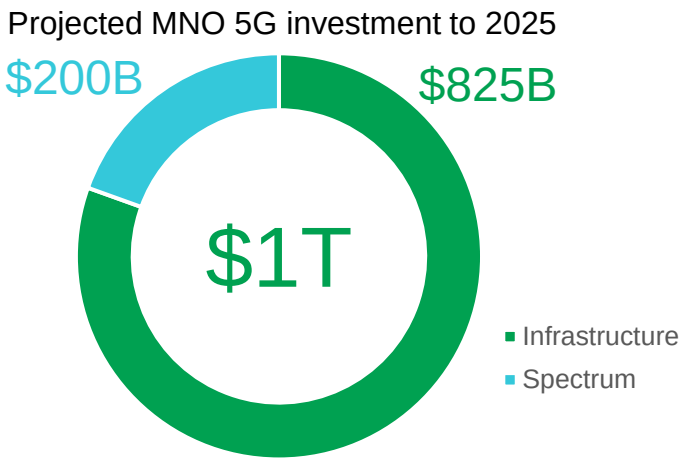
EXFO Reveal

Core-to-RAN troubleshooting
for 5G and other mobile networks

5G makes troubleshooting more complex and more important than ever

Tools built for 3G and 4G troubleshooting just don’t cut it in the 5G era



By 2025, mobile operators will spend over $825 billion on 5G infrastructure[1]. Add in spectrum licenses, and the grand total is well over $1 trillion.

Troubleshooting is absolutely critical for ensuring a return on that enormous investment. For example, enterprise customers will take advantage of service-level agreements (SLAs) to ensure that their mission-critical applications get the network performance they’re paying for.

However, troubleshooting tools deployed for 3G and 4G can’t provide the visibility and capabilities that operators will need for meeting those SLAs as well as supporting premium consumer services. Most operators have amassed a hodge-podge of disparate tools, each designed to support a specific vendor’s infrastructure or a single technology generation.

Those tools can’t handle 5G’s highly complex, fundamentally different architecture because they were built for previous generations. They also struggle to integrate with 5G infrastructure from the new vendors typically brought in as part of a generational upgrade. That means they can’t easily ingest and correlate third-party data to get the kind of actionable insights operators need to troubleshoot quickly and effectively.

1. GSMA Intelligence, 2025 CAPEX Outlook, March 2020. https://bit.ly/3smIOaQ

The era of RAN-to-Core troubleshooting

Complex performance issues traverse multiple domains

65% of MNOs[1] say lacking real-time service assurance is their biggest obstacle

5G service assurance is the guide.

Savvy operators view 5G as an opportunity to take a fresh approach to troubleshooting. For example, complex performance issues traverse multiple network domains. Legacy troubleshooting tools struggle in that environment.

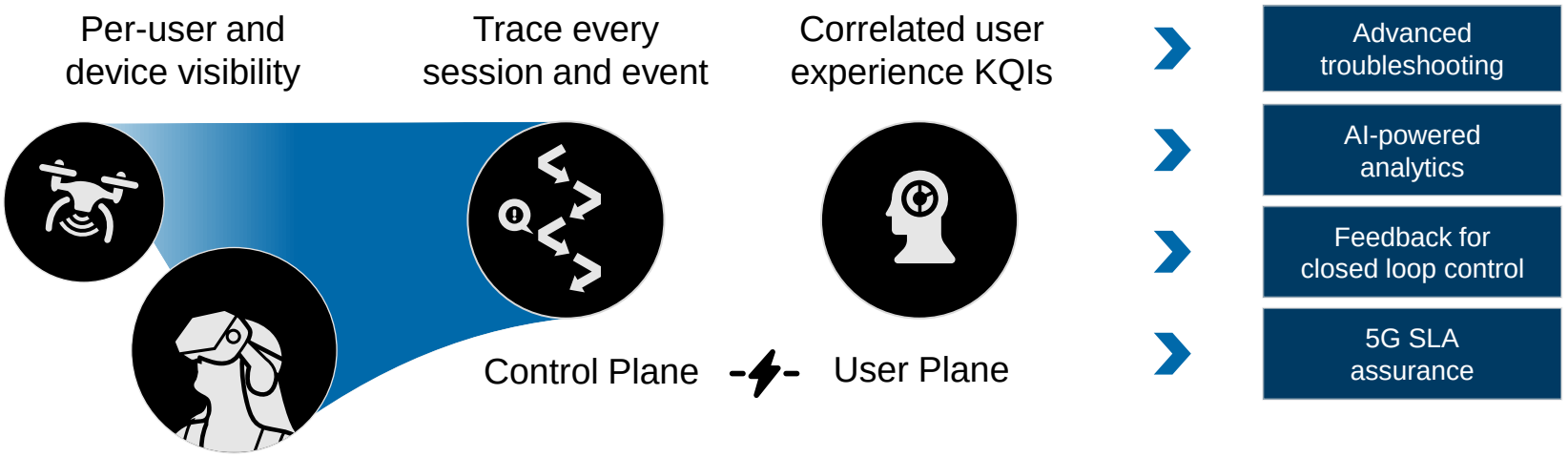
To ferret out the root cause of a problem, operators need a platform that provides comprehensive, RAN-to-Core visibility across a multi-vendor environment.

