

NetHawk GSM Analyser

> The most portable and effective tool for verification of GSM, GPRS and EDGE products and networks.



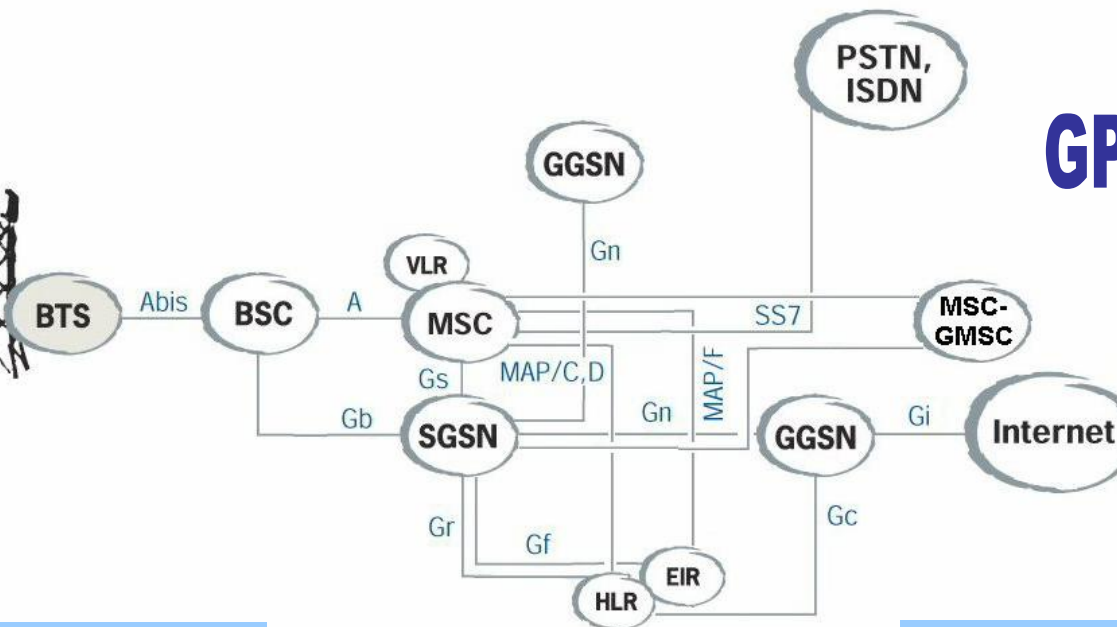


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Challenges in today's market place

GSM



GPRS

EDGE

Market challenges

- Maturing markets increase competition.
- Differentiation from competitors with QoS and attractive services.
- Cost-effective operation.



Investments to GSM/GPRS/EDGE/UMTS networks:

- To increase capacity for voice services.
- To enable multimedia services.



Technology challenges

- Unmature technology/products.
- Interoperability issues.
- Personnel know-how.

Solving technology challenges

- > NetHawk GSM Analyser is the most
 - Portable,
 - Cost-effective,
 - Easy-to-use and flexible solution for verifying and troubleshooting the GSM, GPRS and EDGE networks.



Utilising NetHawk GSM Analyser in R&D and production

Network deployment phases	R&D	Verification	Production
Tasks	<ul style="list-style-type: none"> • Module testing • Unit development and testing • System development and testing • SW release testing 	<ul style="list-style-type: none"> • Integration testing • IOT • End-to-end testing • Network level testing • Load testing 	<ul style="list-style-type: none"> • BTS testing • BSC testing

Utilising NetHawk GSM Analyser in network deployment and operation

Network deployment phases	Verifications	Rollout	Operation
Tasks	<ul style="list-style-type: none"> • Troubleshooting • HW release testing • SW release testing • Interworking tests • IOT 	<ul style="list-style-type: none"> • Troubleshooting • Installation & commissioning • Stand-alone site testing • NW performance acceptance 	<ul style="list-style-type: none"> • Troubleshooting • NW optimising • Performance monitoring • Quality assurance • VAS

