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The bridge to possible

Ansible Network Automation, GitOps for NetOps

Sean Cavanaugh
Red Hat Ansible
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DEVNET-2510

Adrian Iliesiu
Cisco DevNet
@aidevnet

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Cisco Webex App

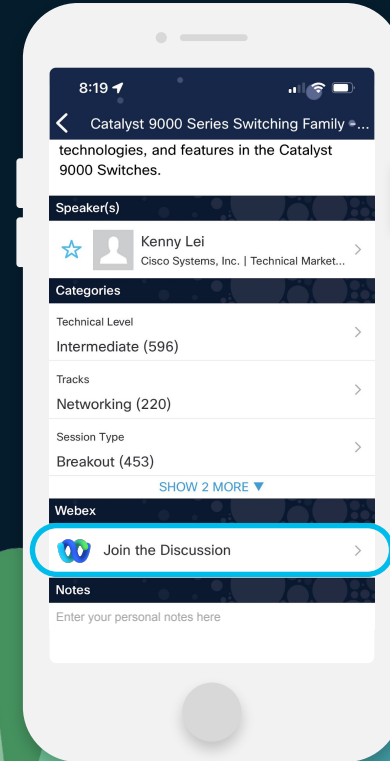
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

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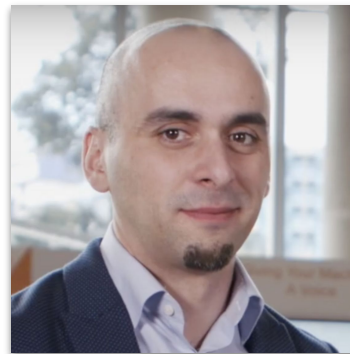
Speakers



Sean Cavanaugh
Red Hat Ansible

CCIE #40514

Sean has previously worked for US Navy, Cumulus Networks (acquired by Nvidia) and Cisco Systems. Sean resides in Chapel Hill, North Carolina



Sean Cavanaugh
Cisco DevNet

CCIE #43909

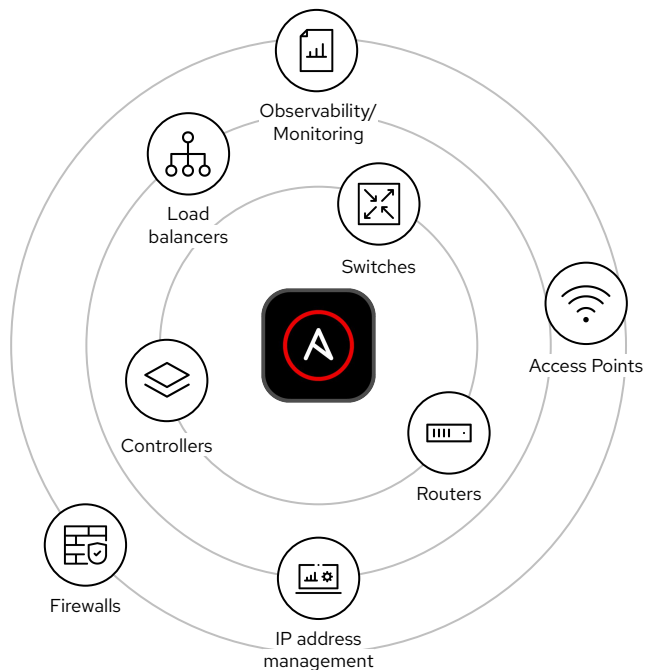
Thought-leader, educator and speaker for global developer conferences, including the iconic DevNet Zone at Cisco Live!



Agenda

- Introduction
- What is Ansible Network Automation?
- Recap of 2023
- What has changed?
- Demo
- Call to action

NetOps as Code with Ansible Automation Platform



Automated operational framework for network management

- ▶ Complete the full life cycle of network operational tasks
- ▶ Use certified and validated content for new projects
- ▶ Address network compliance and security needs
- ▶ Implement NetOps-as-code as part of automation journey

Streamline multivendor network operations, compliance, and security management

Not a repeat 1:1 of last year!

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Ansible Network Automation, GitOps for NetOps – BRKATO-2106



Sean Cavanaugh, Ansible Network Automation, Red Hat

Adrian Illiesiu, Software Development Technical Leader, Cisco Systems, Inc. – **Distinguished Speaker**

A new paradigm shift has created a more opinionated and simpler model: GitOps. This talk covers a simple network as code approach where your Source of Truth (SoT) is simply a Git Repository and every pull request starts your automation workflow for applying network changes in a highly automated way. DevOps or NetDevOps doesn't have to be overly complex, and automation is not all or nothing. I will cover operationalizing GitOps for the enterprise and using Ansible network resource modules, webhooks, Github Actions and Automation controller workflows and approvals. Whether you are beginning your automation journey or are a seasoned veteran there will be something for you in this talk.

Event: 2023 Las Vegas

Technical Level: Intermediate

Technology: Automation & Orchestration, DevNet

Session Type: Breakout

Track: Programmability & Orchestration, Applications

[Session Presentation](#)

[Session Video](#)



Watch last years talk on
ciscolive.com!



Things we covered last year...

- ❑ Infrastructure as code
- ❑ Source of Truth
- ❑ Data centric automation
- ❑ Pipelines
- ❑ DevOps
- ❑ CI/CD
- ❑ GitOps
- ❑ NetDevOps



Things we covered last year...

- ☐ GitLab
- ☐ Project Management
- ☐ Hosted git repositories
- ☐ Built-in CI/CD
- ☐ Complete Adrian demo 🎆



Intended Config?

Running Configuration

```
interface Loopback100
 ip address 10.10.10.1 255.255.255.0
 ipv6 address FC00::100/64
```

SoT

```
config:
- name: loopback100
  ipv6:
  - address: fc00::100/64
  - address: fc00::101/64
```



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YAML SoT

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Ansible Task

```
- name: configure l3 interface
  ios_l3_interfaces:
    config: "{{config}}"
    state: merged
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```

before

```
- name: Loopback100
  ipv4:
  - address: 10.10.10.1/24
  ipv6:
  - address: fc00::100/64
```

Intended Config?

Running Configuration

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commands

```
commands:
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- ipv6 address fc00::101/64
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Intended Config?

