TSGS#28(05)0293

Source: SA5 (Telecom Management)

Title: CR 32403 Performance Management / CR 32412-3 Performance Management IRP

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-Level	Spec__#_	CR__#	R	Phase	Subject	Cat	Ver-Cur	Doc-2nd-Level	Workitem
SP-050293	32.403	0061	-	Rel-6	Correction of measurement type name to RAB.SuccRelPSNoQueuing	F	6.7.0	S5-058351	OAM-PM
SP-050293	32.403	0062	-	Rel-6	Add missing GSM SGSN measurements for subscribers state	F	6.7.0	S5-058386	OAM-PM
SP-050293	32.403	0063	-	Rel-6	Add missing SGSN measurements for GSM ciphering procedures	F	6.7.0	S5-058390	OAM-PM
SP-050293	32.403	0064	-	Rel-5	Correct inter-RAT handover measurement object class UtranRelation to GsmRelation	F	5.10.0	S5-058442	OAM-PM
SP-050293	32.403	0065	-	Rel-6	Correct inter-RAT handover measurement object class UtranRelation to GsmRelation	A	6.7.0	S5-058443	OAM-PM
SP-050293	32.403	0066	-	Rel-6	Add missing UMTS/GSM SGSN measurements for IMEI checking	F	6.7.0	S5-058445	OAM-PM
SP-050293	32.403	0067	-	Rel-6	Add missing UMTS/GSM SGSN measurements for failed PS paging procedures	F	6.7.0	S5-058446	OAM-PM
SP-050293	32.403	0068	-	Rel-6	Add missing GSM SGSN measurements for LLC protocol and SNDCP protocol	F	6.7.0	S5-058447	OAM-PM
SP-050293	32.403	0069	-	Rel-6	Add missing SGSN/GGSN measurements for max number of subscribers	F	6.7.0	S5-058448	OAM-PM
SP-050293	32.412	0011	-	Rel-6	Correct the matching information of monitorId attribute	F	6.4.0	S5-056373	OAM-PM
SP-050293	32.413	0008	-	Rel-6	Add missing IDL constants in PMIRPConstDefs.idl	F	6.4.0	S5-056374	OAM-NIM

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056373***
Meeting #42, Montreal, CANADA, 09 - 13 May 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.412** **CR** **0011** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Correct the matching information of monitorId attribute
Source:	⌘	SA5 (huangsq@zte.com.cn)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:

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:	⌘	The matching information of monitorId attribute in createThresholdMonitor operation is not correct, for the Monitor IOC can not be instantiated.
Summary of change:	⌘	Correct matching information of monitorId attribute to ThresholdMonitor.monitorId
Consequences if not approved:	⌘	This may lead to some confusion, but the implementation won't be affected.

Clauses affected:	⌘	Clause 7.4.1.3

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

Other comments:	⌘	

Change in Clause 7.4.1.3

7.4.1.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
monitorId	M	ThresholdMonitor.monitorId.	It specifies the unique identifier of the ThresholdMonitor in the PMIRP Agent.
unsupportedList	M	List of < ManagedEntity.objectClass, ManagedEntity.objectInstance, MeasuredAttribute. measurementTypeName, reason >	To create a ThresholdMonitor, best-effort is required. This parameter identifies the unsupported but requested measurementType(s). The reason can be: (a) The PMIRP has trouble starting monitoring the threshold of this measurementType. (b) The measurementType is illegal. (c) The measurementType exists but it is not currently under monitoring by any MeasurementJob and that the PMIRP requires that it be under monitoring by MeasurementJob (before it can be monitored for thresholding). (d) Hysteresis is overlapped. This parameter is used only when the operation returns 'PartialSuccess'.
status	M	ENUM (Success,Failure, PartialSuccess)	An operation may fail because of a specified or unspecified reason.

End of Change in Clause 7.4.1.3

Annex C (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2003	SA_20	SP-030295	--	--	Submitted to TSG SA#20 for Information	1.0.0	
Dec 2003	SA_22	SP-030650	--	--	Submitted to TSG SA#22 for Approval	2.0.0	6.0.0
Jun 2004	SA_24	SP-040272	001	--	Clarify and correct the specification of notifications of Monitor	6.0.0	6.1.0
Jun 2004	SA_24	SP-040272	002	--	Add constraint that PM threshold hysteresis must be positive	6.0.0	6.1.0
Sep 2004	SA_25	SP-040558	003	--	Add Measurement Job Overload Management function	6.1.0	6.2.0
Sep 2004	SA_25	SP-040557	004	--	Align threshold alarm trigger to the definition in 32.411	6.1.0	6.2.0
Sep 2004	SA_25	SP-040556	005	--	Extend the scope of ManagedEntity IOC to support collecting and monitoring measurement types related to vendor specific IOCs	6.1.0	6.2.0
Sep 2004	SA_25	SP-040556	006	--	Add definition of post condition for operation suspendMeasurementJob	6.1.0	6.2.0
Dec 2004	SA_26	SP-040784	007	--	Correct ambiguous precondition statement related to createThresholdMonitor operation	6.2.0	6.3.0
Dec 2004	SA_26	SP-040784	008	--	Correct definition of ObjectClass and ObjectInstance in “notifyMeasurementJobStatusChanged” and “notifyThresholdMonitorStatusChanged”	6.2.0	6.3.0
Mar 2005	SA_27	SP-050041	009	--	Remove the ambiguity that a PM IRP compliant system necessarily contains functionalities defined in Kernel CM IRP	6.3.0	6.4.0
Mar 2005	SA_27	SP-050041	010	--	Apply the Generic System Context – Align with TS 32.150	6.3.0	6.4.0

Tdoc ⌘S5-056374

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.413** **CR** **0008** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Add missing IDL constants in PMIRPConstDefs.idl
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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)*
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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:	⌘	Add missing IDL constants in PMIRPConstDefs.idl
Summary of change:	⌘	• Addition of missing IDL constants MONITOR_EVENT_TYPE, PROBABLE_CAUSE, SPECIFIC_PROBLEM, DIRECTION in interface PMIRPConstDefs::AttributeNameValue • Name correction of IDL constant MONITOR_GRANULARITY_PERIOD in interface PMIRPConstDefs::AttributeNameValue • Removal of unused IDL constants in interfaces PMIRPConstDefs::AttributeNameValue and PMIRPNotifications::notifyThresholdMonitorObjectDeletion • Removal of redundant closing brace to interface PMIRPNotifications::notifyThresholdMonitorObjectCreation • Alignments with TS 32.150 Style Guide for CORBA SS IDL • Editorial corrections
Consequences if not approved:	⌘	IDL constants would be missing in PMIRPConstDefs.idl.

Clauses affected:	⌘	5.2, 5.3, A.1, A.2, A.3

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘

Change in Clause 5.2

5.2 Operation parameter mapping

[…]

Table 5.2.1: Mapping from IS `createMeasurementJob` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
iocName	PMIRPConstDefs::MOClassName~~Type~~ moClass	M
iocInstanceList	PMIRPConstDefs::MOInstanceList~~Type~~ moInstanceList	M
measurementCategoryList	PMIRPConstDefs::MeasurementCategoryList~~Type~~ measurementCategoryList	M
granularityPeriod	PMIRPConstDefs::GranularityPeriod~~Type~~ granularityPeriod	M
reportingPeriod	PMIRPConstDefs::ReportingPeriod~~Type~~ reportingPeriod	M
startTime	PMIRPConstDefs::IRPTime~~Type~~Opt~~-~~ startTime	O
stopTime	PMIRPConstDefs::IRPTime~~Type~~Opt~~-~~ stopTime	O
schedule	PMIRPConstDefs::Schedule~~Type~~Opt~~-~~ schedule	O
jobId	~~Return value of type~~ PMIRPConstDefs::JobId~~Type~~ jobId	M
unsupportedList	PMIRPConstDefs::J~~ob~~UnsupportedList~~Type~~ unsupportedList	M
priority	PMIRPConstDefs::JobPriority~~Type~~Opt priority	O
status	Return value of type ManagedGenericIRPConstDefs::Signal Exception: CreateMeasurementJob, ManagedGenericIRPSystem::InvalidParameter, ManagedGenericIRPSystem::ParameterNotSupported, HighWorkLoad	M

Table 5.2.2: Mapping from IS `stopMeasurementJob` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
jobId	PMIRPConstDefs::JobId~~Type~~ jobId	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: StopMeasurementJob, UnknownJob, JobCannotBeStopped	M

Table 5.2.3: Mapping from IS `suspendMeasurementJob` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
jobId	PMIRPConstDefs::JobId~~Type~~ jobId	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: SuspendMeasurementJob, UnknownJob, JobAlreadySuspended, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.4: Mapping from IS `resumeMeasurementJob` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
jobId	PMIRPConstDefs::JobId~~Type~~ jobId	M

IS Operation parameter	SS Method parameter	Qualifier
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: ResumeMeasurementJob, UnknownJob, JobIsNotSuspended, HighWorkLoad, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.5: Mapping from IS `listMeasurementJobs` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
jobIdList	PMIRPConstDefs::Job~~List~~IdList~~Type~~ jobListId	M
jobInfoList	~~Return value of type~~ PMIRPConstDefs::JobInfoList~~Type~~ jobInfoList	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: ListMeasurementJobs, ManagedGenericIRPSystem::InvalidParameter	M

Table 5.2.6: Mapping from IS `createThresholdMonitor` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
iocName	PMIRPConstDefs::MOClassName~~Type~~ moClass	M
iocInstanceList	PMIRPConstDefs::MOInstanceList~~Type~~ moInstanceList	M
thresholdInfoList	PMIRPConstDefs::ThresholdInfoList~~Type~~ thresholdInfoList	M
monitorGranularityPeriod	PMIRPConstDefs::MonitorGranularityPeriod~~Type~~ monitorGranularityPeriod	M
monitorId	~~Return value of type~~ PMIRPConstDefs::MonitorId~~Type~~ monitorId	M
unsupportedList	PMIRPConstDefs::M~~onitor~~UnsupportedList~~Type~~ unsupportedList	M
status	Return value of type ManagedGenericIRPConstDefs::Signal Exception: CreateThresholdMonitor, ManagedGenericIRPSystem::InvalidParameter, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.7: Mapping from IS `deleteThresholdMonitor` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
monitorId	PMIRPConstDefs::MonitorId~~Type~~ monitorId	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: DeleteThresholdMonitor, UnknownThresholdMonitor, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.8: Mapping from IS `listThresholdMonitors` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
monitorIdList	PMIRPConstDefs::MonitorIdList~~Type~~ monitorIdList	M
monitorInfoList	~~Return value of~~ PMIRPConstDefs::MonitorInfoList~~Type~~ monitorInfoList	M

IS Operation parameter	SS Method parameter	Qualifier
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: ListThresholdMonitors, ManagedGenericIRPSystem::InvalidParameter, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.9: Mapping from IS `suspendThresholdMonitor` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
monitorId	PMIRPConstDefs::MonitorId~~Type~~ monitorId	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: SuspendThresholdMonitor, UnknownThresholdMonitor, ThresholdMonitorAlreadySuspended, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.10: Mapping from IS `resumeThresholdMonitor` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
monitorId	PMIRPConstDefs::MonitorId~~Type~~ monitorId	M
status	Return value of type PMIRPConstDefs::Result~~Type~~ Exception: ResumeThresholdMonitor, UnknownThresholdMonitor, ThresholdMonitorIsNotSuspended, ManagedGenericIRPSystem::OperationNotSupported	M

Table 5.2.11: Mapping from IS `getIRPVersion` parameters to SS equivalents

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

Table 5.2.12: Mapping from IS `getOperationProfile` parameters to SS equivalents

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

Table 5.2.13: Mapping from IS `getNotificationProfile` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
iRPVersion	ManagedGenericIRPConstDefs::VersionNumber pm_irp_version	M
notificationNameProfile, notificationParameterProfile	Return value of type ManagedGenericIRPConstDefs::MethodList	M

IS Operation parameter	SS Method parameter	Qualifier
status	Exception: GetPMIRPNotificationProfile, ManagedGenericIRPSystem::OperationNotSupported, ManagedGenericIRPSystem::InvalidParameter	M

End of Change in Clause 5.2

Change in Clause 5.3

5.3 Notification parameter mapping

[…]

Table 5.3.1: Mapping for `notifyMeasurementJobStatusChanged`

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
notificationType	type_name	M	This is ~~the~~ constant string "notifyMeasurementJobStatusChanged".
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
jobId	One NV pair of filterable_ body_fields	M	Name of NV pair is the JOB_ID of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyMeasurementJobStatusChanged. Value of NV pair is JobId~~Type~~ of module PMIRPConstDefs.

