Part 1 - WORKSHOP POLICIES AND PROCEDURES

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

OIW Chairman: **Ted Landberg, National Institute of Standards and Technology**

Workshop Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Chair of the Open Systems Environment Implementors' Workshop (OIW).

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing chapter on this subject.

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Part 1 - General Information

Introduction

Part 1 contains the policies and procedures used to run the Workshop. It describes the activities of the major organizational parts of the Workshop, relationships with other regional workshops and standards development organizations and the charters for the technical working groups called SIGs. This part is a living document reflecting the changes needed for a dynamic organization committed to making productive use of the participants time. The changes are shown as lineouts for deleted material and shaded text for additions.

Workshop Organization

In February l983, the National Institute of Standards and Technology (NIST), [formerly the National Bureau of Standards (NBS)], organized a public international workshop at the request of implementors, users and suppliers of Open Systems Interconnection (OSI) protocols. The goal of the OSI Implementors Workshop was originally established by the need for interoperability among multiple vendors' systems. An implementors' workshop on the Open System Environment (OSE) addresses the additional goal of achieving common applications development environments supported on multiple vendors' systems. This goal is consistent with internationally agreed definitions. The workshop provides a technical forum for the timely development of implementation agreements based on emerging international OSE standards or specifications. The Workshop accepts as input the elements of these emerging standards or specifications and produces as output implementation agreements and testing details for these protocols or specifications. In support of the effectiveness of the functions described above, the Workshop will review abstract conformance test suites submitted to the workshop, and amend as appropriate, for the purpose of alignment with the requirements of the Workshop Implementation Agreements. Submission of abstract test suites is encouraged and welcomed. The workshop may also serve as a focal point for sharing information concerning conformance testing of OSI protocols or testing of OSE specifications.

Workshop Cycle Plan

The OSE Implementors' Workshop is administered in a cycle that begins with the yearly scheduling of workshop meetings. Meeting dates are set as early as possible so that the physical meeting facilities can be reserved. Meeting schedules are announced in the U.S. Federal Register. Meetings held at the National Institute of Standards and Technology in Gaithersburg, Maryland usually require reservations one year in advance. The Workshop schedules its meetings to minimize conflicts with ISO, CCITT, ANSI and other events while producing timely agreements in concert with emerging ISO international standards (IS), draft international standards (DIS), CCITT recommendations, and other specification schedules.

Preparation for the next Workshop begins as soon as the previous meeting adjourns. The minutes are prepared while the meeting is fresh in the recorder's mind.

The Stable Document is edited, checked and submitted for editorial review to the National Institute of Standards and Technology where it is assigned a publication number and printed. The Working Document is edited, checked, and reviewed at NIST.

A cover letter is prepared usually with 5 enclosures:

Delegate material needed before arrival at the next meeting includes hotel accommodation information, maps and so forth;

"Workshop at a Glance," is the next meeting's weekly schedule. Each SIG chair is contacted to verify meeting day and time schedules. Scheduling conflicts involving overlapping delegate interests, joint SIG meetings and so forth are resolved;

minutes of the last Plenary Assembly and Wednesday evening Dinner Meeting are prepared;

Implementation Agreements Documents, if appropriate, are included;

announcements for the next workshop include the current Workshop Organization Chart; proposals for new business and other relevant material.

Workshop Outputs

The Workshop produces implementation agreements and conformance criteria. The output of the Workshop is a set of several documents to be considered in parallel by an implementor .

The first document is entitled "Working Implementation Agreements for an Open Systems Environment" (hereafter referred to as the "Working Document"). This records preliminary agreements and directions developed by the Special Interest Groups and approved by the Workshop Plenary. These Working Agreements are not considered stable enough for use in procurement reference; however, material that is in the Working Document may be used in prototyping and future planning. In general, the Working Document changes after each workshop, as technical work on new and existing topics is progressed. The Working Document is always released in complete form.

As individual protocol specifications, public specifications (defined in subclause 2.2) and conformance criteria are completed and become seen as unchanging into the foreseeable future, with no technical changes to any of the work anticipated, the status of the relevant part is altered to stable. Stable text may be used as a basis for product procurement.

No more than once per year and at their discretion, NIST will incorporate all stable text into a second document (Special Publication), known as the "Stable Implementation Agreements for an Open Systems Environment" (Hereafter referred to as the "Stable Document".) The text from this document may be used in procurement reference.

Even after material is declared technically stable, errors (errata) may occur due to:

Editorial;

technical;

alignment requirements.

These errata, along with new stable material, will be collected into supplements to the stable document, with a more rigorous approval process for technical and alignment errata.

Technical errata may occur due to:

Interworking problems discovered through implementor experience;

any other errors which may necessitate code changes.

Alignment errata may occur to comply with evolving base standards, other Regional Workshop Agreements, or Public Domain Specifications. If there is a question as to whether an erratum is editorial or technical, it is considered technical; similarly, if a question arises as to whether an erratum is editorial or alignment, it is considered alignment. Errata may be approved with a specified date of inclusion in future Stable Agreements, and should be justified. Every attempt will be made to disseminate relevant information on applicability of various errata items to previous text, as well as any restrictions on backward compatibility with previous text. It is a goal that current Stable Agreements be backward compatible with previous stable agreements to the maximum extent possible, and that information on errata applicability be provided.

Replacement page supplements are issued as necessary after each Workshop. They reflect activity at the previous meeting, and are issued between releases of successive base versions.

Those above-referenced supplements will be issued in a loose-leaf "replacement page" form, such that these new pages reflecting errata may be inserted in place of appropriate pages in the Stable Document. The changes on these replacement pages will be clearly marked and dated. Thus an implementor gets a "current" picture of the status of Stable Agreements. After material is declared technically stable, no further changes to that text may occur except for correction of necessary errata.

Published errata apply to the previous versions and editions of stable material as described in appropriate "Errata" text for each subject. The same is true for backward compatibility issues. Succeeding publications of the Stable Document are given version numbers, and supersede previous versions. At the discretion of NIST, editions may be issued if a sufficient number of replacement pages have accumulated within a Stable Document version.

An implementor may need to study Stable and Working documents together . They have a common index; material is not duplicated but cross-referenced. It is recommended that released products conform to a specified level of a Stable Document.

The Stable Document is published by the National Institute of Standards and Technology and is available for sale by the National Technical Information Service (NIST), the US Government Printing Office (GPO), and the IEEE Computer Society. The Draft Working Document is available to attendees at the Workshop. In addition, Stable Documentation and Working Documentation are both available on-line. Copies of the Stable Document are sent to libraries and repositories throughout the world.

Tutorial text in Workshop Agreements is strongly discouraged; in exceptional instances where it must be present, it should be clearly identified with expiration date included. Recent Workshop documentation is being provided in a style consistent with latest ISO/IEC objectives.

Whenever, possible, meeting announcements and other pertinent Workshop information are made available via electronic means. It is a Workshop goal to transact its business using electronic mail to the maximum extent permissible.

Implications of Workshop Affiliation And Participation

The Workshops are held for those organizations expressing interest in implementing or procuring OSE protocols and open systems. Participation is open to all directly and materially affected interest. There are two general categories of participants: Implementors and Users. Other participation may include observers, liaisons, ex-officio persons, and invited guests. All individuals may participate in the working and ad-hoc groups.

The OIW is open to the press. Only the Executive Steering Committee members can speak officially for the Workshop.

Users are encouraged to participate in the activities of the Workshop and to champion their functional requirements in implementation agreements developed by the technical working groups. There is no formal commitment on the part of vendors and users participating in the Workshop to implement or use the Agreements reached at Workshop meetings. However, those who have no intention of using the agreements should consider themselves "observers," and should comply with any requirements for "observers" given in this document. Conformance to Workshop Agreements means conformance (Agreement) with a specified version (plus level of updates) of Stable Agreements. This refers to the previously and currently published documentation. Implementors should consult procurement documentation to understand precisely what level of stable functionality to reference; however, implementors are encouraged to reference the most recently available Stable functionality.

The implementation specifications from the "Stable Implementation Agreements for Open System Interconnection Protocols" are referenced in Federal Information Processing Standard 146, "Government OSI Profile (GOSIP)."

Relationship of the Workshop to the NIST Laboratories

As resources permit, NIST, with voluntary assistance from industry, develops formal protocol specifications, reference implementations, tests and test systems for the protocols agreed to in the Workshops. This is work made available to the industry volunteers and to others making valid commitments to organized events and activities such as NCC, AUTOFACT, and OSINET. As soon as this work can be adequately documented, it is placed in the public domain through submission to the National Technical Information Service. Any organization may then obtain the work at nominal charge. The NIST laboratories bear no other relationship to the Workshop.

Structure and Operation of the Workshop

The business of Workshop should be conducted informally and cooperatively, since there are no corresponding formal commitments within the Workshop by participants to implement the decisions reached. The chart below depicts the Workshop organization and relationships of the major components. Those components are: (1) the Plenary; (2) three standing committees, OSE-TC, TLC, and Executive; and (3) Technical Working Groups, called SIGs .

Workshop Weekly Agenda

The Workshop meets on a weekly schedule organized as illustrated in figure 1 below:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
AM	SIG	SIG	SIG	SIG	
PM	SIG	SIG	SIG	SIG	
	TLC	EC	PLENARY DINNER	Plenary	Plenary
	(OSE TC)	(OSE TC)	(OSE TC)		

Figure 1 - Workshop Week at a Glance

NOTE - Voting Plenary will be Thursday evening or Friday morning.

Special Interest Groups and Technical Committees meet Monday through Thursday to develop appropriate **draft** text for the implementation agreements documents. The SIGs usually do not meet every day, but schedule meetings as needed. Individual SIG schedules are provided with delegate registration materials. Workshop delegates meet Wednesday evening for dinner to conduct Workshop Plenary business that does not require voting. Liaison reports, proposals for new Special Interest Groups and other discussions of interest are encouraged at the dinner meeting. The Voting Plenary Assembly conducts the voting business of the OSE Implementors' Workshop. Old business and new business motions are brought to the floor for Plenary consideration. SIG Chairs control the detailed agendas for their particular meetings.

Each SIG Chair is required:

to hold a SIG meeting during the week;

to attend the whole of the Executive Committee meeting;

to attend the Plenary and give a report of activities.

Relationship of a Special Interest Group to the Plenary Assembly

The SIGs meet independently during the Workshop; they may also hold interim meetings between Workshops. As technical work is completed by a SIG, the work is presented to the Plenary for consideration. Companies participating in a SIG are expected to participate in the Plenary. Voting rules for SIGs are as described above.

The SIGs propose their charters and work programs to, and receive instructions for their technical program of work from the Plenary Assembly.

Formation of New Special Interest Groups

Special Interest Groups are formed at the pleasure of the Plenary Assembly. A proposal to establish a new SIG is made at the Wednesday evening dinner meeting and may be brought to a vote at the Friday Plenary session.

Proposals for new SIGs should address the following topics:

- Demonstrate the timely need for implementation agreements;
- identify:
  - existence of Requirements as submitted to the Workshop by User Organizations;
  - relevant ISO, CCITT, ANSI or other organizations;
  - vendor interest in participating;
  - a relevant interest group (constituency);
- explain the OSE context of work;
- identify a path towards stability of appropriate base standards, or Public specifications;
- include a draft charter, statement of goals and plans for reaching implementation agreements.

Proposals for new SIGs should be submitted to the Secretariat for distribution to participants prior to the Workshop. This will allow everyone to review material and impact submitter with questions. At this point the draft charter may be modified, with the consent of the presenter, and enhancements and/or modifications to the original proposal may be presented. Materials relating to SIG formation will be made available to participants at the Voting Plenary when the actual vote takes place.

Liaison Procedures between Special Interest Groups

Following are procedures for cooperative work among Special Interest Groups.

- Any SIG (SIG 1) or individual having issues to discuss with or requirements of another SIG should bring the matter to the attention of the chair of that SIG (SIG 2);
- The SIG 2 Chair should bring the matter before SIG 2 for action;
- SIG 2 should respond to the concerns or needs of SIG 1 or the individual in a timely manner;
- If the matter cannot be satisfactorily resolved or if the request is outside the charter assigned to SIG 1, then it should be brought before the Technical Liaison Committee, or if a workshop administrative matter, before the Executive Committee;
- SIGs are expected to complete work in a timely manner and bring the results before the Plenary for disposition. However, the Plenary may elect to act on any issue within the scope of the Workshop at any time.

Technical Liaison Committee (TLC)

A Technical Liaison Committee (TLC) has been formed to address the general technical and architectural requirements of the OSE Implementation Agreements.The responsibilities assigned to TLC include reaching Implementors' Agreements on OSE related matters that are not covered by existing SIG charter and/or may concern more than one SIG. Representation in the TLC is comprised of the SIG Chairs and/or two (2) assigned technical experts. Each SIG is encouraged to be represented at this meeting; those SIGs not in attendance will be noted.

The Chair of this group is assigned per SIG Chair selection procedures (see 4.6). The TLC meets one day per Workshop week, if necessary, and reports to the Executive Committee if it has met. A report is also made to the Plenary on its work and progress.

The voting rules of the TLC are subject to consensus approval of SIG representatives. Each SIG casts a single vote. Additionally, text created by TLC is subject to prevailing voting rules of the Workshop Plenary.

Workshop Executive Committee

The Workshop Executive Committee, which meets Tuesday afternoon of the Workshop week, is charged with making decisions affecting the overall interests of the Workshop. Each SIG Chair is required to attend this meeting, which is run by the Workshop Chair. Matters considered by this group may involve technical and administrative direction of the Workshop. Agreement is reached by consensus of all participants. Guests may be invited at the discretion of the Workshop Chair. Occasionally presentations may be made to increase the information available to the meeting participants. SIG Chairs may provide inputs for discussion. The Executive Committee Meeting attendance is restricted to SIG Chairs, Workshop Administration, and invited guests.

OSE Technical Committee

The Open Systems Environment Technical Committee in response to user requirements considers the scope and framework of an OSE; provides a meeting ground to generate interest in open system environment specifications; and allows for technical recommendations via the Technical Liaison Committee of what new work items might be needed in existing Special Interest Groups or new SIGs required to address new work items.

Administratively and logistically the OSE Technical Committee will operate as a SIG. However, the purpose of the OSE Technical Committee is different from that of SIGs in that the focus of the OSE Technical Committee is not necessarily to reach Implementation Agreements.

Liaison of Workshop to other Groups (ANSI, ISO, EWOS, AOW, etc.)

Special Interest Groups sometimes correspond with organizations performing related work, such as

ANSI committees. Such correspondence is approved by the Plenary before sent to committees, such as ANSC X3S3. The Plenary assembly reserves the right to veto correspondence using normal voting rules. External liaisons, if approved for a SIG's charter, may be sent without explicit Plenary approval unless there is an objection; other liaisons may require explicit approval, and should be noted as being outside of a SIG's charter. SIG chairs are responsible for sending approved liaisons and for providing OIW Chair with final copies.

Plenary Assembly

The workshop Plenary is composed of voting representatives from participating U.S. Corporations and Governmental Agencies. The Workshop develops internationally recognized and harmonized Function Profiles. As with all public standards development organizations, it uses a voting process to achieve consensus of the work presented by the technical working groups who represent a group of interested parties to the implementation agreements.

Plenary Meetings

The Plenary meets twice during workshop week, after the Plenary Dinner where groups petition to form new SIGs and technical proposals are presented related by interested groups, and on friday, where consensus votes are taken Implementation Agreements and liaison statements to external organizations.

The OSE Implementors' Workshop Plenary Assembly is called to order by the Workshop Chair at the end of the Workshop week. **In the event of the chair's absence, the TLC Chair will preside over the voting Plenary meeting.**

Plenary Chair Responsibilities

The Chair has the following general duties: to open the session at the scheduled time by calling the assembly to order; to announce the business before the assembly and review the agenda; to put to vote all questions which arise in the course of the proceedings; to make appropriate announcements; and, to conduct other business as appropriate or needed. The order of business before the Plenary is planned with the Executive Committee.

The Chair has the following specific duties:

To maintain an accurate record of the OSE Implementors' Workshop Agreements;

to appoint a Workshop Recorder;

to identify the need for, and to encourage the formation of new relevant SIGs;

to encourage SIG Chairs to develop an organization including a Vice Chair and a Secretary;

to approve the appointment of the SIGs officers;

to report on current SIG charters, work items, and recent accomplishments;

to identify the completion of a SIG's work, and to encourage that SIG to disband when its goals are accomplished;

to preside over the Executive Committee which attends to all administrative matters associated with the Workshop;

to encourage SIG chairs to harmonize their agreements with other groups;

to preside over the Workshop Plenary meetings.

Plenary Agenda

The agenda usually includes:

Introductory remarks and announcements;

approval of the previous meeting minutes;

old Business;

new Business;

SIG Chair Reports.

Each SIG chair report reflects the business (requiring a Plenary vote) conducted by the SIG during all interim SIG meetings and meetings during the Workshop week. SIG Chairs are required to use this agenda time to introduce motions that reflect consensus reached in their meetings. Non-voting descriptive material is distributed to attendees outside of the main Plenary assembly.

Motion Handling

All motions brought to the Plenary Assembly are recorded by the secretary along with the tallied vote including yes, no and abstain. Motions are automatically "seconded" if brought by SIG vote before Plenary.

Motions representing consensus within a SIG are brought to the Plenary floor by the SIG's Chair. Before the Plenary entertains the motion, the SIG's vote on the motion is reviewed. This review provides the Plenary with the measure of consensus reached within the SIG. The Workshop Chair may challenge the vote of a SIG. The SIG vote must be recorded on all motions brought before the Plenary.

A standard template is used for the SIGs to prepare their reports. SIG Chair reports should be brief and contain only voting material. Motions should be divided by document to be modified (if appropriate) and by type of change. Non-contentions issues should be "bundled" together as much as possible when a vote is requested.

Voting Privilege and Responsibility

The pleasure of the Plenary is determined by voting privileges granted to the workshop delegates. Order is maintained through an interpretation of "Robert's Rules of Order,"... while it is important to every person in a free country to know something of parliamentary law, this knowledge should be used only to help, not to hinder business. One who is constantly raising points of order and insisting upon a strict observance of every rule in a peaceable assembly in which most of the members are ... [unfamiliar with] these rules and customs, makes himself a nuisance, hinders business, and prejudices people against parliamentary law. Such a person ... either ... [does not understand] its real purpose or else wilfully misuses his knowledge."

Plenary voting privileges are:

One vote per company;

only companies that regularly attend vote;

only companies that plan to sell, buy, test, certify, or register protocols or data stream formats vote on its implementation decisions;

only companies knowledgeable of the issues vote;

proxy votes are not admissible.

A motion carries if and only if at least 2/3 of the total yes, no and abstain votes are yes.[1]

There is a special set of voting rules for alignment and technical changes to the Stable Document only, and applies to the first attempt at these changes. These rules are as follows:

A unanimous vote (Y=100%, N=0, A=0) is required for passage;

if (A>0 or N>0 or both) but Y> = 2/3 majority, then the proposal is tabled for one Workshop period (NOTE: At the next Plenary the motion is untabled, and resolved by at least 2/3 majority vote);

if Y< 2/3 majority then the proposal will fail, and may be brought up again at the next Plenary as a completely new proposal;

in the case of one or more negative votes as described in (b) above, the full explanation of each negative vote should be minuted.

Representatives should use these special rules to give proposed errata items a proper time for consideration. Again, only items that are truly errata should be brought forth as changes to stable text. Any proposal that causes change to stable text in such a way as to change Implementations should be subject to these special rules. SIGs should maintain levels of

[1]These voting rules were created to provide knowledgeable voters an opportunity to abstain creating an equivalent negative vote. The abstaining delegate, after due consideration, indicates reluctance to reach consensus on an implementation agreement; the abstention, in effect, calls for further consideration of the issue. On the other hand, the rule suggests that delegates lacking concern for implementation detail or lacking knowledge of the issue might avoid the vote all together.

functionality of agreements for as long as is appropriate, to satisfy user requirements.

The order of Plenary business is determined by the Workshop Chair.

Voting privileges for SIGs are the same as general Plenary voting privileges, except that in order for a motion to pass, the total number of yes votes must be substantially more than the "no plus abstention" votes. Any exceptions or special interpretations of the above must be submitted to the Executive Committee for approval. Any Workshop participant with a question in this regard may bring the matter to the attention of the Workshop Chair, who will then notify the Executive Committee. It is suggested that a minimum requirement for "regular attendance" is for the company to have attended one of the previous three meetings. The SIG Chair will determine satisfaction of the "substantial" requirement.

Technical Working Groups (SIG)

The SIG Chair is responsible for reaching the goals stated in the charter of the SIG. The business of the SIG is conducted in public meetings that generally follow the procedures of the Plenary Assembly. There is no minimum quorum requirement for a SIG.

Proposal Presentation

Delegates are assured SIG agenda time to present proposals consistent with the goals and objectives outlined in the SIG's charter.

Motion Handling

The business of the SIG is conducted by the SIG Chair. The Chair is encouraged to use"Robert's Rules of Order" in handling motions brought to the SIG's attention.

Voting Procedures

Voting procedures used in the SIG are the same as those used in the Plenary, except for the special errata rules. The SIG Chair interprets the eligibility of each delegate following the guidelines in 4.2 "Voting Privilege and Responsibility."

SIG Chair Responsibilities

Each SIG Chair is responsible for the activities of the special interest group. The Chair ensures that the charter of the group is upheld and that opportunities are exploited to reach consensus and make progress toward attaining implementation agreements. The Chair is obligated to work within the scope of the SIG's charter and to reach the SIG's stated goals in a timely manner.

To accomplish this, the SIG Chair shall hold at least one meeting during the scheduled

Workshop week except in unusual circumstances (upon prior notification to Workshop Chairman). The Chair is encouraged to hold interim meetings at any convenient time and place between Workshop weeks, provided there is adequate technical work to justify such meetings. Every attempt to publicize interim meetings should be made through mailing lists, phone calls and other means. Interim meetings may be held anywhere in the world. Representatives of other similar regional workshops are encouraged to attend these meetings.

Each SIG Chair is responsible for attending the Executive Committee Meeting held during the Workshop week. The SIG Chair is also responsible for attending the Plenary Assembly and reporting on the activities of the SIG. The SIG Chair is encouraged to appoint a vice chair, secretary, and other officers as appropriate. The Workshop Chair accepts or rejects these appointees by the SIG Chair.

It is expected that SIG Chairs will be available (by telephone or otherwise) to the Chairs constituency and to prospective attendees. SIG Chairs keep SIG document lists and SIG member lists, and determine the agenda of every SIG meeting. If the SIG Chair is unable to carry out assigned duties, the vice chair shall do so; if the vice chair is unable to serve, the secretary shall carry out this function, and so on.

Charter Definition

All SIG Charters shall have the following generalized form:

Scope;

objectives (specific);

high-priority work items;

low-priority work items.

Every Workshop SIG will have this charter form. All SIGs are responsible for keeping their charters current. Charters should be reviewed (and revised as necessary) twice a year. Charters should describe the activities of a SIG.

SIG Chair Selection Procedures

As soon as a vacancy is determined, the OIW Chair should:

Accept nominees or volunteers;

evaluate them in reference to the qualifications listed below

present the qualified candidates to the Plenary for approval at the end of the Workshop week;

SIG Chair qualifications are:

Knowledge of Parliamentary Procedure;

management experience;

organizational skills;

technical knowledge of the subject area;

professional credentials;

regular Workshop attendance (for existing SIGs);

All applicants will submit to the OIW Chair a commitment letter of support from the applicant's corporate sponsor;

All qualified candidates shall be announced by the OIW chair at the Wednesday evening dinner prior to their submission at the Voting Plenary. This is the only procedure in the selection process;

If there is only one candidate, Plenary voting will be by acclamation. If more than one candidate is submitted, voting will be as given below:

The candidate with the largest number of "Yes" votes will win. Nominees will be excused during the voting. No demonstrations or "campaign speeches" will be allowed at the Plenary by candidates. Alternatively, for one candidate, voting may be by simple majority, but "acclamation" should be tried first;

When selected, new Chairs shall serve for a one-year term, effective from the date of selection. A SIG Chair may not resign during this period, except in extraordinary circumstances;

A SIG chair may be removed by the Executive Committee, due to illness or substandard performance. In order for this to happen, 2/3 of regular SIG attendees, or OIW Chair must submit a written request to OIW Executive Committee;

The Executive Committee will make a determination; the OIW Chair has overall final authority in this matter;

For existing chair positions, a list of candidates will be complied one year after the first meeting of the current SIG Chair, and the election process will proceed as described above;

If a SIG Chair is temporarily unable to perform duties, the vice chair shall preside and conduct scheduled SIG meetings. In the absence of a vice chair, the Secretary shall fulfill this requirement;

At no time shall a Vice Chair assume De Facto SIG Chairmanship without prior approval as described above;

A SIG Chair may be elected (re-elected) to no more than three consecutive one-year terms;

For new SIGs, until this process can be instituted, Acting Chairs will be assigned by NIST;

Under exceptional circumstances, to be discussed at the Executive Committee Meeting, SIG Chair elections may be by secret ballot, or there may be opportunity for discussion by candidates at the Wednesday dinner meeting prior to voting (The OIW Chair has final authority in these matters).

Other SIG Chair Meeting Procedures

The following is strongly recommended:

The agenda for a SIG meeting should be prepared by the SIG chair taking into account suggestions by the SIG members and should be circulated to all members about a month before each meeting;

any proposed changes to the Agreements should be clearly identified in the agenda distributed about a month prior to the meeting. The details of such proposals should be circulated with the agenda;

at the opening of a SIG meeting the agenda should be subject to modification and should be formally approved, as is customary. However, any new proposed changes to the Agreements that are first introduced at the opening of the meeting (i.e., not circulated prior to the meeting with the agenda) should be included in the agenda for discussion and should subsequently be minuted, but should not be voted on during the meeting;

once a SIG's agenda is approved, priority during the SIG meeting must be given to the items on the agenda, and changes should be limited to re-ordering to accommodate schedules. If it is foreseen that the agenda may need to be modified again subsequent to the opening of the meeting (e.g., to accommodate the scheduling of joint SIG meetings) then this activity should be specifically scheduled, perhaps at the end of the first day of a SIG meeting;

voting in a SIG should be limited to companies who have been present for at least one of the previous three SIG meetings;

SIG Chairs should make their room assignments on the last day of the Workshop week for the next workshop.

Charters

Within the Workshop there are Special Interest Groups (SIGs). The SIGs receive their instructions for their technical program of work from the plenary. The SIGs meet independently, usually during the Workshop. As technical work is completed by a SIG, it is presented to the plenary for disposition. Companies participating in a SIG are expected to participate in the plenary. Voting rules for SIGS are as described in the Procedures Manual, section 5.3.

Special Interest Groups sometimes correspond with organizations performing related work, such as ANSI committees. Such correspondence should be sent through the plenary to the parent committee, such as ANSI X3T5 or ANSI X3S3. When SIG meetings take place between Workshops, the correspondence from these meetings should be made known to the Workshop plenary.

The procedures for cooperative work among Special Interest Groups are given in section 2.6 of the Procedures Manual.

Following are the charters of the Special Interest Groups.

NOTE - The charters of the Directory Services, Lower Layers, Network Management, Upper Layers, Transaction Processing, and Conformance Testing Special Interest Groups do not follow the format recommended in the *Procedures Manual*.

FTAM SIG

The charter is given as follows:

Scope:

to develop stable FTAM Agreements between vendors and users for the implementation of interoperable products;

in particular to maintain the FTAM Phase 2 and Phase 3 specifications with respect to experiences from implementations and from testing. It is a goal that FTAM Phase 3 will remain backward compatible with FTAM Phase 2;

to act as Registration Authority for OIW FTAM objects;

to define further FTAM functionality;

to conduct liaison with standardization bodies such as ISO SC 21 and ANSI X3T5.5;

to conduct liaison with and contribute to other bodies working on FTAM harmonization such as the Regional Workshops (EWOS, AOW) and the ISO SGFS to define Functional Standards;

to conduct liaison with vendor/user groups such as COS, MAP, TOP, and SPAG;

High priority work items:

Maintain FTAM Phase 2 and Phase 3 Agreements;

Maintain OIW FTAM object register;

Contribute to development of FTAM ISPs;

Specify use of general Character Set Agreements;

Specify requirements of FTAM to a Directory Service;

Specify use of Filestore Management functions;

Specify use of "run-length" compression;

Low priority work items:

Specify use of Security functions;

Specify use of Overlapped Access;

Specify use of ODA documents over FTAM;

Specify use of EDI documents over FTAM;

Specify use of Advanced Adaptive Compression Algorithm(s).

X.400 (MESSAGE HANDLING SYSTEMS) SIG

The charter is given as follows:

Scope of Work:

To develop Stable MHS Agreements among Vendors and Users for the implementation of interoperable products;

To conduct Liaison with Standardization Bodies, such as X3V1 as ANSI TAG to

ISO/IEC JTC1 SC18, U. S. CCITT Study Group D for input to Study Group VII/Q18, and U. S. CCITT Study Group A for input to Study Group I;

To Actively work with other Regional Bodies, primarily (EWOS, AOW) but including others, to define International Standardized Profiles (ISPs) for CCITT X.400 MHS, and ISO/IEC MOTIS;

To Review Abstract Tests for X.400 and MOTIS and provide feedback to appropriate bodies;

Current Work Items:

MHS use of X.500 Directory;

Body Parts / Content Types;

MHS Security Issues;

Access Units;

MHS Registration Issues;

Maintain 1984 MHS Stable Agreements;

Contribute to development of MHS ISPs;

MHS routing;

Future Work Items for Next Year:

EDI over X.400 and MOTIS;

Distribution Lists over X.400 and MOTIS;

EDI Messaging;

MHS Management;

Character Sets and other Internationalization Considerations.

LOWER LAYER SIG

The Lower Layer SIG will study OSI layers 1-4 and produce recommendations for implementations to support the projects undertaken by the workshop and the work of the other SIGs. Both connectionless and connection-oriented modes of operation will be studied. The SIG will accept direction from the plenary for work undertaken and the priority which it is assigned.

The objectives of the Lower Layer SIG are:

Study OSI layers 1-4 as directed by the plenary - such study is to include management objects, security, ISDN user-network interfaces for use in conjunction with OSI network services, routing exchange protocols, etc.;

Produce and maintain recommendations for implementation of these layers;

Where necessary, provide input to the relevant standards bodies concerning layers 1-4, in the proper manner;

Review base standard abstract test suites with the goal of identifying the test cases required for the layer 1-4 Implementation Agreements. Develop test cases for Implementation Agreement functionality not present in the base standard (if any).

OPEN SYSTEMS SECURITY SIG

The charter is as follows:

Scope:

To study the requirements for security in Open Systems (OS), and where appropriate develop OS Security Implementation Agreements with regards to the applicable standards. To advise and support other SIGs on their inclusion of relevant security services and mechanisms in their implementation agreements. When necessary, provide input in the proper manner to the appropriate standards activities. To coordinate with other regional bodies to harmonize the inclusion of security services and mechanisms into International Standardized Profiles.

Objectives:

To define security architectures and implementation profiles based on open systems security standards, including OSI security protocols, cryptographic algorithms and related key management systems. To actively work with other regional bodies to harmonize the inclusion of security services and mechanisms into International Standardized Profiles (ISPs).

Standing Work Items:

Algorithm and Security Information Object Registration/Publication;

Register Security Algorithms, attributes and other objects as required/requested and list algorithms/objects registered by other authorities;

TP Security:

Assist TP SIG in identifying security requirements, services and mechanisms for TP;

Labels:

Define a Standard Security Label (SSL) Label Set for use at the Network level;

GULS:

Liaison with other SIGs (e.g., TP, DIR) to develop Security Exchanges (SEs) and Security Transactions (STs) for use by these applications. Identify common SEs and STs. Register SEs and STs;

OIW Security Activity Matrix and Guideline:

Develop a matrix and supporting guideline which describes the security and security-relevant activity for the OIW;

OSE Security Model (OSM):

Develop in cooperation with other bodies a reference model of open systems security. In particular, to meet the security requirements of OIW SIGs who address security and/or security-related requirements in their LAs.

DIRECTORY SERVICES SIG

The charter of the Directory Services SIG is described in this section.

Scope:

To advance interoperability of Directory Services in an Open Systems Environment through the use of OSI Directory Services technology;

Objectives:

Functional profiling resulting in technical agreements among Directory Services implementors;

Promoting interworking of OSI Directory Services with other directory systems, resulting in technical agreements among Directory Services implementors;

Consultation with other OIW SIGs and related groups on the use of Directory Services and definition of Directory objects;

Alignment with profiles and output of related groups, where appropriate, including that of Directory groups of other Regional Workshops (RWS);

Support of conformance and interoperability test activities;

Development of recommended procedures for administration and management of the Directory in an environment based on OSI Directory Services Technology;

Current work items are as follows:

Continuing a leadership role in the development of International Standardized Profiles (ISPs) for Directory Services, specifically those for distributed operations, authentication, and 1993 extensions to OSI Directory functionality;

Contributing to and advising on current standards work underway in ISO/IEC/ITU regarding management of the Directory;

Proposing mechanisms for interworking, migration, coexistence, and synchronization of directory information between the OSI Directory and other systems and promoting alignment of these mechanisms with the work of related groups;

Revision and review of OSI Directory Services interoperability and conformance test suites.

VIRTUAL TERMINAL SIG

The charter is as follows:

Scope:

To develop agreements concerning implementation and testing of Virtual Terminal systems based on ISO 9040/9041 and their addenda. To monitor the X-window system and potentially develop implementors agreements for OSI compatibility;

Objectives:

Develop VTE-profiles to support diverse interactive applications and environments;

Develop Control Objects which may be referenced and used within VTE-profiles;

Register and maintain OIW VT objects;

Conduct liaison with standards organizations, other regional workshops and vendor/user groups as necessary;

Review and, if necessary, generate abstract test cases for VTE-profiles;

Harmonize OIW VTE-profiles with those from other regional workshops;

Adopt ISP format for OIW VTE-profiles under development;

Migrate existing OIW VTE-Profiles to ISP format;

Develop X-OSI Implementors' Agreement, if necessary;

Register and Maintain OIW X-OSI Objects, if necessary;

Review and, if necessary, generate abstract test cases for X-windows;

High Priority Work Items:

Maintain stabilized OIW VTE-profiles and Control Objects;

Develop fully general TELNET profile in ISP format;

Contribute toward the development of ISP parts for the Forms and Paged Profiles;

Develop interoperability test cases for the Generalized Telnet Profile.

Low Priority Work Items:

Develop abstract test cases;

Migrate stable profiles to ISP format - X.3, Transparent;

UPPER LAYERS SIG

The charter is as follows:

Scope:

To develop common implementors agreements, which include both connection-oriented and connectionless modes, for non-application specific protocol stacks including Session, Presentation, ACSE, ROSE, and RTSE layer protocols, standards and recommendations which are compatible with the OSI Reference Model The Upper Layers SIG is the focal point for the resolution of all Upper Layers issues;

To develop common implementors agreements for the development of non-application specific APIs which address the encoding and decoding of the aforementioned protocols, standards, and recommendations;

To develop interface agreements to application specific APIs;

To coordinate work efforts with other regional workshop groups, standards bodies and industry consortia who are also developing implementors agreements and ISPs;

To make contributions to standards bodies which are developing these protocols, standards, recommendations and APIs;

Objectives:

To approve the Common Upper Layer Requirements (CULR) specification produced by EWOS and to adopt it as part of our implementation agreements;

To develop implementors agreements for a minimum subset of functional requirements needed to perform basic data communications over a connection-oriented OSI protocol stack;

To develop implementors agreements for an API which encodes and decodes the functions of the "Skinny Stack;"

To develop implementors agreements for a minimum subset of functional requirements needed to perform basic communications over a connectionless OSI protocol stack;

To develop implementors agreements for the interface between the "Skinny Stack" API and application-specific APIs;

To harmonize all implementors agreements with similar special interest groups in EWOS and AOW;

Priority of Work Items:

The priorities of the work items are the same as the order in which they are listed in the objectives section of this charter.

NETWORK MANAGEMENT SIG

The OIW NMSIG may:

a) Develop product level specifications and international Profiles for implementations, relating to common services/protocols for exchanging management information between OSI nodes;

b) Develop product level specifications and associated international Profiles for implementations relating to systems management functions;

c) Define, encourage and promote the development of requirements for new Managed Objects (MOs), MO Profiles and MO Ensembles (bundles of Profiles). As required, collect and/or disseminate this information to appropriate bodies in which it is expected that formal definition and registration of such management information can occur;

d) Support and/or lead the development of definitions for new MOs, MO implementation agreements, MO Profiles and MO Ensembles;

e) Support the cataloguing of new MOs, MO Profiles and MO Ensembles.

f) Review and, possibly, develop profiles for implementations of application programming interfaces (APIs) for systems management functions and protocols.

As necessary, the SIG will:

Establish liaisons with various standards bodies and consortia;

Provide feedback for additional/enhanced services and protocols for OSI management.

Examples of Specific Activities:

Requirements Definition Work:

Work with other OIW SIGs (potentially via TLC) and with EWOS & AOW NM groups to develop concepts/guidelines for developing internationally harmonized MO Profiles and MO Ensembles:

Example: TAX 3
MO Profile Guidelines;

Actively solicit contributions that delineate new requirements for new MOs, MO Profiles, MO Ensembles, e.g., via letters to NMSIG membership, NMForum UAC, Open Systems User Alliance (Houston 30/Dallas 800), OIW membership, press releases, CBD announcements, ...

Example: X.400 MTA contribution (NMSIG-92/178, -92/179)
FAA Enterprise OA&M contribution (NMSIG-92/113);

Promote need to develop requirements for new MOs, Profiles, Ensembles, e.g., via OIW banquet presentations;

MO, Profile, Ensemble Definition Activities:

On an as-interested basis (e.g., in response to requirements identified in example 1), the NMSIG may:

Develop MO, Profile, and/or Ensemble definitions, *when* no relevant standards or consortia activities exist;

Example: FAA Enterprise Management Information;

Collaborate with other OIW SIGs, or consortia, to provide MO definition contributions to standards, or consortia, to accelerate progress, when standards, or consortia, activities are immature or stagnated;

[Consider registering contributions when, in the judgment of the NMSIG, standards activities are lagging *extremely* behind (e.g., > 3 years) *urgent* requirements. This would allow associated products to have useful market life cycles.]

Example: X.400 MTA MOs;

Critique relevant MO, Profile, and Ensemble work ongoing in other groups;

Example: OMNIpoint 1 Document Reviews;

Lead/support MO implementation agreements, Profiles, Ensemble development, *when* supporting standards, or consortia, activities are sufficiently mature;

Example: M.TA51;

On an as-interested basis (e.g., in response to requirements identified via example 1), the NMSIG may develop translation algorithms for automatically converting extant MO definitions from one community's object model (e.g., SNMP SMI) into OSI compatible, GDMO MOs;

Catalogue:

Request EWOS & AOW to announce availability of catalogue;

Solicit further inputs to be fed to OPn cataloguer.

API Activities:

Determine the requirements for systems management APIs;

Review proposed systems management APIs and provide comments;

Evaluate and select openly available systems management APIs;

Develop internationally harmonized profiles for implementations of systems management APIs.

OFFICE DOCUMENT ARCHITECTURE SIG

The charter is as follows:

Scope:

To develop agreements concerning implementation and testing of Office Document Architecture (ODA) systems based on ISO 8613, its addenda and related international standards;

Objectives:

Develop ODA document application profiles to support a diverse set of applications and environments;

Register and maintain ODA document application profiles;

Conduct liaison with standards organizations, other groups developing ODA document application profiles, vendor/user groups and testing authorities as necessary;

Review and, if necessary, generate abstract test cases for ODA document application profiles;

Harmonize OIW ODA document application profiles with those from other international groups;

Participate, as necessary, in the ISO ISP processing of FOD-type profiles;

High Priority:

Develop and maintain OIW ODA document application profiles;

Harmonize OIW ODA document application profiles with other international groups;

Assist in the progression of OIW ODA document application profiles through the ISO ISP process;

Low Priority:

Develop abstract test cases;

Integrate addenda and extensions to the base standard into OIW ODA document application profiles;

Develop awareness of ODA in vendor and user groups.

NOTE - The Registration SIG has effectively completed its work. The charter items below may be removed in the future.

REGISTRATION SIG

The OSE Implementors' Workshop Registration Authority Special Interest Group (RA SIG) will deal with OSI Registration for the following areas:

Registration of OSE Implementors' Workshop-Specified Objects;

The OSE Implementors' Workshop RA SIG will define the procedures for the operation of the NIST Registration Authority (i.e., NIST);

Define policies and procedures for the registration of objects defined by the OSE Implementors' Workshop;

Take account of currently existing OSE Workshop registration work;

Establish policies for the publication and promulgation of registered objects;

Liaise with other OSE Workshop SIGs, appropriate standards bodies (e.g., ANSI) and other appropriate organizations;

Support for ANSI (U.S.) Registration activities.

Promote the registration of MHS Private and Administrative Management Domain Names, Network-Layer-Addresses, and other Administrative Objects by ANSI or a surrogate appointed by ANSI. If ANSI feels that it cannot serve as the Registration Authority or delegate its authority to another organization, then the OSE Implementors' Workshop RA SIG should actively support the search for another organization to carry out this work.

This SIG will conduct a self-assessment, three OSE Implementors' Workshop Plenary Meetings after the Charter is approved, to determine if it has fulfilled its mission. Based on this assessment, the SIG will either be disbanded or continue. This procedure will continue until the SIG is disbanded.

TRANSACTION PROCESSING SIG

The charter is as follows:

reduce TR10000-format OSI TP Profile;

Describe TP's use of other profile services: ACSE, CCR, Pres., Dir.;

Produce CCR profile covering TP requirements;

Liaise with other internal and external organizations as required;

Communicate with EWOS and AOW to reach goal of an aligned profile;

Act as registration authority for OIW TP objects, as necessary.

MANUFACTURING MESSAGE SPECIFICATION (MMS) SIG

The charter is as follows:

Scope:

To provide an open forum for discussion and agreements pertaining to MMS and issues related to MMS;

Objectives:

To produce agreements for implementations of MMS (ISO 9506);

To participate in the MMS ISP process;

To produce implementation agreements on MMS Companion Standards (as recognized by ISO TC184/SC5/WG2) after those have reached ISO DIS or equivalent status;

Develop Conformance requirements;

Develop recommendations on MMS testing;

As Necessary:

Respond to defect reports as accepted;

Provide feedback on Addendum material;

To produce implementation agreements on any ISO DIS (or higher level) or equivalent document defining alternate mappings of MMS to an OSI or other international standards based manufacturing communications architecture such as might be progressed from IEC SC 65;

To produce implementation agreements for IS implementations which enable existing DIS based implementations (such as specified in the MAP 3.0 specification) with minimal modifications to interoperate with IS implementations;

High Priority Work Items:

Define implementation agreements on ISO-9506 based on vendor and user requirements;

To generate, edit, and maintain certain MMS ISPs in harmonization with the other regional workshops;

To review, provide input on, and harmonize with MMS ISPs produced in other regional workshops;

To review, provide input on, and harmonize with the common Upper Layer Requirements ISP;

Study ISO test methodologies and produce recommendations for MMS test implementations. If necessary, provide input on MMS specification requirements for the ISO test methodologies;

Provide input to ISO on Abstract Test Cases to facilitate conformance and interoperability testing;

Low Priority Work Items:

Study and comment on CD level or equivalent documents relating to MMS activities defined in the objectives;

Provide input to ISO on the elaboration of service procedures for error conditions and on the relation of the use of specific error codes to these error conditions;

Provide input to ISO on MMS ASE specific management entities;

REMOTE DATABASE ACCESS SIG

The charter is as follows:

Scope:

For all RDA Implementations based on ISO 9579:

For all RDA implementations based upon ISO 9579, Parts 1 and 2: (Generic Model and SQL Specialization):

Develop those RDA implementors' agreements and profiles which include functional elements defined in SQL (IS 9075-1992);

Provide input to national and international standards organizations on RDA-SQL profiles and related standards and profiles;

Coordinate with other organizations on matters related to distributed SQL data management services using RDA;

Objectives:

Use ISO 9579-1 RDA Generic Model, Service, and Protocol, and ISO 9579-2 RDA SQL Specialization, as a basis for Implementors' Agreements on the RDA SQL ASE and its application contexts;

Contribute to the development of an RDA ISP;

Contribute to the development of an operational testbed for distributed database systems that inter-operate using RDA and SQL;

High Priority Work Items:

To Produce Implementors' Agreements on the RDA TP Application Context, by performing the following:

Develop a work plan with an associated time schedule;

Review ULA agreements affecting RDA implementations, and harmonize with RDA and SQL requirements;

Specify limits on encodings in RDA pdus;

Specify profiles for RDA implementations;

Identify and describe recommended practices in the implementation of RDA services and protocols;

Identify implementor defined items in ISO 9579 (RDA) affecting interoperability;

Maintain OIW RDA Implementors' Agreements and profiles and harmonize them with those produced by other regional workshops such as EWOS and AOW to contribute towards the development of an RDA ISP;

Monitor and comment on the development of an ISP for ISO 9075 (SQL), for issues affecting interoperability;

Facilitate development and testing of one or more interoperability test suites for Distributed SQL Environments using RDA. Coordinate with other organizations on international harmonization of these test suites;

Implement a prototype RDA SQL interoperability testbed;

Low Priority Work Items:

Evaluate alternate abstract syntaxes for transferring SQL argument values and SQL result values;

Evaluate requirements for RDA managed objects;

Develop Implementation Agreements for future RDA specializations, if any.

