

CLOUDLENS MOBILESTACK SUBSCRIBER-AWARE VIRTUALIZED MOBILE CORE NETWORK LOAD-BALANCER

SCALE OUT AND OPTIMIZE YOUR MOBILE NETWORK QOS MONITORING PROBES!

PROBLEM: QOS MONITORING PROBES CAN'T KEEP UP WITH INCREASED TRAFFIC

The **exponential growth** of how much mobile data subscribers use, driven by **apps**, **video** and usage of Voice over LTE (**VoLTE**), creates unprecedented **challenges** in scaling not just the mobile core network, but also the monitoring probes user to track the Quality of Service (**QoS**) for these subscribers. The pervasive virtualization of the Evolved Packet Core (**vEPC**), driven by upcoming 5G standards driven by IoT, further complicates quality assurance as it changes the paradigm from dedicated devices with characterized performance to software running on off-the-shelf hardware.

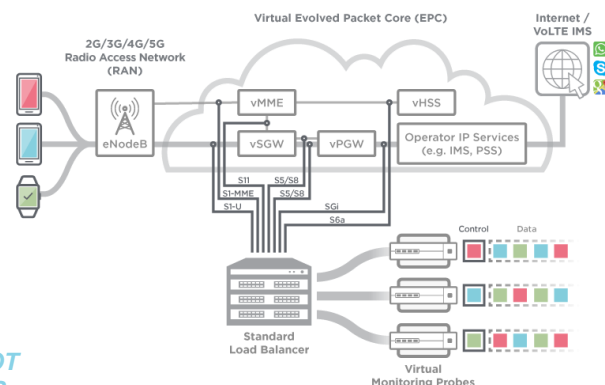
Key issues mobile network operators deal with:

- Providing subscribers the same Quality of Experience (QoE) as a traditional network
- Scaling monitoring infrastructure to parallel the operational network, while retaining the ability to track individual subscribers' sessions as they roam
- Focus quality analysis investment on critical and sensitive services such as VoLTE, that is not transported over the same network and nodes as the regular data traffic
- Sheer volume of data transit over networks with the increase in data-connected devices

FIGURE 1. A STANDARD LOAD BALANCER CANNOT ADDRESS OPERATORS' NEEDS FOR SUBSCRIBER AWARE VISIBILITY

HIGHLIGHTS

- Includes Ixia's MobileStack fundamental capabilities: GTP Session Correlation, GTP Load Balancing and Subscriber-aware filtering
- Load-balances to virtualized or physical mobile network QoS monitoring probes
- Enables horizontal scaling for probes
- Tracks subscribers across 4G and 3G
- IMSI based filtering for VIP customers
- Support for 1G to 100G interface speeds
- DPDK enabled for high performance
- Supports GRE termination and origination
- Easy to deploy and manage with web UI
- Flexible orchestration through REST APIs
- Persists mobile subscriber information
- Packet capture tool for debugging

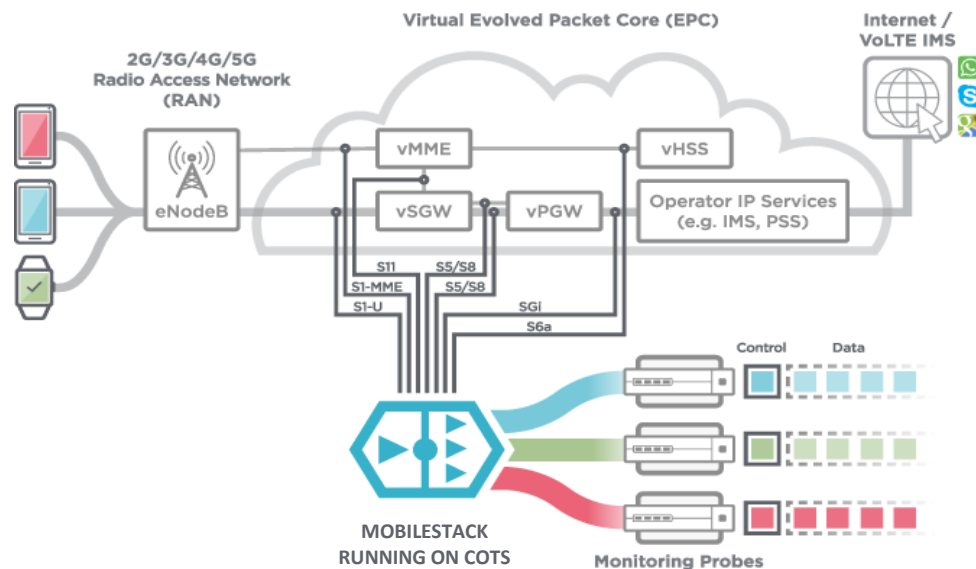


SOLUTION: SCALE MONITORING INFRASTRUCTURE FOR VIRTUAL OR HYBRID EPC WITH GTP CORRELATED LOAD BALANCING

Ixia's **CloudLens with MobileStack** helps service providers ensure highly reliable network quality, which means a good subscriber experience, and thus lower subscriber churn rates. CloudLens with MobileStack:

- Allows providers to scale-out the monitoring for the virtual Evolved Packet Core (vEPC)
- Provides subscriber-aware filtering and load balancing to virtual probes
- Allows isolation of high value customers with IMSI filter capabilities
- Is multi-platform capable - works for physical, virtual, and hybrid transitional deployment models
- Lowers total cost of ownership (TCO) of monitoring solutions and cost per packet

CloudLens with MobileStack has specialized capabilities that provide these benefits. The first, is **subscriber-aware load-balancing – or GTP (GPRS Tunneling Protocol) load-balancing**, which enables **horizontal scaling**. With load-balancing, operators can better use valuable tool resources, which optimizes costs, by avoiding monitoring probe under and overloading scenarios.



