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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
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Configuration Management (CM);
Bulk CM Integration Reference Point (IRP);
Common Management Information Protocol (CMIP)
solution set
(3GPP TS 32.614 version 5.0.0 Release 5)**



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Foreword

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Introduction

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G network as it evolves. CM actions have the objective to control and monitor the actual configuration on the Network Element (NEs) and Network Resources (NRs), and they may be initiated by the operator or functions in the Operations Systems (OSs) or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QoS). The CM actions are initiated either as a single action on a NE of the 3G network or as part of a complex procedure involving actions on many NEs.

1 Scope

The present document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the Bulk CM Integration Reference Point (IRP): Information Service defined in TS 32.612 [4]. In detail:

- Clause 4 contains an introduction to some concepts that are the base for some specific aspects of the CMIP interfaces.
- Clause 5 contains the GDMO definitions for the Alarm Management over the CMIP interfaces

Clause 6 contains the ASN.1 definitions supporting the GDMO definitions provided in clause 5.

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: "3G Telecom Management principles and high level requirements".
- [2] 3GPP TS 32.102: "3G Telecom Management architecture".
- [3] 3GPP TS 32.304: "Telecommunication Management; Notification Management; Part 4: Notification Integration Reference Point; CMIP Solution Set".
- [4] 3GPP TS 32.612: "Telecommunication Management; Configuration Management: Bulk CM Integration Reference Point; Information Services".
- [5] ITU-T Recommendation X.710 (1991): "Common Management Information Service Definition for CCITT Applications".
- [6] ITU-T Recommendation X.721 (02/92): "Information Technology - Open Systems Interconnection – Structure of Management Information: Definition of Management Information".
- [7] ITU-T Recommendation X.730 (01/92): "Information Technology - Open Systems Interconnection – Systems Management: Object Management Function".
- [8] ITU-T Recommendation X.733 (02/92): "Information Technology - Open Systems Interconnection - Alarm Reporting Function".
- [9] ITU-T Recommendation M.3100 (07/95): "Maintenance Telecommunications Management Network – Generic Network Information Model".
- [10] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [11] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic Configuration Management Integration Reference Point (IRP) information service".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 32.600 [10] and TS 32.602 [11] apply.

3.2 Abbreviations

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

CMIP	Common Management Information Protocol
DN	Distinguished Name
GDMO	Guidelines for the Definition of Managed Objects
IDL	Interface Definition Language
IEC	International Electro-technical Commission
ISO	International Standards Organization
ITU-T	International Telecommunication Union, Telecommunication Sector
MIB	Management Information Base
MIM	Management Information Model
MIT	Management Information Tree (or Naming Tree)
MOC	Managed Object Class
MOI	Managed Object Instance
NE	Network Element
NR	Network Resource
NRM	Network Resource Model
TMN	Telecommunications Management Network

4 Basic aspects

4.1 Explanation

A technology-independent IRP Information Service is specified in the TS 32.612 [4] for the configuration management of 3G networks by using bulk data transfer, i.e. Bulk CM IRP IS. This technical specification provides a CMIP solution set of the Bulk CM IRP.

Within a CMIP TMN a network manager may use the operations and notifications defined in this TS to upload files containing managed information about the current configuration status of a concerned 3G network from the related element manager or to download files containing management commands to change the configuration of a concerned 3G network to the corresponding element manager. The concepts and the procedures of uploading and downloading are specified in the TS 32.612 [4]. The syntax and the semantic of files to upload or to download are defined in the TS 32.615.

4.2 Mapping

The sub-clauses below provide mapping tables between the technology-independent operations and notifications defined in TS 32.612 [4] and the CMIP actions and notifications specified in this document.

4.2.1 Mapping of Operations

The table below shows the mapping relation between the technology-independent operations defined in TS 32.612 [4] and the CMIP actions specified in this document.

Table 1: Mapping of operations

technology-independent operations defined in TS 32.612 [4]	CMIP actions specified in this document	Qualifiers of the CMIP actions specified in this document
startSession	startSession	M
endSession	endSession	M
upload	upload	M
download	download	M
validate	validate	O
preactivate	preactivate	O
activate	activate	M
fallback	fallback	M
abortSessionOperation	abortSessionOperation	M
getSessionIds	getSessionIds	M
getSessionStatus	getSessionStatus	M
getSessionLog	getSessionLog	M
getBulkCMIRPVersion	getBulkCMIRPVersion	M

4.2.2 Mapping of Operation Parameters

The following sub-clauses map the parameters of each technology-independent operations defined in the TS 32.612 [4] to the parameters of the corresponding CMIP actions specified in this document.

