

What AI Does for Network Ops, What Automation Keeps Doing

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INTRODUCTION

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- O'Reilly Trainer - Live Training Courses
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What's the difference?

Automation

Deterministic, Pre-defined, Consistent

Predefined rules, logic, and workflows to execute tasks automatically with little or no human intervention.

AI

Reasoning, Generative, Adaptive

Models that learn patterns from data to interpret information, generate outputs, make predictions, or perform tasks that typically require human judgment.

Let's take a typical Network Ops issue...

An incident comes in at 2am and it takes

3 hours

to find the issue

10 minutes

to fix it

Which part of that night could automation have saved me?

Almost none of it

GIVE AUTOMATION ITS DUE

Automation succeeded because it doesn't guess.

1

Same input, same output

Every time. That is the entire promise, and it is why we trusted it with production.

2

Dry run, stage, roll back

We solved 'how do we let software touch the network' years ago. That discipline holds.

3

It runs before you open the ticket

The first four seconds of every incident are already handled.

THE HALF WE NEVER SOLVED

Where the answer actually lives

Monitoring / NMS

Ticketing

IPAM / source of truth

Config backup

Syslog

Carrier portal

Vendor bug database

Slack, MS Teams, etc.

8+ logins. Nothing correlates them. Correlation happens inside the head of whoever is on-call.

THE OBJECTION

“We already have automation and a source of truth”

Source of truth

What the network should be.

Static intent, no time axis. Only as accurate as its last write - correlating on stale intent returns confidently wrong answers.

Automation

What it was told to do.

Executes and enforces change. Drift on 200 devices is 200 findings, not one cause.

Correlation

Why the business hurts now.

Needs time alignment across multiple systems (NMS, syslog, ITSM, etc.).

If those two tools delivered correlation, why is MTTR still spent on diagnosis instead of the fix?

**So how can we make our lives
easier when it comes to network
operations?**

Let's start with a ticket...

TICKET #123

Users at the Reston branch say the VPN has been slow. Started sometime last week.

TROUBLESHOOTING · STEPS 1-3

Initial response

1

Resolve “Reston branch” to device, circuit ID, provider

Source of truth lookup. Same answer every time.

AUTOMATION

2

Pull tunnel state, interface counters, errors, discards, CPU

Known query, known output.

AUTOMATION

3

Compare current metrics against a 30-day baseline

Arithmetic on structured data.

AUTOMATION

TROUBLESHOOTING · STEP 4

The phrase automation can't take

`"sometime last week"`

4

Turn that into an actual search window

Read the ticket. Check when it was filed. Catch the aside about the holiday.

AI

TROUBLESHOOTING • STEPS 5-8

Checking your sources

5

Find changes in the blast radius during that window

Pulling the last 40 changes is a query. Judging which could touch a VPN tunnel is not.

AUTOMATION + AI

6

Check for carrier maintenance

It is an email in a shared mailbox. Could be automation if there's an API.

AI

7

Search past tickets for similar symptoms

Last quarter's ticket from another user said "sluggish." Keyword search finds nothing.

AI

8

Cross-reference code version against known bugs

The advisory describes the symptom in a paragraph, not a field.

AI

TROUBLESHOOTING • STEPS 9-12

Finding the fix

9

Weigh three plausible causes and pick one

Judgment. This is the job.

ENGINEERS

10

Push the fix

Reviewed, staged, idempotent, rollback ready.

AUTOMATION

11

Validate tunnel state and confirm metrics recovered

Deterministic check against a known-good state.

AUTOMATION

12

Write the postmortem

It can assemble the timeline. It cannot own the conclusion.

AI + ENG

Conclusion: The cause was a firewall policy edit filed in the security team's queue.

INVESTIGATIVE RECAP

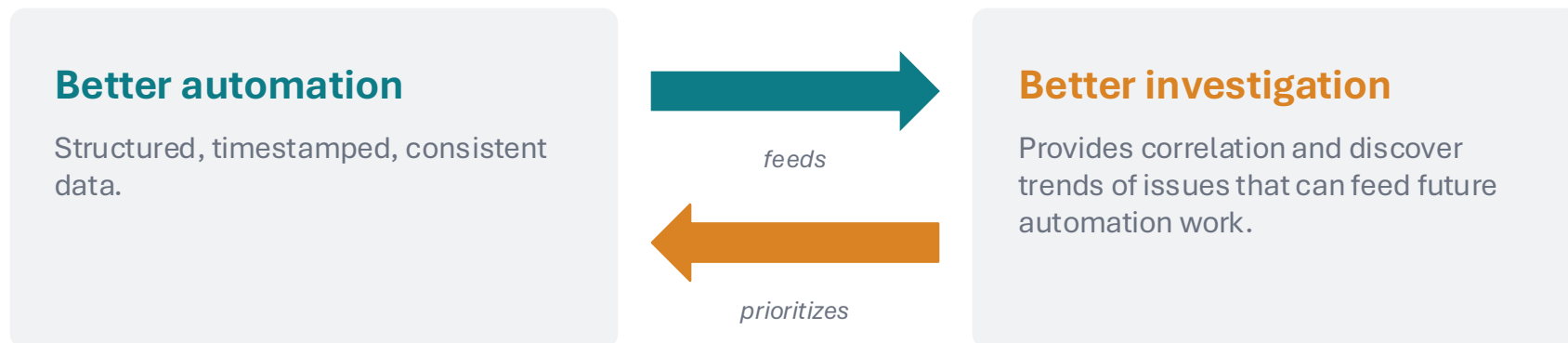
How we spend our time troubleshooting



Automation owned the first four seconds and the last four minutes. The three hours in the middle was finding the needle in the haystack.

WHY THIS IS NOT A COMPETITION

Each side makes the other better



Investing in one is investing in the other. The question was never which one wins.

TAKEAWAYS

Exercise:

Open your network operator runbook.

Label every step: Automation, AI, or Engineers.

Automation executes.

AI investigates.

Engineers decide.

Thank you!