Monitor and comment on the development of TP APIs for any architectural issues related to RDA's use of OSI TP;

Monitor and comment on the development of SQL APIs such as the ISO CLI, for implications on their mapping to RDA.

CONFORMANCE TESTING SIG

GOALS: To promote and participate in worldwide alignment of technical procedures based on ISO 9646 and other appropriate documents. This will include harmonization of text procedures and test specifications for use by conformance test laboratories.

To provide direction to all OIW SIGs regarding conformance testing.

To develop and maintain guidelines for and facilitate the resolution of conformance testing issues.

Provide a forum for test labs to resolve issues specific to conformance testing.

Achieve a consistent implementation of ISO 9646 in conformance testing to ensure equivalence of test reports.

CHARTER:

Harmonize work in the area of conformance methodology and procedures for use in the production of test specifications and conformance testing guidelines for OIW Stable Agreements, based on ISO 9646, TRI10000, and other appropriate documents.

Provide advice on planning and coordination of conformance test specifications and testing issues.

Provide, if required, specific conformance testing expertise to the OIW SIGs.

Consider specific testing problems raised by the OIW SIGs, review these, and coordinate resolution.

Coordinate the review by OIW SIGs of test specifications for their functional standards.

Provide a focal point for representation of OIW SIGs in standards bodies on conformance testing matters.

Build and enhance awareness within the workshop of the current status and plans for ISO 9646, ISO IEC TR10000, and other conformance documents.

Liaise with other testing groups in other workshops where they exist, and with external groups, for purposes of development of harmonized agreements.

Promote expansion of text cases and suites in alignment with ISO text suite structure and purposes to cover requirements of the OIW stable agreements.

DELIVERABLES:

Create and maintain a guidelines document for the OIW Workshop to be used by the other SIGs to resolve conformance testing issues.

Maintain a log of testing issues for the SIGs.

HEALTHCARE SIG

The charter is as follows:

Scope:

Provide a technical forum for the development of implementation agreements based upon standards and profiles relative to the healthcare sector.

Objectives:

Develop implementation agreements specific to the healthcare sector.

Coordinate and harmonize healthcare implementation agreements with those of other OIW SIG's.

Conduct liaison with other implementor's workshops and standards developing organizations concerned with the healthcare sector.

Contribute to the development of healthcare ISP's.

Register and maintain OIW healthcare objects.

Provide a focal point for sharing information relative to healthcare conformance testing.

High Priority Work Items:

Develop detailed work plan.

Coordinate work plan with EWOS EG-MED.

Review available and developing standards and profiles.

Develop structure of implementation agreements.

Low Priority Work Items:

Develop application profiles.

Review of abstract test cases.

OPEN SYSTEMS ENVIRONMENT TECHNICAL COMMITTEE

The charter is as follows:

Scope:

The OSE-TC will coordinate the disposition of Users' OSE requirements and work requests within the OIW sphere of influence. Specifically the OSE-TC will:

Operate administratively and logistically as an OIW SIG (though not a SIG);

work closely with the other Regional Workshops and the OIW TLC in establishing additional OIW OSE work efforts (in response to User OSE requirements);

work OSE issues not addressed by implementation agreements;

establish, promote, and facilitate a process to be used in developing OSE profiles which are harmonized across other workshops;

encourage external agencies to collect, synthesize, prioritized and deliver Users' OSE requirements to the OIW;

assess User OSE requirements;

facilitate the effective use of Publicly Available Specifications (PAS);

work with Users to ensure orderly disposition of initial Users' work requests, and use this experience to evolve toward an internationally harmonized User Requirements process;

Objectives:

The Open Systems Environment Technical Committee (OSE-TC) in response to user requirements:

Considers the scope and framework of OSE (including profiles);

provides a forum to generate consensus in open system environment specifications;

allows for technical recommendations via the Technical Liaison Committee (TLC) of what new work items might be needed in existing Special Interest Groups (SIGs) or new SIGs required to address new work items;

encourage development of internationally harmonized User Requirements processes;

Work Items:

Develop Profiling Methods;

Develop mechanism to process User' OSE requirements and work requests for the OIW;

Identify and Resolve Open Issues with PAS;

Develop Mechanism for Harmonizing OSE Work with other Organizations;

Specifically:

Identify Organizations to Harmonize with (e.g.., AOW, EWOS);

Develop Process for Issue Identification and Notification;

Develop Process for Setting Issue Priority;

Develop Process for Setting Issue and Work Item Responsibility;

Develop Communication and Information Flow Mechanisms;

Develop Glossary of Terms Relevant to OSE-TC;

Develop OSE Procurement Guide;

Develop OSE Specifications;

Develop OSE Reference Model and User Forum.

CHARTER FOR OIW TECHNICAL LIAISON COMMITTEE (TLC)

The OIW Technical Liaison Committee (TLC) was established by the OIW Plenary to deal with issues and problems that are beyond the scope of OIW Special Interest Groups (SIGs) ability to resolve by themselves, or by direct discussions and negotiations among themselves;

Thus, the TLC is tasked to deal with such problems as may be brought before the TLC by any one or more SIGs;

When an issue or problem is brought before the TLC, the TLC is obligated to address the problem in whatever way(s) it can to develop a resolution. The available tools include:

Direct discussion in a TLC meeting to produce a resolution;

Formation of a TLC Task Group to separately address it, which may lead to formation of a new SIG, using New SIG Formation Procedures;

Refer it to another body, such as the Regional WorkShops Coordinating Committee (RWS-CC) which consists of 3 delegations from each of OIW, EWOS, and AOW;

Ad Hoc mechanisms and methods that may be invented to meet specific needs, including mediation of disputes;

Referral of the issue back to its originating SIG, or to another SIG, as may be appropriate;

The resources of the TLC consist of attendees who represent the active SIGs of the OIW. Each SIG is allowed to send 1 or 2 representatives, and SIG Chairs often attend;

The TLC Chair is elected by the OIW Plenary, using SIG Chair Election Rules;

The TLC is not tasked to address any problem that is being addressed in an OIW SIG, unless requested by that SIG, or another SIG requests assistance because of some cross SIG involvement with the issue;

The TLC is tasked to administer the OIW ISO Object Identifier Register as defined in Part 6 of the OIW Stable Implementation Agreements: [iso (1) identified-organization (3) oiw (14)]. TLC is responsible for maintenance of the text in Part 6;

The TLC Chair is designated to serve as a Member of the RWS-CC Delegation, although this is not a required obligation for every RWS-CC meeting. An alternate may be selected according to the OIW Delegate Selection Rules;

The TLC reports to the OIW Executive Committee and to the OIW Plenary. It brings appropriate, TLC attendee approved motions before both the Executive Committee and the Plenary;

The TLC also serves as a contact point for external liaison with other standards bodies and organizations that do not have a properly matching contact point among the active SIGs or with the OIW Chair;

The TLC is the primary contact point for interactions with the EWOS Technical

Liaison Group (TLG) which has corresponding the responsibilities within EWOS. The AOW does not have a matching group or committee, so these matters are addressed directly through the AOW Chair;

The TLC also provides a measure of stability to the OIW over time by serving in an advisory capacity to assist new SIGs and SIG Chairs in the conduct of their work.

MULTIMEDIA DATA AND DOCUMENT INTERCHANGE (MDDI) SIG

Scope:

To develop implementation agreements concerning the interchange and processing of multimedia data/content objects, either in separate interchange or in structured collections such as documents -- this includes business and technical data (e.g., EDI, PDES/STEP).

Objectives:

Develop regional application profiles;

Harmonize and progress ISPs for the application profiles;

Liaison with standards organizations, vendors, users, and testing authorities;

Review ATCs and generate as required;

Provide interoperability testing methodology;

Coordinate with related APP and FIPS development;

High priority projects:

ODA Raster, SGML/HyTime, CGM, EDI, Audio, JPEG, MPEG;

ISRs and ATCs for ODA;

Poscript, PCL, SPDL;

ODA DTIF (Spreadsheet extension)

INTEGRATED SOFTWARE ENGINEERING ENVIRONMENTS (ISEE) SIG

Scope:

The ISEE SIG's goal is to provide an open forum for developing environment profiles, implementation agreements and conventions for using environment integration standards and specifications. The ISEE SIG will adopt those profiles, agreements and conventions necessary for developing standards-compliant ISEEs or components of ISEEs that can better interoperate;

Objectives:

Continue work started in NIST ISEE and NGCR PSESWG working groups;

Develop profiles for open system ISEE;

Develop implementation agreements supporting the implementation of those profiles;

Develop conventions for implementing ISEE standards;

Develop profiles and conventions for using ISEE standards in various contexts and application domains (e.g., MIS, scientific, embedded, large projects);

Work with standards organizations, consortia, vendors, users, researchers and evaluators involved in the development, implementation or conformance testing of ISEE standards to promote the development of useful and compatible ISEE standards;

High priority projects:

Profile for an open sytems ISEE including the following standards and specifications;

for data integration: PCTE, IRDS, ATIS, SQL, ODMG, CDIF, EDIF, SEDDI, PHIGS, GKS, PDES;

for control integration: CORBA, IDL, OLE, BMS, X3H6 messaging standards (CCQ/CIA), OPENSTEP;

for presentation integration: X, MOTIF, COSE;

for platform integration: POSIX, PWI, COSE, DCE;

Define the relationship of the OSE Reference Model and the ISEE Reference Models.

Secretariat

The Secretariat provides administrative support to the Workshop's Plenary, Standing Committees, and Technical Working Groups. NIST and the IEEE Computer Society cosponsor the Secretariat providing its Chairmen and small support staff. Planning and support of quarterly meetings, publication of implementation agreements, and on-going archival of the proceedings of the Workshop are handled by the staff.

Establishing and Changing Workshop Procedures

Workshop procedures are established by the National Institute of Standards and Technology. As the Workshop grows to meet the needs of the participating vendors and users, modification of the procedures are suggested to NIST through the Plenary Assembly as formal business. NIST, acting in the best interest of the Workshop, carefully considers suggested changes and, when appropriate, institutes new Workshop procedures.

Workshop Documents

The Workshop Documents are maintained and distributed by the Workshop Secretariat. The Plenary and dinner meeting minutes, Procedures Manual, and other correspondence detail the administration of the Workshop. Individual SIG documents are managed, maintained and distributed by the SIGs. Each SIG is encouraged to maintain a list of numbered (format XX SIG/year-no) documents, if appropriate. Each SIG is required to send a copy of SIG meeting minutes to the Workshop Chair.

Working Agreements reached through consensus in the Workshop Special Interest Groups and approved by the Plenary, are documented in the Working Document. Additions, deletions and modifications to the Working Document regularly occur until the agreements stabilize, when the agreements may be moved to the Stable Document.

Each part of the Stable and Working Documents represents a particular subject of interest. Each part may be in an ISO-defined format or defined as:

Introduction;

scope and Field of Application;

status/Errata, e.g., ISO Defect Reports;

portions dealing with agreements;

conformance requirements;

appendices, e.g., recommended practices.

Each new version of the Stable Document highlights the additions and modifications as compared to previous versions and includes compatibility and interworking statements. Contact the Workshop Chair or Workshop Secretariat for order information for Workshop Documents.

Modification of Workshop Agreements

Responsibility for the timely publication of accurate Workshop Agreements Documents rests with the National Institute of Standards and Technology. Modifications to these agreements are suggested to the Plenary Assembly by the Special Interest Group that writes the appropriate portion. Approval by the plenary is required for all changes. NIST maintains editorial license and approves all editorial changes to both the Working and the Stable Agreements Documents. Text proposed for stability must have been in the Working Document for at least one workshop period (except for editorial modifications).

Procedures for modifying the Working Document are:

SIG moves for change; SIG motion carries by substantial majority;

SIG Chair presents motion at Plenary; motion carries by at least 2/3 majority;

change made before next meeting.

Procedures for adding new functionality to the "Stable" Document are:

Text must previously exist in working document;

SIG moves to stabilize new functionality; motion carries by substantial majority vote;

SIG Chair presents motion at Plenary; motion carries by at least 2/3 majority vote;

change made to Stable Document as indicated in motion or before next workshop;

provision is made to identify new functionality as stable.

Intention to move material to stability at the next Workshop should be given in the Working Document well in advance, by giving the particular portions of text affected. If possible, those portions will be mailed out before the next Workshop to allow maximum time for consideration. In addition, extensive time may be provided during Workshop week (usually on Thursday) for review of text that is a candidate for stability.

Procedures for modifying the "Stable" Document are:

SIG moves for change; SIG motion carries by substantial majority (change should be identified as technical, editorial, or alignment);

SIG Chair presents motion at Plenary; motion carries according to special voting rules for technical or alignment errata, if necessary;

Errata added to stable document as indicated in motion or before next meeting;

Special voting rules for technical or alignment errata apply for Plenary vote, and all no or abstain votes on first attempt should be minuted.

It is extremely important for Plenary attendees to be informed of the impact of potential decisions reached by the Plenary. Presenters should note such impact in proposals brought before the Plenary. The Workshop Chair will note this importance by having available all copies of affected documentation during Plenary discussion. Time may be made available during the week to discuss these and any other contentious issues before the Voting Plenary.

Stable Document Maintenance

The Stable Document is dated and given a version and edition number. The version is issued no more often than once per year and is issued if and only if new functionality is added. In addition, the Executive Committee must unanimously approve the release of a new version. Implementation Agreements should state clearly, in the respective parts, the standards documents and/or direct reports upon which the implementations are based.

Errata are added to the Stable Document using the procedures defined above. These errata may or may not be edited into a new edition of the "Stable" Document. A new edition may be issued by NIST at any time.

Errata (changes to the Stable Document) are technical, alignment, or editorial. Editorial errata are appearance (clarification) changes which do not alter the meaning of the text. Alignment errata are errata which reflect consistency with other similar agreements or later versions of the base standard, Technical errata are changes which do affect the meaning of a piece of text. Each of these errata must be classified as described above. The Errata history of each part since the last version of the Stable Document may be given in tabular form for informational purposes.

Material for a new Version could come from any of the following sources:

The latest text from the previous version (automatic inclusion);

possibly, some new material from the Working Document.

No other sources of information are acceptable. Thus, it is a goal that material from the most recent version be subsumed into the new version.

Distribution of Workshop Documents

Publications

The Workshop "Stable " Document is published by the U. S. Department of Commerce, National Institute of Standards and Technology and is available for sale from the National Technical Information Services, the U.S. Government Printing Office (GPO), and the IEEE Computer Society. The Draft "Working Document" is available to attendees at the Workshop of issuance; the "Stable" Document (or replacement pages) are also available to attendees. The Stable and Working Documents are available "on-line". The Stable Document is also distributed to libraries and repositories throughout the world.

In addition, a permanent mailing list is maintained for certain individuals (such as delegates from other regional workshops, and voluntary standards participants), with whom communication on a regular basis is important; individuals on this list will receive copies of all Workshop Documentation.

SIG Correspondence and Working Documents

Listed below are the preferred methods for OIW distribution:

The preferred method of distribution is the NIST/OIW computer. Most correspondence from SIGs should be placed on the NIST OSI computer. Directories and FTP services for storing and retrieving large documents are available. Mail Exploder services for SIG email conference is also encouraged;

Distribution of Documents outside of quarterly meeting. Mass distribution of paper documents should be confined to active SIG participants. Where possible email and FTP distribution should be used;

Occasional first class letters (less than 5 pieces):

These random, intermittent mailings should be borne by SIG organizations;

Printing and Distribution Costs;

There are two ways to distribute paper documents;

SIG chair mails documents at their own expense and submits request for reimbursement to OIW (Brenda). The SIG chair is the only one who can submit a request;

SIG may send electronic documents or camera ready hard copy to OIW with instructions on when and to which mailing list to use;

Document distribution Budgets SIG chair will be responsible for submitting a request for reimbursement of document distribution. A rough estimate of the

number of mailings;

number of SIG members;

approximate weight of mailing.

A budget will be negotiated for each SIG for planning purposes. Reasonable and planned overruns are permissible.

Electronic Distribution

This section contains information needed to obtain Workshop documentation.

Most of the publications listed in this document are available for "anonymous" file transfer from the machine NEMO.NCSL.NIST.GOV located at NIST in Gaithersburg, MD, USA. This service is accessible through the

Internet. Files may be retrieved via FTP, SMTP mail, gopher, or WWW.

> **NOTE -** WordPerfect 5.1 files must be transferred in binary mode. A "LaserWriter" printer definition was used in creating the PostScript files. A commonly available set of fonts (for example, Helvetica 10-pt) must be available on your local printer for your local output to be correctly displayed. This applies to all WordPerfect 5.1 and PostScript files retrievable on-line as indicated below. The ".Z" file extension indicates that the files have been compressed using Lempel-Ziv ("LZ") coding (i.e., through the use of the "compress" utility commonly found on UNIX systems).

FTP
NEMO.NCSL.NIST.GOV (129.6.58.136) supports "anonymous" FTP as follows:

login: ftp or anonymous
password: your_name@your_site (SMTP mail address)

cd ./pub/oiw/agreements

Gopher

Gopher allows you to browse through the documents, and to retrieve documents by downloading them through gopher, or by sending them by SMTP mail to the requestor. If your site already has gopher clients installed, type:

gopher nemo.ncsl.nist.gov

Otherwise, you can connect to gopher on NEMO.NCSL.NIST.GOV by typing:

telnet nemo.ncsl.nist.gov
login: gopher
Password: gopher

Go to the menu entry that says "OSE Implementors' Workshop", then go to the menu entry that says "Implementors' Agreements". You can browse through the ASCII versions of the documents, but you cannot save them. You can mail them back to yourself (but FTP will be faster).

World Wide Web

World Wide Web (WWW) allows browsing of documents served by Gopher servers, as well as documents in HTML format served by HTTP servers. If your site has WWW clients installed, you can use them to browse the information on NEMO.NCSL.NIST.GOV. The URL for the NEMO.NCSL.NIST.GOV server is:

http://nemo.ncsl.nist.gov/

Using the WWW line-mode browser under UNIX, the command would be:

```
www  http://nemo.ncsl.nist.gov/
```

Select the "SST Gopher" entry to access the Gopher server.

SMTP mail file server - NOT IMPLEMENTED

The SMTP mail file server is not implemented yet. When it is, files may be requested as follows:

Files may be requested by sending the SMTP mail messages to oiw@nemo.ncsl.nist.gov. The subject line can be blank, the body of the message will be:

```
send ./pub/oiw/agreements/[filename]
```

where [filename] is replaced with the name of the document desired. If you wanted to retrieve the 1993 Subnetworks agreement in ASCII, under UNIX you might type:

```
mail oiw@nemo.ncsl.nist.gov
Subject: nothing
send ./pub/oiw/agreements/02S-9303.asc
.
```

Since some of the documents are very large, they will be split into multiple messages and sent individually. You will have to re-assemble them upon receipt. You can send a message containing:

```
send help
```

for additional instructions.

Questions or comments regarding accessing these services should be sent via SMTP mail to oiw-request@nemo.ncsl.nist.gov.
!

The output of the OSE Implementors Workshop (OIW) is a pair of aligned documents, one representing Stable Implementation Agreements (SIA), the other containing Working Implementation Agreements (WIA) that have not yet gone into the stable document. Material is in either one or the other of these documents, but not both, and the documents have the same index structure.

The SIA is reproduced in its entirety at the beginning of each calendar year, with an incremented version number. Replacement page sets are distributed subsequently three times during each year (after each
Workshop), reflecting errata to the stable material, as well as new functionality declared stable. In this way an up-to-date document is maintained.

The WIA is reproduced in its entirety at the beginning of each calendar year. Replacement page sets are distributed subsequently three times during each year (after each Workshop), reflecting errata to the
Working material, as well as ne functionality. The Workshops are held in March, June, September and December). OIW attendees will not automatically receive the WIA or SIA, as well as the replacement pages to the WIA and SIA. In keeping with the new policy, anyone wishing to obtain paper copies of the
WIA or SIA will must pay an extra fee during registration. These change page sets will be distributed after each Workshop. The 1993 OIW meeting dates are March 8-12, June 7-11, September 13-17, and December 6-10. All of the 1993 meetings are currently planned to be at NIST.

SIA documentation is available from the U.S. Government Printing Office (GPO), and the National Technical Information Service (NTIS). SIA documentation is also online, as described
below.

Effective April 1991, WIA documentation is in draft form, and not sold to the public. It will be distributed to Workshop attendees as usual. WIA documentation is also online, as described below.

NIST Points of Contact for the OIW:

Ted Landberg -- management information
OIW Chairman

Brenda Gray --administrative information
OIW Registrar

SIA, Version 6.

Version 6, Edition 1 of the SIA, Special Publication 500-206, has been published by NIST, and is currently available from the U.S. Government Printing Office and The National Technical

Information Service.

NIST Point of Contact:
Brenda Gray

hardcopy (Version 6):
U.S. Government Printing Office
GPO Stock Number: 903-015-00013-6
Price: $109.00 (base document plus updates) - domestic
$136.25 (base document plus updates) - foreign

hardcopy (Version 6):

NTIS (base document)
Order Number: PB 93-166809/AS
Price: $147.00 (paper); $69 (microfiche)

NTIS (March 92 Change Pages)
Order Number: PB 92-190479/WCC

NTIS (June 92 Change Pages)
Order Number: PB 92-232321/WCC

on-line (Version 5):
available for anonymous file transfer from nemo.ncsl.nist.gov
(129.6.58.136)
(see preface for details)

Individual Working and Stable Parts have been updated and placed on-line (Output from the March 1993 OIW) as WordPerfect 5.1 files, ASCII and Postscript files.

Postscript files for 1992 were placed on-line after the December OIW.

```
./pub/oiw/agreements/XS-9212.asc      -- ascii (stable)
./pub/oiw/agreements/Xs-9212.w51      -- WordPerfect 5.1
                                         (stable)
./pub/oiw/agreements/XW-9212.asc      -- ascii (working)
./pub/oiw/agreements/Xw-9212.w51      -- WordPerfect 5.1
                                         (working)
```

NOTE - For the entire stable document, reference "stable-out.All.Z" for the ASCII file, and "Stable_w51.All" for the WordPerfect 5.1 file. Helvetica fonts ranging in size from 8-pt through

30-pt were used in the preparation of the OIW files. In the above, "X" is part number (1 to 25), where a part describes a particular piece of OSI functionality, and corresponds to a chapter of a book. To access each piece of the book, retrieve filenames with syntax described above. "9212" refers to the month (Dec) and year (1992) of the agreements that are on-line. For the entire working document, reference "work-out.all.Z" for the ASCII file, and "Work_w51.All. Z" for the WordPerfect 5.1 file.

The ".Z" mentioned above indicates compressed mode. In the above, "X" is as follows: X=1 (General Information), X=2 (Subnetworks), X=3 (Network Layer),
X=4 (Transport), X=5 (Upper Layers), X=6 (Technical Registration Info),
X=7 (1984 Message Handling Systems), X=8 (1988 Message Handling Systems),
X=9 (FTAM Phase 2), X=10 (FTAM Phase 3), X=11 (Directory Services),
X=12 (OS Security), X=13 (more OS Security), X=14 (Virtual Terminal),
X=15 (Transaction Processing), X=16 (Level 3 Office Document Architecture),
X=17 (Level 2 Office Document Architecture), X=18 (Network Management),
X=19 (Remote Database Access), X=20 (Manufacturing Message Specification),
X=21 (Character Sets), X=22 (ODA Image DAP), X=23 (ODA Raster DAP),
X=24 (Conformance Testing), and X=25 (Healthcare)

Addresses and Telephone Numbers are as follows:

Ted Landberg--management information (OIW)
OIW Chairman
NIST, Technology, B266
Gaithersburg, MD 20899
(301) 975-2245

Brenda Gray--administrative information (OIW)
OIW Administrative Assistant
Technology, B217
Gaithersburg, MD 20899
(301) 975-3664

National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(703)487-4650, FTS--737-4650

U.S. Government Printing Office
Washington, DC 20402
(202) 783-3238

Standards Processing Coordinator (ADP)
National Institute of Standards and Technology
Technology Building, Room B-64
Gaithersburg, MD 20899
(301) 975-2816

Payment Policy

In the event an attendee indicates that registration payment has been made but there is no record of receipt, payment must be rendered onsite. There MUST be some type of payment received from all attendees in order for them to participate in the workshop. The onsite payment will be returned to the attendee if the original registration payment is received by the end of workshop week. If the original payment is not received by the end of the week, the onsite payment will be processed. In the case of double payment, the attendee will be refunded as soon as possible.

Regional Workshop Coordination

A Regional Workshop Coordinating Committee (RWS-CC) has been formed to monitor technical harmonization activities among the OSE Implementors' Workshop, the Asia-Oceania Workshop, and the European Workshop for Open Systems. The OSE Implementors' Workshop currently has a delegation consisting of a vendor representative, a user representative, the Technical Liaison Committee Chair, and the Workshop Chair.

The Workshop has been granted S-Liaison status to ISO/IEC JTC1/SGFS through NIST; this indicates that (1) Workshop attendees may participate directly in specified ISO Subcommittees on particular subjects, and (2) Workshop attendees may participate extensively in profile development work; the result of this work may be a harmonized proposed draft International Standardized Profile (pDISP) submitted to SGFS.

RWS-CC Charter and Procedures

Clause 2 is the RWS-CC charter document approved 3/6/89 and revised March 1990. Paragraphs have been renumbered to conform with the Part 1 numbering scheme.

Goals

Interoperability of products from different vendors worldwide to be achieved on basis of worldwide harmonized implementation specifications to be approved by ISO/IEC environment (JTC 1/SG-FS).

Specific form of implementation specifications to be harmonized and become the standards form of ISPs; Workshops to influence the 15P process, adaptation to future needs if necessary.

Profile harmonization to concentrate primarily on 'new' profiles.

Harmonization of already existing profiles to be handled pragmatically and oriented towards specific needs.

Abbreviations

RWS = a regional workshop
RSIG = SIG in a regional workshop
SIG = Special interest Group (Technical Group charged with work in a particular area)

Coordination

Coordination needs to be done at two levels
- planning
- technical

Therefore, means have to be established to provide coordination at these levels.

Coordination at Planning Level

Coordination at planning level involves the following:
- notify on regional plans
- identify work items of common interest
- organize reasonable liaison among RSIGs
- propose selected work items for assignment to Multi-RWS SIG and steer their work

RWS Coordinating Committee

In order to properly deal with this coordination a RWS Coordination Committee (RWS-CC) should be established.

It should have limited representation ($\leq$4) from each RWS. Though it is in the responsibility of each RVVS to nominate its delegates to the RWS-CC, it is desirable that both vendors and users be represented. Also, continuity of participants is desirable.

The meeting frequency should be 2-3 times a year at rotating locations.

In order to provide an identifiable point of contact, RWS-CC should elect from the Committee a chairperson on a year's term.

The secretariat of RWS-CC is held by the secretariat of the chairperson's RWS-CC.

RWS-CC: Methods of Working

Each RWS will apply for 5-liaison to JTC 1;

Exchange RWS work item planning information at the earliest possible point in time;

Based on this planning information, the following things may happen:

Only one RW5 can or wishes to work on the item;

More than one ~WS is interested and can supply manpower. Then the following cases need to be distinguished:

The RSIGs work in parallel;

If in favorable circumstances RSIGs can be combined into a Multi-RWS SIG then this should be strongly encouraged.

In either case, output of the active RSlG(s) should be reviewed by the other RWS.

For case b) above, RW5-CC provides for PWS harmonization in the following way:

Encourage coordination at technical level (see below) and monitor the coordination progress towards Harmonized output;

A Multi-RWS SlG's output should be presented to all RWSs, for review and final approval.

RWS-CC takes actions if coordination at technical level fails.

RWS-CC takes actions if voting in RWS leads to unharmonized results (for either case aa) or bb)).

RWS-CC recommends to submit harmonized resultS to lSO/IEC JTC l.

Any funding necessary to execute the coordination remains with each individual RWS.

Coordination at Technical Level

Once an item has been identified as of interest beyond one region, technical coordination among RSIGs working on this subject should be encouraged:

The conveners of the RSlGS (or any other designated persons) are responsible for maintaining close liaison with the objective of final international harmonization; RWS-CC to receive regular reports about liaison status;

By cross-participation in RSlG meetings;

If necessary, one of the RWS should be identified to act as "sponsor" of such a SIG secretariat;

A Multi-RWS SIG is responsible for its own control and operation, in liaison with RWS-CC and the RWSs;

Stable results of such a SIG are submitted to all RWSs for approval;

Exchange documents and comment on them.

Implications for RWS

The coordination mechanisms suggested above lead to some requirements on each RWS:

RWS and RSIG documents related to pics considered in RWS-CC must be eligible for distribution to other RWSs or RWS-CC;

The RWS planning process needs sufficient visibility;

RWSs have to recognize implications on RSIG scheduling as a consequence of the coordination efforts;

A Multi-RWS SIG requires acceptance in at least one RWS as one of its RSIG's;

RSIG chairperson reporting to the RWS should include the status of coordination.

NOTE - It is understood that "voting at RWS level" throughout this document means "voting on stable documents" rather than voting on intermediate steps (which still may be at the discretion of each individual RWS).

Accepting and Processing New Work

The Workshop relies on external mechanisms to collect, synthesize, prioritized and deliver Users' OSE requirements to the OIW. The OSE Technical Committee works with Users to ensure orderly disposition of initial Users' work requests, and uses this experience to evolve toward an internationally harmonized User Requirements process. This section documents the procedures for introducing new work items into the Workshop.

Processing User Requests

In order to avoid delay direct participation is encouraged, though not mandatory. Requirements submitted by outside organizations will be handled in the following manner:

Acknowledgement: Upon arrival:

record and assign an OSE-TC Document number to the request;

the OSE-TC chair will send a letter to the submitter acknowledging receipt of the request;

(No approval or disapproval of the request should be implied from the acknowledgement letter.);

OSE-TC Action: Place Proposal on OSE-TC agenda for next meeting to discuss the following matters to:

identify existing work related to request;

identify potential Workshop technical work groups (SIGs) that would be involved in developing a technical solution;

If further action is required, a task group is created to prepare documents and recommendations for approval by the OSE-TC. with participation open to all interested parties. A task group lead is chosen to coordinate the activity;

The task group will be responsible for the following:

drafting a response to the submitting group for approval by the OSE-TC;

drafting a notice and information package for EWOS, AOW, and SGFS;

review and modify the statement of requirement;

prepare a new work item and/or SIG charter, as appropriate;

draft a Request for Specifications all via the approved process;

collect a list of candidate specifications as part of the work item;

The call for specifications will go out to the OIW membership, and will be available electronically on the OIW electronic bulletin board. Notice will also be sent to a standing list of organizations that will liaison to the OSE-TC for this purpose. These organizations may include for example Standard Development;

Organizations, User Requirement Definition Groups, and Information Industry Consortia;

Notice will be placed in the CBD announcing the Request for Specifications, and that Workshop is considering a project to create an implementation agreement to satisfy the specified user requirements;

Disposition: At a succeeding meeting of OSE-TC, a recommendation for a new work item and/or SIG will be delivered for consideration by the full OSE-TC. The recommendation should include the results of 2a, and 2b along with a recommended disposition and estimated start date of work if accepted. Comments from interested parties would be welcomed as part of the agenda item;

SIG Activity: SIG activities proceed per existing OIW and SIG procedures;

Evaluation: The completed implementors agreement is evaluated with respect to satisfaction of the original user requirement to determine if additional action is needed to satisfy the requirement. The procedures may be modified as a result of the experience to assure continued improvement of the process.

Publicly Available Specifications

Users observe that increasingly there are specifications which provide needed extensions to the international standards, have broad consensus, and can meet user OSE business needs in advance of the completion of the formal standards process. Many users would like to be able to exploit this consensus in their procurement process sooner rather than later.

When proposing the use of a Publicly Available Specifications, a SIG makes its case, using the following guidelines. The OIW Plenary would be responsible for accepting or rejecting the SIG's proposal using the voting rules of the OIW.

The Publicly Available Specifications must neither overlap with nor conflict with an existing formal standard or formal standard under development. That is, if a formal standard exists or is under development that provides the same function as the proposed Publicly Available Specifications, then the Publicly Available Specifications may not be introduced as the basis for OIW Implementation Agreements; if a Publicly Available Specifications adds functionality then it must be engineered to augment the formal standards in such a way that interoperability among systems implementing the formal standards is not precluded.

A SIG would only propose to reference a Publicly Available Specifications in an Implementation Agreement when it provides a technical function that meets a clear and widespread user requirement. The specific reference must be labelled as a "Publicly Available Specifications" in the agreement.

In exceptional circumstances driven by user requirements, a SIG may propose to reference a de facto standard in an Implementation Agreement where the de facto standard does functionally overlap an existing formal standard but otherwise meets the criteria for a Publicly Available Specifications; this would be strictly limited to cases where the SIG can demonstrate that the agreement will expedite the migration (e.g., facilitating a gateway or interworking) from the de facto standard to a formal standard in multi-vendor environments.

Where more than one Publicly Available Specifications might serve as the basis for OIW Implementation Agreements for the same technical function, the SIG proposing to use a Publicly Available Specifications will recommend which among the several candidates should be used and why. The OIW Plenary will make the final choice among competing Publicly Available Specifications in response to specific user requirements. Whenever possible only one Publicly Available Specifications should be used as the basis of Implementation Agreements for any specific technical function.

In proposing the use of a Publicly Available Specifications as the basis of Implementation Agreements, the SIG must document that the specification meets the following criteria:

Common description; the specification should be described using conventions, including conformance statements, appropriate for the existing formal standards which the specification augments. For example, a Publicly Available Specifications describing a new networking service and a supporting protocol should be described with a service and protocol specification using the conventions established for OSI standards;

Stability: the specification will not change except as required to fix technical and editorial errors. The OIW must be free to change and amend the specification as required to fix technical and editorial errors and to make it suitable for submission to the formal standards process.

Completeness; the specification must be sufficiently complete so as to allow useful and predictable implementation of the complete functionality from scratch. For example, an interface specification would not qualify if it simply permits standardized access to an otherwise proprietary implementation which provides the functionality.

Proof of concept; the specification has been demonstrated in at least one actual implementation to meet the user requirement in question.

Reasonable terms; the specification is available on terms consistent with ANSI, ISO and CCITT copyright and patent guidelines.

When a Publicly Available Specifications is proposed as the basis of Implementation Agreements, the proposing SIG will describe what actions are being taken to initiate a formal standard by a standards development organization to provide the same technical functions.

When a formal standard is in progress that provides functionality previously provided through Implementation Agreements about a Publicly Available Specifications, appropriate arrangements must be made to evolve from the Publicly Available Specifications to the formal standard. This will most likely mean that Implementation Agreements on the obsolete Publicly Available Specifications will be eliminated within a reasonable time.

When a Publicly Available Specifications is proposed as the basis of Implementation Agreements, the proposing SIG must demonstrate that the proposed specification is an acceptable basis for work in AOW and EWOS, or demonstrate that neither AOW nor EWOS intend to work on the subject technical function within the near-term.

When a Publicly Available Specifications is approved by the Plenary for use in an Implementors Agreement, the referenced version of the specification may not be modified except as required to fix technical and editorial errors, as noted above. If there is consensus in the SIG to reference a functionally enhanced version of an approved specification, the new version must be proposed following the same guidelines and criteria as for a new Publicly Available Specifications.

The following open issues with regard to Publicly Available Specifications have been resolved:

A special set of voting procedures apply to a vote to forward a proposal to use a Publicly Available Specification in an implementation agreement to the OIW Plenary. These procedures follow the special voting rules as identified in the above paragraph a-d.

When OIW determined that vendor products based on formal standards are widely available, the related Publicly Available Specifications will be expunged from the Implementation Agreements;

The ownership of the Publicly Available Specifications shall be documented on a case by case. Guidelines for Implementation of the ANSI Patent Policy shall be followed in documenting the Publicly Available Specifications;

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Implementation

Agreements for Open Systems Interconnection Protocols: Part 2 - Subnetworks

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Fred Burg, AT&T**

SIG Editor: **Doug Kay/Howard Alexander, Sprint International, Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Lower Layers Special Interest Group (LLSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements" for the workshop charter.

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing part on this subject.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

Table of Contents

List of Figures

List of Tables

Part 2 - Subnetworks

Editor's Note - All references to Stable Agreements in this Section are to Version 7.

0 Introduction

(Refer to Stable Implementation Agreements Document)

Scope

(Refer to Stable Implementation Agreements Document)

Normative References

(Refer to Stable Implementation Agreements Document)

Status

This material is current as of December 10, 1993.

Errata

Errata are reflected in replacement pages of Version 7, Stable Document.

Local Area Networks

(Refer to Stable Implementation Agreements Document)

IEEE 802.2 Logical Link Control

(Refer to Stable Implementation Agreements Document)

IEEE 802.3 CSMA/CD Access Method

(Refer to Stable Implementation Agreements Document)

IEEE 802.4 Token Bus Access Method

(Refer to Stable Implementation Agreements Document)

IEEE 802.5 Token Ring Access Method

(Refer to Stable Implementation Agreements Document)

Fiber Distributed Data Interface (FDDI)

Token Ring Media Access Control (MAC, X3.139-1987)

(Refer to Stable Implementation Agreements Document)

Further study is needed to confirm whether a lower default value or range for T_Req would be useful.

Token Ring Physical Layer (PHY,X3.148-1988)

(Refer to Stable Implementation Agreements Document)

Physical Layer Media Dependent (PMD, X3.166-1989)

(Refer to Stable Implementation Agreements Document)

X.25 Wide Area Networks

CCITT Recommendation X.25

(Refer to the Stable Implementation Agreements Document).

ISO 7776

(Refer to the Stable Implementation Agreements Document).

ISO 8208

(Refer to the Stable Implementation Agreements Document).

Integrated Services Digital Networks (ISDN)

Introduction

(Refer to the Stable Implementation Agreements Document).

Implementation Agreements

(Refer to the Stable Implementation Agreements Document).

Physical Layer, Basic Access at "U"

(Refer to the Stable Implementation Agreements Document).

Physical Layer, Basic Access at S and T

(Refer to the Stable Implementation Agreements Document).

Physical Layer, Primary Rate at "U"

(Refer to the Stable Implementation Agreements Document).

Data Link Layer, D-Channel

(Refer to the Stable Implementation Agreements Document).

Signaling

(Refer to the Stable Implementation Agreements Document).

Data Link Layer B-Channel

(Refer to the Stable Implementation Agreements Document).

Packet Layer

(Refer to the Stable Implementation Agreements Document).

Frame Relay Subnetworks

(Refer to the Stable Implementation Agreements Document).

Annex (informative)

Cross Reference Between CCITT and ANSI Text Relating to ISDN Agreements

(Refer to the Stable Implementation Agreements Document.)

Annex (informative)

Bibliography

(Refer to Stable Implementation Agreements Document)

Annex (informative)

Cross Reference between CCITT and ANSI Text Relating to Frame Relay Agreements

This annex provides a cross-reference listing between those sections of the ANSI Standards mentioned in clause 8 of this part and the sections of the corresponding CCITT Recommendations.

Physical Layer

ANSI T1.403, which is referenced in 8.3.1 of this part, is equivalent to sections related to the 1544 kbit/s service in the combination of CCITT Recommendations G.703 and G.704. Exceptions to Recommendations G.703 and G.704 are listed below:

CCITT Recommendation G.703

The sections related to the 1544 kbit/s interface in this Recommendation apply with the following exception:

> Section 2.5: The current text is replaced by: "The B8ZS code shall be used because connecting line systems require suitable signal content to guarantee adequate timing information."

CCITT Recommendation G.704

The sections related to the 1544 kbit/s interface in this Recommendation apply with the following exceptions:

> Section 2.1.3 - Allocation of the F-bit: The current text is to be replaced by: "Table 1/G.704 which provides the recommended F-bits allocation;"
>
> Table 1/G.704:
>
> > In the column "For character signal," all instances of '1-7' are replaced by '1-8' (related bits are: 966, 2124, 3282, and 4440);
> >
> > The column "For signalling" is not applicable;
> >
> > The column "Signalling channel designation" is not applicable;
> >
> > The note a) below the figure is not applicable as it pertains to items 2) and 3) above;
>
> Table 2/G.704: The table is not applicable;
>
> Section 2.1.3.1.1 - Multiframe alignment signal: The portion starting with "...as well as to identify..." to the end of the sentence is not applicable;

Section 2.1.3.1.3 - 4 kbit/s data link, (third paragraph): The entire paragraph is replaced by: "The idle pattern is the HDLC flag bit pattern (01111110);"

Section 2.1.3.2 - Method: twelve-frame multiframe: This section is not applicable;

Section 3.1.2 - Use of 64 kbit/s channel time slots: This section is not applicable;

Section 3.1.3 - Signalling: All sections under 3.1.3 are not applicable;

Section 3.2 - Interface at 1544 kbit/s carrying 32 kbit/s channel time slots: All sections under 3.2 are not applicable;

Section 3.3 - Interface at 1544 kbit/s carrying n*64kbit/s: This section is not applicable.

Data Transfer

The following table provides the cross-reference between those sections of the ANS T1.618 Standard referenced in 8.3.2 of this document and the corresponding ITU-T Q.922 Recommendation.

Table C1 - ANS - ITU-T cross references

ANS T1.618	ITU-5 Recommendation Q.922
Section 4.2	Section 2.2
Section 4.5	Section 2.5
Section 5.3	Section 3.3
Section 5.3.1	Section 3.3.1
Section 5.3.6--Table 1 (a)	Section 3.3.6 -- Table 1/Q.922 (10 bits DLCI)
Section 5.3.6.2	Note
Section 5.3.7	Section 3.3.7
Section 7	Annex A, Section A.6
ANSI T1.606 (referenced in Section 7)	ITU-T Recommendation I.370
Section 7.1	Annex A, Section A.6.2.1
Section 7.2	Annex A, Section A.6.2
Annex A (referenced in Section 7.2)	Appendix I, Section I.2
Section 8	Annex A, Section A.7

NOTE - Section 5.3.6.2 of ANS T1.618 has no corresponding section in ITU-T Recommendation Q.922. This section is not applicable and is not part of the Stable Implementation Agreements.

Control (Signalling) Procedures

The following table provides the cross-reference between those sections of the ANS T1.617 Standard referenced in 8.3.3 of this document and the corresponding ITU-T Q.933 Recommendation.

Table C2 - ANS - ITU-T cross references

ANS T1.617	ITU-T Recommendation Q.933

Annex D Annex B	Annex A Annex B

Annex (informative)

Frame Relay Network-to-Network Interface

(Refer to the Stable Implementation Agreements Document.)

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 3 - Network Layer

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Fred Burg, AT&T**
SIG Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Lower Layers Special Interest Group (LLSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing part on this subject.

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Part 3 - Network Layer

Editor's Note - All references to Stable Agreements in this Section are to Version 5.

0 Introduction

(Refer to Stable Implementation Agreements Document)

Scope

(Refer to Stable Implementation Agreements Document)

Normative References

Status

This material is current as of December 10, 1993.

Errata

Errata are reflected in pages of Version 7, Stable Document.

Connectionless-Mode Network Service (CLNS)

ISO 8473

Subsets of the protocol

(Refer to the Stable Implementation Agreements Document).

Mandatory Functions of ISO 8473

(Refer to the Stable Implementation Agreements Document).

Optional Functions of ISO 8473

(Refer to the Stable Implementations Agreements document).

Intermediate systems implementing priority shall do so as described below. For End system network entities the implementation of priority is optional, but if implemented it shall also be done as described below:

NPDUs shall be scheduled based on the priority functions of ISO 8473. The scheduling algorithm for achieving this priority function is left as a local matter. It is required that the following constraints be met as described below:

An NPDU of lower priority shall not overtake an NPDU of higher priority in an intermediate system (i.e., exit an IS ahead of a higher priority NPDU arriving before it);

A minimum flow shall be provided for lower priority PDUs.[2];

According to ISO 8473, the priority level is a binary number with a range of 0000 0000 (lowest priority) to 0000 1110 (highest priority level). Within this range, the four abstract values corresponding to the four levels defined in section 3.11 shall be encoded as follows:

"high reserved" priority will be encoded with value 14 (0000 1110);

"high" priority will be encoded with value 10 (0000 1010);

"normal" priority will be encoded with value 5 (0000 0101);

"low" priority will be encoded with value "zero" (0000 0000);

For a receiving network entity, a value lower than 5 shall be considered as "low"; a value lower than 10 and higher than 5 shall be considered as "normal", and a value lower than 14 and higher than 10 shall be considered as "high";

Network entities supporting priority shall process PDUs in which the priority parameter is absent as either "low", "normal", or "high" according to a locally configurable parameter. This is to ensure that NPDUs not containing the priority parameter can be processed by intermediate systems in a defined manner with respect to those which do contain the priority parameter;

IEEE 802.4 and IEEE 802.5 local area networks as well as some X.25 networks implementations have the ability to support subnetwork priorities. When available, a subnetwork priority function should be utilized in support of the priority requested of the network layer. The mapping of network layer priority levels onto subnetwork priority levels is a local configuration matter.

Editor's Note - To enchance the behavior of the congestion notification function (see LLSIG/91-63), the following changes to part 3, 5.1 of the Stable Implementation Agreements are to be made:

Add the following after the definitions of "previous" and "current" cycles:

c) in addition, it is recommended that when the busy period of the current cycle comprises a single packet then the current cycle is combined with the previous cycle.

