TravelHawk

PORTABLE ANALYZER

The only portable, all-in-one multitechnology protocol analyzer for live network troubleshooting.

KEY FEATURES AND BENEFITS

Briefcase-sized unit for lab and field troubleshooting

Enables the user to quickly perform on-site, simultaneous troubleshooting of multitechnology handovers, for faster resolution of network errors and reduced OPEX

Unbeatable combination of portability and performance: powerful test capabilities in a package small enough for airline carry-on regulations

Multitechnology support: LTE, UMTS, GSM, Core and IMS networks

One licensed TravelHawk unit to test all technologies instead of multiple tools, reducing CAPEX

Multi-interface support: STM-1/OC-3 (also channelized), E1/T1/J1 (PCM, ATM, IMA modes), as well as 10/100 Mbit and 1/10 GigE interfaces

Easy-to-use Windows 7-based graphical user interface with automated configuration and intelligent data analysis applications

Multi-interface call and session tracing; detailed decoding of protocol messages

THE IDEAL TOOL FOR TODAY'S MULTITECHNOLOGY ENVIRONMENTS

In order to achieve high quality of service, mobile networks must be tested throughout their lifecycle. This means verification of network functionality and quality at the R&D and deployment phases, but also across the live network. This kind of live network troubleshooting, for example at the base station, requires an easily portable solution that enables a field engineer to quickly identify and address any network issues that may arise. Service, support and field teams need a tool such as the TravelHawk, which works in a multitechnology environment, is easy to use, and—most importantly—reduces the complexity and the time spent on testing.

WHERE TO USE TRAVELHAWK

TravelHawk is a perfect fit for both network equipment manufacturers and operators for testing and troubleshooting networks at all stages of their lifecycle:

> › **Functional testing:** testing of single elements (e.g., a base station) to ensure that they work according to specifications
> › **Interoperability testing (IOT)**: testing a system to verify the interoperability of its multiple network elements and multivendor components
> › **Troubleshooting:** live network testing to locate and qualify any signaling problems reported, and correct them as quickly as possible

TRAVELHAWK: A COMPACT UNIT PACKED WITH MULTIPLE CAPABILITIES

The TravelHawk is the only portable protocol analyzer on the market that supports 2G, 3G and 4G technologies in one unit. Its small size makes it easy to carry, even as carry-on luggage on an airplane.

TravelHawk is a briefcase-sized PC equipped with the M5 Analyzer software. It allows real-time troubleshooting of multiple interfaces from LTE, UMTS, GSM, Core and IMS networks in the lab or in the field. With automated configuration, TravelHawk is quick and easy to set up for analysis. Network traffic analysis is illustrated with clear, real-time graphics, and issues to be addressed are clearly highlighted. New functionalities are easy to install via a software update downloaded directly from the EXFO website. All you need is a valid EXFO Analyzer Care to keep your tool up-to-date.

TROUBLESHOOTING APPLICATIONS

TravelHawk features intelligent data analysis applications that enable real-time multitechnology and multi-interface call and session tracing with real-time pre-filtering capabilities, KPI generation and QoS measurements—all with the capability to drill down into the details of the decoded protocols.

Signaling Tracing and Analysis

The **Call and Session Analysis** application is a key troubleshooting tool that allows you to quickly see if there are any problems in the network.

> Real-time tracing of calls and sessions over the monitored interfaces

> Complete correlation of intersystem calls between LTE, UTRAN, GERAN, Core and IMS

> Real-time pre-filtering of raw data with any main UE or network-related value to see only the needed calls or sessions

> Overall status of the calls and sessions in one view; each transaction has its own line with illustrative phase icons

> Over 500 3G/2G/LTE information elements available for the calls/sessions; any piece of information can be used to filter data in the GUI

> One click to open full signaling details of a call, or save call/session-related data to a file
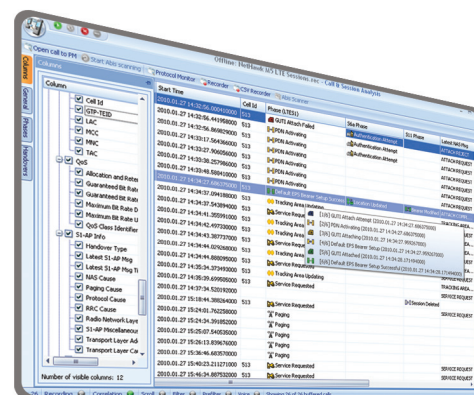
With the **Protocol Monitor** application, transactions can be analyzed to the last detail in real time and from multiple interfaces simultaneously.

