NetHawk GSM Analyser

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

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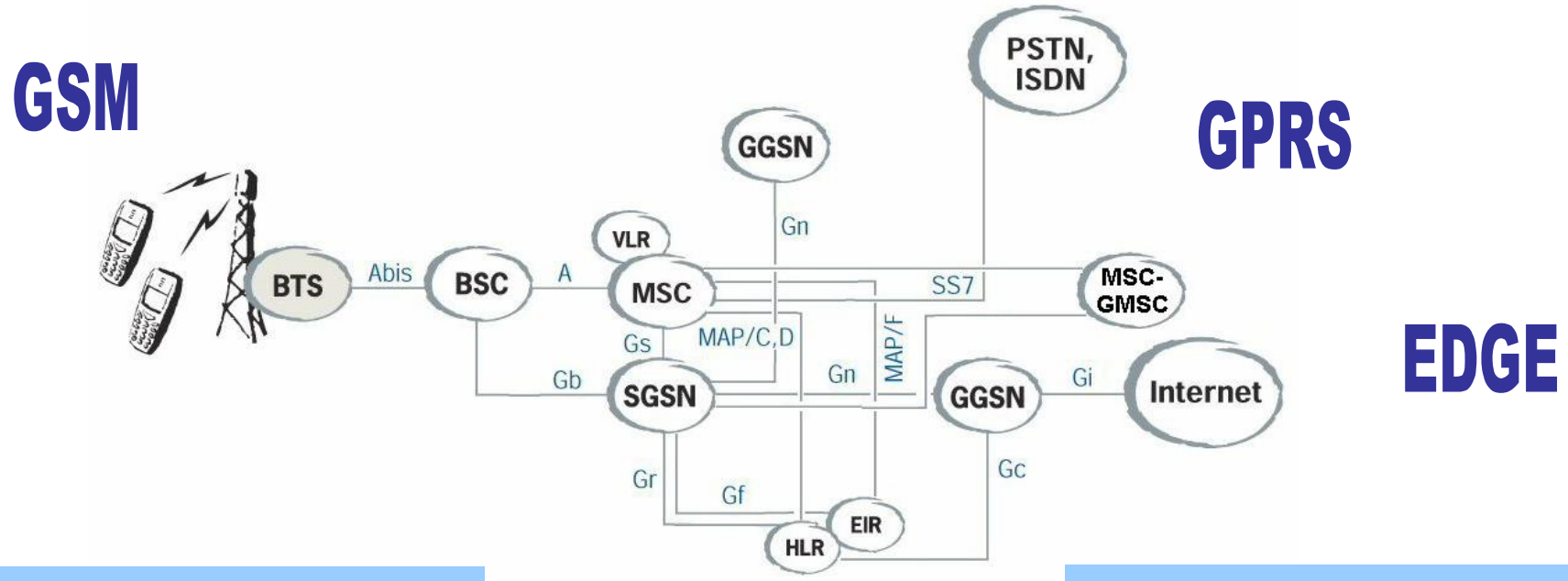
Challenges in today's market place



