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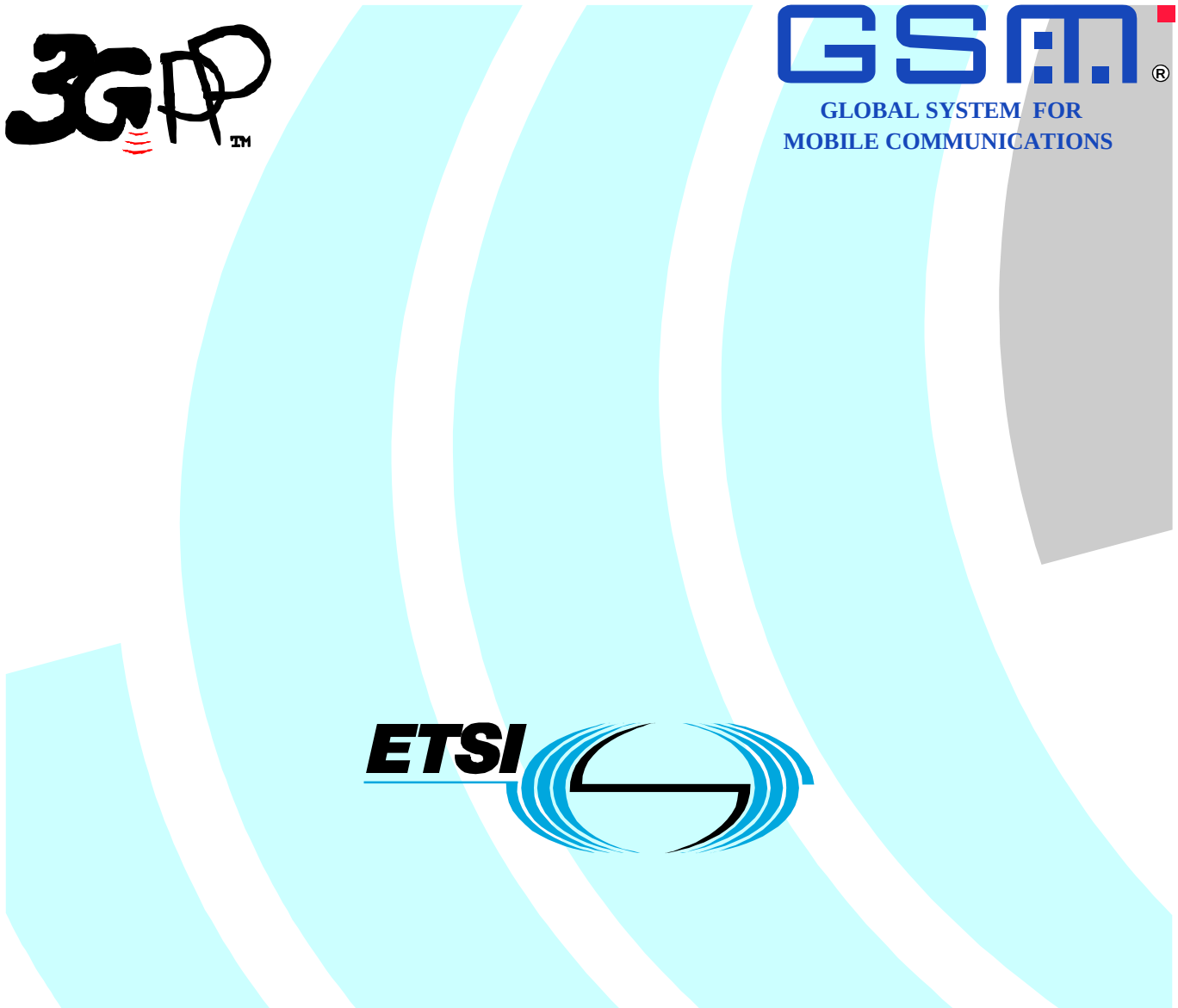
Technical Specification

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
Telecommunication management;
File Transfer (FT) Integration Reference Point (IRP):
Common Management Information Protocol (CMIP)
Solution Set (SS)
(3GPP TS 32.344 version 6.0.0 Release 6)



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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp .

Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the

third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

TS 32.341 "File Transfer (FT) Integration Reference Point (IRP): Requirements";

TS 32.342 "File Transfer (FT) Integration Reference Point (IRP): Information Service (IS)";

TS 32.343 "File Transfer (FT) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

TS 32.344 "File Transfer (FT) Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".

The present document is part of a TS-family which describe the requirements and information model necessary for the Telecommunication Management (TM) of 3G systems. The TM principles and TM architecture are specified in 3GPP TS 32.101 [1] and 3GPP TS 32.102 [2].

Network Elements (NEs) under management, element managers as well as network managers generate various management information stored in file format. This IRP is addressing how these file are exchanged through Itf-N as well as certain aspects of file management and maintenance. It is anticipated that all management functions (e.g. PM, Call Trace, CM) as well as associated IRP's use the capabilities provided by this File Transfer IRP.

1 Scope

The present document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the IRP whose semantics is specified in File Transfer IRP: Information Service [7].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.341: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP): Requirements".

[4] 3GPP TS 32.311: "Telecommunication management; Generic Integration Reference Point (IRP) management: Requirements".

[5] 3GPP TS 32.304: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".

[6] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[7] 3GPP TS 32.342: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP): Information Service (IS)".

[8] 3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management: Information Service (IS)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.341 [3] and the following apply:

IRP document version number string (or "IRPVersion"): See 3GPP TS 32.311 [4].

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ASN.1 Abstract Syntax Notation.1
CM Configuration Management

CMIP	Common Management Information Protocol
DN	Distinguished Name
FT	File Transfer
GDMO	Guidelines for the Definition of Managed Objects
IS	Information Service
NE	Network Element
PM	Performance Management
SS	Solution Set

4 Architectural features

The overall architectural feature of FileTransferIRP is specified in 3GPP TS 32.341 [3].

This clause specifies features that are specific to the CMIP SS.

4.1 Notifications

Notifications are sent according to the Notification IRP: CMIP SS (see 3GPP TS 32.304 [??]).

The contents of the FileTransferIRP notifications are defined in the present document.

4.2 Syntax for Distinguished Names and Versions

The format of a Distinguished Name is defined in 3GPP TS 32.300 [6].

The version of this IRP is represented as a string (see also clause 3 for versions).

5 Mapping

5.1 Mapping of Information Object Classes

For the FT IRP CMIP Solution Set the Information Object Classes (IOC) and the Interfaces defined in 3GPP TS 32.342 [7] are mapped onto Managed Object Classes (MOC) as given in Table 1. These MOC include all the Attributes, Actions and Notifications necessary to model file transfer management as described in 3GPP TS 32.342 [7].

Table 1: Mapping of Information Object Classes

IS IOC	CMIP SS MOC
FileTransferIRP	fileTransferIRP

5.2 Mapping of IOC Attributes

5.3 Mapping of Operations and Notifications

FileTransferIRP: IS 3GPP TS 32.342 [7] defines the semantics of operations and notifications visible across the FileTransferIRP. Clause 5.3.1 and 5.3.2 describe the mapping of FileTransferIRP: IS operations and notifications onto their equivalents defined in this SS.

5.3.1 Mapping of Operations

Table 2 maps the Interface/Operations defined in the IS of the file transfer IRP onto their equivalents in the CMIP SS. These are qualified as Mandatory (M) or Optional (O).

