TSGS#27(05)0040

Source: SA5 (Telecom Management)

Title: CR 32401-403-432 Performance Management (PM)

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-Level	Spec	CR	R	Phase	Subject	Ca	VerCr	Doc-2nd-Level	Workitem
SP-050040	32.401	023	--	Rel-5	Resolve ambiguity in the format for timestamps in PM files	F	5.4.0	S5-058132	OAM-PM
SP-050040	32.432	001	--	Rel-6	Resolve ambiguity in the format for timestamps in PM files	A	6.0.0	S5-058133	OAM-PM
SP-050040	32.403	057	--	Rel-4	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	F	4.9.0	S5-058142	OAM-PM
SP-050040	32.403	058	--	Rel-5	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	A	5.9.0	S5-058143	OAM-PM
SP-050040	32.403	059	--	Rel-6	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	A	6.6.0	S5-058144	OAM-PM
SP-050040	32.403	060	--	Rel-6	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	B	6.6.0	S5-058145	OAM-PM

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-058132***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.401** **CR** **023** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Resolve ambiguity in the format for timestamps in PM files
Source:	⌘	**SA5** (mohanr@lucent.com)
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	An examination of TS 32.401 (Rel-5 & Rel-6) reveals some inconsistencies in the requirement for the format of timestamps while reporting PM counts. TS 32.401 Sec A.1, Table A.1 states that the ASN.1 tag 'timestamp' = DTD tag 'ts' = Schema tag 'measCollec endTime' should be in ASN.1 GeneralizedTime format whereas Sec A.4.2 defines all time-related attributes of type 'dateTime' for files using XML Schema. The time format supported by type dateTime is different from the one supported by GeneralizedTime.
Summary of change:	⌘	1. Added a clarification that all timestamps need to comply with ISO 8601. 2. Added definition text for tag 'timeStamp'. 3. Correction of a word – minor change not related to this topic.
Consequences if not approved:	⌘	If not approved, TS 32.401 will remain ambiguous on the timestamp format since specification will be seen as having two definitions for the same PM file attribute. The defintion of this attribute will be open to interpretation.

Clauses affected:	⌘	Sec 2, Annex A, Annex A.1, Annex B.12.

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments:	⌘	Rel-6 Mirror in S5-058133.

Change in Clause 2

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*.

…

[27] W3C REC-xmlschema-1-20010502: "XML Schema Part 1: Structures".

[28] W3C REC-xmlschema-2-20010502: "XML Schema Part 2: Datatypes".

[29] ITU-T Recommendation X.680: "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation

[30] ISO8601:2000(E) Data elements and interchange formats – Information interchange – Representation of dates and times

End of Change in Clause 2

Change in Annex A

Annex A (normative): Measurement Report File Format

This annex describes the format of measurement result files that can be transferred from the network (NEs or EM) to the NM. Three alternative format definitions are specified, one using ASN.1 (see [29]) with binary encoding (BER), the two others applying XML (see [25]), which is ASCII based. Of the two alternative XML format definitions, one is based on DTD, while the other is based on XML schema (see [26], [27] and [28]). Each 3G-system implementation complying with the present document shall support at least one of the three alternatives.

NOTE: It is not intended to have the DTD based XML format from Release 6 onwards defined as one of the alternate valid file formats for measurement result files.

Both the ASN.1 and XML file format definitions implement the measurement result structure and parameters defined in clauses 5.2 and 5.3 of the present document, except from the measurement job id, which is only needed to correlate measurement result reports with measurement jobs within the area of measurement administration (see clause 5.2.1.4). The three defined file format definitions correspond to each other (except with some minor XML specific optimisations). This implies that the value ranges and size constraints defined in the ASN.1 definition shall also be valid for implementations of the XML format definition. From that perspective, the three format definitions can be regarded as three different instances of the same single format.

The following conditions have been considered in defining this file format:

- Since the files are transferred via a machine-machine interface, the files applying the format definitions should be machine readable using standard tools.
- The file format should be independent of the data transfer protocol used to carry the file from one system to another.
- The file format should be generic across 3G systems.
- The file format should be flexible enough to include all possible measurement types, i.e. those specified within annex C as well as measurements defined within other standards bodies, or vendor specific measurement types.
- The file format should not impose any dependency between granularity periods for the generation of measurement results and file upload cycles for the file transfer from the network to the NM.
- The file format should be flexible enough to support both the NE-based and the EM-based approaches, as discussed in annex B, clause B.1.1 of the present document.
- The file format should be usable for other interfaces than Itf-N if required. The measurement file header could be augmented to indicate this other usage, however this would be a non-standard extension. In the ASN.1 file format definition, this is accommodated by the use of the ellipse notation. XML allows such additions through extra DTDs, provided by the definer of the non-standard extension.

End of Change in Annex A

Change in Clause Annex A.1

A.1 Parameter description and mapping table

Table A.1 maps the tags defined in the ASN.1 file format definition to those used in the XML file format definitions, DTD based and XML schema based. It also provides an explanation of the individual parameters. The XML tags defined in the DTD (see clause A.3.1) have been kept as short as possible in order to minimise the size of the XML measurement result files. XML tag attributes are useful where data values bind tightly to its parent element. They have been used where appropriate.

Table A.1 Mapping of ASN.1 Measurement Report File Format tags to XML tags

ASN.1 Tag	DTD based XML tag	XML schema based XML tag	Description
MeasDataCollection	mdc	measCollecFile	This is the top-level tag, which identifies the file as a collection of measurement data. The file content is made up of a header ("measFileHeader"), the collection of measurement result items ("measData"), and a measurement file footer ("measFileFooter").
measFileHeader	mfh	fileHeader	This is the measurement result file header to be inserted in each file. It includes a version indicator, the name, type and vendor name of the sending network node, and a time stamp ("collectionBeginTime").