> Message sequences for easy analysis of message flows

> Overall view of the network, with each event seen on its own line, along with its specific information and protocol content

> Easy access to complete signaling details for each event

> Correlated protocol messages between analysis views, making it easier to switch analysis to another view

> Layer details settings based on any stack, protocol, message or information elements to define what is displayed

> One click to open calls related to signaling

> Support for latest industry-standard specifications and vendor-specific implementations
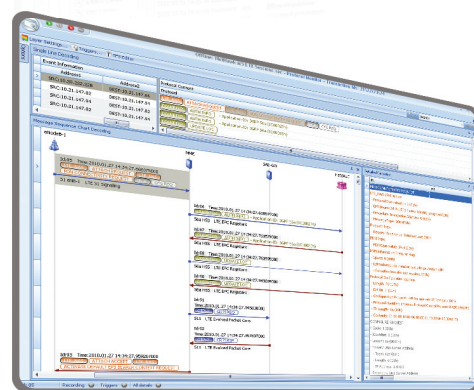
Unique Capability: Call Comparison

TravelHawk also boasts a unique OPEX-saving functionality that allows users to compare any call in extreme details against their own reference call. With one click from the Call and Session Analysis application or the Protocol Monitor application, users can compare detailed signaling of two calls to the information element level and see the different parameters or messages of signaling protocols—saving technicians time as they don't have to spend hours locating the most hard-to-find mobile network signaling problems.

Focus

TravelHawk is designed with real-time telecom signaling analysis in mind. Real-time analysis can be done up to hundreds simultaneous calls and up to 10 000 calls at the time (round-buffer, oldest calls are removed). Intelligent filtering of connections and Iub user-plane data for example, allows physical-link monitoring with full line-rate throughput. TravelHawk is able to filter needed information from full physical links, e.g. the needed base stations or links with signaling data. For bigger data amounts, users can capture data with the recording capacity of up to 120 Mbit/s. Data can later be analyzed in post-processing mode. TravelHawk is not designed for packet network user-plane analysis. Please refer to TravelHawk Pro specification sheet for LTE and packet core user- and control-plane analysis.

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TRAVELHAWK OPTIONS

INTERFACE ADAPTERS

Eight E1/T1 (bidirectional) Interface Adapter (D5)	Physical interface with eight bidirectional links for E1/T1/J1 physical interfaces capable for ATM or PCM data analysis; bantam connectors; cables must be purchased separately.
D5 Adapter Option: Inversed Multiplexed ATM (IMA)	Brings inversed multiplexed ATM capability to the TravelHawk platform. The IMA technology carries logical ATM link over multiple E1/T1 physical link.
Two Bidirectional STM-1/OC3 Interface Adapter (D6)	Physical interface for two bidirectional STM-1/OC-3 links carrying ATM traffic. Different connectors and multimode and singlemode sets available. Cable set with SFP adapters and optical splitters must be purchased separately.
D6 Adapter Option: Channelized STM-1	Channelized STM-1 option gives the possibility to analyze network where STM-1 is carrying multiple logical E1/T1 links.
Four 1G/10M/100M (Optical or Copper) Ethernet Interface Adapter (D7 Pro)	Physical interface for four (unidirectional) 1G/10M/100M Ethernet links. Cables and connector (SFP) sets must be purchased separately. SFP are available for copper or optical (singlemode or multimode) environments.
Two 10G (Optical) Ethernet Interface Adapter (D10)	Physical interface for two (unidirectional) 10G Ethernet links. Cables and connectors (SFP+) must be purchased separately. Multimode and singlemode sets are available.

LTE (4G) TECHNOLOGY PACKAGE

LTE (4G) Technology Support with Correlated Session Analysis (eUTRAN, EPC, Diameter)	Covers LTE and EPC interface analysis, detailed decoding, session analysis and session correlation over the LTE and EPC interfaces. Support is up to 3GPP REL9. [a]
NAS Deciphering (EEA0 Null,128-EEA1 SNOW 3G and 128-EEA2 AES Algorithms)	Fully automated NAS deciphering with defined algorithms. NAS deciphering with unlimited LTE sessions in real time, keys obtained automatically from S6a interface or can be manually added to the file.
NAS Deciphering (ZUC Algorithm)	Fully automated NAS deciphering with defined algorithms. NAS deciphering with unlimited LTE sessions in real time, keys obtained automatically from S6a interface or can be manually added to the file.
NSN eNB Internal Interface Tracing (LTE Air Interface Support over NSN eNB)	LTE air interface analysis (RRC and NAS messages, and RLC/MAC headers), LTE S1-MME signaling and X2 signaling with session analysis support. Connect the M5 software directly to one or multiple eNBs' internal interfaces port (supports NSN eNBs).
3GPP LTE R10	Decoding and session analysis for 3GPP REL10 protocols from all LTE/EPC interfaces.