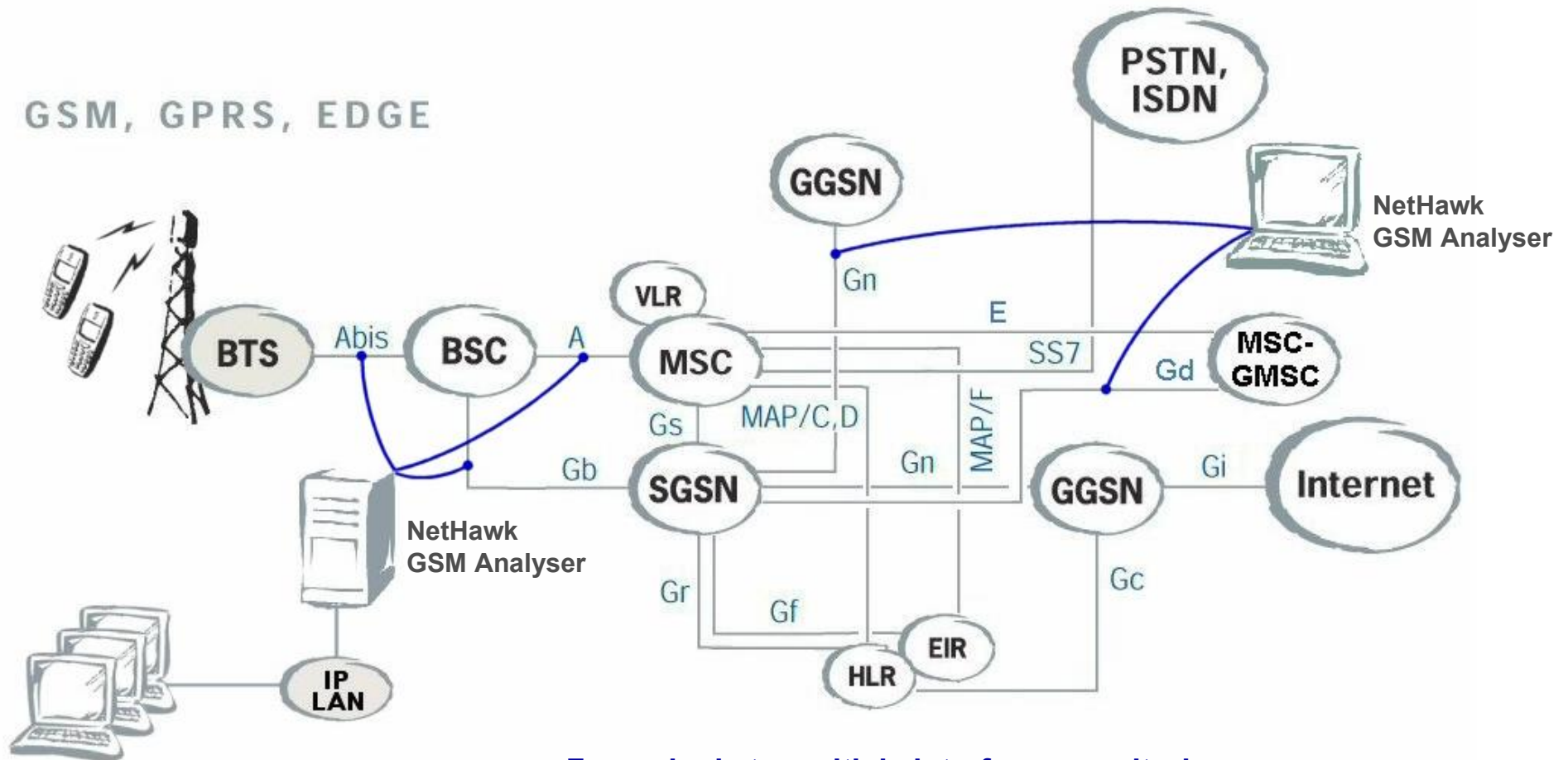
Solution benefits

- > Winning product concept:
 - NetHawk GSM Analyser SW,
 - NetHawk Interface Adapters.
- > Flexibility - use in any standard Windows PC:
 - Laptop for the most portable solution!
 - Capacity for multi-interface monitoring with desktop / industrial PC.



- > Free use of NetHawk GSM Analyser SW offline!
- > Remote file reading supported in real-time.
- > Updates and new functionalities easily with NetHawk Care – new SW releases can be downloaded at www.nethawk.fi
- > Upgradeable solution:
 - From GSM to GPRS and EDGE.
 - From protocol analyser to simulator – same HW platform used.

