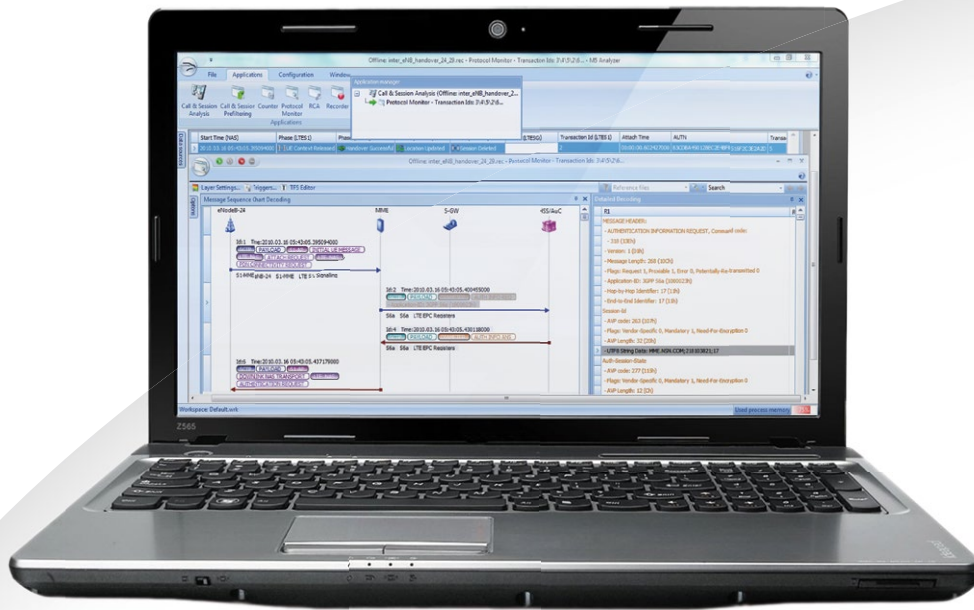# M5 Analyzer

SOFTWARE-BASED MOBILE NETWORK ANALYZER

Easy-to-use, multitechnology protocol analyzer software for Ethernet-based interfaces.

KEY FEATURES AND BENEFITS

Network analyzer for functional testing and troubleshooting

The fastest way to equip your testing team with a protocol analyzer—just download and install software on any Windows-enabled PC

Unique capability of real-time analysis without probes; connect directly to the monitored network element (vendor specific) or use the PC's NIC-adapter to capture data

Multitechnology support: 2G, 3G, LTE, IMS, CS and PS core with Ethernet interfaces; off-line analysis of all these technologies

Correlated multitechnology and multi-interface Call and Sessions Analysis

Supports open format (PCAP) files and EXFO analyzers REC file format for detailed off-line analysis

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INTRODUCTION

Network elements or system behavior analysis during the network trial phase does not always require large or expensive testing systems. For many teams, they simply need an easy-to-use tool to perform real-time and offline testing on networks supporting the latest technology. M5 Analyzer software meets that need. It is the ideal solution for network equipment functional testing, system testing and customer support teams.

WHERE TO USE M5 ANALYZER

EXFO's M5 Analyzer is a protocol analyzer software that can be installed on any PC running on the Windows 7 operating system. It allows for:

› Online and offline detailed analysis

› Functional testing from Ethernet-based signaling

› System verification for wireless signaling

› Live network troubleshooting with NSN eNB, MSC, CS-MGW, SGSN or GGSN

M5 Analyzer allows real-time analysis of Ethernet-based interfaces in GERAN, UTRAN, LTE, PS and CS core, as well as IMS and legacy core. All wireless technologies, including E1/T1 or STM-1 physical interfaces, are supported in offline analysis. With a Windows-style graphical user interface (GUI) and automated configuration, M5 Analyzer is quick and easy to set up for analysis. Network traffic analysis is illustrated by clear graphics and issues are visibly highlighted. You can easily bring the latest functionalities to M5 Analyzer via a software update that is downloadable from the Internet—all you need is a valid EXFO Analyzer Care key to keep your tool up-to-date.

# M5 ANALYZER—UNIQUE SOLUTION FOR LIVE NETWORK TROUBLESHOOTING WITHOUT PROBES

A unique capability of the M5 Analyzer is that it enables real-time analysis without any probes. For example, in Nokia Siemens Networks (NSN) environments, M5 Analyzer can establish a connection directly to the eNodeB for complete LTE monitoring (S1/LTE air interfaces, X2 interfaces) or to the packet-switched and circuit-switched core network elements (e.g., MSC server, SC-MGW, SGSN and GGSN) to troubleshoot live networks. To learn more, please refer to the M5 SiMo product note.

M5 ANALYZER APPLICATIONS

M5 Analyzer applications are shared among various technologies. For example, the session analysis and protocol monitoring applications support the multitechnology correlation if the system supports the GSM, UMTS and LTE technologies.