Changes to the algorithm components defined in table 1 are as follows:

---

[2] The scheduling algorithm by which this is accomplished is for further study.

the old component number 3 becomes component number 4;

just prior to the definition of the new algorithm component 3, add the following definition of C:

- C=no. of packets processed during the current cycle, initailly 0;

the new algorithm component number 3 is defined as follows:

- 3. If C=1 at the end of the current cycle combine the current cycle into the previous cycle as follows:

  - area of previous cycle = area of previous cycle + area of current cycle;

  - duration of previous cycle = duration of previous cycle + duration of current cycle.

NOTE - the corresponding changes to figure 1 are depicted below:

The algorithm makes use of the following variables:

t = Current time
t_i = time of i^{th} arrival or departure event
q_i = number of packets in the system after the event
T_0 = time at the beginning of the previous cycle
T_1 = time at the beginning of the current cycle
C = number of PDUs processed during current cycle
initially 0

The algorithm consists of three components:

1. Queue Length Update: Beginning with $q_0 = 0$,
If the i^{th} event is an arrival event, $q_i = q_{i-1}+1$
If the i^{th} event is a departure event, $q_i = q_{i-1}-1$

2. Queue Area (integral) update:

Area of the previous cycle = $\sum_{t_i \varepsilon \{T_0,T_1)} q_{i-1}(t_i-t_{i-1})$

Area of the current cycle = $\sum_{t_i \varepsilon \{T_1,t)} q_{i-1}(t_i-t_{i-1})$

3. If C = 1 at the end of the current cycle,
then area of previous cycle = area of previous
cycle + area of current cycle;

duration of previous cycle = duration of
previous cycle + duration of current cycle.

4. Average Queue Length Update:

$$\text{Average Queue length over the two cycles} = \frac{\text{Area of the two cycles}}{\text{Time of the two cycles}} = \frac{\text{Area of the two cycles}}{t-T_0}$$

Figure 1 - Queue length averaging algorithm

Add an additional item:

g) when providing an"echo" or "ping" function for CLNP, the protocol mechanisms shall be as specified in ISO 8473/PDAM6. It is strongly recommended that end and intermediate systems support this function and provide appropriate mechanisms through which the Echo request function may be invoked.

Provision of CLNS over Local Area Networks

(Refer to the Stable Agreements Document)

Provision of CLNS over X.25 Subnetworks

(Refer to the Stable Agreements Document)

Provision of CLNS over ISDN

(Refer to the Stable Implementation Agreements document).

Provision of CLNS over Point-to-Point Links

(To be based on ISO 8880)

Connection-Mode Network Service

Mandatory Method of Providing CONS

General

(Refer to the Stable Implementation Agreements document).

X.25 WAN

(Refer to the Stable Implementation Agreements document).

LANs

(Refer to the Stable Implementation Agreements document).

ISDN

(Refer to the Stable Implementation Agreements document).

Priority

Priority for CONS will be addressed with the implementation of X.25-1988 in a future version of these agreements.

Additional Option: Provision of CONS over X.25 1980 Subnetworks

(Refer to the Stable Implementation Agreements Document)

Agreements on Protocols

(Refer to the Stable Implementation Agreements Document)

ISO 8878

(Refer to the Stable Implementation Agreements Document.)

Subnetwork Dependent Convergence Protocol (ISO 8878/Annex A)

(Refer to the Stable Implementation Agreements Document)

Interworking

(Refer to the Stable Implementation Agreements Document.)

Addressing

(Refer to the Stable Implementation Agreements Document)

Routing

ISO 9542 End System to Intermediate System Routing

(Refer to the Stable Implementation Agreements Document.)

ISO 10030 End System to Intermediate System Routing

(Refer to the Stable Implementation Agreements Document.)

Intra-Domain Intermediate Systems to Intermediate Systems Routing

(Refer to Stable Implementation Agreements Document.)

Static Intra-Domain Routing

(Refer to the Stable Implementation Agreements Document.)

Dynamic Intra-Domain Routing

(Refer to the Stable Implementation Agreements Document.)

Inter-Domain Intermediate Systems to Intermediate Systems Routing

(Refer to the Stable Implementation Agreements Document.)

Procedures for OSI Network Service/Protocol Identification

General

(Refer to the Stable Implementation Agreements document).

Processing of Protocol Identifiers

(Refer to the Stable Implementation Agreements document).

Originating NPDUs

(Refer to the Stable Implementation Agreements document).

Destination System Processing

(Refer to the Stable Implementation Agreements document).

Further Processing in Originating End System

(Refer to the Stable Implementation Agreements document).

Applicable Protocol Identifiers

(Refer to the Stable Implementation Agreements document.)

It is proposed to add the following entries to both table 2 (IPI) and table 3 (SPI) of the aligned clause of the Stable Document:

1 0 0 0 0 1 0 1 - ISO/IEC 10747;

Migration Considerations

This section considers problems arising from evolving OSI standards and implementations based on earlier versions of OSI standards.

Use of Priority[3]

Introduction

Within the OSI environment, Quality of Service (QoS) parameters are intended to influence the qualitative behavior of the various OSI Layer entities. QoS is described in terms of parameters related to performance, accuracy, and reliability (e.g. delay, throughput, priority, error rate, security, failure probability, and etc.).

QoS covers a broad spectrum of issues. As a first step, these agreements address the efficient sharing of Layer 1, 2, & 3 transmission resources by making use of the priority parameter. To accomplish this, implementation agreements and encodings are provided for Network and Transport Layer protocols. The implication of these agreement for upper layer protocols is limited to the conveyance of priority information in both directions between an application entity and the service boundary for the Transport Layer.

The implementation of priority as defined herein is optional for intermediate systems and end systems, but if implemented shall be as defined in the layer specific agreements (for

[3]This section provides initial proposals on the use of priority. The proposal requires further technical review before considering it as having support as an implementation agreement. Refer to the following documents for further technical information:

LLSIG 88-64 LLSIG 88-120 LLSIG 88-122

Network Layer see clause 5.1; for Transport Layer see part 4, clause 5.1.2.6, and for Upper Layers the clause will be included at a later date).

Overview

The purpose of the priority parameter, in the context of the lower layers, is to influence the scheduling of the transmission of data on subnetworks, in CONS as well as CLNS environments (end systems as well as intermediate systems). The priority parameter as defined is to be used by OSI Applications to control the "priority of data". Within the lower layers this translates into a contention for transmission resources, which has a direct impact on performance.

In order to implement practical mechanisms for scheduling the transmission of data units while maintaining the usefulness of priority, the specification of priority levels is limited to four; one corresponding to each of the four service classes:

low priority

normal priority

high priority

high reserved priority

The high reserved priority level is intended primarily for OSI network management purposes. The three lower priority levels are intended for information exchange by users.

These four priority levels are used, from an applications point of view, in the various communications lower layers (Transport, Network and Data Link) to provide a consistent mapping of "abstract priority levels" in and n-service onto the n-1 service and when available, priority parameter values in the layer protocol. In the upper layers (ASCE, Presentation and Session) local mechanisms are expected to be provided to application layer ASEs with a means for conveying priority information in both directions through the communication upper layers.

For example, this implies that an application request for a high priority service will be conveyed through association/presentation/session and will result in a high priority data transport connection and either high priority data CLNP PDUs (CLNS case) or a high priority data network connection/X.25 virtual call (CONS case).

Security

(Refer to Stable Implementation Agreements Document.)

Conformance

(Agreements to be added at a later date)

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 4 - Transport Layer

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Fred Burg, AT&T**

SIG Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Lower Layers Special Interest Group (LLSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing part on this subject.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

Table of Contents

Part 4 - Transport Layer

Editor's Note - All references to Stable Agreements in this Section are to Version 7.

0 Introduction

(Refer to Stable Implementation Agreements Document)

Scope

(Refer to the Stable Implementation Agreements Document).

Normative References

This material is current as of December 10, 1993.

Status

This material is current as of December 10, 1993.

Errata

Errata are reflected in pages of Version 7, Stable Document.

This clause lists the defect reports from ISO which are currently recognized to be valid for the purpose of OIW conformance.

Provision of Connection Mode Transport Services

(Refer to the Stable Implementation Agreements Document).

Transport Class 4

(Refer to the Stable Implementation Agreements Document).

Transport Class 4 Overview

(Refer to the Stable Implementation Agreements Document).

Protocol Agreements

(Refer to the Stable Implementation Agreements Document).

General Rules

(Refer to the Stable Implementation Agreements Document.)

Transport Class 4 Service Access Points or Selectors

(Refer to the Stable Implementation Agreements Document.)

Retransmission Timer

(Refer to Stable Implementation Agreements Document)

Keep-Alive Function

(Refer to the Stable Implementation Agreements Document.)

Congestion Avoidance Policies

(Refer to the Stable Implementation Agreements Document).

Use of Priority when operating over CLNS[4]

End system procurers shall have the option of mandating implementation of the priority parameter. If the parameter is mandated, end systems shall send an explicit priority parameter. Additional requirements are defined as follows:

A local mechanism shall be provided to convey priority information in the Transport service. If appropriate, simultaneous Transport service requests can be managed on a priority basis within the Transport Layer;

Mapping to and from the Transport Service priority value is done by encoding/decoding an integer in the range 0..14. Other values, when received, are invalid and should be considered equal to the value 14, the lowest priority. When the priority parameter is not present in a CR TPDU, the priority value is considered to have the value 14, the lowest priority;

[4] Refer to part 3 clause 11 for an overview on the use of priority.

The priority value is negotiable with an implicit minimum acceptable value of 14, the lowest priority. The priority parameter can only be transmitted in a CC TPDU if the corresponding received CR TPDU contained the priority parameter;

Each N-UNITDATA request shall be assigned a priority level derived from the Transport Connection (TC) priority level;

As an option, the mapping of TC priority values, as detemined at connection setup, to N-UNITDATA request priority values, used during data transfer, is as follows:

TC Priority		N-UNITDATA Request Priority
0	high	14
1		13
2	3	12
.	3	.
.	3	.
.	3	.
13		1
14	low	0

NOTE - This encoding is consistent with ISO 8073 and reflects the reverse encoding of ISO 8473. The use of the above mapping is for further study.

The exchange of priority parameters by Transport entities is performed as described below:

The priority value indicated in the T-Connect Request primitive shall be encoded and sent in the CR TPDU as the priority level "desired" for the Transport connection;

A receiving Transport entity supporting priority management shall either accept the priority level proposed in the CR TPDU or select a lower level. The CR shall not be rejected solely because of the "desired" priority level. The selected priority level shall be encoded and returned to the calling Transport entity in the CC TPDU. The TC priority is also passed to the local session entity with the T-Connect indication primitive and is eventually conveyed to the TS user, which can reject the association if the priority is unacceptable. If a transport entity which supports priority management receives a CR TPDU without the priority parameter, the entity shall proceed as follows:

- it shall associate the lowest priority level with any resulting Transport connection for the purpose of local Transport connection management;

- it shall omit the priority parameter from any resulting CC TPDU;

- it shall not associate any priority information with NSDUs passed to the Network entity supporting any resulting Transport connection;

A receiving Transport entity not supporting priority management shall ignore the parameter in the CR TPDU;

If the priority parameter does not appear in the CC TPDU, the initiating Transport entity shall assume the remote Transport entity does not support priority and will therefore maintain the priority sent in the CR TPDU for its local operation;

A disconnect request shall be issued in response to a connect request when the maximum number of Transport connections would be exceeded. However, the Transport service provider shall not refuse a new Transport connection that is higher in priority than the lowest priority Transport connection that currently exists. This may require either the termination of lower priority Transport connections or the maintenance of sufficient resources by the Transport service provider;

The extent to which throughput can be degraded on a Transport connection is determined by the priority of that connection. Lower priority connections will have their throughput degraded first. Throughput can be degraded down to the minimum acceptable level. Connections, the throughput of which falls below the minimum acceptable level must be released.

NOTE - The method for specifying the minimum acceptable throughput level is for further study.

The following, non-standard, DR TPDU reason values are defined for use at Transport connection refusal or release (Classes 1 to 4):

value 128 + 20: connection request refused due to insufficient priority;

value 128 + 21: connection released due to insufficient priority;

value 128 + 22: connection released due to insufficient throughput.

Use of these values is optional. These values should not be generated when the CR TPDU that created the connection did not contain the priority parameter.

NOTE - ISO 8073 does not define nor support a sound negotiation mechanism at this time; this process will serve to allow a priority level to be established for a TC.

Transport Class 0

(Refer to Stable Implementation Agreements Document)

Transport Class 0 Overview

(Refer to Stable Implementation Agreements Document)

Protocol Agreements

(Refer to the Stable Implementation Agreements Document).

General Rules

(Refer to Stable Implementation Agreements Document)

Transport Class 0 Service Access Points

(Refer to Stable Implementation Agreements Document)

Rules for Negotiation

(Refer to Stable Implementation Agreements Document.)

Transport Class 2

(Refer to Stable Implementation Agreements Document.)

Transport Class 2 Overview

(Refer to Stable Implementation Agreements Document.)

Protocol Agreements

(Refer to Stable Implementation Agreements Document)

Provision of Connectionless Transport Service

(Refer to Stable Implementation Agreements Document.)

Transport Protocol Identification

(Refer to the Stable Implementation Agreements Document.)

Security

(Refer to the Stable Implementation Agreements Document.)
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2 Working Implementation Agreements for Open

Systems Interconnection Protocols: Part 5 - Upper Layers

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **James Quigley, Hewlett Packard**
SIG Editors: **Debbie Britt, NCTS** **Laura Emmons, Telenex**

Foreword

This part of the Working Implementation Agreements was prepared by the Upper Layers Special Interest Group (ULSIG) of the for Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject.

Only the pages that were changed in December 1993 are being printed. Please refer to the September 1993 Working Document for additional information.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

Table of Contents

Part 5 - Upper Layers

Editor's Note - All references to Stable Agreements in this section are to Version 7.

Editor's Note - Clauses 1 through 12 will be replaced by appropriate references to ISP 11188-1 (Common Upper Layers Requirements).

0 Introduction

(Refer to Stable Agreements Document)

Scope

(Refer to Stable Agreements Document)

Normative References

(Refer to Stable Agreements Document)

Status

This version of the upper layer agreements is under development.

Errata

ISO Defect Solutions

In accordance with FIPS 146-1, with specific exceptions as noted below, this edition of the Part 5 - Stable Implementation Agreements remains backwardly compatible with Part 5 - Stable Implementation Agreements, Version 3, Edition 1. The method for assuring continued interoperability when these specific exceptions occur is detailed below and has been approved by the plenary of the OIW. Therefore, this edition of Part 5 - Stable Implementation Agreements supersedes all previous versions and editions of the Part 5 - Stable Implementation Agreements.

Technical Corriagenda and Defect Reports

An existing ISO base standard (e.g., ISO 8649 -- ACSE service) may be modified by an approved/registered Technical Corriagenda (TC) that fixes problems as reported in one or more Defect Reports (DR).

An error or request for clarification concerning a base standard is brought to the attention of ISO by a Defect Report. Defect Reports may be submitted to ISO by the OIW or by national bodies such as ANSI X3T5 task group in the USA.

A Defect Report is processed by the Defect Editing Group of the base standard as part of the ISO "Rapid Amendment Process". If the Defect Editing Group agrees that the Defect Report concerns an error in the base standard, the Defect Editing Group prepares a fix to the error in the form of a Draft Technical Corrigenda (DTC). A DTC is not used to add new or revised facility to the base standard. The purpose of the DTC is to rectify inconsistencies and or mechanisms that do not provide the defined facility.

> **NOTE -** The amendment procedure is not used to add facility to a base standard.

A DTC undergoes a 3-month draft ballot by national bodies. An editing meeting may be necessary to resolve national body comments.

An accepted/registered DTC becomes a TC. A TC immediately becomes a part of the base standard that it references. For a referencing standard or profile, the modification by a TC or an errata immediately takes effect unless it applies to an option that is "out-of-scope" or prohibited by the referencing standard or profile.

A TC may impact the interoperability of a base standard. In some cases, recertification may be necessary.

Defect Registers

Table ISO Defect Reports

Defect	**Source**	**Circ. by Sec.**	**WG doc.**	**Distr. as Sec. by**	**Resp to info**	**Returned to Editor for - actn**	**DTC/49**	**DTC/50**	**Ballot ends**	**Voting Sum'ry**	**Final text**	**Remarks**
8649/001	Editor	88-12	--	89-11	--	--	N4447	--	90-05-15	N4687	N5630	Closed: Part of 8649/TC1
8649/002	Editor	89-11	--	89-11	--	--	N4448	--	90-05-15	N4688	N5630	Closed: Part of 8649/TC1
8649/003	Editor	89-11	--	89-11	--	--	N4449	--	90-05-15	N4689	N5630	Closed: Part of 8649/TC1
8649/004	Editor	90-02	N765	90-05-30	--	yes	tbd	tbd	tbd	tbd	tbd	Open: ULA advice - wait for XALS developments
8649/005	--											Number not used
8649/006	Japan	90-03	N782	90-06	--	--	N5320	--	91-01	N5690	--	Referred back to WG6 ULA group; response Nxxxx
							N6336	N6336	91-12-10	N6627	--	AFNOR: no vote

							tbd	tbd	tbd	tbd	tbd	Revised DTC due from Editor
8649/007	CCITT	90-12	N962	91-03-25	--	--				N6628	Ed 2	Closed: DTC text unchanged; add to Edition 2
8650/001	Editor	88-08	N533	89-11	--	--	--	N3473	89-08	N3862	N4286	Closed: Part of 8650/TC1
8650/002	Editor	88-08	N534	89-11	N653	--	--	--	--	--	--	Closed: Not recommended for progression
8650/003	Japan	88-10	N573	89-01	N654	--	--	--	--	--	--	Closed:Editorial change already in IS text
8650/004	Editor	88-12	--	88-12	--	--	--	N3475	89-08	N4286	N4286	Closed: Part of 8650/TC1
8650/005	--											Number not used
8650/006	CCITT	90-10	N915	91-01-11	tbd	--	--	--	--	--	--	Closed: Not recommended for progression
8650/007	CCITT	90-10	N916	91-01-11	--	--	--	N6338	91-12-10	N6629	Ed 2	Closed: Add to Edition 2 of 8650
8650/008	Editor	90-06	--	90-06	N911	--	--	--	--	--	--	Closed: Response only - did not change text
8650/009	Editor	93-??	N???	93-03	--	--	--	Nxxxx	93-12	tbd	tbd	Open: under discussion preparing for DTC text

Exception Handling

For those cases where backwards compatibility cannot be assured due to a Technical Corrigenda (see clause 4.6), interoperability will be maintained by requiring existing implementations to incorporate the change within 12 months after it has been registered as a Technical Corriagenda. The registration authority for conformance testing will determine in each case whether or not recertification is necessary.

Association Control Service Element

Introduction

(Refer to Stable Agreements Document)

Services

(Refer to Stable Agreements Document)

Protocol Agreements

Application Context

(Refer to Stable Agreements Document)

AE Title

(Refer to Stable Agreements Document)

Peer Entity Authentication

(Refer to Stable Agreements Document)

Abort APDU

(Refer to Stable Agreements Document)

Connectionless

(Refer to Stable Agreements Document)

ROSE

(Refer to Stable Agreements Document)

RTSE

(Refer to Stable Agreements Document)

Presentation

Introduction

(Refer to Stable Agreements Document)

Service

Editor's Note - Refer to Clause 11.1 of the Working Agreements Document.

Protocol Agreements

Transfer Syntaxes

(Refer to the Stable Agreements Document)

Presentation Context Identifier

(Refer to Stable Agreements Document)

Default Context

(Refer to Stable Agreements Document)

P-Selectors

(Refer to the Stable Agreements Document)

Provider Abort Parameters

Editor's Note - See Clause 11.2 of the Working Agreements Document.

Provider Aborts and Session Version

(Refer to the Stable Agreements Document)

CPC-Type

(Refer to the Stable Agreements Document)

Presentation-context-definition-result-list

(Refer to the Stable Agreements Documents)

RS-PPDU

(Refer to the Stable Agreements Documents)

Presentation ASN.1 Encoding Rules

(Refer to the Stable Agreements Document)

Presentation Data Value (PDV)

(Refer to the Stable Agreements Document)

Connection Oriented

(Refer to the Stable Agreements Document)

Connectionless

(Refer to Stable Agreements Document)

Session

Introduction

(Refer to Stable Agreements Document)

Services

(Refer to Stable Agreements Document)

Protocol Agreements

Concatenation

Editor's Note - Refer to Clause 11.3 of the Working Agreements Document.

Segmenting

Editor's Note - Refer to Clause 11.4 of the Working Agreements Document.

Reuse of Transport Connection

Editor's Note - Refer to Clause 11.5 of the Working Agreements Document.

Use of Transport Expedited Data

Editor's Note - Refer to Clause 11.6 of the Working Agreements Document.

Use of Session Version Number

Selection of session version

(Refer to the Stable Agreements Documents)

User data in session version 2

(Refer to the Stable Agreements Document)

Receipt of Invalid SPDUs

(Refer to the Stable Agreements Document)

Invalid SPM Intersections

(Refer to the Stable Agreements Document)

S-Selectors

(Refer to the Stable Agreements Document)

Connectionless

(Refer to Stable Agreements Document)

Universal ASN.1 Encoding Rules

Tags

(Refer to the Stable Agreements Document)

Definite Length

(Refer to the Stable Agreements Document)

External

(Refer to the Stable Agreements Document)

Integer

(Refer to the Stable Agreements Document)

String Types

(Refer to the Stable Agreements Document)

Extensibility

(Refer to the Stable Agreements Document)

Additions to ISP on Common Upper Layer Requirements

Service

(Refer to Stable Agreements Document)

Provider Abort Parameters

(Refer to Stable Agreements Document)

Concatenation

(Refer to Stable Agreements Document)

Segmenting

(Refer to Stable Agreements Document)

Reuse of Transport Connection

(Refer to Stable Agreements Document)

Use of Transport Expedited Data

(Refer to Stable Agreements Document)

Character Sets

(Refer to part 21 -- a new chapter expressly for character sets.)

Conformance

(Refer to Stable Agreements Document)

Specific ASE Requirements

FTAM Phase 2

(Refer to Stable Agreements Document)

MHS

(Refer to Stable Agreements Document)

DS Phase 1

(Refer to Stable Agreements Document)

Virtual Terminal

(Refer to Stable Agreements Document)

MMS

(Refer to Stable Agreements Document)

Transaction Processing

(Refer to Stable Agreements Document)

Network Management

(Refer to Stable Agreements Document)

Remote Database Access

(Refer to Stable Agreements Document)

Annex (normative)

Object Identifier Register

Register Index

(Refer to Stable Agreements Document)

Object Identifier Descriptions

(Refer to Stable Agreements Document)

Annex (informative)

Recommended Practices

(Refer to Stable Agreements Document.)

Annex (informative)

Backward Compatibility

Version & Section		
Issue	Changed	Backward Compatibility
Restrictions on minimum number of octets implementations shall be able to receive.	V1E2 5.5.3.2	Interworking problems may occur, since implementations could send more than 128 octets. [An implementation that conforms to versions previous to V1E2 as an initiator and V3E1 as a responder will be able to interoperate.]
Agreements on AE Title, AP Title, and AE Qualifier changed.	V1E3 section 5.5.3.3 & V1E4 section 5.5.3.3	Interworking problems may occur between implementations that expect different forms of AP Title and AE Qualifier to be used. [Implementations that accept any form of these parameters will interwork with initiators that conform to earlier versions.]
Restrictions on encoding of "Presentation Context Identifier."	V2E1 section 5.8.3.3	Interworking problems may occur since implementations could encode negative numbers. [An implementation that conforms to versions previous to V2E1 as a responder and V3E1 as an initiator will be able to interoperate.]
Mode selector as first element in set	V1E4 section 5.6.3.4	This will cause interworking problems for those implementations that don't encode "mode selector" as the first element in the set. [An implementation that conforms

		to versions previous to V1E4 as an initiator and V3E1 as a responder will be able to interoperate.]

Version & Section		
Issue	Changed	Backward Compatibility
Restrictions on encoding of "protocol version" and "presentation requirements."	V2E1 section 5.8.4.2	This will cause interworking problems for those implementations expecting "protocol version" and "presentation requirements" to be encoded in the primitive form. [An implementation that conforms to versions previous to V2E1 as an initiator and V3E1 as a responder will be able to interoperate.]
Restrictions on encoding of "presentation selector."	V2E1 section 5.8.4.3	This will cause interworking problems for those implementations expecting "presentation selector" to be encoded in the primitive form. [An implementation that conforms to versions previous to V2E1 as an initiator and V3E1 as a responder will be able to interoperate with either version.]
Use of default values for Minor syncpoint changed.	V2E3 section 5.11.1.1.1	No backwards compatibility
Addition and deletions of abstract syntaxes.	V2E1 section 5.11.1.3.1	No backwards compatibility
Value for session functional unit "resynchronize" changed.	V2E4 section 5.11.1.4.1	No backwards compatibility

Restrictions on inclusion of "Transfer-syntax-name" in CP PPDU and CPC type.	V3E1 section 5.8.6	Interworking problems will occur for those implementations that expect "Transfer-syntax-name" parameter to be present in the PDV-List even though one transfer syntax was negotiated. [An implementation conforming to V3E1 as an initiator and versions previous to V3E1 as a responder will be able to interoperate.]

Version & Section		
Issue	Changed	Backward Compatibility
Encoding restrictions on ASN.1 INTEGER type describing PCI.	V3E1 section 5.10.4	Interworking problems will occur since implementations conforming to previous versions could encode PCI integer lengths greater than 4. [Responders that accept integers describing PCI that are encoded in greater than 4 octets and Initiators that conform to V3E1 will be able to interoperate.]
Encoding restrictions on BIT STRING, OCTET STRING, and CHARACTER STRING.	V3E1 section 5.10.5	Implementations that conform to previous versions can expect these strings to have nested constructed encodings and therefore interworking problems will occur. [Responders that accept nested constructed encodings and Initiators that conform to V3E1 will be able to interoperate.]
No extra trailing bits	V3E1 section	Interworking problems will

allowed in BIT STRING.	5.10.6	occur when implementations that conform to previous versions send extra trailing bits. [Responders accepting extra trailing bits and Initiators that conform to V3E1 will be able to interoperate.]
Restriction on usage of "token item field" and "user data."	V3E1 section 5.9.3.1	Interworking problems will occur since implementations that conform to V1E1 do not expect the "token item field" to be encoded when a category 0 SPDU is concatenated to a category 2 SPDU.
Restrictions on CPC-type values when multiple transfer syntaxes are proposed.	V2E2 section 5.8.3.9	Interworking problems may occur between initiators that send CPC-type values and receivers that do not examine them.

Version & Section		
Issue	Changed	Backward Compatibility
References to ISO 8649 and ISO 8650 changed.	V1E3 section "References."	Interworking problems will occur for those implementations that conform to ISO DIS 8649 and 8650. V1E3 references IS versions of 8649 and 8650.
References to ISO 8326, ISO 8327, ISO 8822, and ISO 8823 changed.	V1E4 section References.	Interworking problems will occur for those implementations that conform to 8326/DAD2, 8327/DAD2, DIS 8822, and DIS 8823. V1E4 referenced 8326/AD2, 8327/AD2, IS 8822, and IS 8823.
AE Title changed	V3E1 section	Interworking problems will

according to Amendment 1 to ISO 8650.	5.5.3.2	occur between initiators that use AE-title- form 1 and responders that accept only AE-Title-form 2.
Restrictions on usage of "direct references" in ABRT APDU.	V3E1 section 5.5.4	Interworking problems will occur for those implementations that expect the "direct reference" parameter to be included in the ABRT APDU. [An implementation that conforms to V3E1 as an initiator and versions previous to V3E1 as a responder will be able to interoperate.]

Annex (normative)

Working Draft of new ISP on mOSI Specification

TITLE: Explanatory Report for PDISP 11188-3 for Common Upper Layer Requirements - Part 3: Minimal OSI upper layer facilities

SOURCE: OIW
Laura Emmons

DATE:

STATUS: Draft report for information to the Regional OSI/OSE workshops and for submission to SGFS together with PDISP 11188-3

a) General Profile Information

1) Profile Identifier

This profile does not specify a full A-profile, and therefore has no place within the taxonomy of TR 10000-2.

2) Profile Title

Common Upper Layer Requirements — Part 3: Minimal OSI upper layer facilities

3) Submitting Organization

Open Systems Environmental Implementor's Workshop (OIW)

Laura Emmons
Telenex, Inc.
7401 Boston Blvd.
Springfield, VA 22153
USA
Tel: (703) 644-9113
Fax: (703) 644-9011

e-mail: laurae@ar.telenex.com

4) Date of notification to SGFS

5) Maintenance Commitment

The OIW ULSIG will ensure on behalf of the three regional OSI/OSE workshops that the maintenance of PDISP 11188-3 will be done. James Quigley is the project manager.

b) Base Standards Referenced

1) List of ISO/IEC standards, technical reports and CCITT recommendations

Editor's note: These references will be updated in the course of DISP to ISP progression.

1.1 Identical Recommendations | International Standards

CCITT Recommendation X.227 (1993) | ISO 8650: 1993,[5] *Information processing systems–Open Systems Interconnection–Protocol specification for the Association Control Service Element.*

1.2 Paired Recommendations | International Standards equivalent in technical content

CCITT Recommendation X.200 (1984), Reference Model of Open Systems Interconnection for CCITT applications.
ISO 7498:1984, Information processing systems–Open Systems Interconnection–Basic Reference Model.
CCITT Recommendation X.210 (1988), OSI Layer Service Definition Conventions for CCITT applications.
ISO/TR 8509:1986, OSI Layer Service Definition Conventions.
CCITT Recommendation X.214 (1988), Transport service definition for Open Systems Interconnection for CCITT applications.
ISO 8072:1986, Information processing systems–Open Systems Interconnection–Transport service definition.
CCITT Recommendation X.225 (1988), Session protocol specification for Open Systems Interconnection for CCITT applications.
ISO 8327:1990, Information processing systems–Open Systems Interconnection–Connection oriented session protocol specification.
CCITT Recommendation X.226 (1988), Presentation protocol specification for

[5] Currently under ISO/IEC national body review

Open Systems Connection for CCITT applications.
ISO 8822:1988, Information processing systems–Open Systems Interconnection–Connection oriented presentation protocol specification.

1.3 Additional references

ISO 7498-3:1988, Information processing systems–Open Systems Interconnection–Basic Reference Model–Part 3: Naming and Addressing.
ISO 8327-2:1992, *Information processing systems–Open Systems Interconnection–Connection oriented session protocol specification–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO 8650-2: 1992, *Information processing systems–Open Systems Interconnection–Protocol specification for the Association Control Service Element–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma .*
ISO 8823:1992, *Information processing systems–Open Systems Interconnection–Connection-oriented Presentation Protocol Specification–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO/IEC 9545:1989, *Information technology–Open Systems Interconnection–Application Layer Structure*
ISO/IEC TR 10000-1:1992, *Information technology–Framework of taxonomy of International Standardized Profiles–Part 1: Framework.* .
ISO/IEC TR 10000-2:1992, *Information technology–Framework of taxonomy of International Standardized Profiles–Part 2: Taxonomy of Profiles.*
ISO/IEC ISP 11188-1, *Information technology–International Standardized Profile–Common upper layer requirements–Part 1: Basic connection-oriented requirements*.[6]

2) TR 10000-1 Conformance

The documentation requirements of ISO/IEC TR 10000-1 on conformance are not met.

The Profile Requirements List of PDISP 11188-3 consist of several tables which specify the profile requirements. They currently refer to the DIS versions of the PICS proforma of the base standards of the ACSE, Presentation, and Session service definitions. A proforma for determining compliance to this profile is presented in Annex D.

3) Aspects of non-compliance with standards

No such aspects.

4) Ammendments, corrigenda to base standards

None in addition to clause 3 of PDISP 11188-3 (see also editor's note above).

[6]Currently at level of working draft

c) Registration requirements

None

d) Other publications

Draft IETF RFC (London: 1993) "ThinOSI upper layers cookbook", P. Furniss

"X/Open Transport Interface Appendix for Minimal OSI Functionality", H. Lowe (Cambridge, MA: 1993)

e) Profile purpose

1) Executive Summary

ISO/IEC ISP 11188 as a multi-part ISP specifies general requirements on the use of OSI upper layer protocols by A-profiles. These are identified as "Common Upper Layer Requirements".

The parts of this multi-part ISP do not contain the definition of any complete profiles, but can be referenced normatively by other ISPs which do define A-profiles. In addition, a referencing ISP may specify further requirements on the protocols, provided it does not contradict this ISP.

The purpose of this multi-part ISP is to provide common text for ISPs or other referencing specifications which specify A-profiles. In addition to simplifying their drafting, it also facilitates the common implementation of the protocols for their use in different A-profile contexts.

This part of ISO/IEC ISP 11188 specifies a profile of the minimal OSI facilities to support basic connection-oriented communication applications. These facilities are comprised of a subset of the facilities defined by the ACSE, Presentation and Session service definitions.

2) Relationship to other ISPs

PDISP 11188-3 is specified as a common basis to be referenced and used by application ISPs for A-profiles, e.g. ISPs for the AFT or AOM profiles. This profile would be referenced in place of PDISP 11188-1 Coomon upper layer requirements: Basic connection-oriented requirements.

f) PDISP development process

1) Editor: OSI ULSIG (Laura Emmons)

History:

Draft 1 OIW/ULSIG-33-03/93 First OIW draft of mOSI ISP written in ISP format and based on the CULR-1.

Circulated for comments to the regional workshops. Added as annex to working Implementor's Agreements of the OIW.

Draft 2 OIW/ULSIG-33-06/93 Revisions made after comments were obtained from OIW and EWOS.

Draft 3 OIW/ULSIG-33-09/93 Further revisions made after comments were obtained from OIW and EWOS.

Draft 4 OIW/ULSIG-33-12/93 Further revisions were made after issues were raised by OIW and EWOS.

2) Degree of Openess and Harmonization

The working drafts of PDISP 11188-3 have been circulated to all three regional workshops.

3) Joint planning operation

The PDISP was developed under the coordination of RWS-CC.

g) PDISP content and format

1) TR 10000-1-1 Requirements

These requirements have/have not been met.

2) Divergence from TR 10000

3) Multi-part structure

This PDISP is structured as a multi-part ISP to meet the requirements of various A-profiles.

Additional parts:

— Draft for PDISP 11188-1: Common upper layer requirements - Part 1: Basic connection-oriented requirements

— Draft for PDISP 11188-2: Common upper layer requirements - Part 2: Basic connection-oriented requirements for ROSE based profiles

h) Any other information

None

Document No.ULSIG-71-12/93
Date:

mOSI Issues List

(10)

Reference: New Annex

Issue: An informative bibliography should be added which would contain non-normative references.

Source: OIW ULSIG

Date Raised: December 7, 1993

Solution: Added new annex I.

Status: OIW: Accepted December 10, 1993

EWOS:
AOW:

(11)

Reference: Clauses 2 and 8

Issue: All information on compliance and conformance should be combined into clause 2.

Source: OIW ULSIG

Date Raised: December 7, 1993

Solution: Combine relevant parts of clause 8 into clause 2.

Status: OIW: Accepted December 10, 1993

EWOS:
AOW:

(12) Reference: Annexes A, B and C.

Issue: It was felt that since the definition of category 1 compliance/conformance implies that all facilities are mandatory for sending, it is not necessary to have separate column for category 1 and 2 in the tables.

Source: OIW ULSIG

Date Raised: December 7, 1993

Solution: Removed category 1 column from all tables.

Status: OIW: Accepted December 10, 1993

EWOS:
AOW:

(13) Reference: Annexes A and B.

Issue: In order to align with AOM1n (CMISE) and AFTnn (FTAM) profiles, the following facilities/parameters should be made optional in the tables: RLRQ and RLRE reason code, CPR and ARP provider reason, and CPR Responding Presentation selector.

Source: OIW ULSIG

Date Raised: December 7, 1993

Solution: Tables have been changed.

Status: OIW: Accepted December 10, 1993

EWOS:
AOW:

(14) Reference: Clause 6

Issue: There should be a new table which outlines the definitions of mandatory, optional, out-of-scope, and excluded for the cases of compliance and conformance.

Source: OIW ULSIG

Date Raised: December 7, 1993

Solution: Table added to clause 6.

Status: OIW: Accepted December 10, 1993

EWOS:
AOW:

(15) Reference: All

Issue: All information in CULR-1 should be replicated in this document so that people do not have to read so many speciifications.

Source: OIW ULSIG

Date Raised: December 9, 1993

Solution: Open. Will be discussed at next workshop.

Status: OIW:
EWOS:
AOW:

(16) Reference: Clause 6

Issue: Review the definitions in clause 6 for accuracy.

Source: OIW ULSIG

Date Raised: December 9, 1993

Solution: Open.

Status: OIW:
EWOS:
AOW:

(4) Reference: Introduction

Issue: Add expalnatory report and executive summary to document.

Source: OIW ULSIG

Date Raised: September 13, 1993

Solution: Added Foreword, Explanatory Report, changed Introduction.

Status: OIW: Accepted September 16, 1993
EWOS:
AOW:

(5) Reference: Clause 8

Issue: Compliance clause should be in same section in both CULR-1 and this document.

Source: EWOS TLG

Date Raised: July 13, 1993

Solution: Moved 8.1 - 8.2 to new clause 2. Moved 8.3 and 8.4 to new

Annex D.

Status: OIW: Accepted
September 16, 1993
EWOS:
AOW:

(6) Reference: Clause 5, Table 1

Issue: Issue on whether the definition of mandatory is correct.

Source: OIW ULSIG

Date Raised: June 10, 1993

Solution: After joint meeting with the OIW CT SIG, added new note under table 1. Comments requested.

Status: OIW: Accepted
September 16, 1993
EWOS:
AOW:

(7) Reference: 2.1
Annex D, Tables 2 and 3

Issue: Issue on the correctness of tables 2 and 3 (and their corresponding documentation in 2.1) when used as a proforma by a referencing standalone application specification.

Source: OIW ULSIG

Date Raised: 15 September 1993

Solution: Jim Quigley has supplied new text in clause 2 and annexes D and E..

Status: OIW: Accepted
December 10, 1993

EWOS:
AOW:

(8) Reference: 3.7

Issue: Add definitions for category 1 and 2.

Source: OIW ULSIG

Date Raised: 13 September 1993

Solution: Done. Section number has changed to 4.7.

Status: OIW: Accepted September 16, 1993
EWOS:
AOW:

(9) Reference: None.

Issue: Issue on whether to add section on use of transport services, especially the Reuse of Transport Connection service.

Source: Kedem Kaminsky

Date Raised: 14 September 1993

Solution: Mr. Kaminsky was specifically interested in the use of mOSI by network management profiles. The AOM1n profile is the most widely used network management profile. It explicitly states that reuse of the transport connection is out of scope. CULR-3 also states this in Annex C. The AOM1n profile makes no other comments on the use of the Transport service. This is not an issue.

Status: OIW: Accepted December 7, 1993
EWOS:
AOW:

(1) Reference: B.3.1 line 2
C.4.1.3 line 3

Issue: Called (N)-selectors should be optional for sending in Catagory II compliance.

Source: OIW ULSIG

Date Raised: June 10, 1993

Solution: Cat II "m" should be changed to "o".

Status: OIW: Accepted June 10, 1993

EWOS:
AOW:

(2) Reference: D.2

Issue: Clause D.2 is not written clearly.

Source: OIW ULSIG

Date Raised: June 10, 1993

Solution: Rewritten to say the following:

"Transfer-syntax is the representation of the abstract-syntax during data transfer. If an application does not make a distinction between the abstract and transfer syntax, the same object identifier should be used to denote both syntaxes. In the case where: a) the abstract and transfer syntax are not the same; and b) the default abstract syntax object identifier has been used (see D.1 above) the following default transfer syntax object identifier may be used..."

Status: OIW: Accepted June

Document No.ULSIG-71-12/93
Date:

10, 1993

EWOS:
AOW:

(3) Reference: Annex E

Issue: There is no text for Annex E. It should be removed.

Source: OIW ULSIG

Date Raised: June 10, 1993

Solution: Removed.

Status: OIW: Accepted June 10, 1993

EWOS:
AOW:

Schedule for Progression of CULR

Milestone	CULR-1	CULR-2	CULR-3
Informal SC21 review	May 92/ Jun 93	N/A	Jun 93
EWOS endorsement	Sep 93	Nov 93	May 94
OIW endorsement	Sep 93	Dec 93	Mar 94
AOW endorsement	Oct 93	Dec 93 - Feb 94 by correspondence	Apr 94
pDISP submission	Nov 93/ Mar 94	Apr 94/Aug 94	May 94/ Aug 94
DISP Ballot	Dec 93 - Apr 94	Sep 94 - Jan 95	Sep 94 - Jan 95
EDIT Meeting	Jul 94	Feb 95	Feb 95
FINAL TEXT	Oct 94	Mar 95	Mar 95

Annex (normative)

Working Draft of new ISP on CL-CULR Specification

(This is ONLY a placeholder for anticipated work on a new profile for connectionless upper layer facilities)

Annex (informative)

Upper Layer SIG Registered Questions List

ULSIG Registered Question List

(1)
Info.

Summary: Herb Falk's question on ACSE Association

Source: Herb Falk

Date Raised: 26 April, 1993

Issue: Copy of message follows:

The problem is specifically that the ACSE "Association-information", which is an ASN.1 EXTERNAL, has taken the CHOICE of octet-aligned. The ISO specifications and NIST stable agreements seem to be clear on this matter. We will try to explain them as best we can. A hard copy of the Presentation-Connect PDU follows on a separate page. Note that the item circled and marked "1" is the beginning of the PDV-list. Note "2" is the beginning of the Presentation Data List encoded as Single-ASN1-type. Note "3" is the beginning of the Association-Information encoded as an EXTERNAL. Note "4" is the beginning of the External encoding tagged as octet-aligned.

Please reference page 31 of ISO specification ISO-8823 (IS). At the top of the page is found a definition for the PDV-list. Legal presentation data values are a CHOICE of { Single-ASN1-type, octet-aligned, and arbitrary}. This CHOICE is further qualified in section 8.4.2.5, on the following page, to say that the single-ASN1-type shall be used if the PDV-list contains exactly one presentation data value. The ACSE Assocaite-Request PDU shown in the trace has exactly one presentation data value, therefore this encoding rule applies. The PDU conforms to this specification and may be verified in note "2" to be the value 0xA0.

Please refer to page 18 of ISO specification 8650 for a description of the AARQ-apdu. Towards the bottom of the page there is a description of "user-information". It states that "user-information" is IMPLICIT "Association-information" OPTIONAL. 3 pages later in the same specification is the definition for "Association-information". It states that an "Association-information" field may only be a SEQUENCE OF EXTERNAL. An EXTERNAL is not defined in the ACSE Protocol specification. It is found in the ASN.1 Protocol Specification ISO 8824.

Please refer to ISO specification 8824 (Abstract Syntax Notation One) page 23 for a description of the EXTERNAL. Section 34.7 of 8824 says that:

"If the data value is the value of a single ASN.1 data-type, and if the encoding is an integral number of octets, then the sending implementation shall use any of the encoding choices:

single-ASN1-type
octet-aligned
arbitrary"

According to ISO 8824 it would be legal to send "Associate-information" as octet-aligned at note

"4". However, we believe that there is an implementation agreement on this CHOICE of encoding. If you look at the NIST stable agreements on page 12 in section 10.3 there is an implementors agreement on which choice to use in the EXTERNAL. The second sentence in that paragraph reads as follows:

"If a data value to be encapsulated in an EXTERNAL type is an instance of a single ASN.1 type encoded to the basic encoding rules for ASN.1 then the option "single-ASN1-type" shall be chosen as encoding."

We believe that this sentence is why the byte in note "4" should be the value 0xA0 instead of 0x81. This seems to be self-explanatory. However, to make sure that we are not taking this sentence out of context or misinterpreting it, we have placed a call to the Upper Layers chairman of NIST and are asking for a clarification.

Remember that NIST stable agreements are not binding which means that the Computrol MMS is still within the guidelines for this encoding at the current time. But also be advised that these stable agreements are being moved into the upper layer agreements within the next year.

Responses: From Laura Emmons (laurae@ar.telenex.com) May 10:

I took a look at Herb Falk's defect report and I don't think there is any problem with any of the standards or our position on the use of the EXTERNAL data type. His description of the encoding of the encoding of his layer 6 header seems to be irrelevant. If the MMS-InitiateRequest is a single ASN.1 element (I haven't seen this protocol, but it seems that it is), then the data value of the instance of the Association-information element should be encoded as a single-ASN1-type. Therefore, in his pdu Note 4 should be an 0xA0.

Solution:

Status: OIW:
EWOS:
AOW:

Document No.ULSIG-96-12/93
Date:

(2) Summary: PGI PI issue from Japan

Source: Jun Yamaguchi (junichi@vnet.ibm.com)

Date Raised: July 22, 1993

Issue: Copy of message follows:

I have a question about ISO 8327. I would like you to clarify an interpretation of this standard.

Base standard states "PGI units and PI units within the same nesting level shall be ordered in increasing value of their PGI and PI codes." in the clause 8.2.6 of ISO 8327.

There are several interpretations for thsi statement:

1. PGI units shall be ordered in increasing value of their PGI codes. PI units in the same PGI unit shall be ordered in increasing value of their PI codes. PI units without PGI code have the same nesting level with PGI units, and this kind of PI units and PGI units shall be ordered in increasing value of their PGI and PI codes.

