

AWX 101: Getting Started in Automation with the Ansible AWX Platform

Tim Glen Security Solutions Engineer CISCO Live

Cisco Webex App

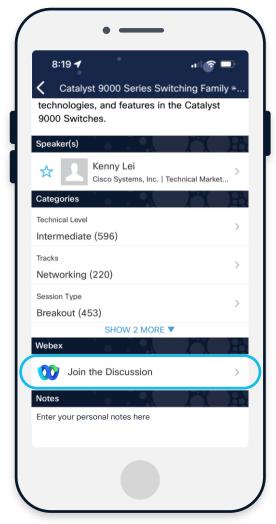
Questions?

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

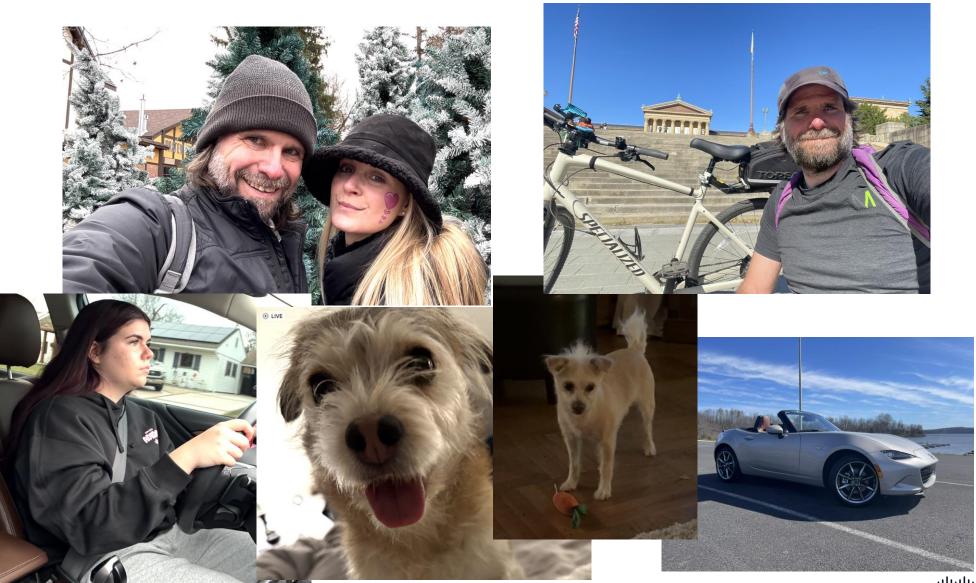
Webex spaces will be moderated by the speaker until June 13, 2025.



https://ciscolive.ciscoevents.com/ ciscolivebot/#DEVNET-1060

Tim (Personal)

- Human
- Husband
- Father
- Dog Dad
- Outside
- Biking
- Driving
- Travel



Tim (Professional)

- Started in IT in 1995, Telephone Tech Support
- Worked 23 years at Web Hosting Provider
 - Managed all routers, switches, firewalls, wireless, security
- Worked at Cisco 6 years
 - Security Systems Engineer
 - github.com/timmayg
 - in linkedin.com/in/timglen
 - cs.co/TimGlen



Agenda

Press here to get started



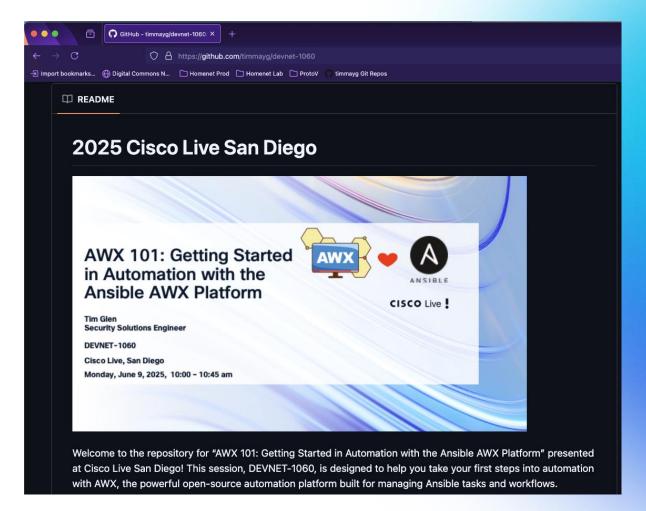
- 01 Introduction
- 02 The Basics
- 03 AWX on AWX Operator
- 04 Dashboard, Git Integration, Playbooks, Inventories
- 05 Demo Show Serial
- 06 Demo ISE Certificate Renewal & Import
- 07 Demo Dark Wiring Closet Cat 9K Power Savings
- 08 Conclusion