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

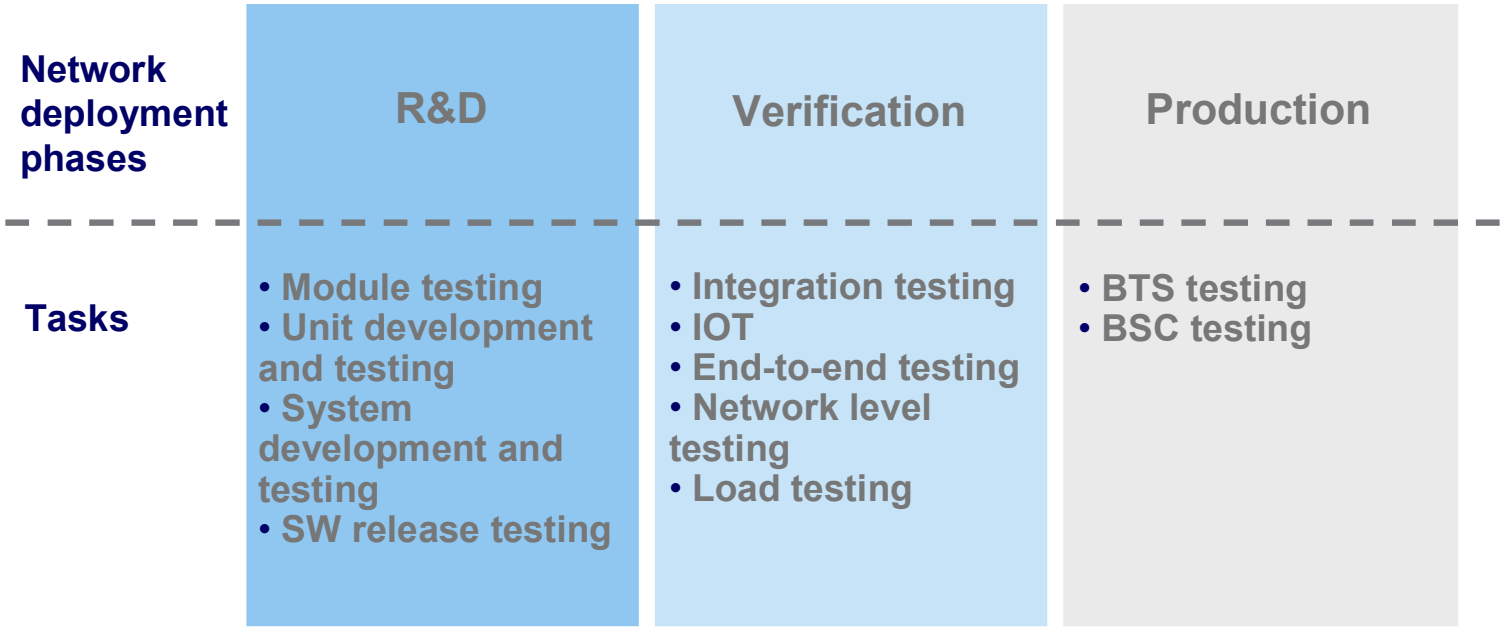
- Unmature technology/products.
- Interoperability issues.
- Personnel know-how.

Solving technology challenges

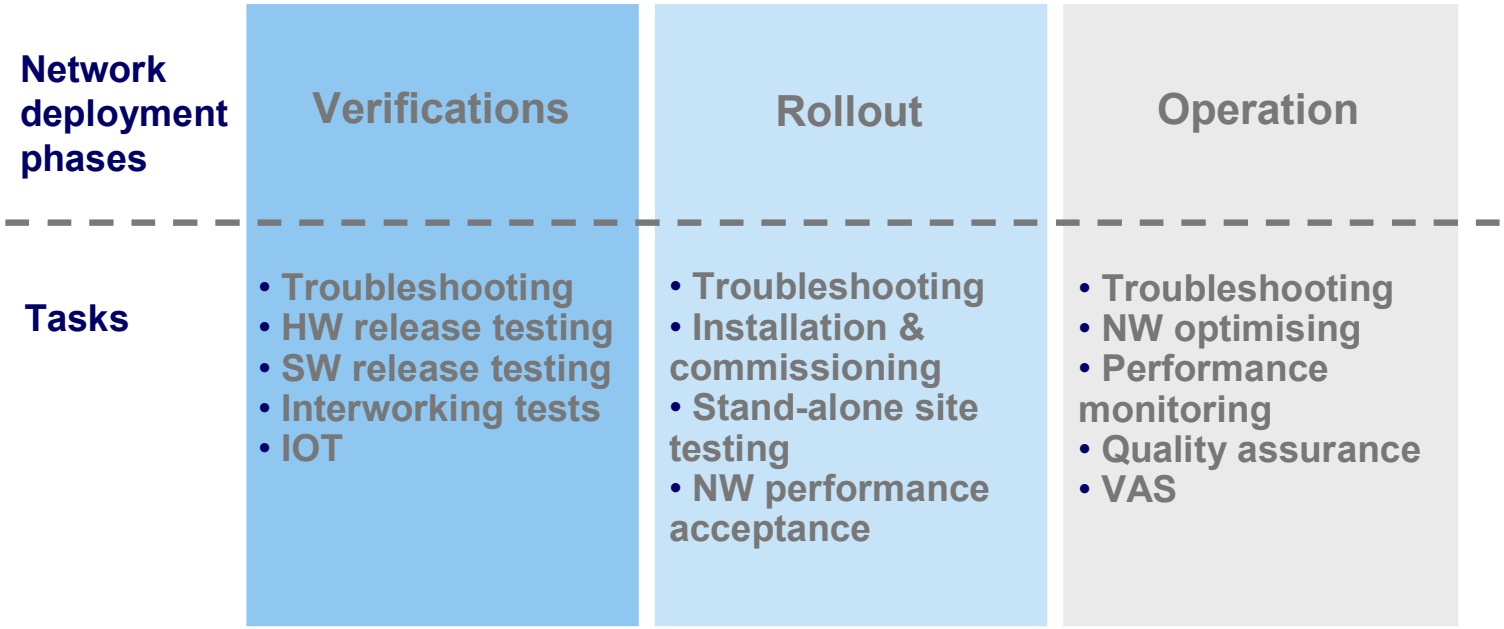
> NetHawk GSM Analyser is the most
  - Portable,
  - Cost-effective,
  - Easy-to-use and flexible solution for verifying and troubleshooting the GSM, GPRS and EDGE networks.



