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Information technology — Text Communication — Message-Oriented Text Interchange Systems (MOTIS) —

Part 6:
Protocol Specifications

AMENDMENT 1: Message Store Extensions

Technologies de l'information — Communication de texte — Systèmes d'échange de texte en mode message (MOTIS) —

Partie 6: Spécifications du protocole

AMENDEMENT 1: Extensions de dépôt de message

ISO IEC

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Amendment 1 to International Standard ISO/IEC 10021-6:1990 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee 18, *Document processing and related communication.*

Information technology -Text Communication - Message-Oriented Text Interchange Systems (MOTIS) -

Part 6:
Protocol Specifications

Amendment 1: Message Store Extensions

0 Introduction

This clause provides an introduction to this Amendment. The text in this clause is not intended for inclusion in ISO/IEC 10021-6.

This Amendment accommodates the requirements for additional Application Contexts arising from ISO/IEC 10021-5:1994 concerning Message Store extensions, and from Amendment 2 to ISO/IEC 10021-4:1990 concerning P3 extensions.

2.1 Open Systems Interconnection

Replace existing clause 2.1 with the following:

This part of ISO/IEC 10021 cites the following OSI specifications:

ISO/IEC 8649:1988,   *Information technology - Open Systems Interconnection - Service Definition for the Association Control Service Element.*

ISO/IEC 8822:1994,   *Information technology - Open Systems Interconnection - Basic Presentation Service Definition.*

ISO/IEC 8824-1: [1],   *Information technology - Open Systems Interconnection - Abstract Syntax Notation One (ASN.1): Specification of Basic Notation.*

ISO/IEC 8824-2: [1],   *Information technology - Open Systems Interconnection - Abstract Syntax Notation One (ASN.1): Information Object Specification.*

ISO/IEC 8824-3: [1],   *Information technology - Open Systems Interconnection - Abstract Syntax Notation One (ASN.1): Constraint Specification.*

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[1] To be published.

ISO/IEC 8824-4: [1],   *Information technology - Open Systems Interconnection - Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 Specifications.*

ISO/IEC 9066-1:1989,   *Information processing systems - Text communication - Reliable Transfer - Part 1: Model and service definition.*

ISO/IEC 9066-2:1989,   *Information processing systems - Text communication - Reliable Transfer - Part 2: Protocol Specification.*

ISO/IEC 13712-1: [1],   *Information technology - Remote Operations: Concepts, Model and Notation.*

ISO/IEC 13712-2: [1],   *Information technology - Remote Operations: OSI Realisations: Remote Operations Service Element (ROSE) Service Definition.*

ISO/IEC 13712-3: [1],   *Information technology - Remote Operations: OSI Realisations: Remote Operations Service Element (ROSE) Protocol Specification.*

2.2   Message Handling Systems

Replace existing clause 2.2 with the following:

This part of ISO/IEC 10021 cites the following Message Handling specifications:

ISO/IEC 10021-1:1990,   *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 1: System and service overview.*

ISO/IEC 10021-1/Amd.1:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 1: System and service overview - Amendment 1: Message Store Extensions.*

ISO/IEC 10021-2:1990,   *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 2: Overall Architecture.*

ISO/IEC 10021-2/Amd.1:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 2: Overall Architecture - Amendment 1: Representation of O/R addresses for human exchange.*

ISO/IEC 10021-2/Amd.2:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 2: Overall Architecture - Amendment 2: Minor Enhancements - Multinational organizations and terminal-form addresses.*

ISO/IEC 10021-2/Amd.3: [1], *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 2: Overall Architecture - Amendment 3.*

ISO/IEC 10021-4:1990,   *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 4: Message Transfer System: Abstract Service Definition and Procedures.*

ISO/IEC 10021-4/Amd.1:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 4: Message Transfer System: Abstract Service Definition and Procedures - Amendment 1: Minor Enhancements: Notification type and Directory substitution.*

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[1] To be published

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ISO/IEC 10021-4/Amd.2: [1], *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 4: Message Transfer System: Abstract Service Definition and Procedures - Amendment 2: ASN.1 and P3 extensions.*

ISO/IEC 10021-5:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 5: Message Store - Abstract service definition.*

ISO/IEC 10021-6:1990, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 6: Protocol Specifications.*

ISO/IEC 10021-7:1990, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 7: Interpersonal messaging system.*

ISO/IEC 10021-7/Amd.1:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 7: Interpersonal messaging system - Amendment 1: Minor Enhancements: File transfer body part and auto-submission indication.*

ISO/IEC 10021-7/Amd.2: [1], *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 7: Interpersonal messaging system - Amendment 2: Voice body part and new ASN.1.*

ISO/IEC 10021-7/Amd.3:1994, *Information technology —Text Communication - Message Oriented Text Interchange Systems (MOTIS) - Part 7: Interpersonal messaging system - Amendment 3: Message Store Extensions.*

6.1   MHS Access Protocol Model

Replace paragraph 5 of 6.1 ("Access to the MTS ...") with the following:

Access to the MTS Abstract Service is realized by the pairing of three ports between the MTS and the MTS-user. Each port is supported by an application-service-element; for some port types more than one version of the application-service-element is defined. The Message Submission Service Element (MSSE) supports the services of the submission-port. The Message Delivery Service Element 1988 (MDSE-88) and Message Delivery Service Element 1994 (MDSE-94) support the services of the delivery-port. The Message Administration Service Element 1988 (MASE-88) and Message Administration Service Element 1994 (MASE-94) support the services of the administration-port.

