

# Integrating AI into NetOps

Building, Buying, and Leading the  
Change

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# Scott Robohn

- Network Plumber: 35+ years in the networking industry
- Technology auditor, network operator, instructor, TAC engineer, SE, SE leader  
*and now...*
- Consultant focused elevating Operations, AI, automation
- Helping clients rationalize adoption of AI and emerging tech



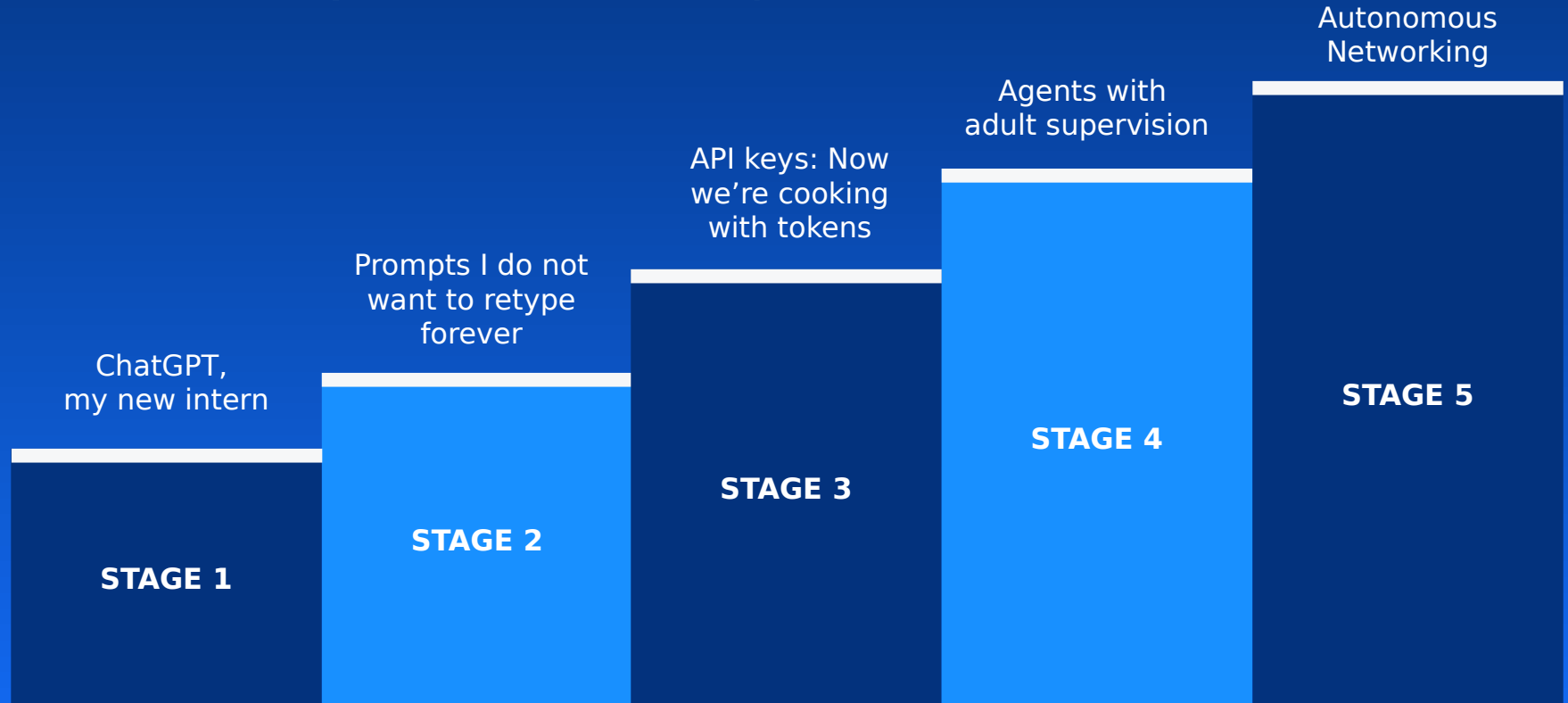
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# AI Has Entered the NOC



# The NetOps AI Maturity Ladder



# Realistic Use Cases You Can Try Today

## USE CASE

Packet capture  
summarization

## USE CASE

Log analysis

## USE CASE

Python  
generation  
Config generation

## USE CASE

MOP  
improvement

## USE CASE

Incident  
summarization

## USE CASE

Documentation  
generation /  
cleanup

# The MOP: Boring, Critical, and Begging for Help

What happens if step 7 fails?

Where is the rollback?

How do we know this worked?

