Cloud Builder Moscow
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Extensibility via Cloud Vision

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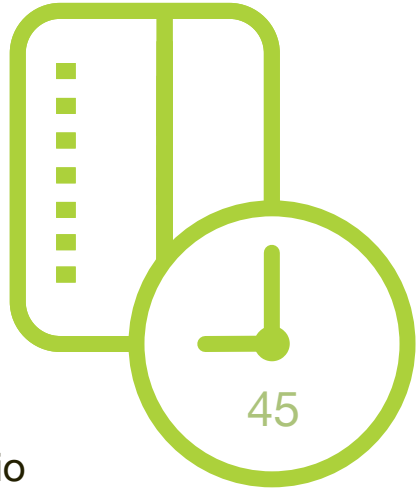
ARISTA

Agenda

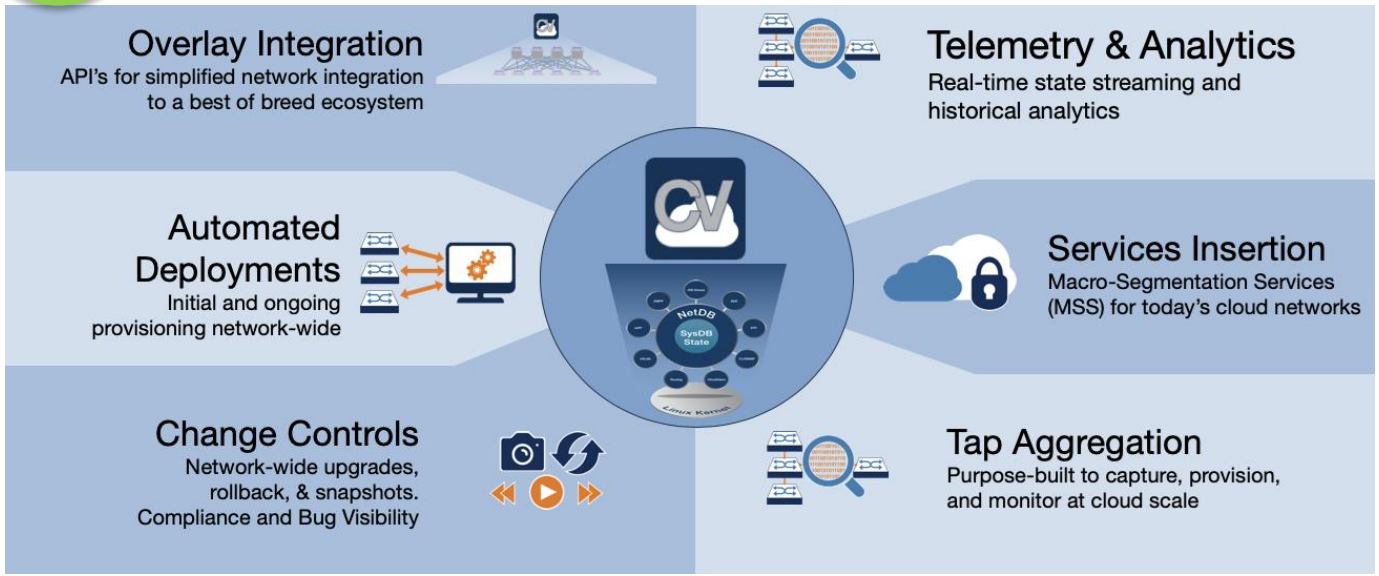


- CloudVision
  - Turn Key solution for Provisioning, Orchestration and Telemetry
- CloudVision Network API Gateway
  - 3rd party integration capabilities
  - Example of possible automation paths and a customer real life scenario
- Ansible CV Modules
- Demo (if there's time)
  - Ansible MoM (Manager of Managers) using Ansible-CV modules