ASN.1 Tag	DTD based XML tag	XML schema based XML tag	Description
measData	md	measData	The "measData" construct represents the sequence of zero or more measurement result items contained in the file. It can be empty in case no measurement data can be provided. The individual "measData" elements can appear in any order. Each "measData" element contains the name of the NE ("nEId") and the list of measurement results pertaining to that NE ("measInfo").
measFileFooter	mff	fileFooter	The measurement result file footer to be inserted in each file. It includes a time stamp, which refers to the end of the overall measurement collection interval that is covered by the collected measurement results being stored in this file.
fileFormatVersion	ffv	fileHeader fileFormatVersion	This parameter identifies the file format version applied by the sender. The format version defined in the present document shall be the abridged number and version of this 3GPP document (see below) for XML formats and the ASN.1 format alike. The abridged number and version of a 3GPP document is constructed from its version specific full reference "3GPP […] (yyyy-mm)" by: - removing the leading "3GPP TS" - removing everything including and after the version third digit, representing editorial only changes, together with its preceding dot character - from the resulting string, removing leading and trailing white space, replacing every multi character white space by a single space character and changing the case of all characters to uppercase.
senderName	sn	fileHeader dnPrefix and fileSender localDn	The senderName uniquely identifies the NE or EM that assembled this measurement file by its Distinguished Name (DN), according to the definitions in 3GPP TS 32.300 [10]. In the case of the NE-based approach, it is identical to the sender's "nEDistinguishedName". For ASN.1 and DTD based XML format, the string may be empty (i.e. string size =0) in case the DN is not configured in the sender. For the XML schema based XML format, the DN is split into the DN prefix and the Local DN (LDN) (see 3GPP TS 32.300 [10]). XML attribute specification "dnPrefix" may be absent in case the DN prefix is not configured in the sender. XML attribute specification "localDn" may be absent in case the LDN is not configured in the sender.
senderType	st	fileSender elementType	This is a user configurable identifier of the type of network node that generated the file, e.g. NodeB, EM, SGSN. The string may be empty (i.e. string size =0) in case the "senderType" is not configured in the sender. For the XML schema based XML format, XML attribute specification "elementType" may be absent in case the "senderType" is not configured in the sender.
vendorName	vn	fileHeader vendorName	The "vendorName" identifies the vendor of the equipment that provided the measurement file. The string may be empty (i.e. string size =0) if the "vendorName" is not configured in the sender. For the XML schema based XML format, XML attribute specification "vendorName" may be absent in case the "vendorName" is not configured in the sender.
collectionBeginTime	cbt	measCollec beginTime	The "collectionBeginTime" is a time stamp that refers to the start of the first measurement collection interval (granularity period) that is covered by the collected measurement results that are stored in this file.
nEId	neid	managedElement	The unique identification of the NE in the system. It includes the user name ("nEUserName"), the distinguished name ("nEDistinguishedName") and the software version ("nESoftwareVersion") of the NE.

ASN.1 Tag	DTD based XML tag	XML schema based XML tag	Description
nEUserName	neun	managedElement userLabel	This is the user definable name ("userLabel") defined for the NE in 3GPP TS 32.622 [24]. The string may be empty (i.e. string size =0) if the "nEUserName" is not configured in the CM applications. For the XML schema based XML format, XML attribute specification "userLabel" may be absent in case the "nEUserName" is not configured in the CM applications.
nEDistinguishedName	nedn	fileHeader dnPrefix and managedElement localDn	This is the Distinguished Name (DN) defined for the NE in 3GPP TS 32.300 [10]. It is unique across an operator's 3G network. The string may be empty (i.e. string size =0) if the "nEDistinguishedName" is not configured in the CM applications. For the XML schema based XML format, the DN is split into the DN prefix and the Local DN (LDN) (see 3GPP TS 32.300 [10]). XML attribute specification "localDn" may be absent in case the LDN is not configured in the CM applications.
nESoftwareVersion	nesw	managedElement swVersion	This is the software version ("`swVersion`") defined for the NE in 3GPP TS 32.622 [24]. This is an optional parameter which allows post-processing systems to take care of vendor specific measurements modified between software versions. For the XML schema based XML format, XML attribute specification "swVersion" may be absent in case the "nESoftwareVersion" is not configured in the CM applications.
measInfo	mi	measInfo	The sequence of measurements, values and related information. It includes a list of measurement types ("measTypes") and the corresponding results ("measValues"), together with the time stamp ("measTimeStamp") and granularity period ("granularityPeriod") pertaining to these measurements.
measTimeStamp	mts	granPeriod endTime	Time stamp referring to the end of the granularity period.
granularityPeriod	gp	granPeriod duration	Granularity period of the measurement(s) in seconds. For the XML schema based XML format, the value of XML attribute specification "duration" shall use the truncated representation "PT*n*S" (see [28]).
measTypes	mt	measTypes or measType	This is the list of measurement types for which the following, analogous list of measurement values ("measValues") pertains. The GSM only measurement types are defined in TS 52.402 [22]. The measurement types for UMTS and combined UMTS/GSM implementations are specified in TS 32.403 [23]. For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measTypes" or XML elements "measType" will be used.
measValues	mv	measValue	This parameter contains the list of measurement results for the resource being measured, e.g. trunk, cell. It includes an identifier of the resource ("measObjInstId"), the list of measurement result values ("measResults") and a flag that indicates whether the data is reliable ("suspectFlag").

ASN.1 Tag	DTD based XML tag	XML schema based XML tag	Description
measObjInstId	moid	measValue measObjLdn	The "measObjInstId" field contains the local distinguished name (LDN) of the measured object within the scope defined by the "nEDistinguishedName" (see 3GPP TS 32.300 [10]). The concatenation of the "nEDistinguishedName" and the "measObjInstId" yields the DN of the measured object. The "measObjInstId" is therefore empty if the "nEDistinguishedName" already specifies completely the DN of the measured object, which is the case for all measurements specified on NE level. For example, if the measured object is a "ManagedElement" representing RNC "RNC-Gbg-1", then the "nEDistinguishedName" will be for instance "DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1,SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1", and the "measObjInstId" will be empty. On the other hand, if the measured object is a "UtranCell" representing cell "Gbg-997" managed by that RNC, then the "nEDistinguishedName" will be for instance the same as above, i.e. "DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1,SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1", and the "measObjInstId" will be for instance "RncFunction=RF-1,UtranCell=Gbg-997". The class of the "measObjInstId" is defined in item F of each measurement definition template.
measResults	r	measResults or r	This parameter contains the sequence of result values for the observed measurement types. The "measResults" sequence shall have the same number of elements, which follow the same order as the measTypes sequence. Normal values are INTEGERs and REALs. The NULL value is reserved to indicate that the measurement item is not applicable or could not be retrieved for the object instance. For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measResults" or XML elements "r" will be used.
suspectFlag	sf	suspect	Used as an indication of quality of the scanned data. FALSE in the case of reliable data, TRUE if not reliable. The default value is "FALSE", in case the suspect flag has its default value it may be omitted.
t~~T~~imeStamp	ts	measCollec endTime	~~ASN.1 GeneralizedTime format.~~ This tag carries the time stamp that refers to the end of the measurement collection interval (granularity period) that is covered by the collected measurement results that are stored in this file. The minimum required information within timestamp is year, month, day, hour, minute, and second.
Not Required	mt p	measType p	An optional positioning XML attribute specification of XML elements "mt" (DTD based) and "measType" (XML schema based), used to identify a measurement type for the purpose of correlation to a result. The value of this XML attribute specification is expected to be a non-zero, non-negative integer value that is unique for each instance of XML element "mt" or "measType" that is contained within the measurement data collection file.
Not Required	r p	r p	An optional positioning XML attribute specification of XML element "r", used to correlate a result to a measurement type. The value of this XML attribute specification should match the value of XML attribute specification "p" of corresponding XML element "mt" " (DTD based) or "measType" (XML schema based).