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YAML SoT

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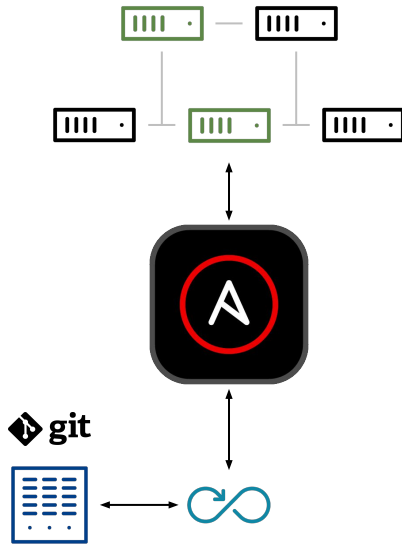
commands

```
commands:
- interface Loopback100
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```

after

```
- name: Loopback100
  ipv4:
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  ipv6:
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  - address: fc00::101/64
```

Apply sources of truth



Why is it important?

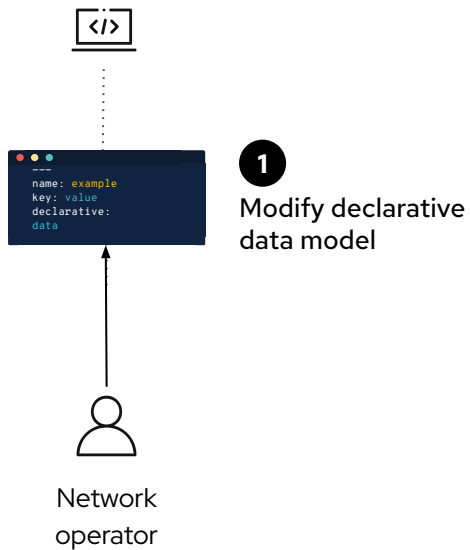
- ▶ Network infrastructure as code, data-centric automation
- ▶ Deploy configuration pipelines
- ▶ GitOps for network automation
- ▶ Integrate IPAM and inventory sources of truth gradually to manage network resources

Why Ansible Automation Platform?

- ▶ Native webhooks for Github/Gitlab, Certified content collection for NetBox