CloudVision (CV)
Overview

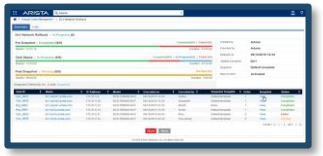
CloudVision (CV) – Turn key solution

Turn Key



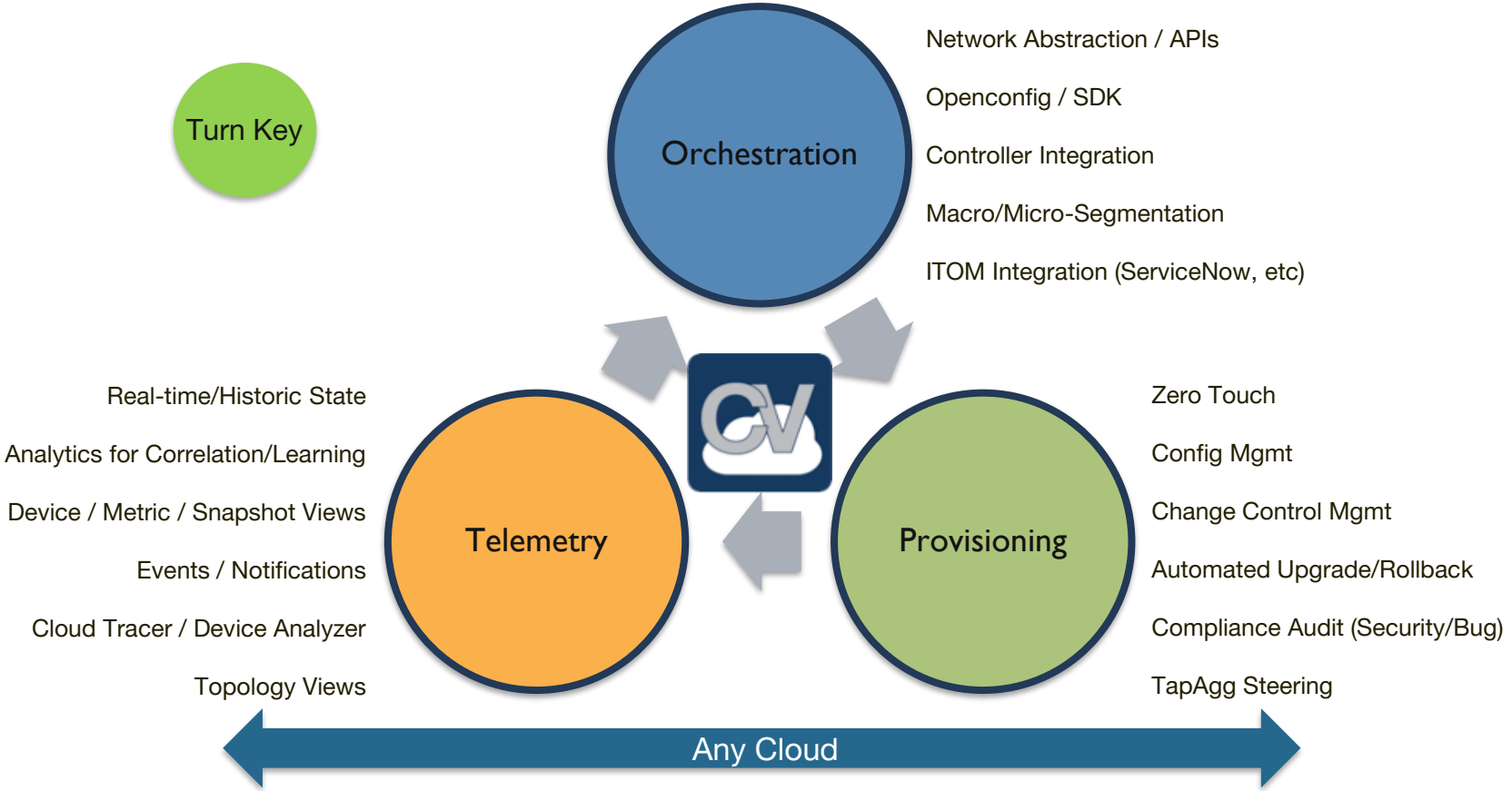
Orchestration & Provisioning

Operations & Maintenance



Telemetry & Analytics

Network Automation Pillars @ ARISTA

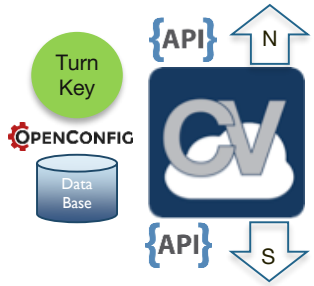


CloudVision – 3rd party integration

Services Integration	Dev Ops	IT Ops Management	Notification	Your choice