Table 2: Mapping of Operations

IS Interface	Qualifier	IS Operation	CMIP SS Equivalent	Qualifier
FileTransferIRPOperations_1 Interface	M	listAvailableFiles	CMISE M-ACTION service, action type: listAvailableFiles	M
FileTransferIRPOperations_2 Interface	M	fileDownloadIndication	CMISE M-ACTION service, action type: fileDownloadIndication	O
GenericIRPVersionOperation	M	getIRPVersion	CMISE M-ACTION service, action type: getIRPVersion	M
GenericIRPProfileOperation	O	getNotificationProfile	CMISE M-ACTION service, action type: getNotificationProfile	M
		getOperationProfile	CMISE M-ACTION service, action type: getOperationProfile	M
NOTE: The Interfaces GenericIRPVersionOperation and GenericIRPProfileOperation are inherited from 3GPP TS 32.314 [8].				

5.3.2 Mapping of Notifications

Table 3 maps the Interface/Notifications defined in the IS of the file transfer IRP onto their equivalents in the CMIP SS. These are qualified as Mandatory (M) or Optional (O).

Table 3: Mapping of IS Notification

IS Notification	CMIP SS Equivalent	Qualifier
notifyFileReady	notifyFileReady	M
notifyFilePreparationError	notifyFilePreparationError	M

5.4 Operation parameter mapping

The FileTransferIRP: IS 3GPP TS 32.342 [7] defines semantics of parameters carried in operations across the FileTransferIRP. The following tables indicate the mapping of these parameters, as per operation, to their equivalents defined in this SS.

Table 5: Parameter mapping of the operation `listAvailableFiles`

IS Operation parameter	IN/ OUT	CMIP SS Equivalent	Qualifier
managementDataType	IN	M-ACTION parameter 'Action information': (ListAvailableFilesInfo): managementDataType	M
beginTime	IN	M-ACTION parameter 'Action information': (ListAvailableFilesInfo): beginTime	M
endTime	IN	M-ACTION parameter 'Action information': (ListAvailableFilesInfo): endTime	M
fileInfoList	OUT	M-ACTION parameter 'Action Reply': (ListAvailableFilesReply): fileInfoList	M
status	OUT	M-ACTION parameter 'Action Reply': (ListAvailableFilesReply): status	M

Table 6: Parameter mapping of the operation `fileDownloadIndication`

IS Operation parameter	IN/ OUT	CMIP SS Equivalent	Qualifier
fileInfoList	IN	M-ACTION parameter 'Action information': (FileDownloadIndicationInfo): FileInfoList	M
status	OUT	M-ACTION parameter 'Action Reply: (FileDownloadIndicationReply): ErrorCauses	M

5.5 Mapping of Notification Parameters

In the CMIP Solution Set notifications emitted by an Agent are reported to the Managers by means of the CMISE "M-EVENT-REPORT" service primitive, which again is implemented by means of the "m-EventReport OPERATION" (see ITU-T Recommendations X.710 [] and X.711 []). The argument of the m-EventReport OPERATION is defined in ITU-T Recommendation X.711 [] as follows:

```
EventReportArgument          ::= SEQUENCE {
        managedObjectClass       ObjectClass,
        managedObjectInstance    ObjectInstance,
        eventTime                [5] IMPLICIT GeneralizedTime OPTIONAL,
        eventType                EventTypeId,
        eventInfo                [8] ANY DEFINED BY eventType OPTIONAL
        }
```

where eventInfo has to be further specified for each notification by means of specific GDMO/ASN.1 definitions.

For the notifications defined in 3GPP TS 32. 342 [7] all parameters are mapped onto their CMIP SS equivalents as shown in the following tables.

Most parameters are mapped to the M-EVENT report parameter 'Event information'. The 'Event information' parameter is described by the ASN.1 definitions given in this document.

