NetDevOps!

Get ready to get your hands dirty

It is all about learning!

Agenda

- What do we want to resolve
- What resources/tools you have

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74% of operators report network changes have significantly impacted their business*

97% of operators admit human factors cause network outages*

22% of unplanned outages caused by human error**

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From
Date
To:
Cc:
Subject: switch uptime

[redacted]1>sh ver
Cisco Internetwork Operating System Software
IOS (tm) s72033_rp Software (s72033_rp-ADVENTERPRISEK9_WAN-M), Version
12.2(18)SXF3, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Tue 14-Feb-06 12:17 by kellythw
Image text-base: 0x40101040, data-base: 0x42D80000

Don't encourage this kind of behavior!!!!

ROM: System Bootstrap, Version 12.2(17r)S2, RELEASE SOFTWARE (fc1)
BOOTLDR: s72033_rp Software (s72033_rp-ADVENTERPRISEK9_WAN-M), Version
12.2(18)SXF3, RELEASE SOFTWARE (fc1)

r[redacted] uptime is 11 years, 31 weeks, 1 day, 16 hours, 46 minutes
Time since r-secmgte1-1 switched to active is 11 years, 31 weeks, 1 day, 17
hours, 29 minutes
System returned to ROM by s/w reset (SP by power-on)
System restarted at 20:47:24 UTC Thu Mar 9 2006

“Every time we implement a network change something goes wrong…”

“Isn’t it great, our switch hasn’t been rebooted in 6 years”

“We can’t update/change the network, our business won’t allow it”

** Paraphrased quotes from actual network operators*

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Today's Network Operations Culture and Mindset

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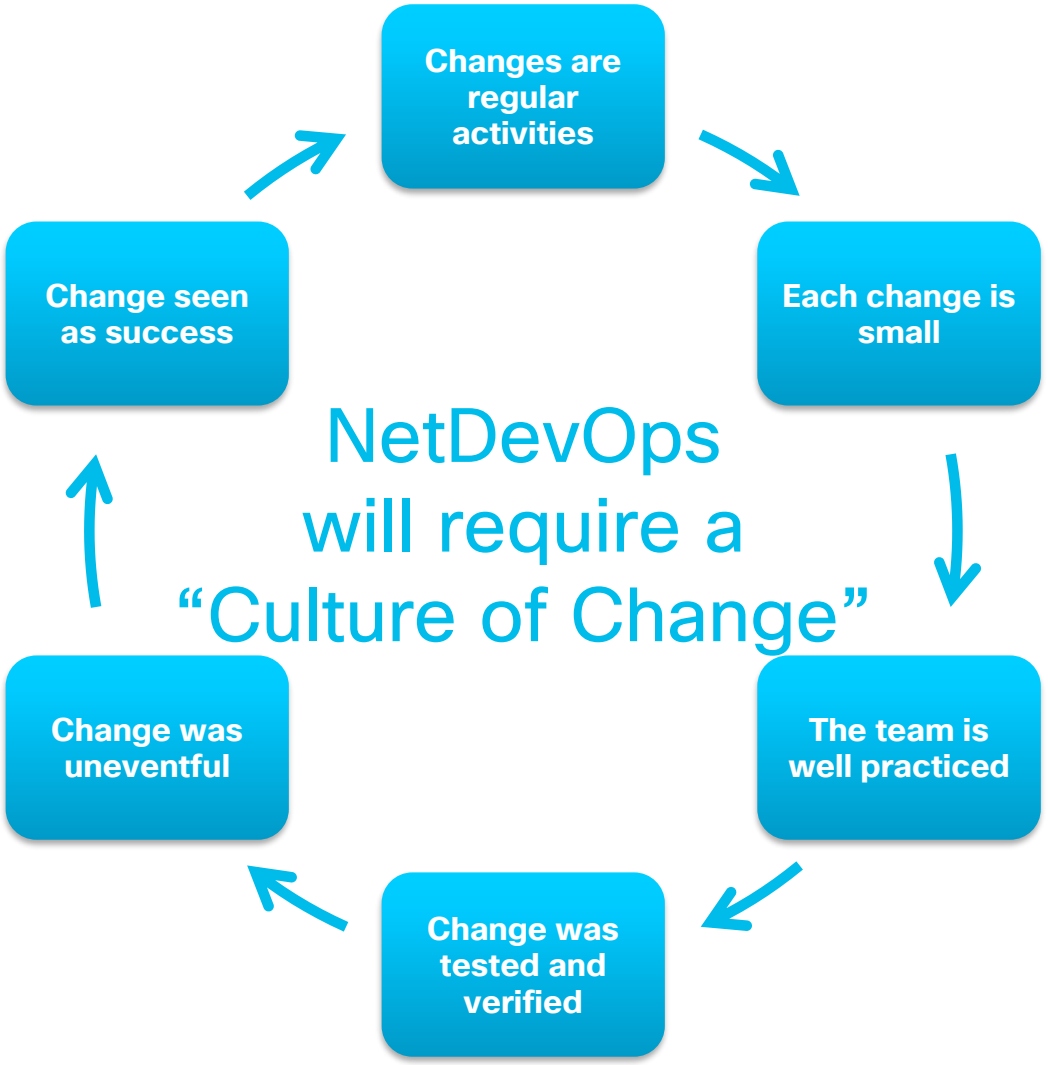
The NetDevOps Culture and Mindset



