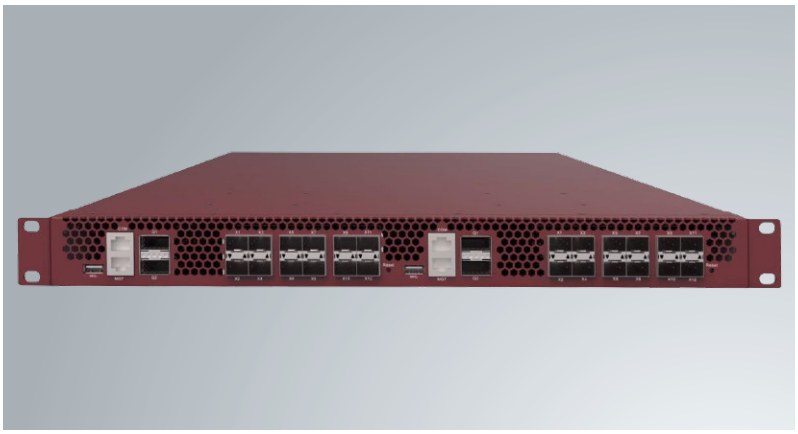
CUBRO
NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

DATA SHEET

Cubro Mobile Probe Series

PRODUCT REVIEW



Cubro delivers the new generation big data intelligent probe series products in order to meet the demands of the operators and fast developing networks. The probe is based on the industry-leading MIPS multi-core architecture. The Probe can process and analyse control plane and userplane traffic in real time. It has ultra high port density, great processing capability, ultra low power consumption and visual interface. The Probe can improve the network quality, promote the user perception and strengthen the information security.

Functions/Benefits:

Network Probe
At a glance

Definition

A probe is a passive device which receives network traffic from TAPs and network packet brokers and extracts metadata .

Advantages of Cubro Probe

- Small foot print
- Low power design
- Embedded Network Processor design
- Can be customized to customer's requirement
- XDR export via UDP stream
- Support of any kind of SFP and SFP+ (also 10 Gbit BASE_T), and QSFP
- 24 x 10 Gbit and 4 x 40 Gbit

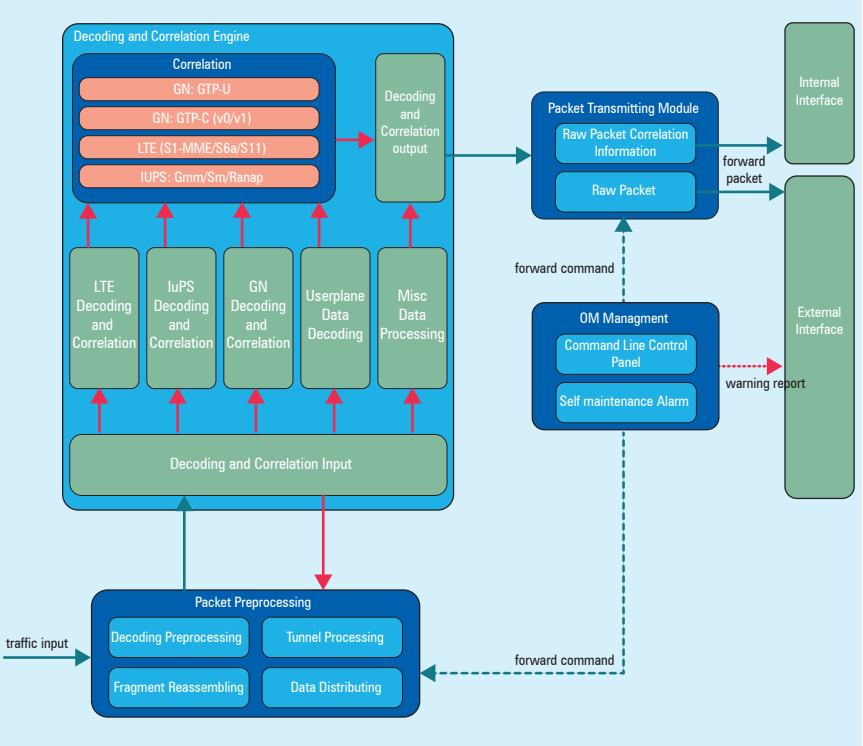
- The operating system developed by Cubro for signaling decoding and network protocol analyzing is based on the Network Protocol Analysis System (NPAS). The Probe can identify and analyze over a thousand traditional applications protocols and various new ones. Besides, the Probe can correlate and analyze signaling messages in mobile core networks and generate XDRs, providing the basis for application analysis and thus helping network owners to construct the intelligent network pipeline which can be identified, localized and analyzed. It has ultra strong processing capacity and ultra low power consumption with MIPS multi-core CPU.