paloalto, FORTINET, vmware, Check Point SOFTWARE TECHNOLOGIES LTD.	ANSIBLE, GitLab, Terraform	now™	slack, pagerduty	IPAM, Data Base, ?
Security policies integration	Infrastructure as code	IT Workflow Authorization	Alerting Mechanisms	Your desired outcome

Northbound

Standardized in OpenConfig data models

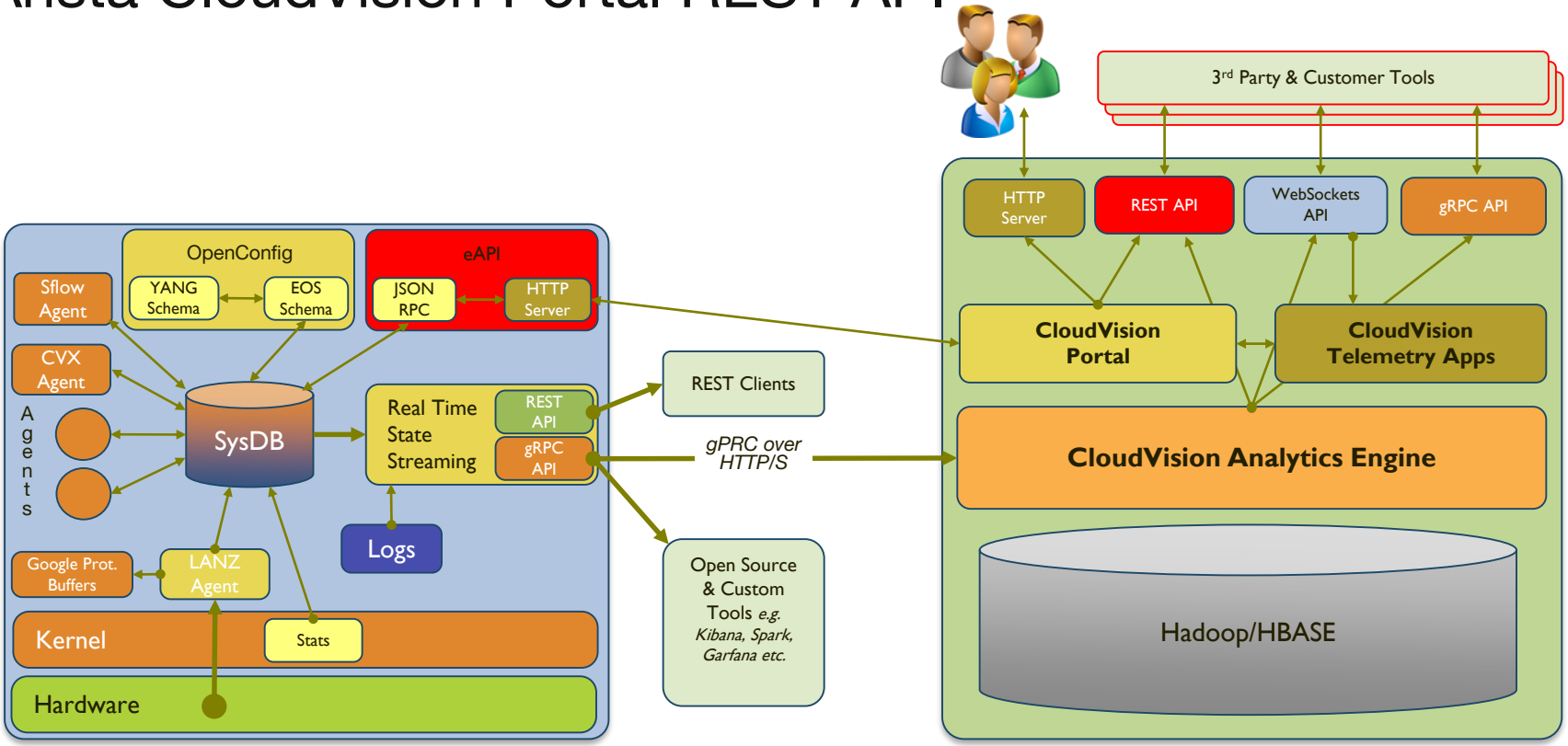


API's for customer extensibility
3rd party integrations

Device integration based on state streaming (gRPC)
Device SDK for SNMP visibility of legacy systems