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```
module "vpc" {
  source = "terraform-aws-modules/vpc/aws"

  name = "my-vpc"
  cidr = "10.0.0.0/16"

  azs             = ["eu-west-1a", "eu-west-1b", "eu-west-1c"]
  private_subnets = ["10.0.1.0/24", "10.0.2.0/24", "10.0.3.0/24"]
  public_subnets  = ["10.0.101.0/24", "10.0.102.0/24", "10.0.103.0/24"]

  enable_nat_gateway = true
  enable_vpn_gateway = true

  tags = {
    Terraform = "true"
    Environment = "dev"
  }
}
```

This doesn't count as "Network as Code"

(or at least isn't ENOUGH)

Principles of ”Network as Code”

- Store Network Configurations in Source Control
- Source Control is a Source of Truth*
- Configuration Management Deployment through APIs

** The “Source of **Whole** Truth” for the network will likely be constructed from multiple systems holding specific details. For example, IP details would come from IP Address Management.*

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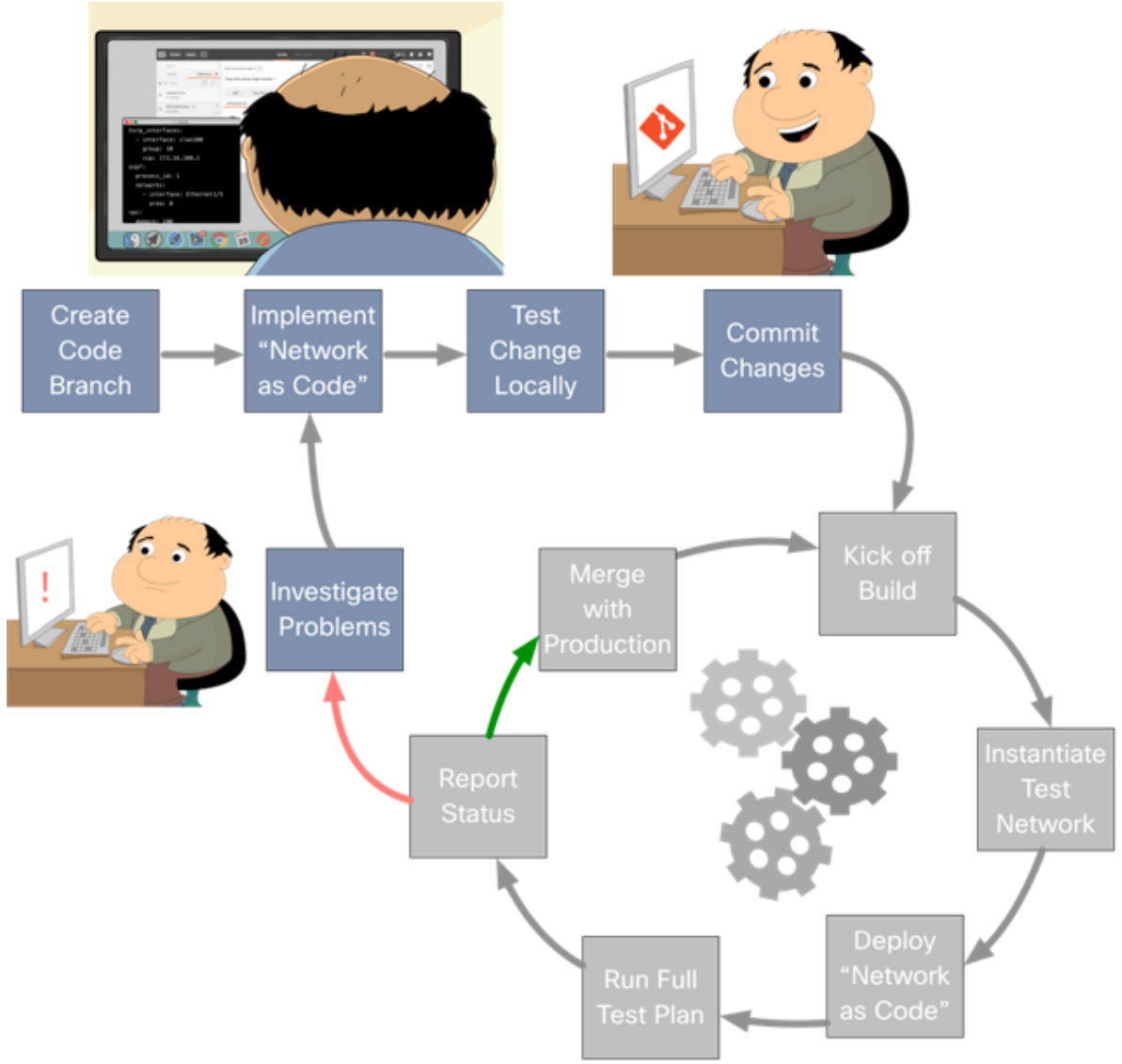
Continuous Delivery Pipeline for Network Configuration

- Network Configuration stored in Source Control
- Changes are proposed in code “branches”