4.2.2.1 Mapping of Parameters of the Operation startSession

Table 2: Mapping of parameters of the operation startSession

parameters of the technology-independent operation 'startSession' defined in the TS 32.612 [4]	parameters of the CMIP action 'startSession' specified in this document	Qualifier of the parameters of the CMIP action 'startSession' specified in this document
sessionId	sessionId	Action information, M
status	status	Action response, M

4.2.2.2 Mapping of Parameters of the Operation endSession

Table 3: Mapping of parameters of the operation endSession

parameters of the technology-independent operation 'endSession' defined in the TS 32.612 [4]	parameters of the CMIP action 'endSession' specified in this document	Qualifier of the parameters of the CMIP action 'endSession' specified in this document
sessionId	sessionId	Action information, M
status	status	Action response, M

4.2.2.3 Mapping of Parameters of the Operation upload

Table 4: Mapping of parameters of the operation upload

parameters of the technology-independent operation 'upload' defined in the TS 32.612 [4]	parameters of the CMIP action 'upload' specified in this document	Qualifier of the parameters of the CMIP action 'upload' specified in this document
sessionId	sessionId	Action information, M
uploadDataFile	uploadDataFile	Action information, M
baseObjectInstance	baseObjectInstance	Action information, M
scope	scope	Action information, M
filter	filter	Action information, M
status	status	Action response, M

4.2.2.4 Mapping of Parameters of the Operation download

Table 5: Mapping of parameters of the operation download#

parameters of the technology-independent operation 'download' defined in the TS 32.612 [4]	parameters of the CMIP action 'download' specified in this document	Qualifier of the parameters of the CMIP action 'download' specified in this document
sessionId	sessionId	Action information, M
downloadDataFile	downloadDataFile	Action information, M
status	status	Action response, M

4.2.2.5 Mapping of Parameters of the Operation activate

Table 6: Mapping of parameters of the operation activate

parameters of the technology-independent operation 'activate' defined in the TS 32.612 [4]	parameters of the CMIP action 'activate' specified in this document	Qualifier of the parameters of the CMIP action 'activate' specified in this document
sessionId	sessionId	Action information, M
activationMode	activationMode	Action information, O
fallbackEnabled	saveFallback	Action information, M
status	status	Action response, M

4.2.2.6 Mapping of Parameters of the Operation fallback

Table 7: Mapping of parameters of the operation fallback

parameters of the technology-independent operation 'fallback' defined in the TS 32.612 [4]	parameters of the CMIP action 'fallback' specified in this document	Qualifier of the parameters of the CMIP action 'fallback' specified in this document
sessionId	sessionId	Action information, M
status	status	Action response, M

4.2.2.7 Mapping of Parameters of the Operation abortSessionOperation

Table 8: Mapping of parameters of the operation abortSessionOperation

parameters of the technology-independent operation 'abortSessionOperation' defined in the TS 32.612 [4]	parameters of the CMIP action 'abortSessionOperation' specified in this document	Qualifier of the parameters of the CMIP action 'abortSessionOperation' specified in this document
sessionId	sessionId	Action information, M
status	status	Action response, M

4.2.2.8 Mapping of Parameters of the Operation getSessionIds

Table 9: Mapping of parameters of the operation getSessionIds

parameters of the technology-independent operation 'getSessionIds' defined in the TS 32.612 [4]	parameters of the CMIP action 'getSessionIds' specified in this document	Qualifier of the parameters of the CMIP action 'getSessionIds' specified in this document
sessionIdList	sessionIdList	Action response, M
status	status	Action response, M

4.2.2.9 Mapping of Parameters of the Operation getSessionStatus

Table 10: Mapping of parameters of the operation getSessionStatus

parameters of the technology-independent operation 'getSessionStatus' defined in the TS 32.612 [4]	parameters of the CMIP action 'getSessionStatus' specified in this document	Qualifier of the parameters of the CMIP action 'getSessionStatus' specified in this document
sessionIdList	sessionIdList	Action information, M
sessionState	sessionState	Action response, M
status	status	Action response, M