Table 7: Parameter mapping of the notification *notifyFileReady*

IS Parameter	Qualifier	CMIP SS Equivalent
objectClass	M	M-EVENT-REPORT parameter "Managed object class"
objectInstance	M	M-EVENT-REPORT parameter "Managed object instance"
notificationId	M	M-EVENT-REPORT parameter "Event information": (NotifyFileReadyInfo): notificationIdentifier
eventTime	M	M-EVENT-REPORT parameter "Event time"
notificationType	M	M-EVENT-REPORT parameter "Event type"
systemDN	C	This parameter is conditional and is not supported in the CMIP SS
fileInfoList	M	M-EVENT-REPORT parameter "Event information": (NotifyFileReadyInfo): fileInfoList
additionalText	O	M-EVENT-REPORT parameter "Event information": (NotifyFileReadyInfo): additionalText

Table 8: Parameter mapping of the notification *notifyFilePreparationError*

IS Parameter	Qualifier	CMIP SS Equivalent
objectClass	M	M-EVENT-REPORT parameter "Managed object class"
objectInstance	M	M-EVENT-REPORT parameter "Managed object instance"
notificationId	M	M-EVENT-REPORT parameter "Event information": (notifyFilePreparationErrorInfo): notificationIdentifier
eventTime	M	M-EVENT-REPORT parameter "Event time"
systemDN	C	This parameter is conditional and is not supported in the CMIP SS
notificationType	M	M-EVENT-REPORT parameter "Event type"
fileInfoList	M	M-EVENT-REPORT parameter "Event information": (notifyFilePreparationErrorInfo): fileInfoList
reason	M	M-EVENT-REPORT parameter "Event information": (notifyFilePreparationErrorInfo): reason
additionalText	O	M-EVENT-REPORT parameter "Event information": (notifyFilePreparationErrorInfo): additionalText

-- 6 GDMO definitions

--Please do not remove the '—' in front of the headline numbering, as it is the CMIP code

--for a comment. This way the whole chapter can be put directly into a compiler.

-- 6.1 Managed Object Classes

-- 6.1.1 fileTransferIRP

fileTransferIRP **MANAGED OBJECT CLASS**

DERIVED FROM

"3GPP TS32.314" : managedGenericIRP;

CHARACTERIZED BY

ftIRPOperationsPackage1,

ftIRPOperationsPackage2;

REGISTERED AS {ts32-344ObjectClass 10600};

-- 6.2 Packages

-- 6.2.1 ftIRPOperationsPackage1

ftIRPOperationsPackage1 **PACKAGE**

BEHAVIOUR

ftIRPOperationsPackage1Behaviour;

ACTIONS

listAvailableFiles;

REGISTERED AS {ts32-344Package 10600};

ftIRPOperationsPackage1Behaviour **BEHAVIOUR**

DEFINED AS

"The action listAvailableFiles allows the IRPManager to list all management data files stored

in the IRPAgent.';

-- 6.2.2 ftIRPOperationsPackage2

ftIRPOperationsPackage2 **PACKAGE**

BEHAVIOUR

ftIRPOperationsPackage2Behaviour;

ACTIONS

fileDownloadIndication;

REGISTERED AS {ts32-344Package 20600};

ftIRPOperationsPackage2Behaviour **BEHAVIOUR**

DEFINED AS

"The action fileDownloadIndication informs the IRPAgent about the completion of the file exchange after the IRPManager has been downloading one or several files to the IRPAgent.";

-- 6.2.3 ftIRPNotificationPackage

ftIRPNotificationPackage **PACKAGE**

BEHAVIOUR

ftIRPNotificationPackageBehaviour;

NOTIFICATIONS

notifyFileReady,

notifyFilePreparationError;

REGISTERED AS {ts32-344Package 30600};

ftIRPNotificationPackageBehaviour **BEHAVIOUR**

DEFINED AS

"After the management data files have been prepared successfully for upload in the IRPAgent, the IRPAgent emits the *notifyFileReady* to all subscribed IRPManager(s) to notify the availability of the data file(s).

