AMANTYA

AI-Driven Log Analysis for Telecom

How Amantya's AI Log Analyzer Turns Data into Actionable Intelligence

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1. Executive Summary

Telecom networks generate billions of logs across RF, RAN, Core, Wi-Fi, cloud infrastructure and CI/CD pipelines. The challenge is not just volume - it is multi-vendor formats, multi-layer causality, and time-sensitive SLAs. Newer IDC-era forecasts indicate that the global datasphere has already reached ~221 zettabytes in 2026 and is expected to grow to ~393.9 zettabytes by 2028, significantly amplifying the volume of machine data and logs that operations teams must interpret.

As networks scale in complexity, traditional log analysis - manual, rule-based, and siloed - can no longer keep pace. AI-driven log analysis has emerged as a board-level priority, reflected in strong growth across AIOps and observability investments worldwide. The AIOps platform market is forecast to reach ~$36.07B by 2030, and observability markets are also projected to grow materially through 2028-2030.)

This whitepaper outlines what AI-driven log analysis done right looks like in modern telecom, and how Amantya's AI-Powered Log Analyzer converts raw, multi-domain logs into structured understanding, cross-layer correlation, automated verdicts, and predictive insights - improving speed, cost, and network resilience.
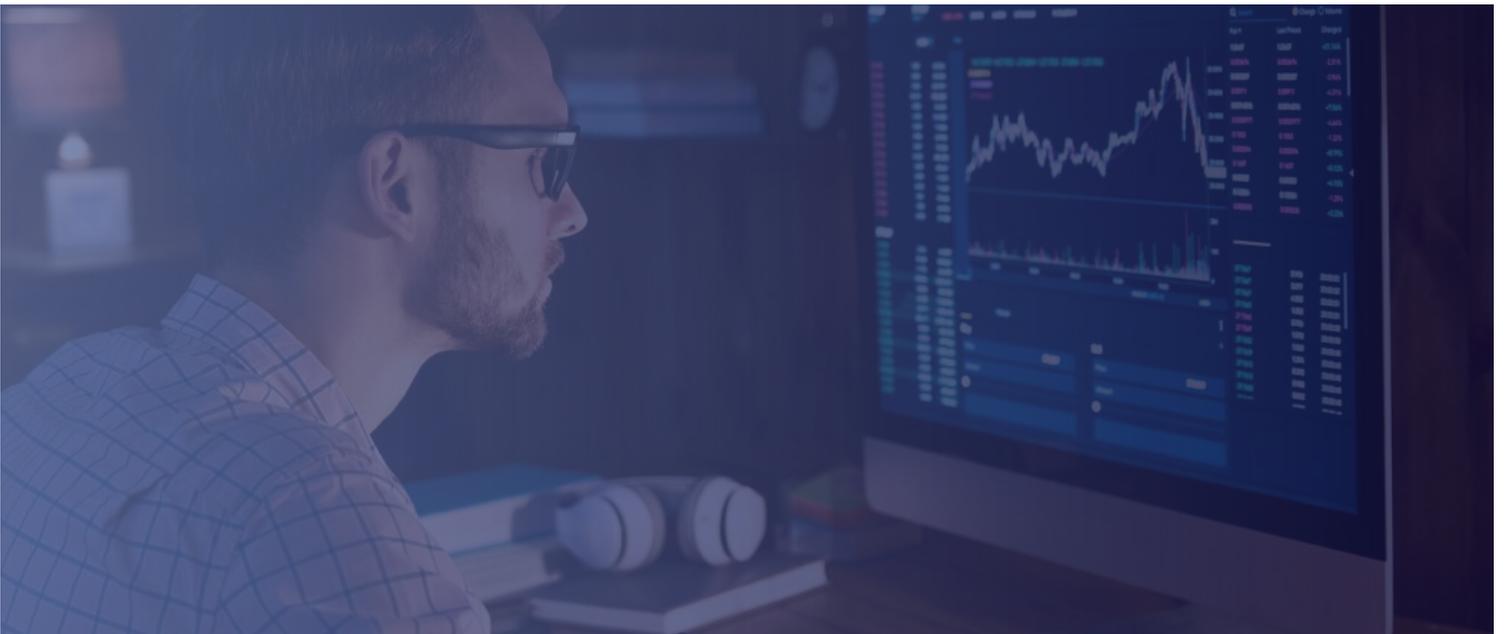
2. The Problem: Logs Are Multi-Layer, Multi-Vendor, Time-Sensitive

In modern telecom networks, incidents rarely present themselves as clear "ERROR" messages. They surface as weak signals - subtle timing shifts, missing event sequences, rare kernel or radio anomalies, or gradual performance regressions that only emerge when viewed across layers.

