BrixHawk DA

DISTRIBUTED ANALYZER FOR MOBILE NETWORKS
VERSION 1.0

Enables effective network service optimization and live network troubleshooting to assure the subscriber's true quality of experience in a multitechnology environment

KEY FEATURES AND BENEFITS

Single tool to help equipment manufacturers and service providers develop and operate multitechnology 4G/LTE, 3G and 2G mobile networks

Reduce customer churn with timely network testing; verify functionality of new network elements, interoperability between elements from different manufacturers and across multiple technologies/baselines

Measure user- and application-level quality of service (QoS) to visualize the true quality of experience from a customer's perspective

Invest as required; seamless scalability from protocol analyzers to complete monitoring systems

Save testing time with fully automated data capturing and processing system to XDR/KPI level; no need for additional post-processing of data before actual analysis and troubleshooting

High-performance system with 1G/10G Ethernet line-rate analysis

Drill down through the data as needed—all details available from statistics to message level; near real-time key performance indicators (KPIs) and QoS counters, IP and user-plane analysis, as well as real-time call and session tracing and signaling processing

The most detailed customer experience view, from signaling to user-plane data; support for over 400 protocols, and deep packet inspection (DPI) technology for detailed application-level analysis

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MUCH MORE THAN JUST A PROTOCOL ANALYZER

As mobile networks are moving to an all-IP model in order to meet the increasing bandwidth requirements and subscriber growth, it is more essential than ever to gain real-time, end-to-end insight into the performance of the network. This insight is necessary to enable effective management of the quality of service throughout the whole network lifecycle. With the introduction of packet networks, key performance metrics are more difficult to demonstrate. Instead of measuring only the transmission, network service providers need to focus more and more on subscriber- and application-based QoS measurements, which enable customer experience management (CEM) and a high quality of experience (QoE).

Optimizing the Network with BrixHawk DA

BrixHawk DA enables network service optimization and troubleshooting with near real-time KPIs and detailed user-plane analysis. Multiple probes remotely capture network traffic at line rate from the 1/10 G Ethernet interfaces. A KPI generator processes the network traffic and stores it in a database for analysis with the M5 Analyzer client software. BrixHawk DA correlates both control- and user-plane traffic across all interfaces to show a full, end-to-end view of both signaling and user-plane data. All this empowers the user to troubleshoot both functionality and quality issues in a single view. Any problems can be identified and located immediately.

UNIQUE SCALABILITY: GROWING THE SYSTEM AS NEEDED

BrixHawk DA consists of probes—one or several according to your needs—a KPI server and database, as well as the M5 Analyzer client software running on a laptop or a desktop PC. For a multi-user system, a client server is added, supporting up to 10 simultaneous users.

The M5 Analyzer client software is equipped with the chosen technology package that includes all applications and other special functionalities for full analysis. The KPI server also comes with different KPI technology packages and can support up to four probes. The multi-interface probes can vary in their procedure-processing capacity—from 100 000 LTE sessions per hour to millions—and optionally include the deep packet inspection (DPI) feature for more detailed application-level analysis.

Scale from a single testing instrument

BrixHawk DA can grow seamlessly as your network grows. In a network trial phase, a single testing instrument such as SoftHawk or PowerHawk may be used to verify network element functionality with real-time detailed analysis. After a successful trial, the tool can be scaled up to BrixHawk DA, which provides unique features to ensure successful deployment and service optimization of a complete network cluster. The scale-up path provides maximum reusability of components—all software licenses and hardware components can still be utilized, and none of the existing functionality is lost.

Scale to a 24/7/365 monitoring system

Thanks to this flexibility, BrixHawk DA is a safe, future-proof investment that matches your specific needs at each stage of the network lifecycle. In addition, with a simple software upgrade and the addition of a BrixWorx correlation and analysis engine, BrixHawk DA can be expanded to the BrixHawk Service Assurance (SA) solution for 24/7/365 network-wide monitoring.

