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DEVNET Workshop:
Using Ansible to Automate Application (NSO) Deployment, and Environment Configuration

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DEVNET-1199

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Agenda

- Why Ansible?

- Use Case Overview

- Playbook Design

- Demo and Hands-on Experience

Why Ansible?

- **No Agent** As long as the box can be ssh'd into and it has python, it can be configured with Ansible

- **Idempotent**. Only do things if they are needed and that things are repeatable without side effects.

- **Declarative Not Procedural**. Ansible works by a description of the state of the machine.

- **Tiny Learning Curve**.

A Deployment and Configuration Use Case

N: NSO

DNS Master

DNS Targets
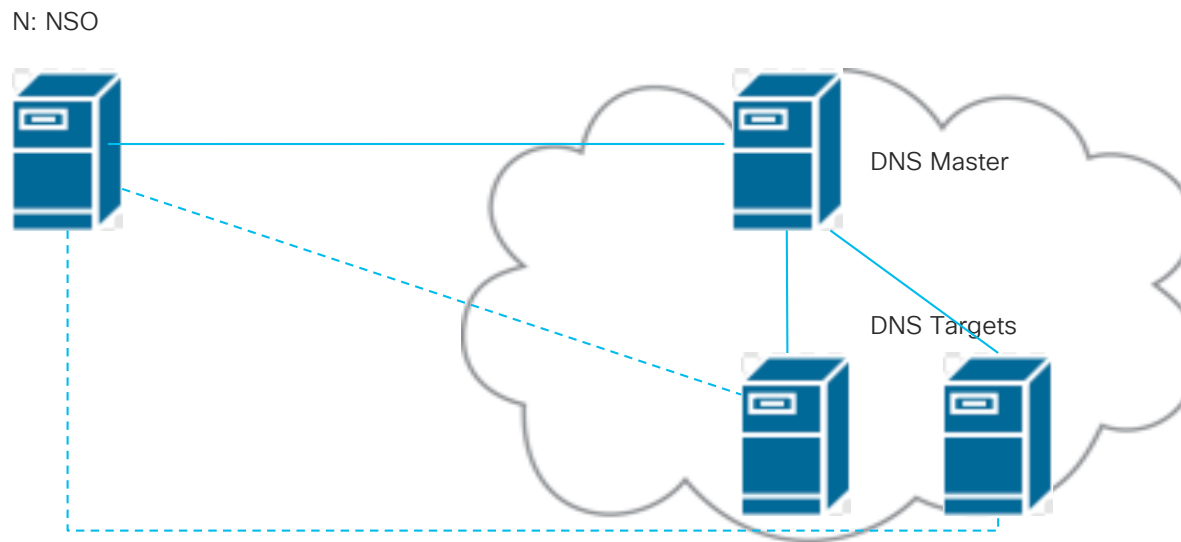
Use Case Requirements

- Cisco NSO manages DNS servers, invoke an action to synchronize selected DNS directories from a master to a set of targets

- To meet security compliance, the communication between NSO to DNS servers is limited to no-login, non-interactive, key based ssh.

- To meet security compliance, the transport among DNS servers is limited to non-interactive, no-login, key based.

- Users:

  - dvnso: owns and runs NSO

  - cl00254: NSO device south bound user. NSO ned communicates DNS servers

  - cl94644: peer user runs synchronization operation

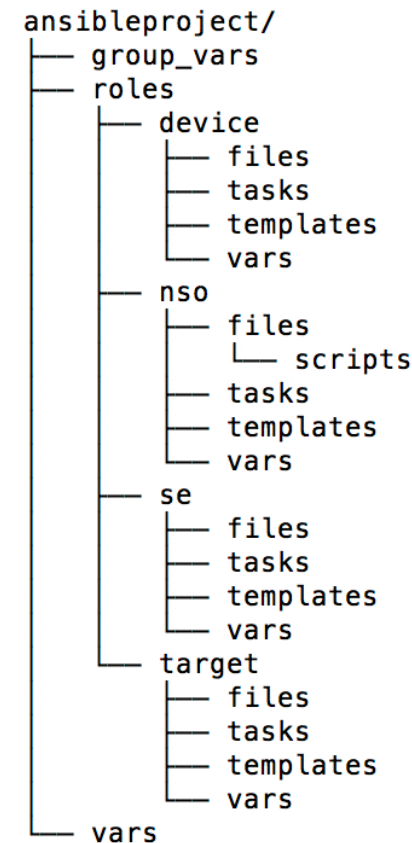# Deployment and Configuration Requirements

- Application Deployment
  - Install Cisco NSO and service packages.
  - Install sync dns package to DNS masters
- Deployment Configurations
  - Scan host keys of DNS masters, make them available to NSO host
  - Set necessary RSA public key exchange to allow key based ssh
    - NSO host to DNS for NSO southbound user, cl00254
    - DNS master to targets for peer user: cl94644
- Set sudoers
  - Allow cl00254 to invoke sync script on DNS master as peer user
  - Allow cl94644 to a set of predefined operation on DNS targets