Replace paragraph 6 of 6.1 ("Similarly, access to the MS ...") with the following:

Similarly, access to the MS Abstract Service is realized by the pairing of three ports between the MS and the MS-user. Each port is supported by an application-service-element; for each port type more than one version of the application-service-element is defined. The Message Submission Service Element (MSSE) and the MS Message Submission Service Element (MS-MSSE) support the services of the MS-submission-port. The Message Retrieval Service Element 1988 (MRSE-88) and the Message Retrieval Service Element 1994 (MRSE-94) support the services of the retrieval-port. The Message Administration Service Element 1988 (MASE-88) and Message Administration Service Element 1994 (MASE-94) support the services of the administration-port. The MS-user ASEs act as the consumer, and the MTS ASEs act as the supplier of the MS Abstract Service.

Replace the second sentence of paragraph 8 of 6.1 ("The MSSE, MDSE ...") with the following:

The MSSE, MS-MSSE, MDSE-88, MDSE-94, MRSE-88, MRSE-94, MASE-88, and MASE-94 provide the mapping function of the abstract-syntax notation of an abstract service onto the services provided by the ROSE.

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[1] To be published

Replace the first sentence of paragraph 11 of 6.1 ("The combination of one or more ...") with the following:

The combination of one or more of the MSSE, MS-MSSE, MDSE-88, MDSE-94, MRSE-88, MRSE-94, MASE-88, and MASE-94, together with their supporting ASEs, defines the application-context of an application-association.

Replace Table 1 with the following:

Table 1 MHS Access Protocol Application Contexts

Application Context	Message Handling ASEs								Supporting ASEs		
	MSSE	MS-MSSE	MDSE-88	MDSE-94	MASE-88	MASE-94	MRSE-88	MRSE-94	ROSE	RTSE	ACSE
MTS Access Protocol											
mts-access-88	C	-	C	-	C	-	-	-	x	-	x
mts-forced-access-88	S	-	S	-	S	-	-	-	x	-	x
mts-reliable-access-88	C	-	C	-	C	-	-	-	x	x	x
mts-forced-reliable-access-88	S	-	S	-	S	-	-	-	x	x	x
mts-access-94	C	-	-	C	-	C	-	-	x	-	x
mts-forced-access-94	S	-	-	S	-	S	-	-	x	-	x
mts-reliable-access-94	C	-	-	C	-	C	-	-	x	x	x
mts-forced-reliable-access-94	S	-	-	S	-	S	-	-	x	x	x
MS Access Protocol											
ms-access-88	C	-	-	-	C	-	C	-	x	-	x
ms-reliable-access-88	C	-	-	-	C	-	C	-	x	x	x
ms-access-94	-	C	-	-	-	C	-	C	x	-	x
ms-reliable-access-94	-	C	-	-	-	C	-	C	x	x	x

Legend	
x	present
-	absent
C	present with initiator the consumer
S	present with initiator the supplier

Replace the fourth last paragraph of 6.1 ("If the MTS Access Protocol ...") with the following:

If the 1994 version of the MTS Access Protocol (P3) is supported, then support for the **mts-access-94** and **mts-forced-access-94** application-contexts is mandatory for an MTA. If the 1988 version of the MTS Access Protocol (P3) is supported, then support for the **mts-access-88** and **mts-forced-access-88** application-contexts is mandatory for an MTA. If an MTA supports the **mts-reliable-access-94** application-context, it shall also support the **mts-forced-reliable-access-94** application-context, and vice versa. If an MTA supports the **mts-reliable-access-88** application-context, it shall also support the **mts-forced-reliable-access-88** application-context, and vice versa. Support for each of the MTS Access Protocol (P3) application-contexts is optional for an MTS-user. The 1994 versions of these application-contexts were introduced to provide revised versions of the Delivery-control and Register operations.

Replace the third last paragraph of 6.1 ("If the MS Access Protocol ...") with the following:

If the MS Access Protocol (P7) is supported, then support for the **ms-access-88** application-context is mandatory for an MS, and support for the **ms-reliable-access-88**, **ms-access-94**, and **ms-reliable-access-94** application-contexts is optional. If an MS supports the **ms-reliable-access-94** application-context, it shall also support the **ms-reliable-access-88** and **ms-access-94** application-contexts. Support for each of the MS Access Protocol (P7) application-contexts is optional for an MS-user. The **ms-access-94** and **ms-reliable-access-94** application-contexts were introduced in the 1994 version of this part of ISO/IEC 10021 in order to offer a broader range of Message Store services (see 7.4 of ISO/IEC 10021-1:1994). These 1994

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application-contexts may be used to offer both the original (1988) range of services and the enhanced range of services. Nevertheless, these two application-contexts are intended to stay optional in the next version of this part of ISO/IEC 10021.

NOTE - An MS which supports one of the 1994 MS Access Protocols may be required to interwork with the MTS using one of the 1988 MTS Access Protocols. If the MS-user invokes Register (a 1994 operation), the MS should attempt to downgrade the Register argument to a Register-88 argument, and invoke the Register-88 operation over its association with the MTS. If this is not possible the MS returns a register-rejected error to the MS-user.

Append the following to the second last paragraph of 6.1:

This illustrates only one of the possible application-contexts supporting the MTS Access Protocol; in the 1988 version of the MTS Access Protocol, the MDSE-88 replaces the MDSE-94, and the MASE-88 replaces the MASE-94.

Append the following to the last paragraph of 6.1:

This illustrates only one of the possible application-contexts supporting the MS Access Protocol; in the 1988 version of the MS Access Protocol, the MSSE replaces the MS-MSSE, the MRSE-88 replaces the MRSE-94, and the MASE-88 replaces the MASE-94.

In Figures 1 and 2, replace "MDSE" with "MDSE-94" (twice), "MRSE" with "MRSE-94" (twice), and "MASE" with "MASE-94" (four times). In Figure 2, replace "MSSE" with "MS-MSSE" (twice).