Real-time monitoring of all interfaces



NetHawk GSM Analyser(s)
(in offline mode)

**From single to multiple interfaces monitoring.
Directly or from a remote location.**

Full GSM, GPRS and EDGE support

- > Wide and up-to-date support for all standard and manufacturer-specific protocols:
 - 3GPP Release 4 (September, 02).
 - Full GSM, GPRS and EDGE support for Nokia, Ericsson, Nortel and Siemens.
 - Support also for Lucent GSM/GPRS and Motorola GSM protocols.
 - Gb deciphering supported.
 - Also GSM-R protocols.

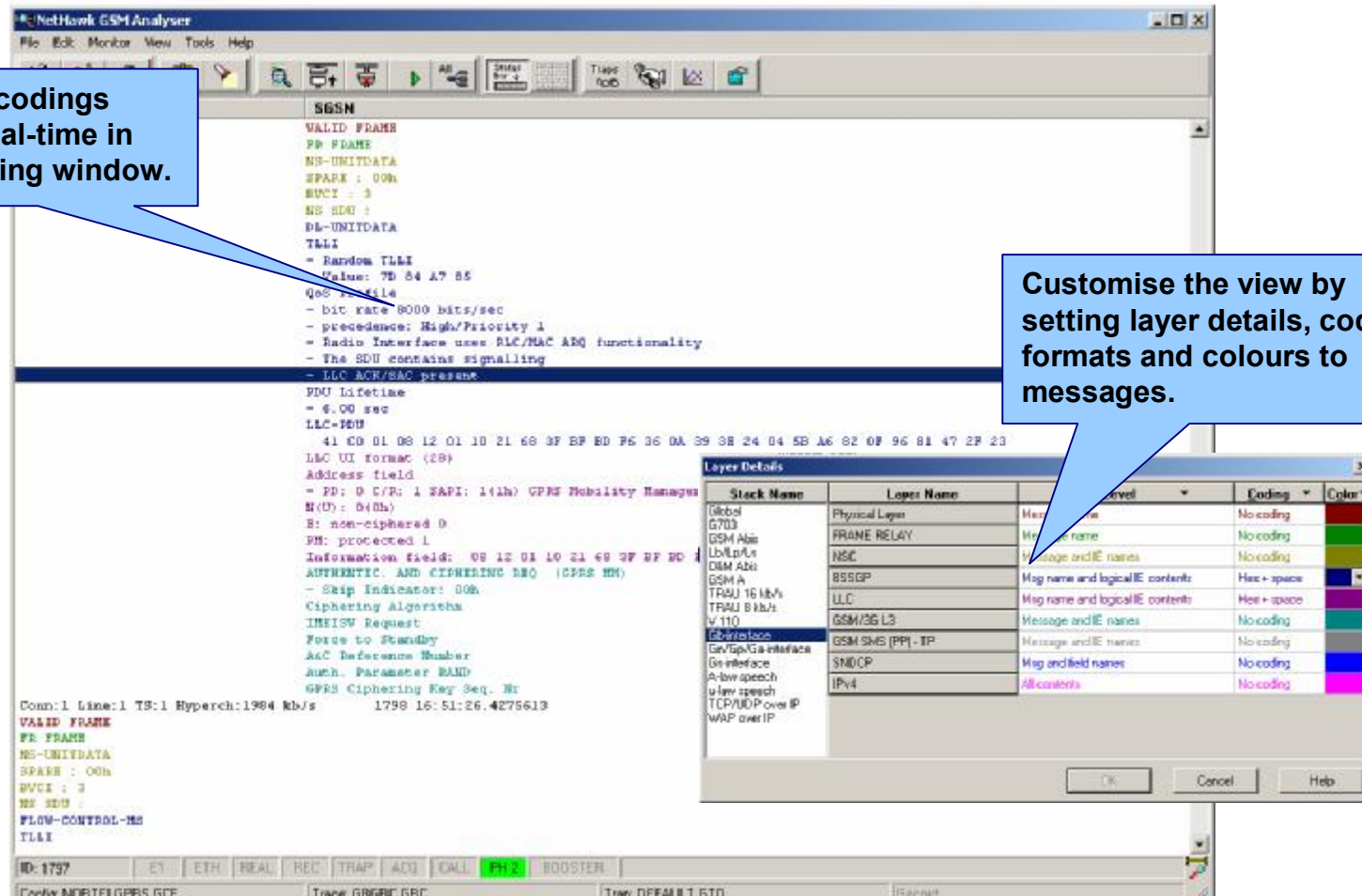
Multi-interface monitoring

- > Powerful and accurate monitoring of multiple interfaces simultaneously:
 - Up to eight bi-directional E1/T1 links, two with the portable solution.
 - *Possibility to install several NetHawk Analysers e.g. to a portable multi-application PC.*
 - 128 connections simultaneously.
 - Ready to use connection configuration by scanning the line.