- The Probe can make typical traffic processing such as packet integrity preserving, packet decompressing, keyword matching and session management with hardware. It provides the processing capacity as high as 20 Gbps and power consumption as low as 160 W in 1 U compared with traditional devices. It can provide 200% traffic processing capability with only 20% equipment size and power consumption, making it simple to conduct the big data analysis in real time.

PRODUCT CAPABILITIES / FEATURES

Identification Feature	Supports 2G/3G/4G mobile core network WLAN MAN interface connection, signaling analysis of GPRS/UMTS/CDMA2000/LTE and business analysis inside MPLS, PP2P, GTP, GRE, IPoverIP, VLAN and PPPoE.
Supported Interfaces	Gn: GTP-C; Gb: BSSGP/GMM/SM; IuPS: RANAP/GMM/SM; LTE S1-U/S1-MME; LTE S11/S12: GTP-C (V2.0); LTE S6a/Gx/Rx: Diameter; Gi: Radius; R-P: A10/A11.
Other DPI Features application detection	Up to 1000 applications are supported today
LTE Signaling Decryption	LTE S1 NAS
Classification	6-tuple ACL rule (IP 5-tuple + app id, maximum: 4K) Redefining app id with actions to classify applications Load balancing (preserving session/subscriber integrity)
XDR	Generating XDRs in Cubro format as UDP stream
Real-time User Tracking	Tracking the user in real time with phone number, IMSI and IP; generating CDR, CDR rate 1 CDR per/sec
Online Session Memory	200 - 400 million simultaneously can be handled per probe
Ports	24 X 10 Gbps / 1 Gbps and 4 X QSFP 40 Gbps
Configuration / Communication	Serial/SSH/Telnet/FTP
Performance	Throughput 160 Gbps DPI Performance 20 - 60 Gbps 20 million concurrent sessions online (max)
CPU	Mips 6496 Core
MTBF	178,125 hours

PRODUCT INTERNAL FUNCTION



- The packet preprocessing module is composed of four parts: decoding preprocessing, IP fragments reassembling, tunnel processing and data distributing.
- In decoding preprocessing process, the probe mainly checks the data correctness, fragment identifier and decodes the IP/TCP/UDP/SCTP layer.
- In IP fragments reassembling process, the probe reassembles the IP fragments. When some fragments are lost, other fragments of the packet should be output to the main system for statistics accuracy. If the first fragment is lost, other fragments of the packet will not be correlated and there are only public fields on CDR. If all the fragments except the first one is lost, the first fragment will be correlated and it will be shown in the CDR that some fragments are lost.
- In tunnel processing process, the probe preprocesses the Gtp-C, Gtp-U, GB signaling and IuPS signaling decoding, distinguishes the main signaling interfaces and extracts some public fields.
- In data distributing process, the probe identifies different interface data types based on the IP table of GGSN, different interfaces and directions (up link or down link). Different data types from different interfaces will be forwarded to corresponding modules to be further processed.
- Decoding and Correlation Engine - The decoding and correlation engine is responsible for decoding and composing different signaling: Gn: GTP-C; Gb: BSSGP/GMM/SM; IuPS: RANAP/GMM/SM; LTE S1-U/S1-MME; LTE S11/S12: GTP-C (V2.0); LTE S6a/Gx/Rx: Diameter; Gi: Radius; R-P: A10/A11.

Besides, the information about the user identification, location and business (such as IMSI, UserIP, LAC and APN) can be obtained by looking up the PDP table. However, the engine can only process the GTP-U data of Gn instead of Gb or IuPS.

- Packet Forwarding - There are two packet forwarding ways:

  1) The forwarding way of packets with information structure - It is used for the communication of the front end subsystem to the main system. The information, which contains header and body, is after the raw data. The information header contains interface version, information length, raw data length, belonging interface and direction (up link or down link). The information body contains CDR or PDP information.