- Identify trends and common activities across MOPs
- Find ways to optimize MOP procedures in ways you have not even thought of before
- Explicitly ask how new tools can impact processes
- Automatic and complete generation of documentation

# AI Usage: Techniques and Considerations

- Think of LLMs as “Thought Partners”
- Let a model interview you
- Use model diversity for generation versus checking
- Focus on what is new and possible; avoid worrying about disruption

# Spec-Driven Development (SDD): Requirements, Guardrails, Contracts

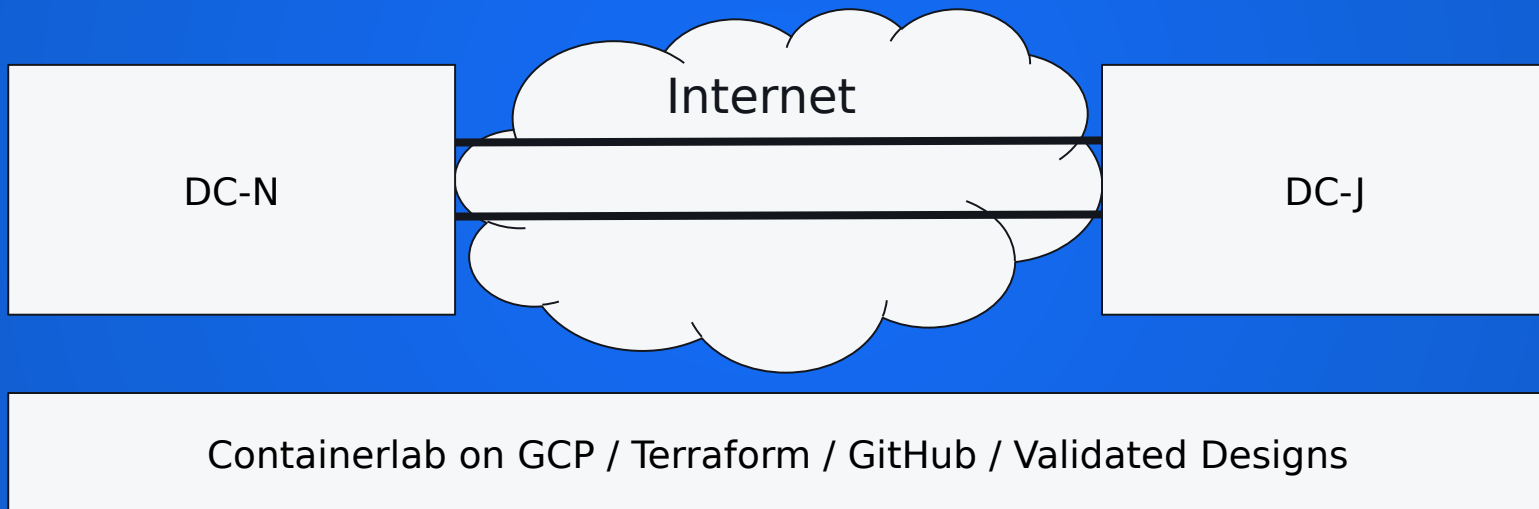
- **Not new:** Product Management perspective for software products
  - <https://www.ibm.com/think/topics/spec-driven-development>
- **Main idea:** writing intent, constraints, acceptance criteria, and tests before building.
  - spec.md: Defines the detailed requirements and "what" is being built.
  - plan.md: Outlines the technical implementation details and "how" the requirements will be met.
  - asks.md: Breaks the plan into actionable, numbered steps for an AI agent to execute.
  - constitution.md: Establishes core project principles and architectural "DNA" that every implementation must follow.
- **AI is strongest when it helps structure thinking:** thought partner model first

# SLAB: A Real SDD Example

Use SDD to define and build network test environment.

Six rounds of useful questions,  
design repo development,  
image creation,  
IAC and configs,  
and useful outputs.

# SLAB Initial Target Topology



# Interview First, Infrastructure Second

A spec-driven framework for GCP-hosted Containerlab network labs, built from explicit design decisions before any cloud resources are created

## PHASE 1 TARGET

Private repo, SDD docs, Terraform skeleton, IAP-only lab access, diagrams, and generated deck.

## FIRST LAB

Nokia DCN, Juniper DCJ, redundant provider-like WAN, blue and green VRFs.

