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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 Object Request Broker Architecture (CORBA)  
Solution Set (SS)  
(3GPP TS 32.343 version 8.0.0 Release 8)**

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## Foreword

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

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

- 32.341: "File Transfer (FT) Integration Reference Point (IRP): Requirements"
- 32.342: "File Transfer (FT) Integration Reference Point (IRP): Information Service (IS)"
- 32.343: "File Transfer (FT) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)"**
- 32.345: "File Transfer (FT) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions"
- 32.347: "File Transfer (FT) Integration Reference Point (IRP): SOAP Solution Set (SS)"

The present document is part of a set of TSs 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 making reuse of capabilities provided by this File Transfer IRP.

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# 1 Scope

The present document specifies the Common Object Request Broker Architecture (CORBA) Solution Set (SS) for the IRP whose semantics is specified in File Transfer IRP: Information Service 3GPP TS 32.342 [7].

This Solution Set specification is related to 3GPP TS 32.342 V7.0.X.

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# 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 32.303: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) 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)".
- [9] OMG TC Document telecom/98-11-01: "OMG Notification Service".  
<http://www.omg.org/technology/documents/>

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# 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:

CM	Configuration Management
CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
FT	File Transfer
IDL	Interface Definition Language
IS	Information Service
NE	Network Element
OMG	Object Management Group
PM	Performance Management
SS	Solution Set

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## 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 CORBA SS.

### 4.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [5]).

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).

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## 5 Mapping

### 5.1 Operation and Notification mapping

FileTransferIRP: IS 3GPP TS 32.342 [7] defines semantics of operation and notification visible across the FileTransferIRP. Table 1 indicates mapping of these operations and notifications to their equivalents defined in this SS.

**Table 1: Mapping from IS Operations and Notification to SS equivalents**

IS Operations/ notification 3GPP TS 32.342 [7]	SS Method	Qualifier
listAvailableFiles	list_available_files	M
fileDownloadIndication	file_download_indication	O
getIRPVersion (see note)	get_file_transfer_irp_versions	M
getOperationProfile (see note)	get_file_transfer_irp_operations_profile	O
getNotificationProfile (see note)	get_file_transfer_irp_notifications_profile	O
notifyFileReady	push_structured_events (see subclause 6.1)	M
notifyFilePreparationError	push_structured_events (see subclause 6.1)	M
NOTE:	This operation is of ManagedGenericIRP IOC specified in 3GPP TS 32.312 [8]. The FileTransferIRP IOC of 3GPP TS 32.342 [7] inherits from it.	

## 5.2 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 2: Mapping from IS listAvailableFiles parameters to SS equivalents**

IS Operation parameter	SS Method parameter	Qualifier
managementDataType	short management_data_type	M
beginTime	FileTransferIRPConstDefs::UTCTime begin_time	M
endTime	FileTransferIRPConstDefs::UTCTime end_time	M
fileInfoList	FileTransferIRPConstDefs::FileInfoList file_info_list	M
status	Return value of type FileTransferIRPConstDefs::Result Exception: ListAvailableFiles, InvalidTimes, ManagedGenericIRPSystem::InvalidParameter	M

**Table 3: Mapping from IS fileDownloadIndication parameters to SS equivalents**

IS Operation parameter	SS Method parameter	Qualifier
fileInfoList	FileTransferIRPConstDefs::FileInfoList file_info_list	M
status	Return value of type FileTransferIRPConstDefs::Result Exception: FileDownloadIndication, InvalidFileInfoList, ManagedGenericIRPSystem:OperationNotSupported	M

**Table 4: Mapping from IS getIRPVersion parameters to SS equivalents**

IS Operation parameter	SS Method parameter	Qualifier
versionNumberSet	Return value of type ManagedGenericIRPConstDefs::VersionNumberSet	M
status	Exception: GetFileTransferIRPVersions	M

**Table 5: Mapping from IS getOperationProfile parameters to SS equivalents**

IS Operation parameter	SS Method parameter	Qualifier
iRPVersion	ManagedGenericIRPConstDefs::VersionNumber irp_version	M
operationNameProfile, operationParameterProfile	Return value of type ManagedGenericIRPConstDefs::MethodList	M
status	Exception: GetFileTransferIRPOperationsProfile, ManagedGenericIRPSystem::OperationNotSupported, ManagedGenericIRPSystem::InvalidParameter	M

