AIOps with OptOSS AI

Delivering operational efficiency and heightened experience

FEATURES

- **Data Ingestion**
  - Topology Discovery
  - Top Down or Bottom Up Overview
  - Activity Monitoring
- **Data Management**
  - Data-Parsing
  - Auto-Labeling
  - Data-Fusion
- **Data Processing (ML)**
  - Anomaly Detection
  - Cross-Correlation
  - Alarm Clustering
- **Analytics + Automation**
  - Automation
  - Data + Anomaly Mining
  - Root Cause Determination
- **Data Visualisation**
  - Broad Customization
  - End-to-End Overview
  - Knowledge Recycling

KEY BENEFITS

Avoid outages with advance warning
Detect new known + unknown anomalous patterns before they cascade and bring down your network

Empower Operators with insights
Deliver actionable real-time root-cause insights on the issues brewing in the stack, before your customers complain

Enhance operational efficiency:
Automate rectification procedures for frequently occurring events & empower Ops to focus on monitoring the live condition of the network

Context

The health of a telecom network is illustrated by the billions of log lines and performance indicators it outputs every day. Teams of System Operators are tasked with sifting through this veritable ocean of data in order to manage these critical networks and ensure zero down-time. Human operators simply cannot manage the colossal amounts of data in real time to uncover the "needle in a haystack" that may ultimately lead to a service disruption. That's why they rely on the alarms and alerts from complex Operations Support Systems (OSS) in an attempt to stay on top of the deluge of data. It's not just the volume of data that's increasing, but the variety and velocity as well. Gone are the days of networks dominated by voice-traffic, replaced by an ever-growing demand for interactive data usage.

We look to some painful statistics to illuminate how truly overwhelmed many networks are becoming under these new & evolving circumstances:

3 of 4	5x	1.5%
service issues are first reported by end users	average network outages/operator/year	% of annual rev. spent on rectifying outages

For telecom operators, ensuring reliable network availability is imperative in order to consistently gain new customers and maintain the trust of existing customers. But the reality today is that most network operators are typically working in a 'reactive mode' fighting proverbial fires, often only responding to major disruptions after many customers start complaining. Not only does this poor quality of service negatively impact the customer's perception of the brand, but in some cases it may even lead to costly breaches of SLA's.

Building from extensive experience in the telecom industry, the OPT/NET team are all too familiar with this problem and the daunting task of working in these increasingly complex and mission-critical environments.

From telecom consultancy to startup

The OPT/NET BV team comprises multiple telecom network experts that have cultivated over 50 years of combined experience in the industry.

Having served and protected the networks of clients all over the globe, the OPT/NET team was specially suited to develop advanced AI products capable of dealing with an ever-increasing volume of data and complexity. Initially serving as a tool for our own telecom consulting practice, OptOSS AI has grown into a stand-alone carrier-grade platform that is truly best-in-class.

Initially a highly rated open source network discovery/management tool - NG-NetMS - it started evolving into a stand-alone commercial AIOps platform during a business incubation granted by the European Space Agency (ESA), where the tool was augmented with spaceworthy "rocket science" know-how and assistance from ESA engineers and data scientists in the area of advanced operations concepts.

The next phase of evolution came through a collaboration with the University of Amsterdam (Top 5 European AI Research Institute), which led to a highly innovative AI module being devised and infused into the platform.

Finally, with over 10 years of R&D behind it (and €M's of cash investments), OptOSS AI was launched as a commercial product for the Telecom industry in 2018.

Due to the novel nature of the innovations involved, OPT/NET B.V. has secured Dutch, EU, & US patents and has pending International patents covering the relevant know-how & technology used in OptOSS AI.

OptOSS AI GUI

What is OptOSS AI?

OptOSS AI is an Artificial Intelligence enabled platform for monitoring, analysing, and managing complex networks in real time. Both structured and unstructured time-series data can be streamed into OptOSS AI, where irregular patterns are detected within 3s of the data being received. A patented process helps to detect, cluster, label and recognise millions of known and unknown irregularities that crop up on critical infrastructures and to distill the gist of meaning helping human operators in their daily jobs. Crucially, the majority of new and repeating issues are automatically spotted by OptOSS AI, without the need for clean labeled training data.

Spotting the unexpected, noticing the unknown patterns is where OptOSS AI excels, often exceeding even the expectations of its creators.

OptOSS AI virtuous cycle of education

Being able to detect known and unknown anomalous patterns without any training data allows Operators to extract meaningful insights with OptOSS AI from Day 1. As soon as data starts streaming in, OptOSS AI begins to autonomously detect and cluster anomalies into groups based on similarity. These are then brought to the Operator's attention, who then works to educate the system on the significance of the presented clusters. As the Operator spends more time working with the system they are not only granted the ability to get a full overview of the network, but they are empowered to intelligently automate away the mundane and repetitive tasks and re-orient themselves towards diagnosing new anomalous incidents. This virtuous cycle of education fits seamlessly into an Operator's day-to-day activities, and allows them to work much more effectively.

