

ANOMALY DETECTION IN KALIX

AUG 2025

PRODUCT IN DEVELOPMENT



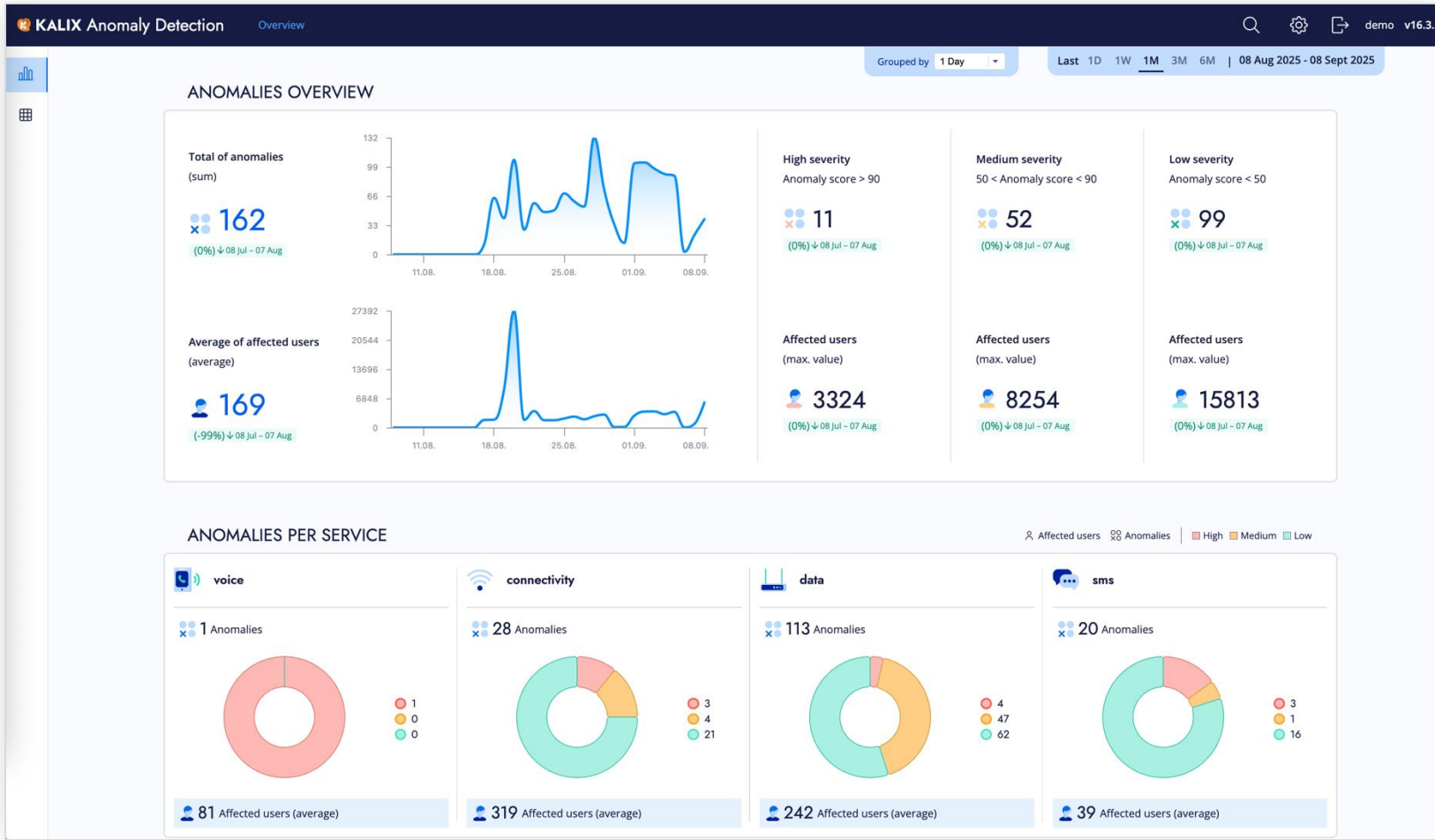


INTRODUCING KALIX AI ANOMALY DETECTION FEATURES



ELISAPOLYSTAR KALIX ANOMALY DETECTION

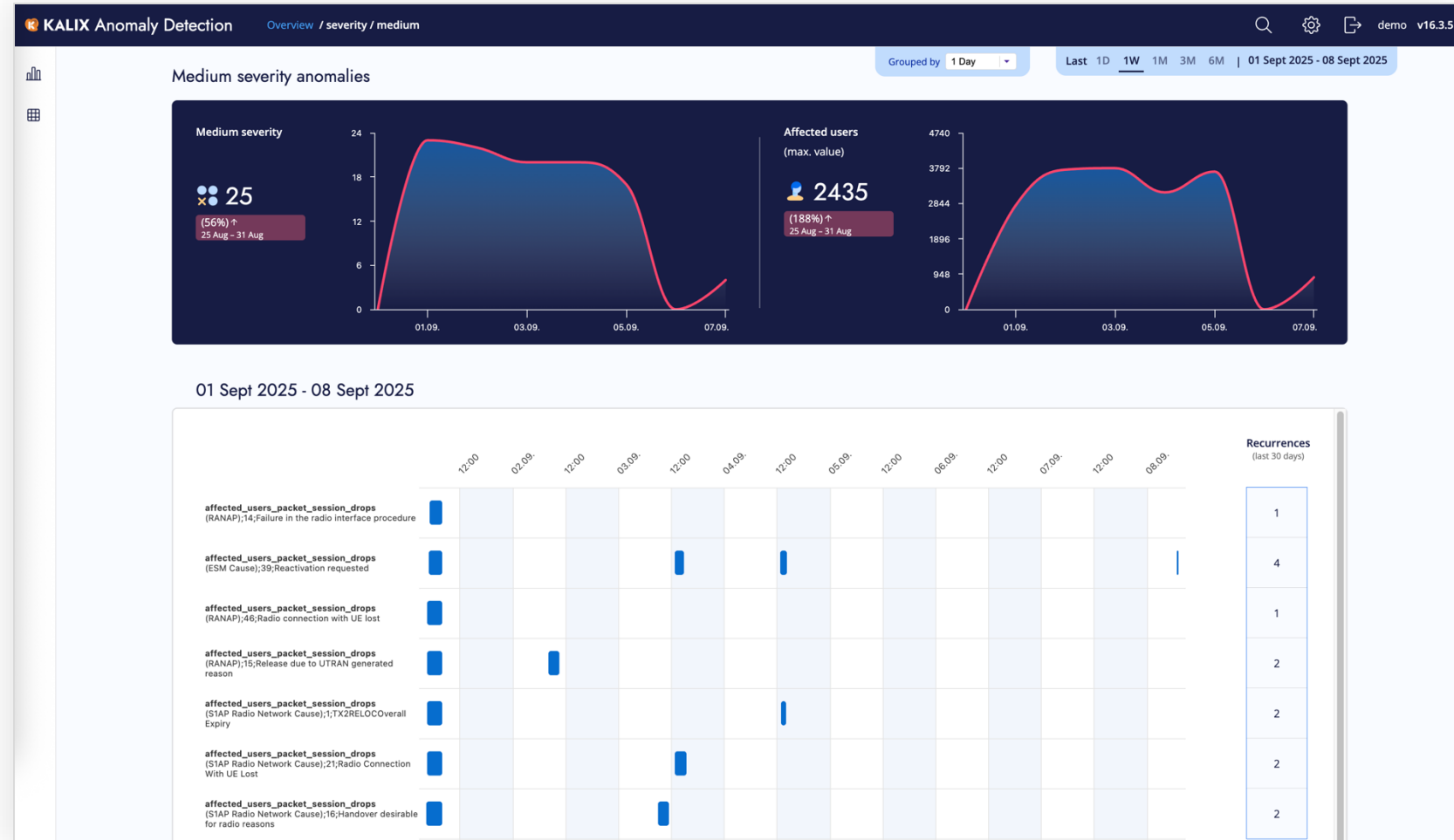
With advanced ML algorithms, ElisaPolystar KALIX AI anomaly detection ad-on module can detect network anomalies for multiple time series KPIs in the network and group and tag each anomaly as high, medium and low while showing the impacted number of customers on each anomaly group. Users can drill down to each anomaly cluster individually and system will provide automated root cause analysis highlighting the most related set of dimensions highly correlated with the detected anomaly