6.2 Services provided by the MTS access protocol

In existing clause 6.2, replace the last seven lines (from "Message Delivery Service Element" onwards) with:

Message Delivery Service Element 1988 (MDSE-88)

    g) Message-delivery

    h) Report-delivery

    i) Delivery-control-88

Message Administration Service Element 1988 (MASE-88)

    j) Register-88

    k) Change-credentials

In the 1994 version of the MTS Access Protocol, the Message Delivery Service Element 1988 and Message Administration Service Element 1988 are replaced by the following:

Message Delivery Service Element 1994 (MDSE-94)

    l) Message-delivery

    m) Report-delivery

    n) Delivery-control

Message Administration Service Element 1994 (MASE-94)

    o) Register

    p) Change-credentials

6.3   Services provided by the MS access protocol

In existing clause 6.3, replace the last ten lines (from "Message Retrieval Service Element" onwards) with:

Message Retrieval Service Element 1988 (MRSE-88)

    g)   Summarize

    h)   List

    i)   Fetch

    j)   Delete

    k)   Register-MS

    l)   Alert

Message Administration Service Element 1988 (MASE-88)

    m) Register-88

    n) Change-credentials

In the 1994 version of the MS Access Protocol, the Message Submission Service Element, the Message Retrieval Service Element 1988 and the Message Administration Service Element 1988 are replaced by the following:

MS Message Submission Service Element (MS-MSSE)

    o)   MS-message-submission

    p)   MS-probe-submission

    q)   MS-cancel-deferred-delivery

    r)   MS-submission-control

Message Retrieval Service Element 1994 (MRSE-94)

    s)   Modify (in addition to the operations defined for the MRSE-88)

Message Administration Service Element 1994 (MASE-94)

    t)   Register

    u)   Change-credentials

7   MTS Access Protocol Abstract Syntax Definition

Replace the first sentence of clause 7 with the following:

The abstract-syntax of the 1994 and 1988 versions of the MTS Access Protocol (P3) is defined in Figure 3.

In existing clause 7, replace the last three paragraphs (from "Message Submission Service Element" onwards) and Figure 3 with the following:

Abstract Syntaxes: definitions of the abstract-syntaxes for the supporting application-service-elements and for the three principal application-service-elements (each of which include ROSE):

    a)   Message Submission Service Element (Figure 3 Part 4)

    b)   Message Delivery Service Element 1994 and 1988 (Figure 3 Part 4)

    c)   Message Administration Service Element 1994 and 1988 (Figure 3 Part 5)

```
MTSAccessProtocol {joint-iso-ccitt mhs-motis(6) protocols (0) modules(0) mts-access-protocol (1)
                version-1994(0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

        -- Prologue

IMPORTS

        -- MTS Abstract Service

        administration, delivery, mts-access-contract, mts-connect, mts-forced-access-contract,
        submission
                ----
                FROM MTSAbstractService {joint-iso-ccitt mhs-motis(6) mts(3) modules(0)
                        mts-abstract-service(1) version-1994(0)}

        -- MTS Abstract Service (1988)

        administration-88, delivery-88, mts-access-contract-88, mts-forced-access-contract-88
                ----
                FROM MTSAbstractService88 {joint-iso-ccitt mhs-motis(6) mts(3) modules(0)
                        mts-abstract-service(1) version-1988(1988)}

        -- Remote Operations

        APPLICATION-CONTEXT
                ----
                FROM Remote-Operations-Information-Objects-extensions {joint-iso-ccitt
                        remote-operations(4) informationObjects-extensions(8) version1(0)}

        Code
                ----
                FROM Remote-Operations-Information-Objects {joint-iso-ccitt remote-operations(4)
                        informationObjects(5) version1(0)}

        Bind{}, InvokeId, Unbind{}
                ----
                FROM Remote-Operations-Generic-ROS-PDUs {joint-iso-ccitt remote-operations(4)
                        generic-ROS-PDUs(6) version1(0)}

        ROS-SingleAS{}
                ----
                FROM Remote-Operations-Useful-Definitions {joint-iso-ccitt remote-operations(4)
                        useful-definitions(7) version1(0)}

        acse, association-by-RTSE, pData, transfer-by-RTSE
                ----
                FROM Remote-Operations-Realisations {joint-iso-ccitt remote-operations(4)
                        realisations(9) version1(0)}

        acse-abstract-syntax
                ----
                FROM Remote-Operations-Abstract-Syntaxes {joint-iso-ccitt remote-operations(4)
                        remote-operations-abstract-syntaxes(12) version1(0)}

        -- Reliable Transfer

        RTSE-apdus
                ----
                FROM Reliable-Transfer-APDUS {joint-iso-ccitt reliable-transfer(3) apdus(0)}
```

Figure 3 - Abstract-Syntax Definition of the MTS Access Protocol (P3) (Part 1 of 5)

```
-- Object Identifiers

   id-ac-mts-access-88, id-ac-mts-access-94, id-ac-mts-forced-access-88,
   id-ac-mts-forced-access-94, id-ac-mts-forced-reliable-access-88,
   id-ac-mts-forced-reliable-access-94, id-ac-mts-reliable-access-88,
   id-ac-mts-reliable-access-94, id-as-mase-88, id-as-mase-94, id-as-mdse-88, id-as-mdse-94,
   id-as-msse, id-as-mts, id-as-mts-rtse
         ----
         FROM MHSProtocolObjectIdentifiers {joint-iso-ccitt mhs-motis(6) protocols(0) modules(0)
              object-identifiers(0) version-1994(0)};


-- APPLICATION CONTEXTS


-- 1994 Application Contexts omitting RTSE


-- MTS-user initiated

mts-access-94  APPLICATION-CONTEXT ::= {
      CONTRACT                  mts-access-contract
      ESTABLISHED BY            acse
      INFORMATION TRANSFER BY   pData
      ABSTRACT SYNTAXES         {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax |
                                message-administration-abstract-syntax-94 |
                                mts-bind-unbind-abstract-syntax }
      APPLICATION CONTEXT NAME  id-ac-mts-access-94 }


-- MTS initiated

mts-forced-access-94  APPLICATION-CONTEXT ::= {
      CONTRACT                  mts-forced-access-contract
      ESTABLISHED BY            acse
      INFORMATION TRANSFER BY   pData
      ABSTRACT SYNTAXES         {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax |
                                message-administration-abstract-syntax-94 |
                                mts-bind-unbind-abstract-syntax }
      APPLICATION CONTEXT NAME  id-ac-mts-forced-access-94 }

-- 1994 Application Contexts including RTSE in normal mode


-- MTS-user initiated

mts-reliable-access-94  APPLICATION-CONTEXT ::= {
      CONTRACT                  mts-access-contract
      ESTABLISHED BY            association-by-RTSE
      INFORMATION TRANSFER BY   transfer-by-RTSE
      ABSTRACT SYNTAXES         {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax |
                                message-administration-abstract-syntax-94 |
                                mts-bind-unbind-rtse-abstract-syntax }
      APPLICATION CONTEXT NAME  id-ac-mts-reliable-access-94 }


-- MTS initiated

mts-forced-reliable-access-94  APPLICATION-CONTEXT ::= {
      CONTRACT                  mts-forced-access-contract
      ESTABLISHED BY            association-by-RTSE
      INFORMATION TRANSFER BY   transfer-by-RTSE
      ABSTRACT SYNTAXES         {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax |
                                message-administration-abstract-syntax-94 |
                                mts-bind-unbind-rtse-abstract-syntax }
      APPLICATION CONTEXT NAME  id-ac-mts-forced-reliable-access-94 }
```