The measInfo contains the sequence of measurements, values and related information, in a table-oriented structure. A graphical representation of this structure, together with an ASN.1 and a XML example, can be found in annex C.

The representation of all timestamps in PM files shall follow the representations allowed by the ISO 8601 [30]. The precise format for timestamp representation shall be determined by the technology used for encoding the PM file (e.g. ASN.1, XML DTD, XML Schema). The choice of technology should ensure that this representation is derived from ISO 8601 [30]. Based on the representation used, the timestamp shall refer to either UTC time or local time or local time with offset from UTC.

At least for those measurement types that are re-used from non-3GPP standards (e.g. IP, ATM), it is required that the measType be operator definable. This is necessary to allow the operator to harmonise the numbering between different vendors' systems where appropriate. Through this harmonisation, it can be assured that identical measurements always carry the same measType value, which is required by the post-processing system. This requirement will eventually be reflected in TS 52.402 [22] and TS 32.403 [23], which specify the performance measurements for GSM (TS 52.402 [22]) and UMTS and combined UMTS/GSM systems (TS 32.403 [23]).

End of Change in Annex A.1

Change in Annex B.1.2

B.1.2 File naming

The following convention shall be applied for measurement result file naming:

<Type><Startdate>.<Starttime>-[<Enddate>.]<Endtime>_[<UniqueId>][_-_<RC>]

1) The Type field indicates if the file contains measurement results for single or multiple NEs and/or granularity periods, where:

   - "A" means single NE, single granularity period;
   - "B" indicates multiple NEs, single granularity period;
   - "C" signifies single NE, multiple granularity periods;
   - "D" stands for multiple NEs, multiple granularity periods.

Note that files generated by the NEs will always have the Type field set to "A".

2) The Startdate field indicates the date when the granularity period began if the Type field is set to A or B. If the Type field is either "C" or "D" then Startdate contains the date when the first granularity period of the measurement results contained in the file started. The Startdate field is of the form YYYYMMDD, where:

   - YYYY is the year in four-digit notation;
   - MM is the month in two digit notation (01 - 12);
   - DD is the day in two digit notation (01 - 31).

3) The Starttime field indicates the time when the granularity period began if the Type field is set to A or B. If the Type field is either "C" or "D" then Starttime contains the time when the first granularity period of the measurement results contained in the file began. The Starttime field is of the form HHMMshhmm, where:

   - HH is the two digit hour of the day (local time), based on 24 hour clock (00 - 23);
   - MM is the two digit minute of the hour (local time), possible values are 00, 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, and 55;
   - s is the sign of the local time differential from UTC (+ or -), in case the time differential to UTC is 0 then the sign may be arbitrarily set to "+" or "-";
   - hh is the two digit number of hours of the local time differential from UTC (00-23);
   - mm is the two digit number of minutes of the local time differential from UTC (00-59).

4) The Enddate field shall only be included if the Type field is set to "C" or "D", i.e. measurement results for multiple granularity periods are contained in the file. It identifies the date when the last granularity period of these measurements ended, and its structure corresponds to the Startdate field.

5) The Endtime field indicates the time when the granularity period ended if the Type field is set to A or B. If the Type field is either "C" or "D" then Endtime contains the time when the last granularity period of the measurement results contained in the file ended. Its structure corresponds to the Starttime field, however, the allowed values for the minute of the hour are 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 00.

6) UniqueId. This is the name of the NE, EM or domain, as defined in clauses B.1.1.1 and B.1.1.2 (e.g. a distinguishedName). The field may be omitted only if the distinguishedName is not available from the CM applications.

7) The RC parameter is a running count, starting with the value of "1", and shall be appended only if the filename is otherwise not ~~unanimous~~unique, i.e. more than one file is generated and all other parameters of the file name are identical. Therefore it may only be used by the EM, since the described situation can not occur with NE generated files. Note that the delimiter for this field, _-_, is an underscore character (_), followed by a minus character (-), followed by an underscore character (_).

Some examples describing file naming convention:

1) file name: A20000626.2315+0200-2330+0200_NodeBId,
meaning: file produced by NodeB <NodeBId> on June 26, 2000, granularity period 15 minutes from 23:15 local to 23:30 local, with a time differential of +2 hours against UTC.

2) file name: B20021224.1700-1130-1705-1130_EMId,
meaning: file containing results for multiple NEs, produced by EM <EMId> on December 24, 2002, granularity period 5 minutes from 17:00 local to 17:05 local, with a time differential of –11:30 hours against UTC.

3) file name: D20050907.1030+0000-20050909.1500+0000_DomainId_-_2,
meaning: file containing results for NEs belonging to domain <DomainId>, start of first granularity period 07 September 2005, 10:30 local, end of last granularity period 09 September 2005, 15:00 local, with a time differential of 0 against UTC. This file is produced by the EM managing the domain, and it is the second file for this domain/granularity periods combination.

End of Change in Annex B.1.2
End of Document

Annex D (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2004	S_24	SP-040265	014	--	Correction in requirement for granularity periods	5.2.0	5.3.0
Sep 2004	S_25	SP-040572	017	--	Correction of measObjInstId and measType length limitations in the Measurement Report File Format	5.3.0	5.4.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-058133***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.432** **CR** **001** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Resolve ambiguity in the format for timestamps in PM files
Source:	⌘	**SA5** (mohanr@lucent.com)
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	An examination of TS 32.401 (Rel-5 & Rel-6) reveals some inconsistencies in the requirement for the format of timestamps while reporting PM counts. TS 32.401 Sec A.1, Table A.1 states that the ASN.1 tag 'timestamp' = DTD tag 'ts' = Schema tag 'measCollec endTime' should be in ASN.1 GeneralizedTime format whereas Sec A.4.2 defines all time-related attributes of type 'dateTime' for files using XML Schema. The time format supported by type dateTime is different from the one supported by GeneralizedTime.
Summary of change:	⌘	1. Added a clarification that all timestamps need to comply with ISO 8601. 2. Added definition text for tag 'timeStamp'. 3. Correction of a word – minor change not related to this topic.
Consequences if not approved:	⌘	If not approved, TS 32.432 will remain ambiguous on the timestamp format since specification will be seen as having two definitions for the same PM file attribute. The defintion of this attribute will be open to interpretation.