- ▶ Brownfield is easy with network resource modules
- ▶ Not all or nothing, can be adopted in incremental steps

Automated NetOps

Tying everything together



Development

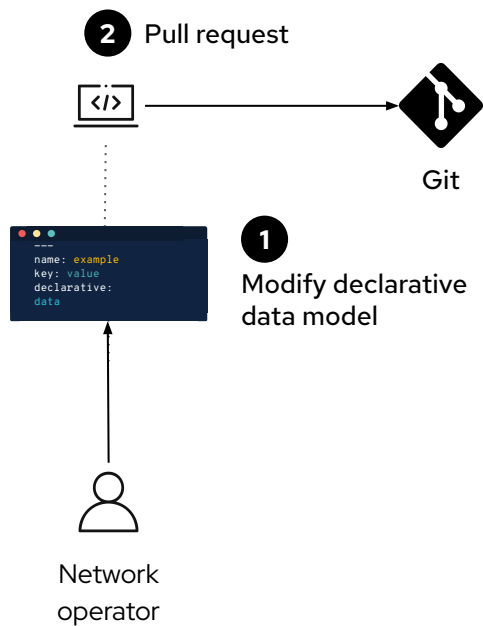


Production



Automated NetOps

Tying everything together



Development

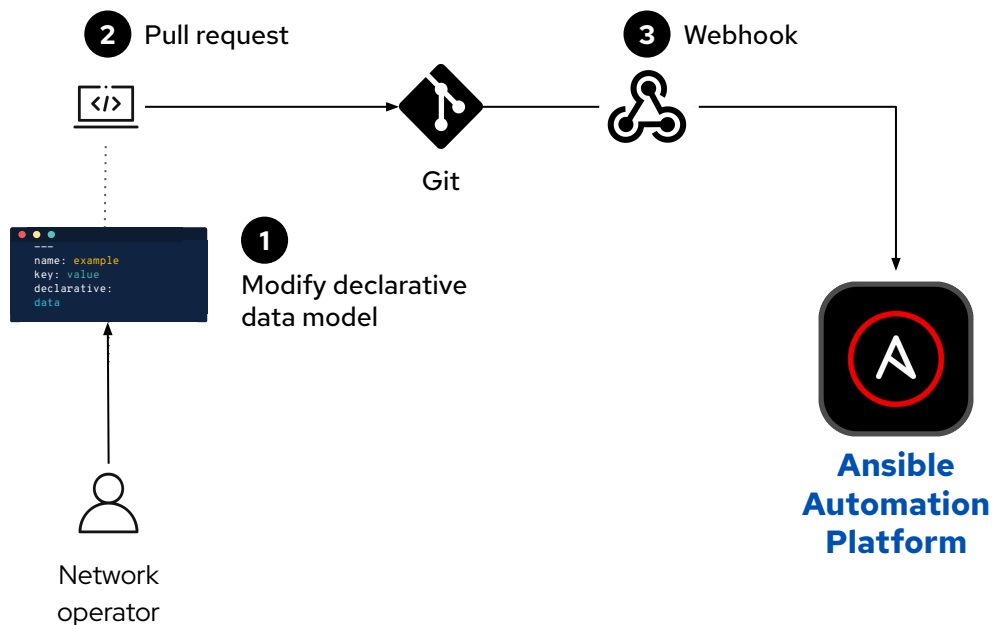


Production



Automated NetOps

Tying everything together