Detailed decodings in real-time

Detailed decodings shown in real-time in the monitoring window.

Customise the view by setting layer details, coding formats and colours to messages.

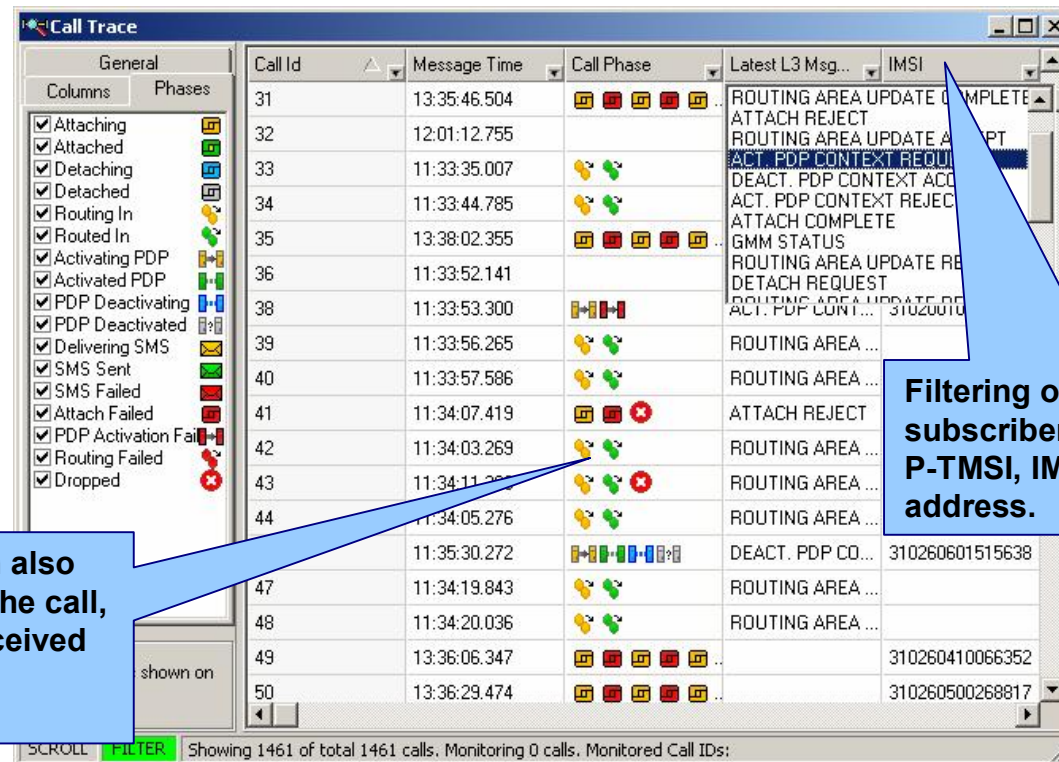


The screenshot displays the NetHawk GSM Analyser interface. The main window shows a real-time decoding of an SGSN message. The decoding is color-coded and includes detailed information such as 'VALID FRAME', 'PD FRAME', 'NS-UNITDATA', 'SPARE : 00h', 'BUCI : 3', 'NS SDU :', 'DL-UNITDATA', 'TLLI', and 'Random TLLI'. A 'Layer Details' dialog box is open in the foreground, showing a table of protocol layers with their names, descriptions, coding formats, and colors.

Stack Name	Layer Name	Level	Coding	Color
Global	Physical Layer		No coding	
G703	FRAME RELAY	Message name	No coding	
GSM Abis	NBSC	Message and IE names	No coding	
Uu/Um/Us	BSSGP	Msg name and logical IE contents	Hex + space	
DMM Abis	LLC	Msg name and logical IE contents	Hex + space	
GSM A	GSM/3G L3	Message and IE names	No coding	
TRAU 16 Mb/s	GSM SMS (PP1 - IP)	Message and IE names	No coding	
TRAU 8 kb/s	SNDCP	Msg and field names	No coding	
V.110	IPv4	All contents	No coding	
Uu/Um/Us	Gn/Gp/Gs interface			
Gn interface				
Au interface				
u-law speech				
u-law speech				
TCP/UDP over IP				
WAP over IP				

Efficient real-time troubleshooting

- > Call Trace to solve subscriber related problems efficiently.

