CONF42 · SRE2026

From Testing to Reliability:

Strengthening Regulated Production Systems

Ensuring Correct Automated Decisions in Enterprise Workflows

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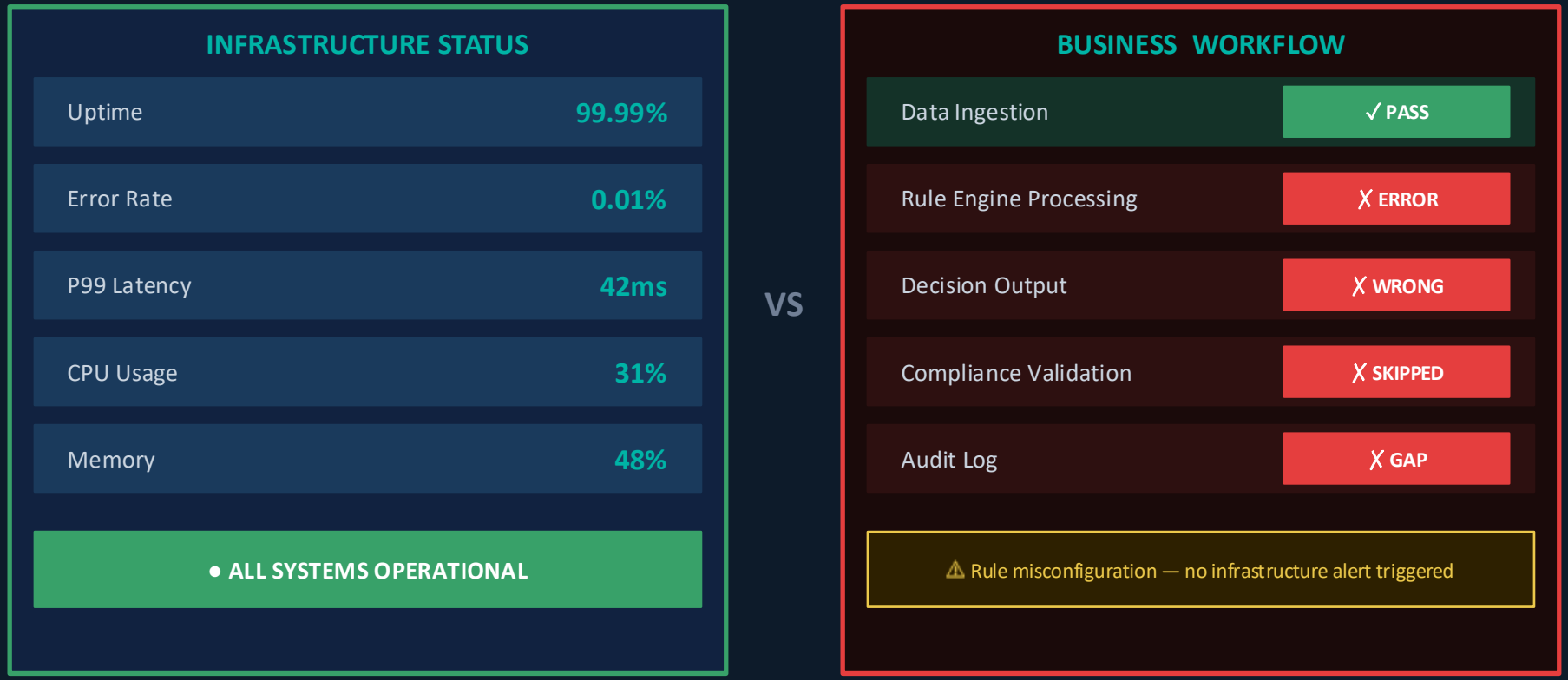
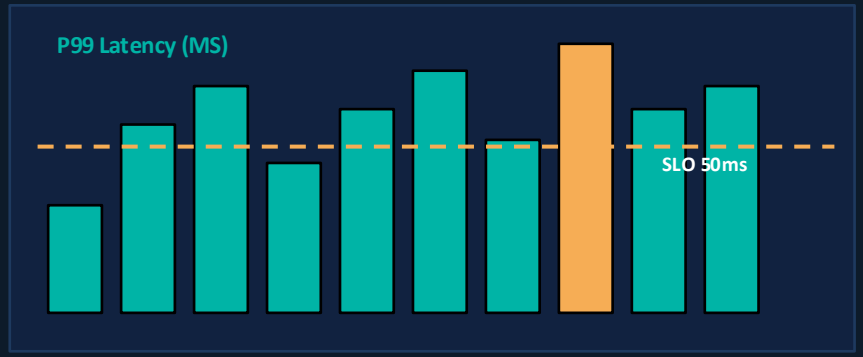
When a Healthy System Still Fails the Business



How Reliability Is Typically Measured

Service Availability	Error Rates	Latency (P99)	CPU & Memory	Infrastructure Uptime
99.9%	0.02%	38ms	45%	100%



These metrics measure technical health — but not decision correctness.

Reliability Beyond Infrastructure

INFRASTRUCTURE LAYER

Servers · Databases · Networks · Cloud Resources

● MONITORED

APPLICATION SERVICES

APIs · Microservices · Queues · Caches

● MONITORED

BUSINESS WORKFLOW LAYER ← THE MISSING LAYER

Claims Processing · Underwriting · Policy Adjustments · Compliance Validation · Audit Logging

◉ UNDER-MONITORED

COMPLIANCE OUTCOMES

Correct Decisions · Regulatory Compliance · Audit Trails · Risk Controls

◉ UNMEASURED

A system can be operational while automated decisions are wrong.

Example: Silent Workflow Failure

SCENARIO

1. Claims processing system shows normal infrastructure metrics
2. A rule configuration change silently alters approval thresholds
3. Infrastructure monitoring remains green throughout
4. Automated decisions drift from expected outcomes — undetected by monitoring.