Check Here for Updates



https://github.com/timmayg/devnet-1060





Run ISE Cert Job RIGHT NOW

Label: demo

> 01 - ISE Cert Demo - CLUS LE_PROD Workflow Job Template Homenet
> 01 - ISE Cert Demo - CLUS LE_STAGE Workflow Job Template Homenet

Why Automation

- Environments are Large & Complex
- Automation enables Speed, Repeatability & Consistency
- Because it's FUN, it's EXCITING

Why Ansible

- Simple, agentless, declarative, idempotent
- YAML playbooks are easy to read \ write

Why AWX

- Massive Flexibility
- Web UI, REST API
- Scheduling, Logging

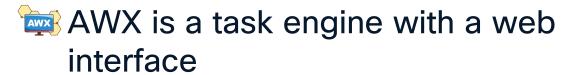






Ansible vs AWX

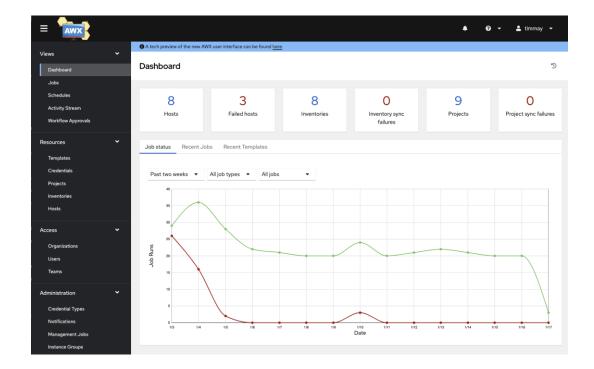
- Ansible is a powerful CLI tools
- Ansible runs on Linux, macOS, WSL



AWX is built & optimized to run ansible

AWX is the upstream version of Tower \
Ansible Automation Platform





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AWX Current \ Future State



Current State of AWX

AWX is currently structured as a monolithic Django application. It consists of several entry points, each running as individual processes, including our API, Job Dispatcher, Event Processor, and Websocket subsystem. Alongside these, AWX relies on various ancillary processes such as Redis, Rsyslog, Receptor, Nginx, Uwsgi, and Daphne.

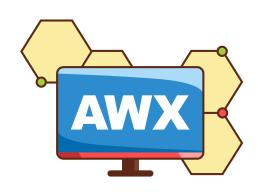
Proposed Changes

To address these challenges, we are beginning to transition AWX towards a more pluggable, service-oriented architecture. By breaking down the monolithic structure into smaller, modular services, we aim to enhance both flexibility and maintainability. This shift will enable us to make changes more swiftly and efficiently in AWX while also improving our ability to reuse code across various projects leveraged by Ansible Automation Platform.

https://forum.ansible.com/t/refactoring-awx-into-a-pluggable-service-oriented-architecture/7404/1

AWX Operator

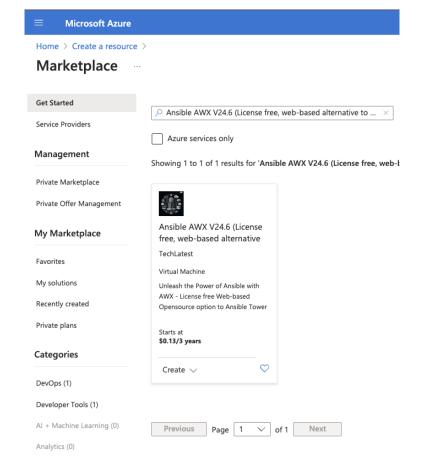
- AWX is a containerized application
- AWX is managed by AWX Operator
- Managed = Deployment, backup, restore, upgrade
- Deployed to Kubernetes (minikube, k3s, microk8s, etc.)



