ProbOS

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About Us

OutSys

OutSys delivers innovative carrier-grade solutions and services to implement, simplify, and speed up the integration, provisioning, management, and testing processes in the Broadband Service Providers Networks and their Information Technology Systems

Active Member of the Broadband-Forum

ProbOS

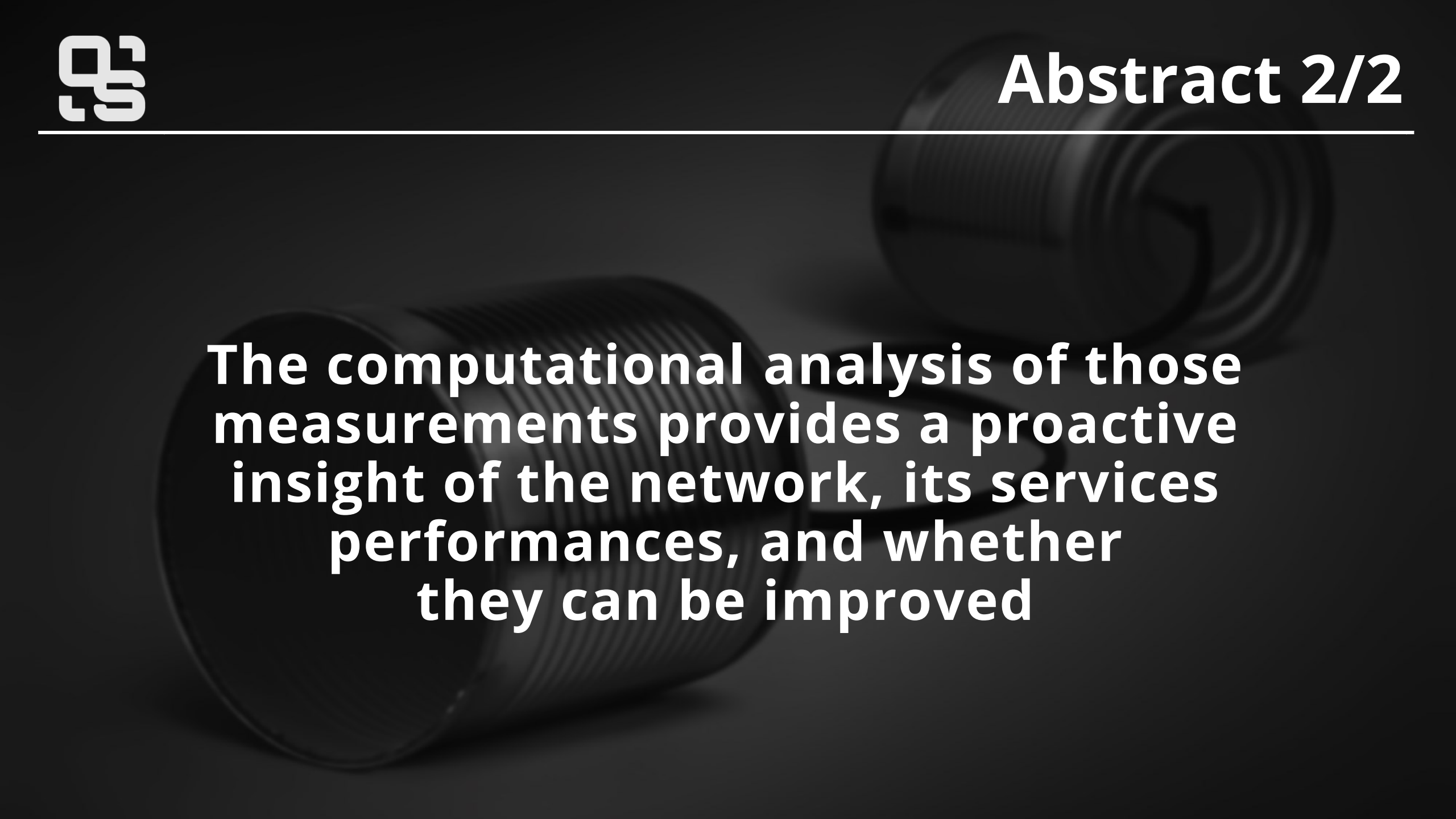
Versatile Network Probing Solution

ProbOS is part of the Testing and Probing Field and Production Solutions Portfolio