Clauses affected:	⌘	Sec 2, Sec 4, Sec 4.1, Sec 5.1.2.

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments:	⌘	Rel-5 parent in S5-058132.

Change in Clause 2

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

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

[3] 3GPP TS 32.401: "Telecommunication management; Performance Management (PM); Concept and requirements".

[4] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[5] 3GPP TS 25.442: "UTRAN Implementation Specific O&M Transport".

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

[7] 3GPP TS 52.402: "Telecommunication management; Performance Management (PM); Performance measurements - GSM".

[8] 3GPP TS 32.403: "Telecommunication management; Performance Management (PM); Performance measurements - UMTS and combined UMTS/GSM".

[9] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[10] ITU-T Recommendation X.680: "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation

[11] ISO8601:2000(E) Data elements and interchange formats – Information interchange – Representation of dates and times

End of Change in Clause 2

Change in Clause 4

4 Measurement Report File Format

This clause describes the format of measurement result files that can be transferred from the network (NEs or EM) to the NM.

The following conditions have been considered in defining this file format:

- Since the files are transferred via a machine-machine interface, the files applying the format definitions should be machine-readable using standard tools.
- The file format should be independent of the data transfer protocol used to carry the file from one system to another.
- The file format should be generic across 3G systems.
- The file format should be flexible enough to include all possible measurement types, i.e. those specified within clause 6 as well as measurements defined within other standards bodies, or vendor specific measurement types.
- The file format should not impose any dependency between granularity periods for the generation of measurement results and file upload cycles for the file transfer from the network to the NM.
- The file format should be flexible enough to support both the NE-based and the EM-based approaches, as discussed in Chapter 5, clause 5.1.1 of the present document.
- The file format should be usable for other interfaces than Itf-N if required. The measurement file header could be augmented to indicate this other usage, however this would be a non-standard extension. In the ASN.1 (see [10]) file format definition this is accommodated by the use of the ellipsis notation. XML schema allows such additions through insertion of extra schema elements through the provider of the non-standard extension.

End of Change in Clause 4

Change in Clause 4.1

4.1 File Content description

Table 4.1 lists all the file content items. It also provides an explanation of the individual items.

Table 4.1 File Content Description

File Content Item	Description
measDataCollection	This is the top-level tag, which identifies the file as a collection of measurement data. The file content is made up of a header ("measFileHeader"), the collection of measurement result items ("measData"), and a measurement file footer ("measFileFooter").
measFileHeader	This is the measurement result file header to be inserted in each file. It includes a version indicator, the name, type and vendor name of the sending network node, and a time stamp ("collectionBeginTime").
measData	The "measData" construct represents the sequence of zero or more measurement result items contained in the file. It can be empty in case no measurement data can be provided. The individual "measData" elements can appear in any order. Each "measData" element contains the name of the NE ("nEId") and the list of measurement results pertaining to that NE ("measInfo").
measFileFooter	The measurement result file footer to be inserted in each file. It includes a time stamp, which refers to the end of the overall measurement collection interval that is covered by the collected measurement results being stored in this file.

File Content Item	Description
fileFormatVersion	This parameter identifies the file format version applied by the sender. The format version defined in the present document shall be the abridged number and version of this 3GPP document (see below). The abridged number and version of a 3GPP document is constructed from its version specific full reference "3GPP […] (yyyy-mm)" by: - removing the leading "3GPP TS" - removing everything including and after the version third digit, representing editorial only changes, together with its preceding dot character - from the resulting string, removing leading and trailing white space, replacing every multi character white space by a single space character and changing the case of all characters to uppercase.
senderName	The senderName uniquely identifies the NE or EM that assembled this measurement file by its Distinguished Name (DN), according to the definitions in 3GPP TS 32.300 [6]. In the case of the NE-based approach, it is identical to the sender's "nEDistinguishedName".
senderType	This is a user configurable identifier of the type of network node that generated the file, e.g. NodeB, EM, SGSN. The string may be empty (i.e. string size =0) in case the "senderType" is not configured in the sender.
vendorName	The "vendorName" identifies the vendor of the equipment that provided the measurement file. The string may be empty (i.e. string size =0) if the "vendorName" is not configured in the sender.
collectionBeginTime	The "collectionBeginTime" is a time stamp that refers to the start of the first measurement collection interval (granularity period) that is covered by the collected measurement results that are stored in this file.
neId	The unique identification of the NE in the system. It includes the user name ("nEUserName"), the distinguished name ("nEDistinguishedName") and the software version ("nESoftwareVersion") of the NE.
neUserName	This is the user definable name ("userLabel") defined for the NE in 3GPP TS 32.622 [9]. The string may be empty (i.e. string size =0) if the "nEUserName" is not configured in the CM applications.
neDistinguishedName	This is the Distinguished Name (DN) defined for the NE in 3GPP TS 32.300 [6]. It is unique across an operator's 3G network. The string may be empty (i.e. string size =0) if the "nEDistinguishedName" is not configured in the CM applications.
neSoftwareVersion	This is the software version ("`swVersion`") defined for the NE in 3GPP TS 32.622 [9]. This is an optional parameter which allows post-processing systems to take care of vendor specific measurements modified between software versions.
measInfo	The sequence of measurements, values and related information. It includes a list of measurement types ("measTypes") and the corresponding results ("measValues"), together with the time stamp ("measTimeStamp") and granularity period ("granularityPeriod") pertaining to these measurements.
measTimeStamp	Time stamp referring to the end of the granularity period.
jobId	The "jobId" represents the job with which measurement result contained in the file is associated. The "jobId" is mandatory when PMIRP is supported.
granularityPeriod	Granularity period of the measurement(s) in seconds.
reportingPeriod	Reporting period of the measurement(s) in seconds. The "reportingPeriod" is mandatory when PMIRP is supported.
measTypes	This is the list of measurement types for which the following, analogous list of measurement values ("measValues") pertains. The GSM only measurement types are defined in TS 52.402 [7]. The measurement types for UMTS and combined UMTS/GSM implementations are specified in TS 32.403 [8].
measValues	This parameter contains the list of measurement results for the resource being measured, e.g. trunk, cell. It includes an identifier of the resource ("measObjInstId"), the list of measurement result values ("measResults") and a flag that indicates whether the data is reliable ("suspectFlag").