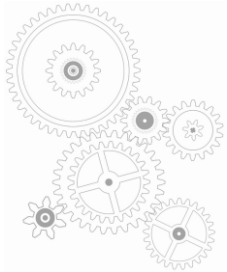
Southbound

Arista CloudVision Portal REST API



CV as a Network API Gateway

Exploring the CV Network API Gateway



Open Source tool as Manager of Managers

(e.g. Ansible)

Playbooks

ANSIBLE

{API} N

More Complex

Turn Key

OPENCONFIG

Data Base

Customize CV via scripting

(e.g. read data from external Database)

IPAM

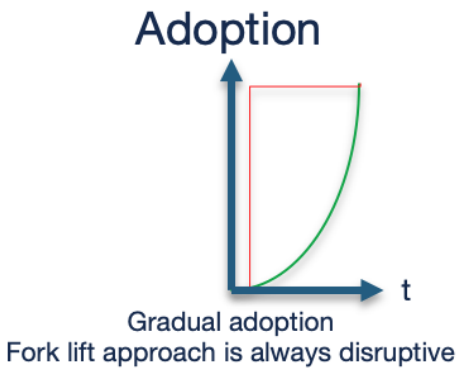
Data Base

{API} N

CI/CD Pipeline

{API} N

Some automation model examples



MODEL #1

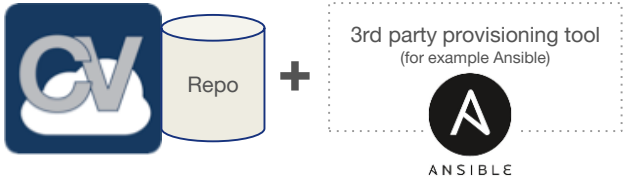
- CVP is the source of truth for every configuration
- No variables / Just static form
- Semi-automation with CVP Configlet builder
- Simplicity

MODEL #2

- CVP is the source of truth for every configuration
- Internal/external Repository (Variables)
- Automation with CVP Configlet builder

MODEL #3

- CVP or an external repo could be the source of truth
- External Repository (Variables)
- Automation with external tool
- Scale



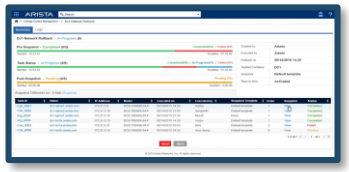
MODEL #4

- CI/CD
- CVP isn't the source of truth
- External Repository (Variables)
- Automation with external tool
- Scale and automatic configuration/test deployment

Model 1 - CloudVision

- Delivers
  - Turn Key, simple, widely deployed
  - Network Operations ‘business as usual’ with increased day 1 efficiency
  - Integration with Customer workflow process via APIs
  - Easy add on: Parallel CloudVision hosting vEOS instances can be used to pre-test changes
- Potential next steps
  - Adopt CI/CD that exists for Compute/Storage
  - 3rd party Network Support
  - Build customisation for customer specific workflows

Orchestration & Provisioning



Operations & Maintenance

Telemetry & Analytics

Model 2– Customised CloudVision

- Delivers as Model 1 +
  - Flexible. Supports low hanging automation requirements with the potential to move to an Ansible MoM (Manager of Managers) as a post-deployment Phase 2
  - Network Operations ‘business as usual’ but significantly more efficient day 1
  - Limited internal development required
  - Parallel CloudVision hosting vEOS instances can be used to pre-test changes
- Potential next steps
  - Include 3rd party in the automation flow