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
jobStatus	One NV pair of remaining_body	M	Name of NV pair is the JOB_STATUS of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyMeasurementJobStatusChanged. Value of NV pair is JobStatus~~Type~~ of module PMIRPConstDefs.
reason	One NV pair of remaining_body	O	Name of NV pair is the REASON of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyMeasurementJobStatusChanged. Value of NV pair is a string.

Table 5.3.2: Mapping for `notifyThresholdMonitorObjectCreation`

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
~~N~~notificationType	type_name	M	This is ~~the~~ constant string "notifyThresholdMonitorObjectCreation".
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
~~N~~notificationId	One NV pair of remaining body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
~~E~~eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
~~S~~systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
~~M~~monitorId	One NV pair of remaining body	M	Name of NV pair is the MONITOR_ID of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is MonitorId~~Type~~ of module PMIRPConstDefs.
monitorGranularityPeriod	One NV pair of remaining body	M	Name of NV pair is the MONITOR_GRANULARITY_PERIOD of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is ~~m~~MonitorGranularityPeriod~~Type~~ of module PMIRPConstDefs.

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
~~E~~eventType	One NV pair of remaining body	M	Name of NV pair is the MONITOR_EVENT_TYPE of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is EventType~~Type~~ of module PMIRPConstDefs.
probableCause	One NV pair of remaining body	M	Name of NV pair is the PROBABLE_CAUSE of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is ~~p~~PrbableCause~~Type~~ of module PMIRPConstDefs.
specificProblem	One NV pair of remaining body	M	Name of NV pair is the SPECIFIC_PROBLEM of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is ~~s~~SpecificProblem~~Type~~ of module PMIRPConstDefs.
direction	One NV pair of remaining body	M	Name of NV pair is the DIRECTION of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is ~~d~~Direction~~Type~~ of module PMIRPConstDefs.
thresholdMonitorStatus	One NV pair of remaining body	M	Name of NV pair is the ~~THRESHOLD_~~MONITOR_STATUS of module ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectCreation. Value of NV pair is ~~thershold~~MonitorStatus~~Type~~ of module PMIRPConstDefs.

Table 5.3.3: Mapping for notifyThresholdMonitorObjectDeletion

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
notificationType	type_name	M	This is ~~the~~ constant string "notifyThresholdMonitorObjectDeletion".
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
notificationId	One NV pair of remaining body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
monitorId	One NV pair of filterable_ body_fields	M	Name of NV pair is the MONITOR_ID of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorObjectDeletion. Value of NV pair is MonitorId~~Type~~ of module PMIRPConstDefs.

Table 5.3.4: Mapping for `notifyThresholdMonitorStatusChanged`

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name	M	It carries the IRP document version number string. See subclause 3.1. It indicates the syntax and semantics of the Structured Event as defined by the present document.
notificationType	type_name	M	This is ~~the~~ constant string "notifyThresholdMonitorStatusChanged".
There is no corresponding IS attribute.	event_name	M	It carries no information.
There is no corresponding IS attribute.	Variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of this NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [5]).
monitorId	One NV pair of filterable_ body_fields	M	Name of NV pair is the MONITOR_ID of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorStatusChanged Value of NV pair is MonitorId~~Type~~ of module PMIRPConstDefs.
monitorStatus	One NV pair of remaining_body	M	Name of NV pair is the MONITOR _STATUS of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorStatusChanged Value of NV pair is MonitorStatus~~Type~~ of module PMIRPConstDefs.

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
reason	One NV pair of remaining_body	O	Name of NV pair is the REASON of ~~PMIRPNotifDefs~~PMIRPNotifications::notifyThresholdMonitorStatusChanged Value of NV pair is a string.

End of Change in Clause 5.3

Change in Annex Clause A.1

A.1 IDL specification (file name "PMIRPConstDefs.idl")

```
//~~File~~: PMIRPConstDefs.idl

#ifndef _PM_IRP_CONST_DEFS_IDL_
#define _PM_IRP_CONST_DEFS_IDL_

#include "<TimeBase.idl">

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

/* ## Module: PMIRPConstDefs
This module contains commonly used definitions for PM IRP
=================================================================
*/
module PMIRPConstDefs
{

   enum Result~~Type~~ {OK, Failure};

   typedef ~~string MOClassName~~Type;
   typedef ~~string MOInstance~~Type;
   typedef ~~sequence<MOInstance~~Type> ~~MOInstanceList~~Type;
   typedef ~~string MeasurementCategory~~Type;
   typedef ~~sequence<MeasurementCategory~~Type> MeasurementCategoryList~~Type~~;
   typedef ~~unsigned long GranularityPeriod~~Type; //The unit is minute.
   typedef ~~unsigned long ReportingPeriod~~Type; //The unit is minute.
   typedef ~~TimeBase::UtcT UTCTime~~Type;

   union IRPTime~~Type~~Opt switch(boolean)
   {
     case TRUE: UTCTime~~Type~~ value;
   };

   struct Time24
   {
     unsigned short hour; // 0-23
     unsigned short minute; // 0-59
   };

   struct IntervalOfDay~~Type~~
   {
     Time24 intervalStartTime;
     Time24 intervalStopTime;
   };
   typedef sequence<IntervalOfDay~~Type~~> DailyScheduling~~Type~~;

   const short Sunday = 1;
   const short Monday = 2;
   const short Tuesday = 4;
   const short Wednesday = 8;
   const short Thursday = 16;
   const short Friday = 32;
   const short Saturday = 64;
```

```
typedef short DaysOfWeekType;
// Bit mask of week days,
// e.g. “Sunday(1) and Wednesday(8)” is encoded as 9.

struct WeeklySchedulingElement
{
  DaysOfWeekType days;
  DailySchedulingType intervalsOfDay;
};
typedef sequence<WeeklySchedulingElement> WeeklySchedulingType;
enum scheduleTypeChoice { Daily, Weekly };
union ScheduleType switch (scheduleTypeChoice)
{
  case Daily: DailySchedulingType daily_Sscheduling;
  case Weekly: WeeklySchedulingType weekly_Sscheduling;
};
union ScheduleTypeOpt switch(boolean)
{
  case TRUE: ScheduleType value;
};


typedef unsigned long JobIdType;
typedef sequence<JobIdType> JobIdListType;
struct JUnsupportedType
{
  MOInstanceType mo_Iinstance;
  MeasurementCategoryType measurement_Ccategory;
  string reason;
};
typedef sequence<JUnsupportedType> JUnsupportedListType;


/**
 * Defines the name of an attribute of a Managed Object
 */
typedef string MOAttributeName;

enum JobStatusType {Scheduled, Active, Suspended, Stopped};
enum JobPriorityType {Low, Medium, High};
union JobPriorityTypeOpt switch (boolean)
{
   case TRUE: JobPriorityType value;
};

struct JobInfoType
{
  JobIdType job_Iid;
  MOClassNameType moClass;
  MOInstanceListType mo_Iinstance_Llist;
  MeasurementCategoryListType measurement_Ccategory_Llist;
  GranularityPeriodType granularity_Pperiod;
  ReportingPeriodType reporting_Pperiod;
  IRPTimeTypeOpt startTime;
  IRPTimeTypeOpt stopTime;
  ScheduleTypeOpt schedule;
  JobStatusType job_Sstatus;
  JobPriorityTypeOpt jobPriority;
};
typedef sequence<JobInfoType> JobInfoListType;

typedef string MeasurementTypeNameType;
typedef string SubCounterNameType;
typedef short ProbableCauseType; //THRESHOLD_CROSSED = 351;

typedef string SpecificProblemType;
typedef any ThresholdValueType;
enum SeverityType {Warning, Minor, Major, Critical};
union HysteresisType switch(boolean)
{
  case TRUE: long longValue;
  case FALSE: float floatValue;
};
enum DirectionType { Increasing, Decreasing};
struct ThresholdPackElementType
{
  ThresholdValueType threshold_Vvalue;
```

```
    _SeverityType severity_;
    _HysteresisType hysteresis_;
  };
  typedef sequence<ThresholdPackElementType> ThresholdPackType;
  struct ThresholdInfoType
  {
    _MeasurementTypeNameType measurement_Ttype_Nname;
    _SubCounterNameType sub_Ccounter_Nname;
    _ProbableCauseType probable_Ccause;
    _SpecificProblemType specific_Pproblem;
    _DirectionType direction_;
    _ThresholdPackType threshold_Ppack;
  };
  typedef sequence<ThresholdInfoType> ThresholdInfoListType;
  typedef GranularityPeriodType MonitorGranularityPeriodType;// time period is based on 5 minutes.
  typedef unsigned long MonitorIdType;
  struct MUnsupportedType
  {
    _MOInstanceType –mo_Iinstance;
    _MeasurementTypeNameType measurement_Ttype_Nname;
    _SubCounterNameType sub_Ccounter_Nname;
    _string reason;
  };
  typedef –sequence<MUnsupportedType> –MUnsupportedListType;
  enum –MonitorStatusType {MSuspended, MActive};

  typedef sequence<MonitorIdType> MonitorIdListType;
  typedef string EventTypeType; // The value is "Quality of Service Alarm"
  struct MonitorInfoType
  {
    __MonitorIdType –monitor_Iid;
    __MOClassNameType –moClass;
    __MOInstanceListType –mo_Iinstance_Llist;
    __MonitorGranularityPeriodType monitor_Ggranularity_Pperiod;
    __ThresholdInfoListType threshold_Iinfo_Llist;
    __MonitorStatusType thresholdMonitorStatus;
    __EventTypeType event_Ttype;
  };
  typedef sequence<MonitorInfoType> MonitorInfoListType;


  /**
  * This block identifies attributes which are included as part of the
  * PMIRP. These attribute values should not
  * clash with those defined for the attributes of notification
  * header (see IDL of Notification IRP).
  */
  interface AttributeNameValue
  {
    __const string JOB_ID = "JOB_ID";
    __const string JOB_STATUS = "JOB_STATUS";
    __const string REASON = "REASON";
    __const string MONITOR_ID = "MONITOR_ID";
    __const string MONITOR_STATUS = "MONITOR_STATUS";

    __const string MONITOR_GRANULARITY_PERIOD = "MONITOR_GRANULARITY_PERIOD";
    const string THRESHOLD_INFO_LIST = "THRESHOLD_INFO_LIST";
    const string MONITOR_EVENT_TYPE = "MONITOR_EVENT_TYPE";
    const string PROBABLE_CAUSE = "PROBABLE_CAUSE";
    const string SPECIFIC_PROBLEM = "SPECIFIC_PROBLEM";
    const string DIRECTION = "DIRECTION";
  };

};

#endif // _PM_IRP_CONST_DEFS_IDL_
```