Figure 3 - Abstract-Syntax Definition of the MTS Access Protocol (P3) (Part 2 of 5)

```
-- 1988 Application Contexts omitting RTSE

-- MTS-user initiated

mts-access-88  APPLICATION-CONTEXT ::= {
        CONTRACT                mts-access-contract-88
        ESTABLISHED BY          acse
        INFORMATION TRANSFER BY pData
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                mts-bind-unbind-abstract-syntax}
        APPLICATION CONTEXT NAME id-ac-mts-access-88 }

-- MTS initiated

mts-forced-access-88  APPLICATION-CONTEXT ::= {
        CONTRACT                mts-forced-access-contract-88
        ESTABLISHED BY          acse
        INFORMATION TRANSFER BY pData
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                mts-bind-unbind-abstract-syntax}
        APPLICATION CONTEXT NAME id-ac-mts-forced-access-88 }

-- 1988 Application Contexts including RTSE in normal mode

-- MTS-user initiated

mts-reliable-access-88  APPLICATION-CONTEXT ::= {
        CONTRACT                mts-access-contract-88
        ESTABLISHED BY          association-by-RTSE
        INFORMATION TRANSFER BY transfer-by-RTSE
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                mts-bind-unbind-rtse-abstract-syntax}
        APPLICATION CONTEXT NAME id-ac-mts-reliable-access-88 }

-- MTS initiated

mts-forced-reliable-access-88 APPLICATION-CONTEXT ::= {
        CONTRACT                mts-forced-access-contract-88
        ESTABLISHED BY          association-by-RTSE
        INFORMATION TRANSFER BY transfer-by-RTSE
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-delivery-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                mts-bind-unbind-rtse-abstract-syntax}
        APPLICATION CONTEXT NAME id-ac-mts-forced-reliable-access-88 }
```

Figure 3 - Abstract-Syntax Definition of the MTS Access Protocol (P3) (Part 3 of 5)

```
-- ABSTRACT-SYNTAXES

-- Abstract Syntax for MTS-bind and MTS-unbind

mts-bind-unbind-abstract-syntax ABSTRACT-SYNTAX ::= {MTSBindUnbindPDUs IDENTIFIED BY id-as-mts}

MTSBindUnbindPDUs ::= CHOICE {
        bind    Bind {mts-connect.&bind},
        unbind  Unbind {mts-connect.&unbind} }

-- Abstract Syntax for MTS-bind and MTS-unbind with RTSE

mts-bind-unbind-rtse-abstract-syntax ABSTRACT-SYNTAX ::= {
        RTSE-apdus -- With MTS-bind and MTS-unbind -- IDENTIFIED BY id-as-mts-rtse }




-- Abstract Syntax for Message Submission Service Element

message-submission-abstract-syntax ABSTRACT-SYNTAX ::= {
        MessageSubmissionPDUs IDENTIFIED BY id-as-msse}

MessageSubmissionPDUs ::= ROS-SingleAS {{MTSInvokeIds}, submission}

MTSInvokeIds ::= InvokeId (ALL EXCEPT absent:NULL)

--    Remote operations

op-message-submission                        Code ::= local:3
op-probe-submission                          Code ::= local:4
op-cancel-deferred-delivery                  Code ::= local:7
op-submission-control                        Code ::= local:2

--    Remote errors

err-submission-control-violated              Code ::= local:1
err-element-of-service-not-subscribed        Code ::= local:4
err-deferred-delivery-cancellation-rejected  Code ::= local:8
err-originator-invalid                       Code ::= local:2
err-recipient-improperly-specified           Code ::= local:3
err-message-submission-identifier-invalid    Code ::= local:7
err-inconsistent-request                     Code ::= local:11
err-security-error                           Code ::= local:12
err-unsupported-critical-function            Code ::= local:13
err-remote-bind-error                        Code ::= local:15


-- Abstract Syntax for Message Delivery Service Element 1994

message-delivery-abstract-syntax ABSTRACT-SYNTAX ::= {
        MessageDeliveryPDUs IDENTIFIED BY id-as-mdse-94 }

MessageDeliveryPDUs ::= ROS-SingleAS {{MTSInvokeIds}, delivery}

-- Abstract Syntax for Message Delivery Service Element 1988

message-delivery-abstract-syntax-88 ABSTRACT-SYNTAX ::= {
        MessageDeliveryPDUs88 IDENTIFIED BY id-as-mdse-88 }

MessageDeliveryPDUs88 ::= ROS-SingleAS {{MTSInvokeIds}, delivery-88}
```

