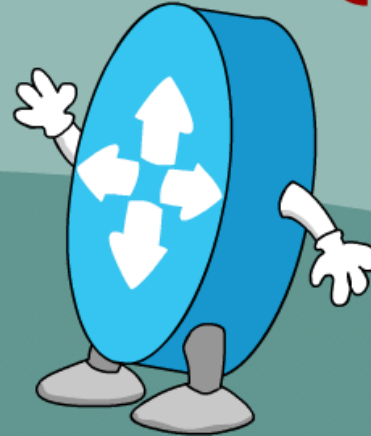




NETDEVOPS {LIVE!}



DEVNET

What's new with Ansible Network Automation

Sean Cavanaugh & Andrius Benokraitis

Ansible Network Automation

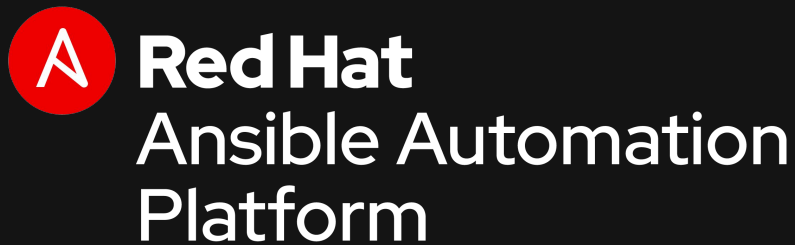
Twitter: [@IPvSean](https://twitter.com/IPvSean) & [@andriusb](https://twitter.com/andriusb)

Season 3, Talk 1

Hosted by Hank Preston, NetDevOps Engineer

Twitter: [@hfpreston](https://twitter.com/hfpreston)

<https://developer.cisco.com/netdevops/live>



Cisco NetDevOps Live!

Ansible Project Restructuring, Network Resource Modules

Sean Cavanaugh
Technical Marketing

Andrius Benokraitis
Product Management

Agenda

- Setting the Narrative
- Project Changes
- Cisco Platforms and Certification
- Quick review of Ansible Playbook
- Network Resource Modules

Obligatory Gartner Self-Validation Quote

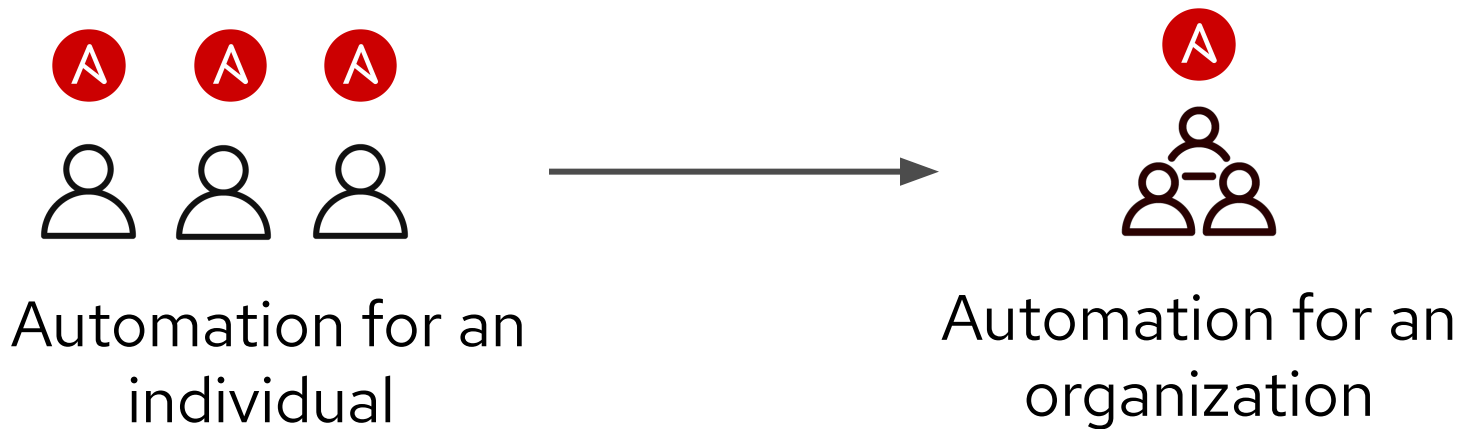
“Automation is perhaps one of the highest yielding investments an entity running its network can make.”