**Table 6: Mapping from IS getNotificationProfile parameters to SS equivalents**

IS Operation parameter	SS Method parameter	Qualifier
iRPVersion	ManagedGenericIRPConstDefs::VersionNumber irp_version	M
notificationNameProfile, notificationParameterProfile	Return value of type ManagedGenericIRPConstDefs::MethodList	M
status	Exception: GetFileTransferIRPNotificationsProfile, ManagedGenericIRPSystem::OperationNotSupported, ManagedGenericIRPSystem::InvalidParameter	M



## 5.3 Notification parameter mapping

The FileTransferIRP: IS 3GPP TS 32.342 [7] defines semantics of parameters carried in notifications. The following table indicates the mapping of these parameters to their OMG CORBA Structured Event (defined in OMG Notification Service [9]) equivalents. The composition of OMG Structured Event, as defined in the OMG Notification Service [9], is:

```
Header
  Fixed Header
    domain_name
    type_name
    event_name
  Variable Header
Body
  filterable_body_fields
  remaining_body
```

The following tables list all OMG Structured Event attributes in the second column. The first column identifies the FileTransferIRP: IS 3GPP TS 32.342 [7] defined notification parameters.

Table 7: Mapping for notifyFileReady

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
notificationType	type_name	M	This is the ET_FILE_READY of module of FileTransferIRPNotifDefs.
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string.  Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
eventTime	One NV pair of filterable_body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
systemDN	One NV pair of filterable_body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
fileInfoList	One NV pair of remaining_body	M	Name of NV pair is the FILE_INFO_LIST of interface NotifyFileReady of module FileTransferIRPNotifications.  Value of NV pair is FileInfoList of module FileTransferIRPConstDefs.
additionalText	One NV pair of remaining_body	O	Name of NV pair is the ADDITIONAL_TEXT interface NotifyFileReady of module FileTransferIRPNotifications.  Value of NV pair is a string.

**Table 8: Mapping for notifyFilePreparationError**

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
notificationType	Type_name	M	This is the ET_FILE_PREPARATION_ERROR of module of FileTransferIRPNotifDefs.
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string.  Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
eventTime	One NV pair of filterable_body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
systemDN	One NV pair of filterable_body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
fileInfoList	One NV pair of remaining_body	M	Name of NV pair is the FILE_INFO_LIST of interface NotifyFilePreparationError of module FileTransferIRPNotifications.  Value of NV pair is FileInfoList of module FileTransferIRPConstDefs.
reason	One NV pair of remaining_body	M	Name of NV pair is the REASON of interface NotifyFilePreparationError of module FileTransferIRPNotifications.  Value of NV pair is a string.
additionalText	One NV pair of remaining_body	O	Name of NV pair is the ADDITIONAL_TEXT of interface NotifyFilePreparationError of module FileTransferIRPNotifications.  Value of NV pair is a string.

---

## 6 FileTransferIRP Notification Interface

OMG CORBA Notification push operation is used to realise the notification of FileTransferIRP Notifications. All the notifications in this interface are implemented using this `push_structured_event` method.

### 6.1 Method `push` (M)

```
module CosNotifyComm {
...
  Interface SequencePushConsumer : NotifyPublish {
    void push_structured_events(
      in CosNotification::EventBatch notifications)
      raises( CosEventComm::Disconnected);
...
  }; // SequencePushConsumer
...
}; // CosNotifyComm
```

NOTE 1: The `push_structured_events` method takes an input parameter of type `EventBatch` as defined in the `OMG CosNotification` module (OMG Notification Service [9]). This data type is the same as a sequence of Structured Events. Upon invocation, this parameter will contain a sequence of Structured Events being delivered to IRPManager by IRPAgent to which it is connected.

NOTE 2: The maximum number of events that will be transmitted within a single invocation of this operation is controlled by IRPAgent wide configuration parameter.

NOTE 3: The amount of time the supplier (IRPAgent) of a sequence of Structured Events will accumulate individual events into the sequence before invoking this operation is controlled by IRPAgent wide configuration parameter as well.

NOTE 4: IRPAgent may push `EventBatch` with only one Structured Event.