UMTS (3G) TECHNOLOGY PACKAGE

UMTS (3G) Technology Support with Correlated Call and Session Analysis	Covers all UMTS RAN and core interface analysis, detailed decoding, session analysis and session correlation over the interfaces. Support is up to 3GPP REL7. [a]
Iub f8 Deciphering Support	Fully automatic Iub deciphering. Fetches keys from IU-PS and IU-CS interfaces and correlates them to the correct calls. No limitations of simultaneous calls under analysis.
Proprietary UTRAN Decoder/DoCoMo	DoCoMo specific decoding support for UTRAN interfaces. [a]
Proprietary UTRAN Decoder/NSN (Nokia)	NSN-specific decoding support for UTRAN interfaces. [a]
3GPP UTRAN R8	Covers full functionalities and new protocols as well as all protocol updates for 3GPP UMTS Rel8 specifications. [a]
3GPP UTRAN R9	Covers full functionalities and new protocols as well as all protocol updates for 3GPP UMTS Rel9 specifications. [a]
3GPP UTRAN R10	Covers full functionalities and new protocols as well as all protocol updates for 3GPP UMTS Rel10 specifications. [a]

Note

a. For details, please refer to Analyzer Technology Coverage product note.

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TRAVELHAWK OPTIONS (CON'T)

GSM (2G) TECHNOLOGY PACKAGE

GSM (2G) Technology Support with Correlated Call and Session Analysis	Covers all GSM (EDGE) RAN and core interface analysis, detailed decoding, session analysis and session correlation over the interfaces. Support is up to 3GPP REL7. [a]
Gb Deciphering	Fully automatic Gb interface deciphering (requires PSTN and Registers technology support). Automatic key fetching from Gr interface.
Proprietary GERAN Decoder/Ericsson	Ericsson-specific decoding support for GERAN interfaces. [a]
Proprietary GERAN Decoder/NSN	NSN-specific decoding support for GERAN interfaces. [a]
Abis over IP for NSN	Supports Abis over IP in NSN environments. Requires Proprietary GERAN Decodings/NSN package.
3GPP GSM R8	Covers full functionalities and new protocols as well as all protocol updates for 3GPP GSM Rel8 specifications. [a]
3GPP GSM R9	Covers full functionalities and new protocols as well as all protocol updates for 3GPP GSM Rel9 specifications. [a]
3GPP GSM R10	Covers full functionalities and new protocols as well as all protocol updates for 3GPP GSM Rel10 specifications. [a]

IMS TECHNOLOGY PACKAGE

IMS Technology Support with SIP Session Analysis	Full IMS interface decoders and session support. [a]

CORE TECHNOLOGY PACKAGE

Core Technology Support with Call and Session Analysis	Full CS and PS core (Mc, Nc, Nb), PSTN (SS7, Sigtran, Sip-I) and Registers (MAP, CAP, CAMEL, Diameter, etc.) interfaces decoding and session support. [a]
Proprietary Core Decodings/Ericsson	Ericsson-specific core decoding support. [a]
Proprietary Core Decodings/NSN	NSN-specific core decoding support. [a]

SIMO, NSN PS AND CS CORE SIGNALING SUPPORT

CS SiMo with Call and Session Analysis	Brings the possibility to connect M5 Analyzer software directly to live network NSN M-GW, or MSC server. Trace live data from CS core networks. [b]
PS SiMo with Call and Session Analysis	Brings the possibility to connect M5 Analyzer software directly to live network NSN SGSN, or GGSN elements. Allows tracing live data from PS core networks.
Gb Deciphering	Brings Gb interface analysis deciphering option to PS-SiMo.

Notes

a. For details, please refer to Analyzer Technology Coverage product note.

b. For details, please refer to M5 SiMo application note.

HARDWARE

TravelHawk 2.2—Technical Details

> Intel Core i7-960 at 3.2 GHz Quad-Core

> 12 GB DDR3 RAM

> 1 TB HDD

> Windows® 7 Professional 64 bit

> Two PCI-Express slots (x16, x4) and one PCI 33 MHz slot for network interface adapters

> 1 GigE port

> Six USB 2.0 ports, two external USB 3.0 ports, one VGA port for dual-head display, one IEEE-1394a (Firewire 400), one SPDIF digital audio out, six analog audio ports

> Display: 17 in WUXGA+ (1920 x 1200) LCD

> Keyboard (US) with touchpad included

> Soft carrying case included; optional hard-cover case

> One-year warranty

> Size (W x H x D): 42.6 cm x 29.1 cm x 15.1 cm (16.8 in x 11.44 in x 5.94 in)

> Weight: 13.5 lb to 19.5 lb (6.1 kg to 8.8 kg) (depending on configuration)

Capacity and Connections

> Multitechnology and multi-interface support

> > Up to four STM-1/OC-3 links

> > Up to eight E1/T1/J1 links

> > Up to eight optical or copper 1 GigE ports

> > Up to four optical 10 GigE ports

> > One 1 GigE with PC's own Ethernet adapter

SUPPORTED CONFIGURATIONS

STM-1/OC-3 links	and	E1/T1/J1 links	and	1 GigE ports	and	10 GigE ports
4		8		0		0
0		8		8		0
2		8		4		0
0		8		4		2
2		8		0		2

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