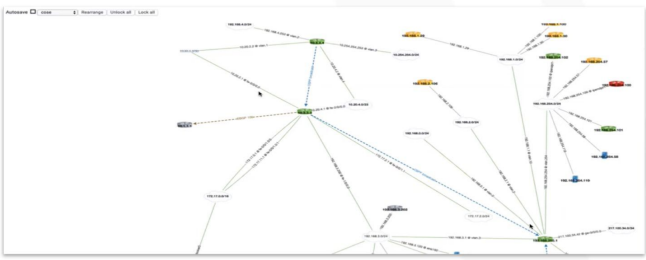
The virtuous cycle of education

What to expect from a deployment

In any deployment, OptOSS AI first connects to all routers, retrieves the most current network topology and creates a list of all networks to be audited.

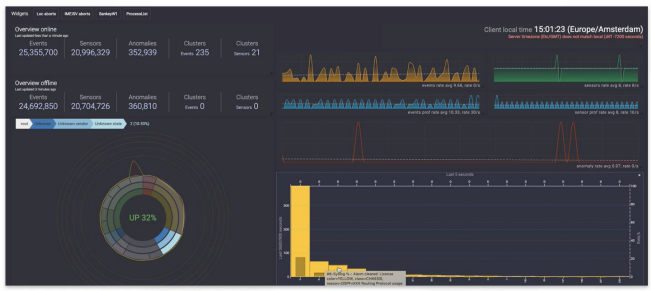
Then, it collects all hardware and software configurations and parameters from every discovered and supported element and automatically monitors all additions and deletions of devices, components and their respective network links.

It creates precise audit reports and maps, rapidly collecting the most complete information about the managed network's inventory, topology, map of IP address space and most important, analysis of syslog events and SNMP alarms.



Network Map

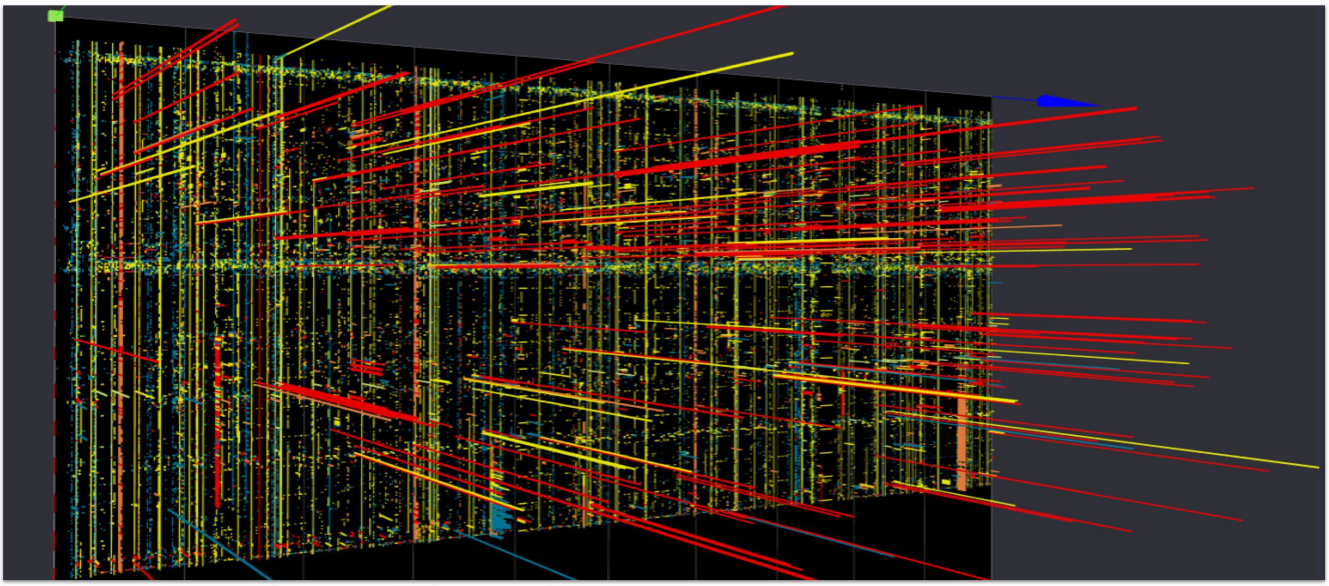
After initial discovery and integration, OptOSS AI becomes an intelligent autonomous and dynamic system which helps operators with their daily operational routines. The base dashboard interface provides operators with a graphical 360° overview of Network Activity & Performance.



Base dashboard interface

The Streaming Alarm-view can also be engaged if needed. When incidents are detected and brought to the Operator's attention, this point-and-click interface provides Operators with the ability to zoom in on the full context of any anomalous activity, and allows for rapid root-cause analysis & remediation when necessary. OptOSS AI learns from this process, and allows for the correct remediation or alerting procedures to be enacted automatically next time. This frees up the Operators to focus on new incidents if and when they appear.

