIMCSEC
               FROM IimcAssignedOIDs {iimcManagementModMan 1};

-- Generic syntax

Integer   ::=  INTEGER

OctetString    ::=  OCTET STRING

ObjectIdentifier    ::=  OBJECT IDENTIFIER


-- MIB specific syntax

AclPrivileges ::= INTEGER (0..255)

AclEntryIdValue     ::= SEQUENCE   {
                         aclTarget      [1] Index,
                         aclSubject     [2] Index,
                         aclResources   [3] Index
                                   }

Clock     ::= UInteger32

ContextEntryIdValue ::= SEQUENCE   {
                    contextIdentity     [1] OBJECT IDENTIFIER
```

```
                                }

Index     ::= INTEGER (1..65535)

PartyAuthLifetime   ::= INTEGER (0..2147483647)

PartyEntryIdValue   ::= SEQUENCE   {
                         partyIdentity  [1] OBJECT IDENTIFIER
                              }

PartyMIBObjectsIdValue   ::= NULL

PartyMaxMessageSize ::= INTEGER (484..65507)

StorageType ::= INTEGER {
                         other(1),       -- eh?
                         volatile(2),    -- e.g., in RAM
                         nonVolatile(3), -- e.g., in NVRAM
                         permanent(4)    -- e.g., in ROM
                         }

ViewEntryIdValue    ::= SEQUENCE   {
                       viewIdentity   [1] OBJECT IDENTIFIER
                         }

ViewMask  ::= OCTET STRING (SIZE (0..16))

ViewType ::= INTEGER  {
                          included(1),
                          excluded(2)
                      }


-- Default value constants

c-aclPrivileges          INTEGER ::= 35
c-contextLocal           BOOLEAN ::= TRUE
c-DEFAULTNullString      OCTET STRING ::= ''H
c-contextLocalTime       Clock ::= currentTime
c-DEFAULTStorageType     INTEGER ::= 3
c-partyTDomain           OBJECT IDENTIFIER ::= snmpUDPDomain
c-partyTAddress          OCTET STRING  ::= '000000000000'H
c-partyMaxMessageSize    INTEGER ::= 484
c-partyLocal             BOOLEAN ::= FALSE
c-partyAuthProtocol      OBJECT IDENTIFIER ::= v2md5AuthProtocol
c-partyAuthClock         INTEGER ::= 0
c-partyAuthLifetime      INTEGER ::= 300
c-partyPrivProtocol      OBJECT IDENTIFIER ::= noPriv
c-viewType               INTEGER ::= 1

END
```

5. IIMC ACL MIB

The use of parties and contexts and community strings can be very confusing for application programmers. Also the actual privileges associated with an individual user of an application are not generally at the discretion of the user or programmer, but are at the discretion of the person responsible for enforcing the security policy, i.e., configuring the security MIB elements. The actual party identities and associated contexts, or community strings that the user needs for access could remain hidden from the user - and perhaps should.

A mechanism for hiding most of the assignment and configuration of security parameters associated with user security privileges for proxy/agent communications is to implement an access control list (ACL) scheme at the proxy. The ACL scheme allows an identity to be specified with the CMIP request, or ACSE association, have it authenticated, and on the basis of that authenticated identity be assigned the context and source/destination party pairs, or community string, that grants or denies them access to specific operations on specific objects associated with specific managed systems. The actual association between the identity and the party/context or community string shall be accomplished by configuring the security management parameters within the aclSecurityInfoEntry objects of the proxy system.

The information for the access control list for ISO/CCITT-Internet shall be maintained in a table of entries (aclSecurityInfoEntry) that contain:

- an <identity> associated with a user, application, or role,
- the SNMP agent identification, and
- the associated party/context or community string information needed to determine, from other elements in the MIB, the security and communication parameters required to communicate with the remote SNMP agent.

The <identity> shall be provided in the access control certificate (ACC) used for security services between the ISO/CCITT manager and the proxy. Therefore, no additional information needs to be delivered in a contained ACC that holds security parameters for proxy to SNMP agent communications. It is a local security policy matter whether the SNMP security parameters delivered in an ACC over an association, or in a CMIP PDU, will have precedence over those in the aclSecurityInfoEntry's parameters.

The naming attribute of the aclSecurityInfoEntry shall contain a sequence of the <identity> (an octet string) and the <agent id>. The <agent id> shall be the same format as that specified for the cmipsnmpProxyAgentId attribute of the

cmipsnmpProxyAgent object class [IIMCPROXY].

The proxy shall determine the transport address of the SNMP agent from data in the Proxy MIB [IIMCPROXY], i.e., in the cmipsnmpProxyAgent entry that contains the indicated <agent id>. It shall then formulate the combination of identity and transport address necessary to find the party/context/community string in a aclSecurityInfoEntry.

The combination of SNMP agent transport address and community string provides sufficient information to communicate with an SNMPv1 agent.

The partyEntry and contextEntry associated with the parties and context found in the aclSecurityInfoEntry provide the communication and security parameters necessary to communicate with the SNMPv2 agent.

For efficiency, this mechanism has been adapted for use with defined parties and contexts in the UDP domain that are derived from the IP address of the agent, as described in [RFC1447].

To accommodate defined UDP contexts and parties, the iimcAclIdentity naming attribute shall be allowed to have values that do not contain the "<agent Id>" component. The naming attribute shall also be allowed to have the associated party and context OIDs of the form for the default party {initialPartyId 0 0 0 0 x} and default context {initialContextId 0 0 0 0 x} as defined in [RFC1447]. The string of "0"s are to be interpreted as the OID fragment representation of the IP address. The x assumes the value as defined in [RFC1447].

For example the aclSecurityInfoEntry below, associated with "John Doe" provides for access to any SNMPv2 device in the snmpUDPDomain conforming to [RFC1447], that uses the defaults for mD5Auth/noPriv and allows Get, Get-Next, Set, and Get-Bulk operations.