- CICD Build Servers deploy and test proposed configurations
- Successful configurations automatically deployed to “Production”



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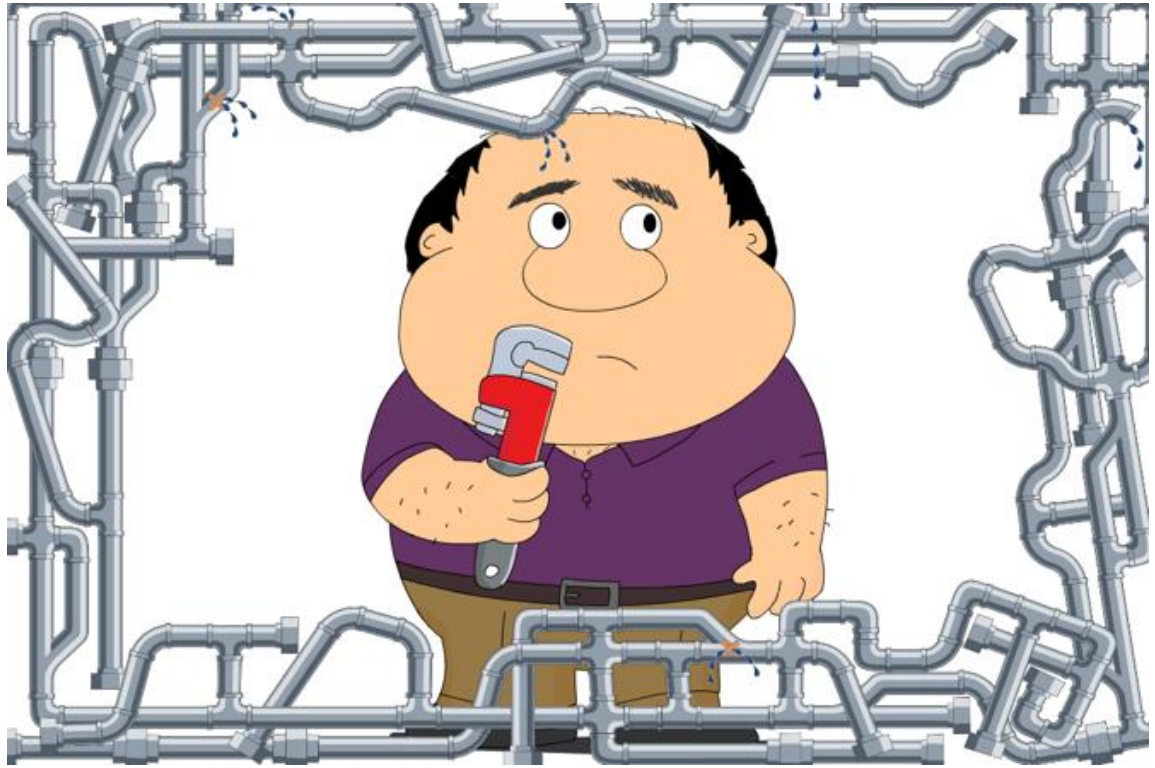
- What resources/tools you have



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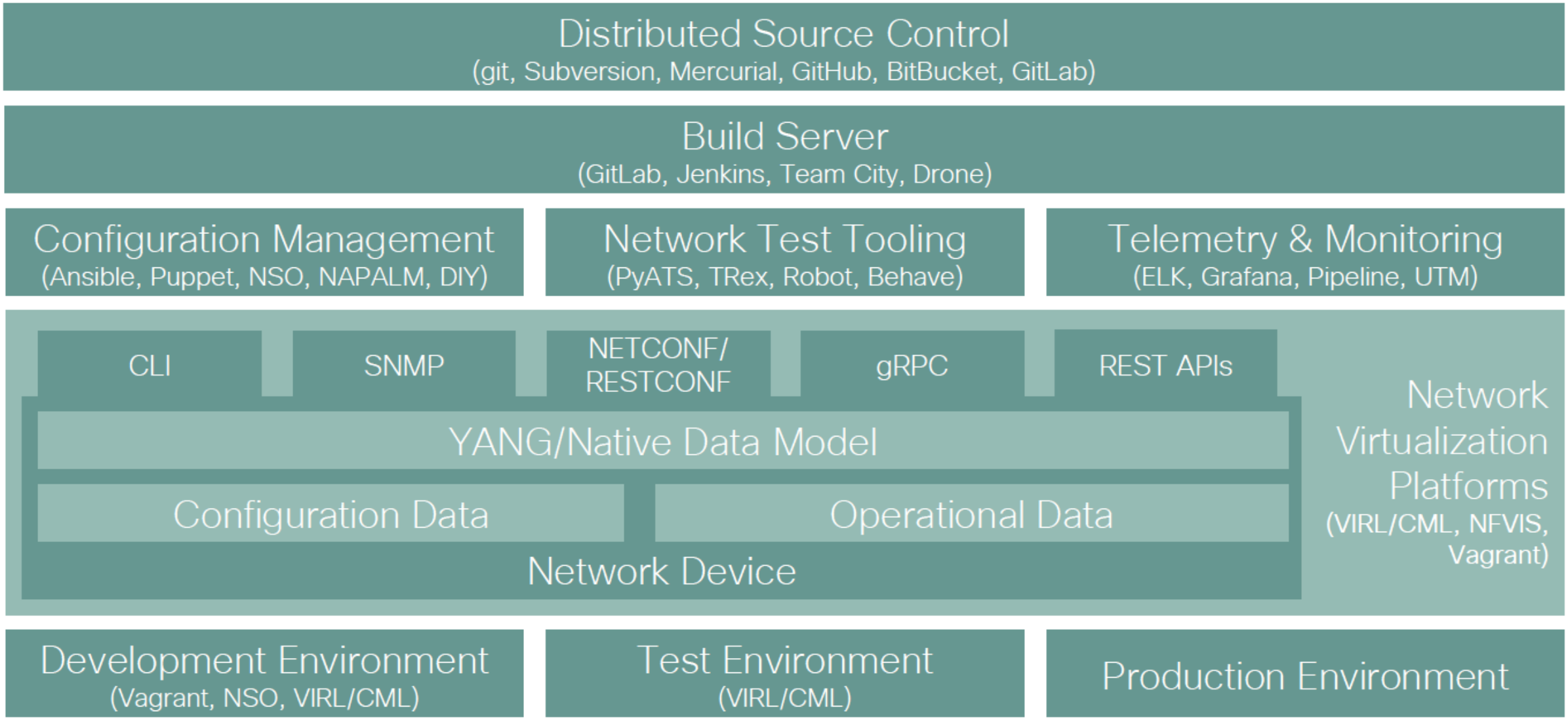
The NetDevOps Engineers Tool Bag

(Example tools, not comprehensive)



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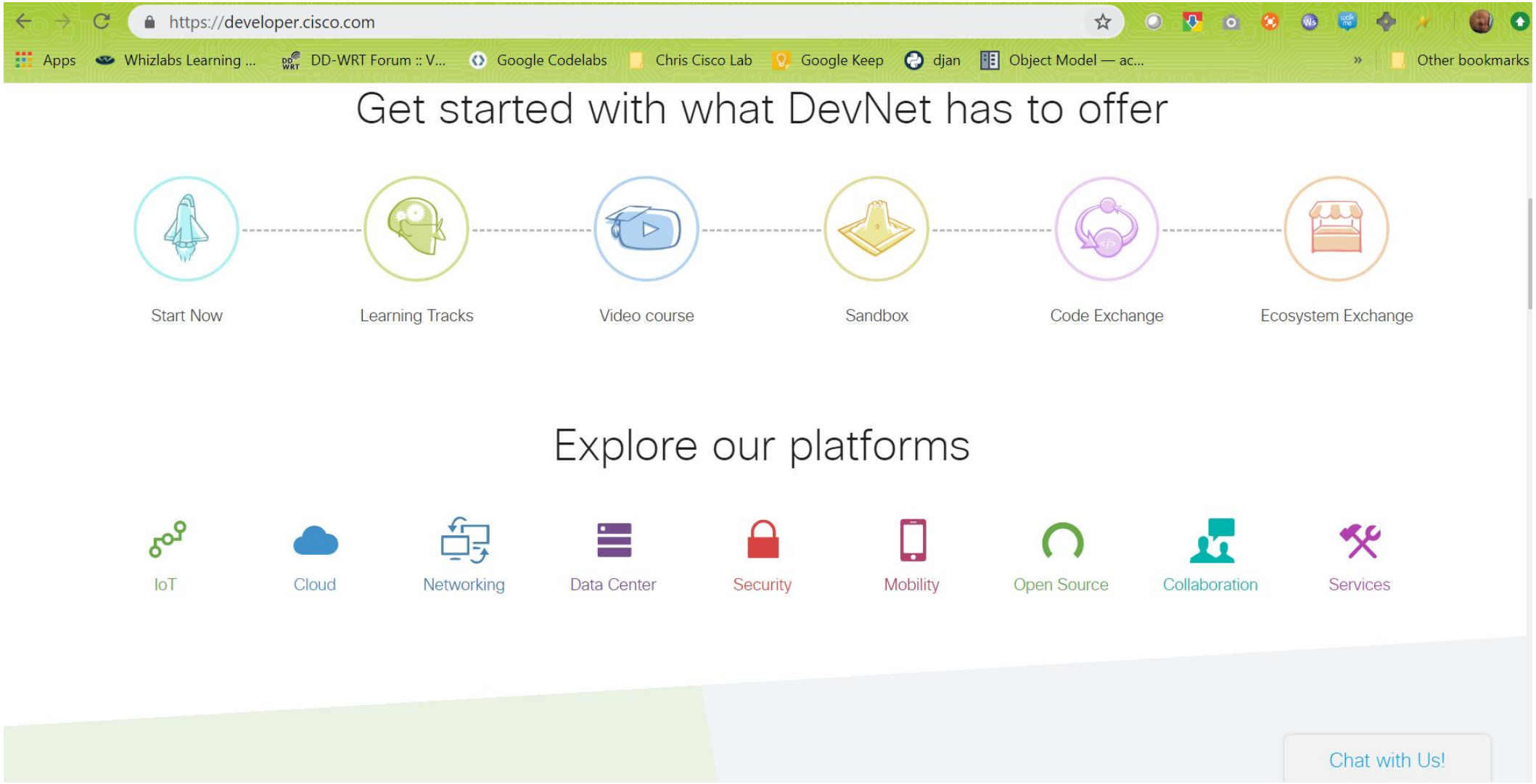
DevNet



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Vagrant