Gartner, Oct 2019

A man with short blonde hair, wearing a dark blue long-sleeved shirt and blue jeans, is sitting on a perforated metal floor in a server room. He is leaning against a black server rack and looking thoughtfully out of a window with white blinds. A silver laptop is open on the floor in front of him, with several white cables plugged into it. The scene is lit with soft, natural light from the window.

Automation does not have to be all or nothing

Automation is a cultural journey



Start small, think big

Start with read-only

Get quick automation wins with no risk

Automate discrete configs

Enforce config policy for small pieces of config

Incrementally add automation

Don't over complicate it on day 1

Crawl, Walk, Run



Manual Automation

- Back ups
- Use command modules
- Use config modules

Days



DevOps Aware

- CI/CD
- Use Resource Modules

Months



DevOps Essential

- Source of Truth
- Jinja2 Templating

Years

Ansible Project Growth – Side Effects

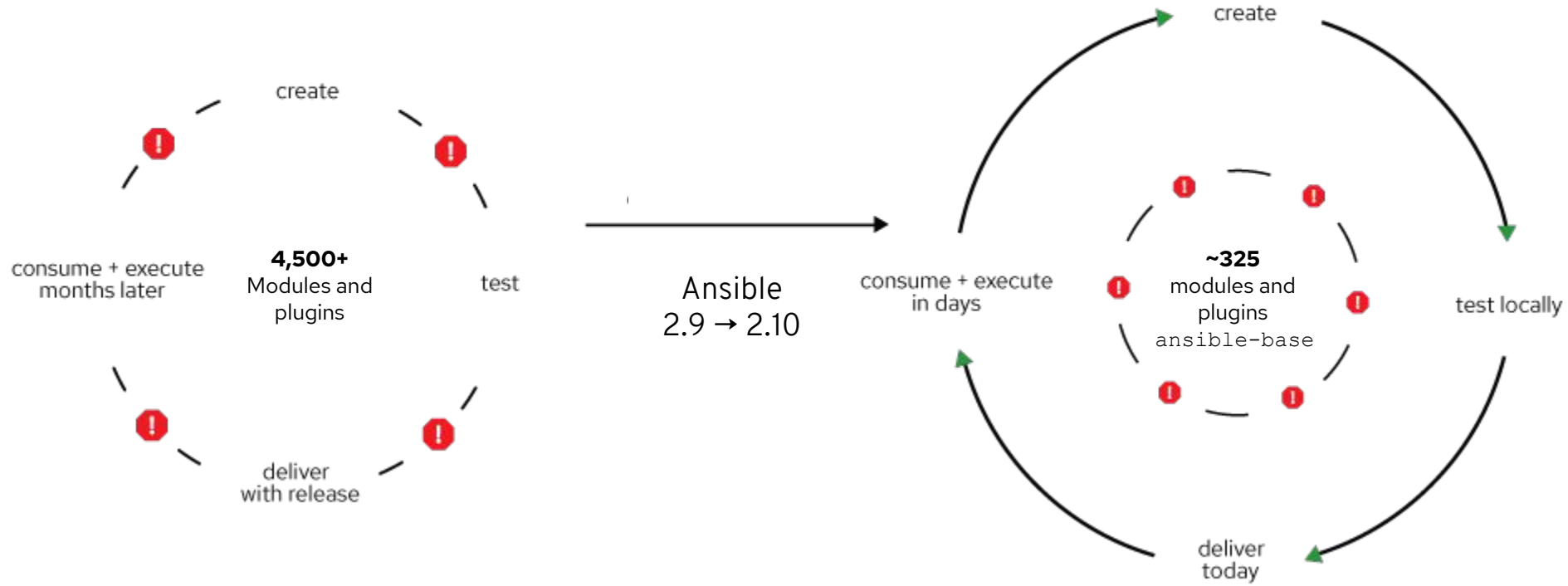
Customers

- Support claim confusion, and who does what and where for issues/PRs?
- Need for stability (longer life cycle) for foundation components while...
- Need new module enablement / platform updates (shorter life cycle)

Developers

- 4,300+ open issues, 2,000 open pull requests
- “One size fits all” doesn’t work for all content sets
- Some things go in quickly, some things don’t