Development

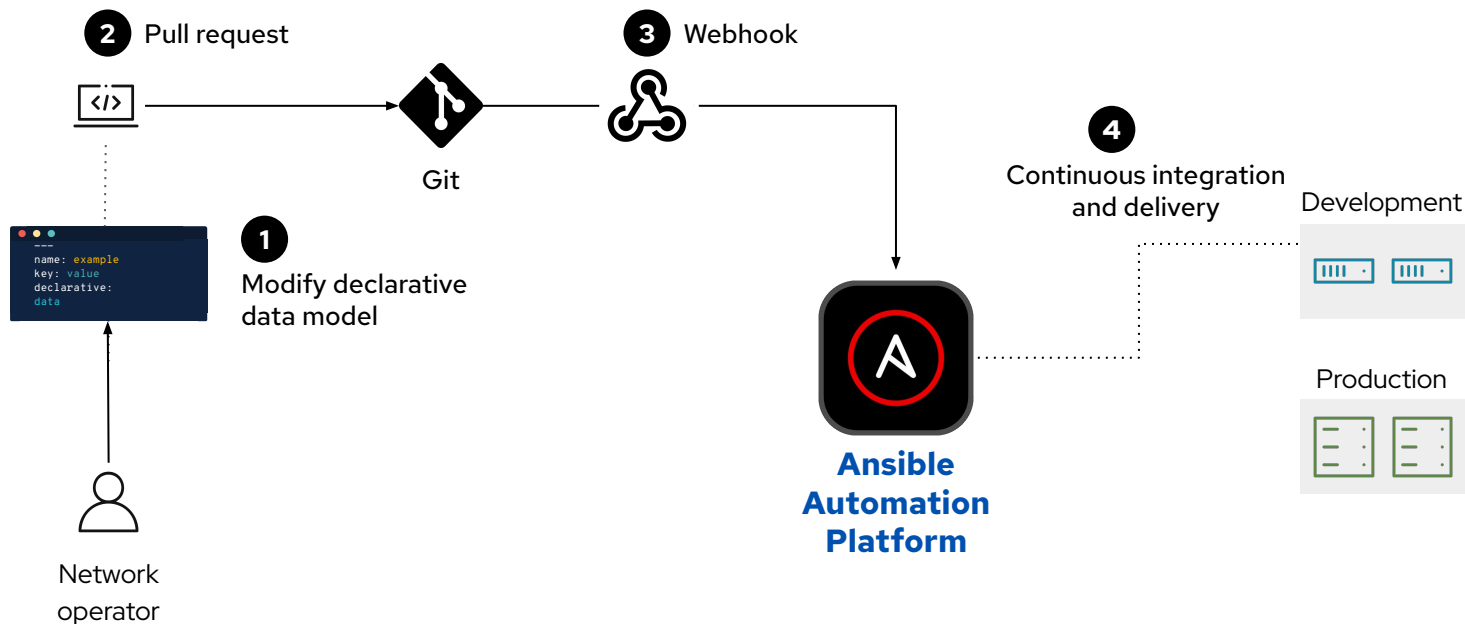


Production



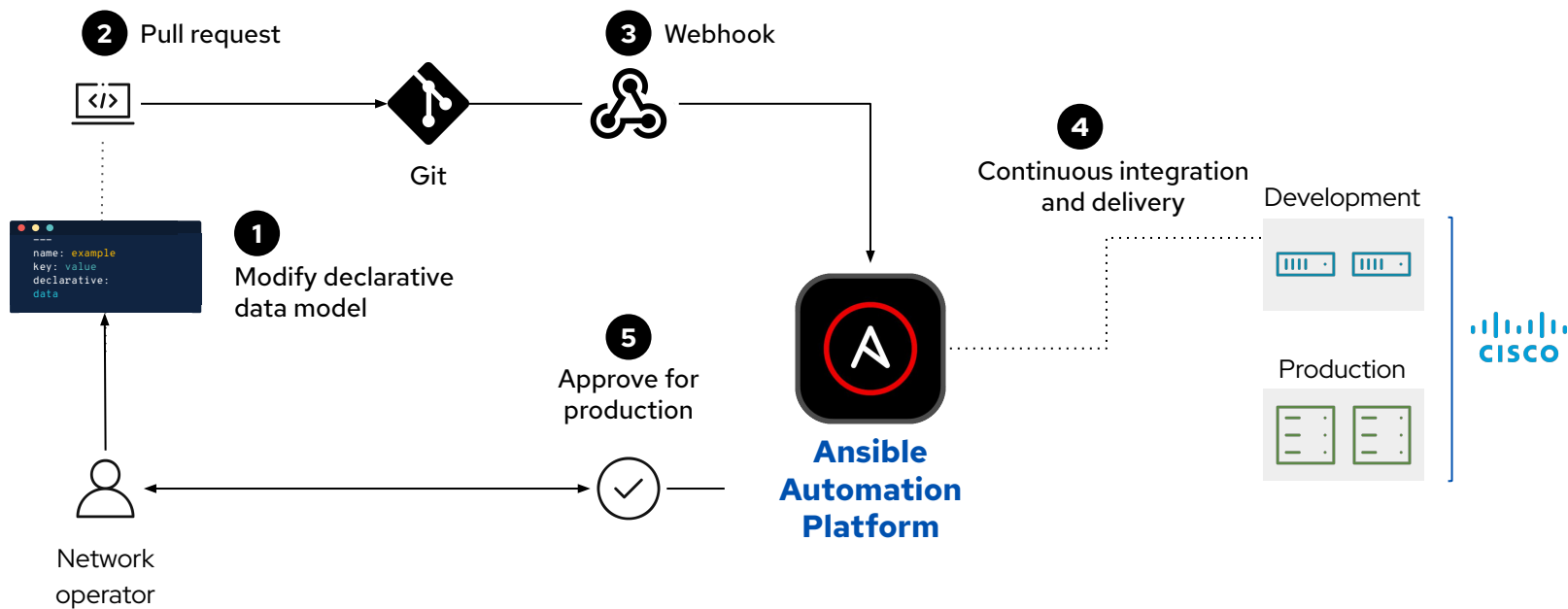
Automated NetOps

Tying everything together



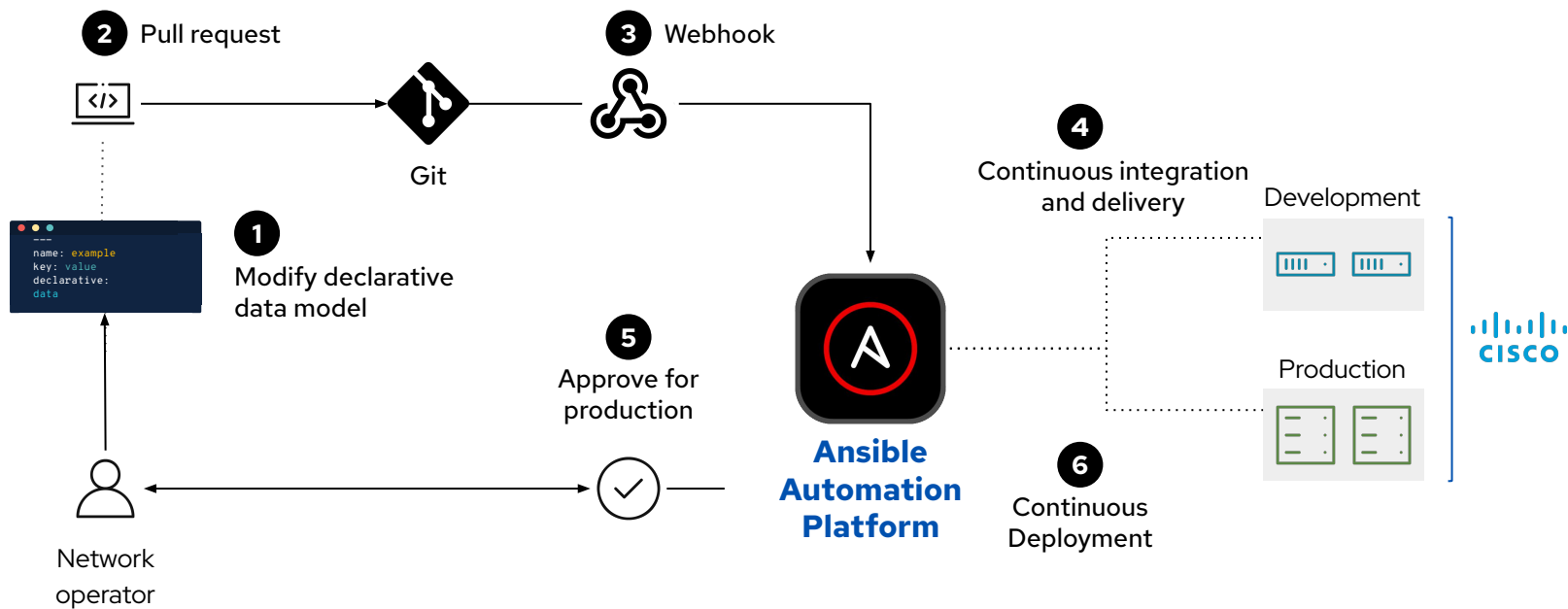
Automated NetOps

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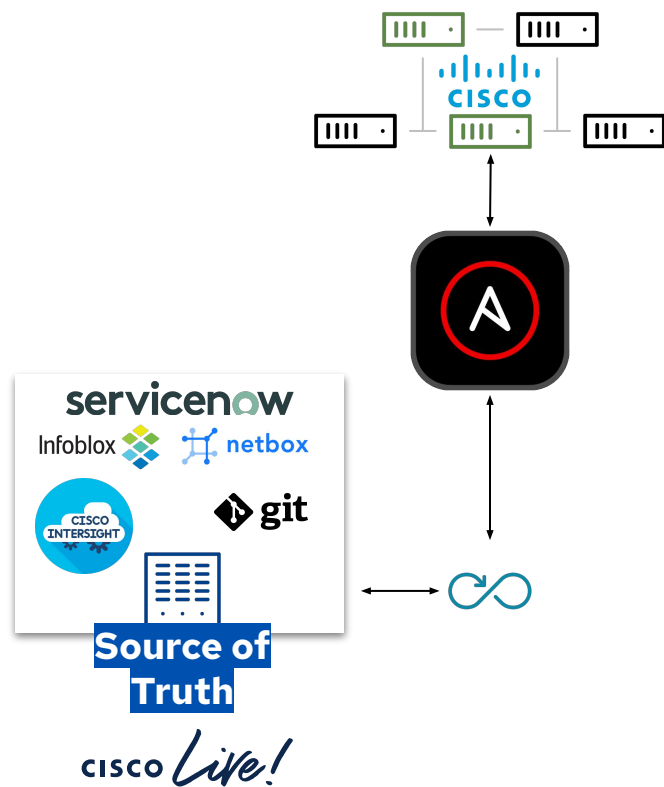


Automated NetOps

Tying everything together



More on Source of Truth

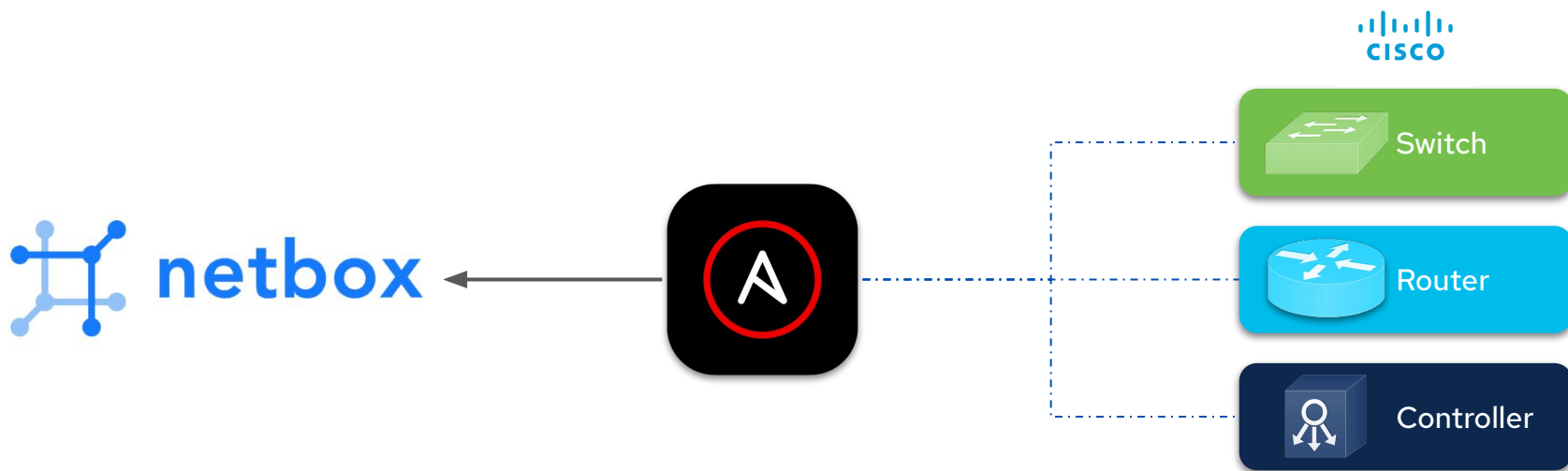