4.2.2.10 Mapping of Parameters of the Operation getSessionLog

Table 11: Mapping of parameters of the operation getSessionLog

parameters of the technology-independent operation 'getSessionLog' defined in the TS 32.612 [4]	parameters of the CMIP action 'getSessionLog' specified in this document	Qualifier of the parameters of the CMIP action 'getSessionLog' specified in this document
sessionIdList	sessionIdList	Action information, M
logFileReference	logFileReference	Action information, M
contentType	contentType	Action information, M
status	status	Action response, M

4.2.2.11 Mapping of Parameters of the Operation getBulkCmIRPVersion

Table 12: Mapping of parameters of the operation getBulkCmIRPVersion

parameters of the technology-independent operation 'getBulkCmIRPVersion' defined in the TS 32.612 [4]	parameters of the CMIP action 'getBulkCmIRPVersion' specified in this document	Qualifier of the parameters of the CMIP action 'getBulkCmIRPVersion' specified in this document
sessionIdList	sessionIdList	Action information, M
status	status	Action response, M

4.2.2.12 Mapping of Parameters of the Operation validate

Table 13: Mapping of parameters of the operation validate

parameters of the technology-independent operation 'validate' defined in the TS 32.612 [4]	parameters of the CMIP action 'validate' specified in this document	Qualifier of the parameters of the CMIP action 'validate' specified in this document
sessionId	sessionId	Action information, M
activationMode	activationMode	Action information, O
status	status	Action response, M

4.2.2.13 Mapping of Parameters of the Operation preactivate

Table 14: Mapping of parameters of the operation preactivate

parameters of the technology-independent operation 'preactivate' defined in the TS 32.612 [4]	parameters of the CMIP action 'preactivate' specified in this document	Qualifier of the parameters of the CMIP action 'preactivate' specified in this document
sessionId	sessionId	Action information, M
verificationMode	verificationMode	Action information, O
activationMode	activationMode	Action information, O
fallbackEnabled	saveFallback	Action information, M
status	status	Action response, M

4.2.3 Mapping of Notifications

The table below shows the mapping relation between the technology-independent notifications defined in TS 32.612 [4] and the CMIP notifications specified in this document.

Table 13: Mapping of Notifications

technology-independent notifications defined in TS 32.612 [4]	CMIP notifications specified in this document	Qualifiers of the CMIP notifications specified in this document
notifySessionStateChanged	sessionStateChanged	M
notifyGetSessionLogEnded	getSessionLogEnded	M

4.2.4 Mapping of Notification Parameters/Attributes

The following sub-clauses map the parameters/attributes of each technology-independent notifications defined in the TS 32.612 [4] to the parameters/attributes of the corresponding CMIP notifications specified in this document.

4.2.4.1 Mapping of Parameters/Attributes of the Notification sessionStateChanged

Table 14: Mapping of parameters/attributes of the notification sessionStateChanged

technology-independent Parameters/Attributes of the notification 'notifySessionStateChanged' defined in TS 32.612 [4]	Parameters/Attributes of the CMIP notification 'sessionStateChanged' specified in this document	Qualifiers of the Parameters/Attributes of the CMIP notification 'sessionStateChanged' specified in this document
managedObjectClass	managedObjectClass	O
managedObjectInstance	managedObjectInstance	O
notificationId	notificationIdentifier (Rec. X.721 1992E)	O
eventTime	eventTime	M
systemDN	Not used in this CMIP SS	
eventType	eventType	M
sessionId	sessionId	M
sourceIndicator	sourceIndicator	O
sessionState	sessionState	M

4.2.4.2 Mapping of Parameters/Attributes of the Notification getSessionLogEnded

Table 15: Mapping of Parameters/Attributes of the Notification getSessionLogEnded

technology-independent Parameters/Attributes of the notification 'notifySessionStateChanged' defined in TS 32.612 [4]	Parameters/Attributes of the CMIP notification 'sessionStateChanged' specified in this document	Qualifiers of the Parameters/Attributes of the CMIP notification 'sessionStateChanged' specified in this document
managedObjectClass	managedObjectClass	O
managedObjectInstance	managedObjectInstance	O
notificationId	notificationIdentifier (Rec. X.721 1992E)	O
eventTime	eventTime	M
systemDN	Not used in this CMIP SS	
eventType	eventType	M
sessionId	sessionId	M
sourceIndicator	sourceIndicator	O
sessionLogStatus	sessionLogStatus	M