If an error occurs during the preparation of the management data files for upload, all subscribed IRPManagers are notified by the *notifyFilePreparationError* notification. This notification is an event and shall not be treated as an alarm as defined in the Alarm IRP IS (3GPP TS 32.111-2 [3]).";

-- 6.3 Actions

-- 6.3.1 listAvailableFiles(M)

listAvailableFiles **ACTION**

BEHAVIOUR

listAvailableFilesBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-344TypeModule.ListAvailableFilesInfo;

WITH REPLY SYNTAX

TS32-344TypeModule.ListAvailableFilesReply;

REGISTERED AS {ts32-344Action 10600};

listAvailableFilesBehaviour **BEHAVIOUR**

DEFINED AS

"The behaviour of this action is described in 32.342.";

-- 6.3.2 fileDownloadIndication(M)

fileDownloadIndication **ACTION**

BEHAVIOUR

fileDownloadIndicationBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-344TypeModule.FileDownloadIndicationInfo;

WITH REPLY SYNTAX

TS32-344TypeModule.FileDownloadIndicationReply;

REGISTERED AS {ts32-344PAction 20600};

fileDownloadIndicationBehaviour **BEHAVIOUR**

DEFINED AS

"The behaviour of this action is described in 32.342.";

-- 6.4 Notifications

-- 6.4.1 notifyFileReady (M)

notifyFileReady **NOTIFICATION**

BEHAVIOUR

notifyFileReadyBehaviour;

WITH INFORMATION SYNTAX

TS32-344TypeModule.NotifyFileReadyInfo;

REGISTERED AS {ts32-344Notification 10600};

notifyFileReadyBehaviour **BEHAVIOUR**

DEFINED AS

"After the management data files have been prepared successfully for upload in the IRPAgent, the IRPAgent emits a notification to all subscribed IRPManager(s) to notify the availability of the file(s).";

-- 6.4.2 notifyFilePreparationError (O)

notifyFilePreparationError **NOTIFICATION**

BEHAVIOUR

notifyFilePreparationErrorBehaviour;

WITH INFORMATION SYNTAX

TS32-344TypeModule.NotifyFilePreparationErrorInfo;

REGISTERED AS {ts32-344Notification 20600};

notifyFilePreparationErrorBehaviour **BEHAVIOUR**

DEFINED AS

"The subscribed IRPManagers are notified regarding the occurrence of an error during the preparation of the file. This notification is an event and shall not be treated as an alarm as defined in the Alarm IRP IS (3GPP TS 32.111-2 [3]).";

-- 7 ASN.1 definitions for the FT IRP

TS32-344TypeModule {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-Operation-Maintenance(3) ts-32-344(344) informationModel(0) asn1Module(2) version10600(10600)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