What about when I have existing IPAM?

- ▶ Ansible integrates with existing tools including ServiceNow, Infoblox, Netbox and more!
- ▶ Ansible is agnostic to the SoT (Source of Truth)
- ▶ Ansible can even import CSV files... 🙌

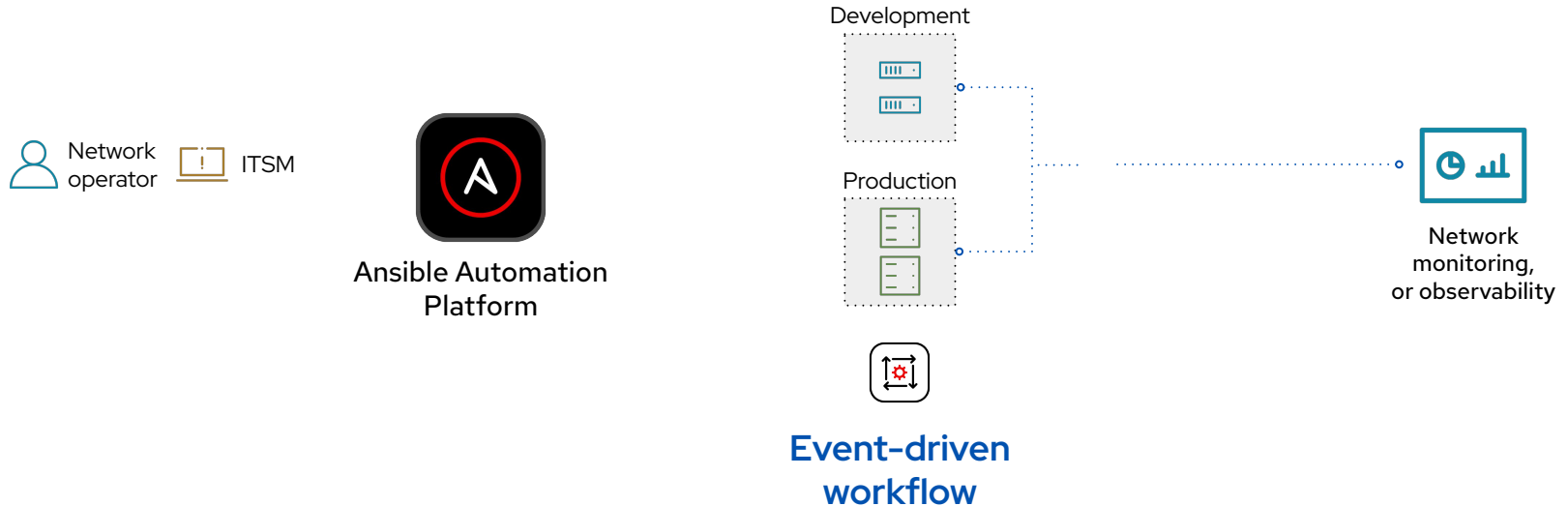
NetBox and Ansible - Better Together

- Certified Ansible collection for NetBox
- Modules to define the **intended network state** in NetBox
