2016 FEDERAL FORUM

DevOps Evolution

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DevOps Evolution

- Is DevOps a tooling or a cultural movement?
- How does automation play a role?
- How do you move beyond automation into continuous delivery?
- Where should you get started?

What Is DevOps?

DevOps is a Culture of Trust and Collaboration in which People use the Right Tools for Automation to achieve Continuous Delivery

SOURCE: HTTP://ROHITGHATOL.GITHUB.IO/
DEVOPS-GETTING-STARTED/#/1

@DEVOPS_BORAT
DevOps Borat

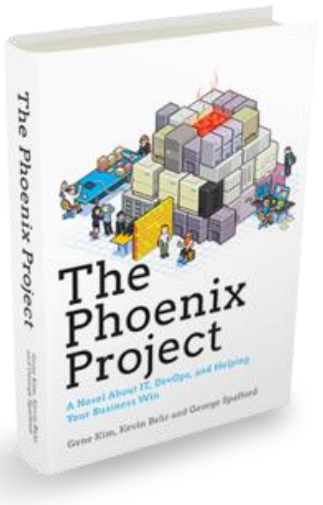
To make error is human. To propagate error to all server in automatic way is #devops.

A simple working definition:
Infrastructure as code

Is DevOps a Tools or Cultural Movement?

DevOps tools are increasingly popular

- Led by open source tools
- Most commonly provisioning tools



***The Phoenix Project* is the DevOps bible**

- A business novel modeled after Eliyahu Goldratt's *The Goal*

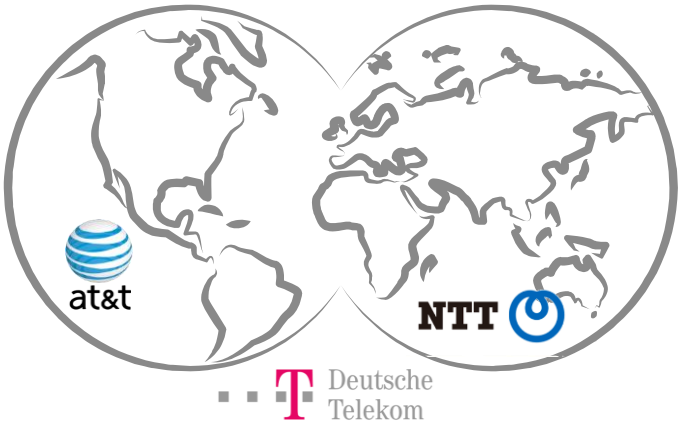
Where Do You Start?

Strong Culture + No Tools = Fail

ITIL Culture + DevOps Tools = Fail

...but people change is the long pole

Like a Carrier, or Like a Cloud?



When something goes wrong, is your instinct to:

Ctrl-Z: Back out the change and try again at the next maintenance window?

OR

Roll forward: Identify the problem, and quickly make the next change?

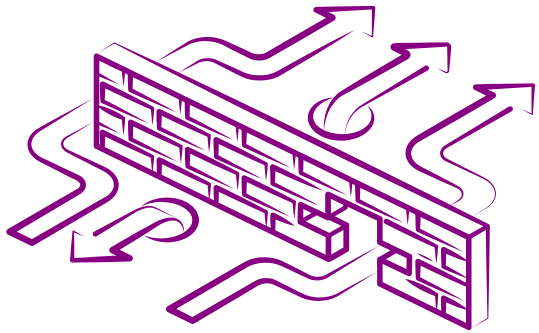
Correctness vs. Resilience

Designing for Correctness

Avoid failure at all costs

- Focus on qualification and integration
- Create process gates to catch errors
- When a change doesn't work, regroup and use the process

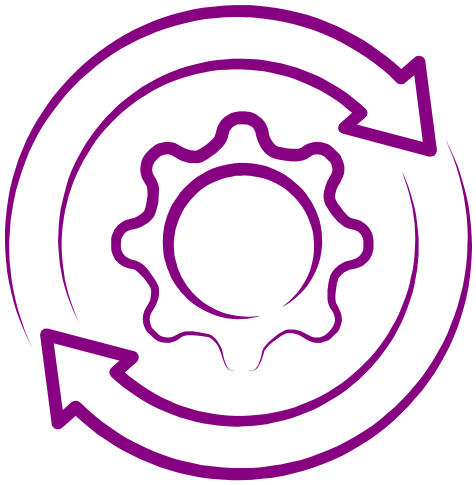
Designing for Resilience



Failure is a certainty

- During failure, service should be resilient
- Simulate failures to test
- When a change doesn't work, roll forward

What about Automation?