AUTOMATIC GROUPING OF ANOMALIES FROM SPECIFIC SERVICE TOGETHER

With each anomaly detected, a timeline showing how chronic and repetitive each anomaly is forming a cluster that will allow the user to troubleshoot each anomaly individually according to the severity and when it happened and for how long it lasted, drilling down from each anomaly will show the cluster of segments/dimensions associated with the deviation (segment of interest)

This improves problem isolation quickly to get to the root cause of the issue, and which network elements might be causing the problem and which customer segment is impacted





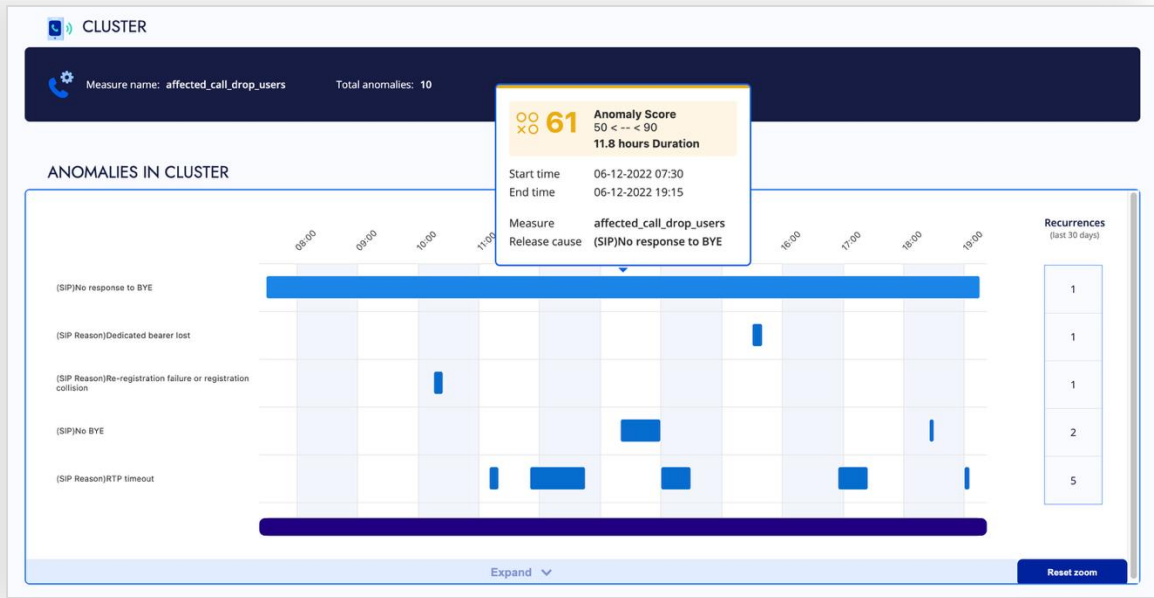
AUTOMATIC ROOT CAUSE ANALYSIS

2 STEPS APPROACH INTO IDENTIFYING ANOMALIES IN THE NETWORK WITH AUTOMATIC ROOT CAUSE ANALYSIS

Pick an anomaly to identify when it started and when it ended and check the frequency of occurrence which can indicate a chronic issue. Prioritize anomalies with anomaly scoring built in to classify anomalies into High, Medium and low severity.

Anomalies represent deviations from predicted values, system constantly learn the pattern of the different time series KPIs fed into the system and adapts the thresholds for anomaly detection accordingly. Drill down to the cluster information to isolate segments of interest

1



2





SEE WHAT MATTERS FIRST

ANALYZE MULTIPLE SERVICES AND KPIs AT ONCE

KALIX AI anomaly detection ad-on module can analyze multiple time series KPIs at the same time highlighting any anomalies detected within a certain measurement period indicating their severity and show all detected anomalies with their respected services In timeline format highlighting any correlation that could happen between two anomalies in two services happening at the same time