Deployment and Configuration Requirements (continue)

- Post Deployment Activities
  - Start NSO application
  - Add network devices to NSO
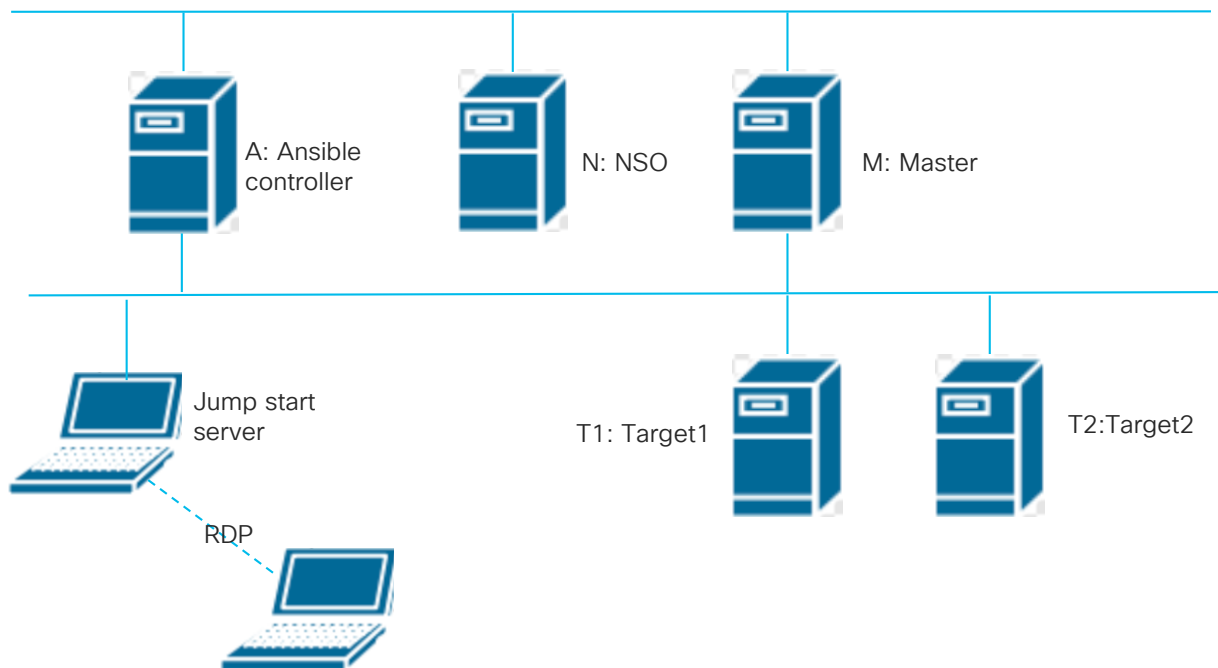 - Add network inventory to NSO
  - Post check

Ansible Playbook Design

- Inventory: hosts
- Roles
  - se: public key management
  - nso: application installation and testing
  - device: sync script installation; authorized keys
  - target: authorized keys
- Variables
  - Group variables
  - Other variables
- Templates
  - Device and network inventory xml for nso

```
ansibleproject/
├── group_vars
├── roles
│   ├── device
│   │   ├── files
│   │   ├── tasks
│   │   ├── templates
│   │   └── vars
│   ├── nso
│   │   ├── files
│   │   │   └── scripts
│   │   ├── tasks
│   │   ├── templates
│   │   └── vars
│   ├── se
│   │   ├── files
│   │   ├── tasks
│   │   ├── templates
│   │   └── vars
│   └── target
│       ├── files
│       ├── tasks
│       ├── templates
│       └── vars
└── vars
```

Demo and Handson

- Setup

A: Ansible controller

N: NSO

M: Master

Jump start server

RDP

T1: Target1

T2:Target2

Demo and Handson

- Other details:
  - Lab access: https://app.smartsheet.com/b/home
  - Guide: https://github.com/weiganghuang/cl-devnet-1199/blob/master/devnet-1199.md

Demo and Handson Experience
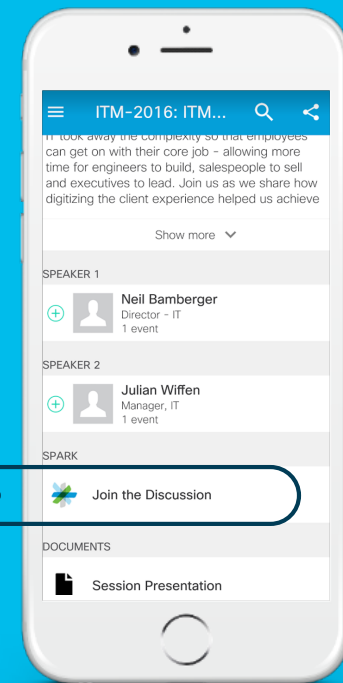
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