timmay@ubuntu-05:~\$ timmay@ubuntu-05:~\$ sudo kubectl get pods -n awx				
NAME	READY	STATUS	RESTARTS	AGE
awx-operator-controller-manager-745b55d94b-6zjxw	2/2	Running	16 (61d ago)	181d
ubuntu-05-awx-migration-24.6.1-s4kcw	0/1	Completed	0	181d
ubuntu-05-awx-postgres-15-0	1/1	Running	7 (61d ago)	181d
ubuntu-05-awx-task-6fd68b7b49-d4hvc	4/4	Running	28 (61d ago)	181d
ubuntu-05-awx-web-bcccb4dcf-xhb4f timmay@ubuntu-05:~\$	3/3	Running	21 (61d ago)	181d

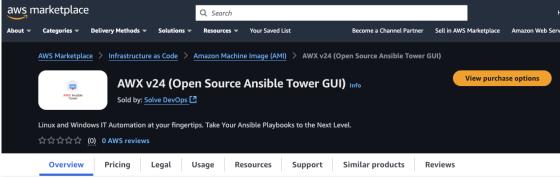
AWX in the Cloud

AWX Native in Azure



AWX Native in AWS





Overview

AWX is an IT Automation platform that provides a web-UI to run Ansible Playbooks. Ansible is IT automation software used for configuration management, cloud resource provision, and application deployment, enabling Infrastructure as Code (IaC) for organisations of all sizes.

AWX extends Ansible's power by providing IT administrators with the option of running Ansible Playbooks using a web user interface. With a few simple clicks, anyone can automate the provisioning and configuration of VMs, Cloud resources, and Software with security and access controls built in. AWX also provides an audit-friendly interface for finance and security teams to audit who did what and when.

This image allows you to deploy AWX on AWS with 1-Click.

What are the benefits of using AWX? -Run your Ansible playbooks on schedule and unattended. -Enable GitOps for your projects. -Automatically start deployments once code changes are pushed to Git. -Use Ansible to configure and manage both cloud and on-premises instances. -Control who can provision resources in the cloud and on-premises. -Complete the audit trail to determine resource usage across your organisation. -Empower your DevOps teams to do what matters for your clients.

Highlights

- Ansible Automation
- GitOps Ready
- · Windows and Linux Automation

Details Sold by

Sold by

Solve DevOps [2]

Categories

Infrastructure as Code [2]

Continuous Integration and Continuous
Delivery [2]

Cloud Operations [2]

Basic Terminology

Ansible

- Playbook
 - Tasks to be executed
- Task
 - Single Unit
 - Declarative & Idempotent
- Module
 - Reusable Unit of Work
- Inventory
 - List(s) of Managed Hosts
 - Static or Dynamically Generated



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AWX

- Projects
 - Collections of Playbooks
 - GitHub (Source Control)
- Templates
 - Playbook Specific Options
- Credentials
 - Encrypted Storage
 - Username, Password & MORE!
- Execution Environments
 - Container, Python, Ansible
 - Jobs, Schedules, Logging