Utilising NetHawk GSM Analyser in R&D and production



Utilising NetHawk GSM Analyser in network deployment and operation



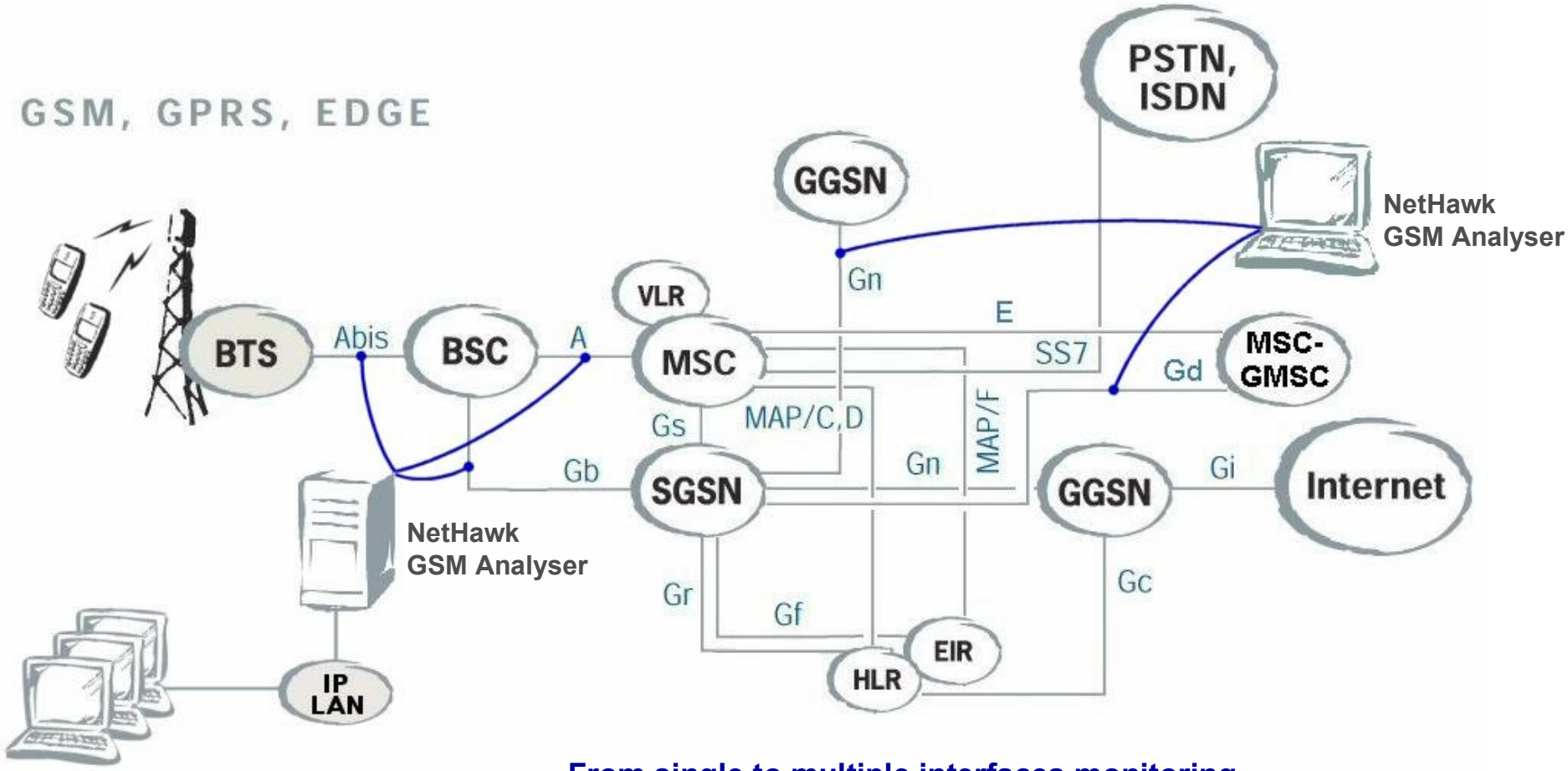
Solution benefits

> 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.

NetHawk

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

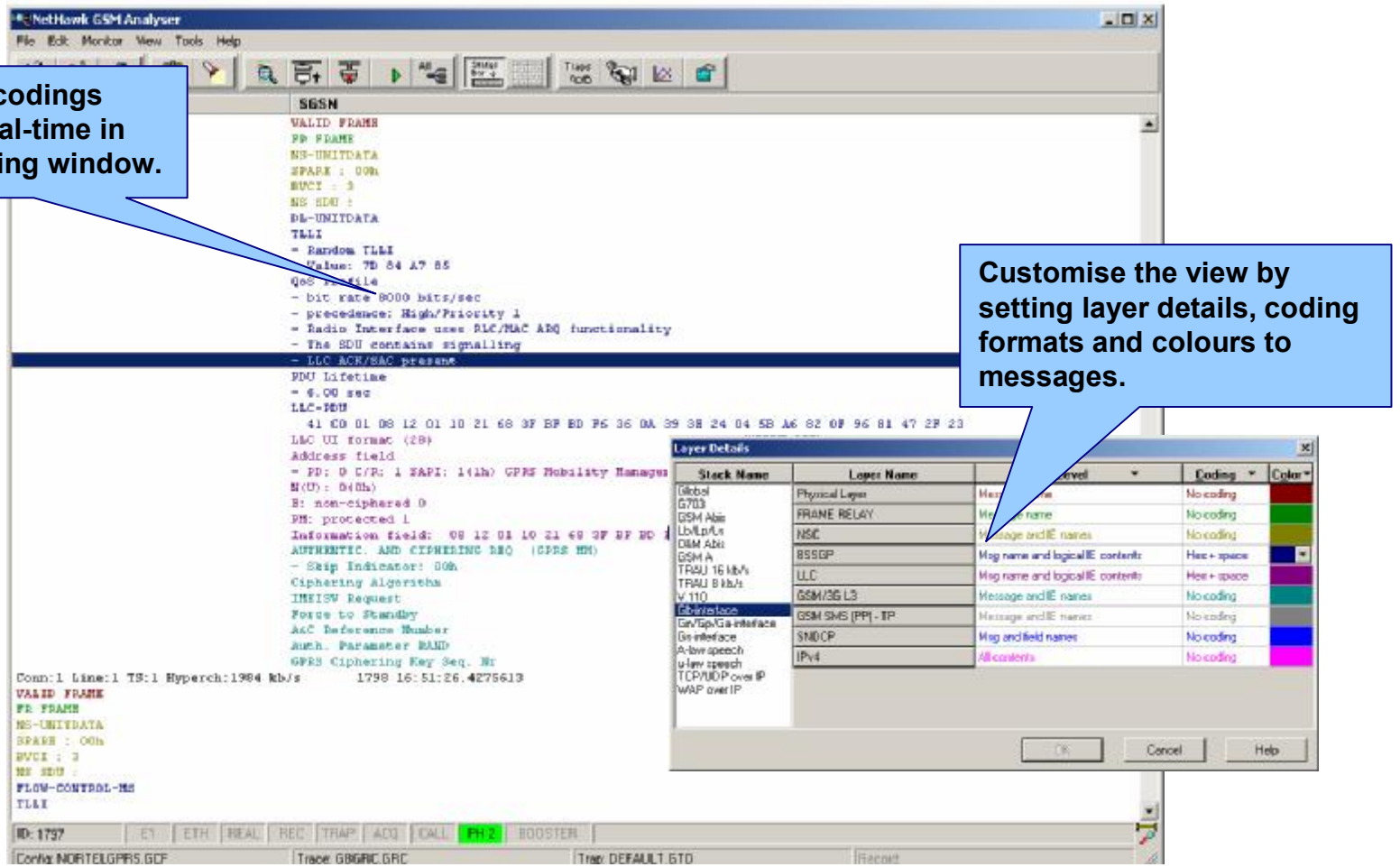
- Wide and up-to-date support for all standard and manufacturer-specific protocols:
  - 3GPP Release 4 (September, 02).
  - Full GSM, GPRS and EDGE support for Nokia, Ericsson, Nortel and Siemens.
  - Support also for Lucent GSM/GPRS and Motorola GSM protocols.
  - Gb deciphering supported.
  - Also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