- Plugins to **drive automation of the network** using data from NetBox
- Official support from Netbox Labs and Red Hat



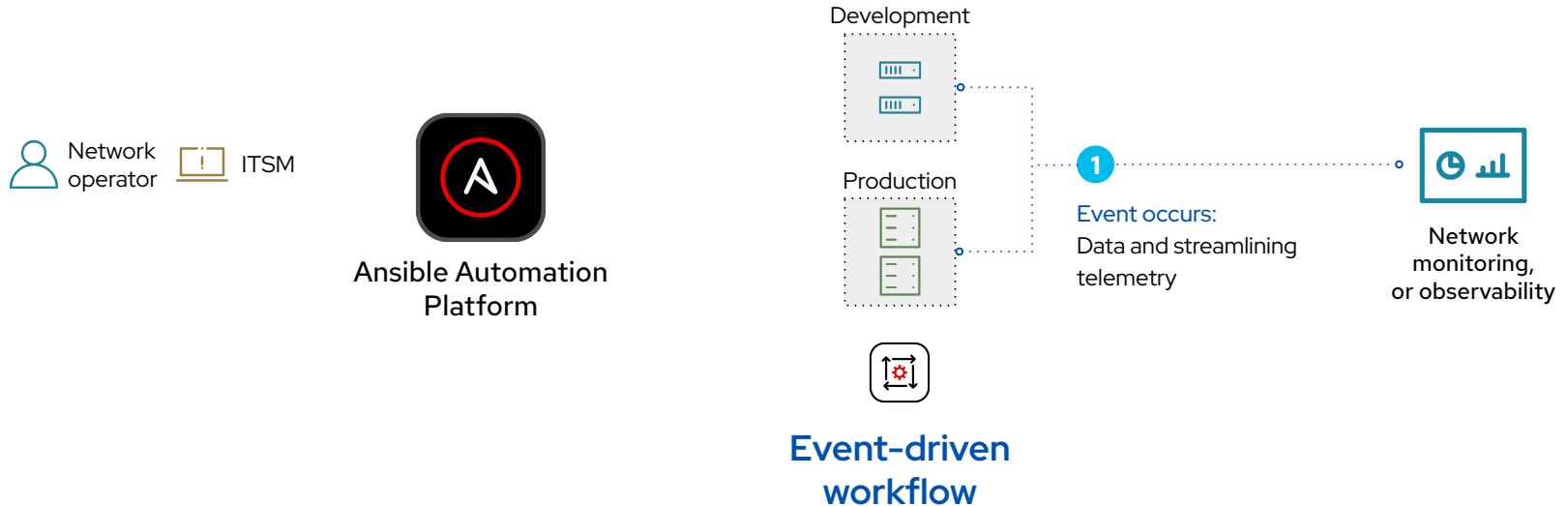
Event-driven troubleshooting

Consistent and faster response to incidents



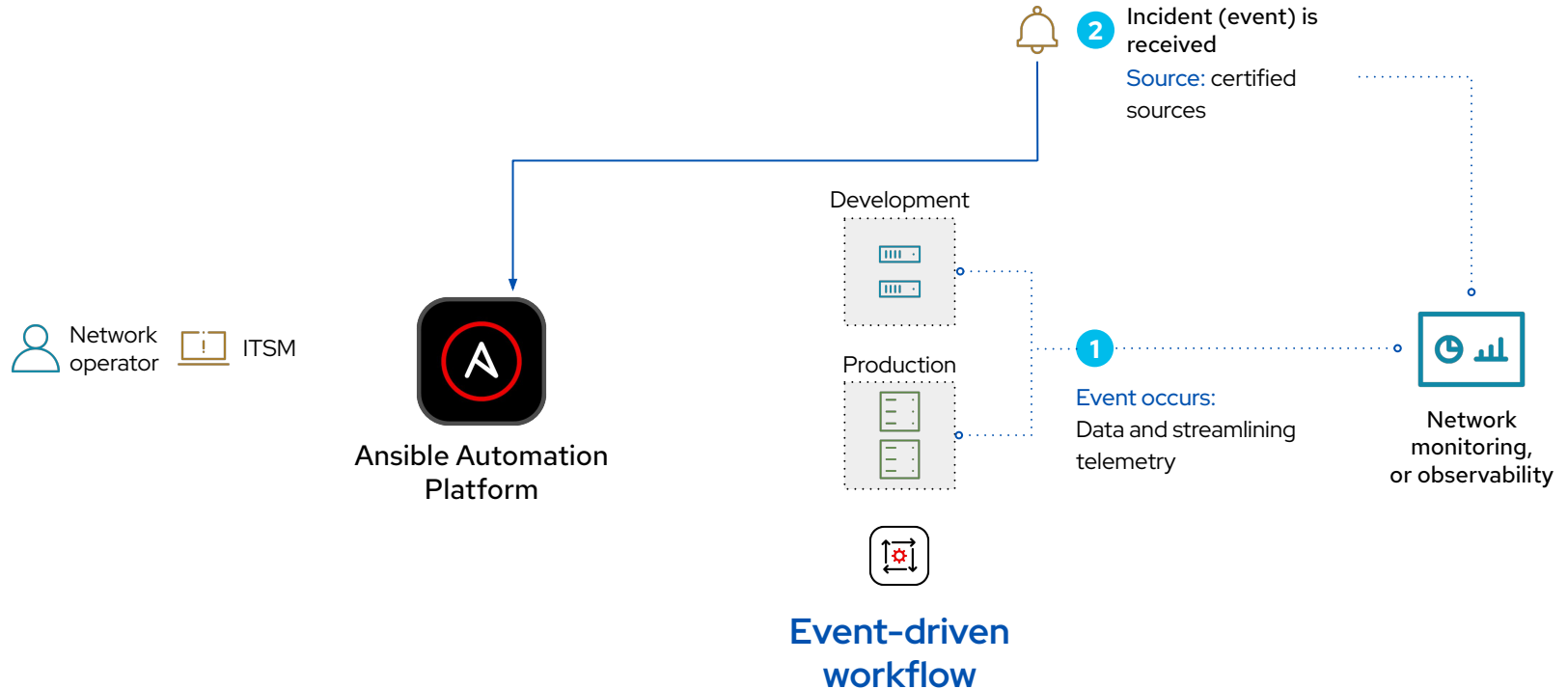
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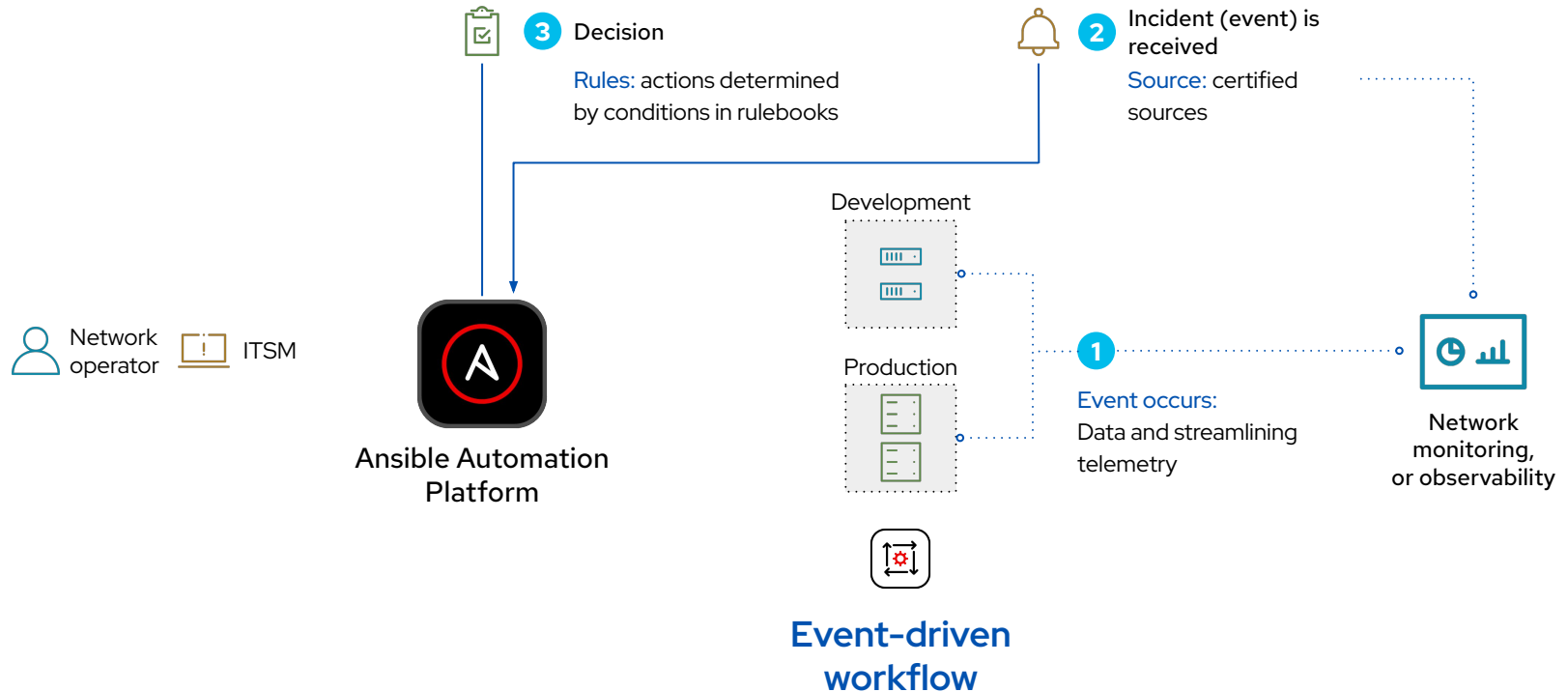
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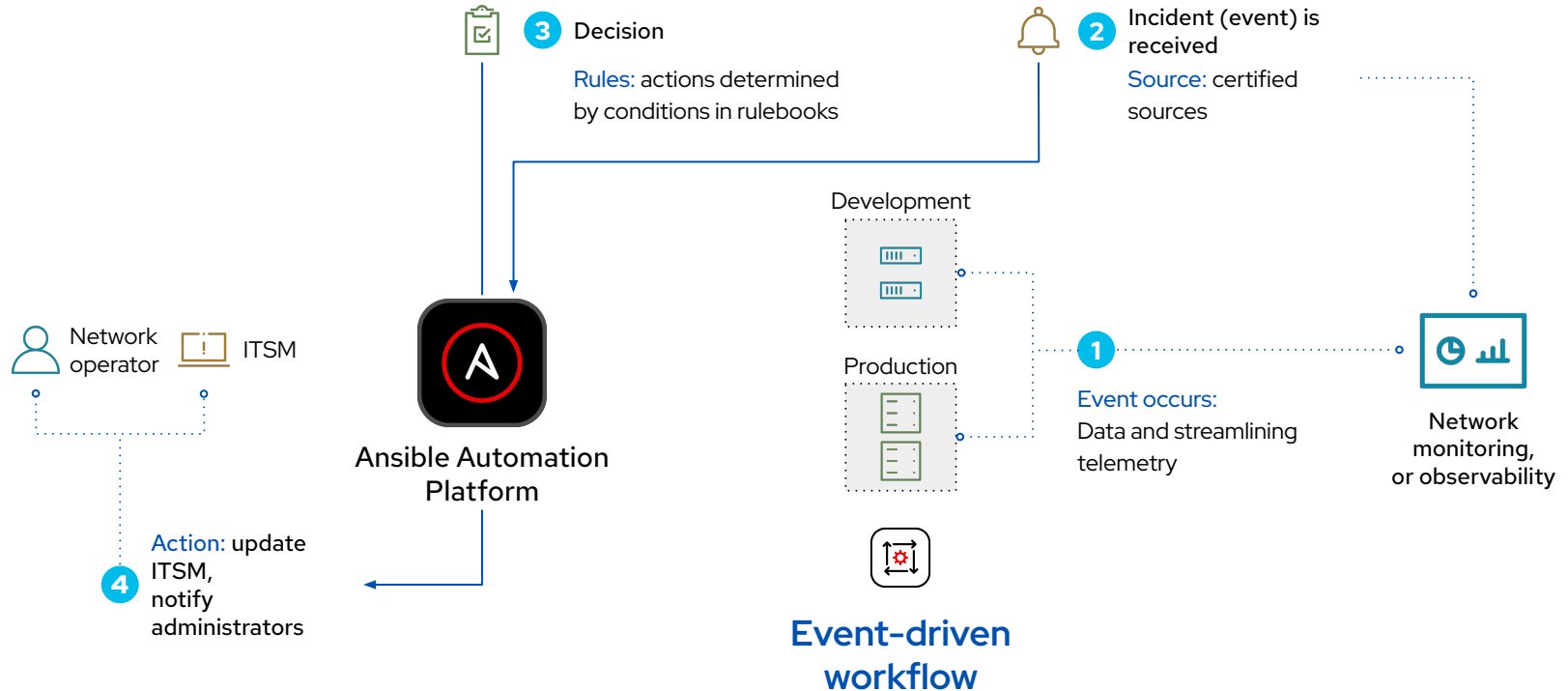