Step 1: Separate Ansible from the content



Introducing the Ansible Collection

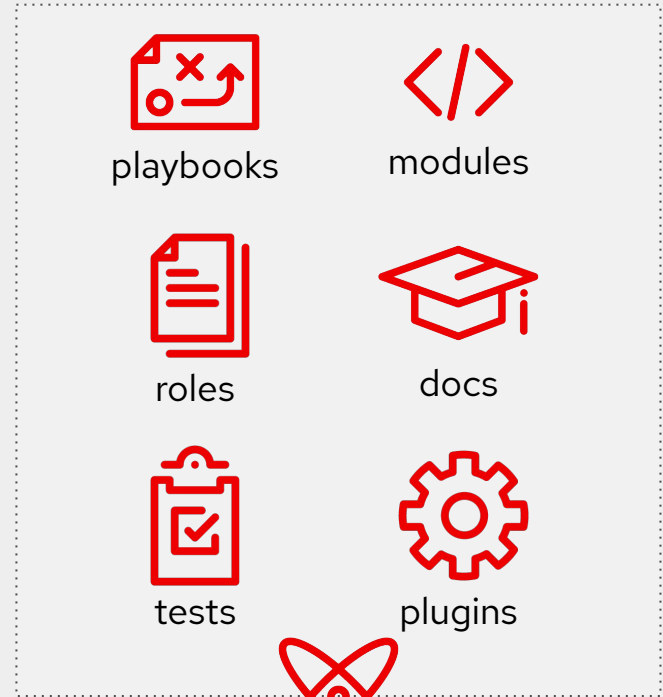
Simplified and consistent content schema



- A standardized way to organize and package Ansible content
- Include roles, modules, module utilities, plugins, documentation
- Semantic versioning
- Portable and flexible delivery

Ansible Collection

- Components are well defined, there is a standard for the directory structure
- Allows modularized sharing of all types of Ansible Content
- Requires same standard of documentation that the Ansible Project does
- Share via Ansible Galaxy and Automation Hub



```
ansible-galaxy init collection namespace.collection_name
```

Step 2: Simplify Ansible Distribution Channels

Ansible Galaxy

galaxy.ansible.com

- Community supported
- Extended to leverage Collections framework
- "Latest and greatest"

Ansible Automation Hub

cloud.redhat.com

- Certified, jointly supported by Red Hat and Partner
- Access to advanced analytics
- "Slow and steady"

Ansible Enabled Cisco Platforms

Fully Supported by Red Hat

IOS

IOS XR

NX-OS

Certified

ACI

ACI MSO

Community

AireOS

ASA

DNA Center

FTD

MDS

Meraki

NSO

UCS

Automation Hub: Certified Collections Today

arista.cvp

arubanetworks.aoscx

azure.azcollection

check_point.mgmt

cisco.aci

cisco.mso

cyberark.pas

dynatrace_innovationlab.

 dynatrace_collection

f5networks.f5_modules

fortinet.fortios

google.cloud

ibm.qradar

ibm.ibm_zos_core

ibm.spectre_virtualize

nginxinc.nginx_controller

netapp.aws

netapp.azure

netapp.elementsw

netapp.ontap

purestorage.flasharray

purestorage.flashblade

rubrikinc.cdm

sensu.sensu_go

splunk.enterprise_security

tirasa.syncope

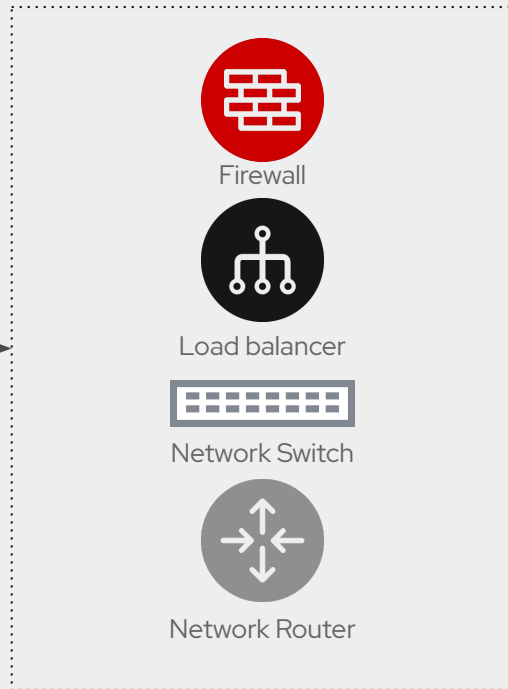
Ansible connection plugins

Ansible supports the connection
your network device supports



ansible_connection

- network_cli
- netconf
- httpapi



Ansible Inventory example

[all:vars]

```
ansible_user=admin  
ansible_password=ansible123
```

[ios]

```
rtr1 ansible_host=52.14.208.176  
rtr2 ansible_host=18.221.195.152
```