Abstract 1/2

ProbOS is a comprehensive, integrated, modular, and extensible solution developed to deploy and manage probe pools capable of taking, collecting, and analyzing network performance measurements

Abstract 2/2



The computational analysis of those measurements provides a proactive insight of the network, its services performances, and whether they can be improved

ToolSet

QED – Quality: Latency & Packet-Loss

UDPST – Speed-Test

VChk – VoIP SIP Test

Extensibility

ProbOS is a modular and extensible framework

Leveraging on its flexible infrastructure, other measurement and test means can be quickly and seamlessly added to its ToolSet

QED - Standards

QED – Quality Experience Delivered

It measures the Network Quality Attenuation

Part of the BroadBand-Forum Performance, Experience, and Application Testing Initiative

TR-452.x – MR-452.x

QED – How it Works 1

QED decomposes the packets network trip time into its distinct components, matches them to the performance degradation sources (packet loss/delay) and then relates them to physical/geographical network topology, packets features, and network load/scheduling

QED – How it Works 2

This segmentation provides better and deeper insights and understandings than those obtained using the conventional indicators such as packet loss, min/average/max latency, and jitter

Allowing to know where the quality degradation happens and whether and how to address it

QED – Implementation

While the ProbOS native QED measurement protocol is STAMP, its probes can also use TWAMP, IP-SLA, or UDP-Echo-Plus protocols to use legacy reflector implemented on RG, CPE, and Routers already present on the network

UDPST – UDP Speed Test

It measures the IP-Layer Capacity

Part of the BroadBand-Forum Performance, Experience, and Application Testing Initiative