--EXPORTS everything

```
IMPORTS

NotificationIdentifier, AdditionalText, EventType, EventTime,
  FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}

CMISFilter, ObjectInstance, ObjectClass, EventTypeId
  FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)};



-- 3GPP TS 32.314 related Object Identifiers

baseNodeUMTS          OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4)
                              etsi(0) mobileDomain(0)
                              umts-Operation-Maintenance(3)}

ts32-344              OBJECT IDENTIFIER ::= {baseNodeUMTS ts32-344(344)}
ts32-344InfoModel     OBJECT IDENTIFIER ::= {ts32-344 informationModel(0)}

ts32-344ObjectClass   OBJECT IDENTIFIER ::= {ts32-344InfoModel managedObjectClass(3)}
ts32-344Package       OBJECT IDENTIFIER ::= {ts32-344InfoModel package(4)}
ts32-344Parameter     OBJECT IDENTIFIER ::= {ts32-344InfoModel parameter(5)}
ts32-344NameBinding   OBJECT IDENTIFIER ::= {ts32-344InfoModel nameBinding(6)}
ts32-344Attribute     OBJECT IDENTIFIER ::= {ts32-344InfoModel attribute(7)}
ts32-344Action        OBJECT IDENTIFIER ::= {ts32-344InfoModel action(9)}
ts32-344Notification  OBJECT IDENTIFIER ::= {ts32-344InfoModel notification(10)}



-- Start of 3GPP SA5 own definitions

ErrorCauses ::= ENUMERATED
  {
   success       (0), -- operation successfully performed
   failure     (255)  -- operation failed, specific error unknown
  }
```

```
FileDescriptor ::= SEQUENCE
 {
  fileLocation         GraphicString,
  fileSize             NumberOfBytes,
  fileReadyTime        GeneralizedTime,
  fileExpirationTime   GeneralizedTime,
  fileCompression      GraphicString,
  fileFormat           GraphicString
 }

FileDownloadIndicationInfo ::= FileInfoList

FileDownloadIndicationReply ::= ErrorCauses

FileInfoList ::= SEQUENCE OF FileDescriptor

FileFormat ::= SEQUENCE
  {
  iRPVersionNumber       IRPVersionNumber,
  fileFormatDefinition   GraphicString
  {

IRPVersionNumber ::= GraphicString

ListAvailableFilesInfo ::= SEQUENCE
  {
  managementDataType   ManagementDataType,
  beginTime            GeneralizedTime,
  endTime              GeneralizedTime
  }

ListAvailableFilesReply ::= SEQUENCE
  {
  fileInfoList   FileInfoList,
  status         ErrorCauses
```

```
}

ManagementDataType ::= ENUMERATED
{
PM   (0),   -- for performance data files (Performance Management IRP TS 32.41x [8])
CM   (1),   -- for configuration files (except inventory) (Bulk CM IRP TS 32.61x [10])
IM   (2),   -- for inventory files
TE   (3),   -- for test files (Test Management IRP TS 32.32x [6])
CT   (4),   -- for call trace files (Subscriber and Equipment Trace TS 32.421 [9])
NL   (5),   -- for notification log files (Notification Log IRP TS 32.33x [11])
CG   (6),   -- for charging files (TS 32.240 [13])
OT   (7)    -- for other files
};

NotifyFilePreparationErrorInfo ::= SEQUENCE
{
notificationIdentifier      NotificationIdentifier,      -- ITU-T X.721
fileInfoList                FileInfoList,
reason                      Reason,
additionalText              AdditionalText               -- ITU-T X.721
}

NotifyFileReadyInfo ::= SEQUENCE
{
notificationIdentifier      NotificationIdentifier,      -- ITU-T X.721
fileInfoList                FileInfoList
additionalText              AdditionalText               -- ITU-T X.721
}

NumberOfBytes ::= INTEGER

Reason ::= GraphicString

END -- of module TS32-344TypeModule
```

Annex A (informative): List of assigned Object Identifiers

This annex provides a list with all object identifiers that have been assigned in TS 32.344. These object identifiers shall not be assigned to new objects (also not in new versions of this document).

Basic Name	Name and OID of the current TS Version	Name and OIDs of previous TS Versions
Managed Object Classes		
fileTransferIRP	Name: fileTransferIRP OID: ts32-344ObjectClass 10600	--
Packages		
ftIRPOperationsPackage1	Name: ftIRPOperationsPackage1 OID: ts32-344IRPPackage 10600	--
ftIRPOperationsPackage2	Name: ftIRPOperationsPackage2 OID: ts32-344Package 20600	--
Actions		
listAvailableFiles	Name: listAvailableFiles OID: ts32-344Action 10600	
fileDownloadIndication	Name: fileDownloadIndication OID: ts32-354Action 20600	
Notifications		
notifyFileReady	Name: notifyFileReady OID: ts32-344Notification 10600	
notifyFilePreparationError	Name: notifyFilePreparationError OID: ts32-344Notification 20600	
Attributes		
--	--	--
Parameters		
--	--	--
Name Bindings		
--	--	--

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Dec 2004	S_26	SP-040801	--	--	Submitted to SA#26 for Approval	1.0.0	6.0.0

History

Document history		
V6.0.0	December 2004	Publication