



The bridge to possible

Growth, Grit & Automation: Mastering the Shift Towards Infrastructure as Code

Jeff Bull, Manager, Developer Advocacy
@jeffbulltech

Hey there! I'm Jeff Bull

@JeffBullTech
(or jbtthejedi on TT)

CISCO *Live!*



2



Agenda

- Introduction – What's a growth mindset?
What about grit?
- Psychological Principles: How they apply to IaC
- Infrastructure as Code Basics
- Best Practices
- Final Takeaways

Introduction

I want *YOU* to feel empowered and
inspired to develop a growth mindset and
take on automation through
Infrastructure as Code

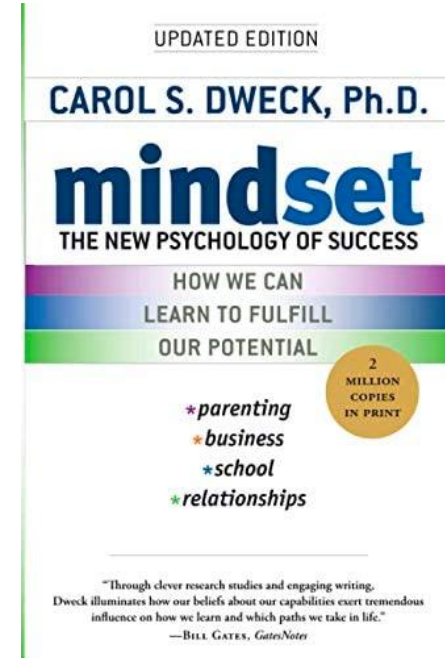


A look back...

What's a growth mindset?

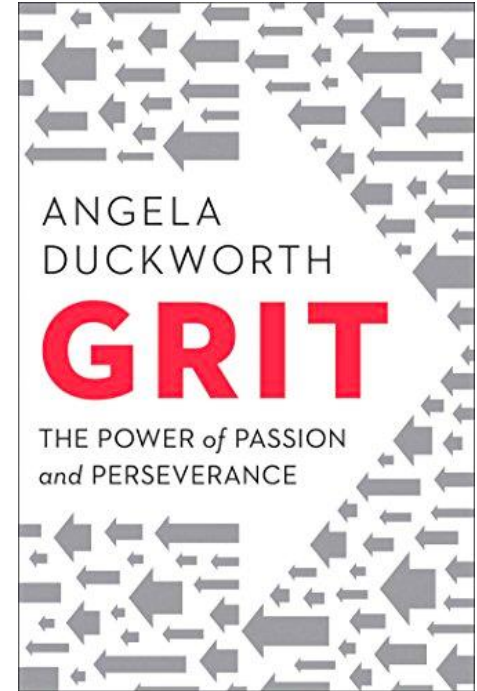
I didn't realize this was a therapy session...

- The belief that one's abilities can be developed through effort and experience
- Opposite of a fixed mindset, which is the belief that one's abilities cannot be changed
- A growth mindset is crucial for achieving success in any area of life, including adopting Infrastructure as Code



Okay, then – what's grit?!

- Both passion and perseverance towards long-term goals
- Ability to show up every day and push through even when things get tough (while understanding your breaking point)
- An important trait for achieving success in any area of life, including adopting Infrastructure as Code



Infrastructure as Code Basics

9

Hang on... What is Infrastructure as Code (IaC)?



```

default:
before_script:
- export ANSIBLE_HOST_KEY_CHECKING=False

image: 'adrianii/cicd-en:0.1.0'

stages:
- pyats-pre-snapshot
- deploy-OSPF
- pyats-post-snapshot

pyats-pre-snapshot:
stage: pyats-pre-snapshot
script: cd pyats && pyats run job job.py --testbed-file cml_test.yaml --trigger-datafile pre_trigger_datafile.yaml --html-logs pre_snapshot.
artifacts:
paths:
- pyats/pre_snapshots/pre_ospf_dist-sw01.json
- pyats/pre_snapshots/pre_ospf_dist-sw02.json
when: always

deploy-OSPF:
stage: deploy-OSPF
script: ansible-playbook -i hosts actions/configure-ospf/configure-ospf.yml

pyats-post-snapshot:
stage: pyats-post-snapshot
script:
- cd pyats && pyats run job job.py --testbed-file cml_test.yaml --trigger-datafile post_trigger_datafile.yaml --html-logs post_snapshots.
- PYATS_OUTPUT_DIR=ospfdiff/ pyats run job job.py --testbed-file cml_test.yaml --trigger-datafile post_trigger_datafile.yaml --html-logs post_snapshots.
- cat ospfdiff/dist_pre_ospf_dist-sw01.json --output ospfdiff/
- cat ospfdiff/dist_pre_ospf_dist-sw02.json --output ospfdiff/
- cat ospfdiff/dist_pre_ospf_dist-sw01.json
- cat ospfdiff/dist_pre_ospf_dist-sw02.json

```

Check out Adrian Iliesiu's Blog
 "Using CI/CD Pipelines for Infrastructure Configuration and Management"
<https://blogs.cisco.com/developer/gitlabci/cicdpipelines01>

EXPLORER

FULL CONFERENCE

IT LEADERSHIP

CI/CD Pipelines for Infrastructure Automation - DEVNET-2261



Adrian Iliesiu, Software Engineering Technical Leader, Cisco Systems, Inc. - **Distinguished Speaker**

In this classroom session I will go over an introduction to CI/CD pipelines, how they are used in a software development environment and how to adapt a GitLab CI/CD pipeline for infrastructure automation. I will showcase how to build a .gitlab-ci.yml file, how to define stages of a pipeline, how to use pyATS to take operational snapshots of network devices, how to use Ansible to perform network changes as part of the pipeline and how to use Cisco CML to build a test network.