File Content Item	Description
measObjInstId	The "measObjInstId" field contains the local distinguished name (LDN) of the measured object within the scope defined by the "nEDistinguishedName" (see 3GPP TS 32.300 [6]). The concatenation of the "nEDistinguishedName" and the "measObjInstId" yields the DN of the measured object. The "measObjInstId" is therefore empty if the "nEDistinguishedName" already specifies completely the DN of the measured object, which is the case for all measurements specified on NE level. For example, if the measured object is a "ManagedElement" representing RNC "RNC-Gbg-1", then the "nEDistinguishedName" will be for instance "DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1,SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1", and the "measObjInstId" will be empty. On the other hand, if the measured object is a "UtranCell" representing cell "Gbg-997" managed by that RNC, then the "nEDistinguishedName" will be for instance the same as above, i.e. "DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1,SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1", and the "measObjInstId" will be for instance "RncFunction=RF-1,UtranCell=Gbg-997". The class of the "measObjInstId" is defined in item F of each measurement definition template.
measResults	This parameter contains the sequence of result values for the observed measurement types. The "measResults" sequence shall have the same number of elements, which follow the same order as the measTypes sequence. Normal values are INTEGERs and REALs. The NULL value is reserved to indicate that the measurement item is not applicable or could not be retrieved for the object instance.
suspectFlag	Used as an indication of quality of the scanned data. FALSE in the case of reliable data, TRUE if not reliable. The default value is "FALSE", in case the suspect flag has its default value it may be omitted.
t~~T~~imestamp	This tag carries the time stamp that refers to the end of the measurement collection interval (granularity period) that is covered by the collected measurement results that are stored in this file. The minimum required information within timestamp is year, month, day, hour, minute, and second.

The measInfo contains the sequence of measurements, values and related information, in a table-oriented structure. A graphical representation of this structure can be found in clause 6.1.

The representation of all timestamps in PM files shall follow the representations allowed by the ISO 8601 [11]. The precise format for timestamp representation shall be determined by the technology used for encoding the PM file (e.g. ASN.1, XML DTD, XML Schema). The choice of technology should ensure that this representation is derived from ISO 8601 [11]. Based on the representation used, the timestamp shall refer to either UTC time or local time or local time with offset from UTC.

At least for those measurement types that are re-used from non-3GPP standards (e.g. IP, ATM), it is required that the measType be operator definable. This is necessary to allow the operator to harmonise the numbering between different vendors' systems where appropriate. Through this harmonisation, it can be assured that identical measurements always carry the same measType value, which is required by the post-processing system. This requirement will eventually be reflected in TS 52.402 [7] and TS 32.403 [8], which specify the performance measurements for GSM (TS 52.402 [7]) and UMTS and combined UMTS/GSM systems (TS 32.403 [8]).

End of Change in Clause 4.1

Change in Clause 5.1.2

5.1.2 File naming

The following convention shall be applied for measurement result file naming:

<Type><Startdate>.<Starttime>-[<Enddate>.]<Endtime>[_-<jobId>][_<UniqueId>][_-_<RC>]

1) The Type field indicates if the file contains measurement results for single or multiple NEs and/or granularity periods, where:

- "A" means single NE, single granularity period;
- "B" indicates multiple NEs, single granularity period;
- "C" signifies single NE, multiple granularity periods;
- "D" stands for multiple NEs, multiple granularity periods.

Note that files generated by the NEs will always have the Type field set to "A".

2) The Startdate field indicates the date when the granularity period began if the Type field is set to A or B. If the Type field is either "C" or "D" then Startdate contains the date when the first granularity period of the measurement results contained in the file started. The Startdate field is of the form YYYYMMDD, where:
   - YYYY is the year in four-digit notation;
   - MM is the month in two digit notation (01 - 12);
   - DD is the day in two-digit notation (01 - 31).
3) The Starttime field indicates the time when the granularity period began if the Type field is set to A or B. If the Type field is either "C" or "D" then Starttime contains the time when the first granularity period of the measurement results contained in the file began. The Starttime field is of the form HHMMshhmm, where:
   - HH is the two-digit hour of the day (local time), based on 24-hour clock (00 - 23);
   - MM is the two digit minute of the hour (local time), possible values are 00, 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, and 55;
   - s is the sign of the local time differential from UTC (+ or -), in case the time differential to UTC is 0 then the sign may be arbitrarily set to "+" or "-";
   - hh is the two-digit number of hours of the local time differential from UTC (00-23);
   - mm is the two digit number of minutes of the local time differential from UTC (00-59).
4) The Enddate field shall only be included if the Type field is set to "C" or "D", i.e. measurement results for multiple granularity periods are contained in the file. It identifies the date when the last granularity period of these measurements ended, and its structure corresponds to the Startdate field.
5) The Endtime field indicates the time when the granularity period ended if the Type field is set to A or B. If the Type field is either "C" or "D" then Endtime contains the time when the last granularity period of the measurement results contained in the file ended. Its structure corresponds to the Starttime field, however, the allowed values for the minute of the hour are 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 00.
6) UniqueId. This is the name of the NE, EM or domain, as defined in clauses B.1.1.1 and B.1.1.2 (e.g. a distinguishedName). The field may be omitted only if the distinguishedName is not available from the CM applications.
7) The RC parameter is a running count, starting with the value of "1", and shall be appended only if the filename is otherwise not ~~unanimous~~unique, i.e. more than one file is generated and all other parameters of the file name are identical. Therefore it may only be used by the EM, since the described situation cannot occur with NE generated files. Note that the delimiter for this field, _-_, is an underscore character (_), followed by a minus character (-), followed by an underscore character (_).
8) jobId. When PMIRP is supported, the jobId shall be indicated in the performance measurement file name.

Some examples describing file-naming convention:

1) file name: A20000626.2315+0200-2330+0200_NodeBId,
   meaning: file produced by NodeB <NodeBId> on June 26, 2000, granularity period 15 minutes from 23:15 local to 23:30 local, with a time differential of +2 hours against UTC.
2) file name: B20021224.1700-1130-1705-1130_-job10_EMId,
   meaning: file containing results for multiple NEs, generated for measurement job job10, produced by EM

<EMId> on December 24, 2002, granularity period 5 minutes from 17:00 local to 17:05 local, with a time differential of –11:30 hours against UTC.