AWX Integrations & Compatibility



 \blacksquare



























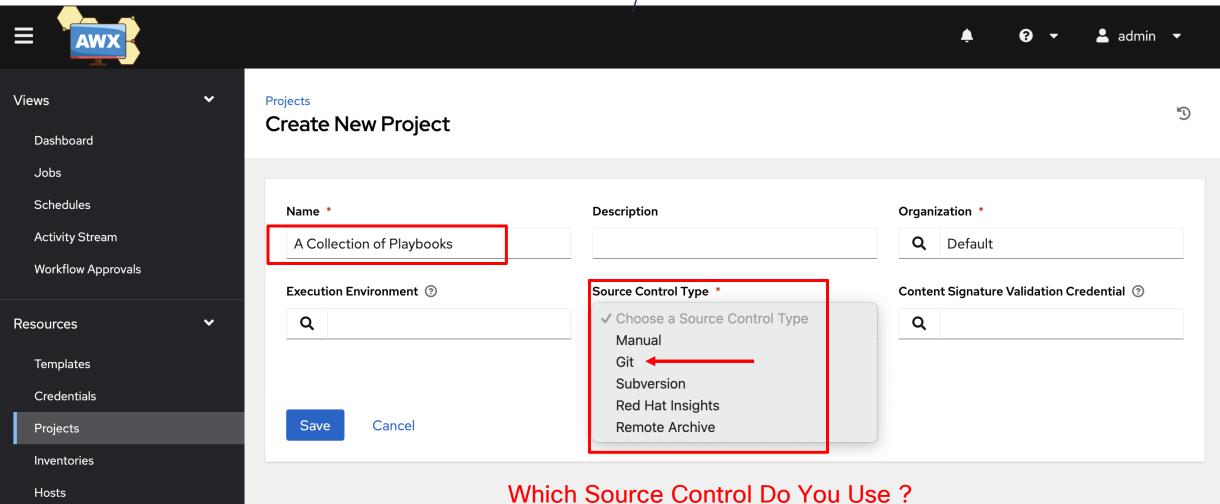
PagerDuty

AWX Projects

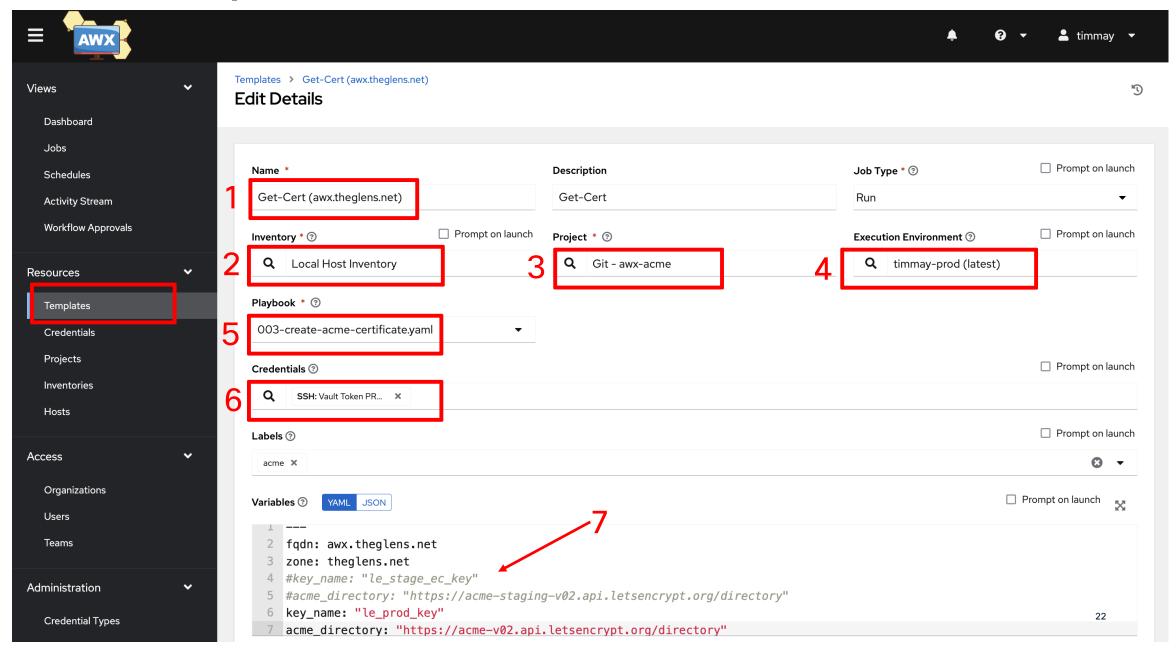








AWX Templates



Execution Environments (EE)

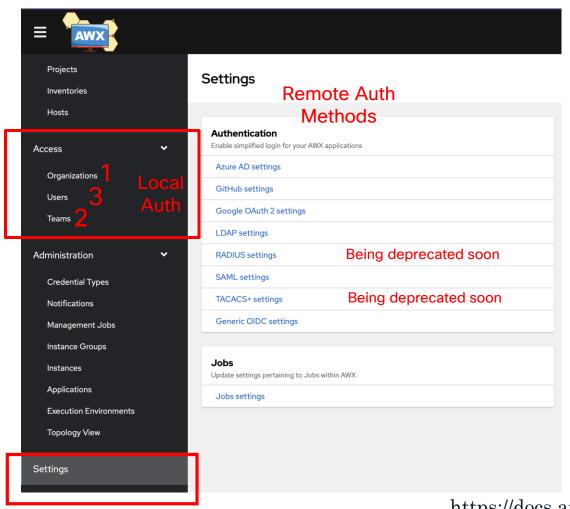
- Developed by the open source AWX Project Community
- Purpose-built containerized runtime environment
- Built in awx-ee good for most playbooks
- ~2021 Replaced Python Virtual Environment
- Customizable, allows system level dependencies
- Build your own for more advanced automation
- Portable, store on Quay IO & distribute