IMPACT

✗ Incorrect approvals or rejections processed at scale

✗ Compliance exposure — regulatory audit trail incomplete

✗ No infrastructure alert triggered — invisible to on-call

System health does not guarantee decision correctness.

Define Reliability at the Workflow Level

WORKFLOW – LEVEL RELIABILITY INDICATORE

Decision Accuracy Rate

% of automated decisions falling within expected outcome range

Compliance Field Completion

Percentage of required audit attributes populated per transaction

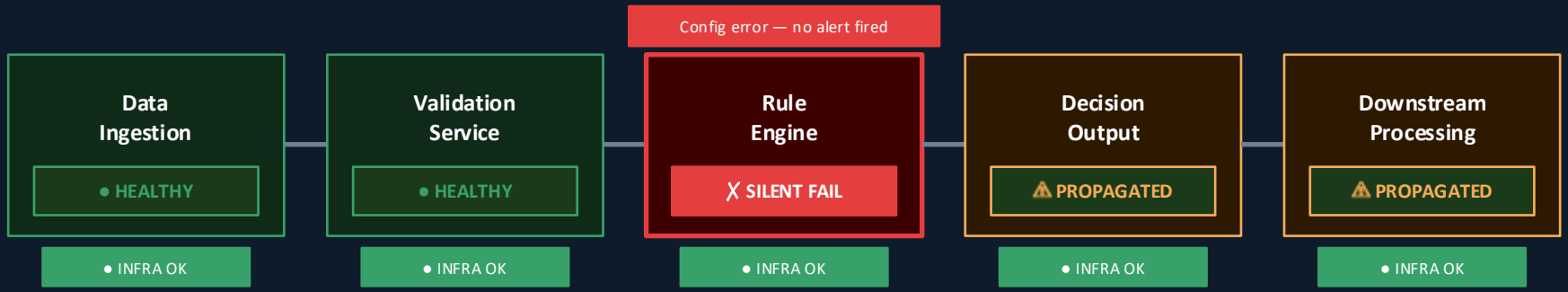
Approval / Rejection Anomaly

Statistical deviation from historical decision distribution baseline

Rule Execution Correctness

Rules executing as configured - confirmed against known test cases

Hidden Risks in Rule-Driven Systems



Infrastructure monitoring layer — all green, no alerts triggered

COMMON CAUSES OF SILENT FAILURES

Rule Config Errors

Incorrect thresholds or logic misconfiguration

Decision Threshold Drift

Baseline shifts go undetected.

Data Mapping Issues

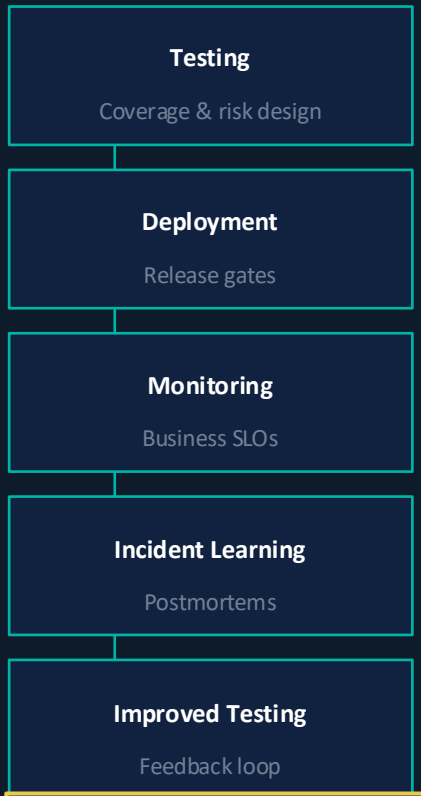
Field mismatches silently propagate wrong values

Missing Compliance Attributes

Required audit fields absent, not validated

Silent failures create incorrect decisions, compliance risk, and operational exposure — while infrastructure remains green.

Extending Testing into Production



PRACTICAL IMPLEMENTATION METHODS

1 **Synthetic Business Transactions**

Replay production-representative requests continuously against live rule engines

2 **Critical Workflow Monitoring**

Track decision outcomes, approval rates, and rule execution in real time

3 **Rule Validation in Production**

Compare rule engine outputs against expected baselines after every deployment

4 **Decision Anomaly Detection**

Alert on statistical deviations in automated outcomes, not just error rates

Testing evolves into continuous reliability validation.

How Teams Can Implement Workflow Reliability

1

Define Workflow-Level Reliability Indicators

Instrument decision accuracy rates, compliance field completion, and rule execution validity — in addition to uptime and latency.

2

Monitor Automated Decision Outcomes

Track approval/rejection rates, decision distributions, and output ranges. Alert when patterns deviate from expected baselines.

3

Detect Anomalies in Approval and Rejection Patterns

Use statistical thresholds to surface drift in automated decisions before they compound into compliance exposure.

4

Feed Production Insights Back into Testing

Use real decision distributions to calibrate test cases, update threshold expectations, and validate rule changes pre-deployment.

Testing + Observability = Workflow Reliability

Redefining Reliability in Regulated Systems

Infrastructure Monitoring

- Uptime & error rates
- Latency & throughput
- Resource utilization

Necessary — but not sufficient

Workflow Reliability

- Decision accuracy rates
- Rule execution validity
- Anomaly detection on outputs

The missing layer

Compliance Validation

- Audit trail completeness
- Regulatory field verification
- Correct automated outcomes

The regulator's view

Reliability in regulated enterprise systems means ensuring automated decisions remain correct, compliant, and auditable.

Thank You

Reliability in regulated systems means ensuring automated decisions remain correct, compliant, and auditable.

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