INTERVIEW

SDD

SCAFFOLD

BOOTSTRAP

BUILD

# The interview becomes a repository contract

Every answer lands in a durable artifact:

Requirements, access model, lifecycle, validation, and presentation material

## **CHARTER**

Goals, scope,  
non-goals

## **REQUIREMENTS**

Functional and  
done criteria

## **AGENT MODEL**

Roles mapped to  
few identities

## **THREAT MODEL**

IAM, secrets,  
public exposure,  
spend

## **LAB TEMPLATE**

Spec, design,  
tasks, validation,  
runbook

# The first topology is concrete enough to validate

Two fabrics, explicit border leaves, provider-like WAN nodes,  
and tenant endpoints from day one

## **dcn.lab**

Nokia SR Linux  
2 spines  
2 leaves  
2 border leaves  
blue + green endpoints

## **WAN**

wan-a and wan-b  
redundant routed paths  
failure testing target

## **dcj.lab**

Juniper cRPD  
QFX/Apstra design intent  
2 spines  
2 leaves  
2 border leaves

## **blue VRF**

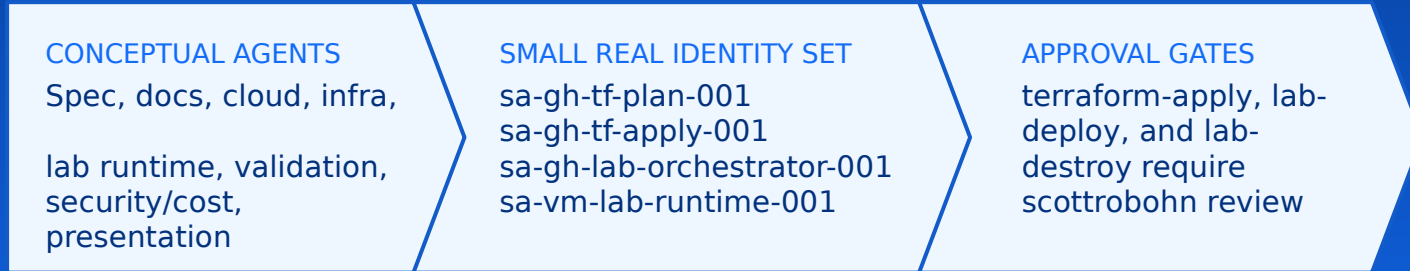
Routed reachability  
across DCs

## **green VRF**

Routed reachability  
across DCs

# Agents are responsibilities first, identities only where useful

The SDD names the work clearly without creating unnecessary credentials



*Visibility and control stay high; login and credential overhead stays low.*

# Strict access does not need to be complicated

GitHub OIDC removes static keys, and IAP removes public SSH from the lab path

## GitHub

Feature branches  
PR review gates

## OIDC / WIF

Short-lived trust  
Repo conditions

## GCP IAM

Least privilege  
Few identities

## IAM SSH

No public IP  
Operator tunnel

*No service account keys. No public SSH.  
No sensitive vendor material in GitHub.*

# Cost control is part of the architecture

Destroy compute when idle, preserve the expensive-to-recreate working state

## Create on demand

Approved lab-deploy workflow recreates the Containerlab host

## Run and validate

Containerlab deploy, BGP/EVPN checks, failure testing, evidence capture

## Destroy compute

Approved lab-destroy removes VM, preserves disk and image

## Preserved State

/opt/slab retained disk, custom lab image, local non-secret cache.  
Budget alerts fire at each \$10 increment.

# Done means the lab proves behavior, not just deployment

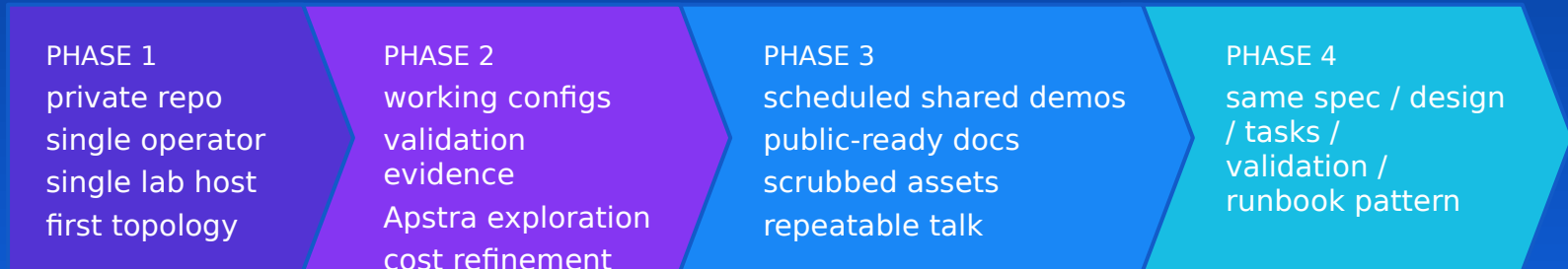
Reachability, isolation, routing state, and failure recovery  
all belong in the acceptance criteria