Figure 3 - Abstract-Syntax Definition of the MTS Access Protocol (P3) (Part 4 of 5)

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```
--    Remote Operations

op-message-delivery                        Code ::= local:5
op-report-delivery                         Code ::= local:6
op-delivery-control                        Code ::= local:2


--    Remote Errors

err-delivery-control-violated              Code ::= local:1
err-control-violates-registration          Code ::= local:14
err-operation-refused                      Code ::= local:16
-- err-security-error                      Code ::= local:12 defined above --
-- err-unsupported-critical-function       Code ::= local:13 defined above --



-- Abstract Syntax for Message Administration Service Element 1994

message-administration-abstract-syntax-94 ABSTRACT-SYNTAX ::= {
        MessageAdministrationPDUs IDENTIFIED BY id-as-mase-94 }

MessageAdministrationPDUs ::= ROS-SingleAS {{MTSInvokeIds}, administration}

-- Abstract Syntax for Message Administration Service Element 1988

message-administration-abstract-syntax-88 ABSTRACT-SYNTAX ::= {
        MessageAdministrationPDUs88 IDENTIFIED BY id-as-mase-88 }

MessageAdministrationPDUs88 ::= ROS-SingleAS {{MTSInvokeIds}, administration-88}

--    Remote Operations

op-register                                Code ::= local:1
op-change-credentials                      Code ::= local:8

--    Remote Errors

err-register-rejected                      Code ::= local:10
err-new-credentials-unacceptable           Code ::= local:6
err-old-credentials-incorrectly-specified  Code ::= local:5

END -- of MTSAccessProtocol
```

Figure 3 - Abstract-Syntax Definition of the MTS Access Protocol (P3) (Part 5 of 5)

8   MS Access Protocol Abstract Syntax Definition

Replace the first sentence of clause 8 with the following:

The abstract-syntax of the 1994 and 1988 versions of the MS Access Protocol (P7) is defined in Figure 4.

Replace the last two paragraphs (beginning "ApplicationContexts") and Figure 4 in clause 8 with the following:

Application Contexts: definitions of application-contexts that may be used between an MS-user and an MS (Figure 4 Part 2).

Abstract Syntaxes: definitions of the abstract-syntaxes for MS-bind and MS-unbind, for the MS Message Submission Service Element (MS-MSSE) and the Message Retrieval Service Element 1994 and 1988 (MRSE-94 and MRSE-88) (Figure 4 Part 3). The Message Administration Service Element 1994 and 1988 (MASE-94 and MASE-88) is defined in Figure 3.

```
MSAccessProtocol {joint-iso-ccitt mhs-motis(6) protocols(0) modules(0) ms-access-protocol(2)
            version-1994(0)}

DEFINITIONS ::=

BEGIN

--   Prologue

IMPORTS

    -- MS Abstract Service

    ms-access-contract-88, ms-access-contract-94, ms-submission, retrieval, retrieval-88
        ----
        FROM MSAbstractService {joint-iso-ccitt mhs-motis(6) ms(4) modules(0)
            abstract-service(1) version-1994(0)}

    -- Remote Operations

    APPLICATION-CONTEXT
        ----
        FROM Remote-Operations-Information-Objects-extensions {joint-iso-ccitt
            remote-operations(4) informationObjects-extensions(8) version1(0)}

    Code
        ----
        FROM Remote-Operations-Information-Objects {joint-iso-ccitt remote-operations(4)
            informationObjects(5) version1(0)}

    Bind{}, InvokeId, Unbind{}
        ----
        FROM Remote-Operations-Generic-ROS-PDUs {joint-iso-ccitt remote-operations(4)
            generic-ROS-PDUs(6) version1(0)}

    ROS-SingleAS{}
        ----
        FROM Remote-Operations-Useful-Definitions {joint-iso-ccitt remote-operations(4)
            useful-definitions(7) version1(0)}
```

Figure 4 - Abstract Syntax Definition of the MS Access Protocol (P7) (Part 1 of 4)

```
        acse, association-by-RTSE, pData, transfer-by-RTSE
            ----
                FROM Remote-Operations-Realisations {joint-iso-ccitt remote-operations(4)
                    realisations(9) version1(0)}

        acse-abstract-syntax
            ----
                FROM Remote-Operations-Abstract-Syntaxes {joint-iso-ccitt remote-operations(4)
                    remote-operations-abstract-syntaxes(12) version1(0)}

    -- Reliable Transfer

        RTSE-apdus
            ----
                FROM Reliable-Transfer-APDUS {joint-iso-ccitt reliable-transfer(3) apdus(0)}

    -- MTS Access Protocol

        message-administration-abstract-syntax-88, message-administration-abstract-syntax-94,
        message-submission-abstract-syntax
            ----
                FROM MTSAccessProtocol {joint-iso-ccitt mhs-motis(6) protocols(0) modules(0)
                    mts-access-protocol(1) version-1994(0)}

    -- Object Identifiers

        id-ac-ms-access-88, id-ac-ms-access-94, id-ac-ms-reliable-access-88,
        id-ac-ms-reliable-access-94, id-as-ms-msse, id-as-mase-88, id-as-mase-94, id-as-mdse-88,
        id-as-mdse-94, id-as-mrse-88, id-as-mrse-94, id-as-ms-88, id-as-ms-94, id-as-ms-rtse,
        id-as-msse
            ----
                FROM MHSProtocolObjectIdentifiers {joint-iso-ccitt mhs-motis(6) protocols(0)
                    modules(0) object-identifiers(0) version-1994(0)};