```
iimcAclIdentity     =    "John Doe"

aclTarget           =    {initialPartyId 0 0 0 0 3 }
aclSubject          =    {initialPartyId 0 0 0 0 4 }
aclResources        =    {initialContextId 0 0 0 0 2 }

snmpv1CommunityString =   ''H
```

The proxy can determine the actual party and context OIDs by filling in the "0 0 0 0" portion of the OIDs with the agents IP address.

It is possible for "John Doe" to have different privileges for different SNMP agents. Other entries could exist for "John

Doe" that are specific to the agent. Therefore, a procedure must be established for processing entries in the table. The procedure for processing the table of aclSecurityInfoEntry shall be:

1) check for an entry that may be specific to an agent;

2) if an agent specific entry is not found, then check for an entry for a generic agent.

The above technique avoids the necessity for creating a table entry for every party pair and context for each agent. It is also possible to extend the generic policies by using the same technique defined in [RFC1447].

The objects, attributes, and name bindings for an access control list scheme within a proxy are defined below. Support for this access control list scheme shall require the proxy to instantiate the partyEntry and the contextEntry managed objects for communicating with SNMP agents.

A Naming Tree diagram for the ACL related managed object classes is illustrated below. The aclSecurityInfoEntry is subordinate to the ISO/CCITT system managed object that represents the proxy.

```
"Rec. X.721 | ISO/IEC 10165-2 : 1992" : system
     |
     |--- aclSecurityInfoEntry
```

-- 5.1 IIMC ACL MIB GDMO Templates

-- 5.1.1 IIMC ACL MIB Managed Object Classes

```
aclSecurityInfoEntry  MANAGED OBJECT CLASS
     DERIVED FROM  "Rec. X.721 | ISO/IEC 10165-2 : 1992" :top;
     CHARACTERIZED BY
     aclSecurityInfoEntryPkg PACKAGE
     BEHAVIOUR
          aclSecurityInfoEntryPkgBehaviour BEHAVIOUR
          DEFINED AS
          !BEGINPARSE
          DESCRIPTION
          !!The security information for a particular requesting
          identity when communicating with a particular SNMP
          agent.  The identity is associated with either the
          specific SNMP source party, destination party, and
          context triplet, or the community string to be used
          for the communication between the proxy and the SNMP
          agent.

