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NetHawk SS7 Analyser

INTRODUCTION

The NetHawk SS7 Analyser is an effective and easy-to-use PC-based protocol analyser for real-time monitoring and analysis of the SS7, SigTran and High Speed Signalling Link (HSL) protocols at the GSM/GPRS/EDGE core network interfaces. It has proven to be a crucial help for both network element manufacturers and mobile operators in different tasks in all stages of the network life cycle. Typical applications include:

- > R&D
- > System integration
- > Interoperability testing
- > Installation & commissioning
- > Network optimisation
- > Network monitoring
- > Troubleshooting

PRODUCT OVERVIEW

Portability or capacity – your choice of a product platform

The NetHawk Analysers are recognised as the most portable testing tools on the market as they can be used in standard laptops. A test engineer can easily take the NetHawk SS7 Analyser into the field with him where its small size and light weight is an advantage.

For multi-interface monitoring, the NetHawk Analysers can be used in desktop PCs. With the intelligence of the NetHawk SS7 Analyser in software, you are able to choose the type of PC for product platform that best suits you.

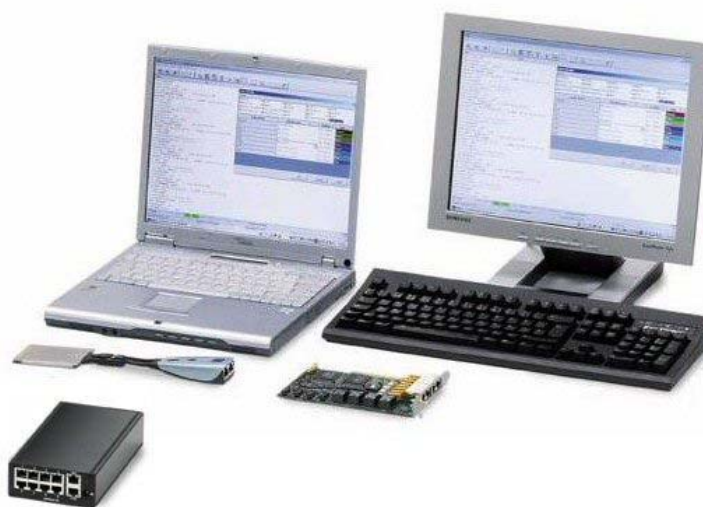


Figure 1: The NetHawk SS7 Analyser is an effective and easy-to-use PC-based protocol analyser for real-time monitoring of the SS7, SigTran and HSL protocols at the core network interfaces.

Real-time decoding of SS7, SigTran, and High Speed Signalling Link protocols

The NetHawk SS7 Analyser is capable of analysing in real-time protocols at the SS7 MAP (C, D, E, F, G, Gc, Gd, Gf, Gr, Lc, Lg, Lh), TUP (PSTN), ISUP (PSTN, Nc), INAP, CAP, SigTran and HSL interfaces. The NetHawk SS7 Analyser supports the Chinese, Australian, UK, Russian, French and Finnish country-specific variants of ISUP as well as ANSI specification. The NetHawk SS7 Analyser can also optionally have a Chinese user interface.

Detailed decodings for real-time protocol analysis

The NetHawk SS7 Analyser is able to show the analysed traffic in real-time with the most detailed level of decodings. The monitoring view can be customised to show each message with a desired level of detail, coding format and colour. Errors in the physical link can be seen in the NetHawk SS7 Analyser's State Monitor window.

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Call Trace for real-time troubleshooting

Call Trace helps in solving subscriber-related problems by providing the means to filter signalling of individual subscribers from traffic loads. Call Trace shows all the signalling of a selected subscriber in the monitoring window. The subscriber can be filtered according to:

- > SCCP DLR/SLR
- > ISUP Called/Calling Party
- > TUP Called/Calling Party
- > IMSI
- > MS-ISDN

The NetHawk SS7 Analyser provides automatically the latest found subscriber identifier for tracing calls.

Extensive set of traps for real-time filtering of messages

The NetHawk SS7 Analyser provides traps for filtering the protocol messages. They effectively reduce the data for analysis and help in solving the reported problems more quickly. Traps can be set by protocol messages and Information Elements making the number of available trap options go over a hundred. Traps can also be set by connection numbers and timestamp values.

In addition to filtering protocol messages, traps can be used to trigger several other actions as well, such as starting or stopping the recording or configuring statistical counters. A trap can also activate another trap to perform several actions consecutively.