3) file name: D20050907.1030+0000-20050909.1500+0000_DomainId_-_2,
meaning: file containing results for NEs belonging to domain <DomainId>, start of first granularity period 07 September 2005, 10:30 local, end of last granularity period 09 September 2005, 15:00 local, with a time differential of 0 against UTC. This file is produced by the EM managing the domain, and it is the second file for this domain/granularity period combination.

End of Change in Clause 5.1.2
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2004	S_25	SP-040578	--	--	Draft created based on 32.401 V6.1.0 and submitted to SA#25 for Information	1.0.0	
Dec 2004	S_26	SP-040786	--	--	Submitted to SA#26 for Approval	2.0.0	6.0.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 057 ⌘rev - ⌘ Current version: 4.9.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of measurements on Number of GTP data packets sent and received on the Gn interface
Source:	⌘	SA5 yaojing@huawei.com, liyewen@chinamobile.com
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Measurement name “number of GTP data packets on the Gn interface” is not precise. Because there are two kinds of Gn interface. One is the interface between SGSN and GGSN. The other is interface between SGSN and SGSN. See TS23.002. When the measurement condition defines the GTP data packets on Gn interface only from SGSN to GGSN, there have some inconsistencies. We propose to modify the measurement name to “Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN”.
Summary of change:	⌘	Correction of measurements name on Number of GTP data packets sent and received on the Gn interface
Consequences if not approved:	⌘	The definition of this measurement is not correct and may lead to inter-operability problem.

Clauses affected:	⌘	5.9.2.1, 5.9.2.2, 5.9.2.3, 5.9.2.4, 5.9.2.5, 5.9.2.6, 5.9.2.7, 5.9.2.8

Other specs affected:	Y	N		
⌘		X	Other core specifications	⌘
		X	Test specifications	
	X		O&M Specifications	Rel-5/6 32.403

Other comments:	⌘	

Change in Clause 5.9.2.1

5.9.2.1 Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP data PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP data PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataPktGnGGSN:

- GTP.OutDataPktGnGGSN the total regardless of the GTP version used;
- GTP.OutDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.1

Change in Clause 5.9.2.2

5.9.2.2 Number of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP Data PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP data PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataPktGnGGSN:

- GTP.InDataPktGnGGSN the total regardless of the GTP version used;
- GTP.InDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.InDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.2

Change in Clause 5.9.2.3

5.9.2.3 Number of octets of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataOctGnGGSN:

- GTP.OutDataOctGnGGSN the total regardless of the GTP version used;
- GTP.OutDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.3

Change in Clause 5.9.2.4

5.9.2.4 Number of octets of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataOctGnGGSN:

- GTP.InDataOctGnGGSN the total regardless of the GTP version used;
- GTP.InDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.InDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.4

Change in Clause 5.9.2.5

5.9.2.5 Number of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP signalling PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP signalling PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigPktGnGGSN:

- GTP.OutSigPktGnGGSN the total regardless of the GTP version used;
- GTP.OutSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.5

Change in Clause 5.9.2.6

5.9.2.6 Number of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP signalling PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP signalling PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigPktGnGGSN:

- GTP.InSigPktGnGGSN the total regardless of the GTP version used;
- GTP.InSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.InSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.6

Change in Clause 5.9.2.7

5.9.2.7 Number of octets of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Signalling-PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigOctGnGGSN:

- GTP.OutSigOctGnGGSN the total regardless of the GTP version used;
- GTP.OutSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.7

Change in Clause 5.9.2.8

5.9.2.8 Number of octets of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Signalling-PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigOctGnGGSN:

- GTP.InSigOctGnGGSN the total regardless of the GTP version used;
- GTP.InSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.InSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

Combined.

End of Change in Clause 5.9.2.8
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2001	S_12	SP-010237	--	--	Submitted to TSG SA #12 for Approval.	1.0.2	4.0.0
Sep 2001	S_13	SP-010468	001	--	Corrections on UMTS and combined UMTS/GSM measurements: Addition of family name for CN measurements, addition of the list of families, addition of Annex A: "(n-1) out of n" examples, application of the "(n-1) out of n" approach to all relevant measurements, enhancement of per cause measurements	4.0.0	4.1.0
Mar 2002	S_15	SP-020026	002	--	Correction of the measured object class for some SGSN MM measurement definitions	4.1.0	4.2.0
Mai 2002	--	--	--	--	MCC clean-up (Cosmetics based on EditHelp)	4.2.0	4.2.1
Mar 2003	S_19	SP-030146	011	--	Correction of the subscriber number measurement definitions	4.2.1	4.3.0
Jun 2003	S_20	SP-030292	013	--	Correction of the definition of the successful GPRS attach counters	4.3.0	4.4.0
Sep 2003	S_21	SP-030431	018	--	Correction of collection method for SGSN measurements	4.4.0	4.5.0
Sep 2003	S_21	SP-030431	021	--	Correction of "outgoing intra-cell hard handovers measurements"	4.4.0	4.5.0
Mar 2004	S_23	SP-040134	026	--	Correction of "Radio link addition" measurements	4.5.0	4.6.0
Jun 2004	S_24	SP-040266	030	--	Correction of “Inter-RAT handover” measurements	4.6.0	4.7.0
Jun 2004	S_24	SP-040267	033	--	Correction of “RAB assignment” measurements	4.6.0	4.7.0
Jun 2004	S_24	SP-040269	036	--	Correction of “hard handover” measurement definitions	4.6.0	4.7.0
Sep 2004	S_25	SP-040575	046	--	Correction of “Mobility Management” GPRS attach measurement definitions	4.7.0	4.8.0
Dec 2004	SA_26	SP-040783	054	--	Correct measurements about GPRS Update Locations sent to the HLR	4.8.0	4.9.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 058 ⌘rev - ⌘ Current version: 5.9.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network X

Title:	⌘	Correction of measurements on Number of GTP data packets sent and received on the Gn interface
Source:	⌘	SA5 yaojing@huawei.com, liyewen@chinamobile.com
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	A
Release:	⌘	Rel-5

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Measurement name “number of GTP data packets on the Gn interface” is not precise. Because there are two kinds of Gn interface. One is the interface between SGSN and GGSN. The other is interface between SGSN and SGSN. See TS23.002. When the measurement condition defines the GTP data packets on Gn interface only from SGSN to GGSN, there have some inconsistencies. We propose to modify the measurement name to “Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN”.
Summary of change:	⌘	Correction of measurements name on Number of GTP data packets sent and received on the Gn interface
Consequences if not approved:	⌘	The definition of this measurement is not correct and may lead to inter-operability problem.