2. PGI units shall be ordered in increasing value of their PGI codes. PI units in the same PGI unit shall be ordered in increasing value of their PI codes. PI units without PGI code shall be ordered in increasing value of their PI codes. There are no relationship between PGI units and PI units about the order.

3. PGI units shall be ordered in increasing order of their PGI codes. PI units in the same PGI unit shall be ordered in increasing value of their PI codes. PI units without PGI code have no relationship with other units. So, this kind of PI units may be placed in any position.

Which interpretation is correct, or all wrong?

Responses: From Bob Baker (baker@uxdp5.Tredydev.Unisys.com) July 26:
I reviewed Jun Yamaguchi's session question which you forwarded to the OIW members. We had the same question years ago when we were implementing our Session layer, and I talked with Kim Banker at the time. He was very helpful and we finished our implementation based on his suggestions.

We believe interpretation #1 is the only correct interpretation of the session specification. This interpretation is consistent with what Kim told us and also with our implementation...Interpretations #2 and #3 would permit any of the PI codes which have no PGI code to be present after PGI 193 (User Data) in an SPDU. This is annoying at best, and would probably cause many implementations severe problems.

From Andrew Chandler (a.chandler@xopen.co.uk) August 17
My interpretation is as follows (essentially this is interpretation 1 above):

PGI units shall be ordered in increasing value of their PGI codes.

PI units in the same PGI unit shall be ordered in increasing value of their PI codes.

PGI units and PI units at the same level of nesting shall be ordered in icreasing value of their PGI and PI codes.

Solution:	Interpretation 1 is correct.	
Status:	OIW:	Accepted 09/93
	EWOS:	
	AOW:	

(3) Summary: Encoding FTAM single PDV list

Source: Kevin Bohan
(0004141431@mcimail.com)

Date Raised: July 29, 1993

Issue: Copy of message follows:

I have a question as to what is meant in section 8.5 of the NIST Stable Agreements.

Proginet has an FTAM product that sends back an F-Begin-Group-Response, F-Deselect-Response, F-Close-Response, F-End-Group-Response.

This is done using a single PDV list. We have encoded this PDV-List using the single-ASN1-type. The remote site is kicking this out and they claim that this is not valid.

Is this Valid?

Responses:

Solution:

Status: OIW:
EWOS:
AOW:

(4) Summary: Ed Kelley question on whether
FTAM can directly use P-U-ABORT.

Source:

Date Raised:

Issue:

Responses:

Solution:

Status: OIW:
EWOS:
AOW:

(5) Summary: new MMS issue on CUL for Security

Source: MMS SIG

Date Raised: 16 September, 1993

Issue: Copy of liason:

The MMS SIG is investigating the use of various OSI protocols and features for achieving different security requirements for MMS. With further discussion with the Security SIG, it appears that concepts in GULS are adequate for our needs. In particular, the use of the ACSE Functional Unit for Authentication.

As it is likely, that all of the SIGs will need similar requirements for upper layers, we are asking for you to investigate the common needs and, if warrented, develop a version of the Common Upper Layer Requirements that address security.

Responses:

Solution:

Status: OIW:
EWOS:
AOW:

Document No.ULSIG-96-12/93
Date:

(6) Summary: Gary Williams issue on p-u-abort on bad encoding.

Source:

Date Raised: 9 September 1993

Issue: The problem is that we believe that there is a possible contradiction between clause 7.9 of Draft Version 12 of pDISP 11188-1, 1993-01-22 (ISP:Common Upper Layer Requirements)
which states:

"If a received PPDU contains improperly encoded data values(including data values embedded with the user data field of a PPDU) and if an abort is issued, then either an ARU shall beissued."

and ISO 8823: 1988, clause's 6.4.4.2 and 6.4.4.3 which state that the only response is a P-P-ABORT.

The information that we require is how to start the procedure to address this issue, possibly obtain a contact name, or how to get in touch with he/she in order to resolve the issue.

Responses: From Klaus Truoel (truoel@gmd.de) Aug 8, 1993:

The current draft of Common Upper Layer Requirements is draft 14, and it will hopefully get the approval as PDISP by the Regional Workshops in Sept and Oct. Of course, after that approval it will not be too late to fix bugs if there are any.

The clause which you are questionning is the same also in the latest version. Actually, it is a clause which is in that document (and in the European FTAM ENVs) since many years. It passed several ISO ballots, reviews and discussions with ISO experts.

The reason behind that clause, as far as I can remember the history, is the often discussed problem, which OSI layer would be responsible to detect "improperly encoded data values". Is it the presentation layer or can it in many cases only be done by the application ? In the latter case, the application would initiate the Abort and that would result in an ARU. This is what the clause expresses.

And, by the way, the clauses in ISO 8823 which you reference, specify "if possible". Sometimes it may not be possible if only the application can detect the bug.

As I myself am the editor of the PDISP, you may send all comments or questions to me. In case you are not satisfied with my above explanation and if you want to raise the issue to a broader audience for consideration, I am prepared to take the issue with me to the forthcoming OIW (beginning of Sept.) and to EWOS (Oct.).

Solution:

Status: OIW:
EWOS:
AOW:

(7) Summary: X/Open ROSE PCI must be in BER.

Source:

Date Raised:

Issue:

Responses:

Solution:

Status: OIW:
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Foreword

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2;|Working Implementation Agreements for Open Systems Interconnection Protocols: Part 6 - Registration Authority Procedures for the OSI Implementors Workshop (OIW)

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Einar Stefferud, Network Management Associates**
Workshop Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Registration Special Interest Group (RSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

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Part 6 - Registration Authority Procedures for the OSI Implementors Workshop (OIW)

Editor's Note - Please refer to the Stable Implementation Agreements Document for text on this subject.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 7 - 1984 Message Handling Systems

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Neil Koorland, Microsoft**
SIG Editor: **Rich Ankney, Fischer International**

Foreword

This part of the Working Implementation Agreements was prepared by the Message Handling Systems Special Interest Group (X.400 SIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing part on this subject. As agreed at the Editors' Meeting during the March '92 Workshop, since there were no changes to this text as previously given, the part will not be reprinted for the Working Document. Please refer to the Working Document which was issued on March 9, 1992.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

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Part 7 CCITT 1984 X.400 Based Message Handling System

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2LWorking Implementation Agreements for Open Systems Interconnection Protocols: Part 8 - Message Handling Systems

Output from the December 1993 NIST Workshop for Implementors of OSI

SIG Chair: **Chris Bonatti, Booz ● Allen & Hamilton**
SIG Editor: **Rich Ankney, Fischer International**

Foreword

The text in this chapter specifies the North American requirements for use of the MHS ISPs. It also specifies any additional requirements and Recommended Practices that are beyond the scope of the ISPs.

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Part 8 Message Handling Systems

0 Introduction

Scope

References

CCITT

ISO

Editor's Note: **[**The following reference is in addition to the contents of the same chapter and clause of the OIW Stable Implementation Agreements. It is anticipated that the referenced chapter will be created at the March 1994 OIW Plenary.**]**

Application Layer - MHS

OIW SIA Chapter ZZ - Working Draft ISP 12063 *Information Processing Systems - International Standardized Profiles AMH3n - Message Handling Systems - EDI Messaging*.

Status

Taxonomy and Functional Groups

AMH1

AMH2

AMH3

Editor's Note - This will contain similar text to the AMH1 & AMH2 clauses describing the profiles and then the parts of the ISP

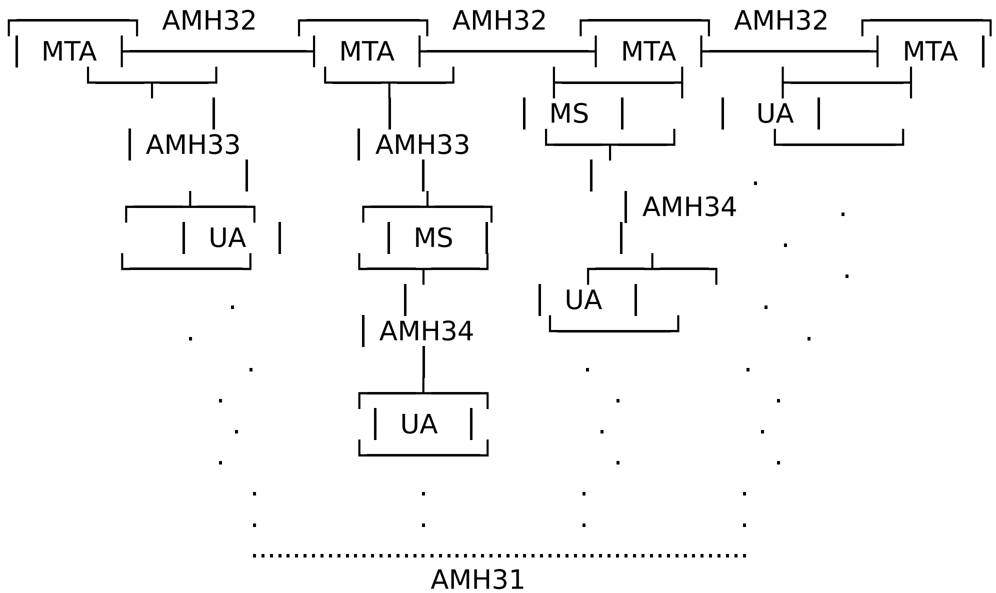

Figure 3 - Combinations of AMH3n Profiles

Conformance

Common Messaging

MHS Management

NOTE - For further study.

IPM Service

EDI Messaging Service

This clause specifies EDI conformance requirements. Conformance to AMH3 is required, as well as support of the ANSI X12 functional group. Other regional requirements are specified herein.

Criticality mechanisms must be supported for all extension fields.

Introduction

This clause specifies the requirements for an EDI Messaging Service (EDIMS). These requirements are based on Recommendations X.435 and F.435 which define the P(edi) content type and outline various EDIMS operational scenarios.

This EDIMS Implementation Agreement separates the functions of the base standard into a Kernel and optional Functional Groups (FGs). These functional groups may be used to support the different scenarios of the EDIMS.

The following functional groups are defined:

- EDIMS Security
- EDIMS Forwarding
- EDIMS Multipart Body

These agreeements classify the support of these functional groups as follows:

Table 7 - EDIMS Functional Groups

Functional Group	Support
EDIMS Forwarding	O
EDIMS Security	O
EDIMS Multi Part Body	O
Notes	

EDIMS Elements of Service

Table 29 specifies the additional requirements for support of EDIMS EoS by a UA conforming to the EDIMS functional group of this agreement. This table indicates differences from the classifications in part 1 of AMH3. The classification scheme is identical to that defined by the ISP.

Table 8 - EDIMS: Optional EDI Elements of Service

Element of Service	Basic		Functional Group		
	Orig.	**Rec.**	**FG**	**Orig.**	**Rec.**
Content Confidentiality	o	o	SEC-A,B	c[7]	c
Message Security Labeling	o	o	SEC-A,B	c[7]	c
Non-repudiation of Delivery	o	o	SEC-A,B	c[7]	c
Non-repudiation of Origin	o	o	SEC-A,B	c[7]	c
Requested Preferred Delivery Method	m	–			

P(EDI) Protocol

This clause defines the additional requirements for EDI-UA support of the EDI protocol (Pedi). The following tables define differences from the requirements of the AMH3 ISP, Part 2, Annex A.

Table 9 - Delta to pDISP 12063-2, Annex A, Clause A.2.2.1: EDIM Heading Per-Recipient Fields

Ref	Element	Origination		Reception	
		Base	**Profile**	**Base**	**Profile**
12	authorization-information-field		m		m

Table 10 - Delta to pDISP 12063-2, Annex A, Clause A.2.2.6: EDIN Receiver Field

Ref	Element	Origination		Reception	
		Base	**Profile**	**Base**	**Profile**

2	original-edim-identifier		o		
3	first-recipient		o		

Table 11 - Delta to pDISP 12063-2, Annex A, Clause A.2.2.10: Service String Advice Field

Ref	Element	Origination		Reception		Notes
		Base	Profile	Base	Profile	
5	reserved		m		m	This does not make sense; consider adopting o/o from ISP.

Table 12 - Delta to pDISP 12063-2, Annex A, Clause A.2.3.2: EDIM Body Part

Ref	Element	Origination		Reception	
		Base	Profile	Base	Profile
2.2.2	additional-body-parts, 2		m		
Notes: 2	When receiving a multi-part body EDIM and forwarding it without accepting EDI responsibility for it, this field is always present.				

Table 13 - Delta to pDISP 12063-2, Annex A, Clause A.2.4.1: EDIN Common Fields

Ref	Element	Origination		Reception		Notes
		Base	Profile	Base	Profile	
3	first-recipient		m			
5.5	original-content-integrity-check		o		o	This should not be mandatory outside of the security functional groups.

Table 14 - Delta to pDISP 12063-2, Annex A, Clause A.2.4.3: NN Fields

Ref	Element	Origination		Reception	
		Base	Profile	Base	Profile
2.1	nn-ua-ms-reason-code		m		
2.2	nn-uiser-reason-code		m		
2.3	nn-pdau-reason-code		o		
2.3.1	nn-pdau-basic-code		m		
2.3.2	nn-pdau-diagnostic		m		
3	nn-supplementary-information		m		

Table 15 - Delta to pDISP 12063-2, Annex A, Clause A.2.4.4: FN Fields

Ref	Element	Origination		Reception	
		Base	Profile	Base	Profile
3.1.3	fn-security-check			o	o
3.2.2	fn-user-diagnostic		o		
3.3	fn-pdau-reason-code		o		
3.3.1	fn-pdau-basic-code		m		
3.3.2	fn-pdau-diagnostic		m		

Table 16 - Delta to pDISP 12063-2, Annex A, Clause A.3.1: EDI Forwarding, AF and MF

Ref	Element	Profile	Notes/ References

		Orig.	Rec.	
A.2.4.4/4	fn-supplementary-information	m		

Table 17 - Delta to pDISP 12063-2, Annex A, Clause A.3.2: EDI Security

Ref	Element	Origination		Reception		Notes
		Base	Profile	Base	Profile	
A.2.4.1/5	notification-security-elements					A, B, C
A.2.4.1/5.1	original-content		c,1		c,1	A, B
A.2.4.1/5.1	original-content-integrity-check		c,1		c,1	A, B
Notes:						
1	One of these two elements must be supported on origination when using the SEC-A or SEC-B EDI security class.					

EDI MS Attributes

This clause defines the additional requirements for EDI-UA and EDI-MS support of the EDI protocol attributes. The following tables define differences from the requirements of the AMH3 ISP, Part 5, Annexes A and B.

Table 18 - Delta to pDISP 12063-5, Annex A: EDI Forwarding class AT and class MF

Ref	Attribute	UA Base	MS Base
	date-and-time-of-preparation		m

Table 19 - Delta to pDISP 12063-5, Annex B, Clause B.1.12: EDI-Specific Attributes

Ref	Attribute	Profile	
		EDI-UA	EDI-MS
	application-reference		o
	edi-notification-requests-for-this-recipient		o
	edim-body-part	o	o
	expiry-time		o
	fn-reason-code		o
	fn-supplementary-information		o
	forwarded-to		o
	interchange-length		o
	nn-reason-code		o
	nn-supplementary-information		o
	notification-time		o
	originator		o
	pn-supplementary-information		o
	processing-priority-code-for-this-recipient	m	
	related-messages		o
	service-string-advice		o
	test-indicator-for-this-recipient	m	
	this-recipient		o

Table 20 - Delta to pDISP 12063-5, Annex B, Clause B.2.1 EDI Forwarding class AT and class MF

Ref	Attribute	Profile	
		EDI-UA	EDI-MS

	edim-body-part	m	m
	incomplete-copy	m	m
	responsibility-forwarded	m	
	responsibility-passing-allowed-for-this-recipient	m	

Table 21 - Delta to pDISP 12063-5, Annex B, Clause B.2.2.1 EDI Security (Class A and B)

Ref	Attribute	Profile	
		EDI-UA	**EDI-MS**
	edi-notification-security-for-this-recipient	m	
	edi-reception-security-for-this-recipient	m	

Table 22 - Delta to pDISP 12063-5, Annex B, Clause B.2.2.2 EDI Security (Class C)

Ref	Attribute	Profile	
		EDI-UA	**EDI-MS**
	edi-application-security-elements	m	
	edi-application-security-extensions	m	

Table 23 - Delta to pDISP 12063, Part 5, Annex B, Clause B.2.3 EDI Multi-Part Body (MPB)

Ref	Attribute	Profile	
		EDI-UA	**EDI-MS**
	cross-referencing-information	o	o
	edim-synopsis		o

Annex (normative)

Naming, Addressing and Routing

Annex (normative)

IPM Body Part Support

Annex (normative)

Object Identifiers

Annex (informative)

Interpretation of Elements of Service

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Recommended Practices

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 9 - FTAM Phase 2

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Joe Mohen, Proginet**
SIG Editor: **Larry Friedman, Digital Equipment Corporation**

Foreword

This part of the Working Implementation Agreements was prepared by the File Transfer, Access and Management Special Interest Group (FTAM SIG) of the Open Systems Environment Implementors' Worksshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject. There is no significant technical change from this text as previously given. As agreed at the Editors' Meeting during the March '92 Workshop, since there were no changes to this text as previously given, the part will not be reprinted for the Working Document. Please refer to the Working Document which was issued on March 9, 1992.

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NOTE - See Stable Document for text on this subject

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(See Stable Document.)

Annex (normative)

Constraint Sets

(See Stable Document.)

Annex (normative)

Abstract Syntaxes

(See Stable Document.)

Annex (informative)

FTAM-1 Document Type Tutorial

(See Stable Document.)

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Interconnection Protocols:
Part 10 - FTAM Phase 3

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Joe Mohen, Proginet**
SIG Editor: **Larry Friedman, Digital Equipment Corporation**

Foreword

This part of the Working Implementation Agreements was prepared by the File Transfer, Access and Management Special Interest Group (FTAM SIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

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(See Stable Document.)

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Register of FTAM Objects

(See Stable Document.)

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(See Stable Document.)

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Constraint Sets

(See Stable Document.)

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Abstract Syntaxes

(See Stable Document.)

Annex (normative)

Delta Protocol Implementation Conformance Statement (PICS) Pro forma

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Amendments and Corrigenda

(See Stable Document.)

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Part 11 - Directory Services Protocols

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 11 - Directory Services Protocols

Output from the December 1993 (OIW) Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Kenneth J. Rossen, SHL Systemhouse**
SIG Editor: **Michael Ransom, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Directory Services Special Interest Group (DSSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above mentioned Workshop. This part replaces the previously existing chapter on Directory Services Protocol.

Please refer to the March 1992 Working Document for additional information.

Future changes and additions to this version of these Implementor Agreements will be published as change pages. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

Table of Contents

List of Tables

Part 11 - Directory Services Protocols

Editor's Note - The text in this part of the Implementation Agreements will be significantly reorganized in 1993 due to the alignment and submission by Regional Workshops of International Standardized Profiles ISO/IEC pdiSP 10615 and 10616. The text in these pdISPs, in some cases containing technical changes, will replace substantial segments of the text in this Agreement. In addition, text addressing the forthcoming 1993 edition of the Directory Documents, currently interspersed among sections of this Agreement, will be moved to a new Agreement appearing in Part 28 of this document and expanded. Please refer to later editions of this document for the most recent of these realignments.

0 Introduction

Refer to clause 0 of Stable Agreements.

Scope

Refer to clause 1 of Stable Agreements.

Normative references

Refer to clause 2 of Stable Agreements.

Status

Refer to clause 3 of Stable Agreements.

Use of the Directory

This clause will contain introductory text.

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Directory ASEs and Application Contexts

Refer to clause 5 of Stable Agreements.

Schema

Refer to clause 6 of Stable Agreements.

Support of Structures and Naming Rules

Refer to 6.1 of Stable Agreements.

Support of Object Classes and Subclasses

Refer to 6.2 of Stable Agreements.

Support of Attribute Types

Refer to 6.3 of Stable Agreements.

Support of Attribute Syntaxes

Refer to 6.4 of Stable Agreements.

Naming Contexts

Refer to 6.5 of Stable Agreements.

Common Profiles

Refer to 6.6 of Stable Agreements.

OIW Directory Common Application Directory Profile

Refer to 6.6.1 of Stable Agreements.

Standard Application Specific Attributes and Attribute Sets

Refer to 6.6.1.1 of Stable Agreements.

Standard Application Specific Object Classes

Refer to 6.6.1.2 of Stable Agreements.

OIW Directory Strong Authentication Directory Profile

Refer to 6.6.2 of Stable Agreements.

Other Profiles Supported

Refer to 6.6.2.1 of Stable Agreements.

Standard Application Specific Object Classes

Refer to 6.6.2.2 of Stable Agreements.

Restrictions on Object Class Definitions

Refer to 6.7 of Stable Agreements.

Pragmatic Constraints

Refer to clause 7 of Stable Agreements.

General Constraints

Refer to 7.1 of Stable Agreements.

Character Sets

Refer to 7.1.1 of Stable Agreements.

DSP APDU Size

Refer to 7.1.2 of Stable Agreements.

Service Control (SC) Considerations

Refer to 7.1.3 of Stable Agreements.

Priority Service Control

Refer to 7.1.4 of Stable Agreements.

Constraints on Operations

Refer to 7.2 of Stable Agreements.

Filters

Refer to 7.2.1 of Stable Agreements.

Errors

Refer to 7.2.2 of Stable Agreements.

Error Reporting - Detection of Search Loop

Refer to 7.2.3 of Stable Agreements.

Constraints Relevant to Specific Attribute Types

Refer to 7.3 of Stable Agreements.

Conformance

Refer to clause 8 of Stable Agreements.

DUA Conformance

Refer to 8.1 of Stable Agreements.

DSA Conformance

Refer to 8.2 of Stable Agreements.

DSA Conformance Classes

Refer to 8.3 of Stable Agreements.

Conformance Class 0 - Centralized DSA

Editor's Note - The following paragraph is to be added immediately after the existing final paragraph of this clause in the Stable Agreements.

A centralized DSA does not have knowledge information of any other DSA. As a result, such a DSA cannot provide the capability of a referral.

Conformance Class 1 - Distributed DSA

Editor's Note - The following paragraph is to be added immediately after the existing final paragraph of this clause in the Stable Agreements.

A distributed DSA must meet the minimum knowledge requirement (Directory documents, clause 10 and in these agreements). As a result, such a DSA shall provide the capability of a referral.

Authentication Conformance

Refer to 8.4 of Stable Agreements.

Directory Service Conformance

Refer to 8.5 of Stable Agreements.

The Directory Access Profile

Refer to 8.6 of Stable Agreements.

The Directory System Profile

Refer to 8.7 of Stable Agreements.

Digital Signature Protocol Conformance Profile

Refer to 8.8 of Stable Agreements.

Strong Authentication Protocol Conformance Profile

Refer to 8.9 of Stable Agreements.

Subtree Specification Classes

Refer to 8.10 of Stable Agreements.

Replication Conformance

Refer to 8.11 in Stable Agreements.

Recommended Practices for Shadowing

Refer to 8.12 in Stable Agreements.

Distributed Operations

Refer to clause 9 in Stable Agreements.

Static Requirements

Refer to 9.1 in Stable Agreements.

Reference Types

Refer to 9.1.1 in Stable Agreements.

Superior References and Root Contexts

Refer To 9.1.2 in Stable Agreements.

First-Level DSAs

Refer to 9.1.2.1 in Stable Agreements.

Return-Cross-References

Refer to 9.1.2.2 in Stable Agreements.

Support of Application Contexts

Refer to 9.1.3 in Stable Agreements.

DSA-level Security

Refer to 9.1.4 in Stable Agreements.

Aliases

Refer to 9.1.5 of Stable Agreements.

Authentication for DSA Bind

Refer to 9.1.6 of Stable Agreements.

Authentication of User Whose Entry Is Held by Another DSA

Refer to 9.1.7 of Stable Agreements.

Dynamic Requirements

Detection of Search Loop

Refer to 9.2.1 of Stable Agreements.

Generation of Trace Information

Refer to 9.2.2 of Stable Agreements.

Integrity of Operation Arguments

Refer to 9.2.3 of Stable Agreements.

Referrals and Chaining

Refer to 9.2.4 of Stable Agreements.

Name-Error: "invalid-attribute-syntax"

Editor's Note - Editor's instructions from the September Workshop indicated that the following sentence was to be added as a note to Table 13 (from Stable Agreements): "This error shall only be generated when the DSA determines that there is an incompatibility in an AVA in that part of the name which it is expected to resolve." That statement is not consistent with the current state of Table 13 in Stable Agreements - there are at least two uses of N(IAS) in Table 13 that are not even tied to the name resolution phase of an operation (e.g., see the Table 13 entry for Symptom: E_ATT_BOUNDS and Situation: Modify-RDN). This issue should be revisited at the next Workshop meeting; either the proposed statement must be modified or changes in Table 13 need to be approved.

Editor's Note - Editor's instructions from the September Workshop indicated that the following sentences are to be added as a note to Table 13 (from Stable Agreements): "If a multicasting DSA receives this error and the matched part of the name is equal to or longer than that indicated by the next RDN to be resolved, name resolution shall be taken as having progressed. The error shall be relayed." The note has been added as note #15 in the list of notes for Table 13. References to the new note have also been added to Table 13; the new references need to be checked at the next Workshop.

Editor's Note - Editor's instructions from the September Workshop indicated that the following sentences are to be added as a note to Table 13 (from Stable Agreements): "If a chaining or multicasting DSA receives this error and the matched part of the name is not equal to or longer than that indicated by the next RDN to be resolved, the error indicates an incompatibility in schema between the DSA and the one to which chaining takes place. Multicasting may continue, and the error in that case may be ignored. A DSA, having received such an error during name resolution, may be need not relay it." The note has been added as note #16 in the list of notes for Table 13. References to the new note have also been added to Table 13; the new references need to be checked at the next Workshop.

Service-Error: "invalid-reference"

Editor's Note - Editor's instructions from the September Workshop indicated that the following sentences are to be added as a note to Table 13 (from Stable Agreements): "If a DSA generates a chained operation on the basis of a cross reference and receives a serviceError with the problem of invalidReference in response, then it is recommended that the invalid cross reference be removed to eliminate repeated errors. Note that attempting to resolve the correct reference via the returnCrossRefs mechanism should be regarded as nonreliable due to the optional nature of returnCrossRefs. The resolution of an invalidReference due to a superior or subordinate reference is a local administrative issue."

Unsupported Attributes

A DSA may receive an AVA that is unsupported by the DSA. If the DSA is not required to act on it, or to store it within an entry, it shall handle it by passing it on by chaining, or providing a referral, and in particular shall not return an error response on its own initiative.

Matching Names in traceInformation

A DSA, when performing loop avoidance, may be required to match names in traceInformation; in the (unlikely) event of the attribute type of an AVA in such a name being unsupported by the DSA, the DSA may forward the operation to the target DSA, since the consequential state of the operation is unknown.

Underlying Services

Refer to clause 10 of Stable Agreements.

ROSE

Refer to 10.1 of Stable Agreements.

Session

Refer to 10.2 of Stable Agreements.

ACSE

Refer to 10.3 of Stable Agreements.

Access Control

For information regarding access control in the 1988 Directory Documents, refer to clause 11 of Stable Agreements.

The following table is applicable to access control as defined in the 1992 Edition of the Directory Documents. The table below is for information only; definitive conformance requirements associated with Basic Access Control (BAC) and Simple Access Control (SAC) are specified in the 1992 Edition of the Directory Documents.

Table 1 - 1992 Extensions for Access Control

Extension	Required by BAC	Required by SAC
Subentries	yes	yes
Operational Attributes PrescriptiveACI SubentryACI EntryACI uniqueMember	 yes yes yes yes	 yes yes no yes
groupOfUniqueNames (object class)	yes	yes
Extended ChainingArguments (includes AuthenticationLevel)	yes	yes
Extended ContinuationReference (includes returnToDUA)	yes	yes
Access Control Specific Area (ACSA)	yes	yes
Access Control Inner Area (ACIA)	yes	no
Extended EntryInformationSelection (includes ExtraAttributes)	yes	yes
Extended Matching Rule for ACIItem	yes	yes

Use of localQualifier in AuthenticationLevel

Editor's Note - for future study

Distributed Administrative Areas

Editor's Note - for future study

ProtectedItem Granularity

Editor's Note - for future study

UserClass Granularity

Editor's Note - for future study

Test Considerations

Refer to clause 12 of Stable Agreements.

Major Elements of Architecture

Refer to 12.1 of Stable Agreements.

Search Operation

Refer to 12.2 of Stable Agreements.

Errors

Refer to clause 13 of Stable Agreements.

Permanent vs. Temporary Service Errors

Refer to 13.1 of Stable Agreements.

Guidelines for Error Handling

Refer to 13.2 of Stable Agreements.

Introduction

Refer to 13.2.1 of Stable Agreements.

Symptoms

Refer to 13.2.2 of Stable Agreements.

Situations

Refer to 13.2.3 of Stable Agreements.

Error Actions

Refer to 13.2.4 of Stable Agreements.

Reporting

Refer to 13.2.5 of Stable Agreements.

Specific Authentication Schemes

Refer to 14 of Stable Agreements.

Specific Strong Authentication Schemes

Refer to 14.1 of Stable Agreements.

Protected Simple Authentication

Refer to 14.2 of Stable Agreements.

Simple Authentication

Refer to 14.3 of Stable Agreements.

Annex (normative)

Maintenance of Attribute Syntaxes

Refer to Annex A of Stable Agreements.

Introduction

Refer to A.1 of Stable Agreements.

General Rules

Refer to A.2 of Stable Agreements.

Checking Algorithms

Refer to A.3 of Stable Agreements.

distinguishedNameSyntax

Refer to A.3.1 of Stable Agreements.

integerSyntax

Refer to A.3.2 of Stable Agreements.

telephoneNumberSyntax

Refer to A.3.3 of Stable Agreements.

countryName

Refer to A.3.4 of Stable Agreements.

preferredDeliveryMethod

Refer to A.3.5 of Stable Agreements.

presentationAddress

Refer to A.3.6 of Stable Agreements.

Matching Algorithms

Refer to A.4 of Stable Agreements.

UTCTimeSyntax

Refer to A.4.1 of Stable Agreements.

distinguishedNameSyntax

Refer to A.4.2 of Stable Agreements.

caseIgnoreListSyntax

Refer to A.4.3 of Stable Agreements.

Annex (informative)

Glossary

Refer to Annex B of Stable Agreements.

Annex (informative)

Requirements for Distributed Operations

Refer to Annex C of Stable Agreements.

General Requirements

Refer to C.1 of Stable Agreements.

Protocol Support

Refer to C.2 of Stable Agreements.

Usage of ChainingArguments

Refer to C.2.1 of Stable Agreements.

Usage of ChainingResults

Refer to C.2.2 of Stable Agreements.

The Root Context

The root context as held by a first level DSA consists of the root and a number of subordinate references to naming contexts held (as master copies) by the DSA and by other first level DSAs. It is replicated to each first level DSA and comprises full knowledge of the naming contexts immediately subordinate to the root of the DIT. The means of this replication is not standardized.

Annex (informative)

Guidelines for Applications Using the Directory

Refer to Annex D of Stable Agreements.

Tutorial

Refer to D.1 of Stable Agreements.

Overview

Refer to D.1.1 of Stable Agreements.

Use of the Directory Schema

Refer to D.1.2 of Stable Agreements.

Use of Existing Object Classes

Refer to D.1.2.1 of Stable Agreements.

Kinds of Object Classes

Refer to D.1.2.2 of Stable Agreements.

Use of Unregistered Object Classes

Refer to D.1.2.3 of Stable Agreements.

Side Effects of Creating Unregistered Object Classes

Refer to D.1.2.4 of Stable Agreements.

Creation of New Object Classes

Refer to D.2 of Stable Agreements.

Creation of New Subclasses

Refer to D.2.1 of Stable Agreements.

Creation of New Attributes

Refer to D.2.2 of Stable Agreements.

DIT Structure Rules

Refer to D.3 of Stable Agreements.

Annex (informative)

Template for an Application Specific Profile for Use of the Directory

Refer to Annex E of Stable Agreements.

Annex (informative)

Bibliography

Refer to Annex F of Stable Agreements.
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2 Working Implementation Agreements for Open Systems Interconnection Protocols: Part 12 - OS Security

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

Acting SIG Chair: **Richard Harris, The Boeing Company**
SIG Editor: **Dr. Mohammad Mirhakkak, MITRE**

Foreword

This part of the Working Implementation Agreements was prepared by the Security Special Interest Group (SECSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject. This part has been reformatted from the previous release.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as . New and replacement text will be shown as shaded.

Table of Contents

List of Figures

List of Tables

Part 12 - Security

0 Introduction

Refer to clause 0 of the Stable Implementation Agreements.

Scope

Normative References

Refer to clause 2 of the Stable Implementation Agreements.

Definitions

Editor's Note - This clause will contain all unique terms used in this part, to be determined.

Refer to ISO 7498/2 for definitions of security relevant terms. This base standard contains detailed descriptions of accepted security terms. Refer to ISO TR-10000 for general ISO definitions used in this part. The following security terms are not defined in ISO 7498/2:

Authentication;

Mechanism;

Profile.

Editor's Note - The above terms will be defined as a work item.

Symbols and Abbreviations

Application Architectures

(See Stable Document).

Introduction

(See Stable Document).

Application Environments

(See Stable Document).

Security Classes

(See Stable Document).

Guidelines for OIW Application Profile Development

Placement of Security Services

The following guidelines are provided for other OIW SIGs to use in the preliminary development of their own application specific security profile. It is intended that final completion of the security profiles should be done in a joint manner between the Security SIG and the other OIW SIGs.

Editor's Note - Item a of the following paragraph will be considered for deletion at the next Security SIG meeting.

The steps in the guidelines are as follows:

Start with the base Profile (5.3.1);

Perform application specific threat analysis. Map the result of this analysis to security services;

Map security services onto application specific security services (e.g., the threats identified for MHS in X.402 are mapped against MHS specific security services);

Map security services to mechanisms that will be used to provide the services;

Describe the security classes and map them to the defined functional groups.

Editor's Note - Steps f and beyond are TBD. It will require further discussion to decide exactly how the application specific security profile is finally determined, how those profiles can be specified (security context, object identifier?) and how we will specify the mechanisms of choice for the implementation of the profile. Further discussion is needed on Security Policy. This is a priority work item.

Selection of Mechanisms

Table 2 defines the security mechanisms to use in providing security services to protect against the defined threats.

Table 2 - Base Security Services/Mechanisms

SECURITY SERVICES	SECURITY MECHANISMS: ENCYPHER	DIG. SIG.	ACC. CTRL.	DATA INTG.	AUTH EX.	TRFF PAD.	RT. CTRL	NOT-IZE.	AUD-IT
AUTHENTICATION	X	X			X				1
ACCESS CONTROL			X		X				1
NON-REPUDIATION		X		X				X	1
DATA INTEGRITY	X			X					1
CONFIDENTIALITY	X					X	X		1

NOTE - The security mechanisms of auditing can be used to provide added security to any security service.

Table 3 defines the security mechanisms to use in providing security services to protect against the defined threats.

Table 3 - Distributed Transactions Security Services/Mechanisms

SECURITY SERVICES		SECURITY MECHANISMS: ENCY- PHER	DIG. SIG.	ACC. CTRL.	DATA INTG.	AUTH EX.	TRFF PAD.	RT. CTRL	NOT- IZE.	AUD- IT
AUTH.	DIALOG					X				
	ASSOCIATION	X	X			X				1
ACCESS CONTROL	DIALOG			X						
	ASSOCIATION			X						1
NON-REPUDIATION			X						X	1
DATA INTEGRITY		X	X		X					1
CONF.	CL	X						X		1
	TRAFFIC FLOW	X					X	X		1

NOTE - The security mechanisms of auditing can be used to provide added security to any security service.

Key Management

Refer to Part 12, clause 6 of the Stable Implementation Agreements.

Security Algorithms

(See the Stable Document).

Message Digests

(See Stable Document)

MDC-2

Editor's Note - This clause will be moved to SIA in December 1993

This is a DES-based hash function [ac] in which the output of each block encryption is fed back as keying material for the next block. It outputs a 128 bit digest.

```
mdc-2 ALGORITHM
PARAMETER NULL
::= { algorithm 19 }
```

Reversible Public Key Algorithms

(See Stable Document).

Irreversible Public Key Algorithms

(See the Stable Document)

El Gamal

(See the Stable Document)

DSA

The NIST Digital Signature Algorithm (DSA)[aa] is a variant of ElGamal which produces a shorter signature size. Its object identifier is:

```
dsa ALGORITHM
PARAMETER DSAParameters
::= { algorithm 12 }
```

The ASN.1 data element subjectPublicKey defined as BIT STRING should be interpreted in the case of DSA as being of type:

```
DSAPublicKey ::= INTEGER

DSAParameters ::= SEQUENCE {
        modulusLength   INTEGER,
        prime1          INTEGER,        -- p
        prime2          INTEGER,        -- q
        base            INTEGER }       -- g
```

The DSAPublicKey is simply an INTEGER, which is encapsulated in the subjectPublicKey BIT STRING in the obvious way: The MSB of the INTEGER becomes the MSB of the BIT STRING, and the LSB of the INTEGER becomes the LSB of the BIT STRING.

In [X.509], the value associated with the ENCRYPTED MACRO (i.e. the signature value) should be interpreted in the case of DSA as being of type:

```
SEQUENCE {
        r INTEGER,
        s INTEGER }
```

DSA with Common Parameters

This version of DSA uses common parameters which are distributed externally. The DSAPublicKey is till an INTEGER as described in the DSA case. The algorithm's object identifier is:

```
dsaCommon ALGORITHM
        PARAMETER NULL
::= { algorithm 20 }
```

Key Exchange

(See the Stable Document).

Diffie-Hellman

Diffie-Hellman with Common Parameters

RSA Key Transport

RSA key transport is used only for encipherment, typically for transporting symmetric keys. It uses the type 2 padding mechanism of [g]; other padding mechanisms (e.g., those used for signature) are not valid. The algorithm's object identifier is:

```
rsaKeyTransport ALGORITHM
        PARAMETER NULL
::= { algorithm 22 }
```

Signature Algorithms

(See the Stable Document).

Message Digests with RSA

(See the Stable Document).

Message Digests with RSA Encryption

(See the Stable Document).

DSA With SHA

This signature algorithm produces a 320-bit signature. SHA is the only hash algorithm which may be used with DSA. Its object identifier is

```
dsaWithSHA ALGORITHM
        PARAMETER DSAParameters
::= { algorithm 13)
```

DSA With SHA with Common Parameters

This version DSA with SHA signature algorithm uses common parameters which are distributed externally. Its object identifier is

```
dsaCommonWithSHA ALGORITHM
        PARAMETER NULL
::= { algorithm 21)
```

RSA Signature With MDC-2

Editor's Note - This clause will be moved to SIA in December 1993

This algorithm uses the RSA Signature algorithm to sign the digest produced by the MDC-2 DES-based hash algorithm. Its object identifier is

```
mdc2WithRSASignature
PARAMETER NULL
::= { algorithm 14 }
```

RSA Signature With SHA

(See the Stable Document).

Symmetric Encryption Algorithms

(See the Stable Document).

Data Encryption Standard

Padding Rules for DES

Editor's Note - This clause will be moved to SIA in December 1993. It will be placed between DES-EDE, clause 7.6.1.6, and RC2-CBC, clause 7.6.2

This section describes some useful padding mechanisms for DES in its various modes of operation, for the case where the input is not a multiple of 8 bytes in length.

RFC 1423 Mechanism

The following padding mechanism from [w] should be used with DES-CBC if the data to be encrypted is octet aligned, unless the security policy dictates otherwise:

The input to the DES CBC encryption process must be padded to a multiple of 8 octet, in the following manner. Let n be the length in octets of the input. Pad the input by appending 8-(n mod 8) octet to the end of the message, each having the value 8-(n mod 8), the number of octets being added. In hexadecimal, the possible paddings are: 01, 0202, 030303, 04040404, 0505050505, 060606060606, 07070707070707, and 0808080808080808. All input is padded with 1 to 8 octets to produce a multiple of 8 octets in length. The padding can be removed unambiguously after decryption.

ASN.1

(See the Stable Document).

Security Attributes

This section identifies some useful security attributes which are defined in ANSI X9.30 Part 3, "Certificate Management for DSA."

Liability Limitation

```
LiabilityLimitation ::= CHOICE {
        no-liability        [0]    NULL,
        full-liability      [1]    NULL,
        monetary-limit      [2]    MonetaryValue }
MonetaryValue ::= SEQUENCE {
        currency            [0]    PrintableString (SIZE 3),   -- per ISO 4217
        amount              [1]    INTEGER}
```

This attribute defines the limits of a CA's liability in the event of key compromise, etc.

```
liability-limitation ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX LiabilityLimitation
        SINGLE VALUE
        ::= id-liability-limitation
```

Binding Information

```
BindingInformation ::= SEQUENCE {
        methodOfDelivery            [0] DeliveryMethod,
        methodOfIdentification      [1] IdentificationMethod,
        entityType                  [2] EntityType }

DeliveryMethod ::= ENUMERATED {
        not-presented-in-person (0),
        presented-in-person (1),
        presented-by-authorized-agent (2),
        split-knowledge (3),
        other (4) }

MethodOfIdentification ::= SEQUENCE {
        IdentificationMethod,
```

```
        SEQUENCE OF IdentificationDocument }

IdentificationMethod ::= ENUMERATED {
        reasonable-commercial-practices (0),
        verified-by-trusted-third-party (1),
        dual-control (2),
        other (3) }

IdentificationDocument{ID-Documents} ::= SEQUENCE {
        documentType            ID-DOC.&id({ID-Documents}),
        documentID              ID-DOC.&Type({ID-Documents},
                                {@documentType}) }

ID-DOC ::= TYPE-IDENTIFIER
drivers-license ID-DOC ::= { PrintableString IDENTIFIED BY
        { id-doc-drivers-license } }

passport ID-DOC ::= { PrintableString IDENTIFIED BY
        { id-doc-passport } }

alien-registration ID-DOC ::= { PrintableString IDENTIFIED BY
        { id-doc-alien-registration } }

birth-certificate ID-DOC ::= { PrintableString IDENTIFIED BY
        { id-doc-birth-certificate } }

EntityType ::= ENUMERATED {
        individual (0),
        corporation (1),
        government (2),
        other (3) }
```

This attribute indicates the criteria used to bind the credentials to the identity of the entity being certified.

```
binding-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX BindingInformation
        SINGLE VALUE
```

```
        ::= id-binding-information
```

Certificate Purpose

```
CertificatePurpose ::= ENUMERATED {
        any (0),
        encipherment (1),        -- key transport
        signature (2) }
```

This attribute indicates what functions the public key contained in the certificate may be used for.

```
certificate-purpose ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX CertificatePurpose
        SINGLE VALUE
        ::= id-certificate-purpose
```

Signature Purpose

The Signature Purpose attribute indicates the purpose of the originator in applying a signature to a document (e.g., authorizing the document, witnessing another signer's signature, etc.).

```
signaturePurpose ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX OBJECT IDENTIFIER
::= { attribute 15 }
```

Values for the attribute will be registered at a later date.

Role Name

The Role Name attribute type specifies the designated FUNCTION of an object (generally a human) WITHIN the organization.

Example:

Role="Program Manager, X.500 Project"
Role="Principal Investigator, X.520 Anomalies and Defects"

```
roleName ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX caseIgnoreStringSyntax
        (SIZE (1..ub-common-name))
::= { attribute 16 }
```

Agent Name

The Agent Name attribute specifies the FUNCTION of an object whose actions have consequences OUTSIDE of the organization, and are authorized in some sense to speak for, commit, or bind the organization.