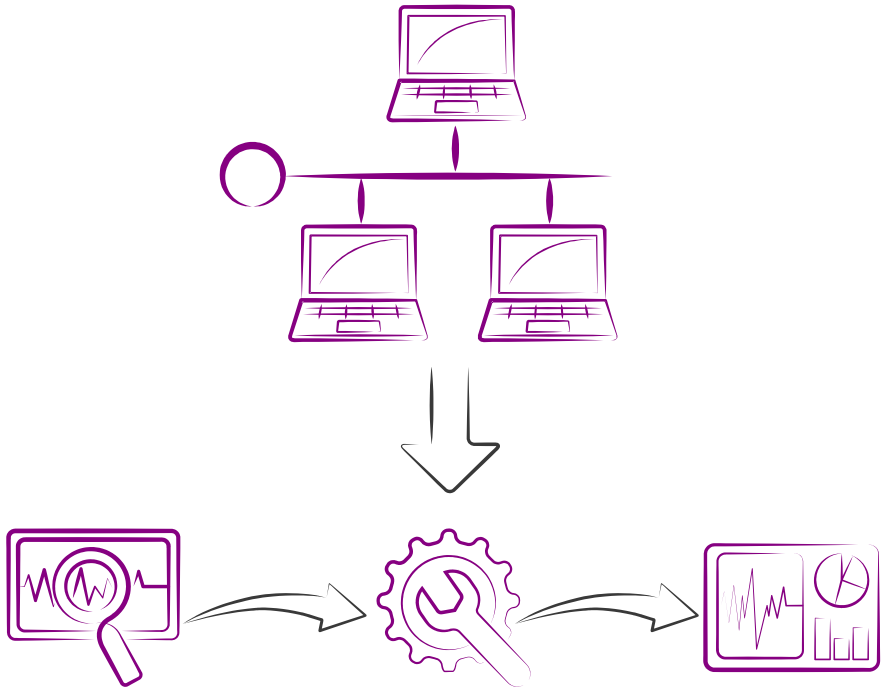


- DevOps often gets lumped in with automation initiatives
- DevOps is infrastructure as code
- Automation is about executing workflows automatically

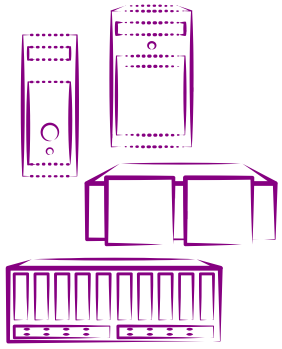
Both are important, but they are different. Be clear on what your objectives are.

Automation Starts with Workflows

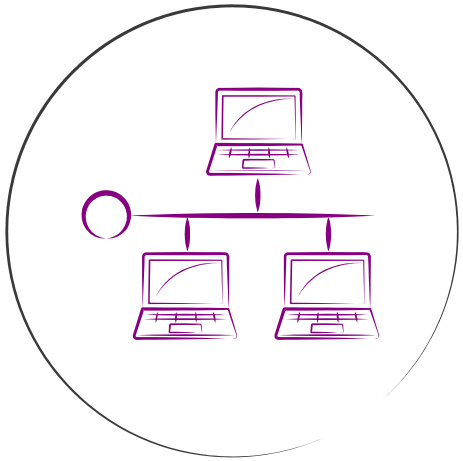
- Most network automation discussions start with the network
- You automate the act of doing something
  - The network is noun not a verb
- A workflow is a set of tasks strung together to achieve some objective
  - Typical examples: provisioning and troubleshooting



Which Workflows Should You Start With?



- Deploy a server
- Add an app instance
- Deploy a service



- Validate

Out of Box

- Initial provisioning
  - Ex: Ansible playbooks
- Planning
  - Ex: Inventory collection