Data post-processing

For analysing the data later, you can record the traffic with the NetHawk SS7 Analyser and store the trace file (.grc-file format) on the PC's hard disk. To make post-processing of the protocol data most effective, you can install the basic NetHawk SS7 Analyser software without the NetHawk Adapters to any PC in your organisation free of charge.

Multi-interface monitoring

The NetHawk SS7 Analyser can be connected simultaneously to eight bi-directional E1/T1 and two Ethernet links in the desktop solution. The portable solution has the capacity for two bi-directional E1/T1 links and one Ethernet for effective troubleshooting in the field.

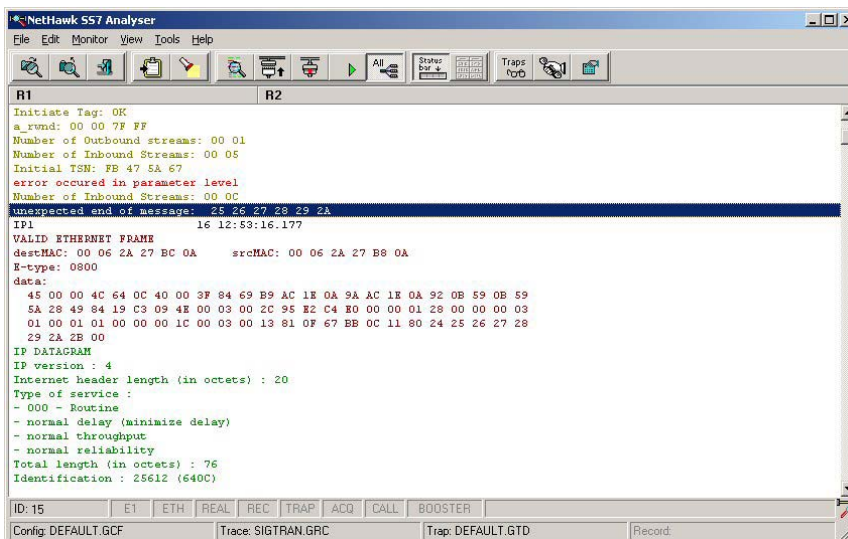


Figure 2: With the NetHawk SS7 Analyser you can analyse the protocols to last details.

You can increase the monitoring capacity of the NetHawk SS7 Analyser with the use of NetHawk C8 PCM Concentrators up to 20 bi-directional E1 links with the desktop solution and to eight bi-directional E1 links with the portable solution. The NetHawk C8 PCM Concentrator is a cost-efficient solution to increase the number of monitored links with the NetHawk SS7 Analyser. With the NetHawk SS7 Analyser up to 128 connections can be monitored simultaneously with different protocol stacks.

Guidance to your work

The NetHawk SS7 Analyser features an online protocol help. The easily available protocol help assists in analysing recordings by explaining in detail the functions and contents of the protocols. Just a click of the mouse and the information on the protocol in question is shown on the screen. The context-sensitive help is available for giving instructions on how to use the NetHawk SS7 Analyser without the need for printed manuals.

SUPPORTED PROTOCOLS

SS7 interfaces (C, D, E, F, G, Gc, Gd, Gf, Gr, Lc, Lg and Lh)

- > MTP-2: Q.703 1988, CCITT (ITU-T) Blue Book / ANSI T1.111, 1996
- > MTP-3: Q.704 1988, CCITT (ITU-T) Blue Book / ANSI T1.111, 1996
- > SCCP: Q.713 (07/96, 1997), CCITT (ITU-T) Blue Book / ANSI T1.111 T1.112-1996
- > TUP: Q.723 (1988), CCITT (ITU-T) Blue Book / Chinese GF 001-9001, 1994 / Finnish THK, TUP
- > UK NUP: BT, BTNR 167, 1992
- > ISUP:
 - ANSI: ANSI, T1.113, 1995
 - Blue Book: ITU-T, Q.763, 1988
 - Chinese: YDN 038-1997
 - ITU-T -97: ITU-T, Q.763, 1997
 - Finnish: THK, ISUP, 1996
 - Russian: National ISUP, 1994
 - UK: PNO-ISC/SPEC/007, Issue 2, 1997
 - French: Spirou 1998
- > I-ISUP: ACIF G500: 2000
- > TCAP: ANSI T1.114-1996, ITU-T Q.771-Q.775-1997
- > MAP: 3GPP TS 29.002 v.4.9.0 and v.3.10.0
- > INAP:
 - ETSI, ETS 300 374, 1994
 - TIA/EIA/IS-41.5-C, Feb 1996
- > Ericsson INAP
- > Siemens INAP
- > CAMEL/CAP: 3GPP TS 29.078 v.3.11.0 (2002-03), 3GPP TS 23.078 v.3.12.0 (2002-03)