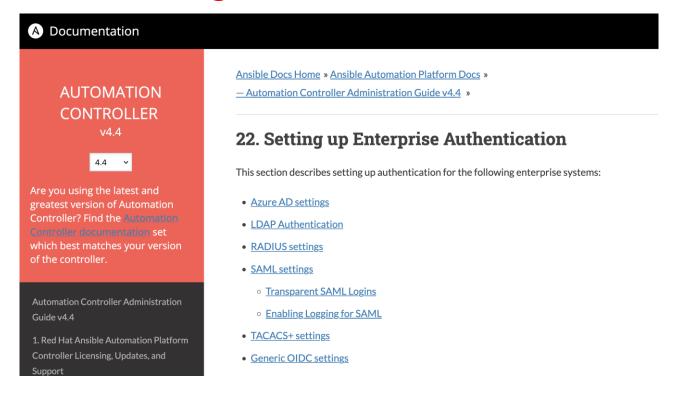
https://quay.io/repository/ansible/awx-ee



Authentication, Local & Remote



Using Modern Authentication



https://docs.ansible.com/automation-controller/4.4/html/administration/ent_auth.html

Demo

The Basics Get it running!

Demo1 - Create Inventory & Host



Name CL - Cat Switch Inventory

Groups iosxe

Hosts

Cat9300-1

ansible_host: 10.65.0.2 ansible_network_os: ios

Cat9300-2

ansible_host: 10.65.0.6 ansible_network_os: ios

```
🙉 inventory.yaml 2, U 🏻 🗨
inventory.yaml
       iosxe:
           hosts:
              Cat9300-1#:
                ansible_host: 10.65.0.2
              Cat9300-2#:
                ansible_host: 10.65.0.6
           vars:
 10
              ansible_network_os: ios
 11
```

Demo1 - Configure Project

- Display Git Repo in Browser
- Create Project
- Show Sync Occur

Name CL - GitHub Project DEVNET-1060

Source Control Type GitHub

Source Control URL https://github.com/timmayg/devnet-1060.git



Demo1 - Create Credential Sets

Create Credential

Name CL - IOS XE Cred

<u>Cred Type</u> Machine

IOS XE Creds

Username ciscolive

Password ciscosecure



Demo1 - Create Template

- Show Playbook
- Create Job Template



<u>Name</u>

Show IOS XE Serial Number

<u>Inventory</u>

Project

Execution Environment

Demo - Run Show Serial

- After successful run
- Increase verbosity and run again
- Increase verbosity and run again

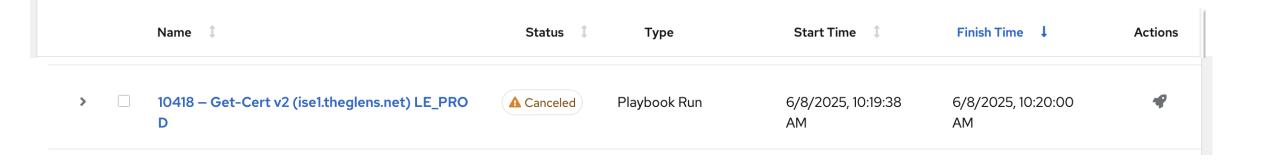


Demo

ISE Certificate Renewal

Demo - ISE Cert

- Show Workflow 01 ISE Cert Demo CLUS
- Show Template Visualizer discuss multiple jobs
- Show Webex Space
- Show ISE Certificate
- Show ISE Server





Demo

Reducing Power Usage on Cat 9000

Reduce Cat 9000 Power Usage

- New sustainability features in 17.15(x) & 17.16(x)
- Turn off front panel interface LEDs