End of Change in Annex Clause A.1

Change in Annex Clause A.2

A.2 IDL specification (file name "PMIRPSystem.idl")

```
//File: PMIRPSystem.idl

#ifndef _PM_IRP_SYSTEM_IDL_
#define _PM_IRP_SYSTEM_IDL_

#include "<ManagedGenericIRPSystem.idl">
#include "<ManagedGenericIRPConstDefs.idl">
#include "<PMIRPConstDefs.idl">

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

/* ## Module: PMIRPSystem
This module contains the specification of all operations of PM IRP Agent.
================================================================
*/
module PMIRPSystem
{

   /**
   * The reason specifies whether EM or NE has high workload. The value shall be one
   * of following: emCpuBusy; emHDShortage, emLowMemory, {neCpuBusy, neObjectInstList},
   * {neHDShortage neObjectInstList}, {neLowMemory, neObjectInstList}, maxJobReached,
   * otherReason.
   * In the case the reason is a tuple, the first element is the string such as
   * "NE_CPU_BUSY" followed by a comma, then followed by a sequence of DN where
   * each DN is separated by its adjacent DN, if any, by a colon. –The DN is formatted
   * as described in 32.300.
   */
   exception HighWorkLoad { string reason; };
   interface HighWorkLoadExceptionReason
   {
     const string EmCpuBusy = "EM_CPU_BUSY";
     const string EmHDShortage = "EM_HD_SHORTAGE";
     const string EmLowMemory = "EM_LOW_MEMORY";
     const string NeCpuBusy = "NE_CPU_BUSY";
     const string NeHDShortage = "NE_HD_SHORTAGE";
     const string NeLowMemory = "NE_LOW_MEMORY";
     const string MaxJobReached = "MAX_JOB_REACHED";
     const string OtherReason = "OTHER_REASON";
   };


   exception UnknownJob { string reason; };
   exception JobCannotBeStopped { string reason; };
   exception JobAlreadySuspended { string reason; };
   exception JobIsNotSuspended { string reason; };
   exception UnknownThresholdMonitor { string reason; };
   exception ThresholdMonitorAlreadySuspended { string reason; };
   exception ThresholdMonitorIsNotSuspended { string reason; };

   /**
   * System fails to complete the operation. –System can provide reason
   * to qualify the exception. –The semantics carried in reason
   * is outside the scope of this IRP.
   */
   exception GetPMIRPVersions { string reason; };
   exception GetPMIRPOperationsProfile { string reason; };
   exception GetPMIRPNotificationProfile { string reason; };
   exception CreateMeasurementJob { string reason; };
   exception StopMeasurementJob { string reason; };
   exception SuspendMeasurementJob { string reason; };
   exception ResumeMeasurementJob { string reason; };
   exception ListMeasurementJobs { string reason; };

   exception CreateThresholdMonitor { string reason; };
   exception DeleteThresholdMonitor { string reason; };
   exception ListThresholdMonitors { string reason; };
   exception SuspendThresholdMonitor { string reason; };
```

```
exception ResumeThresholdMonitor { string reason; };

interface PMIRP
{

   readonly attribute string iRPId;

   /**
   * Return the list of all supported PM IRP versions.
   */
   ManagedGenericIRPConstDefs::VersionNumberSet get_PM_IRP_versions (
   )
   raises (GetPMIRPVersions);


   /**
   * Return the list of all supported operations and their supported
   * parameters for a specific PM IRP version.
   */
   ManagedGenericIRPConstDefs::MethodList get_PM_IRP_operations_profile (
      in ManagedGenericIRPConstDefs::VersionNumber pm_irp_version
   )
   raises (GetPMIRPOperationsProfile,
           ManagedGenericIRPSystem::OperationNotSupported,
           ManagedGenericIRPSystem::InvalidParameter);

   /**
   * Return the list of all supported notifications and their supported
   * parameters for a specific PM IRP version.
   */
   ManagedGenericIRPConstDefs::MethodList get_PM_IRP_notification_profile
   (
      in ManagedGenericIRPConstDefs::VersionNumber pm_irp_version
   )
   raises (GetPMIRPNotificationProfile,
           ManagedGenericIRPSystem::OperationNotSupported,
           ManagedGenericIRPSystem::InvalidParameter);

   /**
   * Request to create a MeasurementJob through Itf-N.
   */
   ManagedGenericIRPConstDefs::Signal create_measurement_job (
     in PMIRPConstDefs::MOClassNameType moClass,
     in PMIRPConstDefs::MOInstanceListType moInstanceList,
     in PMIRPConstDefs::MeasurementCategoryListType measurementCategoryList,
     in PMIRPConstDefs::GranularityPeriodType granularityPeriod,
     in PMIRPConstDefs::ReportingPeriodType reportingPeriod,
     in PMIRPConstDefs::IRPTimeTypeOpt startTime,
     in PMIRPConstDefs::IRPTimeTypeOpt stopTime,
     in PMIRPConstDefs::ScheduleTypeOpt schedule,
     in PMIRPConstDefs::JobPriorityTypeOpt priority,
     out PMIRPConstDefs::JobIdType jobId,
     out PMIRPConstDefs::JUnsupportedListType unsupportedList
   )
   raises (CreateMeasurementJob,
           ManagedGenericIRPSystem::InvalidParameter,
           ManagedGenericIRPSystem::ParameterNotSupported,
           HighWorkLoad);

   /**
   * Request to stop a MeasurementJob through Itf-N, after which,
   * the MeasurementJob will still be visible via Itf-N. Whether
   * the MeasurementJob is thoroughly removed immediately from
   * the managed system is vendor specific.
   */
   PMIRPConstDefs::ResultType stop_measurement_job (
     in PMIRPConstDefs::JobIdType jobId)
   raises (StopMeasurementJob,
           UnknownJob,
           JobCannotBeStopped);

   /**
   * Request to suspend a MeasurementJob
   */
   PMIRPConstDefs::ResultType suspend_measurement_job (
     in PMIRPConstDefs::JobIdType jobId)
   raises (SuspendMeasurementJob,
```

```
                UnknownJob,
                JobAlreadySuspended,
                ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Request to resume a MeasurementJob
        */
        PMIRPConstDefs::ResultType resume_measurement_job (
          in PMIRPConstDefs::JobIdType jobId)
        raises (ResumeMeasurementJob,
                UnknownJob,
                JobIsNotSuspended,
                HighWorkLoad,
                ManagedGenericIRPSystem::OperationNotSupported);

       /**
        * Request to list the information of all or of specified
        * MeasurementJobs
        */
        PMIRPConstDefs::ResultType list_measurement_jobs (
          in PMIRPConstDefs::JobIdListType jobListId,
          out PMIRPConstDefs::JobInfoListType jobInfoList)
        raises (ListMeasurementJobs,
                ManagedGenericIRPSystem::InvalidParameter);

        /**
        * Request to create a ThresholdMonitor to define the threshold
        * for some specific measurementTypes or subCounters
        */
        ManagedGenericIRPConstDefs::Signal create_threshold_monitor (
          in PMIRPConstDefs::MOClassNameType moClass,
          in PMIRPConstDefs::MOInstanceListType moInstanceList,
          in PMIRPConstDefs::ThresholdInfoListType thresholdInfoList,
          in PMIRPConstDefs::MonitorGranularityPeriodType monitorGranularityPeriod,
          out PMIRPConstDefs::MonitorIdType monitorId,
          out PMIRPConstDefs::MUnsupportedListType unsupportedList)
        raises (CreateThresholdMonitor,
                ManagedGenericIRPSystem::InvalidParameter,
                ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Request to delete a specified ThresholdMonitor
        */
        PMIRPConstDefs::ResultType delete_threshold_monitor (
            in PMIRPConstDefs::MonitorIdType monitorId)
        raises (DeleteThresholdMonitor,
                UnknownThresholdMonitor,
                ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Request to list detailed information about all or
        * specified ThresholdMonitors
        */
        PMIRPConstDefs::ResultType list_threshold_monitors (
          in PMIRPConstDefs::MonitorIdListType monitorIdList,
          out PMIRPConstDefs::MonitorInfoListType monitorInfoList)
        raises (ListThresholdMonitors,
                ManagedGenericIRPSystem::InvalidParameter,
                ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Request to suspend a ThresholdMonitor
        */
        PMIRPConstDefs::ResultType suspend_threshold_monitor (
          in PMIRPConstDefs::MonitorIdType monitorId)
        raises (SuspendThresholdMonitor,
                UnknownThresholdMonitor,
                ThresholdMonitorAlreadySuspended,
                ManagedGenericIRPSystem::OperationNotSupported);

        /**
        * Request to resume a ThresholdMonitor
        */
        PMIRPConstDefs::ResultType resume_threshold_monitor (
          in PMIRPConstDefs::MonitorIdType monitorId)
        raises (ResumeThresholdMonitor,
                UnknownThresholdMonitor,
```

```
                ThresholdMonitorIsNotSuspended,
                ManagedGenericIRPSystem::OperationNotSupported);

    };

};

#endif // _PM_IRP_SYSTEM_IDL_
```