VALIDATION AREA	PROOF	STATUS
Deploy	Containerlab nodes present	Required
Tenant reachability	Blue and green work across DCs	Required
Tenant isolation	Cross-tenant tests fail as expected	Required
EVPN proof	Type-5 routes visible	Required
Failure recovery	WAN, border, and BGP flap tests	Required

# The scaffold is designed to become reusable

Phase 1 is private

Documentation and lab template are built for future public use



*The end product is not just a lab.  
It is a way to keep complex infrastructure work explainable.*

Still Private  
(review  
pending)

scottrobohn/gcp-containerlab

github.com/gcp-containerlab-sdd-labs

scottrobohn / gcp-containerlab-sdd-labs

Code Issues Pull requests Actions Projects Security and quality Insights Settings

gcp-containerlab-sdd-labs Private Watch 0 Fork 0 Star 0

main 1 Branch 0 Tags

Go to file Code

scottrobohn Narrow markdown lint scope ✓ 19825ec · 2 weeks ago 4 Commits

.github	Fix scaffold CI checks	2 weeks ago
docs	Document GitHub protection fallback	2 weeks ago
infra/terraform	Initial SDD scaffold	2 weeks ago
labs/dcn-dcj-evpn-dci	Document GitHub protection fallback	2 weeks ago
scripts	Narrow markdown lint scope	2 weeks ago
.gitignore	Initial SDD scaffold	2 weeks ago
.markdownlint.json	Narrow markdown lint scope	2 weeks ago
README.md	Initial SDD scaffold	2 weeks ago
package.json	Initial SDD scaffold	2 weeks ago

About

No description, website, or topics provided.

- Readme
- Activity
- 0 stars
- 0 watching
- 0 forks

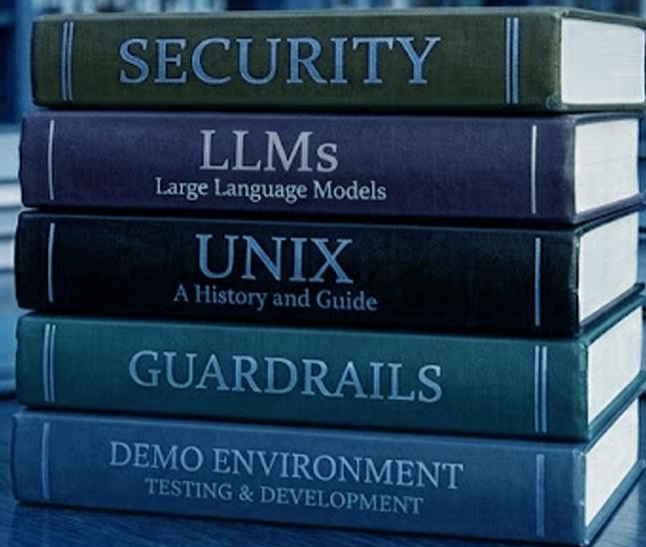
Releases

No releases published  
[Create a new release](#)

Packages

No packages published  
[Publish your first package](#)

# Build Your Own versus Build: LLMs, Agents, MCPs, and Other Ways to Create Homework



# Vendor AI: When the Tool Knows the Network



# Trust building



- Most critical item / not enough attention on it
- No new tech gets deployed in production without proving value and reliability
- An intentional process - not inherent or assumed
- Deliberately build into POCs, early deployments, and production criteria

# What To Try Monday



Pick a safe but useful workflow.

Try a couple of (or more) harnesses (Claude Code, OpenAI Codex, etc).

Get to know SDD.

Develop an AI POC with success criteria and a rollback mindset.

Think big, start small. Test until the edges / weird parts reveal themselves.

Questions?



# Resources

- NGNE: <https://ngne.solutional.com/>
- On Workflow - Lumen case study: <https://solutional.com/lumen-case-study>
- AIOps people to follow: John Capobianco, Du'An Lightfoot, William Collins
  - <https://www.linkedin.com/in/john-capobianco-644a1515/>
  - <https://www.linkedin.com/in/duanlightfoot/>
  - <https://www.linkedin.com/in/william-collins/>
- Other relevant orgs: NAF, USNUA, NANOG
  - <https://networkautomation.forum/>
  - <https://usnua.com>
  - <https://nanog.org/>

# Thank you!

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