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SigTran interfaces

- > Ethernet: RFC 826 A Standard for the Transmission of IP Datagrams over Ethernet Networks, Blue Book: ITU-T, Q.763, 1988
- > IP: RFC 791 Internet Protocol
- > SCTP: RFC 2960
- > M3UA: RFC 3332
- > SCCP, E1: ITU-T Q.713, 07/96
- > SCCP, T1: ANSI T1.112, 1996
- > TC-97: ITU-T White Book, 1997
- > ISUP: ITU-T, Q.763, 1997
- > INAP:
 - ETSI, ETS 300 374, 1994
 - TIA/EIA/IS-41.5-C, Feb 1996
- > MAP: 3GPP TS 29.002 v.3.10.0 and v.4.9.0
- > 3GPP CAMEL/CAP:
 - CAMEL: 3GPP TS 23.078 v.3.12.0 (2002-03)
 - CAP: 3GPP TS 29.078 v.3.11.0 (2002-03)

High Speed Signalling Link (HSL) interfaces

- > MTP-2: Q.703 1988, CCITT (ITU-T) Blue Book / ANSI T1.111, 1996
- > MTP-3: Q.704 1988, CCITT (ITU-T) Blue Book / ANSI T1.111, 1996
- > SCCP: Q.713 (07/96, 1997), CCITT (ITU-T) Blue Book / ANSI T1.111 T1.112-1996
- > TCAP: ANSI T1.114-1996, ITU-T Q.771-Q.775-1997
- > TUP: Q.723 (1988), CCITT (ITU-T) Blue Book / Chinese GF 001-9001, 1994 / Finnish THK TUP
- > ISUP:
 - ANSI: ANSI, T1.113, 1995
 - Blue Book: ITU-T, Q.763, 1988
 - Chinese: YDN 038-1997
 - ITU-T -97: ITU-T, Q.763, 1997
 - Finnish: THK, ISUP, 1996
 - Russian: National ISUP, 1994
 - UK: PNO-ISC/SPEC/007, Issue 2, 1997
 - French: Spirou 1998
- > INAP: ETSI, ETS 300 374, 1994
- > MAP: 3GPP TS 29.002 v.3.10.0 and v.4.9.0
- > CAMEL/CAP: 3GPP TS 29.078 v.3.11.0 (2002-03), 3GPP TS 23.078 v.3.12.0 (2002-03)

Voice codec decodings

- > G.711 μ -law speech
- > G.711 A-law speech

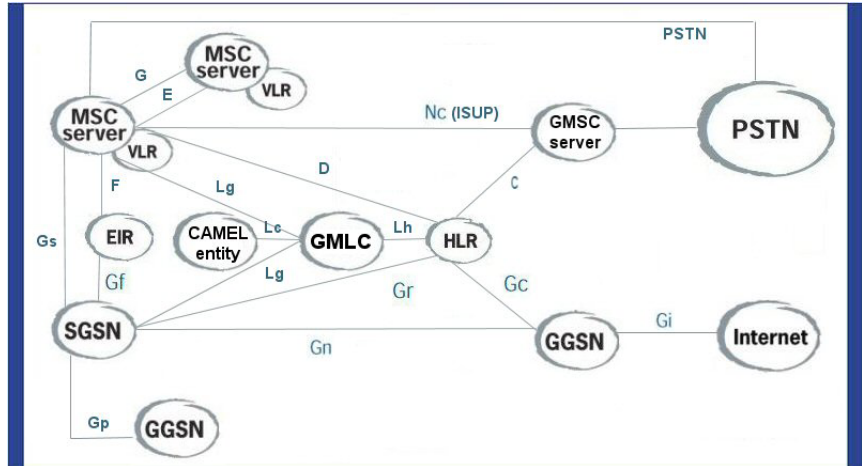


Figure 3: Real-time monitoring of the GSM/GPRS/EDGE core network interfaces with the NetHawk GSM Analyser.