End of Change in Annex Clause A.2

Change in Annex Clause A.3

A.3 IDL specification (file name "PMIRPNotifications.idl")

```
// File: PMIRPNotifications.idl

#ifndef _PM_IRP_NOTIFICATIONS_IDL_
#define _PM_IRP_NOTIFICATIONS_IDL_

#include "<PMIRPConstDefs.idl">
#include "NotificationIRPConstDefs.idl"
#include "<NotificationIRPNotifications.idl">

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

/* ## Module: PMIRPNotifDefsPMIRPNotifications
This module contains the specification of all notifications of PM IRP Agent.
=================================================================
*/
module PMIRPNotifications
{

    /**
    * Constant definitions for the notifyMeasurementJobStatusChanged notification
    */
    interface notifyMeasurementJobStatusChanged: NotificationIRPNotifications::Notify
    {
      const string EVENT_TYPE = "notifyMeasurementJobStatusChanged";
      /**
      * This constant defines the name of the jobId property.
      * The data type for the value of this property
      * is PMIRPConstDefs::JobIdType.
      */
      const string JOB_ID = PMIRPConstDefs::AttributeNameValue::JOB_ID;

      /**
      * This constant defines the name of the jobStatus property.
      * The data type for the value of this property
      * is PMIRPConstDefs::JobStatusType.
      */
      const string JOB_STATUS = PMIRPConstDefs::AttributeNameValue::JOB_STATUS;

      /**
      * This constant defines the name of the reason property.
      * The data type for the value of this property is string.
      */
      const string REASON = PMIRPConstDefs::AttributeNameValue::REASON;
    };

/**
    * Constant definitions for the notifyThresholdMonitorObjectCreation notification
    */
    interface notifyThresholdMonitorObjectCreation:
       NotificationIRPConstDefs::AttributeNameValueNotificationIRPNotifications::Notify
    {
      const string EVENT_TYPE = "notifyThresholdMonitorObjectCreation";

      /**
      * This constant defines the name of the monitorId property,
```

```
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is PMIRPConstDefs::MonitorIdType.
    */
    const string MONITOR_ID = PMIRPConstDefs::AttributeNameValue::MONITOR_ID;

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

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

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

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

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

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

/**
* Constant definitions for the notifyThresholdMonitorObjectDeletion notification
*/
interface notifyThresholdMonitorObjectDeletion:
    NotificationIRPConstDefs::AttributeNameValueNotificationIRPNotifications::Notify
{
    const string EVENT_TYPE = "notifyThresholdMonitorObjectDeletion";

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

    /**
```

```
      * This constant defines the name of the monitorStatus property,
      * which is transported in the filterable_body fields.
      * The data type for the value of this property
      * is PMIRPConstDefs::MonitorStatusType.
      */
      const string MONITOR_STATUS =
            PMIRPConstDefs::AttributeNameValue::MONITOR_STATUS;

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

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

     /**
     * This constant defines the name of the monitorId property.
     * The data type for the value of this property
     * is PMIRPConstDefs::MonitorIdType.
     */
     const string MONITOR_ID = PMIRPConstDefs::AttributeNameValue::MONITOR_ID;

     /**
     * This constant defines the name of the monitorStatus property.
     * The data type for the value of this property
     * is PMIRPConstDefs::MonitorStatusType.
     */
     const string MONITOR_STATUS = PMIRPConstDefs::AttributeNameValue::MONITOR_STATUS;

     /**
     * This constant defines the name of the reason property.
     * The data type for the value of this property is string.
     */
     const string REASON = PMIRPConstDefs::AttributeNameValue::REASON;
   };

};

#endif // _PM_IRP_NOTIFICATIONS_IDL_
```

End of Change in Annex Clause A.3
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2005	SA_27	SP-050041	005	--	IDL incompliant to the style guide	6.3.0	6.4.0
Mar 2005	SA_27	SP-050041	006	--	Remove the ambiguity that a PM IRP compliant system necessarily contains functionalities defined in Kernel CM IRP – Align wih TS 32.412	6.3.0	6.4.0
Mar 2005	SA_27	SP-050041	007	--	Apply the Generic System Context, update of reference to IS specification – Align wih TS 32.412	6.3.0	6.4.0

CR-Form-v7.1

CHANGE REQUEST

⌘ 32.403 CR 0061 ⌘rev - ⌘ Current version: 6.7.0 ⌘

*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 measurement type name to RAB.SuccRelPSNoQueuing
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	Correction of measurement type name to RAB.SuccRelPSNoQueuing
Summary of change:	⌘	Correct measurement type name for measurement "Successful RAB releases without queuing for PS domain" from RAB.AttRelPSNoQueuing to RAB.SuccRelPSNoQueuing
Consequences if not approved:	⌘	Measurement type name for measurement "Successful RAB releases without queuing for PS domain" would mistakenly remain RAB.AttRelPSNoQueuing

Clauses affected:	⌘	4.1.7

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

Other comments: ⌘

Change in Clause 4.1.7

4.1.7 RAB release request by CN for PS domain

[…]

4.1.7.1 Attempted RAB releases for PS domain

[…]

e) The measurement name has the form RAB.AttRelPS.*Cause*
where *Cause* identifies the release cause.

[…]

4.1.7.2 Successful RAB releases without queuing for PS domain

[…]

e) The measurement name has the form RAB.~~Att~~Succ RelPSNoQueuing.Cause
where Cause identifies the release cause.

[…]

4.1.7.3 Failed RAB releases without queuing for PS domain

[…]

e) The measurement name has the form RAB.FailRelPSNoQueuing.Cause
where Cause identifies the failure cause.

[…]

4.1.7.4 Successful RAB releases with queuing for PS domain

[…]

e) The measurement name has the form RAB.SuccRelPSQueuing.Cause
where Cause identifies the release cause.

[…]

4.1.7.5 Failed RAB releases with queuing for PS domain

[…]

e) The measurement name has the form RAB.FailRelPSQueuing.Cause
where Cause identifies the failure cause.

[…]

End of Change in Clause 4.1.7
End of Document

Annex C (informative):
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.403** **CR** **0062** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

*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 missing GSM SGSN measurements for subscribers state
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	Measurements for subscribers state are defined for UMTS SGSN. No measurement for subscribers state is defined for GSM SGSN. In order to allow for combined UMTS&GSM SGSN implementation, GSM measurements for subscribers state are needed in addition to UMTS ones.
Summary of change:	⌘	• Add missing GSM SGSN measurements for subscribers state • Add corresponding mean & max measurements to GSM SGSN subscribers state measurements and to UMTS SGSN subscribers state measurements • Regrouping of related measurements in common sub-clauses
Consequences if not approved:	⌘	Implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected:	⌘	5.1

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

Other comments: ⌘

Change in Clause 5.1

5.1 Mobility Management

[…]

5.1.20 GSM subscribers state

5.1.20.1 Subscribers in STANDBY state

5.1.20.1.1 Number of subscribers in STANDBY state

a) This measurement provides the number of subscribers in STANDBY state.

b) GAUGE.

c) Incremented at transition of a subscriber registered in the SGSN into STANDBY state, decremented at transition of a subscriber registered in the SGSN out from STANDBY state.

d) A single integer value.

e) MM.NbrSubStandby.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.20.1.2 Mean number of subscribers in STANDBY state

a) This measurement provides the mean number of subscribers in STANDBY state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in STANDBY state and then taking the arithmetic mean.

d) A single integer value.

e) MM.MeanNbrSubStandby.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.20.1.3 Max number of subscribers in STANDBY state

a) This measurement provides the maximum number of subscribers in STANDBY state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in STANDBY state and then taking the maximum.

d) A single integer value.

e) MM.MaxNbrSubStandby.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.20.2 Subscribers in READY state

5.1.20.2.1 Number of subscribers in READY state

a) This measurement provides the number of subscribers in READY state.

b) GAUGE.

c) Incremented at transition of a subscriber registered in the SGSN into READY state, decremented at transition of a subscriber registered in the SGSN out from READY state.

d) A single integer value.

e) MM.NbrSubReady

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.20.2.2 Mean number of subscribers in READY state

a) This measurement provides the mean number of subscribers in READY state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in READY state and then taking the arithmetic mean.

d) A single integer value.

e) MM.MeanNbrSubReady.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.20.2.3 Max number of subscribers in READY state

a) This measurement provides the maximum number of subscribers in READY state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in READY state and then taking the maximum.

d) A single integer value.

e) MM.MaxNbrSubReady.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.1.21 UMTS subscribers state

5.1.21.1 Subscribers in PMM-IDLE state

5.1.~~20~~.21.1.1 Number of subscribers in PMM-IDLE state

a) This measurement provides the ~~Number~~ number of subscribers in PMM-IDLE state.

b) GAUGE.

c) Incremented at PS Signalling Connection Release (Iu Release), decremented at PS Detach or PS Signalling Connection Establish (Service Request).

d) A single integer value.

e) MM.NbrSubPmmIdle.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.1.21.1.2 Mean number of subscribers in PMM-IDLE state

a) This measurement provides the mean number of subscribers in PMM-IDLE state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in PMM-IDLE state and then taking the arithmetic mean.

d) A single integer value.

e) MM.MeanNbrSubPmmIdle.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.1.21.1.3 Max number of subscribers in PMM-IDLE state

a) This measurement provides the maximum number of subscribers in PMM-IDLE state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in PMM-IDLE state and then taking the maximum.

d) A single integer value.

e) MM.MaxNbrSubPmmIdle.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.1.21.2 Subscribers in PMM-CONNECTED state

5.1.21.2.1 Number of subscribers in PMM-CONNECTED state

a) This measurement provides the ~~Number~~ number of subscribers in PMM-CONNECTED state.

b) GAUGE.

c) Decremented at PS Signalling Connection Release (Iu Release), Detach, PS Attach Reject or RAU Reject, incremented at PS Attach or PS Signalling Connection Establish (Service Request).

d) A single integer value.

e) MM.NbrSubPmmConnected

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.1.21.2.2 Mean number of subscribers in PMM-CONNECTED state

a) This measurement provides the mean number of subscribers in PMM-CONNECTED state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in PMM-CONNECTED state and then taking the arithmetic mean.

d) A single integer value.

e) MM.MeanNbrSubPmmConnected.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.1.21.2.3 Max number of subscribers in PMM-CONNECTED state

a) This measurement provides the maximum number of subscribers in PMM-CONNECTED state.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers in PMM-CONNECTED state and then taking the maximum.

d) A single integer value.

e) MM.MaxNbrSubPmmConnected.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

End of Change in Clause 5.1
End of Document

Annex C (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
Jun 2002	S_16	SP-020291	003	2	Introduction of "Performance Measurements Definition Process" describing the repeatable, top-down process to define measurements for inclusion in future 3GPP Releases	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	004	--	Adding performance measurement definitions related to GGSN	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	005	--	Introduction of an optional "Purpose" clause in the measurement template	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	006	--	Addition of explanatory text for Radio Access Bearer (RAB) measurements	4.2.0	5.0.0
Sep 2002	S_17	SP-020609	009	--	Introduction of Service Based Performance Measurement Definitions	5.0.0	5.1.0
Sep 2002	S_17	SP-020609	010	--	Add flexibility in the measurement template for the Measured Object Class (MOC)	5.0.0	5.1.0
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
Jun 2003	S_20	SP-030293	016	--	Addition of GPRS per cause measurement definitions	5.3.0	6.0.0
Jun 2003	S_20	SP-030293	017	--	Introduction of MMS Service Based Performance Measurement	5.3.0	6.0.0
Sep 2003	S_21	SP-030431	020	--	Correction of collection method for SGSN measurements	6.0.0	6.1.0
Sep 2003	S_21	SP-030431	023	--	Correction of "outgoing intra-cell hard handovers measurements"	6.0.0	6.1.0
Dec 2003	S_22	SP-030645	025	--	Correction of terms used for subcounter definitions	6.1.0	6.2.0
Mar 2004	S_23	SP-040134	028	--	Correction of "Radio link addition" measurements	6.2.0	6.3.0
Mar 2004	S_23	SP-040135	029	--	Add the measurements about Iu connection release	6.2.0	6.3.0
Jun 2004	S_24	SP-040266	032	--	Correction of "Inter-RAT handover" measurements	6.3.0	6.4.0
Jun 2004	S_24	SP-040267	035	--	Correction of "RAB assignment" measurements	6.3.0	6.4.0
Jun 2004	S_24	SP-040269	038	--	Correction of "hard handover" measurement definitions	6.3.0	6.4.0
Jun 2004	S_24	SP-040270	039	--	Addition of the measurements about RAB modification and RAB release by CN	6.3.0	6.4.0
Sep 2004	S_25	SP-040574	040	--	Restructure clauses 5 and 6 to follow the style of other clauses related to UTRAN measurements for extensibility	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	041	--	Add measurements about Mobility Management	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	042	--	Add mesurements about "PDP context activation procedures initiated by Network"	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	043	--	Add measurements about relocation	6.4.0	6.5.0
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

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CHANGE REQUEST

⌘ **32.403** **CR** **0063** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