Technical Level: Intermediate

Technology: DevOps / NetOps / AIOps, Automation & Orchestration, Programmability

Session Type: DevNet

Session Length: 45 Minutes

DEVNET-2010

12

Percentage of New Content: 100

Schedule

Thursday, Feb 9 | 1:00 PM - 1:45 PM CET | DevNet Theater



Help Identify Opportunities



- Growth mindset: Willingness to learn and adapt to new automation opportunities
- Grit: Persistence through challenges when identifying and implementing automation opportunities
- Together: Drive & determination to successfully identify and implement automation opportunities in IaC

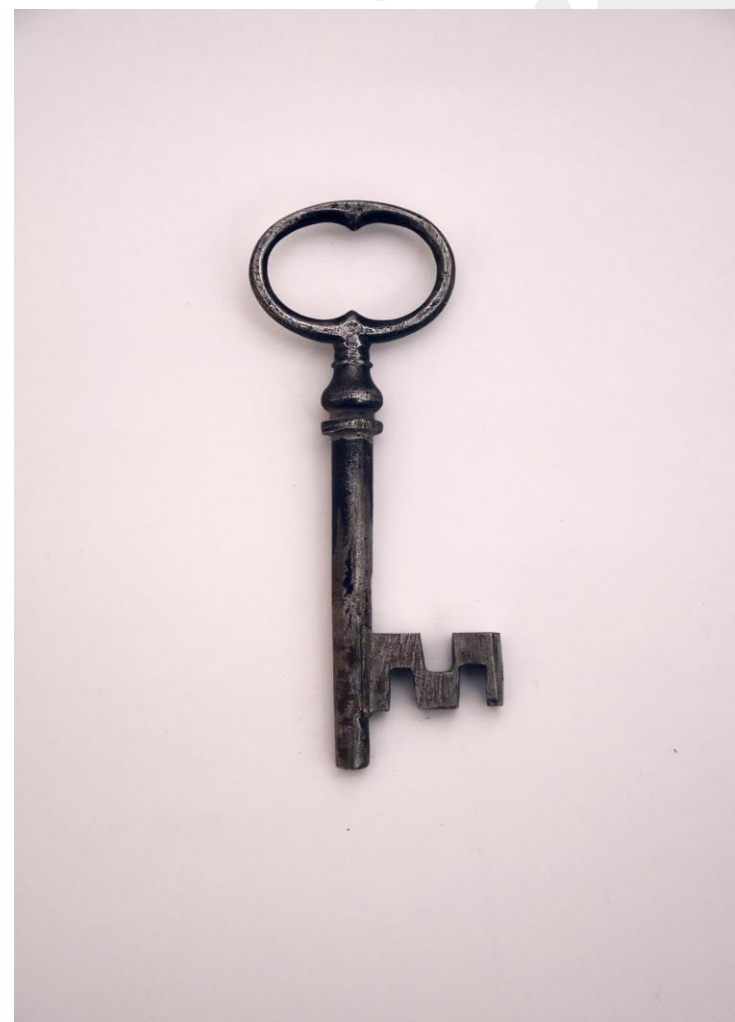
How does Growth Mindset & Grit apply to Infrastructure as Code?

DEVNET 2019

14

How Growth Mindset & Grit apply to IaC

- Growth mindset: Approach IaC challenges with the understanding that abilities can be developed
- Grit: Persist through difficulties & obstacles in implementation and maintenance
- Together: Confidence & resilience for navigating the tech landscape and unlocking the potential in automation





```
bot_app_name = os.getenv("TEAMS_BOT_APP_NAME")
```

```
# Create a Bot Object
```

```
bot = TeamsBot(  
    bot_app_name,  
    teams_bot_token=teams_token,  
    teams_bot_url=bot_url,  
    teams_bot_email=bot_email,  
)
```

```
# A simple command that returns a basic string that will be sent as a reply
```

```
def do_something(incoming_msg):
```

```
    """A simple function to do some action.
```

```
    :param incoming_msg: The incoming message object from Teams
```

```
    :return: A text based reply
```

```
    """
```

```
    return "i did what you said - {}".format(incoming_msg.text)
```