Example:

Agent="Chief Financial Officer"
Agent="Purchasing Agent"
Agent="Corporate Spokesperson"

```
agentName ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX caseIgnoreStringSyntax
        (SIZE (1..ub-common-name))
::= { attribute 17 }
```

Document Types

Document type OIDs are needed for the binding information attributes. Associated data types for the OIDs can be found in Appendix E of ANSI X9.30 Part 3.

```
doc-type ID ::= { iso(1) identified-organization(3) oiw(14)
```

```
secsig(3) doc-type(6) }
id-doc-drivers-license ID ::= { doc-type 1 }
id-doc-passport ID ::= { doc-type 2 }
id-doc-alien-registration ID ::= { doc-type 3 }
```

Trusted Third Party

```
TrustedThirdParty ::= SEQUENCE {
        partyType   ThirdPartyType,
        thirdParty  Name }        -- or SubjectName?

ThirdPartyType ::= ENUMERATED { notary(0), witness(1),
        guardian(2), legal-custodian(3) }
```

This attribute is used when the identification process uses such an entity, e.g. to present identification documents. This allows a complete trail to be constructed from the top-level CA through all involved parties to the certificate subject.

```
trusted-third-party ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX Name
        ::= id-trusted-third-party
```

Cosignature Requirements

This attribute defines any additional signatures required on a certificated signed by the CA to which the attribute refers. It is used to enforce the multiple signature requirement for high-risk applications.

```
CosignatureRequirements ::= SEQUENCE {
        quorum     [0]   INTEGER { allMembers(0) },
        members    [1]   SEQUENCE OF CosignerEntry }

CosignerEntry ::= CHOICE {
        single     [0]   Cosigner,
```

```
	list		[1]	CosignatureRequirements }

Cosigner ::= SEQUENCE {
	cosigner	CosignerID,
	weight		INTEGER DEFAULT 1 }

CosignerID ::= CHOICE {
	name		[0]	CosignerName,
	issuerSerial		[1]	IssuerSerial }

CosignerName ::= SEQUENCE {
	nameName,
	uniqueID	BIT STRING OPTIONAL }

IssuerSerial ::= SEQUENCE {
	issuer		Name,
	serial CertificateSerialNumber }

cosignature-requirements ATTRIBUTE
	WITH ATTRIBUTE-SYNTAX CosignatureRequirements
	SINGLE VALUE
::= id-cosignature-requirements
```

Relative Identity

A CA may wish to certify only a portion of a name of an individual in a normal business setting. E.g., the CA may wish to disclaim liability for correctness of an individual's personal name, since the user's signature is binding on the organization in any event. In such a case, the CA would only vouch for the correctness of the organizational part of the user's distinguished name.

```
RelativeIdentity ::= INTEGER
-- number of certified RDNs in the DN

relative-identity ATTRIBUTE
```

```
        WITH ATTRIBUTE-SYNTAX RelativeIdentity
        SINGLE VALUE
::= id-relative-identity
```

Trust Specification

One can specify the trust in a given CA with the following ASN.1 type.

```
Trust ::= SIGNED SET {   -- signed by the user
        cross [0]    CrossCertify OPTIONAL,
        users [1]    Users OPTIONAL }
```

The two components answer the questions:

a) Which CAs may the CA cross certify?, and
b) Which users may the CA certify?

```
CrossCertify ::= SEQUENCE OF CrossCertifyEntry

CrossCertifyEntry ::= SEQUENCE {
        crossSpec       CrossSpecification,
        trustLevel      [0]    INTEGER OPTIONAL,
        transitive      [1]    INTEGER DEFAULT 0 }

CrossSpecification ::= CHOICE {
        superior        [0]    NULL,   -- my immediate superior
        ancestors       [1]    NULL,   -- all superiors
        subordinates    [2]    NULL,   -- normal CA hierarchy
        descendants     [3]    NULL,   -- any descendant CA
        name      [4]   Name,   -- individual CAs
        group           [5]    Name,   -- group of names (of CAs)
        subtree         [6]    Subtree }   -- all CAs in a subtree
```

The list of CAs which may be cross certified may include CA names, directory subtrees (possibly containing a hierarchy of CAs), group names where the (non hierarchical) group is a list of CA names, and various CAs whose names bear a relationship to the name of the CA in question:

a) the immediate superior CA or all superior CAs (up to the TLCA);
b) all immediately subordinate CAs; and
c) all subordinate CAs at any depth.

An explicit level of trust may be specified, as well as an indication of whether cross-certification applies transitively, i.e. if certificates in a domain which is cross-certified by the CA named in the entry will be trusted. Transitivity is indicated by specifying the number of cross certificates which may be in a chain rooted on the specified CA, i.e. the number of domain boundaries crossed.

The Subtree is defined in X.501 (1993).

```
Users ::= SEQUENCE OF UserEntry

UserEntry ::= SEQUENCE {
        userSpec        UserSpecification,
        trustLevel      [0]     INTEGER OPTIONAL,
        transitive      [1]     INTEGER DEFAULT 0 }

UserSpecification ::= CHOICE {
        subordinates    [0]     NULL,   -- my subordinates
        name        [1]     Name,   -- individuals
        group           [2]     Name,   -- group of names
        subtree         [3]     Subtree }   -- whole subtree
```

The users which a CA may certify may include (all) subordinates (a very common case), as well as individual names, names of groups (Directory entries which contain lists of user names), and subtrees as defined above.

```
trust-specification
        WITH ATTRIBUTE-SYNTAX  TrustSpecification
        SINGLE VALUE
::= id-trust-specification
```

Transaction Limit

This attribute represents the maximum monetary value of a message (transaction) which the entity may sign.

```
TransactionLimit ::= MonetaryValue

transaction-limit ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX TransactionLimit
::= id-transaction-limit
```

Transaction Type

This attribute represents a transaction type which the entity may sign. (Multiple values of the attribute may be present.)

```
TransactionType ::= OBJECT IDENTIFIER

transaction-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX TransactionType
::= id-transaction-type
```

Time Of Day

This attribute describes the time periods during which signatures from this entity are considered valid.

```
TimeConstraint ::= SEQUENCE {
        daysOfWeek      BIT STRING { sunday(0), monday(1),
                        tuesday(2), wednesday(3), thursday(4),
                        friday(5), saturday(6) },
        intervalsOfDay  IntervalsOfDay }

IntervalsOfDay ::= SET OF SEQUENCE {
        intervalStart   Time24,
        intervalEndTime24 }
```

```
Time24 ::= SEQUENCE {
        hour        INTEGER (0..23),
        minute      INTEGER (0..59) }

time-of-day ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX TimeConstraint
::= id-time-of-day
```

Location

This attribute indicates the valid location(s) a transaction may be submitted from.

```
Location ::= CHOICE {
        [0]   PresentationAddress,
        [1]   IPAddress,
        [2]   X121Address }

IPAddress ::= OCTET STRING (SIZE 6)
```

PresentationAddress and X121Address are defined in X.520.

```
location ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX Location
::= id-location
```

Authorized Signatory

This attribute may be used in the attribute certificate of an organizational entity to formally indicate the identities of individuals authorized to sign for the organization.

```
AuthorizedSignatory ::= Name

authorized-signatory ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX AuthorizedSignatory
```

```
::= id-authorized-signatory
```

Pre-approved Counter Party

This attribute may be used to indicate entities with which the certified entity is pre-authorized to conduct financial transactions (e.g., customers or suppliers).

```
PreApprovedCounterParty ::= Name

preapproved-counterparty ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX PreApprovedCounterParty
::= id-preapproved-counterparty
```

Delegation Controls

This attribute may be used to indicate the amount of "authority" an entity may delegate to another entity when issuing an attribute certificate.

```
DelegationControl ::= SEQUENCE {
        delegation  Delegation,
        limit       TransactionLimit,
        types       SET OF TransactionType }

delegation ::= ENUMERATED {
        exercise (0),       -- may not delegate
        deputy (1),  -- may delegate exercise of authority
        officer (2),  -- may subdelegate up to deputy
        master (3) }        -- may delegate anything

delegation-control ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DelegationControl
::= id-delegation-control
```

Lower Layers Security

Upper Layers Security

Refer to Part 12, clause 9 of the Stable Agreements Document.

Security Mechanisms

Peer Entity Authentication

ACSE authentication extensions [ISO8649][ISO8650/1] support two-way authentication through the definition of a new functional unit. When this functional unit is employed, additional parameters are provided by the A-ASSOCIATE service to indicate this requirement and convey authentication information between entities. The ASN.1 definition for this information is given below:

from [ISO8650/1]:

```
Mechanism-name ::= OBJECT IDENTIFIER
      --This field shall be present if authentication-value is of type ANY.
Authentication-value   :=  CHOICE {
      charstring            [0] IMPLICIT GraphicString,
      bitstring       [1] IMPLICIT BIT STRING,
      external        [2] IMPLICIT EXTERNAL,
      other                 [3] IMPLICIT SEQUENCE {

                other-mechanism-name Mechanism-name,
                other-mechanism-value ANY DEFINED BY
                        other-mechanism-name }}


      -- The abstract syntax of authentication-value is determined by the
      -- authentication-mechanism used during association establishment. The
      -- authentication-mechanism is either explicitly denoted by the OBJECT IDENTIFIER
```

```
-- value for Mechanism-name, or it is know implicitly by prior agreement between
-- the communicating partners.  If "other" is chosen, then "Mechanism-name"
-- must be present in accordance with ISO 8824.
```

These agreements define the following mechanisms for use with this ACSE functional unit:

simple-strong authentication mechanism.

Simple-Strong Authentication

External Authentication Mechanisms

Kerberos Version 5

One instance of an external authentication mechanism is the Kerberos mechanism defined in [z]. The Kerberos specification assigned the following object identifier to an abstract syntax suitable for use in this way:

```
kerberos-V5      OBJECT IDENTIFIER ::= { iso(1) org(3) dod(6)
                        internet(1) security (5) kerberosV5 (2) }}
```

Kerberos Version 4

One instance of an external authentication mechanism is the Kerberos mechanism defined in [ai]. The Kerberos specification assigned the following object identifier to an abstract syntax suitable for use in this way:

```
kerberos-V4      OBJECT IDENTIFIER ::= { iso(1) org(3) dod(6)
                        internet(1) security (5) kerberosV4 (1) }
```

Integrity/Data Origin Authentication Transformation

(See the Stable Document)

Message Handling System (MHS) Security

All current MHS security relevant text appears in Part 8.

Directory Services Security

Network Management Security

Threats

Refer to clause 12.1 of the Stable Implementation Agreements.

Security Services

Refer to clause 12.2 of the Stable Implementation Agreements.

Security Mechanisms

Peer-Entity Authentication

Refer to 12.3.1 of the Stable Implementation Agreements.

Connectionless Integrity

In order to identify whether changes to a data unit have occurred it is proposed that an integrity check value (ICV) be computed over the entire data unit and included in the protocol control information for that data unit. The specification and location for conveying this information is left for further study. Because of the envisaged relationship between the underlying mechanisms employed for data origination authentication and connectionless integrity, they are to be considered jointly.

Data Origination Authentication

The proposed security mechanism for data origination authentication is encipherment and intended to protect the ICV computed for connectionless integrity. Successful peer authentication results in the establishment of a cryptographic association between network management entities. The association allows the originator of a data unit to encrypt it or portions of it, and have the peer recipient verify origination through decryption. In order to minimize computational effort, it is proposed that only the integrity check value be enciphered (i.e., a signature) rather than the entire data unit.

This approach implies that data origination authentication information resides with the integrity check value, and that an according ASN.1 definition reflect any requirements of the signing algorithm or choice of algorithm. However, there appears to be no appropriate location in the application layer protocols employed by network management to convey such data origination authentication information. This issue is left for further study.

Connectionless Confidentiality

Annex (normative)

ISPICS Requirements List

Annex (normative)

Errata

Table 4 - WIA Part 12 Changes

NO. OF ERRATA	TYPE	REFERENCED DOCUMENT	CLAUSE	NOTES
	TECHNICAL	WIA PART - 13	12	ADDED NEW
	TECHNICAL	WIA PART - 13	11	ADDED NEW
	TECHNICAL	WIA PART - 13	5.2/.3	ADDED NEW
	TECHNICAL	WIA PART - 13	8	ADDED NEW
	TECHNICAL	SIA PART - 12	0..12	ADD OUTLINE 2ND LEVEL
	TECHNICAL	SIA PART - 12	9	ADD TEXT
	TECHNICAL	SIA PART - 12	12.1.2	ADD TEXT
	TECHNICAL	SIA PART - 12	12.2.2	ADD TEXT
	TECHNICAL	SIA PART - 12	12.4.1/.2	ADD TEXT

Annex (normative)

Security Labels

Editor's Note - Agreements about security labels is a future work item.

Annex (normative)

Security Algorithms and Attributes

```
OIWSECSIGAlgorithmObjectIdentifiers  { iso(1) identified-organization(3)
                                        oiw(14) secsig(3)
                                        oIWSECSIGAlgorithmObjectIdentifiers(1)}
DEFINITIONS =
BEGIN

EXPORTS
-- to be determined

IMPORTS
-- none

-- category of information object
-- defining our own here; perhaps the definition should be imported from
-- { joint-iso-ccitt ds(5) modules(1) usefulDefinitions(0) }
-- This annex contains OIW registrations only; refer to section 7 algorithm
-- descriptions algorithms IDs.

algorithm    OBJECT IDENTIFIER ::= { iso(1) identified-organization(3)
                                     oiw(14) secsig(3) algorithm(2) }



-- macros

-- taken from { joint-iso-ccitt ds(5) modules(1) authenticationFramework(7) }
ALGORITHM MACRO     ::=
BEGIN
TYPE NOTATION           ::= "PARAMETER" type
VALUE NOTATION::= value(VALUE OBJECT IDENTIFIER)
END -- of ALGORITHM
```

```
-- algorithms

md4WithRSA ALGORITHM
  PARAMETER NULL
  ::= { algorithm 2 }

md5WithRSA ALGORITHM
  PARAMETER NULL
  ::= { algorithm 3 }

md4WithRSAEncryption ALGORITHM
  PARAMETER NULL
  ::= { algorithm 4 }


desECB ALGORITHM
  PARAMETER NULL
  ::= { algorithm 6 }

desCBC ALGORITHM
  PARAMETER CBCParameter
  ::= { algorithm 7 }

CBCParameter ::= IV

desOFB ALGORITHM
  PARAMETER FBParameter
  ::= { algorithm 8 }

desCFB ALGORITHM
  PARAMETER FBParameter
  ::= { algorithm 9 }

FBParameter ::= SEQUENCE {
  iv IV,
```

```
  numberOfBits NumberOfBits}

NumberOfBits ::= INTEGER    -- Number of feedback bits (1 to 64 bits)
```

Editor's Note - Check FIPS PUB 81 for allowed ranges of feedback bits and specify ranges here as a comment.

```
IV ::= OCTET STRING  -- 8 octets

desMAC ALGORITHM
  PARAMETER MACParameter
  ::= { algorithm 10 }

MACParameter ::= INTEGER    -- Length of MAC (16, 24, 32, 40, 40 or 64 bits)
```

Editor's Note - Check FIPS PUB 113 for allowed

```
rsaSignature ALGORITHM
      PARAMETER NULL
      ::= { algorithm 11 }

dsa ALGORITHM
      PARAMETER DSAParameters
      ::= { algorithm 12 }

dsaWithSHA ALGORITHM
      PARAMETER DSAParameters
      ::= { algorithm 13}

mdc2WithRSASignature
      PARAMETER NULL
      ::= { algorithm 14 }

shaWithRSASignature
```

```
      PARAMETER NULL
      ::= { algorithm 15 }

dhWithCommonModulus ALGORITHM
      PARAMETER NULL
      ::= { algorithm 16 }

desEDE ALGORITHM
      PARAMETER NULL
      ::= { algorithm 17 }
sha ALGORITHM
      PARAMETER NULL
      ::= { algorithm 18 }

mdc-2 ALGORITHM
      PARAMETER NULL
      ::= { algorithm 19 }

dsaCommon ALGORITHM
        PARAMETER NULL
    ::= { algorithm 20 }

dsaCommonWithSHA ALGORITHM
      PARAMETER NULL
      ::= { algorithm 21)

      rsaKeyTransport ALGORITHM
                PARAMETER NULL
      ::= { algorithm 22 }

      keyed-hash-seal ALGORITHM
                PARAMETER NULL
      ::= { algorithm 23 }

authentication-mechanism OBJECT IDENTIFIER ::=
      { iso(1) identified-organization(3) oiw(14) secsig(3) auth-mechanism(3) }
```

```
attribute OBJECT IDENTIFIER ::=
      { iso(1) identified-organization(3) oiw(14) secsig(3) attribute(4) }
id-liability-limitation OBJECT IDENTIFIER ::= { attribute 1 }
id-binding-information OBJECT IDENTIFIER ::= { attribute 2 }
id-trusted-third-party OBJECT IDENTIFIER ::= { attribute 3 }
id-cosignature-requirements OBJECT IDENTIFIER ::= { attribute 4 }
id-certificate-purpose OBJECT IDENTIFIER ::= { attribute 5 }
id-relative-identity OBJECT IDENTIFIER ::= { attribute 6 }
id-trust-specification OBJECT IDENTIFIER ::= { attribute 7 }
id-transaction-limit OBJECT IDENTIFIER ::= { attribute 8 }
id-transaction-type OBJECT IDENTIFIER ::= { attribute 9 }
id-location OBJECT IDENTIFIER ::= { attribute 10 }
id-time-of-day OBJECT IDENTIFIER ::= { attribute 11 }
id-authorized-signatory OBJECT IDENTIFIER ::= { attribute 12 }
id-preapproved-counterparty OBJECT IDENTIFIER ::= { attribute 13 }
id-delegation-control OBJECT IDENTIFIER ::= { attribute 14 }

doc-type OBJECT IDENTIFIER ::=
      { iso(1) identified-organization(3) oiw(14) secsig(3)
      doc-type(5) }

id-doc-drivers-license OBJECT IDENTIFIER ::= { doc-type 1 }
id-doc-passport OBJECT IDENTIFIER ::= { doc-type 2 }
id-doc-alien-registration OBJECT IDENTIFIER ::= { doc-type 3 }
id-doc-birth-certificate OBJECT IDENTIFIER ::= { doc-type 4 }

module OBJECT IDENTIFIER ::=

    { iso(1) identified-organization(3) oiw(14) secsig(3) module (6) }
x9f1-certmgmt OBJECT IDENTIFIER ::= { module 1 }


END -- of Algorithm Object Identifier Definitions
```

Annex (normative)

References for Security Algorithms

(See the Stable Document).

Annex (informative)

Bibliography

(See the Stable Document).

Annex (normative)

El Gamal

Annex (informative)

STATUS

Table 5 - ISO Status

DOCUMENT	WD	CD	DIS	IS
ISO/IEC JTC1 SC21/WG1 N5044	X	X	X	6/91
NETWORK LAYER ISO/IEC JTC1 SC6	X	7/91		
TRANSPORT LAYER ISO/IEC JTC1 SC6	X	X	7/91	
LOWER LAYER ISO/IEC JTC1 SC6 6227	X			

NOTE - This table was not included in any motion presented to the Plenary in December 1990.

Annex (informative)

Security-SIG Management Plan

Table 6 - Management Plan

Document	Next Milestone	Date
ISO/IEC JTC1 SC21 N3614		
ISO/IEC DP 9796		
SDN-601/NIST IR 90-4262	COMPLETED	
SDN-701/NIST IR 90-4250	COMPLETED	
SDN-702/NIST IR 90-4250	COMPLETED	
ISO/IEC JTC1 SC21/WG1 N5002		
SDN-902/NIST IR 90-4262	COMPLETED	
SDN-903/NIST IR 90-4262	COMPLETED	
ISO/IEC JTC1 SC21/WG1 N4110		
SDN-301/NIST IR 90-4250	COMPLETED	
SDN-401/NIST IR 90-4250	COMPLETED	
SDN-906/NIST IR 90-4262	COMPLETED	
ISO/IEC JTC1 SC21/WG1 N5001		
ISO/IEC JTC1 SC21/WG1 F29 N5045		
ISO/IEC JTC1 SC21/WG1 F30		
ISO/IEC JTC1 SC21/WG1 F31 N5047		
ISO/IEC JTC1 SC21/WG1 F32 N5046		
ISO/IEC JTC1 SC21/WG4 N3775		
ISO/IEC JTC1 SC21/WG1 N4110		
ISO/IEC JTC1 SC21/WG7 N4022		

ISO/IEC JTC1 SC21/WG1 N5048		
ISO/IEC JTC1 SC21/WG1 N5049		
ISO/IEC JTC1 SC21/WG1 N5044	IS	6/91
NETWORK LAYER ISO/IEC JTC1 SC6	CD	7/91
TRANSPORT LAYER ISO/IEC JTC1 SC6 6285	DIS	7/91
LOWER LAYER ISO/IEC JTC1 SC6 6227	WD	N/A

Annex (informative)

Key Management

Many of the security services defined for use within OSI protocols and applications are provided by the use of cryptographic techniques. The use of these techniques requires that cryptographic keys are available.

Key management is the generic name covering the process required to ensure such availability.
A definition of the objective for key management is thus:

a) To provide suitable cryptographic keys to security services that require such keys in a secure and timely manner.

This area has been studied for a number of years and specific solutions produced to address needs in well defined situations; the defense and banking communities are examples.

The general problem of key management in a nonspecific OSI environment has not, however, been addressed. And hence OSI key management standards do not exist; whilst responsibility for them has been assigned, work to produce such standards is only just starting.

Definition of Key Management

Key management is the collection of procedures and services that support the generation, storage, transport, and destruction of cryptographic key material. Specifically, with respect to OIW agreements, key management supports the security services specified in the OIW protocol ISPs.

Tutorial on Key Management

This tutorial provides information on the role of key management within an overall security architecture. It addresses the requirements OSI security services place on key management. It describes the issues that arise specifically with regard to the administration of keying material, approaches to key distribution, and the relationship of these approaches to the requirements and concerns referred to above.

Requirements of Key Management

This section identifies the generic and specific requirement that security services and protocols place on key management.

a) Symmetric (private, single key);

All parties belong to the same cryptographic network and hold the same private key which is known only to the members of that network. This one key is used by all members for both encryption and decryption. The network can be as small as 2, or as large as thousands. However, to minimize damage in the event the key is broken, the network size is kept small.

b) Asymmetric (public, two key);

There is no cryptographic network as in the sense of symmetric keying. Each user holds two keys: an encrypt and a decrypt. The decrypt key is private and known only to the holder. Each user's encrypt key is also placed at a point of public access where all other users can obtain it. A user who wishes to send encrypted information to another user would RETRIEVE the intended recipient's public encrypt key from the common storage area and use it to encrypt the information to be sent to the recipient. The recipient would then use his own private decrypt key to decrypt the information.

c) Intermediary

This key scheme is one in which each user holds his own private key known only to himself and to a trusted intermediary. The users encrypt information to be sent to the intended recipient using his private key and then sends it to the intermediary. The intermediary decrypts the information using the user's private key, re-encrypts the information using the intended recipient's private key, and sends the information to the intended recipient. The intended recipient then decrypts the information using its own private key.

Key Administration

One of the primary tasks of key management is the administration of keying material. There are several general issues which arise in this context.

Generation

Key management is responsible for ensuring the availability of keys when required. The provision of cryptographic keys may be by a process internal to [the] key management [system] or by an external process.

Generated keys must be suitable for use by the key requestor. This suitability is determined by the cryptographic algorithm to be used by the requestor.

Validation

TBD

Expiration

Key management must have provision for expiring keys, including time limit expiration and expiration due to compromise.

Audit

Key management must maintain an audit trail of its activities. There must be capabilities for reporting this information in an appropriate fashion.

Authorization/Authentication

Key management may require the requesting security service authentication itself to key management to determine the validity of the request.

Approaches to Key Distribution

There are several extant approaches to key management. These include public key and certificate methods, symmetric key techniques, and proposals to use network management for toy manager.

Symmetric

Network management provides an alternate view of key management. The basic approach here is to treat keying material as management information to be manipulated.

There are two ways to structure this. The security services could generate a "key management event" and the key management service could respond with a keying material. There are difficulties with this because the difficulty in assuring event delivery.

Alternatively, the security services could be seen as the manager generating get and put commands to enable the communication of keying material.

The largest concern with this approach is that unless combined with one of the others, one merely re-introduces the key-management problem in order to provide peer-entity authentication, integrity, and confidentiality for the key exchange.

Certificate

Symmetric Generation

Centralized

External

Asymmetric

Public key techniques are mostly commonly used for authentication and data integrity where the amount of information being protected is relatively small. These can also be used as an underlying mechanism to implement a symmetric private key exchange.

Public key technology can also be coupled with certificates or other methods of relating public keys to identifies. Doing this provides peer entity authentication based on the strength of the relationship between keys and identities. Directory stored certificated (possibly with local caching) are an example of a method of this type.

Certificate

Centralized

External

Key Management Architectures

Existing Systems

SDNS

SILS

ANSI X9.17

Kerberos

OSI

TBD

Current Issues

Related Organizations

ANSI X.9

SC21

SC27

IEEE 802.10

References

Annex (informative)

Base Environment Threats

Table 7 defines the services required to protect against various threats in a Base Environment.

Each X in the table identifies a security service which offers protection against the corresponding threat.

Table 7 - Threats to Sevices

THREAT	SECURITY SERVICES AUTH.	ACC. CTRL	DATA CONF.	DATA INTEG.	NON-REPUD.
MASQUERADE	X				
REPLAY			X	X	
MODIFICATION OF MESSAGE		X		X	
DENIAL OF SERVICE		X		X	
TRAP DOOR		X		X	
TROJAN HORSE		X	X	X	

DISCLOSURE			X	X		
REPUDIATION						X

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 14 - Virtual Terminal

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Michelle Conaway, HFSI**
SIG Editor: **Michelle Conaway, HFSI** Workshop Editor: **Brenda Gray**

Foreword

This part of the Working Implementation Agreements was prepared by the Virtual Terminal Special Interest Group (VTSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject.

Only the pages that were changed in December 1992 are being printed. Please refer to the September 1992 Working Document for additional information.

Three normative annexes are given.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as strikeouts. New and replacement text will be shown as shaded.

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Part 14 ISO Virtual Terminal Protocol

Editor's Note - References to Stable Agreements in this part refer to Version 5.

0 Introduction

See Stable Agreements.

Scope

Phase Ia agreements

See Stable Agreements.

Phase Ib agreements

See Stable Agreements regarding Forms profile.

Phase II agreements

See Stable Agreements regarding X.3 profile, Generalized Telnet profile and the S-mode Paged Application Profile.

Phase III agreements

Develop ISPs for A-mode Generalized Telnet profile, A-mode Transparent profile, S-mode Forms profile, S-mode Paged profile, and associated control objects.

Develop interoperability test cases for the Generalized Telnet profile.

Develop an ISP for Use of Directory by Vt entities.

Develop conformance tests for the Generalized Telnet profile.

Normative references

See Stable Agreements.

Status

These agreements are being done in phases. Below is the current status of each phase.

Status of phase Ia

The Phase Ia Agreements, which include the profiles for Telnet and Transparent operation, are complete and were stabilized in May, 1988. See Stable Agreements.

Status of phase Ib

The Forms profile of Phase 1b was stabilized in December, 1988. Alignment with EWOS Forms profile was achieved in September, 1989. See Stable Agreements.

Status of phase II

The S-mode Paged Application Profile is being progressed as PDISP 11187-2 (AVT-23 S-mode Paged Application Profile).

The X.3 profile was stabilized in December 15, 1989.

The Generalized Telnet profile was stabilized in December 13, 1991.

It is intended that Phase II agreements be compatible with Phase I agreements.

Status of phase III

Phase III is still in progress and includes the remaining work on the Generalized Telnet interoperability test cases, VT use of directory, and the Generalized Telnet conformance tests.

The S-mode Forms and S-mode Paged VTE profiles and their associated control objects have been submitted to SGFS. The A-mode Generalized Telnet and A-mode Transparent VTE profiles and their associated control objects have been approved by the regional workshops for submission to SGFS.

The S-mode Forms and Paged Application profiles and the A-mode Generalized Telnet and Transparent Application profiles are awaiting approval by the regional workshops.

It is intended that Phase III agreements be compatible with those of the previous phases.

Errata

See Stable Agreements.

Conformance

See Stable Agreements.

Protocol

See Stable Agreements.

OIW registered control objects

Sequenced Application (SA)

See Stable Agreements.

Unsequenced Application (UA)

See Stable Agreements.

Sequenced Terminal (ST)

See Stable Agreements.

Unsequenced Terminal (UT)

See Stable Agreements.

OIW defined VTE-profiles

Telnet profile

See Stable Agreements.

Transparent profile

See Stable Agreements.

Forms profile

See Stable Agreements.

X3 profile

See Stable Agreements.

Generalized Telnet profile

See Stable Agreements

S-mode Paged Application profile

See Stable Agreements.

Annex (normative)

Specific ASE requirements

See Stable Agreements.

Annex (normative)

Clarifications

See Stable Agreements.

Annex (normative)

Object identifiers

See Stable Agreements for Object Identifiers assigned to objects in the Stable Agreements. Object Identifiers below have been assigned to objects for which work is still in progress.

General Identifiers:

oiw-vt-rep OBJECT IDENTIFIER ::= { oiw-vt repertoire(2) }

oiw-vt-font OBJECT IDENTIFIER ::= { oiw-vt font(3) }

oiw-vt-colour OBJECT IDENTIFIER ::= { oiw-vt colour(4) }

oiw-vt-directory OBJECT IDENTIFIER ::= { oiw-vt useOfDirectory(5) }

Annex (informative)

Recommended practice_Operating X Window System over OSI upper layers

This annex provides a "recommended practice" for the operation of the X Window System (X) over an OSI upper layer stack. The "recommended practice" provides an interim[7] solution for an area not addressed by base standards or existing profiles. This recommended practice reflects OIW agreement.

It is recommended that this interim solution be used when mapping X over an OSI upper layer stack. However, implementors should note the following_future specifications of the regional workshops may possibly result in different solutions than those proposed in this recommended practice.

Background

X is a graphical user interface standard which enables a user to view and gain access to multiple computer applications from a single window or multiple windows on a display screen. X is based on a client/server architecture which allows applications and resources to be distributed across a network.

The **X server** is a software program that is resident on a user's display unit that acts as an intermediary between the user and applications running on a local or remote system. The X server also maintains complex data structures such as specific windows, cursors and fonts which can be referenced and utilized by applications. Input from the keyboard and/or mouse is collected by the X-server and passed to local and/or remote applications for processing.

Applications are referred to as **X clients**. These applications access the display unit by sending messages to the X server which is then able to perform two dimensional drawing of lines, shapes and text.

X products are based on a de facto standard (MIT-X) maintained by the MIT X Consortium. However, this specification does not provide for the operation of X over OSI-based networks.

Two OSI mapping specifications were created to define the operation of X over an OSI upper layer stack: EWOS Technical Guide 13 (ETG13) and part 4 of ANSI dpANS X.196 (X3.196). Parts 1-3 were intended to define the X protocol. Part 4 was based on ETG13. .X3.196 never progressed beyond the draft proposal stage. ETG13 was approved by EWOS in 05/91.

[7] It is intended that this Recommended Practice will be progressed as an RWS technical report.

ETG13 explicitly defines:

the required OSI upper layer facilities;

the mapping of the OSI upper layer services for sending and receiving X protocol.

Since the creation of these documents, the ISO ISP 11188-3 *Common Upper Layer Requirements_Part 3: Minimal OSI upper layer requirements* (CULR-3) came into existence. CULR-3 defines the minimal set of OSI upper layer facilities for basic communications applications such as X.

Unlike ETG13, this specification does not itself specify the required upper layer facilities. Rather, it references CULR-3 to indicate the required OSI upper layer facilities. On the other hand, like ETG13, it specifies the mapping of X to the OSI upper layers services (ACSE, Presentation and Session). The mapping specified is compatible with that in ETG13.

This specification is intended to be as brief as possible. ETG13 includes additional guidance and explanatory material for implementors.

Mapping specification

This clause defines the mapping of the OSI ACSE (ISO 8649) and Presentation Layer (ISO 8822) services for sending and receiving X messages. This mapping uses the following ACSE and presentation services:

ASSOCIATE;

RELEASE;

ABORT;

A-P-ABORT;

P-DATA.

The required ACSE, presentation and supporting session facilities are discussed in clause D.3

For the purposes of this specification, the operation of X over the OSI upper layers is referred to as **X-osi**.

Summary of mapping

All the X protocol Request, Reply, Error and Event messages (i.e., the "X messages") use the encodings specified in MIT-X. The X messages are treated by this mapping as unstructured stream of octets. Any arbitrary sequence of consecutive octets can be treated as a single octet-aligned presentation data value this is transmitted as the user data on a Presentation P-DATA primitive. The OPEN DISPLAY Request and Reply messages are treated in the same way, and are carried on P-DATA. This mapping does not use the user data of the ACSE services.

The OSI upper layer stack supporting X-osi shall be mOSI compliant as defined in clause D.3.

Association establishment

The initiative for connection and association establishment is always with the X client. The X client establishes a new association with the desired X server by issuing an A-ASSOCIATE request. As part of the A-ASSOCIATE procedure, an OSI transport-connection is established to the X server system. The class of Transport protocol is out of scope of this specification. There is no requirement for X clients or X servers to re-use OSI Transport connections.

Once the transport-connection is established, an AARQ PDU carried in a Presentation Connect request (CP PPDU) that is in turn carried in a Session Connect request (CONNECT SPDU). The parameters shall include:

Application Context Name : This shall be the value "x-application context", defined in ETG13 and shown below:

Presentation Context Definition List : Shall include the ACSE presentation context and the X-osi presentation context, using the abstract and transfer syntax names defined in ETG13 and shown below. Other contexts may be offered (these may include synonyms or alternative names for X abstract or transfer syntax);

Presentation context identifiers shall be integers not greater than 255. This is a more severe restriction than ISO ISP 11188-1, Common Upper Layer Requirements_Part 1: Basic connection-oriented requirements (CULR-1), that permits 2-octet integers.

The user information field of the A-ASSOCIATE request shall be absent.

All other parameters are subject only to the requirements of mOSI compliance (see clause D.3).

If the X server accepts the association, the Application Context Name parameter on the A-ASSOCIATE response shall have the same value as that received on the indication. The ACSE and X-osi presentation contexts shall be accepted. If synonym abstract syntax or transfer syntax names for X-osi were offered and recognized, only one shall be accepted (i.e., following this exchange, there shall be a unique presentation context established for X-osi). The user information field of the A-ASSOCIATE response shall be absent.

Data exchange

As stated in the summary above, once the association is established, all X-messages are carried as user data on P-DATA primitives, each carrying a single PDV-list element containing a single "octet-aligned" presentation data value, which is some sequence of consecutive octets from one or more X-messages. No correlation is required between the PDVs (i.e. between successive P-DATAs) and the division between the X-messages : the division into PDVs is entirely at the sender's option. (Obviously, in practice there will be some correlation, but there is no requirement to achieve this, nor should receivers rely on it.)

Connection termination

A CLOSE DISPLAY request from an X client is mapped to an A-RELEASE request. After receiving an A-RELEASE indication, the X server responds with an A-RELEASE response. Neither the request or response primitive shall contain any User Information.

A KILL CLIENT request from another client results in the issue of an A-ABORT request by the X server. A protocol or internal procedural error in either the X client or the X server also results in the issue of an A-ABORT request. The A-ABORT indication will contain the Abort Source parameter with the value "ACSE service-user".

The receipt of an A-ABORT indication with the Abort Source parameter having the value "ACSE service-provider" indicates a failure in either the local or peer ACSE. The receipt of an A-P-ABORT indication indicates a failure in the supporting Presentation Layer or below.

Required OSI upper layer facilities.

X is a basic communications application as defined in the CULR-3. That is, it simply requires the ability to open and close communications with a peer and to send and receive messages with the peer. The required facilities of the OSI upper layers (Session, Presentation, and ACSE) are specified by stating the minimal mOSI compliance requirements as defined in the CULR-3.

mOSI compliance requirements depend on whether a system supports one or more X clients (requests an association) or X servers (accepts an association request).

X client mOSI compliance

An upper layer stack that supports an X client shall be mOSI compliant category I or category II.

An X client stack has the following minimal compliance requirement based on Table 2 in the CULR-3.

"Establishment role" shall have the value "Initiator" or "Both". An X client is always the association initiator; it is never an association-responder.

"Normal data role" shall have the value "Both". An X client shall be able to send or receive data.

"Release role" shall have the value "Requestor", or "Both". A CLOSE DISPLAY request is mapped to A-RELEASE.

"Authentication" shall have the value "Supported" or "Not supported". The X client - X server association does not use the ACSE Authentication functional unit.

"AC negotiation" shall have the value "Supported" or "Not supported". The X client - X server association does not use the ACSE Application context negotiation functional unit.

"All "m" parms sent and received and CULR-1 compliance?" shall have the value "Yes". If the value is "Yes", the stack is mOSI compliant, category I or category II.

"All "o" parms sent and received?" shall have the value "Yes" or "No." If the value is "Yes", the stack is category I. If the value is "No", the stack is of category II. In this case, the X client stack is only required to support the following features for sending(see Table 3).

_Called AE title

_ Form1 (Directory name)

X server mOSI compliance

An upper layer stack that supports an X server shall be mOSI compliant category I or category II. The X server stack has the following compliance requirement based on Table 2 in the CULR-3.

"Establishment role" shall have the value "Responder" or "Both". An X server is always the association responder; it is never an association-initiator.

"Normal data role" shall have the value "Both". An X server shall be able to send or receive data.

"Release role" shall have the value "Acceptor", or "Both". The receipt of an A-RELEASE indication indicates a CLOSE DISPLAY request from the X client.

"Authentication" shall have the value "Supported" or "Not supported". The X client - X server association does not use the ACSE Authentication functional unit.

"AC negotiation" shall have the value "Supported" or "Not supported". The X client - X server association does not use the ACSE Application context negotiation functional unit.

"All "m" parms sent and received?" shall have the value "Yes". If the value is "Yes", the stack is mOSI compliant, category I or category II.

"All "o" parms sent and received?" shall have the value "Yes" or "No". If the value is "Yes", the stack is category I. If the value is "No", the stack is of category II. No category II features are required for sending.

Object identifiers

Object identifiers used for this specification are assigned in ETG13.[8]

Application context for X-osi :
{iso(1) identified-organization(3) ewos(16) eg(2) vt(7)
x-osi(10) application-context(1) }

Abstract syntax name:
{iso(1) identified-organization(3) ewos(16) eg(2) vt(7)
x-osi(10) abstract-syntax-version-1(2) }

[8] These EWOS based object identifiers were also referenced in the last draft of X3.196_part 4.

Transfer syntax name:
{iso(1) identified-organization(3) ewos(16) eg(2) vt(7)
x-osi(10)
binary-transfer-syntax-version-1(3) }

Recommended encoding

It is recommended that the encoding of the Presentation PCI for the P-DATA follow a particular set of choices, among the optional features allowed by BER. This makes the P-DATA a (nearly) fixed header and allows implementations to be optimized to process this encoding. An implementation must be able to handle alternative encodings (i.e. any allowed by BER, subject to the restraints of CULR-1), within the mapping specification that each P-DATA carries a single octet-aligned presentation data value. The recommended encoding is :

the fully-encoded-data (SEQUENCE OF PDV-list) shall contain exactly one PDV-list;

both the SEQUENCE OF PDV-list and the PDV-list shall have indefinite length, but shall contain no levels of construction other than those required by the data types;

the length of the presentation-context-identifier value shall be expressed in short form;

the presentation-context-identifier value shall be encoded in one octet;

the OCTET STRING of presentation-data-values will contain a single presentation data value and shall have primitive encoding and

the (definite) length of this OCTET STRING shall be expressed in exactly four octets (i.e., the length itself will occupy three octets, prefixed by one octet which defines the length of this length).

These encoding choices mean that each TSDU user data consists of 16 octets of header, the X-message octets, and 4 octets of trailer (all zero). The length of the X-message segment is in the last three octets of the header.

This recommendation is identical to that in ETG13 except for the length field in (6). In ETG13 this is for a length of 1+4, not 1+3. This gives a 17-octet header. Since the X protocol, and many implementations go to some effort to get things on 4-byte boundaries, it is better to make this apply to X-osi as well. If a truly enormous P-DATA is needed i) the implementation is being very clever with its buffering; ii) it will have to use a longer length field; iii) the receiver is required to handle any legal encoding anyway.

Differences from ETG13

Abstract and transfer syntax names

In ETG13 the abstract and transfer syntax names are defined as names for the syntaxes defined in part II of X3.196, and ETG13 includes a copy of the April 1990 text for this. Since this is just a definition of the X data formats, there will be no problem in using them for X protocol as defined in MIT-X. ETG13 explicitly allows the extensibility features of X to be used without altering the syntax names.

Strictly speaking, X uses two transfer syntaxes, and the OPEN DISPLAY request defines which one will be used. The transfer syntax name defined in ETG13 covers both the "MSBfirst" and "LSBfirst" forms.

Application process title and application entity qualifier

ETG13 requires that the Called Application Process Title parameter on the A-ASSOCIATE request be a Directory Name (i.e. form1) in which the last RDN is the attribute value assertion CommonName=<displaynumber>, where <displaynumber> is a string representing the X Window System server number (and thus most commonly "0"), and that the Called Application Entity Qualifier be CommonName = "X-Window-System". The requirement was intended to facilitate X-osi : X-other relays, but this really requires integration with RFC 1275 to be general.

Although ETG13 requires these values it also recommends that implementations accept other values (or no value). Therefore there should be no interworking problems by omitting this requirement here.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 15 - Transaction Processing

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Jeff Hildebrand, Boeing Computer Services**
SIG Editor: **Jeff Hildebrand, Boeing Computer Services**

Foreword

This part of the Working Agreements was prepared by the Transaction Processing Special Interest Group (TPSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - General Information in the "Draft Working Agreements Document."

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing part on this subject. There is some change from this text as previously given. References are made to other section of both the Working and Stable agreements.

This part is submitted as camera-ready material. Redline and Strikeout were not used in this text. If you have any questions regarding this part, please call the TP SIG Chair.

> **Editor's Note -** Material in part 15 is being created and formatted as a proposed draft international standardized profile to be submitted to ISO. The TP technical organization dictates the contents and appearance of this part.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 16 - Open Document Architecture Level 3 Profile

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Jon Stewart, Quality One Softworks**
SIG Editor: **Jim Wing, IBM Software Solutions**

Foreword

This part of the Working Implementation Agreements was prepared by the Multimedia Data and Document Interchange Special Interest Group (MDDISIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

The MDDISIG has worked as an authorized agent of the Plenary to produce the final text for publication of ISP 11182-1 (FOD36). This text has been moved to the Stable Implementation Agreements which will contain a reference to the published ISP only.

Future changes and additions to this version of these Implementor Agreements will be published as a new part, for example, see Part 27.

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Part 16 - Open Document Architecture Level 3 Profile

Open Document Architecture Level 3 DAP

The Document Application Profile (DAP) document for the Level 3 Profile has been approved as ISP 11182-1 : 1993.

NOTE - Please refer to the Stable Implementation Agreements for information on this Part.

Open Document Architecture Level 3 ISR

The Implementation Support Requirements (ISR) document for the Level 3 Profile is in development. See Part 27. The technical editor is Jim Wing, IBM, of OIW.

Open Document Architecture Level 3 ATS

The Abstract Test Suite (ATS) for the Level 3 Profile is in development. The technical editor is Makota Oya, Hitachi, of AOW. The results of this work are available in the documents to be provided by INTAP.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 17 - Open Document Architecture Level 2 Profile

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Jon Stewart, Quality One Softworks**

SIG Editor: **Jim Wing, IBM Software Solutions**

Foreword

This part of the Working Implementation Agreements was prepared by the Multimedia Data and Document Interchange Special Interest Group (MDDISIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

The MDDISIG has worked as an authorized agent of the Plenary to produce the final text for publication of ISP 11181-1 (FOD26). This text has been moved to the Stable Implementation Agreements which will contain a reference to the published ISP only.

Future changes and additions to this version of these Implementor Agreements will be published as a new part.

Editor's Note -

The text of subsection 2 of Part 17 is continuation text prepared as a regional Implementation Support Requirements (ISR) document. This text is in the process of harmonization within PAGODA.

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Part 17 - Open Document Architecture Level 2 Profile

Open Document Architecture Level 2 DAP

The Document Application Profile (DAP) document for the Level 2 Profile has been approved as ISP 11181-1 : 1993.

NOTE - Please refer to the Stable Implementation Agreements for information on this Part.

Open Document Architecture Level 2 ISR

The Implementation Support Requirements (ISR) document for the Level 2 Profile is in development. Technical editor is Ian Valentine, Level 7, of EWOS

NOTE - Text reflecting the proposed draft International Standardized Profile FOD26, Part 2, was printed in the June 1992 Working Agreements.

Open Document Architecture Level 2 ATS

The Abstract Test Suite (ATS) for the Level 2 Profile is under development through PAGODA. Technical editor is Richard Carr, NCC, of EWOS. The interim result of this work is contained in the document CTS ODA II ISR for Generation Testing and Reception Testing, version 2.1 dated Nov 1993. This document was created as part of CEC CTS II ODA project and is not included as text in this subsection due to its size. The MDDI SIG intends to make the complete text available online as soon as approvals to do so are obtained. WPC*
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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 18 - Network Management

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair	**Paul Brusil, The Mitre Corporation**
SIG Editor	**Robert Aronoff, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Network Management Special Interest Group (NMSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject.

To highlight textual changes since the last Workshop output, additions to the text in this part are marked with shading; deleted text is left in but marked with strikeouts.

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Network Management

Introduction

(Refer to the Stable Implementation Agreements Document.)

Scope

(Refer to the Stable Implementation Agreements Document.)

Normative References

The following documents are referenced in the statements of the agreements relating to OSI sytems management.

[AMF] ISO/IEC CD 10164-10, Information Technology - Open Systems Interconnection - Systems Management - Part 10: Accounting Meter Function, ISO/IEC JTC1/SC21 N4958, 4 July 1990. (Document name has been changed to "Usage Metering Function". See [UMF].)

[AMWD] Information Processing Systems - Open Systems Interconnection - Accounting Management Working Document (Fourth Version), ISO/IEC JTC1/SC21, May 30, 1990.

[AOM12] DISP 11183-2, Information Technology - International Standardized Profiles AOMnn OSI Management - Management Communications Protocols - Part 2: AOM12 - Enhanced Management Communications, September 1991.

[ARF] ISO/IEC IS 10164-4, Information Technology - Open Systems Interconnection - Systems Management - Part 4: Alarm Reporting Function, ISO/IEC JTC1/SC21 N6359, August 19, 1991.

[ARR] ISO/IEC IS 10164-3, Information Technology - Open Systems Interconnection - Systems Management - Part 3: Attributes for Representing Relationships, ISO/IEC JTC1/SC21 N5186, September 1991.