Shutdown Stack Power power supplies under low load

Switch(config)# stack-power stack auto-off

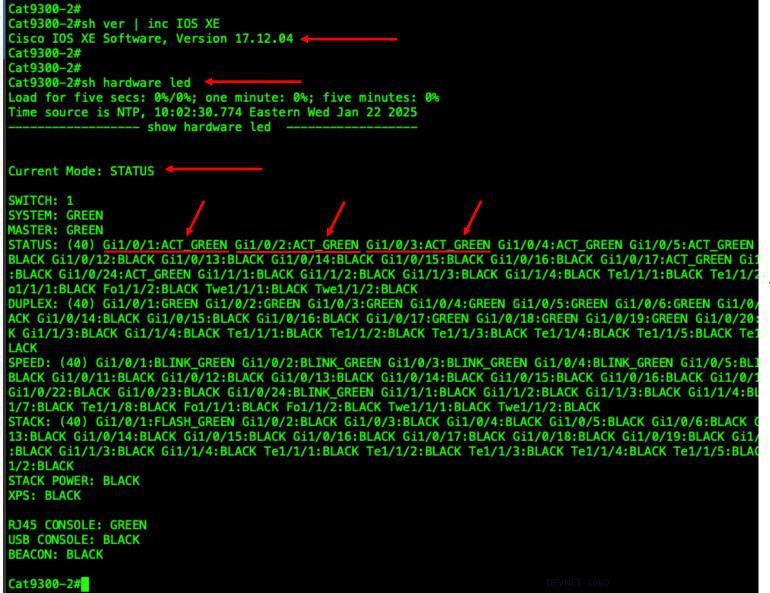


IOS 17.15(x)

IOS 17.16(x)