5 GDMO definitions

5.1 Actions

5.1.1 startSession (M)

startSession **ACTION**
BEHAVIOUR
 startSessionBehaviour;
MODE
 CONFIRMED;
WITH INFORMATION SYNTAX
 TS32-614TypeModule.Common;
WITH REPLY SYNTAX
 TS32-614TypeModule.CommonReply;
REGISTERED AS {ts32-614Action 1};

startSessionBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to start a session state machine as defined in TS 32.612 [4] and initialise temporary entities to be related with bulk data configuration sessionId in an Agent.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies the new session and process to be associated with a bulk data operation e.g. upload or download.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.2 endSession (M)

endSession **ACTION**
BEHAVIOUR
 endSessionBehaviour;
MODE
 CONFIRMED;
WITH INFORMATION SYNTAX
 TS32-614TypeModule.Common;
WITH REPLY SYNTAX
 TS32-614TypeModule.CommonReply;
REGISTERED AS {ts32-614Action 2};

endSessionBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to end a session state machine as defined in TS32.612 [4] and delete all temporary entities and their related bulk data configuration for a specified sessionId in an Agent. The deletion will be rejected if the configuration state is in a working state: e.g. uploading (including getting a log), downloading or activating.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.3 upload (M)

upload **ACTION**

BEHAVIOUR

uploadBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Upload;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 3};

uploadBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to create a file containing bulk configuration data (as defined in 3GPP TS 32.615 and in Claus 8 of the TS 32.612 [4]) and transfer the file to the indicated globally unique data file reference.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with the requested bulk data upload.

- *uploadDataFileReference*

This mandatory parameter specifies a globally unique file reference to where the specified scope of bulk data is to be uploaded and stored.

- *baseObjectInstance*

This mandatory parameter specifies a MO where the search starts. This is a full Distinguished Name.

- *scope*

This mandatory parameter defines how many levels of the containment hierarchy to search (i.e. apply the filter defined below). The search starts from the MO given by the baseObjectInstance parameter. The levels of search that may be performed are:

1. the base object alone (default);
2. the n-th level subordinates of the base object;
3. the base object and all of its subordinates down to and including the n-th level;
4. the base object and all of its subordinates.

- *filter*

This mandatory parameter defines a filter test to be applied to the scoped Managed Object(s). If the filter is empty, all of the managed objects included by the scope are selected.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.4 download (M)

download **ACTION**

BEHAVIOUR

downloadBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Download;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 4};

downloadBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to activate previously downloaded bulk configuration data (as defined in 3GPP TS 32.615 and in Claus 8 of the TS 32.612 [4]). Activate means that operations specified in a previously downloaded configuration file, for example create, delete and modify of managed objects are carried out on the live network i.e. mobile subscribers are affected by the downloaded configuration.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with the requested bulk data download.

- *downloadDataFileReference*

This mandatory parameter identifies specifies a globally unique file reference from where the data to be fetched and download from.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.5 activate (M)

activate **ACTION**

BEHAVIOUR

activateBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Activate;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;
REGISTERED AS {ts32-614Action 5};

activateBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to activate previously downloaded bulk configuration data (as defined in 3GPP TS 32.615 and in Claus 8 of the TS 32.612 [4]). Activate means that operations specified in a previously downloaded configuration file, for example create, delete and modify of managed objects are carried out on the live network i.e. mobile subscribers are affected by the downloaded configuration.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data download that is required to be activated.

- *saveFallback*

This mandatory parameter indicates whether or not it is required to initialise and enable fallback option prior to the activation.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.6 fallback (M)

fallback **ACTION**
BEHAVIOUR
 fallbackBehaviour;
MODE
 CONFIRMED;
WITH INFORMATION SYNTAX
 TS32-614TypeModule.Common;
WITH REPLY SYNTAX
 TS32-614TypeModule.CommonReply;
REGISTERED AS {ts32-614Action 6};

fallbackBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to activate a fallback area if a previously ordered activation has failed.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current log is required.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.7 abortSessionOperation (M)

abortSessionOperation **ACTION**

BEHAVIOUR

abortSessionOperationBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Common;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 7};

abortSessionOperationBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to abort a currently activate asynchronous operation. The abort will cause the session state machine to exit the current state and enter a new state, see clause 9 of TS 32.612 [4].