*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 missing SGSN measurements for GSM ciphering procedures
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	SGSN measurements are defined for UMTS ciphering procedures. No SGSN measurement is defined for GSM ciphering procedures. In order to allow for combined UMTS&GSM SGSN implementation, measurements for GSM ciphering are needed in addition to UMTS ones.
Summary of change:	⌘	Addition of SGSN measurements for GSM ciphering procedures
Consequences if not approved:	⌘	Implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected:	⌘	5.4.12

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

Other comments: ⌘

Change in Clause 5.4.12

5.4.12 Ciphering procedures started by the SGSN

5.4.12.1 Attempted GSM ciphering procedures started by the SGSN

a) This measurement provides the number of GSM ciphering procedures started by the SGSN.

b) CC.

c) Transmission of an "AUTHENTICATION AND CIPHERING REQUEST" message with ciphering activated ("Ciphering algorithm" is not "ciphering not used (0)") to the MS (TS 24.008).

d) A single integer value.

e) SEC.AttGsmCiphering.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.4.12.2 Successful GSM ciphering procedures started by the SGSN

a) This measurement provides the number of successful GSM ciphering procedures started by the SGSN.

b) CC.

c) Receipt of an "AUTHENTICATION AND CIPHERING RESPONSE" message with ciphering activated from the MS (TS 24.008).

d) A single integer value.

e) SEC.SuccGsmCiphering.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.4.12.~~1~~3 Attempted UMTS ciphering procedures started by the SGSN

a) This measurement provides the number of UMTS ciphering procedures started by the SGSN.

b) CC.

c) Transmission of a "SECURITY MODE COMMAND" message with ciphering activated ("Encryption Algorithm" is not "no encryption (0)")~~,~~ to the MS (TS 25.413 [5]).

d) A single integer value.

e) SEC.AttUmtsCiphering.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

5.4.12.~~2~~4 Successful UMTS ciphering procedures started by the SGSN

a) This measurement provides the number of successful UMTS ciphering procedures started by the SGSN.

b) CC.

c) Receipt of a "SECURITY MODE COMPLETE" message~~,~~ with ciphering activated~~,~~ from the MS (TS 25.413 [5]).

d) A single integer value.

e) SEC.SuccUmtsCiphering.

f) SgsnFunction.

g) Valid for packet switching.

h) UMTS.

End of Change in Clause 5.4.12
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2004	S_24	SP-040267	035	--	Correction of "RAB assignment" measurements	6.3.0	6.4.0
Jun 2004	S_24	SP-040269	038	--	Correction of "hard handover" measurement definitions	6.3.0	6.4.0
Jun 2004	S_24	SP-040270	039	--	Addition of the measurements about RAB modification and RAB release by CN	6.3.0	6.4.0
Sep 2004	S_25	SP-040574	040	--	Restructure clauses 5 and 6 to follow the style of other clauses related to UTRAN measurements for extensibility	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	041	--	Add measurements about Mobility Management	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	042	--	Add mesurements about "PDP context activation procedures initiated by Network"	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	043	--	Add measurements about relocation	6.4.0	6.5.0
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

3GPP TSG-SA5 (Telecom Management) **Tdoc ⌘S5-058442**
Meeting #42, Montreal, CANADA, 09 - 13 May 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.403** **CR** **0064** ⌘**rev** **-** ⌘ Current version: **5.10.0** ⌘

*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 ☐

Title:	⌘	Correct inter-RAT handover measurement object class UtranRelation to GsmRelation
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
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:	⌘	▪ Some inter-RAT handover RNC performance measurements mistakenly have object class UtranRelation as associated measurement object class. ▪ There have some edit error in Measurement object class of RLC connection. In this subclause two RncFunction have been listed. ▪ Re-introduce text erroneously deleted
Summary of change:	⌘	▪ Change object class UtranRelation to object class GsmRelation for inter-RAT handover RNC performance measurements having object class UtranRelation as associated measurement object class ▪ Correct some edit error of measurements object class on RLC connection ▪ Re-introduction of the deleted text line
Consequences if not approved:	⌘	It would be impossible to implement the performance measurements in question.

Clauses affected:	⌘	4.1.5, 4.7.1, 4.7.2, 4,7, 4.12.1, 4.12.2

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

Other comments:	⌘	

Change in Clause 4.1.5

4.1.5 RAB release

4.1.5.1 RAB releases for CS domain

a) This measurement provides the number of RAB releases for CS domain split into subcounters per cause.

b) CC.

c) On transmission by the RNC of a RANAP RAB RELEASE REQUEST message for CS domain, each RAB requested to be released is added to the relevant per cause measurement. Possible causes are included in TS 25.413. The sum of all supported per cause measurements shall equal the total number of RAB Releases for the CS domain. In case only a subset of per cause measurements is supported, a sum subcounter will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form RAB.RelCS.*Cause*
where *Cause* identifies the release cause.

f) RncFunction.

g) Valid for circuit switched traffic.

h) UMTS.

4.1.5.2 RAB releases for PS domain

a) This measurement provides the number of RAB releases for PS domain split into subcounters per cause.

b) CC.

c) On transmission by the RNC of a RANAP RAB RELEASE REQUEST message for PS domain, each RAB requested to be released is added to the relevant per cause measurement. Possible causes are included in TS 25.413. The sum of all supported per cause measurements shall equal the total number of RAB Releases for the PS domain. In case only a subset of per cause measurements is supported, a sum subcounter will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form RAB.RelPS.*Cause*
where *Cause* identifies the release cause.

f) RncFunction.

g) Valid for packet switched traffic.

h) UMTS.

End of Change in Clause 4.1.5

Change in Clause 4.7.1

4.7.1 Number of RLC blocks sent (per Mode)

a) This measurement provides the number of RLC blocks sent by the RNC including retransmitted blocks.

b) CC.

c) Transmission of RLC block, see TS 25.322 [24].

d) RLC.NbrBlocksSent.TM
RLC.NbrBlocksSent.UM
RLC.NbrBlocksSent.AM

e) A single integer value.

f) ~~RNCFunction~~RncFunction, per Mode (Transparent, Unacknowledged and Acknowledged)

g) Valid for packet switching and circuit switching

h) UMTS

End of Change in Clause 4.7.1

Change in Clause 4.7.2

4.7.2 Number of RLC blocks Received (per Mode)

a) This measurement provides the number of received RLC blocks by the RNC.

b) CC.

c) Receipt of a RLC blocks from a peer entity and before any error checking, see TS 25.322 [24].

d) RLC.NbrBlocksReceived.TM
RLC.NbrBlocksReceived.UM
RLC.NbrBlocksReceived.AM

e) A single integer value.

f) ~~RNCFunction~~RncFunction per Mode (Transparent, Unacknowledged and Acknowledged)

g) Valid for packet switching and circuit switching

h) UMTS

End of Change in Clause 4.7.2

Change in Clause 4.7.4

4.7.4 Number of Retransmitted RLC blocks in Acknowledge Mode

a) This measurement provides the number of retransmitted RLC blocks in RLC acknowledge mode, detected in the UE and signalled to the RNC (downlink transmission, UE).

b) CC.

c) Receipt of a NACK or SACK block from the peer entity (UE) , see TS 25.322 [24].

d) RLC.RetransmittedBlocksToUE.

e) A single integer value.

f) ~~RNCFunction~~RncFunction.

g) Valid for packet switching.

h) UMTS

End of Change in Clause 4.7.4

Change in Clause 4.12.1.

4.12.1 Relocation preparation for outgoing circuit switched inter-RAT handovers

[…]

4.12.1.1 Attempted relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of attempted relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.

b) CC.

c) Transmission of a RANAP message RELOCATION REQUIRED from the serving RNC to the CN, indicating an attempted relocation preparation of an outgoing inter-RAT handover (see TS 25.413).

d) A single integer value.

e) IRATHO.AttRelocPrepOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.1.2 Successful relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of successful relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.

b) CC.

c) Receipt of a RANAP message RELOCATION COMMAND sent from the CN to the serving RNC, indicating a successful relocation preparation of an inter-RAT handover (see TS 25.413).

d) A single integer value.

e) IRATHO.SuccRelocPrepOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.1.3 Failed relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides number of failed relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell per cause.

b) CC.

c) Receipt of a RANAP message RELOCATION PREPARATION FAILURE sent from the CN to the serving RNC, indicating a failed relocation preparation for outgoing inter-RAT handovers. Failure causes are defined within TS 25.413.
The sum of all supported per cause measurements shall equal the total number of failed events. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form IRATHO.FailRelocPrepOutCS.*Cause*
where *Cause* identifies the failure cause.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

End of Change in Clause 4.12.1

Change in Clause 4.12.2

4.12.2 Outgoing circuit switched inter-RAT handovers

[…]

4.12.2.1 Attempted outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of attempted outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.

b) CC.

c) Transmission of an RRC-message HANDOVER FROM UTRAN COMMAND from serving RNC to the UE, indicating an attempted outgoing inter-RAT handover (see TS 25.331).

d) A single integer value.

e) IRATHO.AttOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.2.2 Successful outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of successful outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.

b) CC.

c) Receipt of a RANAP message IU RELEASE COMMAND sent from the CN to the serving RNC, indicating a successful inter-RAT handover (see TS 25.413).

d) A single integer value.

e) IRATHO.SuccOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.2.3 Failed outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of failed outgoing circuit switched inter-RAT handovers per neighbour cell per cause from UEs point of view, where the UE returned to the original physical channel configuration.

b) CC.

c) Receipt of a RRC message HANDOVER FROM UTRAN FAILURE sent from the UE to the serving RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331.
The sum of all supported per cause measurements shall equal the total number of failed events. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form IRATHO.FailOutCS.*Cause*
where *Cause* identifies the failure cause.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

End of Change in Clause 4.12.2
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
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
Mar 2005	SA_27	SP-050040	058	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	5.9.0	5.10.0

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.403** **CR** **0065** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

*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 ☐

Title:	⌘	Correct inter-RAT handover measurement object class UtranRelation to GsmRelation
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
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:
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:	⌘	▪ Some inter-RAT handover RNC performance measurements mistakenly have object class UtranRelation as associated measurement object class ▪ Erroneous document reference ▪ Same IOC description appears twice
Summary of change:	⌘	▪ Change object class UtranRelation to object class GsmRelation for inter-RAT handover RNC performance measurements having object class UtranRelation as associated measurement object class ▪ Document reference corrected. ▪ Doubled IOC description removed
Consequences if not approved:	⌘	It would be impossible to implement the performance measurements in question.

Clauses affected:	⌘	4.7, 4.12.1, 4.12.2, 4.14.1.1

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

Other comments: ⌘

Change in Clause 4.7

4.7 RLC connection

4.7.1 Number of RLC blocks sent (per Mode)

a) This measurement provides the number of RLC blocks sent by the RNC including retransmitted blocks.

b) CC.

c) Transmission of RLC block, see TS 25.322 [24].

d) RLC.NbrBlocksSent.TM
RLC.NbrBlocksSent.UM
RLC.NbrBlocksSent.AM

e) A single integer value.

f) ~~RNCFunction~~RncFunction, per Mode (Transparent, Unacknowledged and Acknowledged).

g) Valid for packet switching and circuit switching.

h) UMTS.

4.7.2 Number of RLC blocks Received (per Mode)

a) This measurement provides the number of received RLC blocks by the RNC.

b) CC.

c) Receipt of a RLC blocks from a peer entity and before any error checking, see TS 25.322 [24].

d) RLC.NbrBlocksReceived.TM
RLC.NbrBlocksReceived.UM
RLC.NbrBlocksReceived.AM

e) A single integer value.

f) ~~RNCFunction~~RncFunction per Mode (Transparent, Unacknowledged and Acknowledged).

g) Valid for packet switching and circuit switching.

h) UMTS.