IOS XE 17.12(4) Before New Feature - All LEDs On

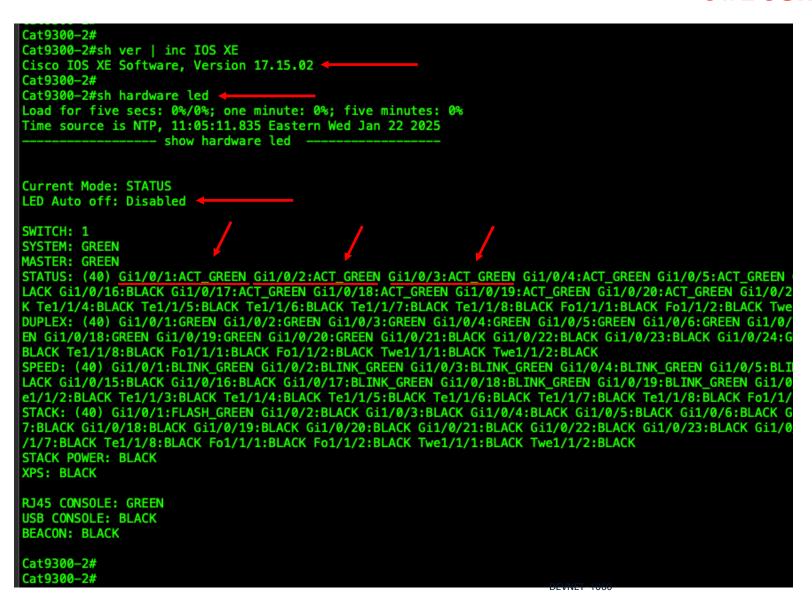
Switch# show hardware led



Status LED Color

IOS XE 17.15(2) - LEDs On

Switch# show hardware led

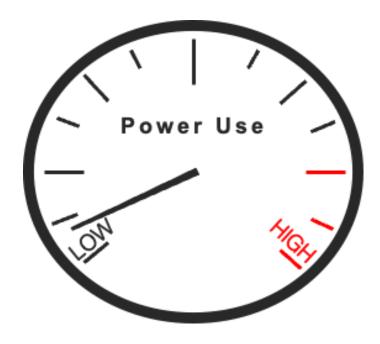




IOS XE 17.15(2) - LEDs Off

Cat9300-2# Cat9300-2#sh ver | inc IOS XE Cisco IOS XE Software, Version 17.15.02 Cat9300-2# Cat9300-2#sh hardware led Load for five secs: 0%/0%; one minute: 0%; five minutes: 0% Time source is NTP, 11:10:40.693 Eastern Wed Jan 22 2025 -- show hardware led Current Mode: STATUS LED Auto off: Enabled • SWITCH: 1 SYSTEM: GREEN STATUS: (40) Gi1/0/1:BLACK Gi1/0/2:BLACK Gi1/0/3:BLACK Gi1/0/4:BLACK Gi1/0/5:BLACK CK Gi1/0/18:BLACK Gi1/0/19:BLACK Gi1/0/20:BLACK Gi1/0/21:BLACK Gi1/0/22:BLACK Gi1/0/ BLACK Te1/1/8:BLACK Fo1/1/1:BLACK Fo1/1/2:BLACK Twe1/1/1:BLACK Twe1/1/2:BLACK DUPLEX: (40) Gi1/0/1:BLACK Gi1/0/2:BLACK Gi1/0/3:BLACK Gi1/0/4:BLACK Gi1/0/5:BLACK CK Gi1/0/18:BLACK Gi1/0/19:BLACK Gi1/0/20:BLACK Gi1/0/21:BLACK Gi1/0/22:BLACK Gi1/0 BLACK Te1/1/8:BLACK Fo1/1/1:BLACK Fo1/1/2:BLACK Twe1/1/1:BLACK Twe1/1/2:BLACK SPEED: (40) Gi1/0/1:BLACK Gi1/0/2:BLACK Gi1/0/3:BLACK Gi1/0/4:BLACK Gi1/0/5:BLACK K Gi1/0/18:BLACK Gi1/0/19:BLACK Gi1/0/20:BLACK Gi1/0/21:BLACK Gi1/0/22:BLACK Gi1/0/ LACK Te1/1/8:BLACK Fo1/1/1:BLACK Fo1/1/2:BLACK Twe1/1/1:BLACK Twe1/1/2:BLACK STACK: (40) Gi1/0/1:BLACK Gi1/0/2:BLACK Gi1/0/3:BLACK Gi1/0/4:BLACK Gi1/0/5:BLACK (K Gi1/0/18:BLACK Gi1/0/19:BLACK Gi1/0/20:BLACK Gi1/0/21:BLACK Gi1/0/22:BLACK Gi1/0/ LACK Te1/1/8:BLACK Fo1/1/1:BLACK Fo1/1/2:BLACK Twe1/1/1:BLACK Twe1/1/2:BLACK STACK POWER: BLACK XPS: BLACK RJ45 CONSOLE: GREEN USB CONSOLE: BLACK BEACON: BLACK Cat9300-2#

Switch# show hardware led



Demo3 - Reduce Power

- Show Meraki Camera
- Show Template



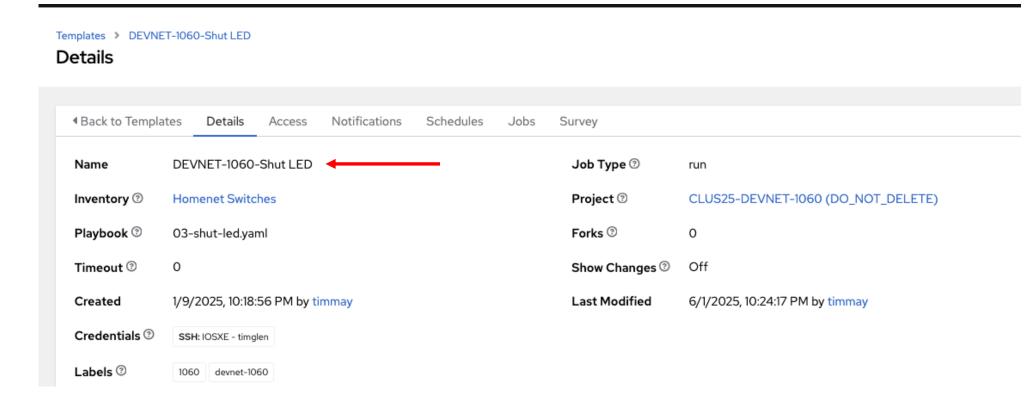
<u>Name</u>

<u>Inventory</u>

Project

Execution Environment

DEVNET-1060-Shut LED





Recap

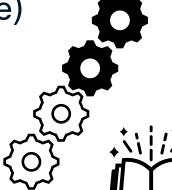




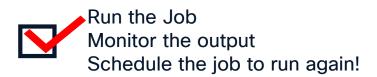
- Hosts and Inventories Perform tasks on these devices
- Projects Collections of Playbooks stored in Source Control
- Credentials typically username & password
 - VERY Flexible with Custom Credential Types
 - Dive DEEP on Thursday June 12 @ 11:30 am DEVNET-2517
- Templates set of parameters for running a job \ playbook
- Automate Replace Certificates, Backups, Hardening (compliance)
- Save power, turn off interface LEDs











Create a Job Tempate



Complete your session evaluations



Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to win 1 of 5 full conference passes to Cisco Live 2026.



Earn 100 points per survey completed and compete on the Cisco Live Challenge leaderboard.



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Book your one-on-one Meet the Engineer meeting



Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs



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