## Annex A (normative): IDL specifications

### A.1 IDL specification (file name "FileTransferIRPConstDefs.idl")

```
//File: FileTransferIRPConstDefs.idl
#ifndef _FILE_TRANSFER_IRP_CONST_DEFS_IDL_
#define _FILE_TRANSFER_IRP_CONST_DEFS_IDL_

#include <TimeBase.idl>

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: FileTransferIRPConstDefs
This module contains commonly used definitions for FileTransferIRP.
=====
*/
module FileTransferIRPConstDefs
{
    enum Result {OK, FAILURE};

    typedef TimeBase::UtcT UTCTime;

    enum LocationChoice {DIRECTORY, URL};

    //The FileLocation may be a directory path or a URL
    union FileLocation switch (LocationChoice)
    {
        case DIRECTORY: string file_location_directory;
        /* e.g. \\202.112.101.1\D:\user\performanceFiles\ */
        case URL: string file_location_url;
        /* e.g. ftp://nms.telecom_org.com/datastore/<fileName> */
    };

    typedef unsigned long FileSize; //the unit is byte
    typedef string FileCompression;
    typedef string FileFormat;

    struct FileInfo
    {
        FileLocation file_location;
        FileSize file_size;
        UTCTime file_ready_time;
        UTCTime file_expiration_time;
        FileCompression file_compression;
        FileFormat file_format;
    };

    typedef sequence<FileInfo> FileInfoList;

    const short PM_MANAGEMENT_DATA_TYPE = 1; //Performance Management
    const short CM_MANAGEMENT_DATA_TYPE = 2; //Configuration Management
    const short IM_MANAGEMENT_DATA_TYPE = 3; //Inventory Management
    const short TM_MANAGEMENT_DATA_TYPE = 4; //Test Management
    const short CT_MANAGEMENT_DATA_TYPE = 5; //Subscriber & Equipment Trace
    const short NL_MANAGEMENT_DATA_TYPE = 6; //Notification Log
    const short CG_MANAGEMENT_DATA_TYPE = 7; //Charging
    const short OT_MANAGEMENT_DATA_TYPE = 8; //Other Types

    /*
    Define the parameters specified in the notifyFileReady
    and notifyFilePreparationError notifications.
    */
    interface AttributeNameValue
    {
        const string FILE_INFO_LIST = "FILE_INFO_LIST";
        const string ADDITIONAL_TEXT = "ADDITIONAL_TEXT";
        const string REASON = "REASON";
    };
};
```

```
};  
};  
#endif // _FILE_TRANSFER_IRP_CONST_DEFS_IDL_
```

## A.2 IDL specification (file name "FileTransferIRPSystem.idl")

```

//File: FileTransferIRPSystem.idl
#ifndef _FILE_TRANSFER_IRP_SYSTEM_IDL_
#define _FILE_TRANSFER_IRP_SYSTEM_IDL_

#include <ManagedGenericIRPConstDefs.idl>
#include <ManagedGenericIRPSystem.idl>
#include <FileTransferIRPConstDefs.idl>

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: FileTransferIRPSystem
This module implements capabilities of FileTransferIRP.
=====
*/
module FileTransferIRPSystem
{
    exception InvalidTimes { string reason; };
    exception InvalidFileInfoList { string reason; };

    /*
    System fails to complete the operation. System can provide reason
    to qualify the exception. The semantics carried in reason
    is outside the scope of this IRP.
    */
    exception ListAvailableFiles { string reason; };
    exception FileDownloadIndication { string reason; };
    exception GetFileTransferIRPVersions { string reason; };
    exception GetFileTransferIRPOperationsProfile { string reason; };
    exception GetFileTransferIRPNotificationsProfile { string reason; };

    interface FileTransferIRP
    {
        /*
        * IRPManager invoke this operation to get the files information
        */
        FileTransferIRPConstDefs::Result list_available_files(
            in short management_data_type,
            in FileTransferIRPConstDefs::UTCTime begin_time,
            in FileTransferIRPConstDefs::UTCTime end_time,
            out FileTransferIRPConstDefs::FileInfoList file_info_list
        )
        raises (ListAvailableFiles, InvalidTimes,
            ManagedGenericIRPSystem::InvalidParameter);

        /*
        * IRPManager invoke this operation to indicate completion of downloading files to IRPAgent
        */
        FileTransferIRPConstDefs::Result file_download_indication(
            in FileTransferIRPConstDefs::FileInfoList file_info_list
        )
        raises (FileDownloadIndication, InvalidFileInfoList,
            ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Return the list of all supported FileTransferIRP versions.
        */
        ManagedGenericIRPConstDefs::VersionNumberSet get_file_transfer_irp_versions (
        )
        raises (GetFileTransferIRPVersions);

        /**
        * Return the list of all supported operations and their supported
        * parameters for a specific FileTransferIRP version.
        */
        ManagedGenericIRPConstDefs::MethodList get_file_transfer_irp_operations_profile (
            in ManagedGenericIRPConstDefs::VersionNumber irp_version
        )
        raises (GetFileTransferIRPOperationsProfile,
            ManagedGenericIRPSystem::OperationNotSupported,
            ManagedGenericIRPSystem::InvalidParameter);
    }
}