4.7.3 Discarded RLC blocks by RNC

a) This measurement provides the number of discarded RLC blocks in case of error detection in the RNC (uplink transmission, RNC).

b) CC.

c) Discard of a received block in the RNC, see TS 25.322 [24].

d) RLC.DiscardedBlocksByRNC.

e) A single integer value.

f) RncFunction.

g) Valid for packet switching.

h) UMTS.

4.7.4 Number of Retransmitted RLC blocks in Acknowledge Mode

a) This measurement provides the number of retransmitted RLC blocks in RLC acknowledge mode, detected in the UE and signalled to the RNC (downlink transmission, UE).

b) CC.

c) Receipt of a NACK or SACK block from the peer entity (UE) , see TS 25.322 [24].

d) RLC.RetransmittedBlocksToUE.

e) A single integer value.

f) ~~RNCFunction~~RncFunction.

g) Valid for packet switching.

h) UMTS

End of Change in Clause 4.7

Change in Clause 4.12.1

4.12.1 Relocation preparation for outgoing circuit switched inter-RAT handovers

[…]

4.12.1.1 Attempted relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of attempted relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.

b) CC.

c) Transmission of a RANAP message RELOCATION REQUIRED from the serving RNC to the CN, indicating an attempted relocation preparation of an outgoing inter-RAT handover (see TS 25.413 [5]).

d) A single integer value.

e) IRATHO.AttRelocPrepOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.1.2 Successful relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of successful relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.

b) CC.

c) Receipt of a RANAP message RELOCATION COMMAND sent from the CN to the serving RNC, indicating a successful relocation preparation of an inter-RAT handover (see TS 25.413 [5]).

d) A single integer value.

e) IRATHO.SuccRelocPrepOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.1.3 Failed relocation preparation for outgoing circuit switched inter-RAT handovers

a) This measurement provides number of failed relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell per cause.

b) CC.

c) Receipt of a RANAP message RELOCATION PREPARATION FAILURE sent from the CN to the serving RNC, indicating a failed relocation preparation for outgoing inter-RAT handovers. Failure causes are defined within TS 25.413 [5].
The sum of all supported per cause measurements shall equal the total number of failed events. In case only a subset of per cause measurements is supported, a sum subcounter will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form IRATHO.FailRelocPrepOutCS.*Cause*
where *Cause* identifies the failure cause.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

End of Change in Clause 4.12.1

Change in Clause 4.12.2

4.12.2 Outgoing circuit switched inter-RAT handovers

[…]

4.12.2.1 Attempted outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of attempted outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.

b) CC.

c) Transmission of a RRC-message HANDOVER FROM UTRAN COMMAND from serving RNC to the UE, indicating an attempted outgoing inter-RAT handover (see TS 25.331 [4]).

d) A single integer value.

e) IRATHO.AttOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.2.2 Successful outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of successful outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.

b) CC.

c) Receipt of a RANAP message IU RELEASE COMMAND sent from the CN to the serving RNC, indicating a successful inter-RAT handover (see TS 25.413 [5]).

d) A single integer value.

e) IRATHO.SuccOutCS.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

4.12.2.3 Failed outgoing circuit switched inter-RAT handovers

a) This measurement provides the number of failed outgoing circuit switched inter-RAT handovers per neighbour cell per cause from UEs point of view, where the UE returned to the original physical channel configuration.

b) CC.

c) Receipt of a RRC message HANDOVER FROM UTRAN FAILURE sent from the UE to the serving RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331 [4].
The sum of all supported per cause measurements shall equal the total number of failed events. In case only a subset of per cause measurements is supported, a sum subcounter will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the .*sum* suffix.

e) The measurement name has the form IRATHO.FailOutCS.*Cause*
where *Cause* identifies the failure cause.

f) ~~UtranRelation~~GsmRelation.

g) Valid for circuit switched traffic.

h) UMTS.

End of Change in Clause 4.12.2

Change in Clause 4.14.1.1

4.14.1.1 Considered Iu connection release procedures

Performance Measurement definitions in this subclause are based on TS 25.4~~2~~13 [5].

The following paragraphs are of interest for this purpose:

- Iu Release Request;
- Iu Release;
- IU RELEASE REQUEST;
- IU RELEASE COMMAND;
- IU RELEASE COMPLETE.

These paragraphs show in particular the following diagrams:

Figure: Iu Release Request procedure. Successful operation

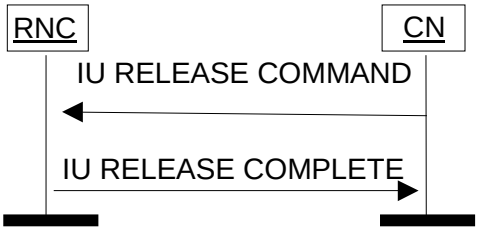

Figure: Iu Release procedure. Successful operation

End of Change in Clause 4.14.1.1
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2004	S_25	SP-040574	043	--	Add measurements about relocation	6.4.0	6.5.0
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

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CHANGE REQUEST

⌘ **32.403** **CR** **0066** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

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

Title:	⌘	Add missing UMTS/GSM SGSN measurements for IMEI checking
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	IMEI checking is a common UMTS/GSM procedure. SGSN IMEI checking measurements are defined in GSM TS 52.402, but no corresponding measurement is defined in the present UMTS/GSM TS.
Summary of change:	⌘	Add missing UMTS/GSM SGSN measurements for IMEI checking
Consequences if not approved:	⌘	Measurements for SGSN common UMTS/GSM IMEI checking -- defined for GSM SGSN in TS 52.402 -- would be missing from the present TS and implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected:	⌘	3.1, 5

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

⌘

Other comments: ⌘

Change in Clause 3.1

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

[…]

Measurement family

[…]

The list of families currently used in the present document is as follows:

[…]

- HHO (measurements related to Hard Handover).
- IMEI (measurements related to IMEI ~~management~~verification).

[…]

End of Change in Clause 3.1

Change in Clause 5

5 Measurements related to the SGSN

[…]

5.11 IMEI checking procedure

5.11.1 Number of check IMEI requests

a) This measurement provides the number of check IMEI requests sent to the EIR.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission of a "MAP_CHECK_IMEI" request to the EIR (TS 29.002 [18]).

d) A single integer value.

e) IMEI.CheckImeiReq.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.11.2 Number of check IMEI white list responses

a) This measurement provides the number of check IMEI white list responses received from the EIR.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Receipt of a "MAP_CHECK_IMEI" response from the EIR with parameter "equipment status" indicating a white listed equipment (TS 29.002 [18]).

d) A single integer value.

e) IMEI.CheckImeiRspWhite.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.11.3 Number of check IMEI grey list responses

a) This measurement provides the number of check IMEI grey list responses received from the EIR.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Receipt of a "MAP_CHECK_IMEI" response from the EIR with parameter "equipment status" indicating a grey listed equipment (TS 29.002 [18]).

d) A single integer value.

e) IMEI.CheckImeiRspGrey.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.11.4 Number of check IMEI black list responses

a) This measurement provides the number of check IMEI black list responses received from the EIR.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Receipt of a "MAP_CHECK_IMEI" response from the EIR with parameter "equipment status" indicating a black listed equipment (TS 29.002 [18]).

d) A single integer value.

e) IMEI.CheckImeiRspBlack.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

5.11.5 Number of check IMEI unknown equipment responses

a) This measurement provides the number of check IMEI unknown equipment responses received from the EIR.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Receipt of a "MAP_CHECK_IMEI" response from the EIR with parameter "user error" indicating an unknown equipment (TS 29.002 [18]).

d) A single integer value.

e) IMEI.CheckImeiRspUnknown.

f) SgsnFunction.

g) Valid for packet switching.

h) Combined.

End of Change in Clause 5
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040135	029	--	Add the measurements about Iu connection release	6.2.0	6.3.0
Jun 2004	S_24	SP-040266	032	--	Correction of "Inter-RAT handover" measurements	6.3.0	6.4.0
Jun 2004	S_24	SP-040267	035	--	Correction of "RAB assignment" measurements	6.3.0	6.4.0
Jun 2004	S_24	SP-040269	038	--	Correction of "hard handover" measurement definitions	6.3.0	6.4.0
Jun 2004	S_24	SP-040270	039	--	Addition of the measurements about RAB modification and RAB release by CN	6.3.0	6.4.0
Sep 2004	S_25	SP-040574	040	--	Restructure clauses 5 and 6 to follow the style of other clauses related to UTRAN measurements for extensibility	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	041	--	Add measurements about Mobility Management	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	042	--	Add mesurements about "PDP context activation procedures initiated by Network"	6.4.0	6.5.0
Sep 2004	S_25	SP-040574	043	--	Add measurements about relocation	6.4.0	6.5.0
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.403** **CR** **0067** ⌘ **rev** **-** ⌘ Current version: **6.7.0** ⌘

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

Title:	⌘	Add missing UMTS/GSM SGSN measurements for failed PS paging procedures
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	UMTS/GSM SGSN measurements for failed PS paging procedures are missing. Additionally measurements for failed GSM PS paging is defined in TS 52.402, but no corresponding measurement is defined in the present UMTS/GSM TS.
Summary of change:	⌘	Addition of UMTS/GSM SGSN measurements for failed PS paging
Consequences if not approved:	⌘	SGSN measurements for failed PS paging procedures would be missing and implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected:	⌘	5.1

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

Other comments: ⌘

Change in Clause 5.1

5.1 Mobility Management

[…]

5.1.15 GSM PS paging procedures

The three measurement types defined in clauses 5.1.15.n are subject to the "2 out of 3 approach".

5.1.15.1 Attempted GSM PS paging procedures

a) This measurement provides the ~~total~~ number of attempted PS paging procedures ~~that are~~ initiated at the SGSN~~,~~ over the Gb interface. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when a GSM PS paging procedure is started, i.e. at the transmission of the first BSSGP Paging Request (GSM 08.18) from the SGSN to the MS.

d) A single integer value.

e) MM.AttPsPagingProcGb.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) GSM.

5.1.15.2 Successful GSM PS paging procedures

a) This measurement provides the ~~total~~ number of successful PS paging procedures ~~that are~~ initiated at the SGSN~~,~~ over the Gb interface. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when an uplink_trigger (any LLC frame) is received by the SGSN from the MS (over the Gb interface) as response to a GSM PS paging ~~PS~~ procedure (TS 23.060) or during intersystem change UMTS -> GSM.

d) A single integer value.

e) MM.SuccPsPagingProcGb.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) GSM.

5.1.15.~~2~~3 Failed GSM PS paging procedures

a) This measurement provides the number of failed PS paging procedures initiated at the SGSN over the Gb interface, i.e. PS paging procedures that time out. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when a GSM PS paging procedure times out.

d) A single integer value.

e) MM.FailPsPagingProcGb.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) GSM.

5.1.16 UMTS PS paging procedures

The three measurement types defined in clauses 5.1.16.n are subject to the "2 out of 3 approach".