[nxos]

```
switch01 ansible_host=3.15.11.56
```

[ios:vars]

```
ansible_network_os=ios  
ansible_connection=network_cli
```

[nxos:vars]

```
ansible_network_os=nxos  
ansible_connection=nxapi
```

Retrieve Ansible Facts



Network native
configuration
(on box)



Convert to
structured data



```
- name: desktops  
  vlan_id: 20  
- name: servers  
  vlan_id: 30
```

Retrieve Ansible Facts Example

```
---
- hosts: rtr2
  gather_facts: false
  tasks:

- name: grab info
  ios_facts:
    gather_subset: min
    gather_network_resources: vlans

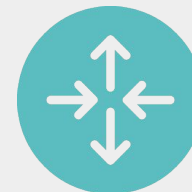
- name: push structured data to hostvars
  copy:
    content: "{{ansible_network_resources | to_nice_yaml}}"
    dest: "{{playbook_dir}}/host_vars/{{inventory_hostname}}"
```

Resource Modules

```
- name: desktops  
  vlan_id: 20  
- name: servers  
  vlan_id: 30  
- name: printers  
  vlan_id: 40
```



Resource Module



Network native
configuration
(on box)

Ansible Playbook example

```
---  
- name: add VLANs  
  hosts: cisco  
  tasks:  
    - name: add VLAN configuration  
      ios_vlans:  
        config:  
          - name: desktops  
            vlan_id: 20  
          - name: servers  
            vlan_id: 30  
          - name: printers  
            vlan_id: 40
```

Always idempotent



“

When does it make sense for a network engineer to start building roles vs just playbooks?

”

?

When does it make sense for a network engineer to start building roles vs just playbooks?

- When two or more people are contributing and working on developing the playbook together
- when multiple Ansible Playbook make use of the role to reduce playbook complexity

One of the common challenges engineers see and discuss with Ansible is around performance. Both with configuring multiple devices, as well as with large and robust configurations.

What can be done to improve this for engineers?



What can be done to improve this for engineers?

- Come to Ansiblefest! We have multiple talks on performance and scale.
- Design your network for cattle versus pets (reduce uniqueness and complexity)
- Understand how Ansible works and modify forking and performance metrics

bit.ly/TuneAnsible

What does Ansible Tower provide the network engineer, when should we start using it?




What does Ansible Tower provide the network engineer, when should we start using it?


- an API for your Ansible Playbooks
- As soon as two or more people are using the same Ansible Playbooks
- When you want an enterprise solutions versus DIY bespoke automation

Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

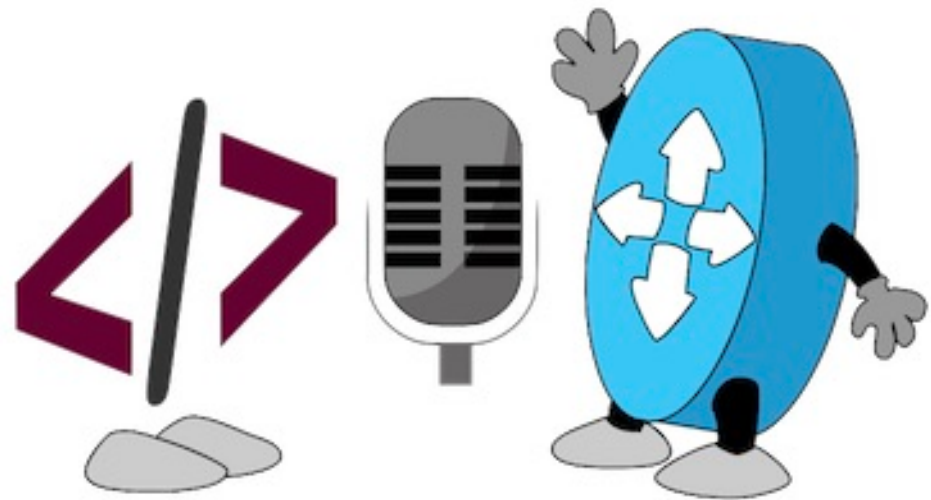
 linkedin.com/company/red-hat

 youtube.com/user/AnsibleAutomation

 facebook.com/redhatinc

 twitter.com/Ansible

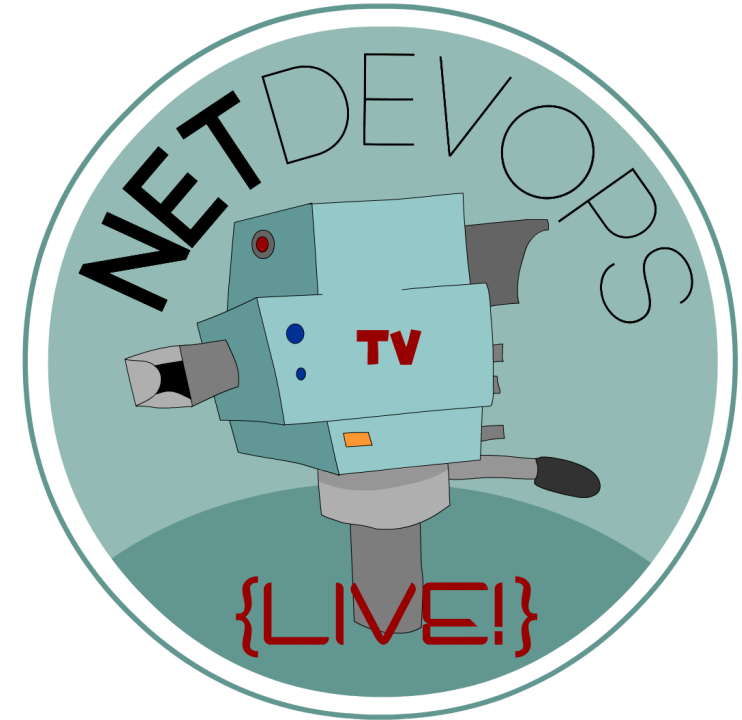
NetDevOps Tech Chat



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Webinar Resources on DevNet!

- Docs and Links
- Learning Labs
- DevNet Sandboxes
- Code Samples



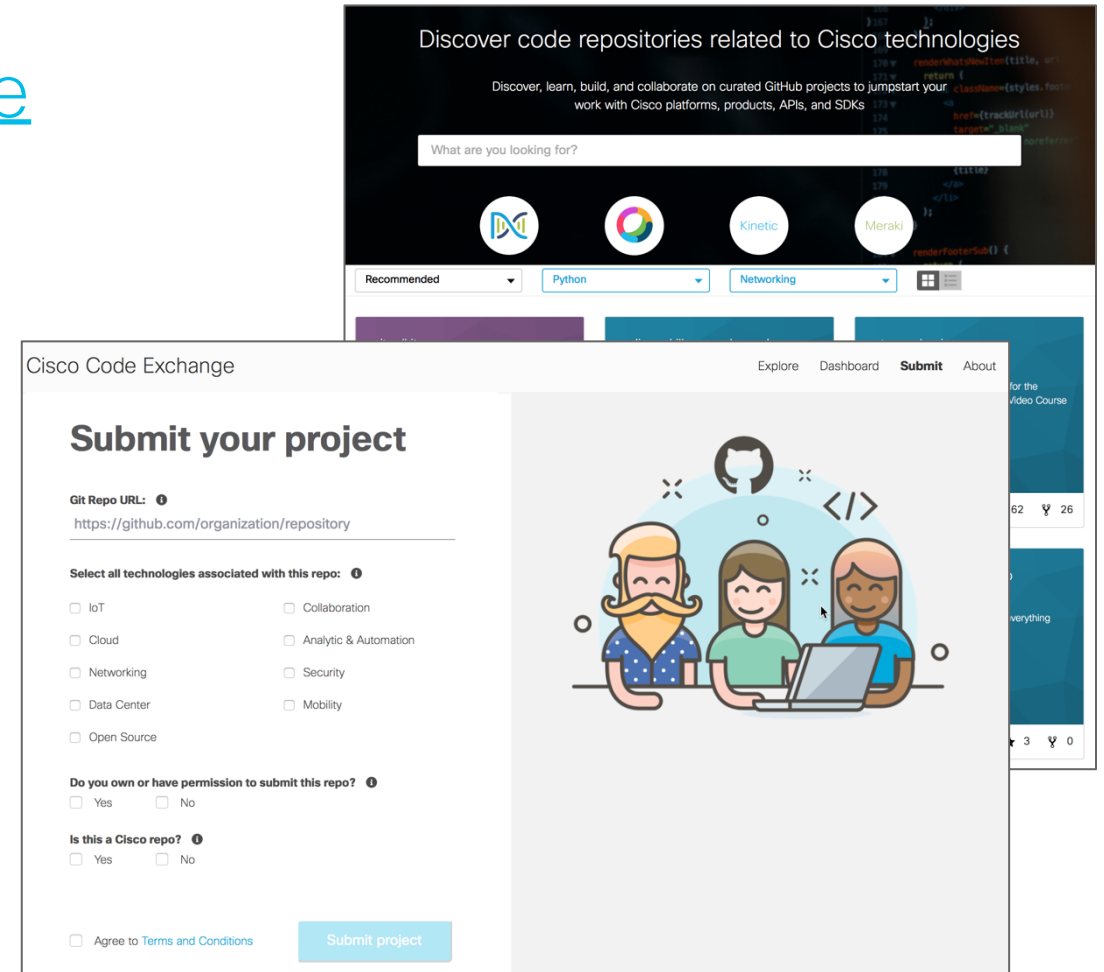
developer.cisco.com/netdevops/live/#s03t01