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

› 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 items available for the calls/sessions; any piece of information can be used to filter data in the GUI

› With one click, open full signaling details of a call, or save call- and session-related data to a file

› Detailed one-click comparison analysis of calls or sessions, unique application that allows comparison of any call to predefined reference calls
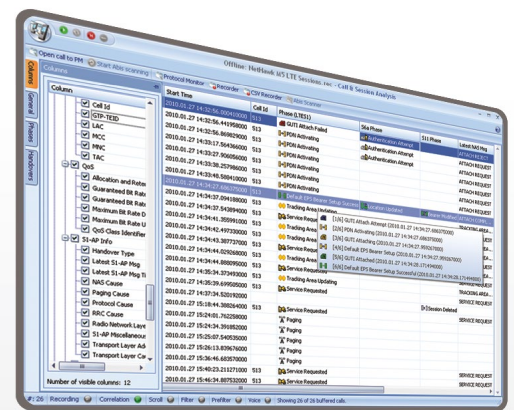
UNIQUE USE CASE: CALL COMPARISON

The M5 Analyzer 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, use the Call and Session Analysis application or the Protocol Monitor application to compare detailed signaling of two calls up to the information element level and see the different parameters or messages of signaling protocols—saving numerous hours in locating the most hard-to-find problems in terms of mobile network signaling.

With the Protocol Monitor application, transactions can be analyzed to the last detail in real time and from multiple interfaces simultaneously.

› Shows message sequences for easy analysis of message flow among the detailed view and single-line views

› Offers an overall view of the network as each event can be seen on its own line, providing event information and protocol content

› Easily provides complete signaling with full details for each event

› Correlates 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 element to define what you see

› Support latest industry standard specifications (up to 3GPP REL10) and vendor specific implementations

› PDF/TXT/HTML outputs from any view for easier test reporting

The on-demand LTE Graphical Network view shows LTE elements (with auto-detection and naming of elements) of selected live data or recorded pcap/REC file. This allows seeing which elements were interacting with one another during the detailed analysis test cases. Network elements are also displayed in a message sequence chart view under Protocol Monitor.
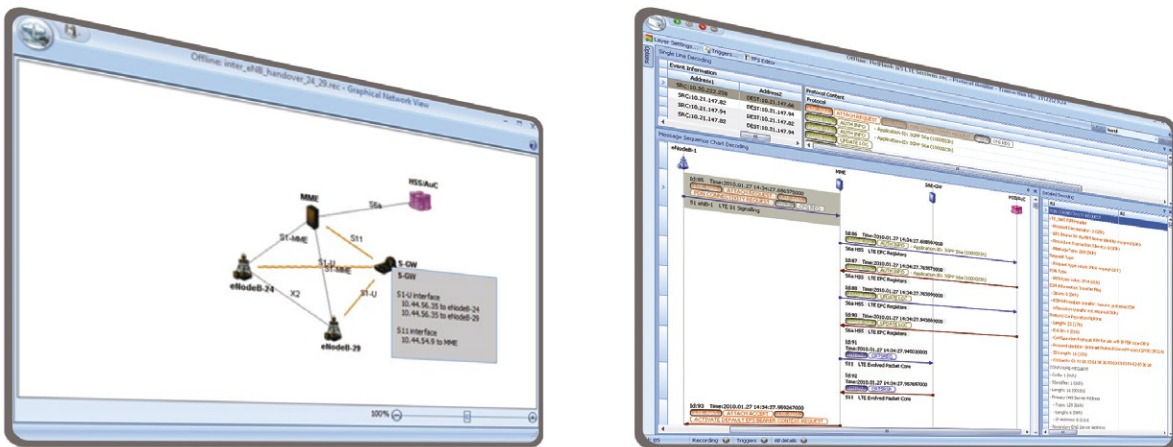
M5 Analyzer has multiple applications and functionalities that are a time-saver for wireless test technicians when they troubleshoot and perform test verifications. For example, the Counter application defines counters and KPIs based on any messages or elements. The Triggers application is also an extremely powerful tool when details of the messages matter; it enables filtering in or out of any messages with one click.

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M5 ANALYZER OPTIONS

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)	Brings 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)	Brings 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 Analyzer directly to one or multiple eNBs' internal interface ports (supports NSN eNBs).
3GPP LTE R10	Adds the decoding and session analysis for 3GPP REL10 protocols from all LTE/EPC interfaces.
3GPP LTE R11	Adds the decoding and session analysis for 3GPP REL11 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	Brings fully automatic Iub deciphering. Fetches the 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	NSN-specific decoding support for UTRAN interfaces. [a]
3GPP UMTS R8	Covers full functionalities and new protocols as well as all protocol updates for 3GPP UMTS Rel8 specifications. [a]
3GPP UMTS R9	Covers full functionalities and new protocols as well as all protocol updates for 3GPP UMTS Rel9 specifications. [a]
3GPP UMTS R10	Covers full functionalities and new protocols as well as all protocol updates for 3GPP Rel10 specifications. [a]

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 Decoder/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]
3GPP GSM R11	Covers full functionalities and new protocols as well as all protocol updates for 3GPP GSM Rel11 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, PSTN and Registers (SS7, MAP, CAP, CAMEL, Diameter, etc.) interfaces decoding and session support. [a]
Proprietary Core Decoder/Ericsson	Ericsson-specific core decoding support. [a]
Proprietary Core Decoder/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 the 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 the M5 Analyzer software directly to live network NSN SGSN, or GGSN elements. Allows tracing live data from PS core networks. [b]
Gb Deciphering	Brings Gb interface analysis deciphering option to PS SiMo.

Notes

a. For details, please refer to Analyzer Technology Coverage specification sheet.

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

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HARDWARE REQUIREMENTS

M5 Analyzer—Minimum hardware requirements

› CPU: 2 GHz Pentium or faster

› Memory: minimum 2 GB, 4 GB recommended

› Available disk space: 10 GB (recommended 2 GB for each analyzed offline trace)

› SVGA color display (1280 x 1024), color quality of at least 24 bits

› For the USB dongle: a free USB port