[ATSS] ISO/IEC DIS 9646-2, Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification, ISO/IEC JTC1/SC21 N5867, 10 April 1991.

[CDTC]ISO/IEC CD 10164-cdt, Information Processing Systems - Open Systems Interconnection - Systems Management - Part cdt: Confidence and Diagnostic Test Classes, ISO/IEC JTC1/SC21 N1394, December 1991.

[CMO] Information Processing Systems - Open Systems Interconnection - Working Draft of the Configuration Management Overview, ISO/IEC JTC1/SC21 N3311, 16 January 1989.

[DMI] ISO/IEC IS 10165-2, Information Technology - Open Systems Interconnection - Structure of Management Information - Part 2: Definition of Management Information, ISO/IEC JTC1/SC21 N6363, August 1991.

[ENSCON] Forum 025, The "Ensemble" Concepts and Format, Issue 1.0, Network Management Forum, July 1992.

[ERMF]ISO/IEC IS 10164-5, Information Technology - Open Systems Interconnection - Systems Management - Part 5: Event Report Management Function, ISO/IEC JTC1/SC21 N6360, August 1991.

[FMWD] Information Processing Systems - Open Systems Interconnection - Systems Management - Fault Management Working Document, ISO/IEC JTC1/SC21 N4077, December 1989.

[GDMO] ISO/IEC IS 10165-4, Information Technology - Open Systems Interconnection - Structure of Management Information - Part 4: Guidelines for the Definition of Managed Objects, ISO/IEC JTC1/SC21 N6309, July 30, 1991.

[GULS-1] ISO/IEC CD 11586-1, Information Technology - Open Systems Interconnection - Generic Upper Layers Security - Part 1: Overview, Models and Notation, ISO/IEC JTC1/SC21 N8182, August 9, 1993.

[GULS-2] ISO/IEC CD 11586-2, Information Technology - Open Systems Interconnection - Generic Upper Layers Security - Part 2: Security Exchange Service Element (SESE) Service Definition, ISO/IEC JTC1/SC21 N8183, August 9, 1993.

[GULS-3] ISO/IEC CD 11586-3, Information Technology - Open Systems Interconnection - Generic Upper Layers Security - Part 3: Security Exchange Service Element (SESE) Protocol Specification, ISO/IEC JTC1/SC21 N8184, August 9, 1993.

[GULS-4] ISO/IEC CD 11586-4, Information Technology - Open Systems Interconnection - Generic Upper Layers Security - Part 4: Protecting Transfer Syntax Specification, ISO/IEC JTC1/SC21 N8185, August 9, 1993.

[IIMCIMIBTRANS] ISO/CCITT and Internet Management Coexistence (IIMC): Translation of Internet MIBs to ISO/CCITT GDMO MIBs, Forum 026, Issue 1.0, November 1993.

[IIMCMIB-II] ISO/CCITT and Internet Management Coexistence (IIMC): Translation of Internet MIB-II (RFC1213) to ISO/CCITT GDMO MIB, Forum 029, Issue 1.0, November 1993.

[IIMCOMIBTRANS] ISO/CCITT and Internet Management Coexistence (IIMC): Translation of ISO/CCITT GDMO MIBs to Internet MIBs, Forum 030, Issue 1.0, November 1993.

[IIMCPROXY] ISO/CCITT and Internet Management Coexistence (IIMC): ISO/CCITT to Internet Management Proxy, Forum 028, Issue 1.0, November 1993.

[IIMCSEC] ISO/CCITT and Internet Management Coexistence (IIMC): ISO/CCITT to Internet Management Security, Forum 027, Issue 1.0, November 1993.

[LCF] ISO/IEC IS 10164-6, Information Technology - Open Systems Interconnection - Systems Management - Part 6: Log Control Function, ISO/IEC JTC1/SC21 N6361, June 1991.

[MICS] ISO/IEC CD 10165-6, Information Technology - Open Systems Interconnection - Structure of Management Information - Part 6: Requirements and Guidelines for Implementation Conformance Statement Proformas Associated with Management Information, ISO/IEC JTC1/SC21, 10 April 1992.

[MIM] ISO/IEC IS 10165-1, Information Technology - Open Systems Interconnection - Management Information Services - Structure of Management Information - Part 1: Management Information Model, ISO/IEC JTC1/SC21 N6351, June 1991.

[MOA] ISO/IEC IS 10164-11, Information Technology - Open Systems Interconnection - Systems Management - Part 11: Metric Objects and Attributes, ISO/IEC JTC1/SC21 N7533, February 1993. (Previously entitled "Workload Monitoring Function". See [WMF].)

[OAAC] ISO/IEC CD 10164-9, Information Technology - Open Systems Interconnection - Systems Management - Part 9: Objects and Attributes for Access Control, ISO/IEC JTC1/SC21, February 1992.

[OMF] ISO/IEC IS 10164-1, Information Technology - Open Systems Interconnection - Systems Management - Part 1: Object Management Function, ISO/IEC JTC1/SC21 N5184, September 1991.

[OP1LIB] Forum 006, Forum Library - Volume 4: OMNIPoint 1 Definitions, Issue 1.0, Network Management Forum, August 1992.

[PMWD] Information Processing Systems - Open Systems Interconnection - Performance Management Working Document (Seventh Draft), ISO/IEC JTC1/SC21 N6306, June 24, 1991.

[SARF] ISO/IEC IS 10164-7, Information Technology - Open Systems Interconnection - Systems Management - Part 7: Security Alarm Reporting Function, July 1991.

[SATF] ISO/IEC DIS 10164-8, Information Technology - Open Systems Interconnection - Systems Management - Part 8: Security Audit Trail Function, ISO/IEC JTC1/SC21 N7039, June 1992.

[SF] ISO/IEC CD 10164-13.2, Information Technology - Open Systems Interconnection - Systems Management - Part 13: Summarization Function, ISO/IEC JTC1/SC21 N6485, November 12, 1991.

[SMWD] Information Processing Systems - Open Systems Interconnection - Systems Management - OSI Security Management Working Document - 7th Draft, ISO/IEC JTC1/SC21 N4091, 15 November 1989.

[STMF] ISO/IEC IS 10164-2, Information Technology - Open Systems Interconnection - Systems Management - Part 2: State Management Function, ISO/IEC JTC1/SC21 N5185, September 1991.

[TMF] ISO/IEC DIS 10164-12, Information Processing Systems - Open Systems Interconnection - Systems Management - Part 12: Test Management Function, ISO/IEC JTC1/SC21 N6558, November 1991.

[UMF] ISO/IEC 2ndDIS 10164-10, Information Technology - Open Systems Interconnection - Systems Management - Part 10: Usage Metering Function, ISO/IEC JTC1/SC21 N????, October 1993. (Previously entitled "Accounting Meter Function". See [AMF].)

[WMF] ISO/IEC DIS 10164-11, Information Technology - Open Systems Interconnection - Systems Management - Part 11: Workload Monitoring Function, ISO/IEC JTC1/SC21 N6677, February 3, 1992. (Document name has been changed to "Metric Objects and Attributes". See [MOA].)

Status

The following clauses were moved into the Stable Agreements in June 1990:

0 INTRODUCTION

2 NORMATIVE REFERENCES (i.e., only those relevant to the Stable Agreements)

6 MANAGEMENT COMMUNICATIONS

6.2 General Agreements on Users of CMIS

6.3 Specific Agreements on Users of CMIS

6.4 Specific Agreements on CMIP

The following clauses were moved to the Stable Agreements in December 1990:

1 SCOPE

1.1 Phased Approach

1.1.1 Alignment With Evolving Standards

1.1.2 Definition of Phase 1

1.1.3 Future Phases

2 NORMATIVE REFERENCES (i.e., only those relevant to the newly added Stable Agreements)

5 MANAGEMENT FUNCTIONS AND SERVICES

5.1 General Agreements

5.2 Object Management Function Agreements

5.3 State Management Function Agreements

5.4 Attributes For Representing Relationships Agreements

5.5 Alarm Reporting Function Agreements

5.6 Event Report Management Function Agreements

6 MANAGEMENT COMMUNICATIONS

6.1 Association Policies

7 MANAGEMENT INFORMATION

7.1 The Information Model

7.2 Principles of Naming

7.3 Guidelines for the Definition of Management Information

The following clause was added to the Stable Agreements in March 1991:

6 MANAGEMENT COMMUNICATIONS

6.5 Services Required by CMIP (added as subclause 13.7 of part 5, Upper Layer Agreements)

The following clauses were added to the Stable Agreements in September 1991:

6.1.3 Security Aspects of Associations

6.2.4 CMIS Subsets

6.4.5 Parameters

6.4.6 Access Control Parameter

8 CONFORMANCE

8.1 Introduction

8.2 General Requirements of Conformance

8.3 Specific Conformance Categories

8.3.1 Management Communication Categories

8.3.3 Management Information Conformance Category

8.3.3.1 MOCS Proforma

8.3.4 Management Application Contexts

The following clauses were added to the Stable Agreements in December 1991:

5.7 Log Control Function Agreements

5.8 Security Alarm Reporting Function Agreements

8.3.2 Management Functions and Services Conformance Categories

8.3.2.1 General Management Capabilities Conformance Category

8.3.2.2 Alarm Reporting and State Management Capabilities Conformance Category

8.3.2.3 Alarm Reporting Capabilities Conformance Category

8.3.2.4 General Event Report Management Conformance Category

8.3.2.5 General Log Control Conformance Category

The following clauses were added to the Stable Agreements in June 1992:

5.9 Security Audit Trail Function Agreements

6.4.7 Action Error Info

6.5 Services Required by CMIP

6.5.1 P-DATA Encoding

6.6 CMIP PICS

ANNEX A Management Information Library

ANNEX A.4 Harmonized Library

ANNEX A.5 OIW NMSIG IVMO Definitions

ANNEX B NMSIG Object Identifiers

ANNEX B.1 Introduction

ANNEX B.2 Harmonized MIL Object Identifiers

ANNEX B.3 Phase 1 MIL Object Identifiers

The following clause was added to the Stable Agreements in September 1992:

ANNEX C MOCS Proforma

Text was added to the following clause of the Stable Agreements in December 1992:

5.7.1 General Agreements

The following clauses are planned to be added to the Stable Agreements in September 1993:

8.4 Demonstration of Conformance

8.4.1 Management Communication

8.4.2 Management Functions and Services

8.4.3 Management Information

The following clauses were added to the Stable Agreements in September 1993:

8.4 Demonstration of Conformance

8.4.1 Management Communication

8.4.2 Management Functions and Services

8.4.3 Management Information

ANNEX D.2 Systems Management for OSI Transport and Network Layers Ensemble

The following clauses were added to the Stable Agreements in December 1993:

6.1.3 Security Aspects of Associations

10 Management Coexistence and Interworking

10.1 Internet MIB Translation
10.2 ISO/CCITT to Internet Management Proxy

ANNEX E Translated Management Information Libraries

ANNEX E.1 Introduction

ANNEX E.2 MIBs Translated By Organizations Other Than OIW

Errata

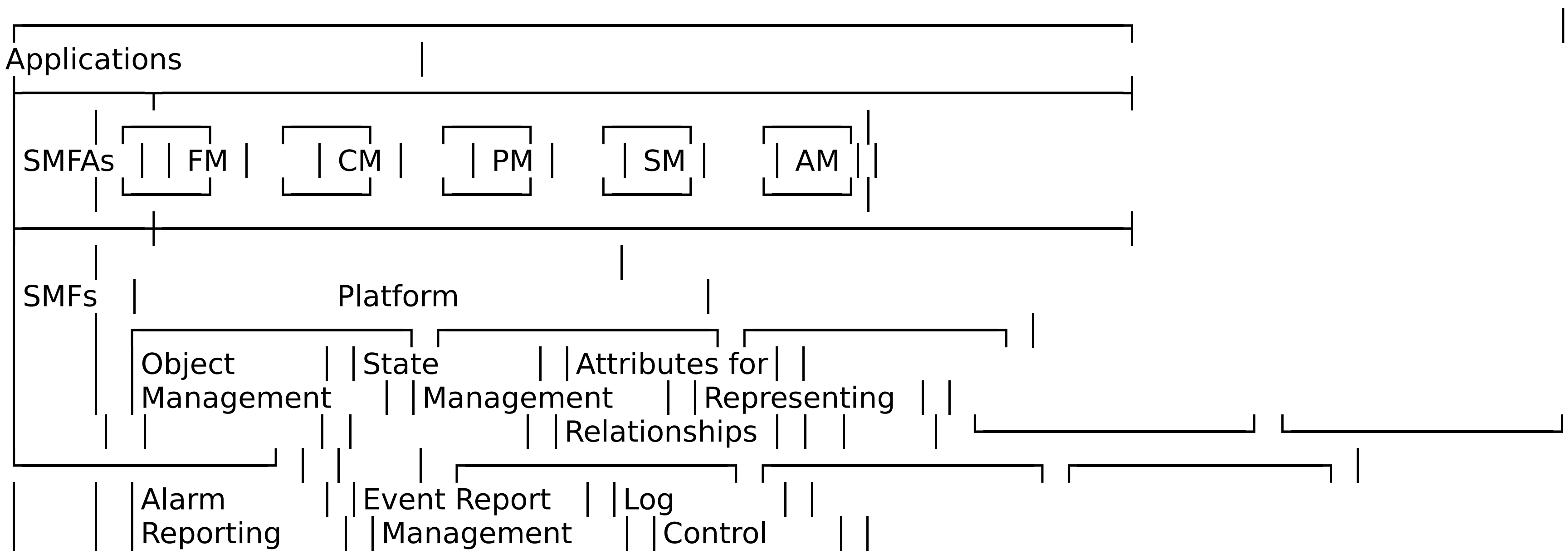
(Refer to the Stable Implementation Agreements Document.)

Management Functions and Services

ISO has partitioned network management into five Specific Management Functional Areas (SMFAs) as a convenience for developing requirements particular to configuration management (CM), fault management (FM), performance management (PM), security management (SM), and accounting management (AM). These requirements are specified in five separate SMFA standards ([CMO], [FMWD], [SMWD], [AMWD], and [PMWD]). Since the SMFAs have overlapping requirements, management functions and management information applicable to one SMFA are often applicable to other SMFAs. Therefore, the SMFAs point to separate standards that contain the management functions needed to satisfy particular requirements.

This set of management functions is referred to as the System Management Functions (SMFs). They provide a generic platform of common network management capabilities available to any management application. For example, the event report management function [ERMF] may be used to report events to satisfy FM, PM, AM, and SM requirements. The log control function [LCF] may be used to satisfy both FM and SM requirements.

The following schematic (figure 1) depicts the functional hierarchy of SMFs and SMFAs. There are currently seven SMF International Standards: Object Management [OMF], State Management [STMF], Attributes For Representing Relationships [ARR], Alarm Reporting [ARF], Event Report Management [ERMF], Log Control [LCF], and Security Alarm Reporting [SARF]. These SMFs provide much of the network management capabilities needed by CM and FM. When additional requirements are identified in other SMFAs, additional SMFs may be developed. Security Audit Trail [SATF] is a Draft International Standard. Committee drafts are currently in progress for the following additional SMFs: Objects and Attributes For Access Control [OAAC], Usage Metering [UMF], and Metric Objects and Attributes [MOA]. Working drafts are currently in progress for the following additional SMFs: Confidence and Diagnostic Testing (consisting of two documents, one specifying a Test Management Function [TMF], and the other defining related management support objects classes and attributes [CDTC]), and Summarization [SF].



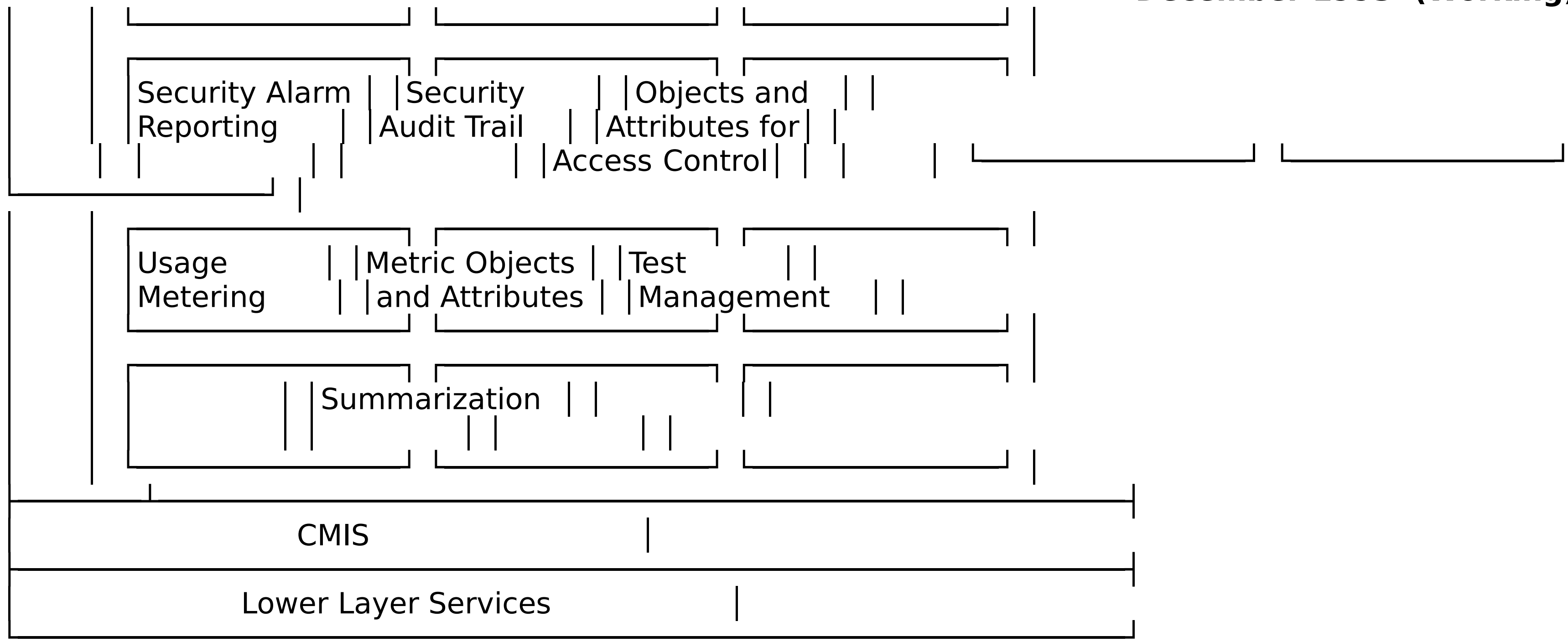


Figure 1 - Functional hierarchy of SMFs and SMFAs

General Agreements

(Refer to the Stable Implementation Agreements Document.)

Object Management Function Agreements

(Refer to the Stable Implementation Agreements Document.)

State Management Function Agreements

(Refer to the Stable Implementation Agreements Document.)

Attributes For Representing Relationships Agreements

(Refer to the Stable Implementation Agreements Document.)

Alarm Reporting Function Agreements

(Refer to the Stable Implementation Agreements Document.)

Event Report Management Function Agreements

(Refer to the Stable Implementation Agreements Document.)

Log Control Function Agreements

(Refer to the Stable Implementation Agreements Document.)

Security Alarm Reporting Function Agreements

(Refer to the Stable Implementation Agreements Document and online profile document referenced in editor's not below.)

Note: [The agreements in this clause are contained in the Security Alarm Reporting profile. The text for this profile is available on-line by anonymous ftp from the OIW document store. The document can be retrieved as follows: ftp to nemo.ncsl.nist.gov [129.6.58.136]; login as "anonymous" with password "guest"; cd to pub/oiw/agreements; retrieve the file "readme.sar" and read that file for instructions as to which files to retrieve.**]**

Security Audit Trail Function Agreements

(Refer to the Stable Implementation Agreements Document.)

Objects and Attributes for Access Control Agreements

Introduction

This subclause provides agreements pertinent to Objects and Attributes for Access Control defined by [OAAC].

Objects and Attributes for Access Control:

* defines a conceptual model for the administration of managed object access control; and

* provides the Access Control Descriptor, Target Access Control Information, and Authorized Initiators management support object classes to facilitate object access control.

There is a need to prevent unauthorized access to management resources at various levels:

* management notifications must not be sent to unauthorized recipients,

* unauthorized initiators must not have access to management operations, and

* management information must be protected from unintended disclosure.

This function defines mechanisms for controlling access to management associations and operations.

Objects and Attributes for Access Control makes use of the following management support objects:

accessControlDescriptor,
targetACI, and
authorisedInitiators.

Objects and Attributes for Access Control makes use of the following attributes, in addition to those attributes defined for the object class top:

accessControlDomainNames,
accessControlPolicyName,
ACDName,
ACDRules,
ACIOperations,
ACIRules,
AIName,
defaultRules,
globalRules,
initiatorACI,
initiatorList,
MIOperations,
MIRules,
objectList, and
targetACIName.

Objects and Attributes for Access Control makes use of the following notification types:

objectCreation,
objectDeletion,
attributeChange, and
securityServiceOrMechanismViolation.

Usage Metering Function Agreements

Editor's Note: **[**The material in this clause is out-of-date. The clause will be updated when the OIW NMSIG has the resources available to renew activity regarding its contents.**]**

Introduction

This subclause provides agreements pertinent to the Accounting Meter Function defined by [AMF].

The Accounting Meter Function:

* defines a conceptual model for collecting, recording, and reporting accounting information;

* provides a set of management information pertinent to account metering;

* provides the Accounting Record, Accounting Meter Control, and Accounting Meter Data management support object classes;

* provides a number of notifications regarding account metering; and

* provides a set of services to effect account metering.

In general, any accounting activity begins by monitoring resources to identify who is using them and to what extent they are being used. An accounting meter records the use of a resource in the form of accounting records or logs. Accounting meters record information such as:

* the identity of the user and the resource,
* the quality and type of service requested and provided,
* the usage start time and current time,
* the current state of usage (running or suspended), and
* the unit of measurement and number of units consumed.

The Accounting Meter Function defines the following management support objects:

accountingMeterControlObject,
accountingMeterDataObject, and
accountingRecordObject.

The Accounting Meter Function defines the following attributes:

controlObjectReference,
dataObjectReference,
dataObjectState,
meterInfo,
notificationCause,
notificationTime,

recordingTrigger,
reportingTrigger,
requesterId,
responderId,
resourceName,
serviceProvided,
serviceRequested,
subscriberId,
unitsOfUsage,
usageMeterTime, and
usageStartTime.

The Accounting Meter Function defines the following notification types:

accountingStarted,
accountingSuspended,
accountingResumed,
accountingRecord, and
accountingInfoLost.

The Accounting Meter Function defines the following actions:

startMetering,
suspendMetering, and
resumeMetering.

Metric Objects and Attributes Agreements

Note: [The OIW NMSIG is participating in the development of ISPs for Metric Objects and Attributes (ISO/IEC 10164-11). ISPs for Metric Objects and Attributes are numbered in the AOM252x series.

The latest drafts of this activity are available from nemo.ncsl.nist.gov via anonymous FTP. Documents can be retrieved as follows:

FTP to nemo.ncsl.nist.gov [129.6.58.136];
login as "anonymous" with password "guest";

cd pub/oiw/agreements;
retrieve the file "perfmgmt.readme";
read that file for instructions as to which further files to retrieve

Since the ISP activity in this area is relatively immature, these drafts are subject to change, especially with regard to base standard ICS proforma style.**]**

Editor's Note: **[**The material in this clause is out-of-date. The clause will be updated when the OIW NMSIG has the resources available to renew activity regarding its contents.**]**

Introduction

This subclause provides agreements pertinent to the Workload Monitoring Function defined by [WMF].

The Workload Monitoring Function:

* defines three conceptual models for the monitoring of system resources;

* provides the Gauge Monitor Metric and Mean Monitor Metric management support objects to facilitate workload monitoring;

* provides a number of notifications regarding workload monitoring; and

* provides a set of services to effect workload monitoring.

Three conceptual models are defined within the Workload Monitoring Function.

* Utilization Model: Provides monitoring of instantaneous use of an OSI resource.

* Rejection Rate Model: Provides monitoring of service request rejection.

* Resource Request Rate Model: Provides monitoring of requests for usage of OSI resources.

Together, these three models provide an estimate of the workload for a managed resources.

The Workload Monitoring Function defines the following management support objects:

gaugeMonitor, and
meanMonitor.

The Workload Monitoring Function defines the following attributes:

administrativeState,
counterT,
counterTMinusDT,
derivedGauge,
derivedGaugeThold,
estimateOfMean,
estimateOfMeanThold,
gaugeMonitorId,
granularityPeriod,
meanMonitorId,
observedAttributeId,
observedObjectClass,
observedObjectInstance,
schedularName, and
timeConstant.

The Workload Monitoring Function references the following notification types:

attributeChange,
stateChange,
qualityOfServiceAlarm,
objectCreation, and
objectDeletion.

Summarization Function Agreements

Note: [The OIW NMSIG is participating in the development of ISPs for the Summarization Function (ISO/IEC 10164-13). ISPs for the Summarization Function are numbered in the AOM253x series.

The latest drafts of this activity are available from nemo.ncsl.nist.gov via anonymous FTP. Documents can be retrieved as follows:

FTP to nemo.ncsl.nist.gov [129.6.58.136];
login as "anonymous" with password "guest";
cd pub/oiw/agreements;
retrieve the file "perfmgmt.readme";
read that file for instructions as to which further files to retrieve

Since the ISP activity in this area is relatively immature, these drafts are subject to change, especially with regard to base standard ICS proforma style.**]**

Editor's Note: **[**The material in this clause is out-of-date. The clause will be updated when the OIW NMSIG has the resources available to renew activity regarding its contents.**]**

Introduction

This subclause provides agreements pertinent to the Summarization Function defined by [SF].

The Summarization Function:

* defines a conceptual model for the summarization, reporting by notification, and logging of measurements pertaining to managed objects;

* provides the Measurement Summarization, Measurement Request, Observed Object Request, Running Summary Metric, Measures Threshold Control, and Measurement Object Summary Record management support object classes;

* provides a Measurement Summary notification to report summary information; and

* provides a set of services to effect measurement summarization.

The Summarization Function defines the following management support objects:

measurementSummarizationObject,
measurementRequest,
observedObjectRequest,
runningSummaryMetric,

measuresThresholdControl, and
measurementObjSummRecord.

At this time, the Summarization Function does not contain a complete list of services, attributes, or notifications.

Test Management Function Agreements

Editor's Note: **[**The material in this clause is out-of-date. The clause will be updated when the OIW NMSIG has the resources available to renew activity regarding its contents.**]**

Introduction

This subclause provides agreements pertinent to the Test Management Function defined by [TMF].

The Test Management Function:

* defines a conceptual model for the initiation, control and execution of tests and reporting of test results;
* provides the Test Results Record management support object;
* provides a Test Result notification for information reporting;
* provides a set of services to effect test management.

The Test Management Function defines the following management support objects:

testResultsRecord.

The Test Management Function defines the following attributes:

testSessionId,
testState,
testOutcome,
mOTS,
associatedObjects, and

timeoutPeriod.

The Test Management Function defines the following notification types:

testResultNotification.

The Test Management Function defines the following actions:

testRequestAsyncAction,
testRequestSyncAction,
testSuspendResumeAction, and
testTerminateAction.

Confidence and Diagnostic Test Classes Agreements

Editor's Note: **[**The material in this clause is out-of-date. The clause will be updated when the OIW NMSIG has the resources available to renew activity regarding its contents.**]**

Introduction

This subclause provides agreements pertinent to the Confidence and Test Classes defined by [TMF].

Confidence and Diagnostic Test Classes:

* identifies certain characteristics which are common to all classes of tests;

* identifies general test categories;

Confidence and Diagnostic Test Classes defines the following management support objects:

internalResourceResultsRecord,
connectivityResultsRecord,
dataIntegrityResultsRecord,
loopbackResultsRecord, and
protocolIntegrityResultsRecord.

Confidence and Diagnostic Test Classes defines the following attributes:

effectiveTime,
establishmentTime,
testDuration, and
loopCounter.

Management Communications

(Refer to the Stable Implementation Agreements Document.)

Association Policies

(Refer to the Stable Implementation Agreements Document.)

Application Context Negotiation

(Refer to the Stable Implementation Agreements Document.)

Functional Unit Negotiation

(Refer to the Stable Implementation Agreements Document.)

Security Aspects of Associations

(Refer to the Stable Implementation Agreements Document.)

Management Information

(Refer to the Stable Implementation Agreements Document.)

Conformance

Introduction

(Refer to the Stable Implementation Agreements Document for additional introductory text.)

Clause 8 also includes a discussion of conformance requirements for demonstration of conformance. These requirements are imposed on implementors to assure that implementations can be tested in an agreed consistent manner.

General Requirements of Conformance

(Refer to the Stable Implementation Agreements Document.)

Specific Conformance Categories

(Refer to the Stable Implementation Agreements Document.)

Management Communication Categories

(Refer to the Stable Implementation Agreements Document.)

Management Functions and Services Conformance Categories

(Refer to the Stable Implementation Agreements Document.)

General Management Capabilities Conformance Category

(Refer to the Stable Implementation Agreements Document.)

Alarm Reporting and State Management Capabilities Conformance Category

(Refer to the Stable Implementation Agreements Document.)

Alarm Reporting Capabilities Conformance Category

(Refer to the Stable Implementation Agreements Document.)

General Event Report Management Conformance Category

(Refer to the Stable Implementation Agreements Document.)

General Log Control Conformance Category

(Refer to the Stable Implementation Agreements Document.)

Management Information Conformance Category

(Refer to the Stable Implementation Agreements Document.)

MOCS Proforma

(Refer to the Stable Implementation Agreements Document.)

Management Application Contexts

(Refer to the Stable Implementation Agreements Document.)

Demonstration of Conformance

(Refer to the Stable Implementation Agreements Document.)

Management Communication

(Refer to the Stable Implementation Agreements Document.)

Editor's Note: **[**The NMSIG should align with CTS-3 and EWOS Conformance Testing Project Team Results. The NMSIG will examine CTS-3 CMIP project for a test object. (The OSI/NM Forum uses an upper tester test object for CMIP conformance testing.)**]**

Management Information

(Refer to the Stable Implementation Agreements Document.)

Editor's Note: **[**The availability of test cases for managed objects is TBD.**]**

Management Functions and Services

(Refer to the Stable Implementation Agreements Document.)

Editor's Note: **[**There may be requirements for test objects. The NMSIG should examine the results of the CTS-3 and EWOS Conformance Testing Project Team efforts.**]**

Management Ensembles

This clause, which is based on the NM Forum Ensemble Concepts and Format specification [ENSCON], contains agreements regarding the basic concepts and modelling techniques related to management ensembles. These agreements apply to developers of contributions to Annex D, Management Ensemble Annex.

It is not within the scope of this clause to make agreements about or to define specific management ensembles. Such definitions and/or agreements can be obtained via the Management Ensemble Library.

Management Ensemble Concepts

When modelling management ensembles, these agreements require the use of [ENSCON] with the following additional constraints.

Editor's Note: **[**Constraints will be added as subclauses, as they are identified. If no constraints are identified, the phrase "with the following additional constraints" will be deleted.**]**

Management Ensemble Format

When defining management ensembles, these agreements require the use of the format defined by [ENSCON] Annex C, with the following additional constraints.

Use of Boiler Plate Text

The common "boiler plate" text defined in Annex C of [ENSCON] shall be considered optional for inclusion in specific ensembles. Use of the boiler plate text is recommended, but only that text which is relevant to the ensemble need be included. The boiler plate text may be revised as appropriate for the specific ensemble.

Management Coexistence and Interworking

(Refer to the Stable Implementation Agreements Document.)

Internet MIB Translation

(Refer to the Stable Implementation Agreements Document.)

ISO/CCITT to Internet Management Proxy

(Refer to the Stable Implementation Agreements Document.)

ISO/CCITT MIB Translation

When translating management information from ISO/CCITT GDMO format to Internet MIB macro format, these agreements allow the use of [IIMCOMIBTRANS] with the following additional constraints.

Editor's Note: **[**Constraints to be added as subclauses, as they are identified. If no constraints are identified, the phrase "with the following additional constraints" will be deleted.**]**

Editor's Note: **[**Should we constrain MIB translation algorithms or approaches?**]**

Annex (informative)

Management Information Library (MIL)

A. Scope of Activities

The OIW NMSIG may:

- a) Develop product level specifications and international Profiles for implementations, relating to common services/protocols for exchanging management information between OSI nodes;

- b) Develop product level specifications and associated international Profiles for implementations relating to systems management functions;

- c) Define, encourage and promote the development of requirements for new Managed Objects (MOs), MO Profiles and MO Ensembles (bundles of Profiles). As required, collect and/or disseminate this information to appropriate bodies in which it is expected that formal definition and registration of such management information can occur;

- d) Support and/or lead the development of definitions for new MOs, MO implementation agreements, MO Profiles and MO Ensembles;

- e) Support the cataloguing of new MOs, MO Profiles and MO Ensembles.

As necessary, the SIG will:

Establish liaisons with various standards bodies;

Provide feedback for additional/enhanced services and protocols for OSI management.

-

Examples of Specific Activities

1. Requirements Definition

- (a) Work with other OIW SIGs (potentially via TLC) and with EWOS & AOW NM groups to develop concepts/guidelines for developing internationally harmonized MO Profiles and MO Ensembles.

  Example: TAX 3
  MO Profile Guidelines

- (b) Actively solicit contributions that delineate new requirements for new MOs, MO Profiles, MO Ensembles, e.g., via letters to NMSIG membership, NMForum UAC, Open Systems User Alliance (Houston 30/Dallas 800), OIW membership, press releases, CBD announcements, ...

  Example: X.400 MTA contribution (NMSIG-92/178, -92/179)
  FAA Enterprise OA&M contribution (NMSIG-92/113)

- (c) Promote need to develop requirements for new MOs, Profiles, Ensembles, e.g., via OIW banquet presentations.

2. MO, Profile, Ensemble Definition Activities

- (a) On an as-interested basis (e.g., in response to requirements identified via example 1), the NMSIG may:

- (i) Develop MO, Profile, and/or Ensemble definitions, *when* no relevant standards or consortia activities exist;

  Example: FAA Enterprise Management Information

- (ii) Collaborate with other OIW SIGs, or consortia, to provide MO definition contributions to standards, or consortia, to accelerate progress, when standards, or consortia, activities are immature or stagnated;

- [Consider registering contributions when, in the judgment of the NMSIG, standards activities are lagging *extremely* behind (e.g., > 3 years) *urgent* requirements. This would allow associated products to have useful market life cycles.]

- Example: X.400 MTA MOs

- (iii) Critique relevant MO, Profile, and Ensemble work ongoing in other groups;

- Example: OMNIpoint 1 Document Reviews

- (iv) Lead/support MO implementation agreements, Profiles, Ensemble development, *when* supporting standards, or consortia, activities are sufficiently mature.

- Example: M.TA51

- (b) On an as-interested basis (e.g., in response to requirements identified via example 1), the NMSIG may develop translation algorithms for automatically converting extant MO definitions from one community's object model (e.g., SNMP SMI) into OSI compatible, GDMO MOs.

3. Catalogue

- (a) Request EWOS & AOW to announce availability of catalogue.

- (b) Solicit further inputs to be fed to OPn cataloguer.

Editor's Note: **[**The following information in Annex A is residual information following the movement of clauses A.4 and A.5 to the Stable Agreements. This remaining text (i.e., clauses A.1.2, A.2, and A.3) needs to be reviewed for possible updates or deletion.**]**

A. Background

The Management Information Library provides definitions of management information - managed object classes, name bindings, attributes, actions and notifications. Provision of these definitions is made by a) references to standards' documents that contain these definitions, or b) inclusion of the actual definitions in this document; in which case they are registered in the NMSIG arc of the ISO ASN.1 Object Identifier Tree.

The reasons why the NMSIG has opted to define management information are as follows:

(i) There is an urgent need for network management within the community. Managed objects are critical ingredients of network management; but standards' defined managed objects that represent network/system resources are not available yet. However, there does exist an ISO standard that specifies guidelines for defining managed objects : [GDMO]. Different organizations, including private companies, etc, can use [GDMO] to define their own managed objects. However, two network management implementations can interoperate only if there is a common subset of managed objects supported on both sides. The NMSIG has used the [GDMO] standard to define "public domain" managed objects that meet the needs of the community and foster interoperability.

(ii) Standards' groups are not addressing all the network/system resources that need to be managed; i.e. there is no standards' activity for defining managed objects that represent such resources. The NMSIG has attempted to fill these holes by defining managed objects for these resources, and thus fulfil the needs of the community.

As mentioned earlier, managed objects in the MIL have been provided to foster interoperability. They are not normative as far as the NMSIG IAs are concerned. Implementors do not have to support any of the MIL managed objects; they may choose to define their own managed objects using the agreements on [GDMO] specified in Section 18.7. However, supporting managed objects from the MIL will increase the potential for interoperability with other network management implementations.

The NMSIG defined managed objects in the MIL are intended to be implementable but they also serve as a basis from which other implementations may define refinements or alternatives. These definitions do not override or duplicate those provided by standards' groups or other OIW SIGs.

More specifically, the transport and network layer managed objects that have been defined in the MIL are "generally applicable" objects, in that they do not represent any particular transport or network layer protocols, but contain characteristics common across different transport or network layer protocols. These managed objects provide a high level view of the transport and network layers, and are especially useful in managing heterogeneous networks that support various different types of transport and network layer protocols. These managed objects do not override the OSI Transport and Network Layer managed objects that are being defined in ISO. The ISO specified OSI Transport and Network Layer managed objects are "specific" managed objects that represent strictly the OSI Transport and Network protocol layers.

A. Rules and Procedures

Editor's Note: **[**The text contained in this clause is relatively old and requires update to accurately reflect the rules and procedures used to define the current MIL.**]**

The following rules and procedures apply to managed object class definitions that are to be included in the MIL :

(i) All managed object class definitions provided by the MIL must comply with ISO [GDMO] object templates.

(ii) A managed object class definition provided by the MIL must represent an abstraction of an identifiable logical or physical resource that can be managed via OSI management.

(iii) All managed object classes in the MIL will have registered ASN.1 object identifiers assigned either by a standards' body if it is defining the managed object class, or, if the managed object class definition is being progressed within the NMSIG, by the NMSIG in its branch of the ISO Registration Tree.

(iv) A managed object class will be selected as a candidate for inclusion into the MIL if there are at least two NMSIG members from different companies who express a requirement (strong interest) for the managed object class. If this is not a standards' defined managed object class, then there must be at least one NMSIG member who is committed to developing the definition of the managed object class.

(v) A managed object class selected for the MIL will be given a priority based on the number of members who express interest in it.

(vi) All managed object class definitions that are proposed for inclusion into the MIL will undergo a review process within the NMSIG. NMSIG member defined managed object classes will additionally undergo a balloting process. If problems are found with a standards' defined managed object class, the appropriate standards' body will be approached. If problems are found with a member defined managed object class, it will be returned with comments.

(vii) Based on its priority, there will be a call for contributions on the definition of a managed object class at an NMSIG meeting. Contributions could be in the form of a) identification of a standards' body that is currently working on the definition, or b) an NMSIG member definition of the managed object class.

(viii) An element of management information, once registered, i.e., given an ASN.1 Object Identifier, will never be deleted from the Registration Tree (ASN.1 Object Identifier tree). It may, however, fall into disuse due to lack of requirements for it.

A. General Guidelines

Editor's Note: **[**The text contained in this clause is relatively old and requires update to accurately reflect the general guidelines used to define the current MIL.**]**

It is recommended that the following guidelines be used in general for all managed object definitions, unless there is a specific exception condition:

a) For the objectCreation Notification, send all the attributes of the created managed object instance in the Attribute List parameter.

b) For the objectDeletion Notification, send all the attributes of the deleted managed object instance in the Attribute List parameter.

c) For the attributeValueChange Notification, send the Attribute Identifier List parameter.

d) Use the attributeValueChange Notification to signal counter attribute wrap, and include the maximum counter value in the Old Attribute Value parameter.

e) Include the Alarm Status attribute in all object class definitions which also contain one or more Alarm Notifications.

f) Include the State ATTRIBUTE GROUP in all object class definitions which also include one or more state attributes defined by [STMF].

g) Include the Relationship ATTRIBUTE GROUP in all object class definitions which also include one or more relationship attributes defined by [ARR].

h) Usage State, when used, is contained in a conditional (not mandatory) package.

A. Harmonized Library

(Refer to the Stable Implementation Agreements Document.)

A.5 OIW NMSIG IVMO Definitions

(Refer to the Stable Implementation Agreements Document.)

A.6 OIW NMSIG Shared Management Knowledge (SMK) Definitions

Editor's Note: **[**Requirements for a discovery object have been met by the discovery object defined and registered in the OP1 Library Volume 4 [OP1LIB] of the NM Forum and, therefore, the discovery definition and object ID in the NMSIG agreements have been deleted.**]**

Editor's Note: **[**To conserve resources, we have not reproduced the old text here that has been deleted from Annex A.6. For those wishing to review the deleted text, the old text can be found in the June 1991 Working Implementors' Agreements.**]**

Annex (informative)

NMSIG Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.1 Introduction

(Refer to the Stable Implementation Agreements Document.)

B.2 Harmonized MIL Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.1 Object Class Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.2 Package Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.3 Name Bindings Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.4 Attribute Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.5 Action Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.6 Parameter Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.7 Response Code Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.2.8 Module Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.3 Phase 1 MIL Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.3.1 Object Class Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.3.2 Name Bindings Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.3.3 Attribute Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

B.3.4 Module Object Identifiers

(Refer to the Stable Implementation Agreements Document.)

Annex (informative)

MOCS Proforma

(Refer to Stable Implementation Agreements Document.)

Annex (normative)

Management Ensemble Annex

D. Introduction

This Annex contains specific management ensembles defined and published by the OIW NMSIG. Management ensembles contained in this Annex shall be defined using the concepts and formats specified in clause 9 of these agreements.

D. Systems Management for OSI Transport and Network Layers Ensemble

(Refer to the Stable Implementation Agreements Document.)

D. Allomorphism Sensitive Event Forwarding Discriminator (EFD) Ensemble

Editor's Note: **[**Because the Allomorphism Sensitive Event Forwarding Discriminator (EFD) Ensemble is intended to be a self-contained, standalone document, the clauses and subclauses of the Allomorphism Sensitive Event Forwarding Discriminator (EFD) Ensemble (as shown here in Annex D.3) are numbered as they would be in a separate, standalone document, and not as they would be according to their position in Annex D.3.**]**

Revision History

Issue 1.0, Draft 1 - December 1992

This is the first draft of this Ensemble, generated as output from the December 1992 OIW NMSIG meeting. The proposed schedule for this document is as follows:

1) Draft presented to OIW NMSIG. Initial comments generated. Ensemble added to the working IAs. December 1992 OIW NMSIG.

2) OIW NMSIG to prepare comments on the Ensemble. Comments to be placed on the OIW NMSIG exploder. December 1992 - March 1993.

3) EWOS EG-NM, AOW NMSIG, OSF, X/OPEN, OMG, NMF to generate comments. December 1992 - March 1993.

4) OIW NMSIG to review all comments, and resolve comments. March 1993.

5) Attempt to harmonize ensemble at RWNMCC.

6) Resolve comments. Move to stable IAs.

Introduction

Ensembles provide a top down view of a particular solution to a management problem. In order to focus on the solution to this management problem, specific restrictions are placed upon particular referenced definitions. The concepts and format of ensembles are described in Forum 025 - The "Ensemble" Concepts and Formats - Issue 1.0.

Each ensemble contains general text in each section that is common to all ensembles. By convention this common text is portrayed in bold italic characters.

This ensemble, wherever possible, references documents which define the components of the ensemble.

The management problem is identified as a set of requirements and constraints. In defining the solution to this management problem, the resources to be managed, the functions to be applied, and the scenarios describing the interactions are all identified. The ensemble references base standards and international standardized profiles (isps). It also references libraries containing definitions expressed by gdmo (guidelines for the definition of managed objects) templates.

The purpose of this document is to collect management information definitions and profiles, and show how they can be applied to manage the resources identified in this ensemble.

This document is organized as follows:

Section 1, "Introduction" Provides a high level overview describing the ensemble and the structure of the document.

Section 2, "Management Context" Identifies the managed resources and management capabilities of the ensemble.

Section 3, "Information Model" Specifies all management information components of this ensemble.

Section 4, "Ensemble Conformance Requirements" Provides or references statements of conformance for this ensemble. The managed object conformance statements (MOCS) proformas specific to the ensemble are provided in Annex B.

Unique Identity

The unique identity is a registered object identifier used to identify this ensemble.

An object identifier has not been assigned yet to this ensemble.

General Description of the Ensemble

This ensemble describes the functional capabilities of the allomorphismSensitiveEFD managed object class. The allomorphismSensitiveEFD is a subclass of the standardized eventForwardingDiscriminator managed object class defined in ISO 10165-2. This ensemble describes how:

- o the decision to forward an event report can be made based upon the valid allomorphic classes of a notification,
- o allomorphic event reports are generated at an agent,
- o a manager configures an allomorphismSensitiveEFD to generate allomorphic event reports, and
- o allomorphism is employed to manage an allomorphismSensitiveEFD.

Scope and Purpose

Ensembles represent specific solutions to particular problems. Thus, an ensemble is the complete description of the problem and the solution to that problem.

This section describes the requirements of the problem. It includes the definition of the information model that represents the solution to a problem. These definitions comprise references to one or more management information libraries which contain definitions of managed object classes expressed in gdmo templates, packages, attributes, name bindings, etc. Also,included in the ensemble definition are statements of conformance and suitable proformas.