5.1.16.1 Attempted UMTS PS paging procedures

a) This measurement provides the ~~total~~ number of attempted PS paging procedures ~~that are~~ initiated at the SGSN~~,~~ over the Iu interface. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when a UMTS PS paging procedure is started i.e. at the transmission of the first "Paging" message (TS 25.413 [5]) from the SGSN to the MS.

d) A single integer value.

e) MM.AttPsPagingProcIu.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) UMTS.

5.1.16.2 Successful UMTS PS paging procedures

a) This measurement provides the ~~total~~ number of successful PS paging procedures ~~that are~~ initiated at the SGSN~~,~~ over the Iu interface. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented ~~When~~ when a paging_response is received by the SGSN from the MS (over the Iu interface) as response to a UMTS PS paging ~~PS~~ procedure (Receipt of "Service Request" message ~~(~~with Service Type = Paging Response~~)~~ to the MS (TS 24.008)) or during intersystem change GSM -> UMTS.

d) A single integer value.

e) MM.SuccPsPagingProcIu.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) UMTS.

5.1.16.~~2~~3 Failed UMTS PS paging procedures

a) This measurement provides the number of failed PS paging procedures initiated at the SGSN over the Iu interface, i.e. PS paging procedures that time out. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when a UMTS PS paging procedure times out.

d) A single integer value.

e) MM.FailPsPagingProcIu.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) UMTS.

5.1.17 PS paging procedures with unknown access type

5.1.17.1 Attempted PS paging procedures with unknown access type

a) This measurement provides the ~~total~~ number of attempted PS paging procedures ~~that are~~ initiated at the SGSN~~,~~ with access type unknown. In this case the paging will be done both over the Gb and the Iu interface. The initial paging procedures as well as the repeated paging procedures are counted.

b) CC.

c) Incremented when a paging procedure is started for which MM doesn't know the access type i.e. at the transmission of the first BSSGP Paging Request (GSM 08.18) and/or "Paging" message (TS 25.413 [5]) from the SGSN to the MS.

d) A single integer value.

e) MM.AttPsPagingProcGbIu.

f) RA, specified by a concatenation of the MCC, MNC, LAC and the RAC.

g) Valid for packet switching.

h) Combined.

[…]

End of Change in Clause 5.1
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

Tdoc ⌘S5-058447

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CHANGE REQUEST

⌘ **32.403** CR **0068** ⌘rev **-** ⌘ Current version: **6.7.0** ⌘

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

Title:	⌘	Add missing GSM SGSN measurements for LLC protocol and SNDCP protocol
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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:	⌘	SGSN measurements for LLC and SNDCP are defined in GSM TS 52.402, but no corresponding measurement is defined in the present UMTS/GSM TS.
Summary of change:	⌘	Add missing GSM SGSN measurements for LLC protocol and SNDCP protocol
Consequences if not approved:	⌘	GSM SGSN measurements for LLC protocol and SNDCP protocol -- defined in GSM TS 52.402 -- would be missing from the present UMTS/GSM TS and implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected:	⌘	2, 3.1, 5

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

Other comments: ⌘

Change in Clause 2

2 References

[…]

[26] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[27] 3GPP TS 44.064: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) layer specification".

[28] 3GPP TS 44.065: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

End of Change in Clause 2

Change in Clause 3.1

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

[…]

Measurement family

[…]

The list of families currently used in the present document is as follows:

[…]

- IU (measurements related to Iu connection).
- LLC (measurements related to Logical Link Control).

[…]

- SMS (measurements related to Short Message Service).
- SNDCP (measurements related to Sub-Network Dependent Convergence Protocol).

[…]

End of Change in Clause 3.1

Change in Clause 5

5 Measurements related to the SGSN

[…]

5.11 LLC frames

5.11.1 Number of LLC frames sent

a) This measurement provides the number of LLC frames sent by the SGSN.

b) CC.

c) Transmission of a LLC frame to a peer entity (TS 44.064 [27]).

d) A single integer value

e) LLC.NbrFramesSent.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.11.2 Number of LLC frames received

a) This measurement provides the number of LLC frames received by the SGSN.

b) CC.

c) Receipt of a LLC frame from a peer entity before any error checking (TS 44.064 [27]).

d) A single integer value

e) LLC.NbrFramesReceived.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.11.3 Number of erroneous LLC frames received

a) This measurement provides the number of erroneous LLC frames received by the SGSN.

b) CC.

c) Discard of an erroneous LLC frame received from a peer entity (TS 44.064 [27]).

d) A single integer value

e) LLC.NbrErroneousFrames.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.11.4 Number of LLC frames retransmitted

a) This measurement provides the number of LLC frames retransmitted in LLC acknowledge mode by the SGSN.

b) CC.

c) Receipt of a NACK or SACK frame from a peer entity (TS 44.064 [27]).

d) A single integer value

e) LLC.NbrFramesRetransmitted.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.12 SNDCP N-PDUs

5.12.1 Number of SNDCP N-PDUs sent

a) This measurement provides the number of SNDCP N-PDUs sent by the SGSN.

b) CC.

c) Transmission of a SN-DATA or SN-UNITDATA request (TS 44.065 [28]).

d) A single integer value

e) SNDCP.NbrNpdusSent.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.12.2 Number of SNDCP N-PDU octets sent

a) This measurement provides the number of octets in SNDCP N-PDUs sent by the SGSN.

b) CC.

c) Transmission of a SN-DATA or SN-UNITDATA request (TS 44.065 [28]).

d) A single integer value

e) SNDCP.NbrNpduOctetsSent.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.12.3 Number of SNDCP N-PDUs received

a) This measurement provides the number of SNDCP N-PDUs received by the SGSN.

b) CC.

c) Receipt of a SN-DATA or SN-UNITDATA indication (TS 44.065 [28]).

d) A single integer value

e) SNDCP.NbrNpdusReceived.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

5.12.4 Number of SNDCP N-PDU octets received

a) This measurement provides the number of octets in SNDCP N-PDUs received by the SGSN.

b) CC.

c) Receipt of a SN-DATA or SN-UNITDATA indication (TS 44.065 [28]).

d) A single integer value

e) SNDCP.NbrNpduOctetsReceived.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM.

End of Change in Clause 5
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.403** **CR** **0069** ⌘**rev** **-** ⌘ Current version: **6.7.0** ⌘

*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 missing SGSN/GGSN measurements for max number of subscribers
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortel.com)
Work item code:	⌘	OAM-PM
Date:	⌘	13/05/2005
Category:	⌘	**F**
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:
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: ⌘ Measurements for mean number of subscribers are defined for SGSN attached subscribers, SGSN home/visiting-national/visiting-foreign subscribers, SGSN CAMEL subscribers, and SGSN/GGSN subscribers with activated PDP context. In order to allow for proper network dimensioning of GSNs, measurements for max number of subscribers are required in addition to mean measurements. Additionally SGSN measurements for max number of attached subscribers and of subscribers with activated PDP context are defined in GSM TS 52.402, but no corresponding measurement is defined in the present UMTS/GSM TS.

Summary of change: ⌘
- Add missing measurements for max number of subscribers:
  - SGSN – Max number of attached subscribers
  - SGSN – Max number of home subscribers
  - SGSN – Max number of visiting national subscribers
  - SGSN – Max number of visiting foreign subscribers
  - SGSN – Max number of CAMEL subscribers
  - SGSN – Max number of subscribers with activated PDP context
  - GGSN – Max number of subscribers with activated PDP context
- Regrouping of related measurements under common sub-clauses

Consequences if not approved: ⌘ Measurements allowing for proper network dimensioning would be missing and implementation of combined UMTS&GSM SGSN would be jeopardized.

Clauses affected: ⌘ 5.1, 5.6, 6.1

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘

Change in Clause 5.1

5.1 Mobility Management

[…]

5.1.22 Attached subscribers

5.1.22.1 Number of attached subscribers

a) This measurement provides the number of attached subscribers within this SGSN area.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) Incremented when a subscriber enters the GMM_REGISTERED state in the SGSN Location Register, and decremented when a subscriber leaves the GMM_REGISTERED state.

NOTE: The GMM state machine in the SGSN Location Register is described in TS 24.008 [15], clause 4.1.3.3 (Figure 4.1c/3GPP TS 24.008: GMM main states on the network side).

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

e) MM.NbrActAttachedSub:

- MM.NbrActAttachedSub Combined (don't care);
- MM.NbrActAttachedSub.G GSM;
- MM.NbrActAttachedSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.~~26~~.22.1 Mean number of attached subscribers

a) This measurement provides the mean number of attached subscribers within this SGSN area.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of attached subscribers and then taking the arithmetic mean.

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

e) MM.MeanNbrAttachedSub:

- MM.MeanNbrAttachedSub Combined (don't care);
- MM.MeanNbrAttachedSub.G GSM;
- MM.MeanNbrAttachedSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.22.3 Max number of attached subscribers

a) This measurement provides the maximum number of attached subscribers within this SGSN area.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of attached subscribers and then taking the maximum.

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

e) MM.MaxNbrAttachedSub:

- MM.MaxNbrAttachedSub Combined (don't care);
- MM.MaxNbrAttachedSub.G GSM;
- MM.MaxNbrAttachedSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.23 Home subscribers

5.1.23.1 Number of home subscribers

a) This measurement provides the number of GPRS home subscribers located in the SGSN location register. The GPRS MM state of this subscriber is GMM_REGISTERED or GMM_DEREGISTERED. Only GPRS subscribers that are homed in the same GPRS network are considered.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) Incremented by one when GPRS home subscriber is successfully registered in the SGSN location registered and decremented by one when GPRS home subscriber is successfully deregistered out of the SGSN location register (TS 24.008).

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

e) MM.NbrHomeSub:

- MM.NbrHomeSub Combined (don't care);
- MM.NbrHomeSub.G GSM;
- MM.NbrHomeSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.~~27~~.23.2 Mean number of home subscribers

a) This measurement provides the mean number of GPRS home subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval, the number of GPRS home subscribers located in the SGSN location register and then taking the arithmetic mean.

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

e) MM.MeanNbrHomeSub:

- MM.MeanNbrHomeSub Combined (don't care);
- MM.MeanNbrHomeSub.G GSM;
- MM.MeanNbrHomeSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.23.3 Max number of home subscribers

a) This measurement provides the maximum number of GPRS home subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of GPRS home subscribers located in the SGSN location register and then taking the maximum.

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

e) MM.MaxNbrHomeSub:

- MM.MaxNbrHomeSub Combined (don't care);
- MM.MaxNbrHomeSub.G GSM;
- MM.MaxNbrHomeSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.24 Visiting national subscribers

5.1.24.1 Number of visiting national subscribers

a) This measurement provides the number of visiting national GPRS subscribers located in the SGSN location register. The GPRS MM state of this subscriber is GMM_REGISTERED or GMM_DEREGISTERED. Only GPRS subscribers that are homed in a partner GPRS network of the same country are considered.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) This measurement provides the number of visiting national GPRS subscribers located in the SGSN location register. The GPRS MM state of this subscriber is GMM_REGISTERED or GMM_DEREGISTERED. Only GPRS subscribers that are homed in a partner GPRS network of the same country are considered.

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

e) MM.NbrVisitingNatSub:

- MM.NbrVisitingNatSub Combined (don't care);
- MM.NbrVisitingNatSub.G GSM;
- MM.NbrVisitingNatSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.~~28~~24.2 Mean number of visiting national subscribers

a) This measurement provides the mean number of visiting national GPRS subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval~~,~~ the number of visiting national GPRS subscribers located in the SGSN location register and then taking the arithmetic mean.