These advanced troubleshooting capabilities are particularly important as operators start to deploy their 5G standalone (SA) core. They also set the stage for real-time service assurance, which 65% of operators say is critical for success in the 5G market.

1. Ericsson and Coleman Parkes Research, 2019.

What to look for in a RAN-to-Core troubleshooting solution

Ingest and correlate data from myriad sources, regardless of vendor



Legacy tools' event-level troubleshooting is no longer sufficient. Instead, operators need the ability to correlate different users in control plane (CP) traffic and decode as required. That's the only way they can understand the user experience and ensure that they are meeting SLAs.

To enable those insights, look for a RAN-to-Core troubleshooting solution that leverages the trend toward self-reporting networks. This includes the ability to ingest and integrate data from a wide variety of sources such as another vendor's RAN parsers.

For example, the ideal solution uses cloud-native probes to sample 5G traffic in the control and user planes (CUPS), with the ability to filter that data by parameters such as events, users, protocols, interface and xDRs.

The platform also should be able to use those probes on the operator's 4G infrastructure. Those insights help ensure a good user experience during handoffs between 4G and 5G. They also enable the operator to determine whether the new 5G standalone core is affecting customers on its 4G network.

The ideal troubleshooting solution features an open-source, cloud-native foundation to maximize flexibility and choice. For example, the use of Elasticsearch eliminates the expense of proprietary databases and frees operators from vendor lock-in.

EXFO Reveal: providing a holistic view of the whole network

End-to-end visibility and troubleshooting, from RAN-to-Core, including 4G and 5G

EXFO developed Reveal to help operators meet demanding enterprise SLAs and high consumer expectations in 5G standalone and extend those capabilities to their 4G networks. This new solution combines the best of Explorer with cloud-native and open-source technologies, Kubernetes orchestration and more, along with an intuitive UI built on Google Angular.

EXFO Reveal provides trace-level troubleshooting from RAN to core, with deep packet inspection, protocol decoding and CP-UP correlation, as well as live and historic data collection and analysis. Its programmable trace policies can be applied at the level of the cloud-native cProbe, with triggering by end users, third-party applications and AI-powered analytics and automated diagnosis platforms.

EXFO Reveal also is designed to be part of an operator's automation loop, providing highly granular insights and then applying the orchestrator's policies.