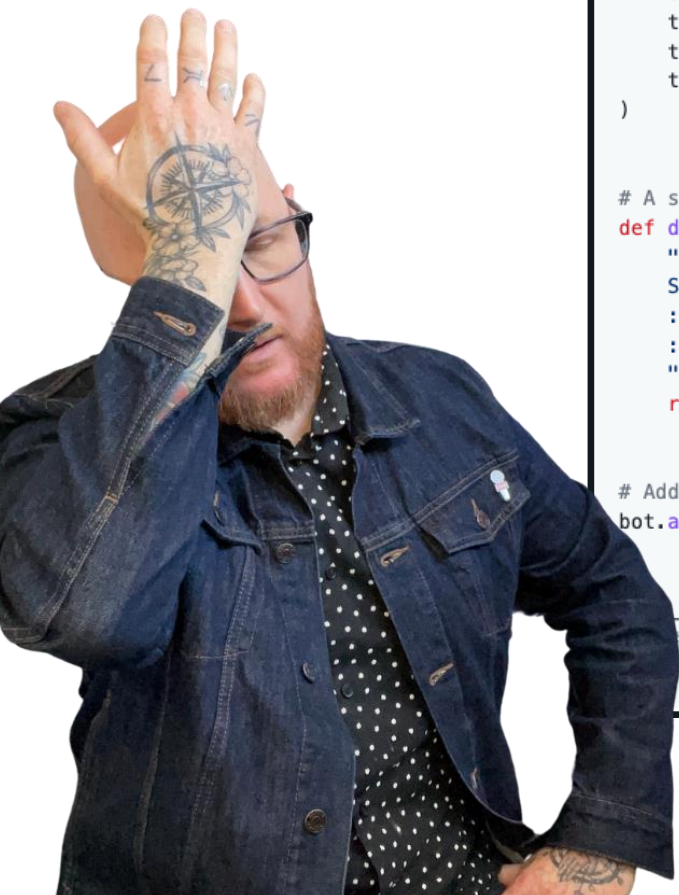
```
# Add new commands to the box.
```

```
bot.add_command("/dosomething", "help for do something", do_something)
```

```
if __name__ == "__main__":
```

```
    # Run Bot
```

```
    bot.run(host="0.0.0.0", port=5000)
```



```
teams_token = os.getenv("TEAMS_BOT_TOKEN")
bot_url = os.getenv("TEAMS_BOT_URL")
bot_app_name = os.getenv("TEAMS_BOT_APP_NAME")

# Create a Bot Object
bot = TeamsBot(
    bot_app_name,
    teams_bot_token=teams_token,
    teams_bot_url=bot_url,
    teams_bot_email=bot_email,
)

# A simple command that returns a basic string that will be sent as a reply
def do_something(incoming_msg):
    """
    Sample function
    :param incoming_msg: The incoming message object from Teams
    :return: A text or markdown based reply
    """
    return "i did what you said - {}".format(incoming_msg.text)

# Add new commands to the bot.
bot.add_command("/dosomething", "help for do something", do_something)

if __name__ == "__main__":
    # Run Bot
    bot.run(host="0.0.0.0", port=5000)
```

Navigating the Challenges of IaC: Examples

If it seems too complex, break into smaller challenges

There's no 1 right way to approach your automation journey

Accept that your goals are probably going to change...
and that's OK!

18

Best Practices

DEVNET-2010

19

Navigating IaC Successfully



- ✓ Set clear goals
- ✓ Foster a culture of continuous improvement
- ✓ Failure is part of the journey

Final Takeaways

21



Grit + a Growth mindset + a Goal

=

A path forward to automation through
laC

Where to next...

DevNet Zone

YouTube

<https://www.youtube.com/ciscodevnetchannel>

developer.cisco.com

Cisco Webex App

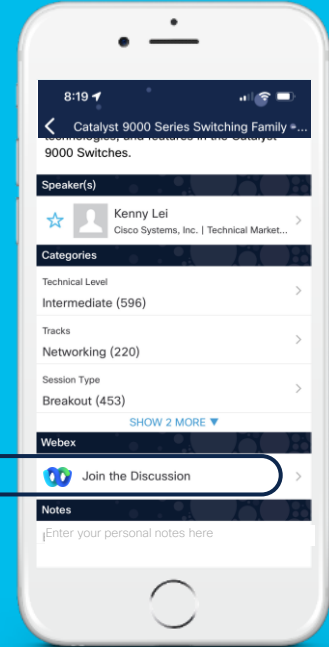
Questions?

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

Webex spaces will be moderated until February 24, 2023.



Continue Your Education



Visit the Cisco Showcase for related demos.



Book your one-on-one Meet the Engineer meeting.



Attend any of the related sessions at the DevNet, Capture the Flag, and Walk-in Labs zones.



Visit the On-Demand Library for more sessions at ciscolive.com/on-demand.

Complete your Session Survey

- Please complete your session survey after each session. Your feedback is important.
- All surveys can be taken in the Cisco Events Mobile App or by logging in to the Session Catalog and clicking the "Attendee Dashboard" at <https://www.ciscolive.com/emea/learn/sessions/session-catalog.html>



We want your feedback!

Answer a few questions in
a short survey to be
entered to win a
DevNet Hoodie!



cs.co/DNZCLEUR2023





The bridge to possible

Thank you

CISCO *Live!*