Multi-interface monitoring

> Powerful and accurate monitoring of multiple interfaces simultaneously:

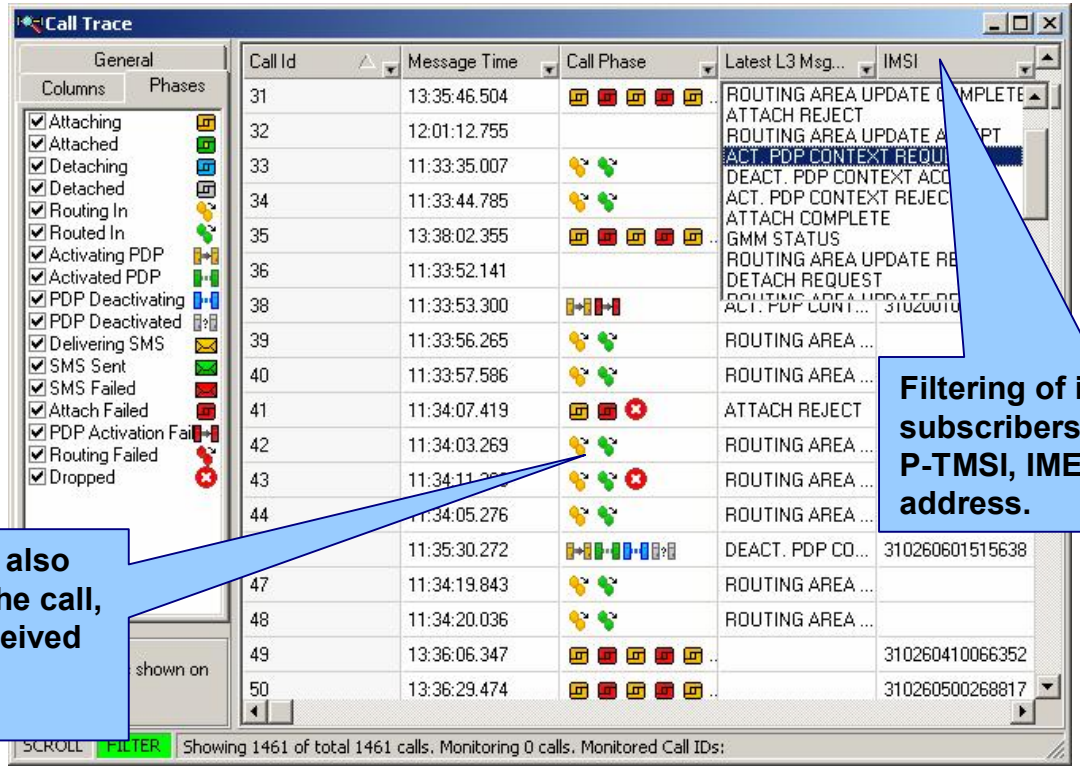
- Up to eight bi-directional E1/T1 links, two with the portable solution.
  - *Possiblity to install several NetHawk Analysers e.g. to a portable multi-application PC.*
- 128 connections simultaneously.
- Ready to use connection configuration by scanning the line.