```

```
/**
 * Return the list of all supported notifications and their supported
 * parameters for a specific FileTransferIRP version.
 */
ManagedGenericIRPConstDefs::MethodList get_file_transfer_irp_notifications_profile
(
    in ManagedGenericIRPConstDefs::VersionNumber irp_version
)
raises (GetFileTransferIRPNotificationsProfile,
        ManagedGenericIRPSystem::OperationNotSupported,
        ManagedGenericIRPSystem::InvalidParameter);
};

};

#endif // _FILE_TRANSFER_IRP_SYSTEM_IDL_
```



## A.3 IDL specification (file name "FileTransferIRPNotifications.idl")

```
//File: FileTransferIRPNotifications.idl
#ifndef _FILE_TRANSFER_IRP_NOTIFICATIONS_IDL_
#define _FILE_TRANSFER_IRP_NOTIFICATIONS_IDL_

#include <FileTransferIRPConstDefs.idl>
#include <NotificationIRPNotifications.idl>

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: FileTransferIRPNotifications
This contains the specification of notifications of FileTransferIRP.
=====
*/
module FileTransferIRPNotifications
{
  /**
   * Constant definitions for the FileReady notification
   */
  interface NotifyFileReady: NotificationIRPNotifications::Notify
  {
    const string EVENT_TYPE = "notifyFileReady";

    /**
     * This constant defines the name of the fileInfoList property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property is
     * FileTransferIRPConstDefs::FileInfoList.
     */
    const string FILE_INFO_LIST =
      FileTransferIRPConstDefs::AttributeNameValue::FILE_INFO_LIST;

    /**
     * This constant defines the name of the additionalText property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property is string.
     */
    const string ADDITIONAL_TEXT =
      FileTransferIRPConstDefs::AttributeNameValue::ADDITIONAL_TEXT;
  };

  /**
   * Constant definitions for the FilePreparationError notification
   */
  interface NotifyFilePreparationError:
    NotificationIRPNotifications::Notify
  {
    const string EVENT_TYPE = "notifyFilePreparationError";

    /**
     * This constant defines the name of the fileInfoList property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property is
     * FileTransferIRPConstDefs::FileInfoList.
     */
    const string FILE_INFO_LIST =
      FileTransferIRPConstDefs::AttributeNameValue::FILE_INFO_LIST;

    /**
     * This constant defines the name of the reason property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property is string.
     */
    const string REASON =
      FileTransferIRPConstDefs::AttributeNameValue::REASON;

    /**
     * This constant defines the name of the additionalText property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property is string.
     */
  };
};

```

```
    const string ADDITIONAL_TEXT =  
        FileTransferIRPConstDefs::AttributeNameValue::ADDITIONAL_TEXT;  
};  
  
};  
  
#endif // _FILE_TRANSFER_IRP_NOTIFICATIONS_IDL_
```

## Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Mar 2004	S_23	SP-040127	--	--	Submitted to TSG SA#23 for Information	--	1.0.0	
Sep 2004	S_25	SP-040563	--	--	Submitted to TSG SA#25 for Approval	--	2.0.0	6.0.0
Dec 2004	S_26	SP-040800	0001	--	Correct mapping of IS-defined non-filterable parameters to SS-defined non-filterable fields - Align IDL style in FT IRP CORBA SS with IDL Style Guide in 32.150	F	6.0.0	6.1.0
Mar 2005	SA_27	SP-050037	0002	--	IDL in compliant to the style guide	F	6.1.0	6.2.0
Sep 2005	SA_29	SP-050461	0003	--	Align the CORBA SS IDL with TS 32.150 Style Guide	F	6.2.0	6.3.0
Jun 2007	SA_36	--	--	--	Automatic upgrade to Rel-7 (no CR) at freeze of Rel-7. Deleted reference to CMIP SS, discontinued from R7 onwards.	--	6.3.0	7.0.0
Mar 2009	SA-43	SP-090207	0004	--	Include reference to SOAP Solution Set specification	D	7.0.0	8.0.0

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# History

<b>Document history</b>		
V8.0.0	April 2009	Publication