--      APPLICATION-CONTEXTS

--      1994 Application Context omitting RTSE

ms-access-94 APPLICATION-CONTEXT ::= {
        CONTRACT                    ms-access-contract-94
        ESTABLISHED BY              acse
        INFORMATION TRANSFER BY     pData
        ABSTRACT SYNTAXES           {acse-abstract-syntax |
                                    ms-message-submission-abstract-syntax |
                                    message-retrieval-abstract-syntax-94 |
                                    message-administration-abstract-syntax-94 |
                                    ms-bind-unbind-abstract-syntax-94}
        APPLICATION CONTEXT NAME    id-ac-ms-access-94 }


--      1994 Application Context including RTSE

ms-reliable-access-94 APPLICATION-CONTEXT ::= {
        CONTRACT                    ms-access-contract-94
        ESTABLISHED BY              association-by-RTSE
        INFORMATION TRANSFER BY     transfer-by-RTSE
        ABSTRACT SYNTAXES           {acse-abstract-syntax |
                                    ms-message-submission-abstract-syntax |
                                    message-retrieval-abstract-syntax-94 |
                                    message-administration-abstract-syntax-94 |
                                    ms-bind-unbind-rtse-abstract-syntax}
        APPLICATION CONTEXT NAME    id-ac-ms-reliable-access-94 }
```

Figure 4 - Abstract Syntax Definition of the MS Access Protocol (P7) (Part 2 of 4)

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```
--      1988 Application Context omitting RTSE

ms-access-88 APPLICATION-CONTEXT ::= {
        CONTRACT                ms-access-contract-88
        ESTABLISHED BY          acse
        INFORMATION TRANSFER BY pData
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-retrieval-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                ms-bind-unbind-abstract-syntax-88 }
        APPLICATION CONTEXT NAME  id-ac-ms-access-88 }

--      1988 Application Context including RTSE

ms-reliable-access-88 APPLICATION-CONTEXT ::= {
        CONTRACT                ms-access-contract-88
        ESTABLISHED BY          association-by-RTSE
        INFORMATION TRANSFER BY transfer-by-RTSE
        ABSTRACT SYNTAXES       {acse-abstract-syntax |
                                message-submission-abstract-syntax |
                                message-retrieval-abstract-syntax-88 |
                                message-administration-abstract-syntax-88 |
                                ms-bind-unbind-rtse-abstract-syntax}
        APPLICATION CONTEXT NAME  id-ac-ms-reliable-access-88 }

-- ABSTRACT SYNTAXES

-- Abstract-syntax for 1994 MS-bind and MS-unbind

ms-bind-unbind-abstract-syntax-94 ABSTRACT-SYNTAX ::= {MSBindUnbindPDUs94 IDENTIFIED BY id-as-ms-94}

MSBindUnbindPDUs94 ::= CHOICE {
        bind    Bind {ms-access-contract-94.&connection.&bind},
        unbind  Unbind {ms-access-contract-94.&connection.&unbind} }

-- Abstract-syntax for 1988 MS-bind and MS-unbind

ms-bind-unbind-abstract-syntax-88 ABSTRACT-SYNTAX ::= {MSBindUnbindPDUs88 IDENTIFIED BY id-as-ms-88}

MSBindUnbindPDUs88 ::= CHOICE {
        bind    Bind {ms-access-contract-88.&connection.&bind},
        unbind  Unbind {ms-access-contract-88.&connection.&unbind} }

-- Abstract-syntax for MS-bind and MS-unbind with RTSE

ms-bind-unbind-rtse-abstract-syntax ABSTRACT-SYNTAX ::= {
        RTSE-apdus -- With MS-bind and MS-unbind -- IDENTIFIED BY id-as-ms-rtse }

-- Abstract Syntax for MS Message Submission Service Element

ms-message-submission-abstract-syntax ABSTRACT-SYNTAX ::= {
        MSMessageSubmissionPDUs IDENTIFIED BY id-as-ms-msse }

MSMessageSubmissionPDUs ::= ROS-SingleAS {{MSInvokeIds}, ms-submission}

MSInvokeIds ::= InvokeId (ALL EXCEPT absent:NULL)
```

Figure 4 - Abstract Syntax Definition of the MS Access Protocol (P7) (Part 3 of 4)

```
-- Abstract Syntax for Message Retrieval Service Element 1994

message-retrieval-abstract-syntax-94 ABSTRACT-SYNTAX ::= {
        MessageRetrievalPDUs IDENTIFIED BY id-as-mrse-94}

MessageRetrievalPDUs ::= ROS-SingleAS {{MSInvokeIds}, retrieval}

-- Abstract Syntax for Message Retrieval Service Element 1988

message-retrieval-abstract-syntax-88 ABSTRACT-SYNTAX ::= {
        MessageRetrievalPDUs88 IDENTIFIED BY id-as-mrse-88}

MessageRetrievalPDUs88 ::= ROS-SingleAS {{MSInvokeIds}, retrieval-88}

--    Remote Operations

op-ms-submission-control       Code ::= local:2
op-ms-message-submission       Code ::= local:3
op-ms-probe-submission         Code ::= local:4
op-ms-cancel-deferred-delivery Code ::= local:7
op-summarize                   Code ::= local:20
op-list                        Code ::= local:21
op-fetch                       Code ::= local:22
op-delete                      Code ::= local:23
op-register-ms                 Code ::= local:24
op-alert                       Code ::= local:25
op-modify                      Code ::= local:26

--    Remote Errors

err-attribute-error            Code ::= local:21
err-auto-action-request-error  Code ::= local:22
err-delete-error               Code ::= local:23
err-fetch-restriction-error    Code ::= local:24
err-range-error                Code ::= local:25    -- 1988 Application Contexts only --
err-security-error             Code ::= local:26
err-service-error              Code ::= local:27
err-sequence-number-error      Code ::= local:28
err-invalid-parameters-error   Code ::= local:29
err-message-group-error        Code ::= local:30
err-ms-extension-error         Code ::= local:31
err-register-ms-error          Code ::= local:32
err-modify-error               Code ::= local:33
err-entry-class-error          Code ::= local:34

END  -- of MSAccessProtocol
```

Figure 4 - Abstract Syntax Definition of the MS Access Protocol (P7) (Part 4 of 4)

Append the following to the second paragraph of clause 9:

Clause 9.3 defines the application-context negotiation mechanism for the MS Access Protocol.

