

3GPP TSG SA WG3 Security — S3#18

S3-010286

21-24 May, 2001

Phoenix, Arizona, USA

Work Item Description

Title

Network Domain Security; IP network layer security (NDS/IP)
(formerly known as Network Domain Security)
(formerly called the Core Network Security)

This WID replaces WID "Network Domain Security" (SP-000420).

Togheter with WID "Network Domain Security; MAP application layer security" (S3-010275) it also replaces WID "Key Management for core network security" (SP-000301).

1 3GPP Work Area

X	Radio Access
X	Core Network
	Services

2 Linked work items

- Related work is in RAN3, N12 and 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.

There is a clear need to protect the IP based core network protocols for the control plane to protect the system against attacks.

4 Objective

The general objective is to develop security solutions for all IP based core network protocols which need protection. This notably includes GTP and control protocols used between CSCF and HSS as well as MAP and GTP in IMS.

-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.

The scope of this WI includes key management and distribution mechanisms for NDS/IP.

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

It is foreseen that there may be a need for a network element authentication framework for later releases.

~~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 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

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

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

Meeting	Date	Activity
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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 <u>Autumn</u> , 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.) <u>Feature specification of GTP signalling security</u> <u>Start feature specification of GTP signalling security</u>
S3#15	September 12-15 , 2000	<u>Start feature specification of GTP signalling security</u> 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 lu and lur interfaces. <u>Establishment of principles for NDS/IP architecture.</u>
S3#17	February, 2001	S3 approval of final versions <u>Maturing the NDS/IP architecture</u>
S3#18 SA #12, CN#12	June, 2001 <u>May, 2001</u>	<u>Maturing the NDS/IP architecture</u> Approval of final versions
<u>S3#19</u>	<u>July, 2001</u>	<u>Description of security gateways and profiling of IKE</u>
<u>S3#20</u>	<u>October, 2001</u>	<u>Completion of Finalising NDS/IP TS Rel5</u>
<u>SA#14</u>	Dec? <u>November, 2001</u>	<u>NDS/IP TS forwarded to SA plenary "for information"</u>
<u>SA#15</u>	? <u>March, 2002</u>	<u>NDS/IP TS Rel5 approved by SA plenary</u>
<u>SA#16</u>	<u>June, 2002</u>	<u>Stage 3 approval</u>

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
33.xxx	NDS/IP	SA3				
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)	

11 Work item rapporteurs

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12 Work item leadership

TSG SA WG3

13 Supporting Companies

T-Mobil, Vodafone, Ericsson, Telenor, Nokia, Siemens, Motorola, [AT&T Wireless](#),
[Lucent](#)

14 Classification of the WI (if known)

X	Feature (go to 14a)
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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“**