NETWORK AUTOMATION FORUM

NTT DATA

Network Automation in Baby Steps!

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NTT DATA - Global IP Network - Network Operations Engineer

AUTOCON 2

THE NETWORK AUTOMATION CONFERENCE

Who am I?

- NTT DATA for 17 years
  - Positions:
    - NOC
      - Network Analyst
      - Senior Network Analyst
      - NOC Engineer
    - Network Operations Engineer

- Currently specializing in automation of operational processes
  - Python
  - Ansible

Global IP Network

- Transit Network - AS2914
  - Routers: 275 - as of 2024Q4
    - 400G: 617 and growing
    - 100G: 10761
    - 10G: 10260
    - 1G: 5373
  - Vendors supported:
    - Cisco (Routing and DWDM)
    - Juniper
    - Nokia
    - Fujitsu (DWDM)
  - Spread across 5 continents

Operational Data Collection Project

- Problem being solved
  - Need more info that basic stats system had available
- Python based scripts collecting various operational data from the network
  - Route Table counts
  - Junos Config DB data
  - Router Config Size
  - Customer Prefix List Config Size
  - Etc…
- Data sent to large data store via Kafka

Project Changes

V1 - 2021

- Data collection via screen scraping
  - Textfsm
  - Netmiko
  - Confluent Kafka
- Crontab initiation
  - Under my own user account

Project Changes

V2 - 2022

- Data collection via Netconf
- Crontab initiation
  - Generic user account
- Gitlab CI/CD pipeline to package scripts for deployment
- Scripts deployed to server using Puppet

Project Changes

V3 - 2024

- Asynchronous data collection
  - Asyncio Python module
- Gitlab CI/CD initiation
  - Created custom docker image
  - Might not be the best place for this afterall

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Lesson Learned

Lessons Learned

- Learned new technologies (to me)
  - Python
    - Textfsm
    - Netmiko
    - Confluent Kafka
  - Netconf
    - Deployed Netconf
    - Learned Netconf in Python
  - GitLab CI/CD
    - Working with repositories
    - Working with pipelines
      - Building *.deb packages
      - Ongoing!!!
    - Building Docker image
      - Storing in Gitlab project container registry
  - Patience!

Lessons Learned

- Start simple!
  - Make a basic outline of what the code needs to do step by step
  - Then code it in baby steps!
    - Pick one step and code it
    - Then pick another and code it
    - Then another…
- It’s ok to iterate over time.
  - Implement new knowledge
    - Some things fail
    - Some things work better


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Questions?