

## Work Item Description

### Title

Network Domain Security; MAP application layer security (NDS/MAPsec)  
(formerly known as MAP application layer protection)

*This WID replaces WID "MAP application layer protection" (SP-000299).*

*Togheter with WID "Network Domain Security; IP network layer security" (S3-010276) it also replaces WID "Key Management for core network security" (SP-000301).*

### 1 3GPP Work Area

	<u>Radio Access</u>
<u>X</u>	<u>Core Network</u>
	<u>Services</u>

### 2 Linked work items

- Related work is in N4 to specify the solutions developed by S3.

### 3 Justification

An identified security weakness in 2G systems is the absence of security in SS7 networks. This was formerly perceived not to be a problem, since this network was the province of a small number of large institutions. This is no longer the case, and so there is now a need for security precautions.

This work item describes ongoing work in S3, which had been originally tasked by SA to S3 under the name of "MAP Security", an early version of which had originally been included in R'99.

### 4 Objective

The MAP protocol is used for signaling in and between core networks. It is the objective of this work item to protect all sensitive data transmitted via MAP, e.g. authentication data and user related data. The security characteristics that have been identified as being in need of protection are confidentiality, integrity, and authentication. These will be ensured by standard procedures, based on cryptographic techniques.

**5 Service Aspects**

None identified.

**6 MMI-Aspects**

None identified.

**7 Charging Aspects**

None identified.

**8 Security Aspects**

The work item is a security item.

**9 Impacts**

<b><u>Affects:</u></b>	<b><u>USIM</u></b>	<b><u>ME</u></b>	<b><u>AN</u></b>	<b><u>CN</u></b>	<b><u>Others</u></b>
<b><u>Yes</u></b>				<u>X</u>	
<b><u>No</u></b>	<u>X</u>	<u>X</u>	<u>X</u>		<u>X</u>
<b><u>Don't know</u></b>					

**10 Expected Output and Time scale (to be updated at each plenary)**

<b><u>Meeting</u></b>	<b><u>Date</u></b>	<b><u>Activity</u></b>
<u>SA3#18</u>	<u>May, 2001</u>	<u>Completion of TS 33.200 Rel4. Forward to SA mailinglist "for information".</u>
<u>SA#13</u>	<u>June, 2001</u>	<u>Present TS Rel4 to SA plenary for approval.</u>
<u>SA3#19</u>	<u>July, 2001</u>	<u>Prepare CRs to include local key distribution for 33.200 Rel5.</u>
<u>SA#14</u>	<u>September, 2001</u>	<u>Present CRs to include local key dsitribution (thereby creating a Rel5 version of the TS.</u>
<u>SA3#20</u>	<u>October, 2001</u>	<u>Prepare CRs to 33.200 Rel5 to include inter-operator SA negotiations</u>
<u>SA#15</u>	<u>December, 2001</u>	<u>Present CRs to Rel5 of TS to include inter-operator SA negotiations</u>

<b>New specifications</b>						
<u>Spec No.</u>	<u>Title</u>	<u>Prime rsp. WG</u>	<u>2ndary rsp. WG(s)</u>	<u>Presented for information at plenary#</u>	<u>Approved at plenary#</u>	<u>Comments</u>
<u>33200</u>	<u>NDS/MAPsec</u>	<u>SA3</u>		<u>SA#13</u>		
<b>Affected existing specifications</b>						
<u>Spec No.</u>	<u>CR</u>	<u>Subject</u>		<u>Approved at plenary#</u>		<u>Comments</u>

**11 Work item raporteurs**

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**12 Work item leadership**

TSG SA WG3

**13 Supporting Companies**

T-Mobil, Vodafone, Ericsson, Telenor...

**14 Classification of the WI (if known)**

<u>X</u>	<u>Feature (go to 14a)</u>
<u>X</u>	<u>Building Block (go to 14b)</u>
	<u>Work Task (go to 14c)</u>

14a This WI is a Feature. This Feature has no active Building Blocks.

14b The WI is a Building Block:

Work-Item-Description

Title

Network Domain Security  
(formerly called the Core Network Security)

1

X	Radio Access
X	Core Network
	Services

2

Related work is in RAN3, N2 and N4 to specify the solutions developed by S3.

3

An identified security weakness in 2G systems is the absence of security in SS7 networks. This was formerly perceived not to be a problem, since this network was the province of a small number of large institutions. This is no longer the case, and so there is now a need for security precautions. This work item describes ongoing work in S3, which had been originally tasked by SA to S3 under the name of "MAP Security", an early version of which had originally been included in R'99.

4

The general objective is to develop security solutions for all core network protocols which need protection. This includes protocols used between CSCF and HSS as well as MAP and GTP. The security characteristics that have been identified as being in need of protection are confidentiality, integrity, and authentication. These will be ensured by standard procedures, based on cryptographic techniques.

This work might also be extended to protection of the user plane.

Within this WI MAP Application Security has been separated out into its own work item as a sort of minimal solution, for completion for R'00; MAP-over-IP is foreseen as belonging to this WI proper and not to the minimal solution. In addition, the protection of GTP has a high time priority; completion of this aspects of the feature is expected well in advance of the others.

5

None identified.

6

None identified.

7

None identified.

8

The work item is a security item.

9

Impacts

Affects:	USIM	ME	AN	CN	Others
Yes			X	X	
No	X	X			X
Don't know					

10

Expected Output and Time scale (to be updated at each plenary)

Meeting	Date	Activity
CN/S3 joint meeting	June 13-14, 2000	Presentation by S2 of R'00 architecture

CN	July-August, 2000	Specification of the protocol stacks of the core network interfaces
S3	June-July, 2000	Requirements capture GTP signalling security Feasibility study of GTP signalling security, including definition of work tasks and completion of plan
S3#14	August 1-4, 2000	Requirements capture (MAP-over-IP, etc.) Feature specification of GTP signalling security
S3#15	September 12-15, 2000	Specification of other security features (MAP-over-IP, etc.)
S3#16	November 27-30, 2000	Feasibility study, including definition of work tasks and completion of plan. Requirements capture for security over Iu and Iur interfaces.
S3#17	February, 2001	S3 approval of final versions
SA#12, CN#12	June, 2001	Approval of final versions

New specifications						
Spec.No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
Affected existing specifications						
Spec.No.	CR	Subject		Approved at plenary#		Comments
33.102						Re-inclusion and extension of core network signalling security in 33.102 (R'00 for MAP and GTP, R'01 for the rest)
33.103						Re-inclusion and extension of core network signalling security in 33.102 (R'00 for MAP and GTP, R'01 for the rest)
33.105						Inclusion of core network signalling security algorithm requirements in 33.102 (R'00 for MAP and GTP, R'01 for the rest)

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T-Mobile, Vodafone, Ericsson, Telenor, Nokia, Siemens, Motorola

14

X	Feature (go to 14a)
X	Building Block (go to 14b)
	Work Task (go to 14c)

14a The WI is a Feature: List of building blocks under this feature

Network Domain Security: protection of MAP Application Layer

Network Domain Security: key exchange and distribution

Other possibilities:

GTP signalling security

CAMEL signalling security

Building blocks from N2, N4, S2, S5

14b The WI is a Building Block: parent feature „provision of IP based multimedia services“