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

e) MM.MeanNbrVisitingNatSub:

- MM.MeanNbrVisitingNatSub Combined (don't care);
- MM.MeanNbrVisitingNatSub.G GSM;
- MM.MeanNbrVisitingNatSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.24.3 Max number of visiting national subscribers

a) This measurement provides the maximum number of visiting national GPRS subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of visiting national GPRS subscribers located in the SGSN location register and then taking the maximum.

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

e) MM.MaxNbrVisitingNatSub:

- MM.MaxNbrVisitingNatSub Combined (don't care);
- MM.MaxNbrVisitingNatSub.G GSM;
- MM.MaxNbrVisitingNatSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.25 Visiting foreign subscribers

5.1.25.1 Number of visiting foreign subscribers

a) This measurement provides the number of visiting foreign GPRS located in the SGSN location register. The GPRS MM state of this subscriber is GMM_REGISTERED or MM_DEREGISTERED. Only GPRS subscribers that are homed in a GPRS network of a foreign country are considered.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) Incremented by one when GPRS subscriber is successfully registered in the SGSN location registered and decremented by one when GPRS subscriber is successfully deregistered out of the SGSN location register (TS 24.008).

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

e) MM.NbrVisitingForeign:

- MM.NbrVisitingForeign Combined (don't care);
- MM.NbrVisitingForeign.G GSM;
- MM.NbrVisitingForeign.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.~~29~~.25.2 Mean number of visiting foreign subscribers

a) This measurement provides the mean number of visiting foreign GPRS subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval~~,~~ the number of visiting foreign GPRS subscribers located in the SGSN location register and then taking the arithmetic mean.

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

e) MM.MeanNbrVisitingForeign:

- MM.MeanNbrVisitingForeign Combined (don't care);
- MM.MeanNbrVisitingForeign.G GSM;
- MM.MeanNbrVisitingForeign.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.25.3 Max number of visiting foreign subscribers

a) This measurement provides the maximum number of visiting foreign GPRS subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of visiting foreign GPRS subscribers located in the SGSN location register and then taking the maximum.

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

e) MM.MaxNbrVisitingForeign:

- MM.MaxNbrVisitingForeign Combined (don't care);
- MM.MaxNbrVisitingForeign.G GSM;
- MM.MaxNbrVisitingForeign.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

~~5.1.26 Mean number of attached subscribers~~

~~This measurement provides the arithmetic mean number of the number of attached subscribers within this SGSN area.~~
~~The three measurement types defined in e) are subject to the "2 out of 3 approach".~~

~~SI.~~

~~This measurement is obtained by sampling at a pre-defined interval, the number of subscribers which are attached and then taking the arithmetic mean.~~

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

~~MM.MeanNbrAttachedSub:~~

- ~~MM.MeanNbrAttachedSub Combined (don't care);~~
- ~~MM.MeanNbrAttachedSub.G GSM;~~
- ~~MM.MeanNbrAttachedSub.U UMTS.~~

~~SgsnFunction.~~

~~Valid for packet switching.~~

~~GSM/UMTS.~~

5.1.26 Void

~~5.1.27 Mean Number of home subscribers~~

~~This measurement provides the arithmetic mean number of GPRS home subscribers located in the SGSN location register.~~
~~The three measurement types defined in e) are subject to the "2 out of 3 approach".~~

~~SI.~~

~~This measurement is obtained by sampling at a pre-defined interval, the number of GPRS home subscribers located in the SGSN location register and then taking the arithmetic mean.~~

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

~~MM.MeanNbrHomeSub:~~

- ~~MM.MeanNbrHomeSub Combined (don't care);~~

- MM.MeanNbrHomeSub.G GSM;
- MM.MeanNbrHomeSub.U UMTS.

SgsnFunction.

Valid for packet switching.

GSM/UMTS.

5.1.27 Void

5.1.28 Mean Number of visiting national subscribers

This measurement provides the arithmetic mean number of visiting national GPRS subscribers located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

SI.

This measurement is obtained by sampling at a pre-defined interval, the number of visiting national GPRS subscribers located in the SGSN location register and then taking the arithmetic mean.

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

MM.MeanNbrVisitingNatSub:

- MM.MeanNbrVisitingNatSub Combined (don't care);
- MM.MeanNbrVisitingNatSub.G GSM;
- MM.MeanNbrVisitingNatSub.U UMTS.

SgsnFunction.

Valid for packet switching.

GSM/UMTS.

5.1.28 Void

5.1.29 Mean Number of visiting foreign subscribers

This measurement provides the arithmetic mean number of visiting foreign GPRS located in the SGSN location register.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

SI.

This measurement is obtained by sampling at a pre-defined interval, the number of visiting foreign GPRS subscribers located in the SGSN location register and then taking the arithmetic mean.

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

MM.MeanNbrVisitingForeign:

- MM.MeanNbrVisitingForeign Combined (don't care);
- MM.MeanNbrVisitingForeign.G GSM;
- MM.MeanNbrVisitingForeign.U UMTS.

SgsnFunction.

~~Valid for packet switching.~~

~~GSM/UMTS.~~

5.1.29 Void

5.1.30 CAMEL subscribers

5.1.30.1 Number of CAMEL subscribers

a) This measurement provides the number of attached subscriber within this SGSN area with CAMEL service. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) ~~i.~~ Incremented when a CAMEL subscriber enters the GMM_REGISTERED state in the SGSN Location Register, and decremented when a subscriber leaves the GMM_REGISTERED state.
Note: the GMM state machine in the SGSN Location Register is described in 3GPP TS 24.008 [15], subclause 4.1.3.3 (Figure 4.1c/3GPP TS 24.008: GMM main states on the network side).

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

e) MM.NbrCamelSub:

- MM.NbrCamelSub Combined (don't care);
- MM.NbrCamelSub.G GSM;
- MM.NbrCamelSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.~~31~~.30.2 Mean Number of CAMEL subscribers

a) This measurement provides the ~~arithmetic~~ mean number ~~value~~ of attached subscribers with CAMEL service. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval~~,~~ the number of attached subscribers ~~which are attached using~~ with CAMEL service and then taking the arithmetic mean.

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

e) MM.MeanNbrCamelSub:

- MM.MeanNbrCamelSub Combined (don't care);
- MM.MeanNbrCamelSub.G GSM;
- MM.MeanNbrCamelSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.30.3 Max number of CAMEL subscribers

a) This measurement provides the maximum number of attached subscribers with CAMEL service.
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of attached subscribers with CAMEL service and then taking the maximum.

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

e) MM.MaxNbrCamelSub:

- MM.MaxNbrCamelSub Combined (don't care);
- MM.MaxNbrCamelSub.G GSM;
- MM.MaxNbrCamelSub.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.1.31 Void

[…]

End of Change in Clause 5.1

Change in Clause 5.6

5.6 Session Management

[…]

5.6.6 Subscribers with activated PDP context

5.6.6.1 Number of ~~mobile~~ subscribers with activated PDP context ~~(i.e. subscribers that can send/receive GPRS packet data)~~

a) This measurement provides the number of ~~mobile~~ subscribers ~~with~~ having an activated PDP context (i.e. subscribers that can send/receive GPRS packet data).
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) GAUGE.

c) Addition of first PDP context or removal of last PDP context in SGSN location register for a particular subscriber.

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

e) SM.NbrActivePdpPerSgsn:

- SM.NbrActivePdpPerSgsn Combined (don't care);
- SM.NbrActivePdpPerSgsn.G GSM;
- SM.NbrActivePdpPerSgsn.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.6.~~7~~.6.2 Mean number of subscribers ~~that have an~~ with activated PDP context ~~(i.e. subscribers that can send/receive GPRS packet data)~~

a) This measurement provides the ~~arithmetic~~ mean number ~~value~~ of subscribers ~~that have~~ having an activated PDP context (i.e. subscribers that can send/receive GPRS packet data).
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval~~,~~ the number of subscribers ~~with~~ having an activated PDP context in SGSN~~,~~ and then taking the arithmetic mean.

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

e) SM.MeanActivePdpPerSgsn:

- SM.MeanActivePdpPerSgsn Combined (don't care);
- SM.MeanActivePdpPerSgsn.G GSM;
- SM.MeanActivePdpPerSgsn.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.6.6.3 Max number of subscribers with activated PDP context

a) This measurement provides the maximum number of subscribers having an activated PDP context (i.e. subscribers that can send/receive GPRS packet data).
The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers having an activated PDP context in SGSN and then taking the maximum.

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

e) SM.MaxActivePdpPerSgsn:

- SM.MaxActivePdpPerSgsn Combined (don't care);
- SM.MaxActivePdpPerSgsn.G GSM;
- SM.MaxActivePdpPerSgsn.U UMTS.

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

5.6.7 Void

[…]

End of Change in Clause 5.6

Change in Clause 6.1

6.1 Session Management

[…]

6.1.3 ~~Number of subscribers~~Subscribers with activated PDP context

[…

6.1.3.1 Number of subscribers with ~~an~~ activated PDP context

a) This measurement provides the number of ~~simultaneous~~ subscribers ~~with~~ having an activated PDP context.

b) GAUGE.

c) The measurement is incremented on transmission by the GGSN of a CREATE PDP CONTEXT RESPONSE message with cause "Request Accepted" for an MSISDN that had no PDP context already activated.
The measurement is decremented on transmission by the GGSN of a DELETE PDP CONTEXT RESPONSE message with cause "Request Accepted" related to the last PDP context for an MSISDN.
See TS 29.060 and TS 23.060.

d) A single ~~Integer~~integer value.

e) SM.NbrActSubs.

f) GgsnFunction.

g) Valid for packet switched traffic.

h) ~~COMB~~Combined.

i) This measurement is mainly dedicated to Operator Business and Vendor Performance Modelling communities.

6.1.3.2 Mean number of subscribers with ~~an~~ activated PDP context

a) This measurement provides the mean number of ~~simultaneous~~ subscribers ~~with~~ having an activated PDP context.

b) SI.

c) This measurement is obtained by sampling at a ~~regular~~ pre-defined interval the number of subscribers ~~that have~~ having an activated PDP context in the GGSN and then taking the arithmetic mean.

d) A single ~~Integer~~integer value.

e) SM.MeanActSubs.

f) GgsnFunction.

g) Valid for packet switched traffic.

h) ~~COMB~~Combined.

i) This measurement is mainly dedicated to Operator Business and Vendor Performance Modelling communities.

6.1.3.3 Max number of subscribers with activated PDP context

a) This measurement provides the maximum number of subscribers having an activated PDP context.

b) SI.

c) This measurement is obtained by sampling at a pre-defined interval the number of subscribers having an activated PDP context in the GGSN and then taking the maximum.

d) A single integer value.

e) SM.MaxActSubs.

f) GgsnFunction.

g) Valid for packet switched traffic.

h) Combined.

i) This measurement is mainly dedicated to Operator Business and Vendor Performance Modelling communities.

[…]

End of Change in Clause 6.1
End of Document

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2004	S_25	SP-040574	043	--	Add measurements about relocation	6.4.0	6.5.0
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
Mar 2005	SA_27	SP-050040	059	--	Correction of measurements on Number of GTP data packets sent and received on the Gn interface	6.6.0	6.7.0
Mar 2005	SA_27	SP-050040	060	--	Add measurements on Number of GTP data packets sent and received on the Gn interface, from SGSN to SGSN	6.6.0	6.7.0