The requirements driving the design of the ensemble are as follows:

1. Develop a discriminator managed object class that allows for filtering on the list of allomorphs emitted with a notification by an extended managed object that acts allomorphically.

2. Develop a means of determining the valid value to be placed into the "managed object class" field of an allomorphic event report. Should the value be the actual class or an allomorphic class?

3. To describe allomorphic operations, manager and agent responsibilities, to manage an allomorphismSensitiveEFD.

This ensemble references 10165-2, DMI which contains GDMO for the eventForwardingDiscriminator class from which allomorphismSensitiveEFD is derived.

This ensemble references protocol data units required by ISP 11183-2, "CMISE/ROSE for AOM12 - Enhanced Management Communications" as a basis for conformance requirements.

Relationships With Other Ensembles

This section identifies the relationships of this ensemble to other ensembles.

This ensemble can be used with other ensembles that require the forwarding of unsolicited management information. For example, this ensemble can be used in conjunction with the OSI Interworking Ensemble.

Management Context

The "management context" describes why the ensemble is required. The description of the "management context" includes the definition of the resources to be managed, the management functions to be performed, the scope of the problem to be solved, and the management view or level of abstraction from which the problem is to be approached.

General Introduction

Allomorphic Behaviour of Managed Objects

Allomorphism is the ability of a managed object that is an instance of a given class to be managed as an instance of one or more other managed object classes. For example, if a manager product only understands a printer managed object class, and an agent supports a subclass of printer called superDuperPrinter, allomorphism allows the manager to manage instances of the superDuperPrinter managed objects as instances of the printer managed object class.

While allomorphic behaviour represents some implementation cost to both the manager and agent products, its benefits outweigh the costs. The chief benefit is that of decoupling the delivery of enhancements in an agent product with specific support enhancements in a manager product, providing a seamless migration strategy. In other words, when the agent product is upgraded to allow printers to be modelled as superDuperPrinter managed objects, it is not a requirement to simultaneously upgrade the manager to understand superDuperPrinter at the same time. The manager can manage superDuperPrinter managed objects as if they were members of the printer managed object class until its code can be updated to manage instances of superDuperPrinter class. By supporting allomorphic behaviour, the agent product will be able to receive a default level of management from a manager product which only supports the allomorphic class, thus making possible an easy migration path for installing updated agent and manager products.

Allomorphism Sensitive EFD

The allomorphismSensitiveEFD managed object class will provide capabilities above and beyond those of the standardized eventForwardingDiscriminator managed object class defined in ISO 10165-2.

Enhanced filtering capability

The allomorphismSensitiveEFD managed object class provides enhanced filtering capabilities.

When both the manager and agent support allomorphism, there will frequently be cases where a manager wishes to receive unsolicited information about a particular type of resource. For example, a manager might wish to receive all notifications emitted by managed objects representing printers. The allomorphismSensitiveEFD provides a mechanism for allowing a manager to receive notifications for a printer resource, regardless of whether the printer is represented at an agent by a printer managed object or a superDuperPrinter managed object.

Allomorphic Notification Support

The allomorphismSensitiveEFD managed object class provides a deterministic mechanism for an agent to provide allomorphic event reports to a manager.

Allomorphic event reports differ from non-allomorphic event reports only in the value of the managedObjectClass parameter of the event report. For example, an allomorphic event report corresponding to a notification emitted by a superDuperPrinter managed object would have the managedObjectClass parameter of the event report equal to printer, since this is the class that the manager understands. The other parameters of the event report are not altered as a result of allomorphism. If the notification is extendable, the manager may receive additional parameters in eventInfo associated with the notification as it is defined for superDuperPrinter, that are not defined for printer. The manager must be capable of receiving the event report in its totality and utilize the parameters as it sees fit.

An example of an extendable notification is the standardized communicationsAlarm. The communicationsAlarm has an extendable parameter defined called additionalInformation. The syntax of additionalInformation is SET OF managementExtension. The additionalInformation parameter contains more subparameters in a communications Alarm emitted from a superDuperPrinter than it would if emitted from a printer. The definition of communicationsAlarm is extended using the NOTIFICATION template, and PARAMETER template.

Please see the second edition of CMIPrun for a tutorial on the use of SET of ManagementExtension.

A manager that only understands the printer class will receive a communicationsAlarm notification that has additional subparameters in the additionalInformation parameter that applies to the superDuperPrinter class, and not to the printer class. The manager must be able to understand these additional subparameters (or display them to an operator who can understand them) as it sees fit.

An example of additional subparameters that a manager must pay attention to and process are the additional communicationsAlarm subparameters that are a part of the additionalInformation parameter, defined with the significance subparameter=true. The significance subparameter is a boolean value which is set to true if the receiving system (manager) must be able to parse the contents of the additional subparameter for the event report to be fully understood.

Compatibility with Managers that only support EFDs

Instances of the allomorphismSensitiveEFD managed object class can act allomorphically themselves. This allows a down-level manager that only understands the eventForwardingDiscriminator class to manage instances of allomorphismSensitiveEFD as if they were instances of eventForwardingDiscriminator.

Management View and Level of Abstraction

This section indicates the management view of the ensemble which includes information on the level of abstraction. For example, in an hierarchically organized system this section would indicate if the ensemble deals with the management of equipment, the management of the networks, or the management of services. It may also indicate management perspectives and roles.

This ensemble deals with the discrimination and forwarding of unsolicited information from managed objects acting allomorphically, and from managed objects not acting allomorphically. This ensemble is general purpose, and can be used in any management environment where systems playing the manager and agent role have the capabilities to support managed objects acting allomorphically.

This ensemble addresses the provider viewpoint, describing the responsibilities of a system playing the agent role that provides the event report discrimination function. This ensemble also details the user viewpoint, describing the responsibilities of a system playing the manager role that uses the discrimination function.

Resources

This section defines all the resources or components of resources that are to be the subject of the ensemble. The definition of the resources contains all the resources and only those resources that are relevant to the ensemble. The resources are defined by textual descriptions or by reference to other documents containing descriptions of the resources. When other documents are referenced statements are provided to indicate any restrictions and constraints on those source definitions.

This ensemble models the discrimination functionality realized by an agent system.

Functions

This section defines the management functions that can be performed on the resources described in section 2.3, "Resources." These functions may be primitive functions for osi systems management (e.G., Event management), higher level functions for general network management (e.G., Alarm surveillance), or other functions unique to the problem of the ensemble addresses.

These definitions consist of a brief textual description of each function. In some cases these descriptions will include a set of references to other documents. For example:

ISO system management functions

Telecommunications management network (tmn) ccitt rec. M.3020

Other standards

When other documents are referenced, statements are required to indicate the restrictions and constraints to the function definitions to the ensemble.

This ensemble utilizes the functions that are defined for the event forwarding discriminator managed object class as defined in ISO/IEC 10164-5. In addition, this ensemble defines a new function, the Allomorphism Sensitive EFD Function, comprised of:

- allowing a manager to set a discriminator construct to apply a filter to the set of valid allomorphic classes for a notification.
- enabling an agent to fill in the managedObjectClass parameter of a notification with an allomorphic class, if appropriate.
- enabling a manager to manage an instance of allomorphismSensitiveEFD as an instance of eventForwardingDiscriminator using allomorphism.

Other Requirements

This section contains any other management context requirements than functions, resources or level of abstraction.

These may be business requirements or performance requirements, for example.

This ensemble also fills in several gaps in the current definition of the eventForwardingDiscriminator:

- o defines precisely the object identifiers that correspond to potential event report attributes mapped from attributes of top.

- o Clarifies that local time instead of GMT time is to be used for attributes of the daily and weekly scheduling packages for instances of allomorphismSensitiveEFD that implement these packages.

Management Information Model

The information model focuses on the real world under study. It contains information about both the elements of the model and their interrelationships. The elements of management information are defined using gdmo templates and their interrelationships are graphically illustrated.

General Introduction

The allomorphismSensitiveEFD managed object class provides capabilities above and beyond those of the standardized eventForwardingDiscriminator managed object class defined in ISO 10165-2.

Enhanced Event Filtering Capability

The allomorphismSensitiveEFD managed object class provides enhanced event filtering capabilities.

When both the manager and agent support allomorphism, there will frequently be cases where a manager wishes to receive unsolicited information about a particular type of resource. For example, a manager might wish to receive all notifications emitted by managed objects representing printers. The allomorphismSensitiveEFD provides a mechanism for allowing a manager to receive notifications corresponding to a printer resource regardless of whether the printer is represented at an agent by a printer managed object, or a superDuperPrinter managed object.

When a superDuperPrinter managed object acting allomorphically as a printer emits a notification, it makes available two things at the managed object boundary:

1. the notification as defined for the superDuperPrinter class, and

2. an unordered list of valid allomorphs for the notification.

The list of valid allomorphs may differ from the value of the allomorphs attribute of the superDuperPrinter managed object. For example, the allomorphs attribute value may include printer, superPrinter, and function. The notification being emitted is printerReport which is inherited from printer, superPrinter, and not from function. Therefore, when the superDuperPrinter managed object emits the printerReport notification, it makes available at the managed object boundary:

1. the printerReport notification as defined for the superDuperPrinter class. This notification will include managedObjectClass parameter equal to superDuperPrinter. The notification will also include any additional parameters added as a result of subclassing from printer, and superPrinter.

2. the "list of valid allomorphs for the notification" with printer and superPrinter as the only set elements.

The notification information must then be transformed into a potential event report as described in ISO/IEC 10164-5, Event Report Management Function by the conceptual event pre-processing function. A potential event report is considered a "discriminator input object" that has attributes that reflect the notification parameters, and additional information that the allomorphismSensitiveEFD can discriminate on. The allomorphismSensitiveEFD can discriminate on the following attributes of a potential event report:

- managedObjectClass - corresponds to the value of the objectClass attribute of the superDuperPrinter emitting the notification. The value would be superDuperPrinter.

- managedObjectInstance - the distinguished name of the instance of superDuperPrinter emitting the notification

- eventType - the value would be printerReport

- validAllomorphs - corresponds to the list of valid allomorphs that accompanied the notification. The value would be {printer, superPrinter}, where {} denotes a SET.

- Event type-specific attributes - these are attributes that correspond to parameters of the notification. These notification parameters must have syntax associated with them. This is accomplished when defining the notification using the GDMO NOTIFICATION template constructs of WITH INFORMATION SYNTAX and AND ATTRIBUTE IDS.

Once the potential event report is formed, then the conceptual event pre-processing function routes it to all allomorphismSensitiveEFD managed objects, and any eventForwardingDiscriminator managed objects (if the system supports them).

Each allomorphismSensitiveEFD managed object applies the discriminator construct specified by the discriminatorConstruct attribute to the attributes of the potential event report to determine whether it meets the criteria for forwarding to the manager.

An enhancement offered by allomorphismSensitiveEFD over the eventForwardingDiscriminator is the ability to discriminate on values of the validAllomorphs. To continue the example, the manager wishes to receive printer reports from managed objects that are either printers, or act as printers allomorphically. The manager specifies the following value for the discriminatorConstruct attribute of an allomorphism SensitiveEFD:

```
((managedObjectClass Equal printer)
     or
(set membership ({printer}, validAllomorphs)))
     and
((eventType Equal printerReport))
```

where set membership refers to the matching rules for set valued attributes:

- o equality
- o present
- o subset of
- o superset of
- o non-null set intersection

The (managedObjectClass Equal printer) comparison fails since the potential event report managedObjectClass attribute value is equal to superDuperPrinter. The (set membership (printer, validAllomorphs)) comparison passes, since printer is listed as an element of the validAllomorphs set-valued attribute of the potential event report. The (eventType Equal printerReport) comparison also passes. As a whole, the discriminator construct is satisfied, allowing the allomorphismSensitiveEFD to pass the notification.

```
((managedObjectClass Equal printer)
     or
(set membership  ({printer}, validAllomorphs)))
     and
((eventType Equal printerReport))

resolves to     ((false)or(true))and(true)
resolves to         (true) and (true)
resolves to               true
```

Allomorphic Event Report Capability

The allomorphismSensitiveEFD managed object class provides a deterministic mechanism for an agent to provide allomorphic event reports to a manager. This is accomplished with semantics associated with a new attribute of allomorphism SensitiveEFD called switchMOCTo.

The switchMOCTo attribute is set by the manager to denote the managed object classes that it understands and desires to have present in the allomorphic event report. For example, the manager sets switchMOCTo to {printer} to indicate that it is interested in receiving notifications with the managedObjectClass parameter set to printer, as opposed to superPrinter or superDuperPrinter, for notifications emitted from instances of superPrinter or superDuperPrinter that can be managed as a printer allomorphically.

Allomorphic event reports differ from non-allomorphic event reports only in the value of the managedObjectClass parameter of the event report. In the example, an printerReport emitted by a superDuperPrinter managed object would have the managedObjectClass parameter of the event report switched to printer by the allomorphismSensitiveEFD, since this is the class that the manager understands. The other parameters of the event report are not altered as a result of allomorphism. Therefore, the manager may receive additional parameters in the eventInfo parameter associated with the notification as it is defined for superDuperPrinter, that are not defined for printer. The manager must be capable of receiving the event report and handling extraneous parameters of interest.

If the processing of the discriminatorConstruct determines that an event report is to be generated, then allomorphismSensitiveEFD takes the following processing steps in determining if an allomorphic event report or a non-allomorphic event report should be emitted:

1. determine if the value of the managedObjectClass attribute of the potential event report is a set element of the switchMOCTo attribute of the allomorphism SensitiveEFD.

   o If TRUE, then a non-allomorphic event report is issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

   o If FALSE, then proceed to the next step

   In the example, the value of switchMOCTo is {printer}. The value of the managedObjectClass attribute of the potential event report is superDuperPrinter. Since switchMOCTo does not contain superDuperPrinter, then it is still possible that an allomorphic event report might be issued.

2. compare the value of the switchMOCTo attribute of allomorphismSensitiveEFD to the value of the validAllomorphs attribute of the potential event report.

(switchMOCTo) NON-NULL INTERSECTION (validAllomorphs)

o If TRUE, then an allomorphic event report will be issued. Proceed onto the next step.

o If FALSE, then a non-allomorphic event report will be issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

Continuing the example, the manager previously set the value of switchMOCTo to {printer} to indicate that if the notification passes the discriminatorConstruct, then it wants to receive event reports from those managed objects of printer class, or allomorphic event reports from managed objects that can be allomorphically managed as instances of the printer class. The NON-NULL INTERSECTION test is applied to determine if a non-allomorphic event report, or alternatively, an allomorphic event report is issued:

(switchMOCTo) NON-NULL INTERSECTION (validAllomorphs)

same as

{printer} NON-NULL INTERSECTION {printer, superPrinter}

yields

TRUE

In the example, an allomorphic event report will be issued.

3. The candidate values for insertion into the managedObject Class field of the allomorphic event report are the result of a logical operation:

(switchMOCTo) LOGICAL INTERSECTION (validAllomorphs)

If multiple values result from the operation, then it is a local implementation option to choose one of the values.

Editor's Note: **[**The following comments were generated at the December OIW NMSIG. The comments have not been harmonized yet within the OIW NMSIG. These comments will appear in the text of the working agreements as an editors note. Other consortia/workshops are asked to comment on the OIW NMSIG comments as well.

1. Examine the applicability of the switchMOCTo attribute to other support objects such as:

- access control objects
- scheduling objects
- management knowledge management

2. Redo the syntax and/or semantics of the switchMOCTo attribute so that it represents a prioritized list of classes instead of a set of classes. This would allow a manager to give its "preferred order" of classes to which the managedObjectClass parameter value would be switched to for an allomorphic event report.**]**

Completing the example, the result of the LOGICAL INTERSECTION is printer. Therefore, the allomorphismSensitiveEFD will switch the value of the managedObjectClass parameter of the allomorphic event report from superDuperPrinter to printer.

Other Requirements

Package Requirements

This ensemble requires that the following packages must be dynamically present in an instance of allomorphismSensitiveEFD :

- o top package
- o packages package
- o allomorphic package
- o discriminator package
- o efd package
- o allomorphism sensitive EFD package

Name Binding Requirements

The following name binding requirements apply:

- o at least one name binding must be supported o any managed object class can be listed as the SUPERIOR managed object class. However, an instance of this class must be the managed object that "represents the system". In addition, an instance of this class must be compatible with the system managed object class.

Potential Event Report Attribute Requirements

The ensemble requires that an instance of allomorphismSensitiveEFD must be able to discriminate on at least the following attributes of a potential event report derived from notifications. This is a minimum set:

Table 3-1. Minimum PER Attributes required by the Profile

attribute	Object Identifier
managedObjectClass	{smi2AttributeID 60}
eventType	{smi2AttributeID 14}
managedObjectInstance	{smi2AttributeID 61}
perceivedSeverity	{smi2AttributeID 17}
securityAlarmSeverity	{smi2AttributeID 23}

The ensemble allows for a supplier to specify additional attributes derived from notifications. This ensemble defines the validAllomorphs as one such attribute. Other attributes derived from notifications must be specified as part of the GDMO NOTIFICATION template constructs of WITH INFORMATION SYNTAX and AND ATTRIBUTE IDs.

Table 3-2. Additional PER attributes required by this Ensemble

attribute	Object Identifier
validAllomorphs	{XXXXXXXXXXXXXXX}

Discriminator Construct Requirements

The manager sets the filter to be applied to the attributes of a potential event report by setting the discriminatorConstruct attribute value. The filter takes the same form as the filters that are supplied in CMIP operations, the CMISFilter syntax. The following filter items must be supported:

o equality

- o substrings
- o greaterOrEqual
- o lessOrEqual
- o present
- o subsetOf
- o supersetOf
- o nonNullIntersection

The following CMIS filter parameters must be supported:

- o item - refers to one of the above listed filter items
- o and
- o or
- o not

The following example is used to clarify the difference between a filter item and a filter parameter in a filter expression present as a value of the discriminatorConstruct attribute:

(filter item) (managedObjectClass Equal EFD)
(filter parameter) OR
(filter item) (setOperation) ({ALLOEFD}, allomorphs))

The number of filter items in this example is two and the level of nesting in this example is one.

An instance of allomorphismSensitiveEFD must be capable of supporting at least:

- o sixteen filter items in a discriminatorConstruct attribute value
- o four filter items joined by the AND filter parameter

- o four filter items joined by the OR filter parameter

An instance of allomorphismSensitiveEFD must be able to support at least two levels of nesting when the filter parameter at the first level of nesting is an AND or an OR.

The filter parameter of NOT may be used at any level of nesting without any restrictions.

Support of Allomorphism

Instances of allomorphismSensitiveEFD must support being managed allomorphically as an instance of eventForwardingDiscriminator. As a result:

- o the allomorphs attribute of an instance of allomorphismSensitiveEFD must at least contain a value for eventForwardingDiscriminator.

- o the validAllomorphs PER attribute must at least contain a value for eventForwardingDiscriminator for notifications emitted by an instance of allomorphismSensitive EFD.

Daily Scheduling and Weekly Scheduling Packages

Unless specified otherwise in a managed object behaviour definition, the values of the following components of weekMask and IntervalsOfDay are interpreted as local time:

- o Interval-start,

- o Interval-end, and

- o days of week

Relationships

This section defines the relationships between the components of the model. These may be expressed in entity relationship (er) diagrams or other similar graphical representations.

Three types of diagrams are used:

- o one for the relationships inherent in the underlying resources,

- o one for the relationships among the classes representing these resources,
- o and one for the naming schema.

Relationships Among The Resources

Relationships Among Classes Representing The Resources

Naming Schema

Scenarios

This section defines the ensemble scenarios. Each of these definitions consists of a brief textual description and message flow diagrams. The scenarios are used to show the managed object in the information model can be used to accomplish the functions listed in section 2.4, "Functions".

Note: [Instances of the allomorphismSensitiveEFD managed object class can act allomorphically themselves as instances of the eventForwardingDiscriminator class. This allows a manager that only understands the eventForwardingDiscriminator class to manage instances of allomorphismSensitiveEFD as if they were instances of eventForwardingDiscriminator.**]**

The following scenarios summarize the exchanges between a manager and agent. The exchanges consider an agent that has implemented allomorphismSensitiveEFD. The agent only has instances of allomorphismSensitiveEFD instantiated, and not any instances of eventForwardingDiscriminator. The case of a manager that only understands eventForwardingDiscriminator and manages instances of allomorphismSensitiveEFD as if they were instances of eventForwardingDiscriminator is examined. In addition, the case of the manager that understands allomorphismSensitiveEFD is also explored.

The following abbreviations will be used:

ABBREVIATION	DESCRIPTION
EFD	Denotes the eventForwardingDiscriminator object class defined in ISO 10165-2.
ASEFD	Denotes allomorphismSensitiveEFD object class. Managed objects of this class are compatible with the eventForwardingDiscriminator managed object class.

ACTUAL Refers to the "actual class", as documented in clause 7.4.4 of GDMO.

The protocol mechanisms are documented by management operation.

Event Forwarding Scenarios Overview

The first scenario provides an overview of event forwarding in an allomorphismSensitiveEFD environment where both the manager and agent understand the allomorphismSensitiveEFD, but only the agent implements instances of allomorphismSensitiveEFD:

1. The Managing Application MgrApplT creates an eventForwardingDiscriminator (EFD T1) at the managing system (or some other local mechanism to route events) to receive event reports (ERs) forwarded from the agent system.

2. Managing Application MgrApplT creates an allomorphismSensitiveEFD (ASEFD T2) at the agent system to receive ERs. The managers sets the values of discriminatorConstruct and switch MOCTo on the create operation.

3. Notifications with validAllomorphs attribute are generated by the managed objects in the agent system. These notifications become the potentialEventReports and are inputted to ASEFD.

4. The allomorphismSensitiveEFD T2 tests the attributes of the potential event report relative to the value of the discriminatorConstruct attribute. If the discriminatorConstruct resolves to true, then the allomorphismSensitiveEFD T2 will forward an event report.

   The allomorphismSensitiveEFD T2 tests to see if the value of the managedObjectClass attribute of the potential event report is a set element of the switchMOCTo attribute.

   o If TRUE, then a non-allomorphic event report will be issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

   o If FALSE, then the value of the switchMOCTo attribute is compared to the value of the validAllomorphs attribute of the potential event report.

   (switchMOCTo) NON-NULL INTERSECTION (validAllomorphs)

   - If TRUE, then an allomorphic event report will be issued.

     The candidate values for insertion into the managedObjectClass field of the allomorphic event report are the result of a logical operation. The result of the operation is a set of one or more elements, where each element corresponds to a candidate allomorphic class for insertion:

(switchMOCTo) LOGICAL INTERSECTION (validAllomorphs)

If multiple elements result from the operation, then it is a local implementation option to choose one of the elements.

- If FALSE, then a non-allomorphic event report will be issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

For example, assuming that

- object A belongs to the object class mocA, object B belongs to mocB, and so on.
- mocA is a superclass of mocB, mocB is a superclass of mocC, and so on.

The EFD T1 at the managing system performs the filtering based on its discriminatorConstruct which has a test for managedObjectClass = mocA, and forwards the event reports that passed to the manager application MgrApplT. The manager system can have some other local mechanism for handling event reports in a similar fashion.

If the switchMOCTo attribute value of { mocA } is specified for an allomorphismSensitiveEFD instance T2 at the agent, then the notifications from objects E and D will be forwarded to MgrAppl T as allomorphic event reports. Notifications from object A are forwarded to MgrAppl T as non-allomorphic event reports.

Create operation - Case 1

A manager that only understands the eventForwardingDiscriminator class and not allomorphismSensitiveEFD will issue an M-CREATE operation with the parameter,

managedObjectClass = eventForwardingDiscriminator

If the agent supports allomorphismSensitiveEFD, then the agent creates an extended managed object and sets attributes as follows:

objectClass = allomorphismSensitiveEFD

allomorphs = { eventForwardingDiscriminator }

Where the brackets { } denote a set. The agent issues an CREATE response that includes the parameter:

managedObjectClass = allomorphismSensitiveEFD

Since the manager requested the creation of a managed object of class eventForwardingDiscriminator, but was told by the agent that the class is allomorphismSensitiveEFD, the manager knows that the managed object is acting allomorphically, and can be managed as an instance of eventForwardingDiscriminator. If the manager wishes further verification, it can perform a GET operation to retrieve the value of the allomorphs attribute which will have a value of { eventForwardingDiscriminator }.

Create operation - Case 2

A manager that understands allomorphismSensitiveEFD will issue an M-CREATE operation, with the parameter:

managedObjectClass = allomorphismSensitiveEFD

The agent will create an instance of allomorphismSensitiveEFD, and sets attributes as follows:

objectClass = allomorphismSensitiveEFD

allomorphs = { eventForwardingDiscriminator }

The agent issues an M-CREATE response with the parameter:

managedObjectClass = allomorphismSensitiveEFD

Delete operation

For a manager to delete an instance of an extended managed object of allomorphismSensitiveEFD it need to know only the distinguished name. The manager will issue an M-DELETE operation, with the parameter:

baseManagedObjectClass = eventForwardingDiscriminator or

baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL or

baseManagedObjectClass = any class listed in the allomorphs attribute for which the operation is valid.

The agent will then delete the managed object.

For scoped operations, each allomorphismSensitiveEFD managed object that falls within the specified scope that meets the filter criteria, and has an active name binding that permits deletes will be deleted.

GET with no attributes (Scope="base object" only) - Case 1

If the manager only understands eventForwardingDiscriminator, then it wants to retrieve only those attributes of the extended managed object that apply to eventForwardingDiscriminator, and not to allomorphismSensitiveEFD. The manager requests an M-GET operation, with the parameters:

baseManagedObjectClass = eventForwardingDiscriminator and

scope = base object (or is absent and defaults to base object).

The extended managed object acts allomorphically, and returns in the M-GET response the attribute identifiers and either values/error indications of eventForwardingDiscriminator, and not those of allomorphismSensitiveEFD.

GET with no attributes (Scope = "base object" only) -Case 2

If a manager understands allomorphismSensitiveEFD, then it wants to retrieve all of the attributes of the managed object. The manager requests an M-GET operation, with the parameter:

baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL.

The managed object acts as a member of its actual class, and returns in the M-GET response the attribute identifiers and either values/error indications of allomorphismSensitiveEFD.

GET with no attributes (Scoped operation) - Case 1

If a manager only understands eventForwardingDiscriminator, and it wants to retrieve all attributes from all managed objects that it considers members of the eventForwardingDiscriminator class in a scoped operation, then it issues an M-GET operation, with the parameters:

baseManagedObjectClass = System (for example) and scope = first level only, or whole subtree, or individual levels, or base to nth level.

The manager must specify as a value for the M-GET Filter parameter the following:

((managedObjectClass Equal eventForwardingDiscriminator)
OR
(non-null set intersection ({eventForwardingDiscriminator}, allomorphs)))

Note: [Please note that the allomorphs refers to the attribute inherited from top. This is a different attribute than validAllomorphs.**]**

Note: [Agents that conform to this ensemble will not create instances of eventForwardingDiscriminator, only instances of allomorphismSensitiveEFD.**]**

Therefore, when instances of allomorphismSensitiveEFD within the scope of the request apply the filter, the filter will resolve to true as follows:

((managedObjectClass Equal eventForwardingDiscriminator)
OR
(non-null set intersection ({eventForwardingDiscriminator}, allomorphs)))

Resolves to: (false) or (true) --> true

The allomorphismSensitiveEFD managed objects will not act allomorphically as eventForwardingDiscriminator managed objects, but as members of their actual class, allomorphismSensitiveEFD. The manager will know that all of the objects that are responding are either members of or are compatible to the eventForwardingDiscriminator class by the virtue of how the CMIP filter was constructed on the request. Managed objects of allomorphismSensitiveEFD will return attribute identifiers and either values/error conditions of allomorphismSensitiveEFD. The manager will receive the managedObjectClass parameter equal to allomorphismSensitiveEFD in the linked replies from the agent, and must not discard the linked replies because of the presence of this parameter value. In addition, the manager must gracefully handle the unexpected information or attributes. For example, the switchToMOC attribute value.

GET with no attributes (Scoped operation) - Case 2

If a manager understands allomorphismSensitiveEFD, and it wants to retrieve all attributes from all managed objects that it considers members of allomorphismSensitiveEFD in a scoped operation, then it issues an M-GET operation, with the parameters:

baseManagedObjectClass = System (for example) and

scope = first level only, or whole subtree, or individual levels, or base to nth level.

To retrieve all attributes from all managed objects of allomorphismSensitiveEFD, then the manager must specify as a value for the M-GET Filter parameter the following:

(managedObjectClass Equal allomorphismSensitiveEFD)

The managed objects that meet this filter will act as members of their actual class, allomorphismSensitiveEFD. The manager will know that all of the objects that are responding are members of allomorphismSensitiveEFD. Managed objects of allomorphismSensitiveEFD will return attribute identifiers and either values/error conditions of allomorphismSensitiveEFD.

Replace Attribute Value operation

For this operation, the extended managed object only acts as a member of its actual class, allomorphismSensitiveEFD. Therefore, the manager issues an M-SET operation, with the parameter:

baseManagedObjectClass = eventForwardingDiscriminator or

baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL or

baseManagedObjectClass = any managed object class listed in the allomorphs attribute for which the operation is valid.

The extended managed object performs the operation as allomorphismSensitiveEFD.

For scoped operations, each allomorphismSensitiveEFD managed object that falls within the specified scope that meets the filter criteria will perform the operation as allomorphismSensitiveEFD.

Replace-with-default value operation

For this operation, the extended managed object only acts as a member of its actual class, allomorphismSensitiveEFD. Therefore, the manager issues an M-SET operation, with the parameter:

baseManagedObjectClass = eventForwardingDiscriminator or baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL or

baseManagedObjectClass = any managed object class listed in the allomorphs attribute for which the operation is valid.

The extended managed object replaces the attribute values with the default values of allomorphismSensitiveEFD.

For scoped operations, each allomorphismSensitiveEFD managed object that falls within the specified scope that meets the filter criteria will perform the operation as allomorphismSensitiveEFD.

Add member operation

For this operation, the extended managed object only acts as a member of its actual class, allomorphismSensitiveEFD. Therefore, the manager issues an M-SET operation, with the parameter:

baseManagedObjectClass = eventForwardingDiscriminator or

baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL or

baseManagedObjectClass = any managed object class listed in the allomorphs attribute for which the operation is valid.

The extended managed object performs the operation as allomorphismSensitiveEFD.

For scoped operations, each allomorphismSensitiveEFD managed object that falls within the specified scope that meets the filter criteria will perform the operation as allomorphismSensitiveEFD.

Remove member operation

For this operation, the extended managed object only acts as a member of its actual class, allomorphismSensitiveEFD. Therefore, the manager issues an M-SET operation, with the parameter:

baseManagedObjectClass = eventForwardingDiscriminator or baseManagedObjectClass = allomorphismSensitiveEFD or

baseManagedObjectClass = ACTUAL or

baseManagedObjectClass = any managed object class listed in the allomorphs attribute for which the operation is valid.

The extended managed object performs the operation as allomorphismSensitiveEFD.

For scoped operations, each allomorphismSensitiveEFD managed object that falls within the specified scope that meets the filter criteria will perform the operation as allomorphismSensitiveEFD.

Notifications

Instances of allomorphismSensitiveEFD emit notifications as they are defined for allomorphismSensitiveEFD. AllomorphismSensitiveEFD does not introduce additional notifications over the eventForwardingDiscriminator. Therefore, every notification that an instance of allomorphismSensitiveEFD emits will be accompanied at the managed object boundary with {eventForwardingDiscriminator } as the list of valid allomorphs for the notification.

Management Information References (and Definitions)

This section references all the definitions of management information relevant to the ensemble. The definitions may be provided as references to other documents which contain gdmo specifications. This section may contain references to definitions that are relevant to the ensemble. Thus, this section also contains statements about any additional restrictions or constraints to those definitions.

This ensemble departs from standard ensemble format, and defines the GDMO specification of the allomorphismSensitiveEFD here.

Managed Object Classes

allomorphismSensitiveEFD

```
allomorphismSensitiveEFD MANAGED OBJECT CLASS
    DERIVED FROM
```

```
        "CCITT REC. X.721 (1992)|ISO/IEC 10165-2:1992"
                        :eventForwardingDiscriminator;
    CHARACTERIZED BY
        allomorphismSensitiveEFDpkg;
REGISTERED AS {xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx}
```

Packages

allomorphismSensitiveEFDpkg

```
allomorphismSensitiveEFDpkg PACKAGE
    BEHAVIOUR
        allomorphismSensitiveEFDBhv;
    ATTRIBUTES
        switchMOCTo
            REPLACE-WITH-DEFAULT
            DEFAULT VALUE ASEFDmodule.emptySet
            GET
            ADD-REMOVE;
    REGISTERED AS {xxxxxxxxxxxxxxxxxxxxxxxxxxxx }
```

Attributes

switchMOCTo

```
switchMOCTo  ATTRIBUTE
    WITH ATTRIBUTE SYNTAX
        ASEFDmodule.SetOfManagedObjectClasses;
    MATCHES FOR
        EQUALITY,
        SET-COMPARISON,
        SET-INTERSECTION;
    BEHAVIOUR
        switchMOCToBhv;
REGISTERED AS {xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx}
```

validAllomorphs

```
validAllomorphs  ATTRIBUTE
    WITH ATTRIBUTE SYNTAX
        ASEFDmodule.SetOfManagedObjectClasses;
    MATCHES FOR
        EQUALITY,
        SET-COMPARISON,
        SET-INTERSECTION;
    BEHAVIOUR
        validAllomorphsBhv;
REGISTERED AS {xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx}
```

Behaviours

allomorphismSensitiveEFDBhv

```
allomorphismSensitiveEFDBhv  BEHAVIOUR
    DEFINED AS
```

"

An instance with this behaviour provides a deterministic mechanism for an agent to provide allomorphic event reports to a manager. Allomorphic event reports differ from non-allomorphic event reports only in the value of the managedObjectClass parameter of the event report. An allomorphic event report will contain a valid allomorphic class in the managedObjectClass parameter. A non-allomorphic event report will contain the actual class of the managed object in the managedObjectClass parameter. The information content of the event report will be exactly that defined in the managed object class definition for the managed object that emitted the notification, i.e. it is not modified as a consequence of allomorphism.

An instance with this behaviour realizes allomorphic event reports by being able to operate on the validAllomorphs attribute of a potential event report. The validAllomorphs attribute value is mapped from the set of valid allomorphic classes for which the notification is defined. The set of valid allomorphic classes for which the notification is defined is made available by a managed object acting allomorphically, in conjunction with the notification at the managed object boundary. An instance with this behaviour decides whether an allomorphic event report, or alternatively, a non-allomorphic event report is issued.

An instance with this behaviour takes the following processing steps in determining if an allomorphic event report should be emitted if the processing of the discriminator Construct attribute resolves to true:

1. determine if the value of the managedObjectClass attribute of the potential event report is a set element of the switchMOCTo attribute.

   o If TRUE, then a non-allomorphic event report will be issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

   o If FALSE, then proceed to the next step

2. compare the value of the switchMOCTo attribute to the value of the validAllomorphs attribute of the potential event report.

   (switchMOCTo) NON-NULL INTERSECTION (validAllomorphs)

   o If TRUE, then an allomorphic event report will be issued. Proceed onto the next step.

   If FALSE, then a non-allomorphic event report will be issued. The managedObjectClass parameter of the event report will contain the value of the actual class of the managed object, not an allomorphic class.

3. The candidate values for insertion into the managedObjectClass field of the allomorphic event report are the result of a logical operation. The result of the operation is a set of one or more elements, where each element corresponds to a candidate allomorphic class for insertion:

   (switchMOCTo) LOGICAL INTERSECTION (validAllomorphs)

   If multiple elements result from the operation, then it is a local implementation option to choose one of the elements. An instance of this behaviour supports discriminating on a number of attributes mapped from notification parameters:

Table 3-3. Minimum PER Attributes required by the Profile

attribute	Object Identifier
managedObjectClass	{smi2AttributeID 60}
eventType	{smi2AttributeID 14}

managedObjectInstance	{smi2AttributeID 61}
perceivedSeverity	{smi2AttributeID 17}
securityAlarmSeverity	{smiAttributeID 23}
validAllomorphs	{XXXXXXXXXXXXXXXXXXX}

Other attributes derived from notifications must be specified as part of the GDMO NOTIFICATION template constructs of WITH INFORMATION SYNTAX and AND ATTRIBUTE IDS.

Unless otherwise specified, the allomorphs attribute cannot be set from a value specified by an explicit CREATE operation.
";

switchMOCToBhv

switchMOCToBhv BEHAVIOUR
DEFINED AS

" The value of an attribute with this behaviour indicates managed object classes that are eligible to be placed into the managedObjectClass parameter of an event report. ";

validAllomorphsBhv

validAllomorphsBhv BEHAVIOUR
DEFINED AS

" The value of an attribute with this behaviour is mapped from the set of valid allomorphic classes for which the notification is defined. The set of valid allomorphic classes for which the notification is defined is made available by a managed object acting allomorphically, in conjunction with a notification at the managed object boundary. ";

ASN.1 Syntax Definitions

--
-- Allomorphism Sensitive Event Forwarding Discriminator

```
-- Ensemble
--
-- ASN.1 Module Definitions
--

ASEFDmodule {XXXXXXXXXXXXXXXXX}


        DEFINITIONS ::= BEGIN

                -- EXPORTS everything

                SetOfManagedObjectClasses ::= SET OF OBJECT IDENTIFIER

                -- This ASN.1 is designed to negate the use of the
                -- localForm of ObjectClass.

                emptySet SetOfManagedObjectClasses ::= {}

        END
```

Ensemble Conformance Requirements

General Conformance Requirements

The general conformance requirements for omnipoint 1 are specified in forum 020 - OMNIPoint 1 conformance requirements - Issue 1.0. All the conformance requirements identified in this part of the document are based on that document and Forum 025 - The "Ensemble" Concepts and Format - Issue 1.0.

In general, an implementation supporting this ensemble must prove conformance to:

- o all of the object classes representing the resources of the ensemble
- o all the functionality representing the management of the ensemble resources

The conformance requirements of an ensemble, either reference a set of existing ISPs (AOM2x OSI management-management functions), or define specific ensemble conformance requirements which are based on existing ISPs.

The conformance requirements are presented in a tabular fashion forming the implementation conformance statement (ICS) proformas.

An ensemble may also include other implementation conformance statement (ICS) proformas for components of the ensemble other than system management functions. These ICS proformas will also be specified in a tabular format.

The supplier of an implementation that claims conformance to this ensemble must complete these tables, indicating which options and capabilities have been implemented.

It is the proformas that identify which role (manager/agent) the implementation supporting this ensemble adopts.

The capabilities of the underlying object classes, ISP functions and management communication protocols that are not explicitly required for this ensemble are left "beyond the scope" of conformance to this ensemble.

Specific Conformance Requirements

This section presents the specific conformance requirements for this ensemble. The relationship of ensemble conformance to OSI management functions ISP conformance is discussed, and ensemble function support requirements are presented.

The detailed managed object conformance statements are provided in Annex B.

Common Conditions List Conventions

The table below lists the common conditions that are defined in other profiles and used within this ensemble:

NOTATION	DESCRIPTION
c1	Support of at least one of these options is required. This condition is specified in DISP 12059-0.
c2	Support of the feature in at least one management role is required. This condition is specified in DISP 12059-0.

Specific Conditions List Conventions

The table below lists the specific conditions that are uniquely defined for this ensemble:

NOTATION DESCRIPTION

c70 Present if the ROIV-m-CREATE (sending) contained a value in the managedobjectclass parameter that differs from the actual class of the object that was created.

c71 If M-GET is supported, then M-CANCEL-GET is optional,else out of scope.

c72 If a name binding that supports create operations is supported, then M-CREATE is mandatory, else out of scope.

c73 If a name binding that supports delete operations is supported, then M-DELETE is mandatory, else out of scope.

c74 Present if the ROIV-m-GET (sending) contained EFD or a compatible class listed in the allomorphs attribute as the value for the baseManagedObjectClass parameter

OSI Management Functions Profiles Conformance

The table below, lists all the current ISPs and identifies which profiles are required to be supported when the implementation adopts a manager or agent role.

The following notation convention has been used:

NOTATION	DESCRIPTION
m	defines a mandatory requirement
i	stands for out-of-scope

Table 4-1. Ensemble functional ISP conformance requirements

ISP Supported	Manager role	Agent Role
AOM211 - General Management Capabilities	i	i
AOM212 - Alarm Reporting and State Management Capabilities	i	i
AOM213 - Alarm Reporting	i	i

Capabilities		
AOM221 - General Event Report Management	i	i
AOM231 - General Log Control Management	i	i

Ensemble Functions Conformance

The table below lists all of the ensemble functions, and identifies which are mandatory, optional or conditional in the manager or agent roles.

The following notation convention has been used:

NOTATION	DESCRIPTION
m	defines a mandatory requirement
o	defines an optional requirement
c	defines a conditional requirement

Table 4-2 Ensemble Function Requirements

Ensemble Specific Functions	Manager Role	Agent Role
allomorphism Sensitive EFD function	m	m

Management Conformance Summary

Table 4-3. System Conformance Statement/Management Conformance Summary

Index	Ident.	Ident. of Std.	MO Class Label /	Base	Profile	Additional Info

			MOCS Proforma			
4.3.1	CMIP	ISO/IEC 9596-1	ISO/IEC 9596-2	-	m	
4.3.2	ROSE	ISO/IEC 9072-2	ISO/IEC 9596-2	-	m	
4.3.3	ACSE	ISO/IEC 8650	ISO/IEC 8650-2	-	m	
4.3.4	Pres.	ISO/IEC 8823	ISO/IEC 8823-2	-	m	
4.3.5	Sess.	ISO/IEC 8827	ISO/IEC 8827-2	-	m	

Management Capability Support/SMFUs Support

Table 4-4. Management Capability Support/SMFU Support Summary

Index	Functional Unit	Base Name	MAPDU Standard	CMIPDU Support	Profile Indexed by CMIS
4.4.1	-	-	-	-	-

MOCS Proforma For Ensemble Managed Object Classes

Table 4-5. MOCS Proforma for Ensemble MO classes

Index	Class Name	Base Standard		Profile	
		Manager role	Agent role	Manager role	Agent role
4.5.1	allomorphism SensitiveEFD	-	-	c2	c2

c2 - support of the feature in at least one management role is required

Association Initiator/Responder

Table 4-6. Association Initiator/Responder

Capability	Base Standard		Profile	
	Initiator	Responder	Initiator	Responder
What type of association does the implementation support?	c1	c1	c1	c1

CMIS Services (CMIP pdu) Requirements

Table 4-7. Manager CMIS Services (CMIP PDU) Requirements

Index	CMIS Service	pDISP 12059-0 Draft 5.0 Table Reference		Conditions mandated relevant to ISP 11183-2
		Manager Role	Profile	
4.7.1	M-GET	Table 13	c1	none
4.7.2	M-SET	Table 15	c1	none
4.7.3	M-CREATE	Table 7	c1	none
4.7.4	M-EVENT-RPT	Table 11	c1	none
4.7.5	M-CANCEL-GET	Table 5	c71	none
4.7.6	M-DELETE	Table 9	c1	none

c71 - If M-GET is supported, then M-CANCEL-GET is optional, else out of scope.

Support for modified ISP 11183-2 tables as defined in 4.2.9.1 is required for the supported CMIS services.

Table 4-8. Agent CMIS Services (CMIP PDU) Requirements

Index	CMIS Service	pDISP 12059-0 Draft 5.0 Table Reference		Conditions mandated relevant to ISP 11183-2
		Agent Role	Profile	
4.8.1	M-GET	Table 14	m	none
4.8.2	M-SET	Table 16	m	none
4.8.3	M-CREATE	Table 8	c72	none
4.8.4	M-EVENT-RPT	Table 12	m	none
4.8.5	M-CANCEL-GET	Table 6	c71	none
4.8.6	M-DELETE	Table 10	c73	none

c71 - If M-GET is supported, then M-CANCEL-GET is optional, else out of scope.

c72 - If a name binding that supports CREATE operations is supported, then M-CREATE is mandatory, else out of scope.

c73 - If a name binding that supports DELETE operations is supported, then M-DELETE is mandatory, else out of scope.

Support for modified ISP 11183-2 tables as defined in 4.2.9.1 is required for the supported CMIS services.

Modifications To ISP 11183-2 Tables

This ensemble specifies the use of the protocol elements of CMIP. The requirements are stated by reference to tables in the general CMIP Profile ISP 11183-2. The following tables modify the tables in ISP 11183-2 for the purposes of this ensemble.

Abbreviation	Description
EFD	denotes the eventForwardingDiscriminator class.

ASEFD denotes the allomorphismSensitiveEFD class. Managed objects of this class are compatible with the eventForwardingDiscriminator managed object class.

ACTUAL refers to the "actual class", as documented in clause 7.4.4 of GDMO.

ROIV-m-Create (sending)

Table 4-9. Modifications to ISP 11183-2, Table 14

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
14.4.1	managedObject Class	m	mm	mm	(3)

(3) - The parameter is either ASEFD or a class which is compatible with an instantiation of ASEFD. EFD is a compatible class to an instance of ASEFD.