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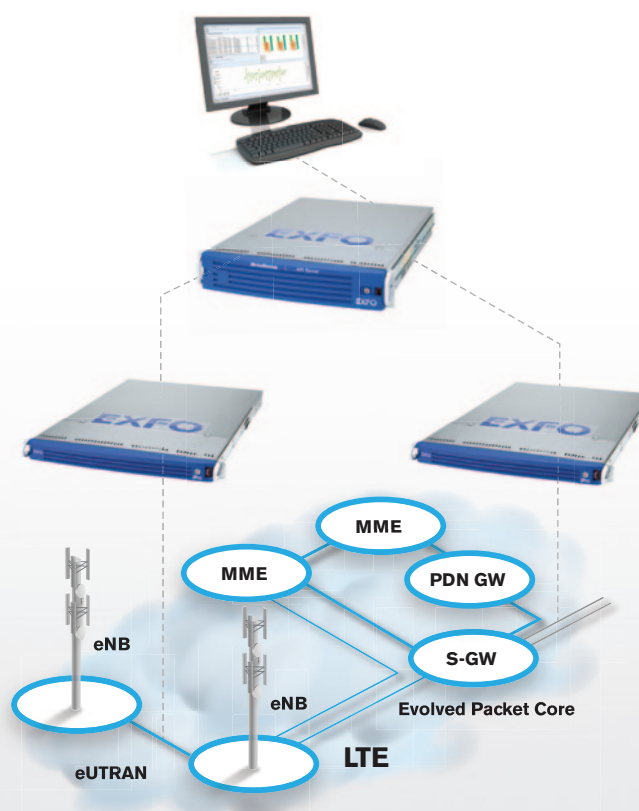
# REAL-TIME KPIS AND DETAILED USER-PLANE ANALYSIS

With BrixHawk DA you get the most comprehensive at-a-glance view of your network's performance and quality of service. Control- and user-plane traffic is correlated across all interfaces to provide subscriber- and application-level KPIs and QoS analysis with drill-down to detailed message sequences and decoding. Analysis can be done in real-time or with historical data.

BrixHawk DA offers three main easy-to-use analysis applications: **Diagnostics Suite**, **Call and Session Analysis**, and **Protocol Monitor**.

Rich Statistics and High-Performance IP and User-Plane Analysis

The **Diagnostics** application shows signaling KPIs, QoS for subscribers and applications, IP and user-plane analysis, and DPI to determine true network QoE. In brief, it provides:

> Signaling KPIs (attach, PDN, TA, etc.) per specific context, such as cell, TAC and cause values
> IP and session QoS (throughput, jitter, delay, round-trip delay, etc.) over time for subscribers and applications
> Ready charts and graphs for top talkers and applications, nodes under high load, DNS resolving times, top websites, etc.
> IP flow records with full IP session (S1-U) details:
>> Transport (Ethernet, VLAN, MPLS), IP, application protocol, GTP-U support
>> Session parameters such as throughput, ToS, session length, packets and bytes transferred
>> Easy sorting and aggregation of sessions based on any parameter in the flow table view
>> Drill-down into any specific flow using the Protocol Monitor application, for detailed signaling-level analysis
> Maximum analysis accuracy of applications with deep packet inspection:
>> Additional information for IP sessions all the way to layer 7
>> Over 1000 protocols with thousands of parameters
>> Identification and classification of network applications
>> Key parameters provided for each application
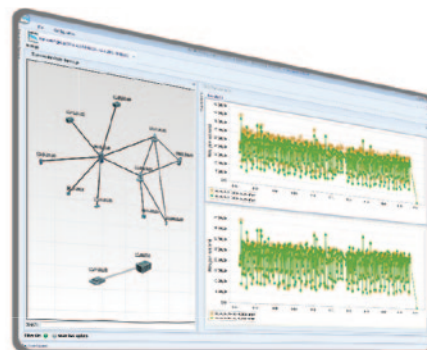
Correlated Multi-Interface Signaling Processing and Call Tracing

All the main call details (XDRs) such as phase information, cause values, etc. are included in the database. You can trace in real time calls and sessions over the correlated interfaces in the network using the **Call and Session Analysis** application. It supports:

> Call and session tracing for all LTE and EPC interfaces (S1, X2, S10, etc.)
> Correlated LTE session information with main parameters
> Correlated Uu interface analysis with third-party tools
> Real-time pre-filtering of data to quickly identify problems
> Full signaling details and related user-plane QoS values or IP flows with a single click
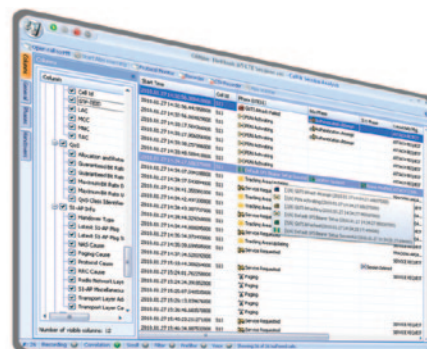
Detailed Message Decoding and Sequences

With the **Protocol Monitor** application, transactions can be analyzed to the last detail with different analysis views from message sequence charts to detailed decoding:

> Full decoding support including all standards-based (GTP-C, NAS, etc.) and major proprietary (Ericsson, NSN, Alcatel-Lucent, Nortel, DoCoMo, etc.) protocols
> Support for the latest baseline from Release 9 down to Release 99
> NAS and IPSec deciphering

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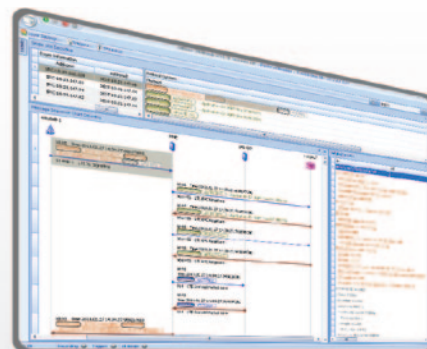
TECHNICAL DETAILS

PROBES

Items	iPro 1040-1	iPro 1040-4	iPro 1200-4
Interfaces	Two 10/100 Mbit/s and 1 Gbit/s Ethernet	Two 10/100 Mbit/s and 1 Gbit/s Ethernet	Two 10 Gbit/s Ethernet
Memory	4 GB	4 GB	4 GB
Processor	Intel Xeon Quadcore 5220 2.26 GHz	Intel Xeon Quadcore 5220 2.26 GHz	Intel Xeon X5220 Quadcore 2.26 GHz
Local Storage	1 TB (SATA2)	4 TB (4 x 1 TB SATA2)	4 TB (4 x 1 TB SATA2)
Size	1U	1U	1U

PROBES

Items	iPro 2040-8	iPro 3200-16	iPro 3200-32
Interfaces	Four 10/100 Mbit/s and 1 Gbit/s Ethernet	Two 10 Gbit/s Ethernet	Two 10 Gbit/s Ethernet
Memory	16 GB	32 GB	32 GB
Processor	Intel Xeon X5670 six-core 2.93 GHz	Two Intel Xeon X5670 six-core 2.93 GHz	Two Intel Xeon X5670 six-core 2.93 GHz
Local Storage	8 TB (8 x 1 TB SAS)	16 TB (16 x 1 TB SAS)	32 TB (16 x 2 TB SAS)
Size	2U	3U	3U

KPI GENERATOR SERVER

Items	KPI Generator Server
System	KPI generator server
Interfaces	Up to 4 iPro interfaces
Memory	16 GB
Processor	Intel Xeon six-core X5670 2.93 GHz
Operating System	Linux
Size	2U

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CLIENT SERVER (OPTIONAL)

Items	Optional Client Server
System	PowerHawk server
Interfaces	Up to 10 software clients
Memory	48 GB
Processor	Two Intel Xeon six-core X5670 2.93 GHz
Operating System	Windows 2008 server
Size	3U

SYSTEM PERFORMANCE

› 20 Gbit/s IP packet inspection and filtering rate per probe
› Up to 12 Gbit/s IP packet capture and peak recording rate to disk (pcap) per probe
› Up to 15 000 LTE sessions stored in the database by a single probe (up to 150 000 signaling messages per second, 30 000 S1 attaches)
› Two million simultaneous GTP sessions (UEs) handled per probe
› 8 Gbit/s (15 000 flow per second) IP session and LTE user-plane analysis and QoS measurements with real-time database storing per probe
› Deep packet inspection (DPI) rate of up to two million packets per second for L7 protocols
› If more is required, an additional probe can do the rest; traffic can be split between multiple probes

* Figures vary depending on iPro unit. Above figures measured with 3200-16 unit.

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