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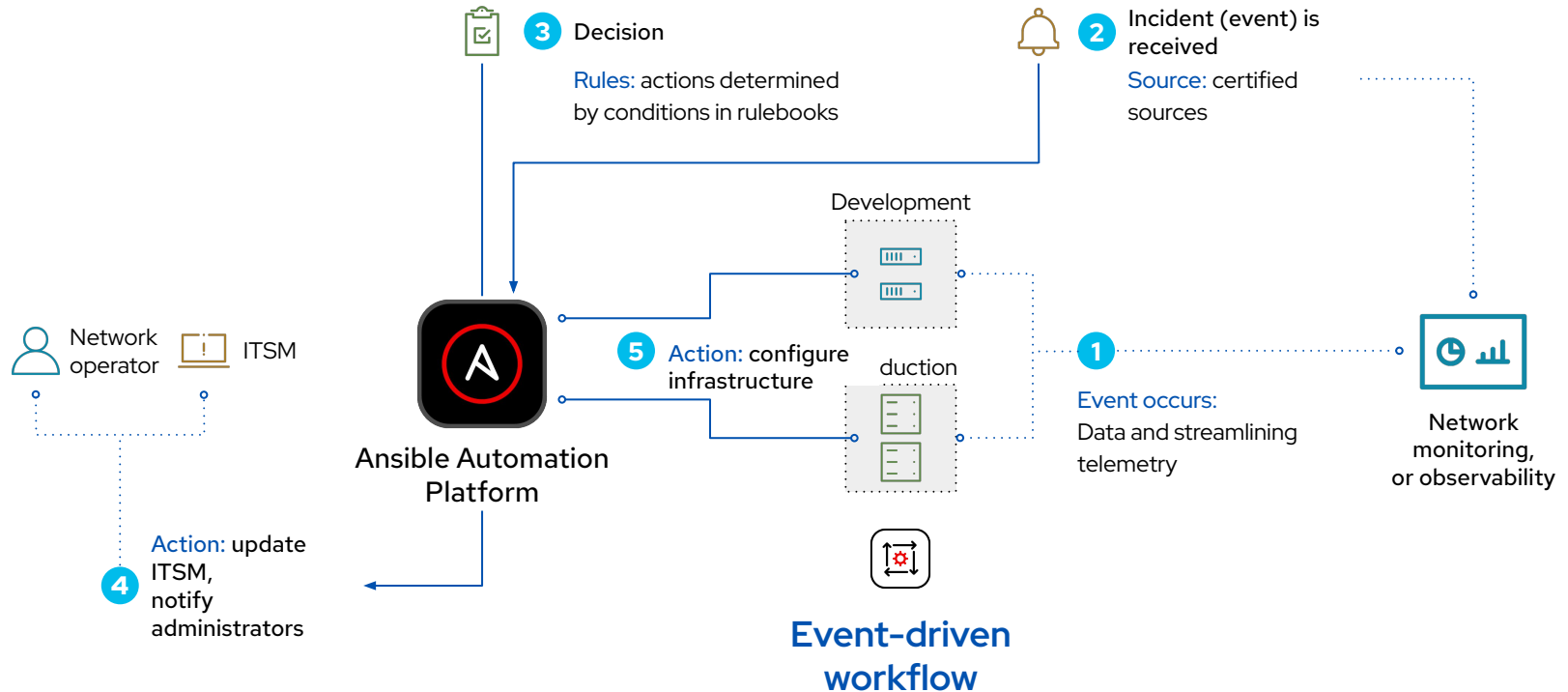
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Event-driven troubleshooting

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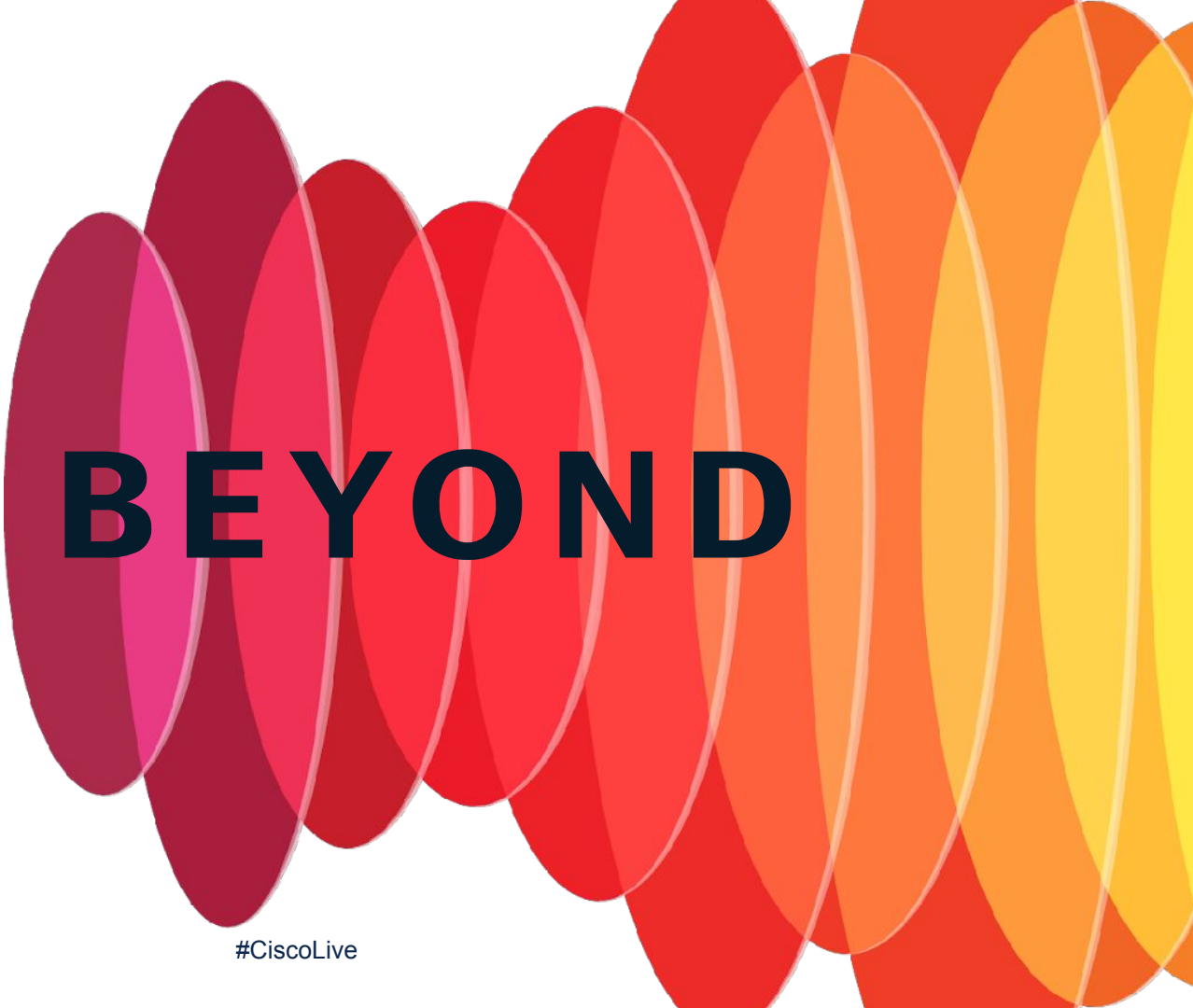
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Thank you

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