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the abort is required.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.8 getSessionIds (M)

getSessionId **ACTION**

BEHAVIOUR

getSessionIdBehaviour;

MODE

CONFIRMED;

WITH REPLY SYNTAX

TS32-614TypeModule.GetSessionIdsReply;

REGISTERED AS {ts32-614Action 8};

getSessionIdBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to return a list of all its currently open sessionIds.

The 'Action response' is composed of the following data:

- *sessionIdList*

This mandatory parameter is a list of all the sessionID an Agent currently has open i.e. started with startSession and not ended with endSession operations.

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.9 getSessionStatus (M)

getSessionStatus **ACTION**

BEHAVIOUR

getSessionStatusBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Common;

WITH REPLY SYNTAX

TS32-614TypeModule.GetSessionStatusReply;

REGISTERED AS {ts32-614Action 9};

getSessionStatusBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to send the current state of the bulk data configuration file operation. The IRPAgent returns the current state. See clause 9 of TS 32.612 [4].

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current status is required.

The 'Action response' is composed of the following data:

- *sessionState*

This mandatory parameter indicates current state of the configuration file operation. See clause 7.3.5 of TS 32.612 [4].

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.10 getSessionLog (M)

getSessionLog **ACTION**

BEHAVIOUR

getSessionLogBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.GetSessionLog;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 10};

getSessionLogBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation to request an Agent to provide a log of the results from activities associated with bulk data configuration file sessionId operations.

The 'Action information' contains the following data:

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current log is required.

- *logFileReference*

This mandatory parameter specifies the address and file name where the result is to be placed in the Manager.

- *contentType*

This mandatory parameter identifies if retrieved file should include (1) complete log including errors, (2) only errors.

The 'Action response' is composed of the following data:

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.11 getBulkCmIRPVersion (M)

getBulkCmIRPVersion **ACTION**

BEHAVIOUR

getBulkCmIRPVersionBehaviour;

MODE

CONFIRMED;

WITH REPLY SYNTAX

TS32-614TypeModule.GetBulkCmIRPVersionReply;

REGISTERED AS {ts32-614Action 11};

getBulkCmIRPVersionBehaviour **BEHAVIOUR**

DEFINED AS

"A Manager invokes this operation when it wishes to find out the Bulk CM IRP SS versions supported by an Agent. The Agent shall respond with a list of supported Bulk CM IRP SS versions.

- *sessionIdList*

This mandatory parameter is a list of all the sessionID an Agent currently has open i.e. started with startSession and not ended with endSession operations.

- *status*

It contains the results of this action. Possible values: noError (0), error (the value indicates the reason of the error).";

5.1.12 validate (M)

validate **ACTION**

BEHAVIOUR

validateBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Validate;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 12};

validateBehaviour **BEHAVIOUR**

DEFINED AS

"An IRPManager invokes this operation to request an IRPAgent to validate previously downloaded bulk configuration data. Use of this optional operation enables an IRPManager to detect errors with regard to the previously downloaded bulk configuration data before requesting preactivation or activation.

- *sessionId*
Identifies this specific session and process associated with the requested bulk data download.
- *activationMode*
Identifies whether a specific activation mode is required.
- *status*
indicates (a) start of operation is successful or (b) operation failed because of specified or unspecified reasons.";

5.1.13 preactivate (M)

preactivate **ACTION**

BEHAVIOUR

preactivateBehaviour;

MODE

CONFIRMED;

WITH INFORMATION SYNTAX

TS32-614TypeModule.Preactivate;

WITH REPLY SYNTAX

TS32-614TypeModule.CommonReply;

REGISTERED AS {ts32-614Action 13};

preactivateBehaviour **BEHAVIOUR**

DEFINED AS

"An IRPManager invokes this operation to request an IRPAgent to preactivate previously downloaded bulk configuration data that may have optionally been validated. The principal functions of the preactivate operation is to validate the configuration data changes in the context of current operational data and to pre-process the configuration data changes. Use of this operation enables the IRPManager to prepare the activation of the downloaded bulk configuration data at the EM or NE level before requesting its effective activation. The actions shall fall short of executing the bulk configuration data changes in the network and impacting service. (The actions may for example be to validate the configuration data changes in the context of current operational data or to pre-process the configuration data changes). Performing such actions prior to activate may help identify any potential problems prior to executing the changes on a live a network and may minimise activation elapse time.