          Attributes for this object are read only.
```

```
          When created, only the security information specific
          to the SNMP protocol version needs to be provided.
          The security parameters for the version not chosen are
          set to default values indicating that they are not
          applicable for communicating with the SNMP agent.!!;
          ENDPARSE!;;
          ATTRIBUTES
          iimcAclIdentity                          GET,
          aclTarget
               DEFAULT VALUE
                    IIMCACLMIB.c-DEFAULToidNA
                                                   GET,

          aclSubject
               DEFAULT VALUE
                    IIMCACLMIB.c-DEFAULToidNA
                                                   GET,

          aclResources
               DEFAULT VALUE
                    IIMCACLMIB.c-DEFAULToidNA
                                                   GET,

          snmpv1CommunityString
               DEFAULT VALUE
                    IIMCACLMIB.c-DEFAULTNullString
                                                   GET;;;
REGISTERED AS  {iimcManagementMOC 2};
```

-- 5.1.2 IIMC ACL MIB Attributes

```
iimcAclIdentity ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCACLMIB.IimcAclIdentity;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          iimcAclIdentityBehaviour BEHAVIOUR
          DEFINED AS
          !The value of an instance of this object is an identity
          that is associated either with a specific source party,
          destination party, and context triplet, or a community
          string.  It may also include the specific agent domain
          name in the form "identity@<agent Id>" where the
          <agent Id> is the domain address associated with the
          SNMP agent.  The <agent Id> should be the same format
          as the identifier used for the naming attribute of
          cmipsnmpProxyAgent.!;;
REGISTERED AS {iimcManagementAtt 5};

snmpv1CommunityString ATTRIBUTE
     WITH ATTRIBUTE SYNTAX IIMCPartyMIB.OctetString;
     MATCHES FOR      EQUALITY, ORDERING;
     BEHAVIOUR
          snmpv1CommunityStringBehaviour BEHAVIOUR
```

```
          DEFINED AS
          !The value of an instance of this object is an SNMPv1
          community string that is associated with the remote SNMP
          agent.!;;
REGISTERED AS {iimcManagementAtt 6};
```

-- 5.1.3 IIMC ACL MIB Name Bindings

```
aclSecurityInfoEntry-systemNB  NAME BINDING
          SUBORDINATE OBJECT CLASS     aclEntry
                                            AND SUBCLASSES ;
          NAMED BY SUPERIOR OBJECT CLASS
               "Rec. X.721 | ISO/IEC 10165-2 : 1992":system
                                  AND SUBCLASSES;
              WITH ATTRIBUTE
                    iimcAclIdentity;
          CREATE         WITH-AUTOMATIC-INSTANCE-NAMING,
                         WITH-REFERENCE-OBJECT;
          DELETE         DELETES-CONTAINED-OBJECTS;
REGISTERED AS {iimcManagementNB 1};
```

-- 5.2 IIMC ACL MIB ASN.1 Modules

```
IIMCACLMIB {iimcManagementModMan 5}
DEFINITIONS IMPLICIT TAGS ::= BEGIN
IMPORTS
          iimcManagementModMan, iimcManagementDocMan,
          iimcManagementAtt, iimcManagementNB,
          iimcManagementName, iimcManagementMOC,
          iimcIIMCSEC
               FROM IimcAssignedOIDs {iimcManagementModMan 1};

IimcAclIdentity     ::= SEQUENCE   {
                    identity  OCTET STRING,
                    agentId
                         IimcProxyASN1.CmipsnmpProxyAgentId
                                        OPTIONAL}

c-DEFAULToidNA           OBJECT IDENTIFIER ::= {0 0}
c-DEFAULTNullString      OCTET STRING        ::= ''H

END
```

6. Conformance

An implementation claiming conformance to [IIMCSEC]:

(a) shall conform the to translated ISO/CCITT GDMO Party MIB {iimcIIMCSEC} requirements stated in the corresponding MOCS proforma specified by Appendix A;

(b) shall optionally conform to all of the ISO Manager to ISO/CCITT Internet Proxy security requirements stated

in section 3.1, in the agent role;

(c) shall support all of the ISO/CCITT-Internet Proxy to Internet Agent security requirements stated in section 3.2, in the manager role; and

(d) shall optionally conform to the aclInfoEntry class requirements stated in the corresponding MOCS proforma specified by Appendix A.

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Appendix A (Normative) Managed Object Conformance Statements (MOCS)

Editor's Note: [This section will be filled in prior to publication. When completed, this section will contain a tabular representation of the managed object classes, attributes, notifications, and name bindings defined in this document. The format of these proforma tables will be as defined by ISO/IEC 10165-6.]

Class	Status	Support
partyEntry	m	
contextEntry	m	
viewEntry	c1	
aclEntry	c1	
aclInfoEntry	o	

c1: - if ISO/CCITT-Internet Proxy implementation, else m