In 9.1.1.4, replace the last sentence of the second paragraph with:

Each named abstract-syntax for the MSSE, MS-MSSE, MDSE-88, MDSE-94, MRSE-88. MRSE-94, MASE-88, and MASE-94 includes the ROSE APDUs.

Replace 9.1.2 and the first paragraph of 9.2.2 with the following:

The MSSE, MS-MSSE, MDSE-88, MDSE-94, MRSE-88. MRSE-94, MASE-88, and MASE-94 services are mapped onto the RO-INVOKE, RO-RESULT, RO-ERROR, RO-REJECT-U, and RO-REJECT-P services of the ROSE. The mapping of the abstract-syntax notation of these ASEs onto the ROSE services is defined in ITU-T Rec. X.880 I ISO/IEC 13712-1.

9.3　　MS Access Application-context Negotiation

Insert the following new clause 9.3:

Where the application-context proposed by the MS-user is not supported by the MS, it may still be possible for the MS and MS-user to establish an association using a mutually acceptable application-context. This clause defines this mechanism.

9.3.1　　Application Context Name

Where an MS-user which supports the Application Context Negotiation functional unit proposes the use of one application-context but is prepared to use a different application-context, the MS-user may identify these alternative application-contexts in the Application Context Name List. If the MS-user is prepared to accept alternative application contexts (whether or not explicitly identified in the Application Context Name List), it shall supply additional information as indicated in 9.3.2 and 9.3.3. If the MS-user proposes both a 1988 and a 1994 application-context, and the MS is capable of supporting either of these, it shall accept the association establishment for the 1994 application-context.

NOTE - Where the MS-user proposes application contexts of the same vintage (e.g., ms-access-88 and ms-reliable-access-88) the choice between these is a local matter for the MS.

If the MS does not support the proposed application-context and no alternative application-contexts are identified in the Application Context Name List, the MS may respond with an alternative application-context provided that the MS-user has supplied the additional information indicated in 9.3.2 and 9.3.3.

If the MS does not support the proposed application-context but the MS-user has identified alternative application-contexts in the Application Context Name List, and has supplied the corresponding additional information specified in 9.3.2. and 9.3.3, the MS may respond with one of those alternative application-contexts. Support of the Application Context Negotiation functional unit by the MS is not essential, since the MS may analyse the User Information to discover the set of proposed alternative application-contexts.

In all cases where the MS accepts the association establishment, the Application Context Name present in the A-ASSOCIATE response shall indicate which application-context has been established.

9.3.2　　User Information

If the MS-user proposes the use of an application-context but is prepared to accept the use of one or more alternative application-contexts, then the User Information parameter shall contain EXTERNAL values for the MS-bind arguments of each of these application-contexts (i.e. a value of the MS-bind argument for the application-context proposed, and one for each of the proposed alternatives), except where the values are identical.

9.3.3   Presentation Context Definition List

If the MS-user proposes the use of an application-context but is prepared to accept the use of one or more alternative application-contexts, then the Presentation Context Definition List shall include presentation-context-definitions for all the abstract-syntaxes that could be used by any of the proposed application-contexts (i.e. values for the application-context proposed, and for each of the proposed alternatives). A presentation-context-definition shall always be present for the ACSE abstract-syntax.

If the ms-access-94 application-context is proposed, presentation-context-definitions for the ACSE, MASE-94, MS-MSSE, MRSE-94, and MS-bind and MS-unbind abstract-syntaxes shall be specified.

If the ms-access-88 application-context is proposed, presentation-context-definitions for the ACSE, MASE-88, MSSE, MRSE-88, and MS-bind and MS-unbind abstract-syntaxes shall be specified.

If the ms-reliable-access-94 application-context is proposed, presentation-context-definitions for the ACSE, MASE-94, MS-MSSE, MRSE-94, and MS-bind and MS-unbind with RTSE abstract-syntaxes shall be specified.

If the ms-reliable-access-88 application-context is proposed, presentation-context-definitions for the ACSE, MASE-88, MSSE, MRSE-88, and MS-bind and MS-unbind with RTSE abstract-syntaxes shall be specified.

If several application-contexts are proposed, the Presentation Content Definition List shall contain the logical union of the presentation-context-definitions defined for each application-context.

Replace existing Table 2 with the following:

Table 2 - Remote Operation Priorities

Priority	MSSE	MS-MSSE	MDSE-88	MDSE-94	MASE-88	MASE-94	MRSE-88	MRSE-94
0	Association release							
1	RO-REJECT-U RO-ERROR							
2	RO-RESULT							
3	Submission-control Cancel-deferred-delivery	MS-submission-control MS-cancel-deferred-delivery	Delivery-control-88	Delivery-control				
4	Message-submission (urgent)	MS-message-submission (urgent)	Message-delivery (urgent)	Message-delivery (urgent)			Alert	Alert
5	Probe-submission	MS-probe-submission	Report-delivery	Report-delivery	Register-88 Change-credentials	Register Change-credentials	Register-MS Summarize List Fetch Delete	Register-MS Summarize List Fetch Delete Modify
6	Message-submission (normal)	MS-message-submission (normal)	Message-delivery (normal)	Message-delivery (normal)				
7	Message-submission (non-urgent)	MS-message-submission (non-urgent)	Message-delivery (non-urgent)	Message-delivery (non-urgent)				

10.1   Statement Requirements

In 10.1 (as modified by TC 4), replace bullet (c) with the following:

c)   in the case of an MS or a UA accessing an MS:

- the optional MS entry-classes, general-attribute-types, general-matching-rules, and general-auto-action-types for which conformance is claimed;

- the content-types and corresponding content-type-specific attribute-types, matching-rules, and auto-action-types for which conformance is claimed;

- for the IPM content-type, whether conformance is claimed for support of the attribute-types derived from the (unbounded) set of extended body part types.