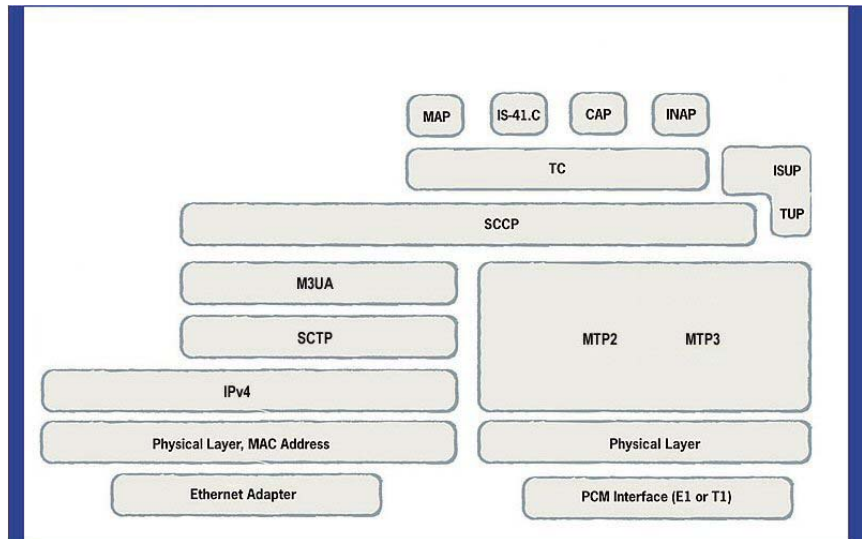


Figure 4: The NetHawk SS7 Analyser has a wide and up-to-date support for SS7, SigTran and HSL protocols.

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PRODUCT COMPONENTS

- > NetHawk SS7 Analyser SW
- > NetHawk Adapter(s)
- > User's documentation
- > A cable set
- > Options:
 - Manufacturer-specific INAPs
- > Optional HW:
 - NetHawk C8 PCM Concentrator

NetHawk Adapter for a laptop PC



NetHawk N2 for E1/T1 interfaces. Capacity for one bi-directional link.

NetHawk Adapter for a desktop PC



NetHawk NAP for E1/T1 interfaces. Capacity for two bi-directional links.

NetHawk C8 PCM Concentrator



NetHawk C8 PCM Concentrator to increase the number of monitored links with NetHawk N2 or NAP Adapters. Configurable to have either eight E1 or seven T1 input ports.

Supported NetHawk Adapter configurations

Laptop configurations

- > 1-2 x NetHawk N2
- > 1-2 x NetHawk N2 + 1-2 x NetHawk C8

Desktop configurations

- > 1-4 x NetHawk NAP
- > 1-4 x NetHawk NAP + 1-4 x NetHawk C8

PC RECOMMENDATIONS

- > The minimum PC configuration:
 - Pentium® 1 GHz CPU
 - 512 MB of RAM and 1 GB of free disk space
- > The recommended PC configuration:
 - Pentium® 2.4 GHz CPU
 - 512 MB of RAM and 1 GB of free disk space
- > Operating system:
 - Windows® XP Professional (Service Pack 1)
 - Windows® 2000 Professional (Service Pack 4)



Figure 5: It only takes a few moments to install the NetHawk SS7 Analyser software and plug-in the NetHawk Adapter(s) to the PC. Then your NetHawk SS7 Analyser is ready for use.

NETHAWK SS7 ANALYSER IN BRIEF

The NetHawk SS7 Analyser is an effective and easy-to-use PC-based protocol analyser for real-time monitoring and analysis of the SS7, SigTran and High Speed Signalling Link (HSL) protocols at the GSM/GPRS/EDGE core network interfaces. The NetHawk SS7 Analyser is available for both laptop and desktop installations with different configuration options.

- > Real-time monitoring of all protocols at the SS7 MAP, TUP, ISUP, INAP and CAP, SigTran and High Speed Signalling Link (HSL) interfaces:
 - Country-specific variants of ISUP supported for China, Australia, UK, Russia, France and Finland, also ANSI specification supported.

- > Detailed decodings are shown in the monitoring window in real-time. The view can be customised to show each message with a desired level of detail, coding format and colour. Errors at the physical link are displayed in the State Monitor.

- > Call Trace allows filtering the signalling of individual subscribers from the traffic loads according to SCCP DLR/SLR, ISUP Called/Calling Party, TUP Called/Calling Party, IMSI or MS-ISDN.

- > Extensive set of traps for real-time filtering of messages or activating other actions based on the signalling contents.

- > Recordings can be stored to PC's hard disk and post-processed later with the NetHawk SS7 Analyser software. In offline use, each user can have their own NetHawk SS7 Analyser installed on their desktop free of charge.

- > Physical capacity:
 - Up to eight (desktop) or two (laptop) bi-directional E1/T1 links.
 - The capacity can be increased to 20 (desktop) / 8 (laptop) bi-directional links with the use of NetHawk C8 PCM Concentrators.
 - 128 connections simultaneously.
 - Two Ethernet interfaces.

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