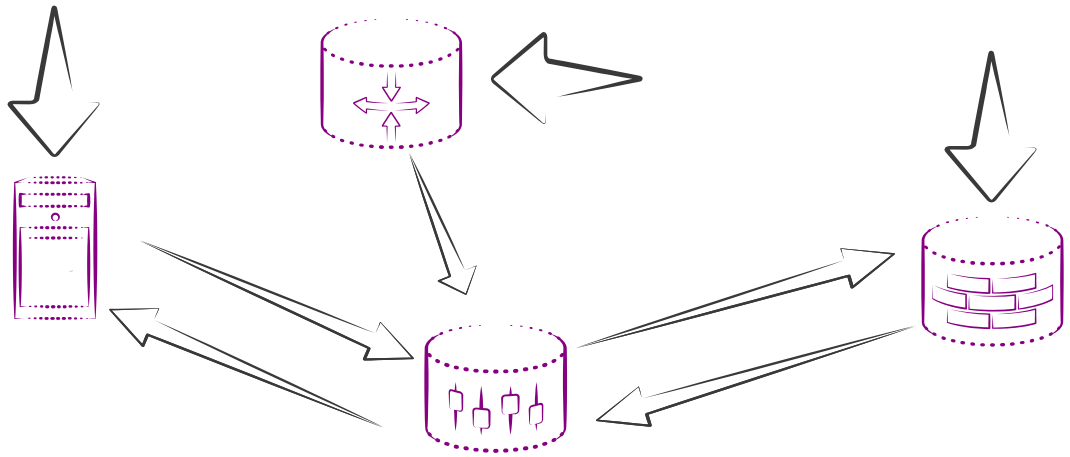
Troubleshooting

- Collecting diagnostics
  - Ex: Counters, stats
- Remediation
  - Ex: Policy application

Key Tools

- Most tools represent an entry point to workflows
  - Ex: Logging tools lead to troubleshooting
  - Ex: Server and app provisioning tools lead to edge policy

What Does Automation Require?



Data Distribution

- How do the elements talk to each other?
- Not all elements communicate
- Not all communication is all the time

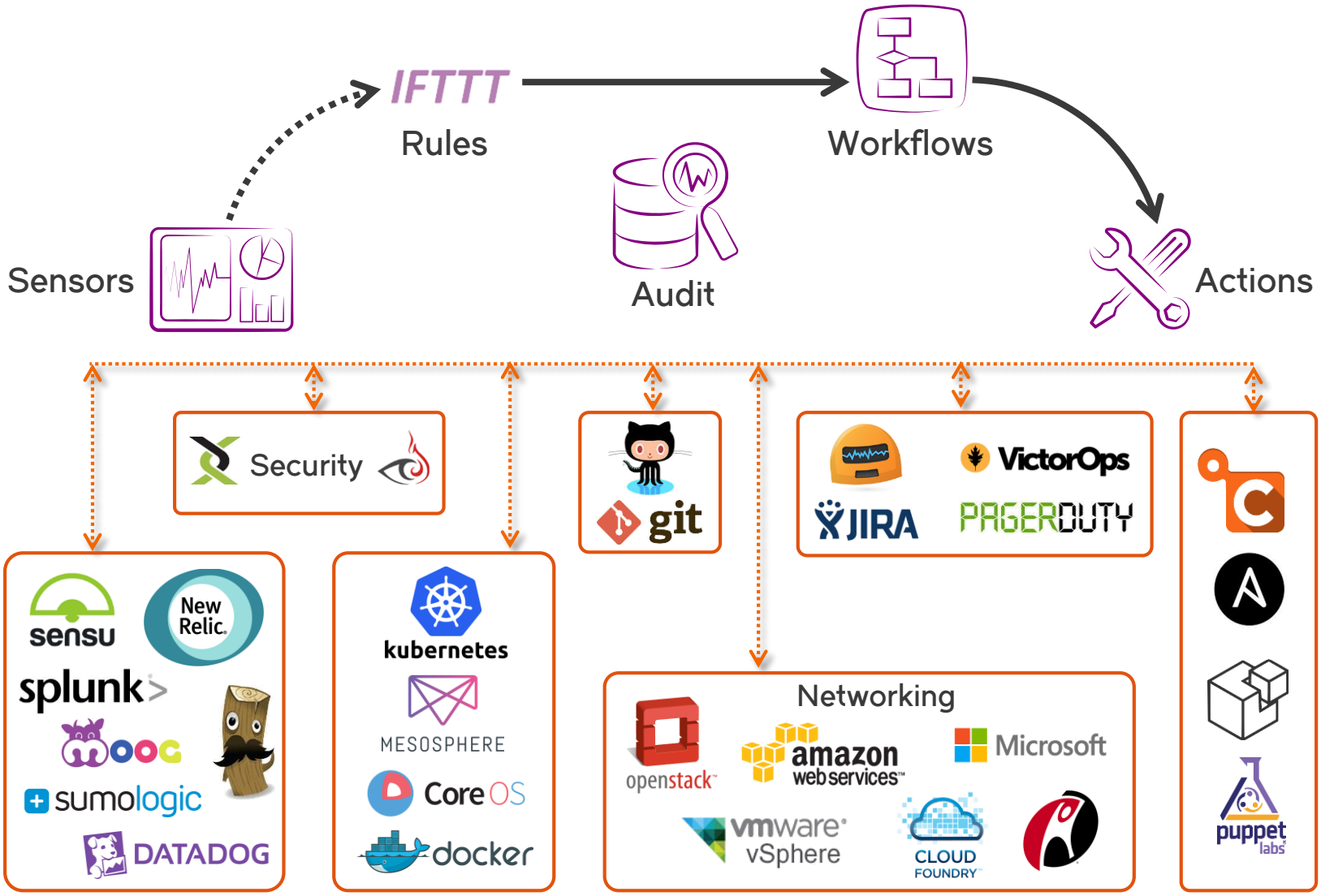
Normalization

- What language do the elements speak?
- Even similar constructs can be formatted in different ways