- *sessionId*
Identifies this specific session and process associated with an earlier bulk data download that is required to be activated.
- *verificationMode*
Selects the mode of checking (full or limited).
- *activationMode*
Identifies which specific activation mode is required: leastServiceImpact or leastElapseTime
- *saveFallback*
Indicates whether or not it is required to initialise and enable fallback option prior to the preactivation. This option is only open for the first preactivate operation of a session. For any subsequent preactivate operation

retries within a session the fallbackEnabled parameter must be set to indicate it is not required to initialise fallback otherwise the pre-activate operation retry shall fail

- *status*

Indicates (a) start of operation is successful or (b) operation failed because of specified or unspecified reasons.";

5.2 Notifications

5.2.1 sessionStateChanged (M)

sessionStateChanged **NOTIFICATION**

BEHAVIOUR

sessionStateChangedBehaviour;

WITH INFORMATION SYNTAX

TS32-614TypeModule.SessionStateChangedInfo

AND ATTRIBUTE IDS

notificationIdentifier "Recommendation X.721 1992E" : notificationIdentifier,
 sessionId sessionId,
 sourceIndicator "Recommendation X.721 1992E" : sourceIndicator,
 sessionState sessionState;

REGISTERED AS {ts32-614Notification 1};

sessionStateChangedBehaviour **BEHAVIOUR**

DEFINED AS

"An Agent notifies a Manager that a state change has occurred on a bulk data configuration file sessionID operation subscribed to by the IRPManager.

The 'Event Information' field contains the following data:

- *notificationIdentifier*

This ITU-T X.721 standardised parameter, together with MOI (Managed Object Instance), unambiguously identifies this notification.

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current status is required.

- *sourceIndicator*

This optional when present, indicates the source of the operation that led to the generation of this notification. It can have one of the following values:

- 1 resource operation: The notification was generated in response to an internal operation of the resource;
- 2 management operation: The notification was generated in response to a management operation applied across the managed object boundary external to the managed object;
- 3 unknown: It is not possible to determine the source of the operation. parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current status is required.

- *sessionState*

This mandatory parameter indicates state transition that caused the Notification. See subclause 8.1 of TS 32.612 [4].";

5.2.2 getSessionLogEnded (M)

getSessionLogEnded **NOTIFICATION**

BEHAVIOUR

getSessionLogEndedBehaviour;

WITH INFORMATION SYNTAX

TS32-614TypeModule.GetSessionLogEndedInfo

AND ATTRIBUTE IDS

notificationIdentifier "Recommendation X.721 1992E" : notificationIdentifier,
 sessionId sessionId,
 sourceIndicator "Recommendation X.721 1992E" : sourceIndicator,
 sessionState sessionState;

REGISTERED AS {ts32-614Notification 2};

getSessionLogEndedBehaviour **BEHAVIOUR**

DEFINED AS

" An Agent notifies a Manager that a requested GetSessionLog for a bulk data configuration file sessionId operation subscribed to by the Manager has ended successfully or unsuccessfully.

The 'Event Information' field contains the following data:

- *notificationIdentifier*

This ITU-T X.721 standardised parameter, together with MOI (Managed Object Instance), unambiguously identifies this notification.

- *sessionId*

This mandatory parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current status is required.

- *sourceIndicator*

This optional when present, indicates the source of the operation that led to the generation of this notification. It can have one of the following values:

- 1 resource operation: The notification was generated in response to an internal operation of the resource;
- 2 management operation: The notification was generated in response to a management operation applied across the managed object boundary external to the managed object;
- 3 unknown: It is not possible to determine the source of the operation. parameter identifies this specific session and process associated with an earlier bulk data operation e.g. upload or download for which the current status is required.