Key features and benefits

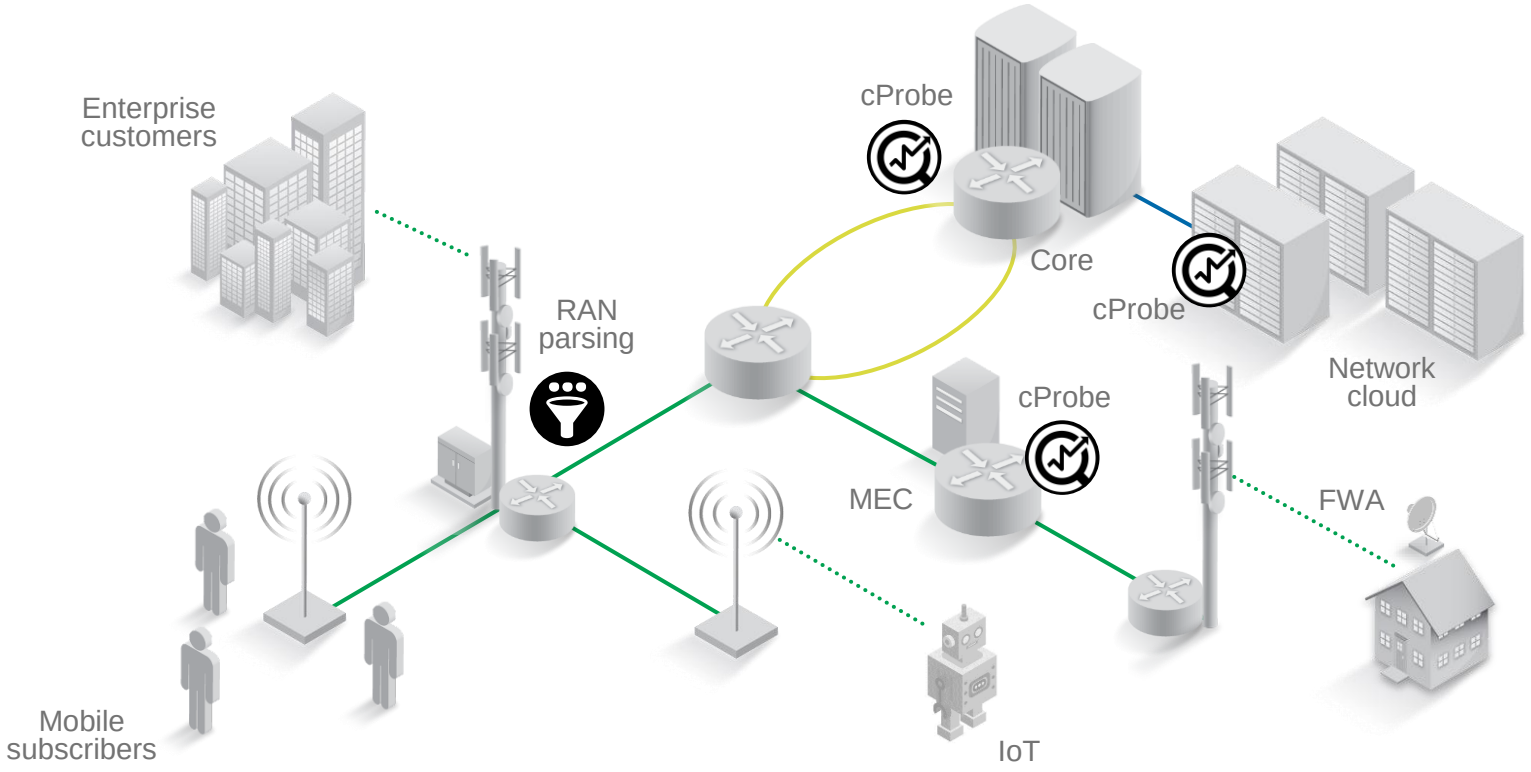
1. Core-to-RAN visibility: Dig deep into the user plane, control plane, and every network element—both 4G and 5G—regardless of vendor.
2. Single-pane perspective: Drill down into granular session records, traffic and session distributions, geo-analytics and more—all from an intuitive UI that maximizes efficiency and speeds up resolution.
3. Multiple trace levels: Choose live data for tasks such as 5G configuration and tuning, or historical data for rapid root-cause analysis.
4. User experience insights: ID every network element and interface that affects a voice call, video chat, connected vehicle service or other critical application with per-user visibility in just 3 seconds.

To realize the full benefits of 5G SA, we must achieve end-to-end assurance from service-to-device across our multidomain network and multivendor core.