ROIV-m-Create (Receiving)

Table 4-10. Modifications to ISP 11183-2, Table 15

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
15.4.1	managedObject Class	m	mm	mm	(3)

(3) - The following values must be statically supported:
- EFD
- ASEFD

Note: [Other values of compatible classes that are supported by the receiving implementation may also be specified.**]**

ROIV-m-Delete (sending)

Table 4-11. Modifications to ISP 11183-2, Table 16

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
16.4.1	baseManaged ObjectClass	m	mm	mm	(2)

(2) - The parameter must take one of the following values when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL or any compatible class listed in the allomorphs attribute

ROIV-m-Delete (receiving)

Table 4-12. Modifications to ISP 11183-2, Table 17

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
17.4.1	baseManaged ObjectClass	m	mm	mm	(2)

(2) - The following values must be statically supported when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL

Note: **[**Other values of compatible classes that are listed in the allomorphs attribute may also be specified.**]**

ROIV-m-Get (sending)

Table 4-13. Modifications to ISP 11183-2, Table 22

ISP	Parameter name	Base std.	ISP 11183-	Ensemble	Type,

11183-2 Index			2		value(s) & range(s)
22.4.1	baseManaged ObjectClass	m	mm	mm	

Note: [For an allomorphic operation with scope = baseObject only, the value can be any compatible class listed in the allomorphs attribute. The RORS-m-Get (sending) will contain only the attribute identifiers and values for the requested class.**]**

ROIV-m-Get (receiving)

Table 4-14. Modifications to ISP 11183-2, Table 23

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183- 2	Ensemble	Type, value(s) & range(s)
23.4.1	baseManaged ObjectClass	m	mm	mm	

Note: [For an allomorphic operation with scope = baseObject only, the value can be any compatible class listed in the allomorphs attribute. The RORS-m-Get (sending) will contain only the attribute identifiers and values for the requested class.**]**

ROIV-m-LinkedReply-Delete (sending)

Table 4-15. Modifications to ISP 11183-2, Table 26

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183- 2	Ensemble	Type, value(s) & range(s)
26.4.1.1	managedObject Class	m	mm	mm	(2)
26.4.2.1	managedObject Class	m	mm(1)	mm(1)	(2)
23.4.3.1	managedObject Class	m	mm(1)	mm(1)	(2)

(2) - The value of this parameter is the value of the objectClass attribute.

ROIV-m-LinkedReply-Get (receiving)

Table 4-16. Modifications to ISP 11183-2, Table 28

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
28.4.1.1	managedObject Class	m	mm(1)	mm(1)	(2)
28.4.2.1	managedObject Class	m	mm(1)	mm(1)	(2)
28.4.1	managedObject Class	m	mm(1)	mm(1)	(2)

(2) - The value of this parameter is the value of the objectClass attribute.

ROIV-m-LinkedReply-Set (sending)

Table 4-17. Modifications to ISP 11183-2, Table 30

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
30.4.1.1	managedObject Class	m	mm(1)	mm(1)	(4)
30.4.2.1	managedObject Class	m	mm(1)	mm(1)	(4)
30.4.3.1	managedObject Class	m	mm	mm	(4)

(4) - The value of this parameter is the value of the objectClass attribute.

ROIV-m-Set (sending)

Table 4-18. Modifications to ISP 11183-2, Table 32

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
32.4.1	baseManaged ObjectClass	m	mm	mm	(3)

(3) - The following values must be statically supported when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL or any compatible class listed in the allomorphs attribute for which the operation is valid.

ROIV-m-Set (receiving)

Table 4-19. Modifications to ISP 11183-2, Table 33

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
33.4.1	baseManaged ObjectClass	m	mm	mm	(3)

(3) - The following values must be statically supported when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL or any compatible class listed in the allomorphs attribute for which the operation is valid.

ROIV-m-Set-Confirmed (sending)

Table 4-20. Modifications to ISP 11183-2, Table 34

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
34.4.1	baseManaged ObjectClass	m	mm	mm	(3)

(3) - The following values must be statically supported when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL or any compatible class listed in the allomorphs attribute for which the operation is valid.

ROIV-m-Set-Confirmed (receiving)

Table Table 4-21. Modifications to ISP 11183-2, Table 35

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
35.4.1	baseManaged ObjectClass	m	mm	mm	(3)

(3) - The following values must be statically supported when scope = baseObject only:
- EFD
- ASEFD
- ACTUAL or any compatible class listed in the allomorphs attribute for which the operation is valid.

RORS-m-Create (sending)

Table 4-22. Modifications to ISP 11183-2, Table 40

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
40.3	CreateResult	m	mo	mc70	

40.3.1	managedObject Class	m	oo	mc70	(2)

(2) - The parameter value must take the value of the objectClass attribute

C70 - present if the ROIV-m-CREATE (sending) contained a value in the managedObjectClass parameter that differs from the actual class of the object that was created.

RORS-m-Delete (sending)

Table 4-23. Modifications to ISP 11183-2, Table 42

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
42.3.1	managedObject Class	o	oo(2)	oo(2)	(2)

(2) - The parameter value must take the value of the objectClass attribute

RORS-m-Get (sending)

Table 4-24. Modifications to ISP 11183-2, Table 46

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
46.3	GetResult	m	mo	mc74	
46.3.1	managedObject Class	o	oo(2)	mc74(2)	(5)
46.3.4	attributeList	m	mm(3)	mm(3)	(6)

c74 - present if the ROIV-m-Get (sending) contained EFD or a compatible class listed in the allomorphs attribute as the value for the baseManagedObjectClass parameter.

(5) - The value of this parameter is the value of the objectClass attribute

(6) - the attributeList only contains the set of attributeId and attributeValue pairs defined for requested compatible class. The requested compatible class is specified in the ROIV-m-Get (sending) baseManagedObjectClass parameter, and must be listed in the allomorphs attribute.

RORS-m-Set-Confirmed (sending)

Table 4-25. Modifications to ISP 11183-2, Table 48

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
48.3.1	managedObject Class	o	oo(2)	oo(2)	(3)

(3) - The parameter value must take the value of the objectClass attribute

ROER-classInstanceConflict (sending)

Table 4-26. Modifications to ISP 11183-2, Table 52

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
52.3.1	baseManaged ObjectClass	m	mm	mm	(1)

(1) - The value of this parameter is the same as was present on the invoking operation.

ROER-getListError (sending)

Table 4-27. Modifications to ISP 11183-2, Table 58

ISP	Parameter name	Base std.	ISP 11183-	Ensemble	Type,

11183-2 Index			2		value(s) & range(s)
58.3.1	managedObject Class	o	oo(1)	mc74(1)	(2)
58.3.4.1.2	attributeId	m	mm	mm	(3)
58.3.4.2.1	attributeId	m	mm	mm	(3)

(2) - The value of this parameter is the value of the objectClass attribute

(3) - only attributeId values defined for the requested compatible class are present if:

- scope = baseObject only
- the requested compatible class that is specified in the ROIV-m-Get (sending) baseManagedObjectClass parameter is listed in the allomorphs attribute
- the value of the errorStatus parameter is 2 (accessDenied)
- no attributes were specified in the attributeIdList on the ROIV-m-Get (sending)

c74 - The managedObjectClass parameter shall be present if the ROIV-m-GET (sending) contained EFD or a compatible class listed in the allomorphs attribute as the value for the baseManagedObjectClass parameter.

ROER-noSuchObjectClass (sending)

Table 4-28. Modifications to ISP 11183-2, Table 84

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
84.3	ObjectClass	m	mm	mm	(1)

(1) - The parameter value is the same as was present on the invoking operation

ROER-processingFailure (sending)

Table 4-29. Modifications to ISP 11183-2, Table 92

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
92.3.1	managedObject Class	m	mm	mm	(1)

(1) - The value of this parameter is the value of the objectClass attribute

ROER-setListError (sending)

Table 4-30. Modifications to ISP 11183-2, Table 94

ISP 11183-2 Index	Parameter name	Base std.	ISP 11183-2	Ensemble	Type, value(s) & range(s)
94.3.1	managedObject Class	o	oo(3)	oo(3)	(4)

(4) - The value of this parameter is the value of the objectClass attribute

D. Service Request Management Ensemble

Editor's Note: **[**Because the Service Request Management Ensemble is intended to be a self-contained, standalone document, the clauses and subclauses of the Service Request Management Ensemble (as shown here in Annex D.4) are numbered as they would be in a separate, standalone document, and not as they would be according to their position in Annex D.4.**]**

SERVICE REQUEST MANAGEMENT ENSEMBLE - DRAFT 3

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ANNEX C: REFERENCE LIST

List of Figures

List of Tables

Issue 1, Draft 1, December 1992

Issue 1, Draft 2, February 1993 - the major changes in this draft were the incorporation of review comments, expanding and revising the text from Draft 1, an attempt to broaden the scope of the ensemble to support more than just network services, and the addition of draft text to Sections 2.1 and 2.2.

Issue 1, Draft 3, March 1993 - the changes in this draft were the incorporation of review comments obtained and discussed in the March 1993 OIW meeting.

1. INTRODUCTION

Ensembles provide a top down view of a particular solution to a management problem. In order to focus on the solution to this management problem, specific restrictions are placed upon particular referenced definitions.

The concepts and format of Ensembles are described in the "NM Forum Ensemble Concepts and Format" [n1] specification document.

This Ensemble, wherever possible, references documents which define the components of the Ensemble.

The management problem is identified as a set of requirements and constraints. In defining the solution to this management problem, the resources to be managed, the functions to be applied, and the scenarios describing the interactions are all identified. The Ensemble references base standards and International Standardized Profiles (ISPs). It also references libraries containing definitions expressed by GDMO (Guidelines for the Definition of Managed Objects [n2]) templates.

The purpose of this document is to collect management information definitions and profiles, and show how they can be applied to manage the resources identified in this Ensemble.

This document is organized as follows:

Section 1, "General Information", provides a high level overview describing the Ensemble and the structure of the document.

Section 2, "Management Context", identifies the managed resources and management capabilities of the Ensemble.

Section 3, "Information Model", specifies all management information components of this Ensemble.

Section 4, "Ensemble Conformance Requirements", provides or references statements of conformance for this Ensemble. The Managed Object Conformance Proformas that are specific to this Ensemble are provided in Annex B.

1.1 UNIQUE IDENTITY

The unique identity is a registered object identifier used to identify this Ensemble.

Editor's Note: **[**identity to be provided**]**

1.2 GENERAL DESCRIPTION

This Ensemble specifies the managed objects and the application functions that define a service request interface between a provider and a customer. Such capabilities allow a customer to submit a service request to a provider, exchange information regarding the requrest, modify the request, obtain periodic information on the status of a request, and be notified by the provider that a request has been satisfied.

This ensemble specifies a standardized means for a customer to request, change, and track services provisioned by a service provider. For example, a customer contracts with a provider to supply services upon request, i.e., to provision or allocate the resources necessary to provide the elements of the services. This ensemble defines a standard customer/provider interface that specifies how a customer requests elements of the contracted (i.e., pre-authorized) service and is informed of its status. This ensemble addresses the customer's view of the customer/provider interface for processing service requests.

Many of the terms used in this Ensemble (e.g., service request, service, goods, user, etc.) have different meanings to different readers. Therefore, to set the context for the scope, purpose, requirements to be satisfied, and functions needed for this Ensemble, a number of terms are defined below and are defined from a user perspective.

For the purposes of this ensemble the following definitions apply:

- Service Request - a request for the provisioning of one or more services, connections, and goods to one or more users.

- Service - a specific functionality available to one or more users. Examples of the types of services that could be requested include electronic mail, voice mail, user privileges (e.g., long distance access, file access, and security privileges), video and teleconferencing, and application usage (e.g., SNA). (Note: this list should not be construed to be all inclusive of the services that could be requested. In fact, it is expected that the list of possible services will be continually changing and may span several other areas of information technology and possibly maintenance services.) In this Ensemble, the term service is not intended to represent OSI Layer Service Access Points.

- Connection - refers to a user's access (attachment) to a network. Examples of the types of connections that could be requested include dedicated leased lines, voice connections, packet switched services (e.g., X.25, frame relay, or ATM), LAN connections, and multidrop connections. (Note: this list should not be construed to be all inclusive of the connections that could be requested. In fact, it is expected that the list of possible connections will be continually changing and may span several other areas of information technology.)

- Goods - refers to physical items. These physical items may be necessary to provide services and connections. Examples of the types of goods that could be requested include equipment/hardware (e.g., muxes, switches, modems, bridges, routers, cables, computers and peripheral supplies, phone sets, encryption devices, and network interface cards), software, and people. (Note: these lists should not be construed to be all inclusive of the goods that could be requested. In fact, it is expected that the list of possible goods will be continually changing and may span several other areas of information technology.)

- Customer - a corporation, organization, or individual with needs to be satisfied by some services, connections, and goods. A customer is the procurement agent for some group of users.

- Requester - a requester is a person or process authorized to submit a specific service request on behalf of a user.

- User - a person or process that uses services, connections, and goods.

- User device - a resource to which a specific service is delivered. Not all services require an end user device.

- Provider - an organization responsible for supplying some service, connection, or goods that are visible to management. Services, connections, and goods provided may be tariffed or non-tariffed, public or private, and may be provided to one or more customers. The same organization can be both a customer and a provider.

Editor's Note: **[**From comments from BT: In Section 1.2 (or somewhere else Scope ?? Context ??), a couple of diagrams would be useful, perhaps showing the 'requester-provider' relationship.**]**

1.3 SCOPE AND PURPOSE

Ensembles represent specific solutions to particular problems. Thus, an Ensemble is a complete description of the problem and the solution to that problem.

This section describes the requirements of the problem. It includes the definition of the information model that represents the solution to a problem. These definitions comprise references to one or more management information libraries that contain definitions of managed object classes expressed in GDMO templates, packages, attributes, name bindings, etc. Also included in the Ensemble definition are statements of conformance and suitable proformas.

The purpose of this Ensemble is to define a general purpose management service that will allow:

- A requester to submit a service request to a provider for the purpose of adding, modifying, or deleting a preauthorized service, connection, or goods

- A requester to submit a service request to a provider for the purpose of modifying or canceling an outstanding service request

- A requester to receive feedback on the status of a service request and pertinent implementation information

This Ensemble does not address:

- A customer's internal mechanism for tracking service requests
- The accounting, pricing, billing, or other contractual issues related to service, connection, and goods provisioning

1.4 RELATIONSHIPS WITH OTHER ENSEMBLES

This section identifies the relationships of this Ensemble to other Ensembles.

At this time, this Ensemble is not related to any other Ensembles.

2. MANAGEMENT CONTEXT

The "Management Context" describes why the Ensemble is required. The description of the "Management Context" includes the definition of the resources to be managed, the management functions to be performed, the scope of the problem to be solved, and the management view or level of abstraction from which the problem is to be approached. The influence of the Management Context on the Ensemble is shown in Figure 1.

```
                         MANAGEMENT TOOLS
                      {Standards: GDMO, Objects,
                     System Management Functions,
                            Profiles, ...}
                                  |
                                  V
  MANAGEMENT CONTEXT             -----------------------------
                         |         ENSEMBLE           |
                         |                            |
VIEWPOINT                | - Requirements             |
 ------------------------>   |                        |
{User, Provider, Element,    | - Scenarios            |
    Network, ...}            |                        |
                         | - Resources                |
                         |                            |
RESOURCES                | - Information Models       |
 ------------------------>   |                        |
{Equipment, Software,        | - Entity Relationship  |
    Applications, ...}       |   Diagrams             |
                         |                            |
                         | - Object Specifications    |
FUNCTIONS                |                            |
 ------------------------>   | - Managed Object       |
{Fault, Configuration,       |   Conformance Statements    |
     Performance, ...}       |                        |
                         | - Ensemble Conformance     |
                          -----------------------------
```

Figure ??. Management Context Overview

2.1 GENERAL INTRODUCTION

A general description for the steps involved in processing a service request is given below. Not all of the steps listed below will necessarily be required or taken for each request. In addition, steps 2 though 6 can occur in any order.

1. INITIATE A SERVICE REQUEST - A requester submits a request for a service, connection, or good.

2. EXCHANGE INFORMATION ABOUT A SERVICE REQUEST - Information exchange can happen zero or more times throughout the life of a service request and can be initiated by either the requester or the provider. Examples of information exchange are:

   - A provider may request clarification or additional information about a service request; in turn, the requester provides the desired information

   - A provider provides pricing, scheduling, or other implementation information concerning the service request

3. MODIFY (ADD TO, CHANGE, DELETE FROM, AND DELETE) AN OUTSTANDING SERVICE REQUEST - A requester initiates a modification to an outstanding service request

4. PROVIDER PROVISIONS SERVICE, CONNECTION OR GOODS - The provider designs and costs the requested service, connection, or good; orders required goods; schedules the provisioning activities; and provisions the service, connection, or goods. (Note: These functions are outside the scope of this Ensemble.)

5. GET STATUS INFORMATION - A customer requests status information from the provider

6. STATUS NOTIFICATIONS - A provider sends the customer status notifications when the status of a service requests changes

7. PROVISIONING COMPLETED - The provider completes all the necessary steps to provision the requested service, connection, or goods

Editor's Note: **[**Add a diagram depicting the steps described above. Also add text describing why the ensemble is required.**]**

2.2 MANAGEMENT VIEW AND LEVEL OF ABSTRACTION

This section indicates the management view of the Ensemble, which includes information on the level of abstraction. For example, in a hierarchically organized system, this section would indicate if the Ensemble deals with the management of equipment, the management of networks, or the management of services. It may also indicate the management perspectives and roles.

Editor's Note: **[**Add text describing whether the ensemble is from the user or provider point of view and the expected level of detail.**]**

The management view that this ensemble addresses is based on the interface between two (or more) cooperating management systems operating in some sort of requester-provider relationship, where the provider is to operate on a set of services, connections, and goods on behalf of the requester. The requester is able to monitor and control the progress of that order; and, where appropriate, to cancel or modify the order.

This requester-provider relationship is appropriate to an interface between any management system architecture or any interface between user and provider domains (as in the Reconfigurable Circuit Service Ensembles), and is not limited to the provisioning of network services. This model is not restricted to the layer, purpose of the interaction, or the services, connections, or goods affected.

Editor's Note: **[**State what the model is targeted toward.**]**

2.3 RESOURCES

This section defines all the resources or components of resource that are to be the subject of the Ensemble. The definition of the resources contains all of the resources and only those resources that are relevant to the Ensemble. The resources are defined by textual descriptions or by reference to other documents containing descriptions of the resources. When other documents are referenced, statements are provided to indicate any restrictions and constraints on those source definitions.

Editor's Note: **[**The resources to be managed are service requests. Possible structures for managed objects representing service requests include:

- A base service request managed object class with more detailed subclasses for different types of service requests or for requests for different types of services

- One (or more) base service request managed object class(es) with relationship/referential "pointers" to other classes providing more detailed description of the type of service request or the type of service requested

- Some combination of the approaches described above

Regardless of the approach, it is not the intent of this Ensemble to define every possible type of service that a customer might wish to request. However, it is the authors' intention to include the detailed definition of at least one service in this Ensemble to serve as an example of how other services may be defined.**]**

Editor's Note: **[**Comment from BT: The SRM mechanism should be capable of supporting any sort of request (order) for any sort of service, connection, or good. It is therefore important that the resources section does not specify service-specific resources. For this type of mechanism the resources involved should be the order itself, not the subject of the order. As listed in the BT contribution this could include:

- a resource defining the orders that the provider is capable of performing
- a resource defining the progress of an order
- a resource representing the changes to be made
- resources representing the real resources to be affected

These would provide a basic mechanism to be used in the ensemble which would support a wide range of possible resources, changes, etc.. The exact nature of these resources would need to be further defined, but see the BT contribution for more details.**]**

2.4 FUNCTIONS

This section defines the management functions that can be performed on the resources described in Section 2.3. These functions may be primitive functions defined for OSI systems management (e.g., event management), higher level functions for general network management (e.g., alarm surveillance), or other functions unique to the problem the Ensemble addresses.

These definitions consist of a brief textual description of each function. In some cases, these descriptions will include a set of references to other documents, for example:

ISO System Management Functions

Telecommunications Management Network (TMN) CCITT
M.3020 [4]

Other standards

When other documents are referenced, statements are required to indicate the restrictions and constraints to the function definitions in the Ensemble.

Editor's Note: **[**The figure below is included to provide an overview of the functions to be addressed by this Ensemble. Descriptions of these functions will be provided in a later draft.**]**

==

REQUESTER PROVIDER

INITIATE A SERVICE REQUEST:

----- Requester submits request for service ---->
<---- Optionally, provider acknowledges request -----

EXCHANGE INFORMATION ABOUT A SERVICE REQUEST:

<---- Provider requests clarification/ -----
additional info
----- Requester provides clarification/ ---->
additional info
<---- Optionally, provider acknowledges -----
additional info

<---- Provider provides pricing, scheduling, -----
installation and other info
----- Optionally, requester acknowledges/ ---->
confirms information

MODIFY (ADD TO, CHANGE, DELETE FROM, AND DELETE) AN OUTSTANDING SERVICE REQUEST:

----- Requester submits request to modify an ---->
outstanding service request
<---- Optionally, provider acknowledges request -----

GET STATUS INFORMATION:

-----   Requester requests status information   ---->
<----   Provider sends status response   -----

STATUS NOTIFICATIONS:

<----   Provider sends status (change) notifications   -----
-----   Optionally, requester acknowledges/ confirms information   ---->

Figure ??. Overview of the Service Request Management Ensemble Functions

==

Editor's Note: **[**Comment from BT: The list of functions should include:

Both Asynchronous (Controlled) and Synchronous (Uncontrolled) functions:

- Create order
- Order rejected by performer
- Modify order
- Suspend/Resume order
- Report on order progress
- Monitor order progress
- Delete order
- Report on failure
- Report on completion (partial success and complete success)**]**

2.5 OTHER REQUIREMENTS

This section contains requirements not covered in functions, resources, or level of abstraction. For example, these may be business or implementation requirements.

Editor's Note: **[**Requirements related to security need to be addressed.**]**

3. MANAGEMENT INFORMATION MODEL

For the purposes of defining an Ensemble, an Information Model can be thought of as focusing on the real world under study. An information model contains information about both the elements of the model and the relationships between them. For a management information model the elements of management information are defined using GDMO and the relationships are graphically illustrated.

Editor's Note: **[**Comment from BT: This model could be very similar to the testing management type mechanism which allows a range of tests to be performed on a range of resources. This sort of mechanism should be applicable to the order handling type work. The classes will of course be different but it may save effort if the same principles were applied.**]**

Editor's Note: **[**This proposed approach requires further investigation. Testing model will be kept in mind, but there questions as to whether it is the best or most appropriate model for SRM.**]**

3.1 GENERAL INTRODUCTION

3.2 RELATIONSHIPS

This section defines the relationships among the components of the model. These may be expressed in Entity-Relationship (ER) diagrams or other similar graphic representations.

Three types of diagrams may be used:

- One for the relationships intrinsic to the underlying resources. In this representation of the model, the entities (resources represented by managed object classes) making up the Ensemble are identified along with the relationships between the entities.

- One for the relationships among the classes representing the resources.

- One for the naming schema. The naming model to be used by this ensemble is described, which is a subset of all possible naming relationships. This is expressed graphically and by listing references to those name bindings selected for use with the ensemble.

The management information described in this section is defined to have the following inter-relationships.

3.3 SCENARIOS

This section defines the scenarios associated with this Ensemble. The scenarios are used to show how the managed objects in the information model can be used to accomplish the function listed in section 2.4. The scenarios may be defined in the standards or defined specifically for the ensemble.

Each of the scenario definitions consist of a brief textual description and message flow diagrams. In some cases, these description will include a set of references to other documents. When other documents are referenced, statements are required to indicate the restrictions and constraints in this Ensemble to the function definitions in the referenced document.

In the scenarios that follow, CMIP flows between (and corresponding CMIS primitives within) manager and agent systems are indicated by arrows with a three character abbreviation for request (Req), indicate (Ind), response (Rsp), and confirm (Cnf) primitives shown at the head and tail of the arrow. For example:

```
o-- Req --------------- Ind -->
        CMIS request
<-- Cnf --------------- Rsp --o
        CMIS response
```

Editor's Note: **[**Comment from BT: Scenarios required for each function.**]**

3.4 MANAGEMENT INFORMATION REFERENCES

This section references all the definitions of management information relevant to the Ensemble. The definitions will be provided entirely by references to other documents which contain GDMO specifications.

This section contains only references to definitions that are relevant to the Ensemble. Thus, this section also contains statements about any additional restrictions or constraints to those definitions.

4. ENSEMBLE CONFORMANCE REQUIREMENTS

Editor's Note: **[**Comment from BT: Should at least refer to AOM211, and 221 - likely that 231 should be included depending on exact functions adopted.**]**

4.1 GENERAL CONFORMANCE REQUIREMENTS

4.2 SPECIFIC CONFORMANCE REQUIREMENTS

4.2.1 OSI Management Functions Profiles Conformance

4.2.2 Ensemble Functions Conformance

4.2.3 Management Conformance Summary

4.2.4 Management Capability Support/SMFUs Support

4.2.5 MOCS Proforma for Ensemble Managed Object Classes

4.2.6 Association Initiator/Responder

4.2.7 CMIS Services (CMIP PDU) Requirements

Editor's Note: **[**Unresolved Comments, Discussion Points, Issues, and Action Items:

1) Comment from BT:
Location. Title page
Comment. Title should be changed to reflect that the mechanism specified is more generally applicable. The title could be changed to :

- Order Handling Management Ensemble
- Generic Order Handling Management Ensemble
- Order Request Management Ensemble
- Order Request Handling Ensemble

Rationale. This mechanism could be used for any interface where two (or more) systems were involved in some sort of user-provider relationship. See following comments.

2) Provider frequently has to deal with one or more end users, particularly in later stages of the provisioning activities. What if any impact does that have on this ensemble?

3) Need to apply model & scenarios to "customer-provider-vendor" arrangement.

4) Can/should this ensemble be broadened to include all types of services, connections and goods and not just those that are network and telecommunications related? If so, some of the definitions in Section 1.2 may need to be modified to reflect this broadened scope.

5) What is the relationship between this ensemble and phone calls/email service requests??

6) What (if any) language considerations are needed? (Is foreign language support needed?)

7) Is the "send request" and "status always open until instance deleted" the simplest scenario or is "send request, status open" and "notify of completion the simplest"?

8) Is the Management Context Diagram in the Section 2.0 Ensemble template intended to be used verbatim or "customized" for the particular Ensemble being documented? What are the management context functions? (Is there a "standard" list?)

9) Need to look at if and how to handle a single request that is broken up by the provider into the ordering and/or provisioning of multiple services, connections, and goods.

10. Look into the use of EDI, TMN, and the Trouble Ticketing concept

11. Add a discussion about the relationship between this ensemble and EDI, when each might be used, etc.

12. Identify which model (e.g., ISO, CCITT) is being used.**]**

Annex (informative)

Translated Management Information Libraries

E. Introduction

(Refer to the Stable Implementation Agreements Document.)

E. MIBs Translated By Organizations Other Than OIW

(Refer to the Stable Implementation Agreements Document.)

E. OIW NMSIG Translated MIBs

Editor's Note: **[**MIBs which may be translated by the OIW NMSIG have yet to be determined.**]**

Editor's Note: **[**The OIW NMSIG expressed a strong interest in initially translating the RMON MIB (The Internet Remote Monitoring Management Information Base, RFC 1271), the MADMAN Network Services Monitoring MIB (NMSIG-93/301), the MADMAN Directory Monitoring MIB (NMSIG-93/302), and the MADMAN Mail Monitoring MIB (NMSIG-93/303). An electronic call has been distributed to identify other candidate MIBs to be considered for translation.**]**

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 19 - Remote Database Access

Output from the December 1993 OSE Implementors' Workshop (OIW)

SIG Chair: **Peter Eng, IBM Canada**
SIG Editor: **Joel Berson, Santosh Hasani, Digital Equipment Corp.**

Foreword

This part of the Working Implementation Agreements was prepared by the Remote Database Access Special Interest Group (RDA SIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing part on this subject.

Future changes and additions to this version of these implementation Agreements will be published as change pages. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

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List of Tables

Part 19 - Remote Database Access

0 Introduction

Refer to the Stable Implementation Agreements.

Scope

Refer to the Stable Implementation Agreements.

Status

Refer to the Stable Implementation Agreements.

Normative references

Refer to the Stable Implementation Agreements.

Definitions and abbreviations

Refer to the Stable Implementation Agreements.

Structure of RDA standards

Refer to the Stable Implementation Agreements.

SQL specialization

Service parameter limits/agreements

Refer to the Stable Implementation Agreements.

Limits for common parameters

Refer to the Stable Implementation Agreements.

Other limits and agreements

Refer to the Stable Implementation Agreements.

Profiles

The names of RDA profiles are of the form "ARD-abcd". ("ARD" is reserved in ISO/IEC TR 10000-2 for Remote database Access.)

a identifies the RDA specialization:

0 = SQL Specialization

b identifies the capabilities for transaction management:

0 = transactions accessing data resources through a single remote open system (RDA Basic application-context). The type of transaction management provided is one-phase commitment.

1 = transactions spanning more than one open system (the RDA TP application-context). The type of transaction management provided is two-phase commitment.

c identifies the functionality provided; that is, the set of functional units or other major elements of function mandated by the profile. This may differ among the various RDA Specializations. See below for the definition of this element for the SQL Specialization.

d identifies the role:

0 = client role; that is, the ability to initiate RDA requests.

1 = server role; that is, the ability to respond to RDA requests.

(An implementation that provides both roles must specify both profiles.)

For the SQL Specialization, the following functionalities are defined:

ARD-000d = Immediate execution: the capability to immediately execute SQL statements. (The significant function is the RDA Immediate Execution functional unit.)

ARD-001d = Stored execution: the capability to store and later execute SQL statements. (The significant function is the RDA Stored Execution functional unit.)

ARD-002d = Status: the capability to perform status operations on other dialogues. (The significant function is the RDA Status functional unit together with support for the controlServiceDataRequested parameter of the R-Initialize service.)

ARD-003d = Cancel: the capability to perform cancel operations on other dialogues. (The significant function is the RDA Cancel functional unit together with support for the controlServiceDataRequested parameter of the R-Initialize service.)

Profiles for the RDA TP application-context will be defined at a later time.

Refer to the Stable Implementation Agreements for the rules for and descriptions of the RDA profiles.

Annex (normative)

RDA SIG object identifiers

Refer to the Stable Implementation Agreements.

Annex (normative)

Protocol Implementation Conformance Statement

No text.

Annex (informative)

SQLSTATE values for RDA errors

If passed on from the RDA service provider to an SQL Application in the RDA Client, errors returned by the SQL Server in RDA Error Responses are mapped into SQLSTATE values as specified in Table 43, SQLSTATE values for RDA errors.

Table 43 - SQLSTATE values for RDA errors

SQLSTATE VALUE	RDA Service Error Name
HZ001	accessControlViolation
HZ002	badRepetitionCount
HZ003	commandHandleUnknown
HZ004	controlAuthenticationFailure
HZ005	controlServicesNotAllowed
HZ006	dataResourceAlreadyOpen
HZ007	dataResourceHandleNotSpecified
HZ008	dataResourceHandleUnknown
HZ009	dataResourceNameNotSpecified
HZ010	dataResourceNotAvailable
HZ011	dataResourceUnknown
HZ012	dialogueIDUnknown
HZ013	duplicateCommandHandle
HZ014	duplicateDataResourceHandle
HZ015	duplicateDialogueID
HZ016	duplicateOperationID

HZ017	invalidSequence
HZ018	noDataResourceAvailable
HZ019	operationAborted
HZ020	operationCancelled
HZ021	serviceNotNegotiated
HZ022	transactionRolledBack
HZ023	userAuthenticationFailure
HZ024	hostIdentifierError
HZ025	invalidSQLConformanceLevel
HZ026	rDATransactionNotOpen
HZ027	rDATransactionOpen
HZ028	sQLAccessControlViolation
HZ029	sQLDatabaseResourceAlreadyOpen
HZ030	sQLDBLArgumentCountMismatch
HZ031	sQLDBLArgumentTypeMismatch
HZ032	sQLDBLNoCharSet
HZ033	sQLDBLTransactionStatementNotAllowed
HZ034	sQLUsageModeViolation
SQLSTATE VALUE	**ACSE Service Error Name**
HZ200	A-AssociateFailurePermanent
HZ201	A-AssociateFailureTransient
HZ202	A-ReleaseFailure
HZ203	A-AbortFailureServiceUser
HZ204	A-AbortFailureServiceProvider

SQLSTATE VALUE	TP Service Error Name
HZ500	BeginDialogueRejectedUser
HZ501	BeginDialogueRejectedProvider
HZ502	UError
HZ503	UAbortRollbackTrue
HZ504	UAbortRollbackFalse
HZ505	PAbortRollbackTrue
HZ506	PAbortRollbackFalse
HZ507	HeuristicMix
HZ508	HeuristicHazard
HZ509	Rollback

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 20 - Manufacturing Message Specification (MMS)

Output from the December 1993 NIST Workshop for Implementors of OSI

SIG Chair: **Rick Igou, Martin Marietta Energy Systems**
SIG Editor: **Neal Laurance, Ford**

Foreword

This part of the Working Implementation Agreements was prepared by the Manufacturing Message Specification (MMS) Special Interest Group (MMSSIG) of the National Institute of Standards and Technology (NIST) Workshop for Implementors of Open Systems Interconnection (OSI). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. No significant technical change has occurred in this part since it was previously presented.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

Table of Contents

Part 20 - Manufacturing Message Specification (MMS)

0 Introduction

(Refer to the Stable Agreements, Version 6.)

Scope

(Refer to the Stable Agreements, Version 6.)

Field of Application

Normative References

(Refer to the Stable Agreements, Version 6.)

Definitions

(Refer to the Stable Agreements, Version 6.)

Corrigenda and Addenda

ISO/IEC 9506-1:1993 - *Industrial automation systems - Manufacturing Message Specification: Technical Corrigenda 1*

Status

Phase 1 is in progress.

General Agreements

Max supported PDU size

(Refer to the Stable Agreements, Version 6.)

FileName

(Refer to the Stable Agreements, Version 6.)

Order of capabilities

(Refer to the Stable Agreements, Version 6.)

Constructed Encodings

Constructed encodings shall not be used for bit strings shorter than 256 bits, nor for octet strings (or types derived from octet strings by tagging) shorter than 1024 octets. For such strings, only primitive encodings shall be used. Upon receipt of a constructed bit string or octet string that violates this restriction, the receiving implementation may reject the corresponding PDU, but shall not send a P-P-Abort.

Service-Specific Agreements

Environment and general management

Initiate

Negotiation of MMS abstract syntaxes

(Refer to the Stable Agreements, Version 6.)

Max serv outstanding

(Refer to the Stable Agreements, Version 6.)

Local detail calling

(Refer to the Stable Agreements, Version 6.)

Local detail called

(Refer to the Stable Agreements, Version 6.)

Rules of Extensibility

(Refer to the Stable Agreements, Version 6.)

VMD Support

(Refer to the Stable Agreements, Version 6.)

Domain Management

List of capabilities

(Refer to the Stable Agreements, Version 6.)

Initiate Download Sequence service

(Refer to the Stable Agreements, Version 6.)

Download Segment service

(Refer to the Stable Agreements, Version 6.)

Terminate Download Sequence service

(Refer to the Stable Agreements, Version 6.)

Initiate Upload Sequence service

(Refer to the Stable Agreements, Version 6.)

Upload Segment service

(Refer to the Stable Agreements, Version 6.)

Get Domain Attributes service

(Refer to the Stable Agreements, Version 6.)

Program Invocation Management

Start service

(Refer to the Stable Agreements, Version 6.)

Stop service

(Refer to the Stable Agreements, Version 6.)

Resume service

(Refer to the Stable Agreements, Version 6.)

Reset service

(Refer to the Stable Agreements, Version 6.)

Variable Access

Scattered access

(Refer to the Stable Agreements, Version 6.)

Floating point

(Refer to the Stable Agreements, Version 6.)

Unsigned Data

(Refer to the Stable Agreements, Version 6.)

Order of variable specifications

(Refer to the Stable Agreements, Version 6.)

Parameter CBBs

(Refer to the Stable Agreements, Version 6.)

Named Variable Scope

(Refer to the Stable Agreements, Version 6.)

Address Types

(Refer to the Stable Agreements, Version 6.)

Semaphore Management

Semaphore services are not considered in Phase 1.

Operator Communication

(Refer to the Stable Agreements, Version 6.)

Event Management

Event Management services are not considered in Phase 1.

Journal Management

Journal Management services are not considered in Phase 1.

Annex (normative)

Backwards compatibility agreements

(Refer to the Stable Agreements, Version 6.)

Annex (normative)

DIS 9506 modifications required for backwards compatibility

(Refer to the Stable Agreements, Version 6.)

Annex (normative)

Basic functional tests

(Refer to the Stable Agreements, Version 6.)

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 21 - Character Set

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Editor: **Wally Wedel, U.S. West Advanced Technologies**

Foreword

This part of the Working Implementation Agreements was prepared by the Character Set Working Group, formerly affilitated with the Upper Layer Special Interest Group of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - General Information in the "Draft Working Implementation Agreements Document" for the workshop charter. Text in this part has been approved by the Plenary of the above-named workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

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Part 21 - Character Set Usage in OSI Applications

This text was approved as stable and moved into the "Stable Implementation Agreements Document," Version 7, Edition 1, December 1993.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 22 - ODA Image DAP

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **James Wing, IBM**
SIG Editor: **Frank Spielman, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Office Document Architecture (ODA) Special Interest Group (SIG) of the Open Systems Environment Implementors' Workshop (OIW). Development of this document application profile has been done in liaison with several organizations. These include the DoD Computer-aided Acquisition and Logistic Support (CALS) Office, Navy's David Taylor Research Center, and the ad-hoc Tiling Task Group.

This document application profile is intended to be suitable for the interchange of large format raster images which may be annotated with character, raster, or geometric revisions.

This part contains four annexes:
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annex A (normative): Amendments and Corrigenda;p a2LiI
ca2LiI
annex B (informative): Recommended practices; v a2LiI
v ca2LiI
annex C (informative): References to other standards and registers; v a2LiI
v ca2LiI
annex D (informative): Supplementary information on attributes. v a2LiI
v QLiO
Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

Part 22 - ODA Image DAP

(Refer to Stable Implementation Agreements Document)

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 23 - ODA Raster DAP

Output from the December 1992 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **James Wing, IBM**
SIG Editor: **Frank Spielman, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Office Document Architecture (ODA) Special Interest Group (SIG) of the Open Systems Environment Implementors' Workshop (OIW).

All of the text in this part has been approved by the Plenary of the above-mentioned Workshop for movement to the Stable Document. Refer to the Stable Implementation Agreements.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struckout. New and replacement text will be shown as shaded.

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Implementation Agreements for Open Systems Interconnection Protocols: Part 24 - Conformance Testing

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Eva Kuiper, Hewlett Packard**
Workshop Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Conformance Testing Special Interest Group (CTSIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures of the "Draft Working Implementation Agreements Document."

Text in this part has been approved by the Plenary of the above-mentioned Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

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Part 24 - Conformance Testing

0 Introduction

(Refer to Stable Implementation Agreements Document)

Scope

(Refer to Stable Implementation Agreements Document)

Normative References

(Refer to Stable Implementation Agreements Document)

Status

This material is current as of December 6, 1993.

Errata

Errata will be reflected in replacement pages of Version 7, Stable Document.

Guidelines on Interpretation of Disputed Test Cases

Abstract test cases

The guidelines are given as follows:

The Certification/Registration body shall present to the Conformance SIG the list of disputed test cases prior to the workshop;

If the Conformance SIG is unable to resolve specific interpretations, the problems shall be discussed with the relevant protocol SIGs for resolution at the same workshop;

If the OIW is unable to resolve an issue, then the OIW will refer the problem to the relevant standards body. In such a case the OIW will recommend to all relevant Certification bodies that the test case be considered as deselected until it is resolved;

In the case where a resolution is reached by the OIW, the new interpretation shall be distributed to the Certification bodies, relevant standards body, MOT suppliers, and the test case maintenance authority.

Executable test cases

These problems may be brought before the OIW at the discretion of a product supplier, test system supplier, test lab, or Certification Authority. Resolutions will be determined in the same way as for Abstract Test Case problems.

Static analysis and test case selection

Disputes regarding static analysis and test case selection will be handled as above in the case of Abstract Test Cases.

Guidelines on the Choice of PICS

SIGs are responsible for referencing the appropriate base standard PICS proforma for the protocols used by their specific profiles. The SIGs are also responsible for producing the International Profile Requirements List(s) for their specific parts in the Implementors Agreements.

Where an internationally harmonized PICS proforma exists, it shall be used. In the absence of an available PICS proforma, the SIGs are encouraged to use the guidelines stated in ISO 9646 to define a PICS proforma and arrange to have it submitted to the appropriate standards body. The consequence of not providing for an internationally harmonized PICS proforma are that implementors may have to deal with multiple PICS proformas for the same protocol.

CT SIG Resolution for FTAM

The PICS reflects the product. The product being tested is the protocol machine and the necessary software to fulfill the functionality indicated in the PICs.

Guidelines for PCTR Test Campaign Summary

Refer to the Stable Agreements Document.

Resolutions which apply to formal test campaigns

Testing of collocated MHS '88 elements

Part 8 of the SIA states that the UA, MS, and MTA configuration is not restricted; any of these components may be collocated, although they are depicted as logically separate. In the case of a collocated UA and MS, a proprietary interface may be used instead of P7. In the case of a collocated MS and MTA, or a collocated UA and MTA, a proprietary interface may be used instead of P3. In the absence of P3 and P7, These components (MS, UA, and MTA) must be tested and registered together.

Testing of MHS '88 systems for 1984 conformance

For TCs Rts 1.2.2.3, 51.2.2.3, 55.2.2.1, 56.2.2.1, 56.2.2.2, 56.2.2.3, and 56.2.2.4, since normal mode should be the default mode, do the following:

If implementation is statically configurable, configure as MHS 84;

If implementation is only dynamically configurable:

The test cases shall be run, and where possible, a manual verdict assessment performed in consultation with JITC;

If manual verdict is not possible, a manual verdict assessment should be performed in consultation with JITC.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 25 - Health Care

Output from the December 1992 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **John J. Harrington, Hewlett Packard**
Workshop Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Health Care Special Interest Group (HCSIG) of the Open Systems Interconnection Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures in the "Draft Working Implementation Agreements Document" for the workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as . New and replacement text will be shown as shaded.

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Part 25 - Health Care

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 26 - Open Systems Environment

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Walt Houser, Department of Veterans Affairs**
SIG Editor: **Robert Lynch, Digital Equipment Corporation**

Foreword

This part of the Working Implementation Agreements was prepared by the Open Systems Environment Technical Committee (OSE TC) of the Open Systems Environment Implementors' Workshop (OIW).

This text was approved by the Plenary of the Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part with redline (shaded) for next text and stikeout (---) for deleted text.

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Part 26 - Open Systems Environment

Editor's Note - Future text on this subject will appear in this part of the Working Agreements.

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Implementation Agreements for Open Systems Interconnection Protocols: Part 27 - Open

Document Architecture Level 2 to Level 3 Migration DAP

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

Acting SIG Chair: **Jon Stewart, Quality One**

Softworks
SIG Editor: **Jim Wing, IBM Software Solutions**

Foreword

This part of the Working Implementation Agreements was prepared by the Multimedia Data and Document Interchange Special Interest Group (MDDISIG) of the Open Systems Environment Implementors' Workshop (OIW).

This text was approved by the Plenary of the Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as a new part with redline (shaded) for next text and stikeout (---) for deleted text.

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(AE)**Working Implementation Agreements for Open Systems Interconnection**

Protocols: Part 28 - 1993 Edition Directory Services Protocols

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Kenneth J. Rossen, SHL**

Systemhouse

SIG Editor: **Michael Ransom, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Directory Services Special Interest Group (DSSIG) of the Open Systems Environment Implementors' Workshop (OIW).

Text in this part has been approved by the Plenary of the above mentioned Workshop.

Future changes and additions to this version of these Implementor Agreements will be published as change pages. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

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Part 28 - Directory Services Protocols

Editor's Note - This part is reserved for future working text relating to the 1993 Edition Directory Services Protocols. When these agreements become stable, they will be moved into part 28.

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Working Implementation Agreements for Open Systems Interconnection Protocols: Part 30 - Interpersonal Messging ISP

Output from the December 1993 NIST Workshop for Implementors of OSI

SIG Chair: **Chris Bonatti, Booz ● Allen & Hamilton**
SIG Editor: **Rich Ankney, Fischer International**

Foreword

The text for this part can be found in the Stable Implementation Agreements Document, Version 7, Edition 1, Special Publication 500-214, and contains the draft working text for MHS ISP AMH2n on Interpersonal Messaging, and its accompanying explanatory documents. It is retained there as a temporary placeholder until promulgation of the ISP is completed. The ISP is included in its final pDISP editorial form, without additional OIW specific notation. The following documents are contained in this chapter:

- Explanatory Report for Parts 1-5 of pDISP 12062 - Message Handling Systems - Interpersonal Messaging
- ISP 12062-1: IPM MHS Service Support
- ISP 12062-2: AMH21 - IPM Content
- ISP 12062-3: AMH22 - IPM Requirements for Message Transfer (P1)
- ISP 12062-4: AMH23 - IPM Requirements for MTS Access (P3)
- ISP 12062-5: AMH24 - IPM Requirements for Enhanced MS Access (P7)