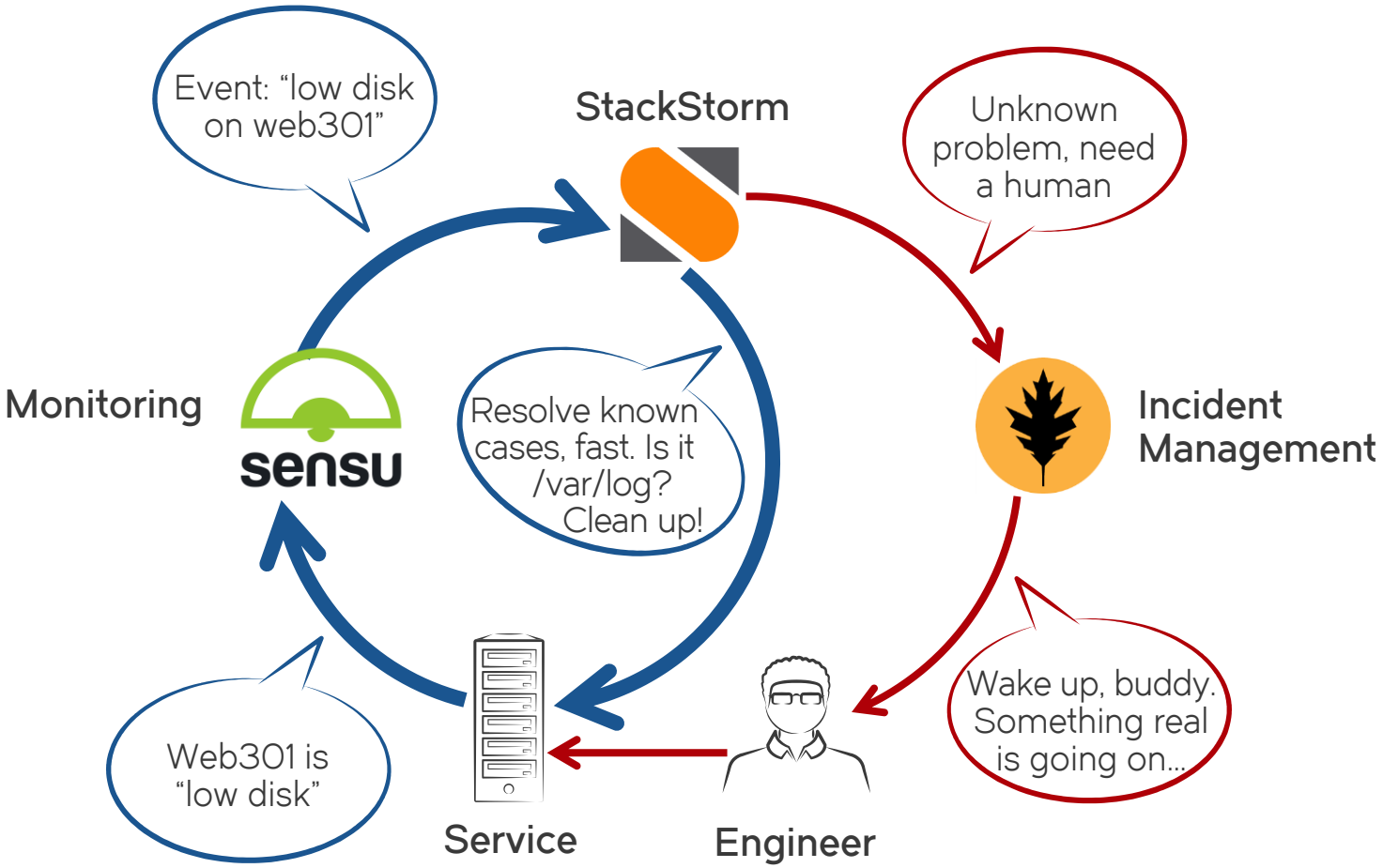
Logic

- If this, then that
- Requires rich set of triggers (or sensors)
- Template-based set of actions

What Can Be Automated?