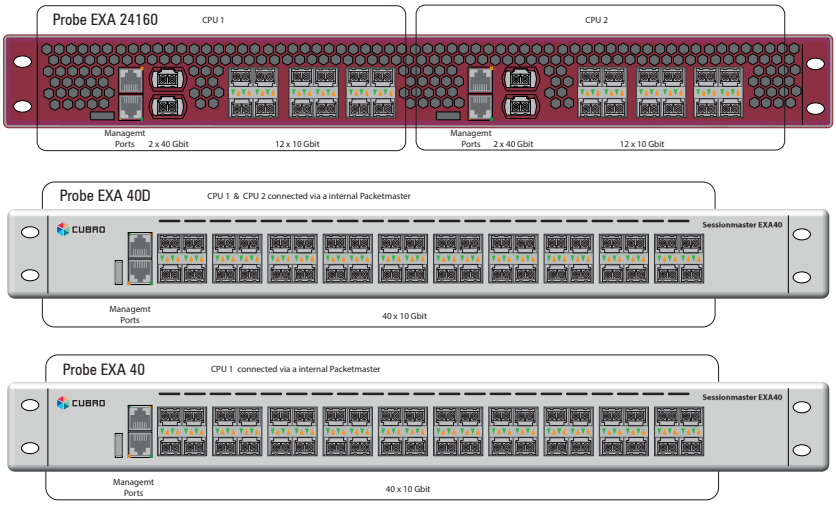
  2) The forwarding way of raw data - It is used for internal debugging or other functional requirements.

- OM Management

  1) Command line control panel - It is used for managing and configuring the basic parameters forwarding configurations of the front-end subsystems and checking the system status statistics information.

  2) Self-maintenance alarm - The device will notify the maintenance engineers of the device state by alarms, such as the port state and processing capacity.

TECHNICAL DATA / SPECIFICATIONS



INPUTS*

Several 1, 10, 40 Gbit interfaces can be used as inputs from TAPs or NPB.

On EXA40 and EXA40D a NPB is build in the probe.

On EXA24160 an external NPB can be used for load balancing the traffic.

OUTPUTS*

Any port can be used as metadata streaming output. The XDR's can also send load balanced traffic over several ports to reduce the load on the servers.

PERFORMANCE

Nearly more than 1000 pre configured fingerprint application id available.

Advanced multi core CPU design

Lowest power usage per Gbit traffic processing in the industry.

Operating specifications:

Operating Temperature: 0°C to 45°C
Storage Temperature: -10°C to 70°C
Relative Humidity: 10% min, 95% max
Non-condensing

Mechanical specifications:

Dimension (HxWxD): W=440.00 mm, L=532 mm, H=44,4 mm
Weight: 9,4 kg

Electrical specifications:

Input Power: 100-240V, 2A, 47-63 Hz
36 - 72 V DC
Maximum Power Consumption: 184 - 270 W

Certifications:

Fully RoHS compliant
CE compliant
Safety - UL 60950-1 / CSA C22.2 60950-1-07 / IEC 60950-1 (2005) EN 60950-1 (2006)