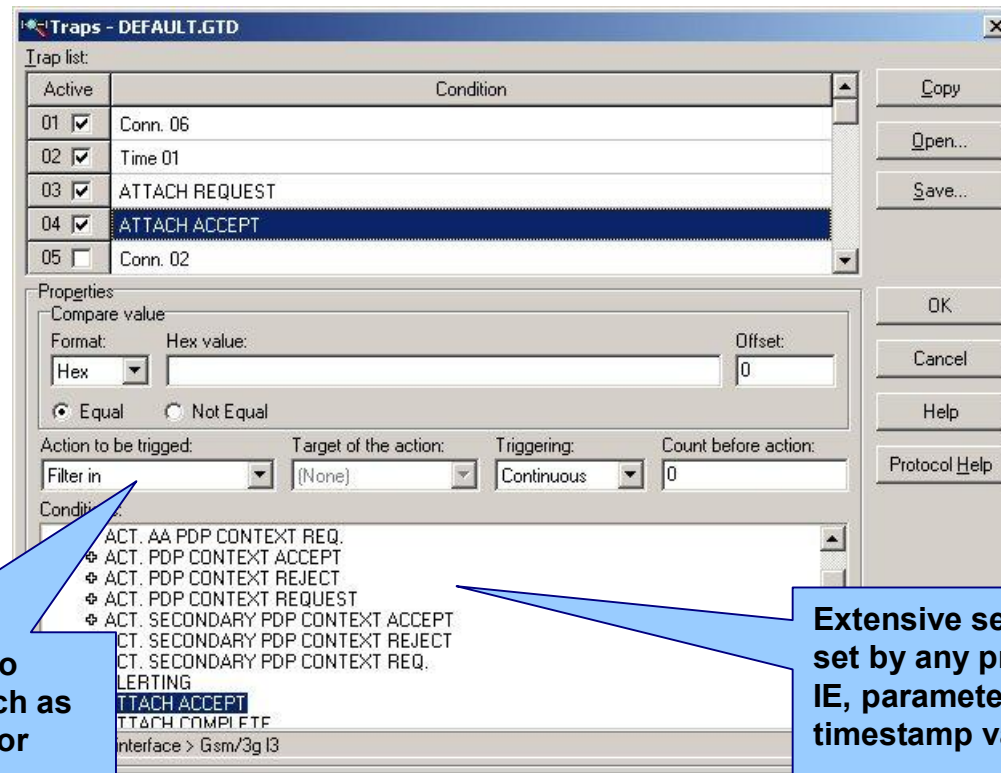


Filtering of GPRS calls can also be based on the status of the call, routing area, requested/received QoS or cause values in all protocol layers.

Filtering of individual subscribers according to IMSI, P-TMSI, IMEI or a MS's IP address.

Effective real-time filtering



> Real-time filtering of messages with traps.



Traps can also be used to trigger other actions, such as start/stop recording, or for statistical counters.

Extensive set of traps – can be set by any protocol message, IE, parameter, connection or timestamp value.

Hardware – NetHawk Adapters

	For a laptop PC	For a desktop PC
For E1/T1/JT1	<p>N2</p>  <p>One bi-directional E1/T1/JT1</p>	<p>NAP</p>  <p>Two bi-directional E1/T1/JT1s</p>

Supported laptop configurations

Environment	N2	Ethernet
Windows XP	1 – 2	1*
Windows 2000	1 – 2	1*

** Requires a laptop PC with an integrated Ethernet adapter.*

**Monitoring of two bidirectional E1/T1/JT1 links
and one Ethernet with a portable solution.**



Supported desktop configurations

Environment	NAP	Ethernet
Windows XP	1 – 4	2
Windows 2000	1 – 4	2

Monitoring of eight bi-directional E1/T1/JT1 links and two Ethernet.



Conclusions

- > The solution for verifying and troubleshooting GSM, GPRS and EDGE networks to increase network performance and quality:
 - Future-proof and cost-effective investment with the use of standard PC technology.
 - The most portable solution for field operations.
 - The most detailed protocol decoding capability in the market.
 - Call Trace, counters and filters for efficient real-time troubleshooting.