In a typical deployment, CloudLens with MobileStack receives mobile network traffic from taps (either physical or virtual), analyzes the traffic to match it to unique mobile subscribers and then delivers the traffic load balanced across the entire domain of mobile subscribers to probes (either physical or virtual). **GTP session correlation**, another specialized feature, is performed on the traffic, ensuring that **traffic** for a certain mobile subscriber received from multiple sources and different 3GPP interfaces is always delivered in its entirety **to the same monitoring tool**. This ensures that monitoring probe capacity is not

wasted correlating subscriber traffic – this can free up to 50% of a probe’s capacity to do the core function of generating KPIs.

CloudLens with MobileStack is also capable of **subscriber-aware filtering**, allowing an operator to specify the relative importance of various mobile subscribers or groups of subscribers. High value subscribers can be monitored differently than those that are not of interest for monitoring purposes. This eliminates the need to monitor all traffic, ensuring that monitoring probes are focusing where it matters.

CloudLens with MobileStack also persists mobile subscribers’ information in an internal database to restore to a working state very quickly after an outage or planned maintenance event. This backup ensures up-time and a better subscriber experience through continuous monitoring.

The rich tunneling and encapsulation feature set allows CloudLens with MobileStack to be used seamlessly in a mix of physical and virtual EPC components and monitoring probes. A great advantage of CloudLens with MobileStack is that that it can be **deployed** on regular server it in a **physical environment** in **today’s** EPC, **and** its **licenses** and correlation capacity **can be reused in** a hybrid deployment as the transition to a **virtual EPC** takes place, or in a fully virtualized deployment.

KEY FEATURES:

FILTERING, TRAFFIC HANDLING	
<p>GTP Session Correlation</p> <ul style="list-style-type: none"> Supports up to 6 million tracked subscribers and up to 300K control plane packets (GTP-C) per second. <p>GTP Load Balancing</p> <ul style="list-style-type: none"> Supports S1-U, S11, Gn, S1-MME and S6a EPC interfaces (more available on request) <p>Packet capture</p> <ul style="list-style-type: none"> Supports packet capture on ingress and egress for debugging purposes 	<p>Subscriber-aware filtering</p> <ul style="list-style-type: none"> Flexible IMSI based filtering allows focusing on high value customers and emergency <p>Tunneling and encapsulation</p> <ul style="list-style-type: none"> Can receive GRE encapsulated traffic from virtual taps as well as plain, non-encapsulated traffic from physical taps Can send GRE encapsulated traffic to virtual monitoring probes, as well as non-encapsulated traffic to directly connected probes Bidirectional (RX/TX) traffic support for efficient NIC port use in case of physical deployment
DEPLOYMENT OPTIONS	
<p>Multi-platform capable</p> <ul style="list-style-type: none"> Runs on both VMWare and KVM hypervisors (OVA or QCOW2 downloadable VM image) Also works directly deployed on Linux for traditional EPC deployments 	<p>Flexible connectivity</p> <ul style="list-style-type: none"> Support for 1G to 100G physical connectivity depending on installed NICs Up to 16 ingress and 16 egress virtual or directly connected physical ports DPDK enabled for enhanced performance

MANAGEMENT INTERFACE	
<p>Easy setup & management</p> <ul style="list-style-type: none"> HTML5 UI – use a web browser to manage HTTPS enabled for security Rich statistics for all supported interface types 	<p>Orchestration and administration</p> <ul style="list-style-type: none"> Fully REST API controllable for easy integration with any orchestration engine Persistent subscriber tracking database to quickly restore outage or planned maintenance event

RECOMMENDED HARDWARE

18+ core CPU (Intel® Xeon® E5-2697 v4 or better), 64 GB or more RAM, DPDK enabled NICs (Intel XL710®, Intel® X710, Intel® 82599) allows scaling up to 6 million simultaneous attached subscribers.

ORDERING INFORMATION

CLOUDLENS MOBILESTACK ORDERING INFORMATION	
<p>10G</p>	<p>LIC-CL-MS-10G</p> <p>Ixia CloudLens MobileStack, 10Gbps Perpetual License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets per second.</p> <p>SUB-CL-MS-10G</p> <p>Ixia CloudLens with MobileStack, 10Gbps Yearly Subscription License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets (GTP-C) per second. Use 909-5038 when purchasing renewal.</p> <p>909-5038 Renewal for SUB-CL-MS-10G.</p>
<p>40G</p>	<p>LIC-CL-MS-40G</p> <p>Ixia CloudLens MobileStack, 4 units of 10Gbps Perpetual License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets per second.</p> <p>SUB-CL-MS-40G</p> <p>Ixia CloudLens MobileStack, 4 units of 10Gbps First Year Subscription License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets per second. Use 909-5040 when purchasing renewal.</p> <p>909-5040 Renewal for SUB-CL-MS-40G.</p>

CLOUDENS MOBILESTACK ORDERING INFORMATION

80G	<p>LIC-CL-MS-80G</p> <p>Ixia CloudLens MobileStack, 8 units of 10Gbps Perpetual License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets per second.</p> <p>SUB-CL-MS-80G</p> <p>Ixia CloudLens MobileStack, 8 units of 10Gbps First Year Subscription License. Each unit provides up to 10Gbps of throughput, up to 2 million tracked subscribers and up to 100K control plane packets per second. Use 909-5039 when purchasing renewal.</p> <p>909-5039 Renewal for SUB-CL-MS-80G.</p>
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