Nabil Charkani, director of network architecture and automation, Orange

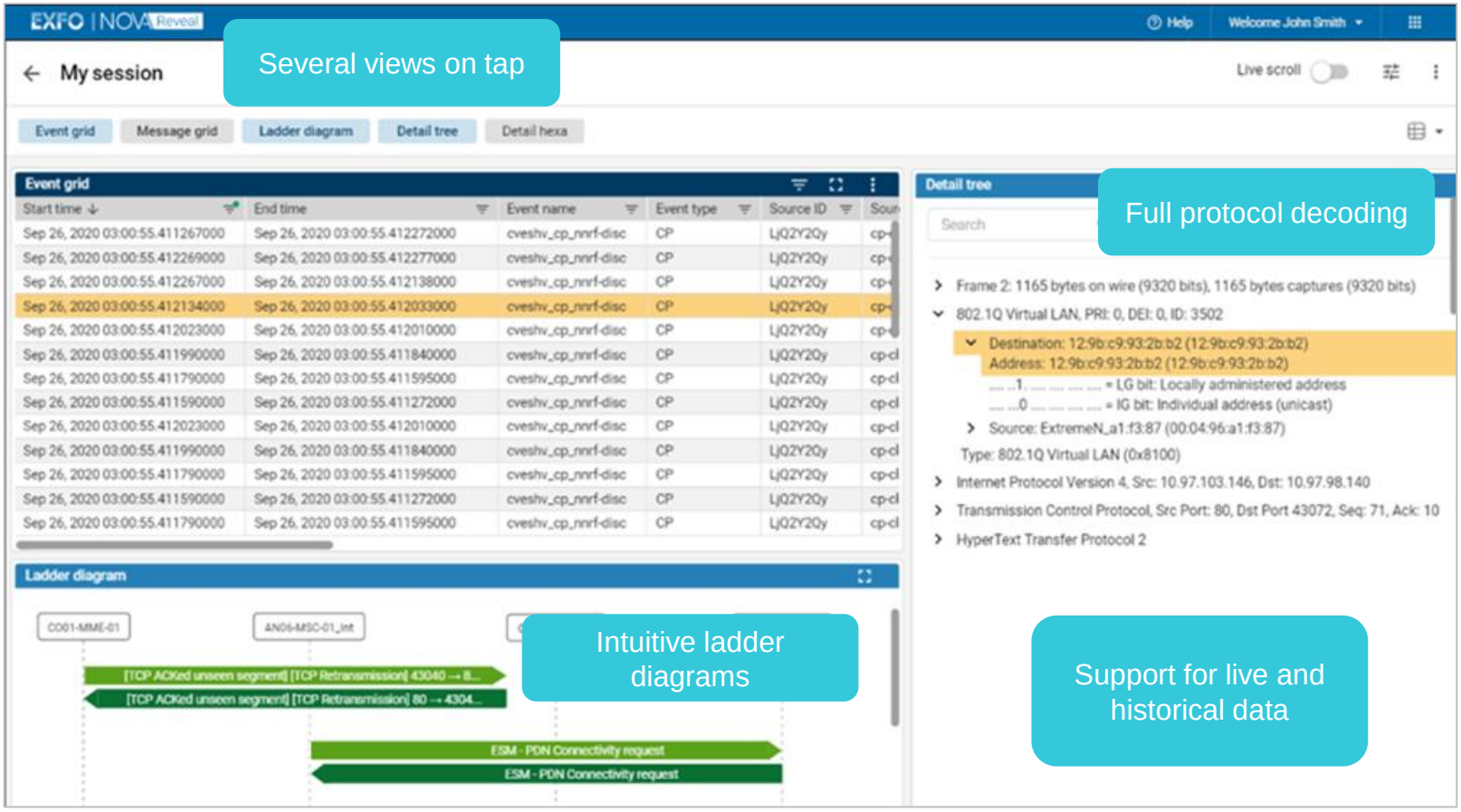
EXFO Reveal: RAN-to-Core troubleshooting with end-to-end visibility

EXFO Reveal integrates data from passive monitoring, active testing, RAN parsing, and equipment and device telemetry to provide a complete view of network performance from Core to RAN. A fully cloud-native solution, EXFO Reveal correlates event data from the control and user planes with xDRs and active test data to provide a detailed view of network performance that speeds troubleshooting and resolution.



The whole network in one window

Fully-customizable user experience with view templates that can be re-used and shared across use cases and personnel



Glossary

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