NetDevOps Live! Code Exchange Challenge

developer.cisco.com/codeexchange

Build an Ansible playbook or role that tackles your most common configuration challenge.

Example: Configure standard host port configurations for printers, access points, workstations, servers, etc



The image shows two overlapping screenshots of the Cisco Code Exchange website. The top screenshot displays a search interface with the heading "Discover code repositories related to Cisco technologies" and a search bar. Below the search bar are icons for various technologies: Ansible, Docker, Kinetic, and Meraki. The bottom screenshot shows the "Submit your project" form, which includes a "Git Repo URL" field, a "Select all technologies associated with this repo" section with checkboxes for IoT, Cloud, Networking, Data Center, Open Source, Collaboration, Analytic & Automation, Security, and Mobility, and a "Submit project" button.

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blogs.cisco.com/tag/netdevops
- Network Programmability Basics Video Course
developer.cisco.com/video/net-prog-basics/



Join us next week!

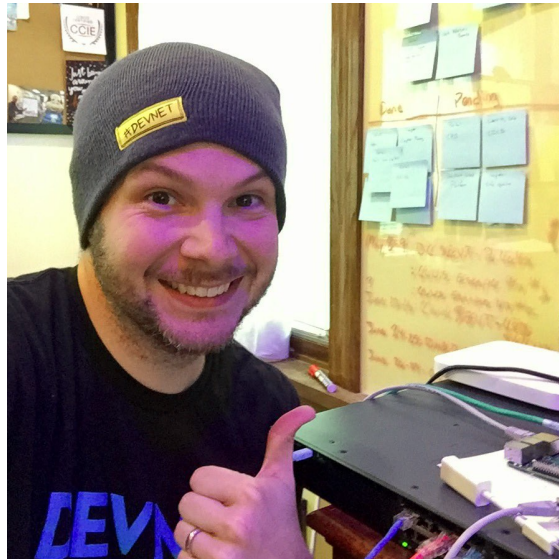


Power Your NetDevOps Workflows with GitLab

April 14, 2020 with Brad Downey

<https://developer.cisco.com/netdevops/live/#s03t02>

Got more questions? Stay in touch!



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 <http://github.com/hpreston>



developer.cisco.com

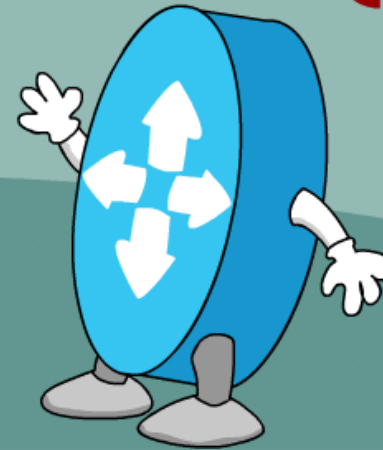
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 facebook.com/ciscocodevnet/

 <http://github.com/CiscoDevNet>



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