MANAGEMENT

Management Port: (1)
RJ45 10/100/1000 Mbit

Configuration (CLI) Port: (1) RS-232 DB9

USB 3.0 for software update

INDICATORS

Per RJ45 port: Speed, Link/ Activity

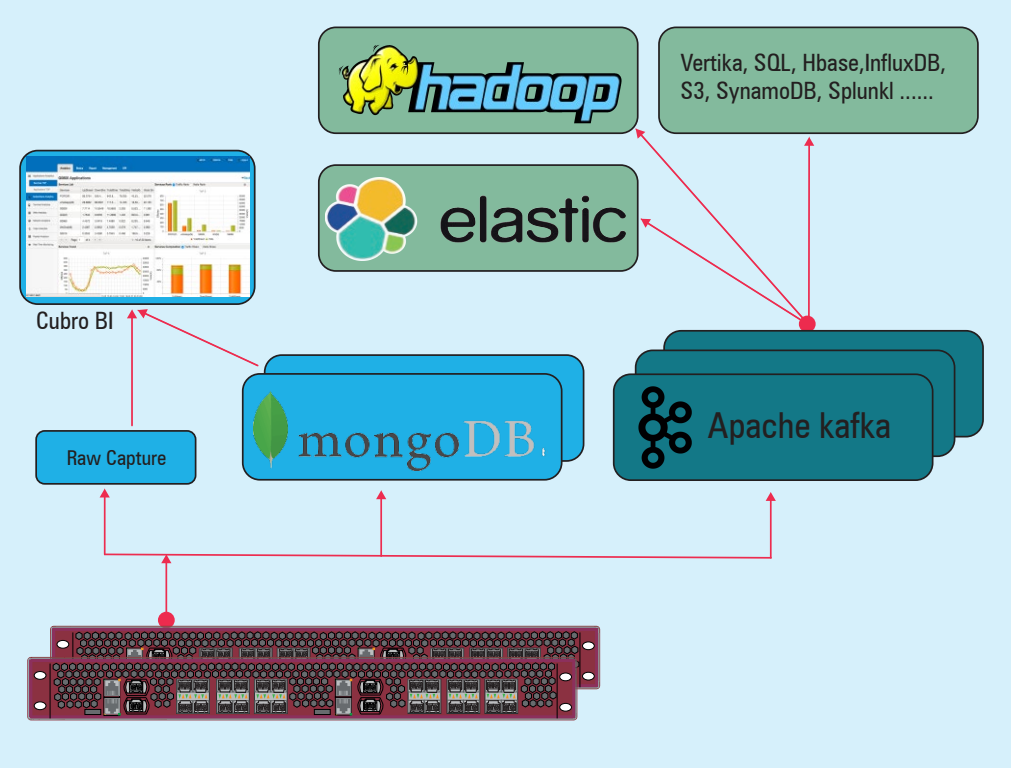
Per SFP+ port: Status, Rx, Tx, Link

Per Device: Power, Status

AVAILABLE PROBE UNITS

Product Type		Probe EXA40	Probe EXA40D	Probe EXA24160
Hardware specs	Monitoring Ports	40 x 10 Gbit SFP+	40 x 10 Gbit SFP+	24 x 10 Gbit & 4 x 40 Gbit
	Management Ports	1 x RS 232 RJ45 & 1 x FE RJ45 & USB 2.0		
	Memory	64G DDR3 1333MHz ECC	128G DDR3 1333MHz ECC	128G DDR3 1333MHz ECC
	CPU	Cavium MIPS multi-core processor	Cavium dual MIPS multi-core processor	Cavium quad MIPS multi-core processor
Features	Network and Interface Connection	GPRS UMTS: Gb/IuPS/Gn/Gi CDMA2000 1X EVDO: RP/Pi LTE FDD TD-LTE: UU(software collection)/X2(software collection)/S1-MME/S1-U/S11/S3/S4/S5/S8/S6A/SGs/SGi WLAN IP network: TCP/IP; managing the ID information by Radius		
	Mobile Network Signaling Protocol (with CDR)	GRPS: GMM/SM/BSSGP/SNDCP/GTP/RADIUS UMTS: RANAP/GTP CDMA2000 1X EVDO: A10/A11 LTE FDD TD-LTE: RRC/X2AP/S1AP/GTPv2/DIAMETER/SGSAP/EMM/ESM		
	End-to-end Analysis of Signaling Business	Analyzing the user signaling and businesses to generate the CDR which contains user ID, location and behavior, etc.		
	Real-time User Tracking	Tracking the user in real time with phone number, IMSI and IP; generating CDR		
	DPI performance	20 Gbps	40 Gbps	60 Gbps
	DPI Protocol Feature	1200 Application Signature (can be extended to approx. 4000)		
	Business Identifying Rate	>95%		
	Business Identifying Accuracy Rate	>99%		
	Identifiable Main Applications (expendable)	Instant Message WeChat, QQ,whats up,skype Payment (Alipay, Mobile Wallet) Music (QQ Music, Baidu Music, KuGoo) Video Youku, Tudou , Youtube, Netflix , Amazon Microblog (Sina Weibo, Tecent Weibo) HTTP Download (360 Application Asistant , Pea pods, Assistant 91) VOIP (Alicall, Skype E-mail (163 postbox, QQ postbox) Game Fruit Ninja, Legends of the Three Kingdoms P2P Download (Thunder, eDonky) Operator Business (MMS, Mobile Newspaper) Web Browsing (SINA, SOHO) Traditional Protocol (FTP, TELNET, DNS)		

TYPICAL APPLICATION



This is the Cubro Big Data approach. The Cubro Probe delivers the XDRs via UDP stream to Apache Kafka instances.

The Cubro Kafka extension makes it possible that Kafka can handle the Cubro XDRs and enrich, modify and convert the data into the requested format, depending on the customers need and the used BI system.

Cubro also offers a basic BI system based on Mongo DB. This also scales to large size, but is a closed system.

ORDERING INFORMATION

Product Components:

- Cubro Mobile Probes
- AC/DC power supply
- European power cord
- (no SFPs included)

Part Number	Description
CUB.PCP-S	Packet Core Probe, single CPU, AC power
CUB.PCP-D	Packet Core Probe, dual CPU, AC power
CUB.PCP-Q	Packet Core Probe, quad CPU, AC power
CUB.PCP-S-DC	Packet Core Probe, single CPU, DC power
CUB.PCP-D-DC	Packet Core Probe, dual CPU, DC power
CUB.PCP-Q-DC	Packet Core Probe, quad CPU, DC power

For more information please check our website **www.cubro.com**