- *sessionLogStatus*

This mandatory parameter indicates event that caused the Notification i.e. Get log completed, Get Log Failed.";

5.3 Attributes

5.3.1 sessionId

sessionId ATTRIBUTE

WITH ATTRIBUTE SYNTAX TS32-614TypeModule.SessionId;

MATCHES FOR EQUALITY;

BEHAVIOUR

sessionIdBehaviour **BEHAVIOUR DEFINED AS**

" This attribute identifies a specific session.";

REGISTERED AS {ts32-614Attribute 1};

5.3.2 sessionState

sessionState ATTRIBUTE

WITH ATTRIBUTE SYNTAX TS32-614TypeModule.SessionState;

MATCHES FOR EQUALITY;

BEHAVIOUR

sessionStateBehaviour BEHAVIOUR DEFINED AS

" This attribute indicates the current state of the configuration data file operation . See Subclause 7.3.5 of 3GPP TS 32.612.";

REGISTERED AS {ts32-614Attribute 2};

5.3.3 sessionLogStatus

sessionLogStatus ATTRIBUTE

WITH ATTRIBUTE SYNTAX TS32-614TypeModule.SessionLogStatus;

MATCHES FOR EQUALITY;

BEHAVIOUR

sessionLogStatusBehaviour BEHAVIOUR DEFINED AS

"This attribute indicates event that caused a getSessionLogEnded Notification, i.e. Get log completed, Get Log Failed.";

REGISTERED AS {ts32-614Attribute 3};

6 ASN.1 definitions

```

TS32-614TypeModule { ccitt (0) identified-organization (4) etsi (0)
    mobileDomain (0) umts-Operation-Maintenance (3) ts-32-614 (614)
    informationModel (0) asn1Module (2) version2 (2)}

DEFINITIONS IMPLICIT TAGS ::=
BEGIN

--EXPORTS everything
IMPORTS

NotificationIdentifier, SourceIndicator
FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}
CMISFilter, ObjectInstance, Scope
FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)};

-- 3GPP TS 32.614 related Object Identifiers

baseNodeUMTS OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
    umts-Operation-Maintenance(3)}
ts32-614 OBJECT IDENTIFIER ::= { baseNodeUMTS ts32-614(614)}
ts32-614InfoModel OBJECT IDENTIFIER ::= { ts32-614 informationModel(0)}

ts32-614ObjectClass OBJECT IDENTIFIER ::= { ts32-614InfoModel managedObjectClass(3)}
ts32-614Package OBJECT IDENTIFIER ::= { ts32-614InfoModel package(4)}
ts32-614Parameter OBJECT IDENTIFIER ::= { ts32-614InfoModel parameter(5)}
ts32-614NameBinding OBJECT IDENTIFIER ::= { ts32-614InfoModel nameBinding(6)}
ts32-614Attribute OBJECT IDENTIFIER ::= { ts32-614InfoModel attribute(7)}
ts32-614Action OBJECT IDENTIFIER ::= {ts32-614InfoModel action (9)}
ts32-614Notification OBJECT IDENTIFIER ::= {ts32-614InfoModel notification (10)}

-- Start of 3GPP SA5 own definitions

ErrorCauses ::= ENUMERATED
{
    noError (0), -- operation / notification successfully performed
    wrongSessionId (1), -- the value of the parameter SessionId is not known for the Agent
    unspecifiedErrorReason (255) -- operation failed, specific error unknown
}

SaveFallback ::= ENUMERATED
{
    enable (0), -- enable the fallback option
    disable (1) -- disable the fallback option
}

SessionId ::= GraphicString

Version ::= GraphicString
SessionState ::= ENUMERATED
{
    idle(0),
    uploadInProgress (1),
    uploadCompleted (2),

```

```

uploadFailed           (3),
downloadInProgress    (4),
downloadCompleted     (5),
downloadFailed        (6),
activationInProgress  (7),
activationCompleted   (8),
activationFailed      (9),
activationPartlyRealised (10),
fallbackInProgress    (11),
fallbackCompleted     (12),
fallbackFailed        (13),
fallbackPartlyRealised (14),
validationInProgress  (15),
validationFailed      (16),
validationCompleted   (17),
preactivationInProgress (18),
preactivationFailed    (19),
preactivationPartlyRealised (20),
preactivationCompleted (21)}