TR-471.x – MR-471.x

UDPST – Advantages

UDP is the transport protocol closer to the physical layer

The probing duration is as short as possible

It’s a public open measurement protocol not an “obscure” proprietary tool

It is ratified by the BBF: TR-471 and the IETF: RFC 9097

VCheck – Abstract

VChk – VoIP SIP Test

It verify the Signaling protocols dialogs

It measure the Real-Time Transport protocols MOS quality

It can interact with any SIP infrastructure or emulate it

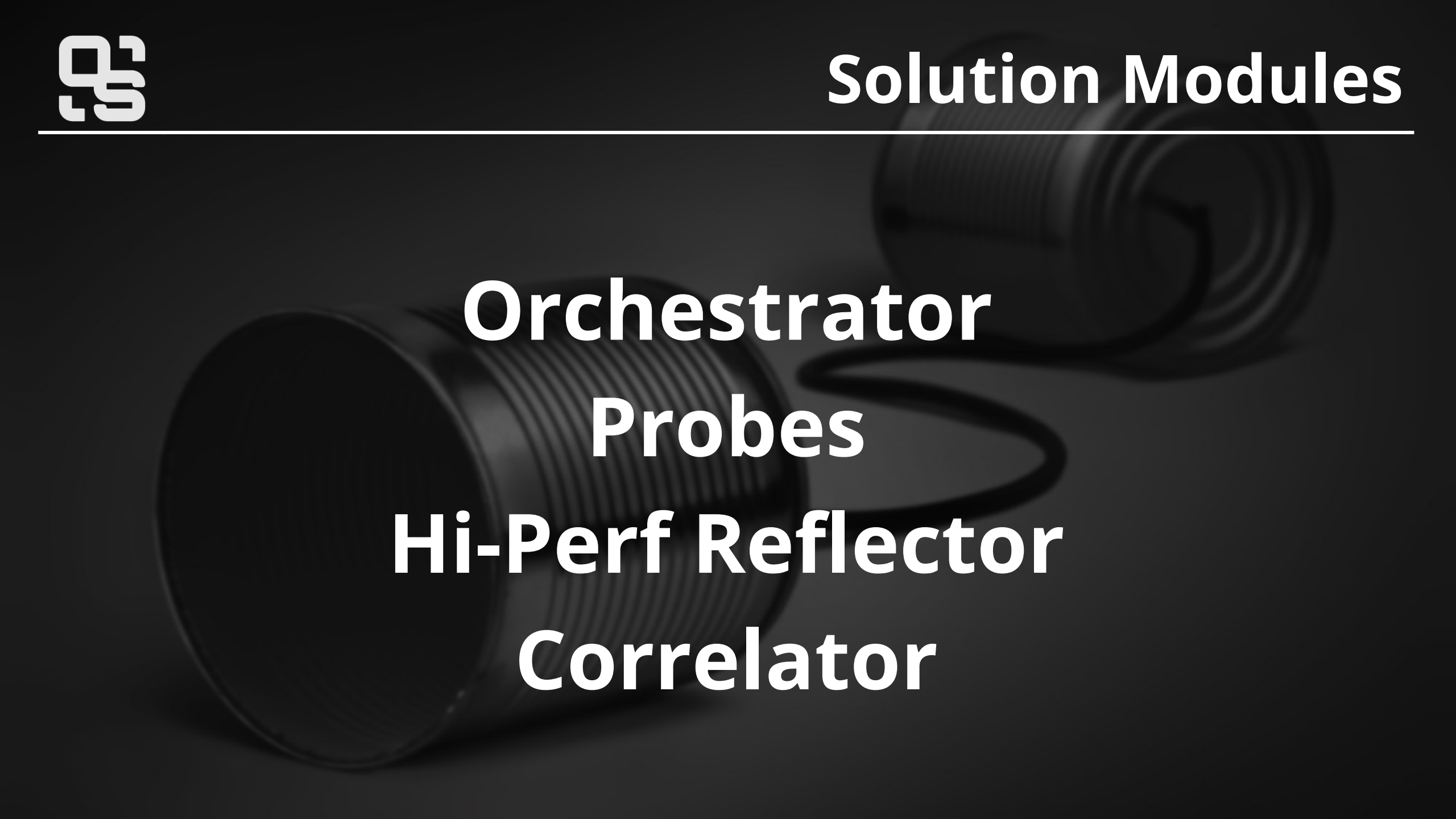
VCheck – Extensions

Real-Time Transport protocols quality measurement with:

PESQ and/or POLQA

Mean Opinion Score (MOS)