Automation Example



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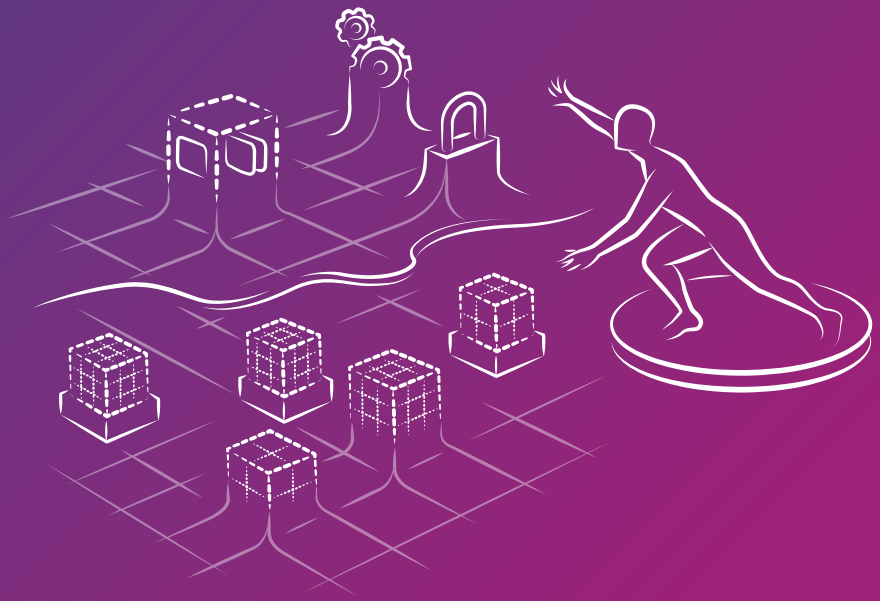
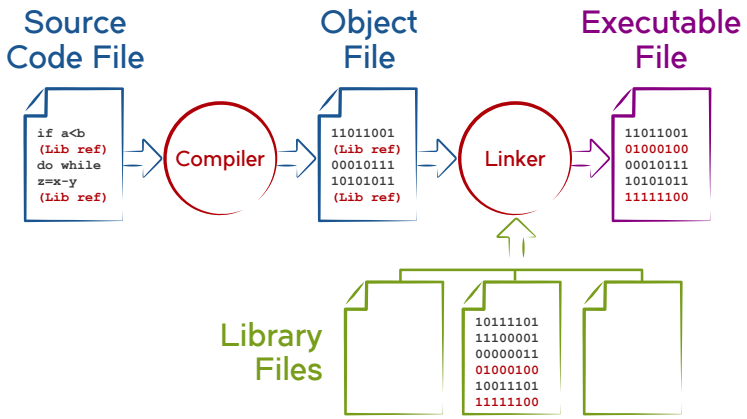
Moving from Automation to DevOps

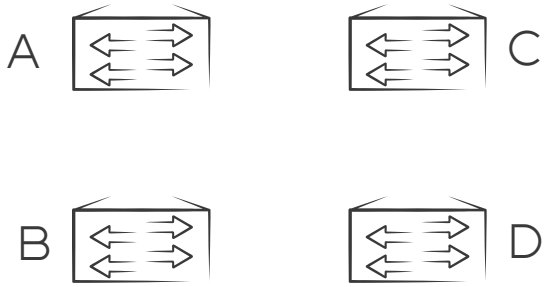


Single System Image

Software



Infrastructure



$A_1\ B_1\ C_1\ D_1 = Network_1$

$A_1\ B_2\ C_1\ D_1 = Network_2$

Tools Supporting a Single System Image

Modify Code

- Configuration management or provisioning

  Examples: CFEngine, Puppet, Chef, Ansible, Salt

Validate

- Network and SLA monitoring
- Data collection and analysis

  Examples: Nagios, OpenNMS, Zabbix

Unit Test

- Requires a test description language
- Automated test harness
- Commercially unsolved for networking

Compile

- Configuration rollout and deployment

  Examples: Otto, Jenkins, Maven, Ant

Source Code Management

- Configuration versioning
- Aligned to management domains

  Examples: Git, Mercurial, Perforce

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DevOps Evolution

- Be clear about whether your company really wants DevOps
- Fight the temptation to start with tools—people first!
- Automation is about workflows, not infrastructure
- Consider using your favorite tools to identify workflows
- Build modularly and expand
- Involve more than just the networking team

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Thank you