Development Environments Made Easy

Guestshell and spark integration

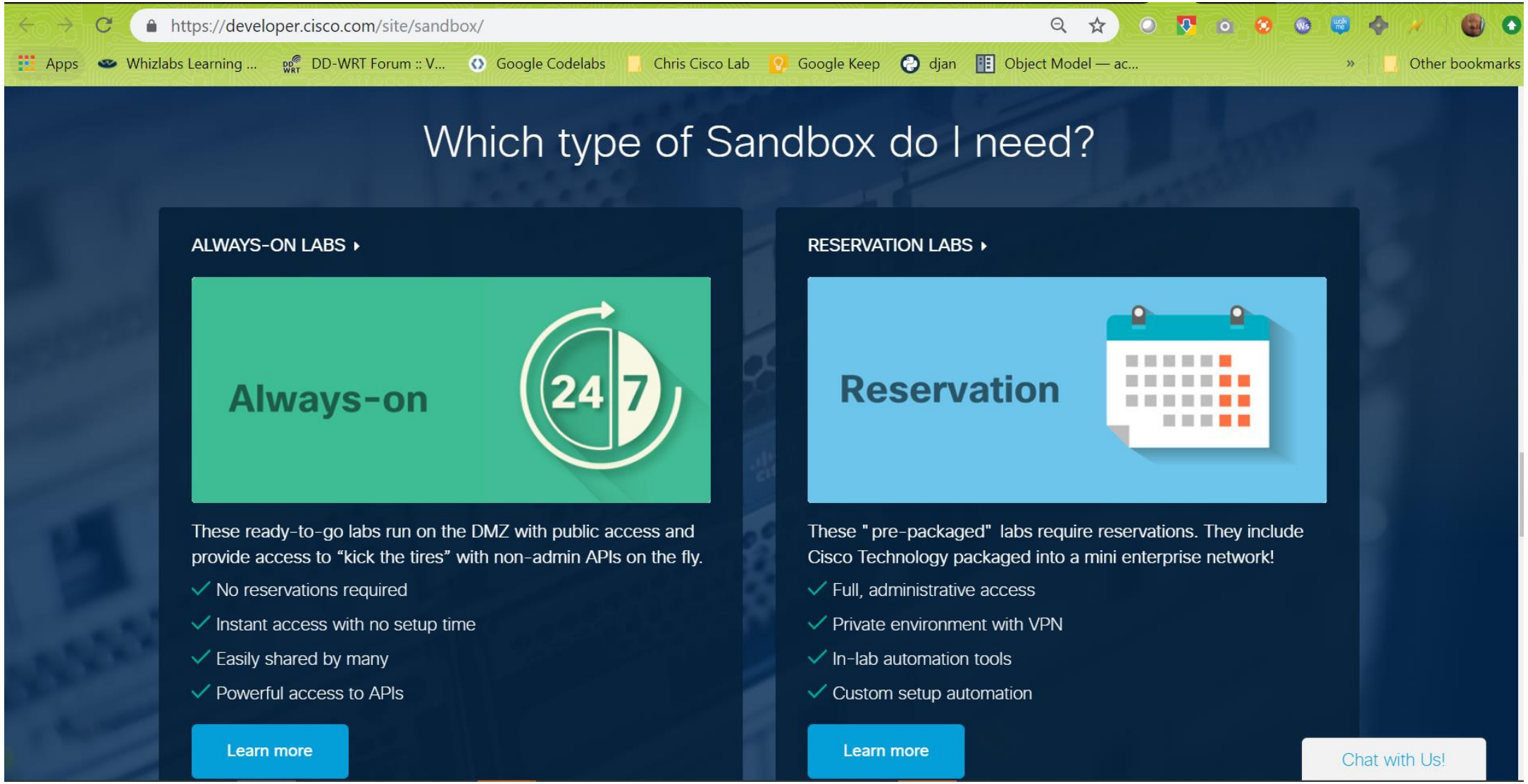
https://github.com/CiscoDevNet/python_code_samples_network/tree/master/spark_checkin#create-folder-for-scripts-and-add-script

- It can be spark or other application integration

Windows Subsystem for Linux

https://docs.microsoft.com/en-us/windows/wsl/install-win10

DevNet Sandbox



https://developer.cisco.com/site/sandbox/

NetDevOps {LIVE}

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

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What do do next?

- NetDevOps Readings
  - Embrace NetDevOps, Say Goodbye to a "Culture of Fear”
  - NetDevOps Goes Beyond Infrastructure as Code
  - What does "Network as Code" Mean?
  - A Network Engineers Journey in Programmability
  - NetDevOps and the Rise of the Programmable Network
- NetDevOps Learning Resources
  - Network Programmability Basics Video Course
  - NetDevOps Learning Labs
  - NetDevOps Live!
- NetDevOps Videos
  - How to be a Network Engineer in a Programmable Age
  - Network as Code in Action
  - Benefits of Configuration Management

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Thank you