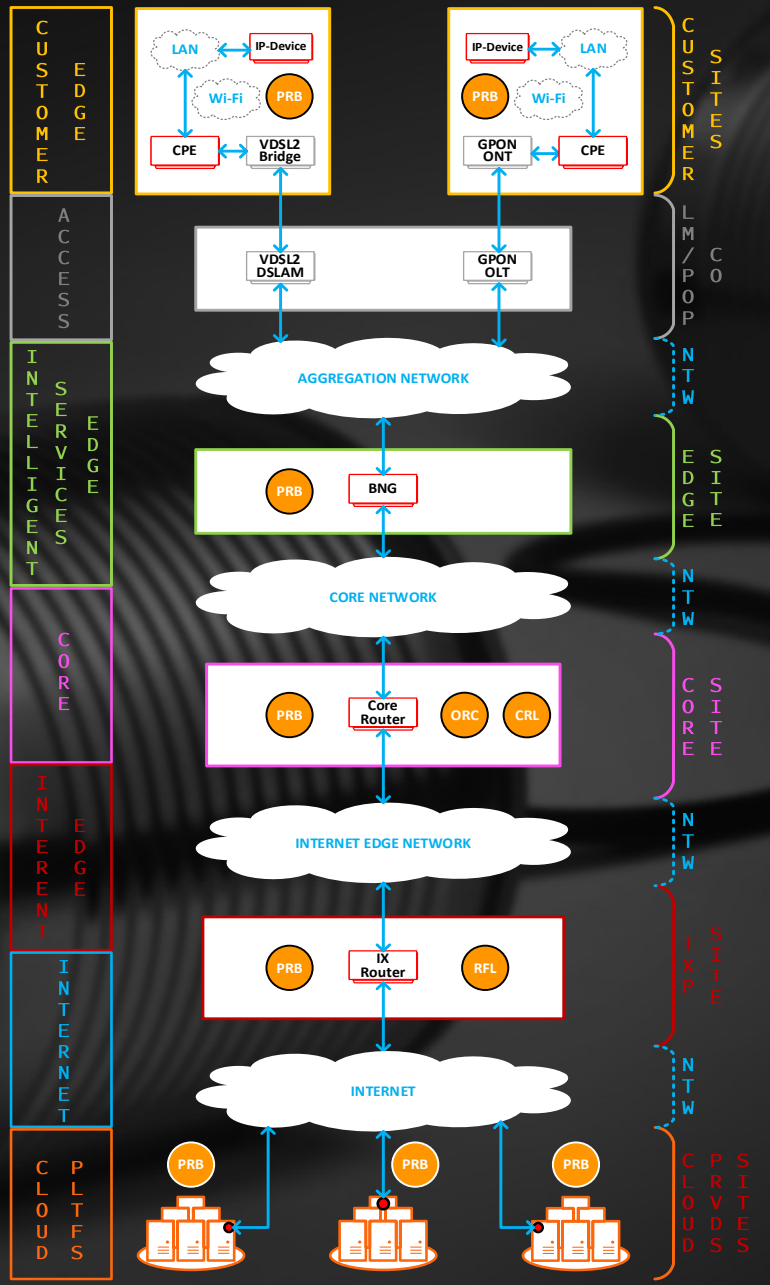
Deep Learning Speech Recognition



Solution Modules

Orchestrator
Probes
Hi-Perf Reflector
Correlator

ProbOS Modules Network Deployment



- **ORC** Orchestrator
- **PRB** Probe
- **RFL** HPR-Reflector
- **CRL** Correlator

Orchestrator

The ProbOS Orchestrator is a distributed Carrier-Grade and Cloud-Ready system built on Open Software Standard Platforms that manages the probe pools

Its tasks include updating the probe software, scheduling testing campaigns, collecting and archiving their results

Orchestrator – IFs

The ProbOS Orchestrator has its own administrative WebGUI Dashboard

It also exposes an extensible REST-API interface for an easy integration with other systems