Replace Table 3 (and the Note) with the following:

Table 3 - MTS Access Protocol Conformance Requirements

Application Context	MTA	MTS-user
MTS Access Protocol mts-access-88 mts-forced-access-88 mts-reliable-access-88 mts-forced-reliable-access-88	 Mandatory Mandatory Optional - see Note Optional - see Note	 Optional Optional Optional Optional
mts-access-94 mts-forced-access-94 mts-reliable-access-94 mts-forced-reliable-access-94	Optional Optional Optional - see Note Optional - see Note	Optional Optional Optional Optional

NOTE - If an MTA claims conformance to the mts-reliable-access-88 application-context, it shall also claim conformance to the mts-forced-reliable-access-88 application-context, and vice versa. If an MTA claims conformance to the mts-access-94 application-context, it shall also claim conformance to the mts-forced-access-94 application-context, and vice versa. If an MTA claims conformance to the mts-reliable-access-94 or mts-forced-reliable-access-94 application-contexts, it shall claim conformance to all application-contexts in Table 3.

Replace Table 4 with the following:

Table 4 - MS Access Protocol Conformance Requirements

Application Context	MS	MS-user
MS Access Protocol ms-access-88 ms-reliable-access-88 ms-access-94 ms-reliable-access-94	 Mandatory Optional Optional Optional - see Note	 Optional Optional Optional Optional

NOTE - If an MS claims conformance to the ms-reliable-access-94 application-context, it shall also claim conformance to the ms-reliable-access-88 and ms-access-94 application-contexts.

10.2   Static Requirements

In 10.2 (as modified by TC 4), replace bullet (b) with the following:

b)   in the case of an MS, or a UA accessing an MS, support the MS abstract-service definition in CCITT Rec. X.413 I
ISO/IEC 10021-5, as well as the entry-classes, general-attribute-types, and general-matching-rules classified as
mandatory in 6.3.7.4, Tables 2 and 3, and 12.5 respectively of CCITT Rec. X.413 I ISO/IEC 10021-5.

12   MTS Transfer Protocol Abstract Syntax Definition

*In existing clause 12, replace the last two paragraphs (from "Message Transfer Service Element" onwards) and Figure 6
with the following:*

Abstract Syntaxes: definitions of the abstract-syntaxes for MTA-bind and MTA-unbind, and for the Message
Transfer Service Element

```
MTSTransferProtocol {joint-iso-ccitt mhs-motis(6) protocols(0) modules(0) transfer-protocol(3)
            version-1994(0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

--   Prologue

IMPORTS

    -- MTA Abstract Service

    Message, mta-transfer, Probe, Report
        ----
            FROM MTAAbstractService {joint-iso-ccitt mhs-motis(6) mts(3) modules(0)
                mta-abstract-service(2) version-1994(0)}

    -- Remote Operations

    APPLICATION-CONTEXT
        ----
            FROM Remote-Operations-Information-Objects-extensions {joint-iso-ccitt
                remote-operations(4)  informationObjects-extensions(8) version1(0)}

    Bind{}, Unbind{}
        ----
            FROM Remote-Operations-Generic-ROS-PDUs {joint-iso-ccitt remote-operations(4)
                generic-ROS-PDUs(6) version1(0)}

    association-by-RTSE, transfer-by-RTSE
        ----
            FROM Remote-Operations-Realisations {joint-iso-ccitt remote-operations(4)
                realisations(9) version1(0)}

    acse-abstract-syntax
        ----
            FROM Remote-Operations-Abstract-Syntaxes {joint-iso-ccitt remote-operations(4)
                remote-operations-abstract-syntaxes(12) version1(0)}

    -- Reliable Transfer

    RTSE-apdus
        ----
            FROM Reliable-Transfer-APDUS {joint-iso-ccitt reliable-transfer(3) apdus(0)}
```

```
              -- Object Identifiers

          id-ac-mts-transfer, id-as-mta-rtse, id-as-mtse
              ----
                  FROM MHSProtocolObjectIdentifiers {joint-iso-ccitt mhs-motis(6) protocols(0) modules(0)
                          object-identifiers(0) version-1994(0)};


-- APPLICATION CONTEXTS

-- Application Context including RTSE in normal mode

mts-transfer  APPLICATION-CONTEXT ::= {
        CONTRACT                    mta-transfer
        ESTABLISHED BY              association-by-RTSE
        INFORMATION TRANSFER BY     transfer-by-RTSE
        ABSTRACT SYNTAXES           {acse-abstract-syntax |
                                    message-transfer-abstract-syntax |
                                    mta-bind-unbind-rtse-abstract-syntax }
        APPLICATION CONTEXT NAME    id-ac-mts-transfer }

-- Application Context including RTSE in X.410-1984 mode

mts-transfer-protocol  INTEGER ::= 12

-- Application Context for interworking with 1984 P1

mts-transfer-protocol-1984  INTEGER ::= 1


-- ABSTRACT-SYNTAXES

-- Abstract Syntax for MTABind and MTAUnbind

mta-bind-unbind-rtse-abstract-syntax ABSTRACT-SYNTAX ::= {
        RTSE-apdus -- With MTA-bind and MTA-unbind -- IDENTIFIED BY id-as-mta-rtse}

-- Abstract Syntax for Message Transfer Service Element

message-transfer-abstract-syntax ABSTRACT-SYNTAX ::= {
        MTS-APDU IDENTIFIED BY id-as-mtse}

-- MTS Application Protocol Data Units

MTS-APDU ::= CHOICE {
        message [0] Message,
        report  [1] Report,
        probe   [2] Probe }

END    -- of MTSTransferProtocol
```

Figure 6 - Abstract-Syntax Definition of the MTS Transfer Protocol (P1)