A single service-impacting issue may span:

System logs, protocol traces, RAN events, core network functions, and service-level KPIs

Multiple vendors and log formats with inconsistent timestamps

Implicit failure patterns, such as missing sequences or gradual degradations

As a result, manual log parsing is slow, reactive, increasing mean time to resolution (MTTR), operational effort, and the risk of SLA breaches.

3. What "AI Log Analysis Done Right" Looks Like

A telecom-grade AI log analyzer must deliver four outcomes:

1. Event Understanding (Structure + Meaning)

Ingest and normalize multi-source logs, convert vendor-specific messages into structured events, and generate readable summaries using AI and LLM techniques. Research consistently shows that log parsing quality and event sequencing directly impact anomaly detection accuracy - reinforcing the need for structured, learning-based pipelines over keyword search.

2. Cross-Layer Correlation (Context)

Unify system log events from RAN, and core layers into a single contextual timeline, enabling cross-layer cause-effect analysis and faster root cause identification.

3. Anomaly & Regression Detection (Signal over Noise)

Detect rare events, missing or disordered sequences, timing violations, and performance regressions that rule-based systems routinely miss.

4. Operationalization (Decisions, Not Dashboards)

Deliver automated PASS/FAIL/WARN verdicts, extract KPIs such as attach success rate, call setup delay, and throughput, and integrate seamlessly with CI/CD and ticketing workflows.

4. Amantya's AI-Powered Log Analyzer

Telecom-Grade. Explainable. Automation-Ready.

Amantya's AI-Powered Log Analyzer is purpose-built for telecom-scale, multi-domain fault intelligence, transforming raw logs into actionable, decision-ready insights through:

Multi-source log ingestion across devices, drive tests, RAN, Core, IMS, and IT systems

AI-powered event understanding, converting vendor-specific logs into structured insights

LLM-assisted summarization with structured JSON outputs for faster issue resolution

Event similarity and clustering using embeddings, enabling "label once, auto-recognize" workflows with human-in-the-loop learning

Cross-layer correlation across system, RAN, and Core to build cause-effect chains

Automated verdict engine generating PASS/FAIL/WARN against expected metadata

Anomaly and regression detection with KPI extraction (attach success rate, call setup delay, throughput)

Dashboards, exportable reports, and ecosystem integrations with CI/CD pipelines, Jira/Bugzilla, and test management systems

4.1 Business Impact

Amantya's AI-Powered Log Analyzer delivers measurable operational and business outcomes.

Impact	Measured Outcome
50-70% Faster Fault Resolution	AI-driven detection and correlation significantly reduce MTTR.
20-40% Lower Operational OPEX	Automation minimizes manual log analysis and expert dependency.
Proactive Failure Prevention	Early detection of drops, handover failures, and congestion before SLA impact.
Superior QoE & Future Readiness	Improved reliability with scalable support for 5G, Wi-Fi, O-RAN, and NTN.

5. Conclusion

Telecom operations are entering a phase where data scale and system complexity outpace manual analysis. AI-based log analysis is becoming essential - not to generate more alerts, but to deliver structured understanding, cross-layer correlation, explainable root cause, regression detection, and automation-ready verdicts.

Amantya's AI-Powered Log Analyzer is built for this shift, turning multi-domain logs into actionable intelligence that improves reliability, reduces OPEX, and enables automation-ready operations across 5G, Wi-Fi, O-RAN, and beyond.

6. Glossary of Terms

Term	Description
AIOps	Use of AI/ML to automate fault detection, root cause analysis, and operational decisions.
Anomaly Detection	Identification of rare or abnormal log patterns indicating faults or regressions.
Cross-Layer Correlation	Linking events across devices, RAN, Core, and service layers to identify root cause.
Explainable AI (XAI)	AI systems that provide transparent reasoning behind outputs.
KPI	Metrics measuring network performance (e.g., attach success rate, call setup delay, throughput).
Log Normalization	Converting multi-vendor logs into a consistent structure.
MTTR	Mean time required to identify and resolve an issue.
Verdict Engine	Automated determination of PASS / FAIL / WARN outcomes.

7. References

IDC – Global DataSphere Forecast (data growth, zettabyte scale).
Grand View Research - AIOps and Observability market forecasts.
BM - AI for log analysis and AIOps.
VMware - Log analysis and observability challenges.
LogicMonitor - AI-driven log analysis and automation.
Springer/ScienceDirect - Research on log parsing and anomaly detection.
Drain Log Parser (GitHub) - Log template extraction for ML pipelines.

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