```

SessionLogStatus ::= ENUMERATED

```

{
  getLogFailed      (0),
  getLogCompleted   (1)
}

```

ContentType ::= ENUMERATED

```

{
  completeLog (0),           -- complete log including errors
  errorLog (1)              -- only error log
}

```

FileReference ::= GraphicString

ActivationMode ::= ENUMERATED

```

{
  notSupported (0),          -- the optional parameter is not supported
  leastServiceImpact (1),    -- the IRPAgent shall optimise the execution of the activation in a way that
                              -- minimises disruption to network services. Elapse time to complete the
                              -- activation is of secondary importance
  leastElapseTime (2)       -- the IRPAgent shall optimise the execution of the activation in a way that
                              -- minimises the elapse time for completing the execution of the activation.
                              -- During the execution, disruption of network services is of secondary
                              -- importance
}

```

VerificationMode ::= ENUMERATED

```

{
  notSupported (0),          -- the optional parameter is not supported
  fullChecking (1),         -- the checking should be as complete as possible with the intent of achieving
                              -- the greatest assurance that the subsequent activation operation will be
                              -- successful
  limitedChecking (2)       -- checking that can be performed by the IRPAgent rapidly is still performed,
                              -- but further checking that may cause significant delays to execute should be
                              -- omitted
}

```

Common ::= SEQUENCE

```

{
  sessionId      SessionId
}

```

CommonReply ::= SEQUENCE

```
{
  status          ErrorCauses
}
```

Download ::= SEQUENCE

```
{
  sessionId          SessionId,
  downloadDataFileReference FileReference
}
```

Upload ::= SEQUENCE

```
{
  sessionId          SessionId,
  uploadDataFileReference FileReference,
  baseObjectInstance ObjectInstance, -- ITU-T X.711
  scope             Scope, -- ITU-T X.711
  filter            CMISFilter -- ITU-T X.711
}
```

Validate ::= SEQUENCE

```
{
  sessionId          SessionId,
  activationMode     ActivationMode
}
```

Preactivate ::= SEQUENCE

```
{
  sessionId          SessionId,
  verificationMode  VerificationMode,
  activationMode     ActivationMode,
  saveFallback      SaveFallback
}
```

Activate ::= SEQUENCE

```
{
  sessionId          SessionId,
  saveFallback      SaveFallback,
  activationMode     ActivationMode
}
```

GetSessionIdsReply ::= SEQUENCE

```
{
  sessionIdList     SEQUENCE OF sessionId SessionId,
  status           ErrorCauses
}
```

GetSessionStatusReply ::= SEQUENCE

```
{
  sessionState     SessionState,
  status           ErrorCauses
}
```

GetSessionLog ::= SEQUENCE

```
{
  sessionId          SessionId,
}
```

```
logFileReference  FileReference,
contentType       ContentType,
status            ErrorCauses
}
```

GetBulkCmIRPVersionReply ::= SEQUENCE

```
{
  versionList      SEQUENCE OF Version ,
  status           ErrorCauses
}
```

SessionStateChangedInfo ::= SEQUENCE

```
{
  notificationIdentifier  NotificationIdentifier OPTIONAL, --ITU-T X.721
  sessionId               SessionId,
  sourceIndicator         SourceIndicator, -- ITU-T X.721
  sessionState            SessionState
}
```

GetSessionLogEndedInfo ::= SEQUENCE

```
{
  notificationIdentifier  NotificationIdentifier OPTIONAL, --ITU-T X.721
  sessionId               SessionId,
  sourceIndicator         SourceIndicator, -- ITU-T X.721
  sessionLogStatus        SessionLogStatus
}
```

END -- of module TS32-614TypeModule

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Sep 2001	S_13	SP-010478	001	--	Correction due to TS renumbering	4.0.0	4.1.0
Jun 2002	S_16	SP-020296	002	--	Correction of behaviour for IS parameter "saveFallback" of IS operation "activate"	4.1.0	4.2.0
Dec 2002	S_18	SP-020746	003	--	Correction of ASN.1/GDMO sources	4.2.0	4.3.0
Dec 2002	S_18	SP-020746	004	--	Alignment with the Rel-5 version of the Information Service in 32.612	4.3.0	5.0.0

History

Document history		
V5.0.0	December 2002	Publication