Streaming Alarm view



CT-Scan Visualisation (Simulated Environment)

The visualisations of activity across the network are highly customizable, and can provide Ops teams with a variety of useful and pragmatic insights.

For example, the interactive CT-Scan visualisation (see above) intuitively illustrates the extent of different types of detected anomalous activity across a network over time with color-codes highlighting levels of severity- clearly visualising and communicating any hidden patterns to the operators.

The CT-Scan visualises the extremely complex story that describes the truly chaotic world of a large network. Capturing the activity of millions of actors (both good & malicious), depicting small incidents, scheduled activities, large outages and even subtle hacking attempts. Invisible stochastic noise can become a powerful symphony of insightful findings thanks to the capabilities of OptOSS AI.

Immediate results

By deploying OptOSS AI, telecom providers can rest assured that they have the full and up-to-date picture of everything occurring in their network.

Human operators can finally shift from a reactive 'fire-fighting' (e.g. reacting to customer complaints) to a proactive mode of operations with unmatched actionable intelligence.

Within days of deployment, it's possible to seamlesly improve the monitoring capacity & capabilities by several orders of magnitude, empowering Ops teams to work better, faster and more cost effectively.

OptOSS AI also brings great value to any existing Data Science teams, by offering access to unprecedented tools for rapid creation of new analytical products, covering new areas in a fraction of the typical time and effort.

OptOSS AI - Customer Benefits

Save massive costs and deliver a better service by avoiding outages
Any anomalous patterns that emerge, which may have never been seen before, are detected instantly before they can cascade and bring down the entire network. Spot 'the needle in the haystack' before it causes a disruption, be it during routine maintenance, 3rd party updates, service rollout procedures etc...

Empower Operators with insights
Provide Ops teams with context-rich and actionable real-time insights into the issues currently brewing in the network, before your customers notice them and start calling to complain! OptOSS AI can detect performance issues across the network, identify affected and unhappy customers/problematic sites, and kickstart the remediation process before things spiral out of control.

Task automation
Intelligently automate sophisticated rectification procedures for frequently occurring and/or mundane events. Empower the Ops teams to focus on monitoring the live condition of the network. Leave it to OptOSS AI to trigger troubleshooting when needed, lock out intruders, reroute traffic, or restart relevant network assets or even initiate the service tickets for engineer deployment when things go awry.

OptOSS AI - Built for speed at scale

Performance
In a standard configuration, the platform can handily ingest and process >50,000 separate data points per second. Typical service provider deployments demonstrated performance of hundreds of thousands data points per second on general purpose COTS server hardware and it possible to arrange the product for mega-scale deployments, running modules concurrently or in certain hierarchical distributed system arrangements can even unlock processing performances of many millions of events per second.

Scalability
A typical OptOSS AI deployment can ingest data from over 10,000 connected devices, thereby covering all of your critical systems.The deployment architecture relies on customisable and modular design, which is highly flexible and provides room for future expansion.

Speed
OptOSS AI completes full network discovery in a matter of minutes if required, and takes less than 3 seconds from data ingestion to detection of anomalous behavior.

Value
Our 'rule-of-thumb' goes as follows: 1M events can be processed daily per €100 investment in hardware! Furthermore, negating the need for labelled training datasets (not to mention expensive data scientists!) also saves a significant amount of time and expense compared to other AI approaches.

Schedule a demo today

Schedule a demo to find out more about how OptOSS AI was able to help a leading Dutch Telecom generate real-time actionable insights, or how a leading CDN company reduced security exposure and saved 12% in base infrastructure costs within days of deployment. Our team is ready and excited to share how OptOSS AI can help you cope with ever-increasing complexity on your networks today!

ABOUT OPT/NET

OPT/NET B.V. is a team that builds comprehensive AI products based on decades of hardcore critical industry experience. Having served and protected the networks of clients all over the globe, the OPT/NET team was specially suited to develop a series of advanced AI products capable of dealing with an ever-increasing volume of data and complexity. Initially serving as a tool for our own telecom consulting practice, the OPT/NET AI engine has grown into a series of stand-alone platforms with unlimited potential across a variety of critical and data-intensive industries.

We believe in making humans superhuman, not replacing them. The OPT/NET AI Engine provides domain experts in both structured and unstructured data environments the ability to rapidly develop advanced real-time AI solutions that help them do their jobs more effectively, without requiring an advanced degree in data-science. Importantly, our solutions are human-driven, AI-assisted.

We meet the toughest problems head on. Our clients and partners have massive datasets, and extensive expertise in tackling industry-specific challenges. Our engineers have the most powerful generic AI platform at their disposal, and the skills and willingness to understand new and challenging environments. We're able to integrate new data streams into our award-winning AI platform, learn and optimise workflows, and generate valuable operational results in hours/days/weeks instead of months/years.

From telecom networks to disaster zones. From farmlands to the open ocean. From analysing log lines to multispectral satellite imagery. Our approach remains the same: forge real meaningful partnerships with our customers to empower them towards achieving more with their data.

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