External Databases

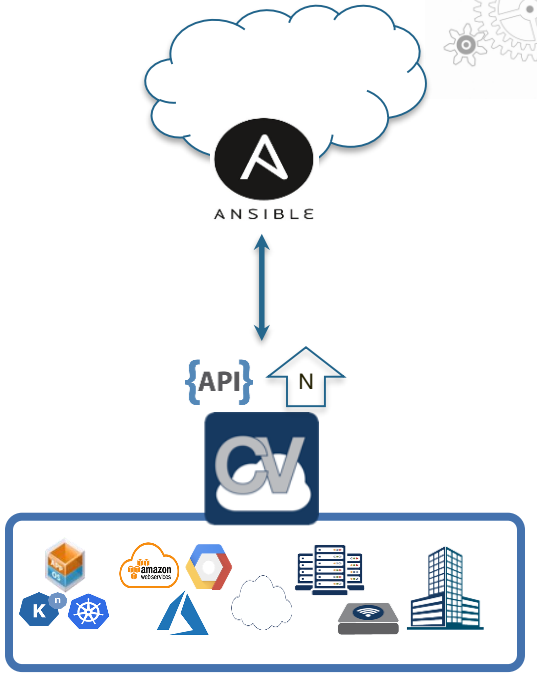
Configlet Builders

Custom Apps

Model 3 – Ansible as MoM (Manager of Managers)

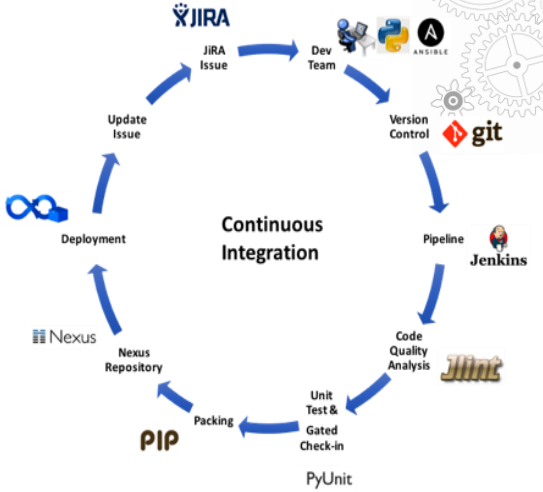
- Delivers
  - Full CI/CD pipeline exists for compute/storage without enforcing the same model on Networks
  - Reduced risk as Ansible never writes changes to real devices
  - Ansible can be responsible for specific elements of configuration rather than the entirety

- Knowledge requirements
  - Ansible
    - » Ansible-CV interaction will be delivered by Ansible modules thus removing the API icon seen in the drawing

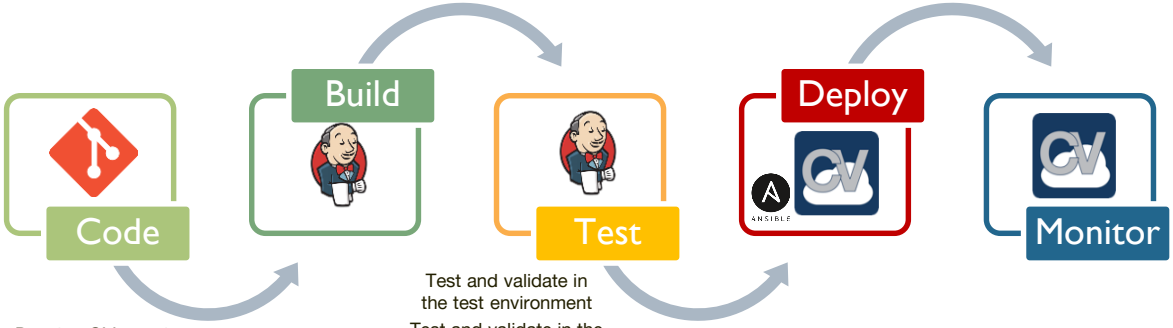


Model 4 – Complete CI/CD pipeline

- Delivers
  - Best method to reach higher % of end-to-end environment automation
- Challenges
  - Complex
  - Network teams need to adopt a totally new way of thinking
  - 100% network automation is unlikely. How should exceptions be managed?
  - Bleeding edge, very few enterprise examples in the field