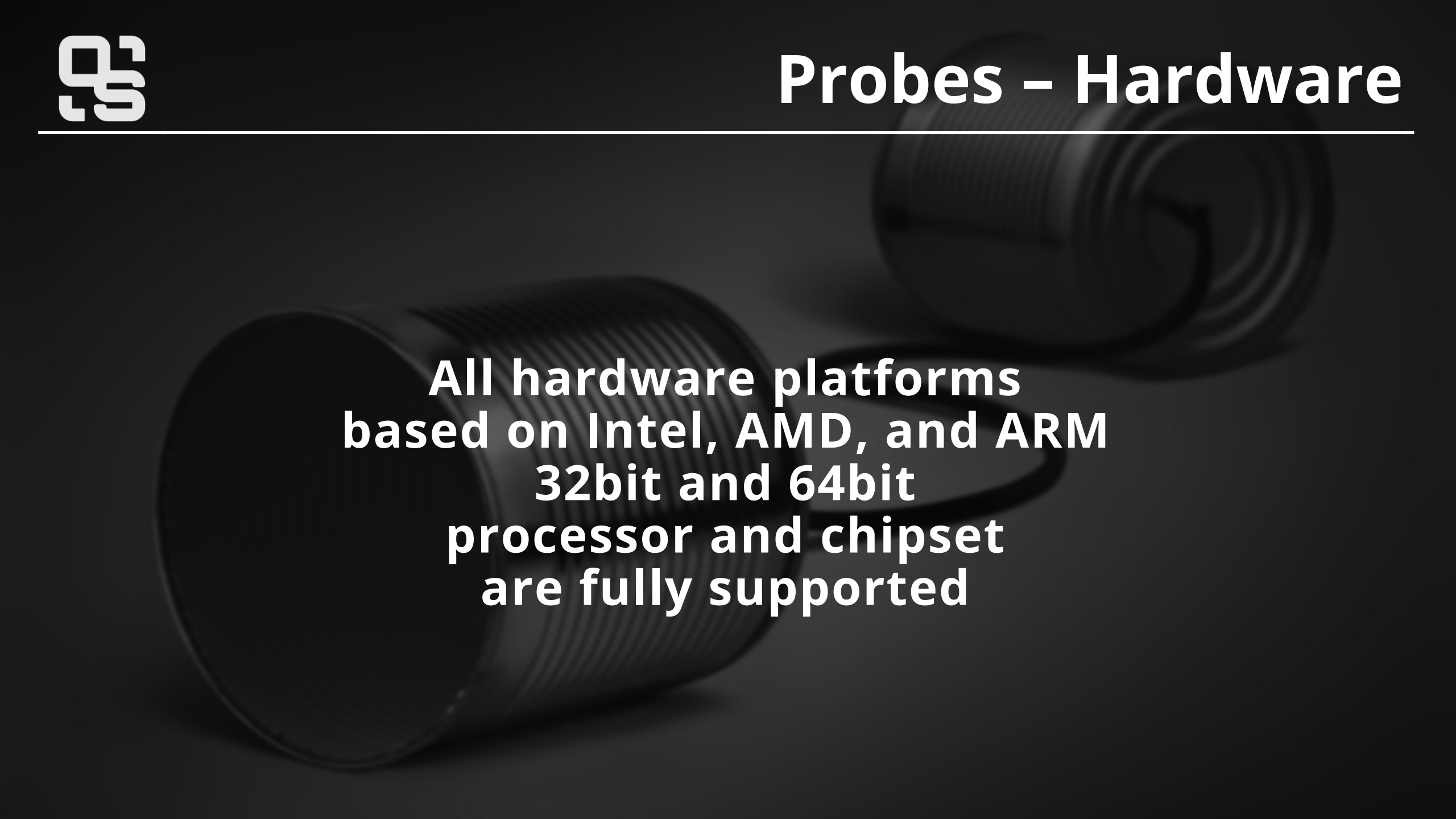
Probes – Software

The ProbOS Probe is developed on Linux and Open Software Standard Platforms

It runs on all common distributions, as well as specialized environments such as OpenWRT and proprietary Linux-based RG/CPE systems

It is Cloud and Container Ready

Probes – Hardware



All hardware platforms
based on Intel, AMD, and ARM
32bit and 64bit
processor and chipset
are fully supported

Probes – HW REQs

For QED and VChk measurements, there are no particular hardware requirements

For UDPST up to 1Gbit/sec, any SBC Raspberry Pi4 like is enough

Given the looming XGS-PON… ProbOS Probe can run on hardware with higher capacity to support 10Gbit/sec and up

Hi-Perf Reflector

ProbOS High Performance Reflector implements the SDN/NVFI design paradigms and is built on Off-the-Shelf Hardware and Open Software Standard Platforms

One instance can handle thousands of QED / VChk and dozens of UDPST concurrent tests

Hi-Perf Reflector – Deployment

ProbOS Hi-Perf Reflector can be deployed when and where a high number of concurrent tests need to be performed

A BSP can install them where its Internet eXchange Points are located

Taking the measurements from its subscriber RG/CPEs to those HPC-Reflectors provides the quality of the network segment under BSP direct control

Correlator

ProbOS Correlator is a Deep Learning powered system that continuously monitors and analyzes the collected test results, aggregating events and trends by probes groups to infer network issues and their location before they can cause disruptions

Correlator – IFs

The ProbOS Correlator has its own administrative WebGUI Dashboard

It also exposes an extensible REST-API interface for an easy integration with other systems

In addition, it provides an extensible Push Notification API Set: SNMP, Web-Hooks, etc.

Offer Models

Since every Service Provider has its own procurement procedures and requirements, ProbOS offer goes from a Software-Only to a Turn-Key models with all the intermediate possible flavors

Contacts

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Thank You