KALIX Anomaly DetectionOverview

demo v16.3.5

Grouped by1 DayLast1D1W1M3M6M06 Dec 2022 - 23 Jan 2023

ALL SYSTEM ANOMALIES

Anomaly Score	Anomaly Type	Aggregator	KPI	Start Time	End Time	Duration (min)	Occurrences	Status
100	voice	(SIP);403;Forbidden	affected_call_setup_users	13 Dec 2022, 15:10	13 Dec 2022, 18:00	170	2	CLEARED_BY_RETURNING_TO_NORMAL
100	voice	(SIP)RTP internal timeout	affected_call_drop_users	09 Jan 2023, 15:00	09 Jan 2023, 15:50	50	1	CLEARED_BY_RETURNING_TO_NORMAL
96	voice	(DTAP CC);8;Operator determined barring	affected_call_setup_users	03 Jan 2023, 12:10	03 Jan 2023, 21:05	535	7	CLEARED_BY_RETURNING_TO_NORMAL
95	voice	(DTAP CC);8;Operator determined barring	affected_call_setup_users	06 Dec 2022, 06:55	06 Dec 2022, 21:55	900	7	CLEARED_BY_RETURNING_TO_NORMAL
91	voice	(SIP)No final response to initial INVITE	affected_call_setup_users	09 Jan 2023, 15:00	09 Jan 2023, 17:55	175	6	CLEARED_BY_RETURNING_TO_NORMAL
88	voice	(SIP Reason)RTP timeout	affected_call_drop_users	07 Dec 2022, 22:05	07 Dec 2022, 22:25	20	17	CLEARED_BY_RETURNING_TO_NORMAL
86	voice	(DTAP CC);8;Operator determined barring	affected_call_setup_users	06 Jan 2023, 12:05	06 Jan 2023, 20:00	475	7	CLEARED_BY_RETURNING_TO_NORMAL
76	voice	(SIP)No final response to initial INVITE	affected_call_setup_users	31 Dec 2022, 23:00	01 Jan 2023, 01:15	135	6	CLEARED_BY_RETURNING_TO_NORMAL
75	voice	(RANAP);23;Invalid RAB parameters combination	affected_call_setup_users	31 Dec 2022, 23:00	01 Jan 2023, 03:25	265	3	CLEARED_BY_RETURNING_TO_NORMAL
74	voice	(SIP)No BYE	affected_call_drop_users	18 Jan 2023, 14:15	18 Jan 2023, 14:35	20	6	CLEARED_BY_RETURNING_TO_NORMAL

1234567891011121314

AI POWERED PROBLEM SUMMERIZATION AND INCIDENT REPORT GENERATION USING GENERAL AND PRIVATE KNOWLEDGE BASE MANAGEMENT

AI ASSESSMENT

With an integrated knowledge base management backend, customer can embed their own troubleshooting steps and comments on the anomalies detected for the system to learn from it then using LLM we can later give summery and recommendations assessments using generally available 3GPP knowledge base infused with privately added knowledge bases for more accurate analysis of the issues monitored and better next best actions

AI Assessment

- Severity: Significant ongoing incident affecting voice call setups.
- Impact:
 - 2262 users at peak for (SIP)No final response to initial INVITE.
 - 80 users at peak for (SIP)Request retransmitted with no response.
 - 48 users at peak for (SIP);487 without CANCEL.
 - 42 users at peak for (DTAP CC);42;Switching equipment congestion.
- Impacted Areas: Core network elements, signaling infrastructure, and specific nodes (BSC21, RNC201, SBCPC1, SBCPC2).
- Root Causes: The temporal overlap between these anomalies suggests a possibility of compounded effects from congestion, hardware faults, or misconfigurations exacerbating the issue.
- Recurrence: Anomaly with (SIP)No final response to initial INVITE has been observed 26 times in the last 30 days.

Is the assessment accurate?
☆☆☆☆☆

Verify and confirm

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AI Recommended actions

Network Monitoring and Diagnostics:

- Monitor performance of BSC21, RNC201, EMSS4, and SBC nodes (SBCPC1, SBCPC2).
- Utilize diagnostic tools to pinpoint congestion sources and configuration issues.
- Focus on periods of peak user impact (e.g., 13:15, 13:30).

Incident Response Protocols:

- Reallocate network resources and update configurations to mitigate congestion.
- Investigate SBC performance for anomalies and overloads.

My Report

Analysis report name:
Switching equipment congestion

Problem/incident:
Fault X, Y and Z

Forward to:
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