Clauses affected:	⌘	5.9.2.1, 5.9.2.2, 5.9.2.3, 5.9.2.4, 5.9.2.5, 5.9.2.6, 5.9.2.7, 5.9.2.8

Other specs affected:	Y	N			
⌘		X	Other core specifications	⌘	
		X	Test specifications		
	X		O&M Specifications		Rel-6 32.403

Other comments:	⌘	

Change in Clause 5.9.2.1

5.9.2.1 Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP data PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP data PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataPktGnGGSN:

- GTP.OutDataPktGnGGSN the total regardless of the GTP version used;
- GTP.OutDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.1

Change in Clause 5.9.2.2

5.9.2.2 Number of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP Data PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP data PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataPktGnGGSN:

- GTP.InDataPktGnGGSN the total regardless of the GTP version used;
- GTP.InDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.InDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.2

Change in Clause 5.9.2.3

5.9.2.3 Number of octets of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataOctGnGGSN:

- GTP.OutDataOctGnGGSN the total regardless of the GTP version used;
- GTP.OutDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.3

Change in Clause 5.9.2.4

5.9.2.4 Number of octets of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataOctGnGGSN:

- GTP.InDataOctGnGGSN the total regardless of the GTP version used;
- GTP.InDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.InDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.4

Change in Clause 5.9.2.5

5.9.2.5 Number of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP signalling PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP signalling PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigPktGnGGSN:

- GTP.OutSigPktGnGGSN the total regardless of the GTP version used;
- GTP.OutSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.5

Change in Clause 5.9.2.6

5.9.2.6 Number of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP signalling PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP signalling PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigPktGnGGSN:

- GTP.InSigPktGnGGSN the total regardless of the GTP version used;
- GTP.InSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.InSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.6

Change in Clause 5.9.2.7

5.9.2.7 Number of octets of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Signalling-PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigOctGnGGSN:

- GTP.OutSigOctGnGGSN the total regardless of the GTP version used;
- GTP.OutSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.7

Change in Clause 5.9.2.8

5.9.2.8 Number of octets of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Signalling-PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigOctGnGGSN:

- GTP.InSigOctGnGGSN the total regardless of the GTP version used;
- GTP.InSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.InSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

Combined.

End of Change in Clause 5.9.2.8
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2003	S_19	SP-030146	012	-	Correction of the subscriber number measurement definitions	5.1.0	5.2.0
Jun 2003	S_20	SP-030292	014	--	Correction of the definition of the successful GPRS attach counters	5.2.0	5.3.0
Jun 2003	S_20	SP-030292	015	--	Deletion of dual clause 4.1.2	5.2.0	5.3.0
Sep 2003	S_21	SP-030431	019	--	Correction of collection method for SGSN measurements	5.3.0	5.4.0
Sep 2003	S_21	SP-030431	022	--	Correction of “outgoing intra-cell hard handovers measurements”	5.3.0	5.4.0
Dec 2003	S_22	SP-030645	024	--	Correction of terms used for subcounter definitions	5.4.0	5.5.0
Mar 2004	S_23	SP-040134	027	--	Correction of "Radio link addition" measurements	5.5.0	5.6.0
Jun 2004	S_24	SP-040266	031	--	Correction of “Inter-RAT handover” measurements	5.6.0	5.7.0
Jun 2004	S_24	SP-040267	034	--	Correction of “RAB assignment” measurements	5.6.0	5.7.0
Jun 2004	S_24	SP-040269	037	--	Correction of “hard handover” measurement definitions	5.6.0	5.7.0
Sep 2004	S_25	SP-040575	047	--	Correction of “Mobility Management” GPRS attach measurement definitions	5.7.0	5.8.0
Sep 2004	S_25	SP-040577	052	--	Add missing Measurement Name Length constraints	5.7.0	5.8.0
Dec 2004	SA_26	SP-040783	055	--	Correct measurements about GPRS Update Locations sent to the HLR	5.8.0	5.9.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 059 ⌘rev - ⌘ Current version: 6.6.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network X

Title:	⌘	Correction of measurements on Number of GTP data packets sent and received on the Gn interface
Source:	⌘	SA5 yaojing@huawei.com, liyewen@chinamobile.com
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Measurement name “number of GTP data packets on the Gn interface” is not precise. Because there are two kinds of Gn interface. One is the interface between SGSN and GGSN. The other is interface between SGSN and SGSN. See TS23.002. When the measurement condition defines the GTP data packets on Gn interface only from SGSN to GGSN, there have some inconsistencies. We propose to modify the measurement name to “Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN”.
Summary of change:	⌘	Correction of measurements name on Number of GTP data packets sent and received on the Gn interface
Consequences if not approved:	⌘	The definition of this measurement is not correct and may lead to inter-operability problem.

Clauses affected:	⌘	5.9.2.1, 5.9.2.2, 5.9.2.3, 5.9.2.4, 5.9.2.5, 5.9.2.6, 5.9.2.7, 5.9.2.8

Other specs affected:	Y	N		
⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	

Change in Clause 5.9.2.1

5.9.2.1 Number of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP data PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP data PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataPktGnGGSN:

- GTP.OutDataPktGnGGSN the total regardless of the GTP version used;
- GTP.OutDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.1

Change in Clause 5.9.2.2

5.9.2.2 Number of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP Data PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP data PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataPktGnGGSN:

- GTP.InDataPktGnGGSN the total regardless of the GTP version used;
- GTP.InDataPktGnGGSN.v0 only the GTPv0 part;
- GTP.InDataPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.2

Change in Clause 5.9.2.3

5.9.2.3 Number of octets of outgoing GTP data packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataOctGnGGSN:

- GTP.OutDataOctGnGGSN the total regardless of the GTP version used;
- GTP.OutDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.3

Change in Clause 5.9.2.4

5.9.2.4 Number of octets of incoming GTP data packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataOctGnGGSN:

- GTP.InDataOctGnGGSN the total regardless of the GTP version used;
- GTP.InDataOctGnGGSN.v0 only the GTPv0 part;
- GTP.InDataOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.4

Change in Clause 5.9.2.5

5.9.2.5 Number of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of GTP signalling PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP signalling PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigPktGnGGSN:

- GTP.OutSigPktGnGGSN the total regardless of the GTP version used;
- GTP.OutSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.5