Detailed decodings in real-time



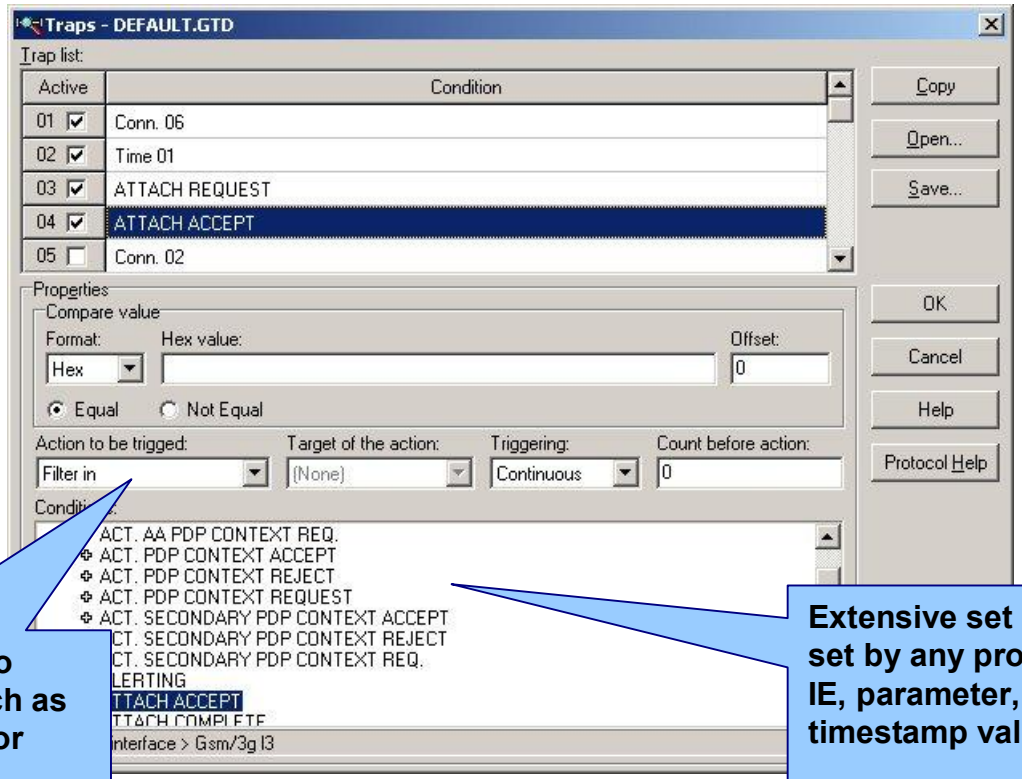
Efficient real-time troubleshooting

> Call Trace to solve subscriber related problems efficiently.



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	**N2**  **One bi-directional E1/T1/JT1**	**NAP**  **Two bi-directional E1/T1/JT1s**

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 birectional 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.