Change in Clause 5.9.2.6

5.9.2.6 Number of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of GTP signalling PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP signalling PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigPktGnGGSN:

- GTP.InSigPktGnGGSN the total regardless of the GTP version used;
- GTP.InSigPktGnGGSN.v0 only the GTPv0 part;
- GTP.InSigPktGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.6

Change in Clause 5.9.2.7

5.9.2.7 Number of octets of outgoing GTP signalling packets on the Gn interface, from SGSN to GGSN

a) This measurement provides the number of octets of outgoing GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Signalling-PDU on the Gn interface to the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigOctGnGGSN:

- GTP.OutSigOctGnGGSN the total regardless of the GTP version used;
- GTP.OutSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.OutSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5.9.2.7

Change in Clause 5.9.2.8

5.9.2.8 Number of octets of incoming GTP signalling packets on the Gn interface, from GGSN to SGSN

a) This measurement provides the number of octets of incoming GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Signalling-PDU on the Gn interface from the GGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigOctGnGGSN:

- GTP.InSigOctGnGGSN the total regardless of the GTP version used;
- GTP.InSigOctGnGGSN.v0 only the GTPv0 part;
- GTP.InSigOctGnGGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

Combined.

End of Change in Clause 5.9.2.8
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2004	S_25	SP-040574	044	--	Change of the mesurements about "SRNS Relocation"	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	045	--	Split measurements about successful PDP context deactivation	6.4.0	6.5.0
Sep 2004	S_25	SP-040575	048	--	Correction of "Mobility Management" GPRS attach measurement definitions	6.4.0	6.5.0
Sep 2004	S_25	SP-040577	053	--	Add missing Measurement Name Length constraints	6.4.0	6.5.0
Dec 2004	SA_26	SP-040783	056	--	Correct measurements about GPRS Update Locations sent to the HLR	6.5.0	6.6.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 060 ⌘rev - ⌘ Current version: 6.6.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network X

Title:	⌘	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN
Source:	⌘	SA5 yaojing@huawei.com, liyewen@chinamobile.com
Work item code:	⌘	OAM-PM
Date:	⌘	28/01/2005
Category:	⌘	B
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Since Gn interface may be used to SGSN to SGSN. the measurement “number of GTP data packets on the Gn interface” can only partly measures SGSN’s transmition ability. We mostly consider SGSN as a router, which is a datacom device, the packets of its interface is important to this kind of device. The number of packets between SGSN to SGSN is as significant as packets between SGSN to GGSN. So add another counter to measure GTP packets transmitted from SGSN to SGSN is necessary. From these two type counters, we will measure the whole GTP packets transmitted by SGSN.
Summary of change:	⌘	Addition of measurements name on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN.
Consequences if not approved:	⌘	

Clauses affected:	⌘	5.9.2

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

Change in Clause 5.9.2

5.9.2.9 Number of outgoing GTP data packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of GTP data PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP data PDU on the Gn interface to the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataPktGnSGSN:

- GTP.OutDataPktGnSGSN the total regardless of the GTP version used;
- GTP.OutDataPktGnSGSN.v0 only the GTPv0 part;
- GTP.OutDataPktGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.10 Number of incoming GTP data packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of GTP Data PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP data PDU on the Gn interface from the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataPktGnSGSN:

- GTP.InDataPktGnSGSN the total regardless of the GTP version used;
- GTP.InDataPktGnSGSN.v0 only the GTPv0 part;
- GTP.InDataPktGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.11 Number of octets of outgoing GTP data packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of octets of outgoing GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface to the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutDataOctGnSGSN:

- GTP.OutDataOctGnSGSN the total regardless of the GTP version used;
- GTP.OutDataOctGnSGSN.v0 only the GTPv0 part;
- GTP.OutDataOctGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.12 Number of octets of incoming GTP data packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of octets of incoming GTP data packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Data-PDU (T-PDU) on the Gn interface from the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InDataOctGnSGSN:

- GTP.InDataOctGnSGSN the total regardless of the GTP version used;
- GTP.InDataOctGnSGSN.v0 only the GTPv0 part;
- GTP.InDataOctGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.13 Number of outgoing GTP signalling packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of GTP signalling PDUs which have been generated by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of a GTP signalling PDU on the Gn interface to the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigPktGnSGSN:

- GTP.OutSigPktGnSGSN the total regardless of the GTP version used;

- GTP.OutSigPktGnSGSN.v0 only the GTPv0 part;

- GTP.OutSigPktGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.14 Number of incoming GTP signalling packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of GTP signalling PDUs which have been accepted and processed by the GTP protocol entity on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of a GTP signalling PDU on the Gn interface from the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigPktGnSGSN:

- GTP.InSigPktGnSGSN the total regardless of the GTP version used;

- GTP.InSigPktGnSGSN.v0 only the GTPv0 part;

- GTP.InSigPktGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.15 Number of octets of outgoing GTP signalling packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of octets of outgoing GTP signalling packets on the Gn interface.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an GTP-Signalling-PDU on the Gn interface to the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.OutSigOctGnSGSN:

- GTP.OutSigOctGnSGSN the total regardless of the GTP version used;

- GTP.OutSigOctGnSGSN.v0 only the GTPv0 part;

- GTP.OutSigOctGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.9.2.16 Number of octets of incoming GTP signalling packets on the Gn interface, from SGSN to SGSN

a) This measurement provides the number of octets of incoming GTP signalling packets on the Gn interface. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Reception by the SGSN of an GTP-Signalling-PDU on the Gn interface from the SGSN.

d) A single integer value per measurement type defined in e).

e) GTP.InSigOctGnSGSN:

- GTP.InSigOctGnSGSN the total regardless of the GTP version used;
- GTP.InSigOctGnSGSN.v0 only the GTPv0 part;
- GTP.InSigOctGnSGSN.v1 only the GTPv1 part.

f) SgsnFunction.

g) Valid for packet switching.

Combined.

End of Change in Clause 5.9.2
End of Document

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Sep 2004	S_25	SP-040574	045	--	Split measurements about successful PDP context deactivation	6.4.0	6.5.0
Sep 2004	S_25	SP-040575	048	--	Correction of "Mobility Management" GPRS attach measurement definitions	6.4.0	6.5.0
Sep 2004	S_25	SP-040577	053	--	Add missing Measurement Name Length constraints	6.4.0	6.5.0
Dec 2004	SA_26	SP-040783	056	--	Correct measurements about GPRS Update Locations sent to the HLR	6.5.0	6.6.0