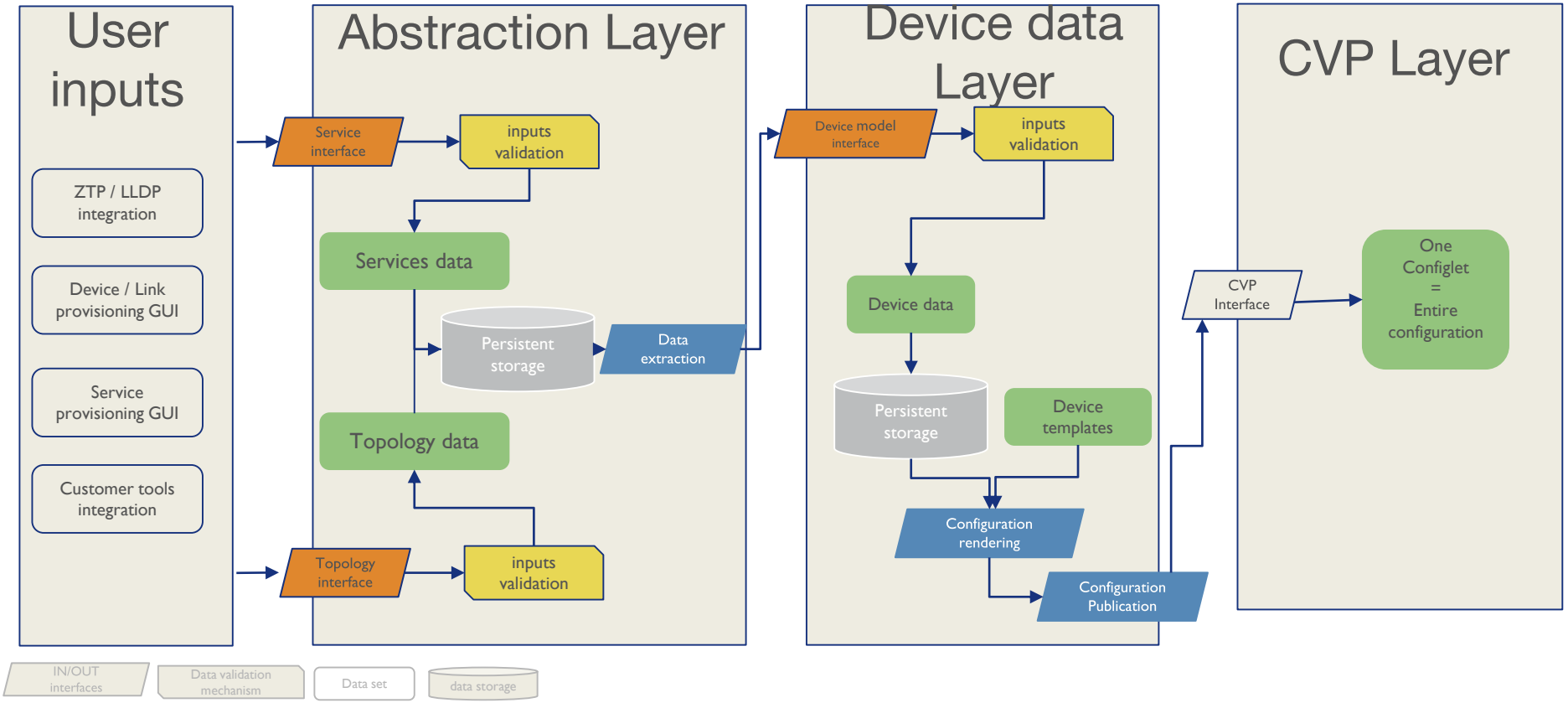


CI/CD, DevOps and Networks



Examples of open source frameworks

Example: From Abstract Data Model To CVP



Ansible – CV modules

Ansible & CloudVision

- Goals: simplicity and ease of use
- Playbooks written in easy-to-read YAML
- Core code written in Python
  - Modules can be written in any language you like
- Agent-less architecture (no client daemon)
- Tower: Operationalize Ansible
- Idempotency
- Community-driven (2300 >> 1)

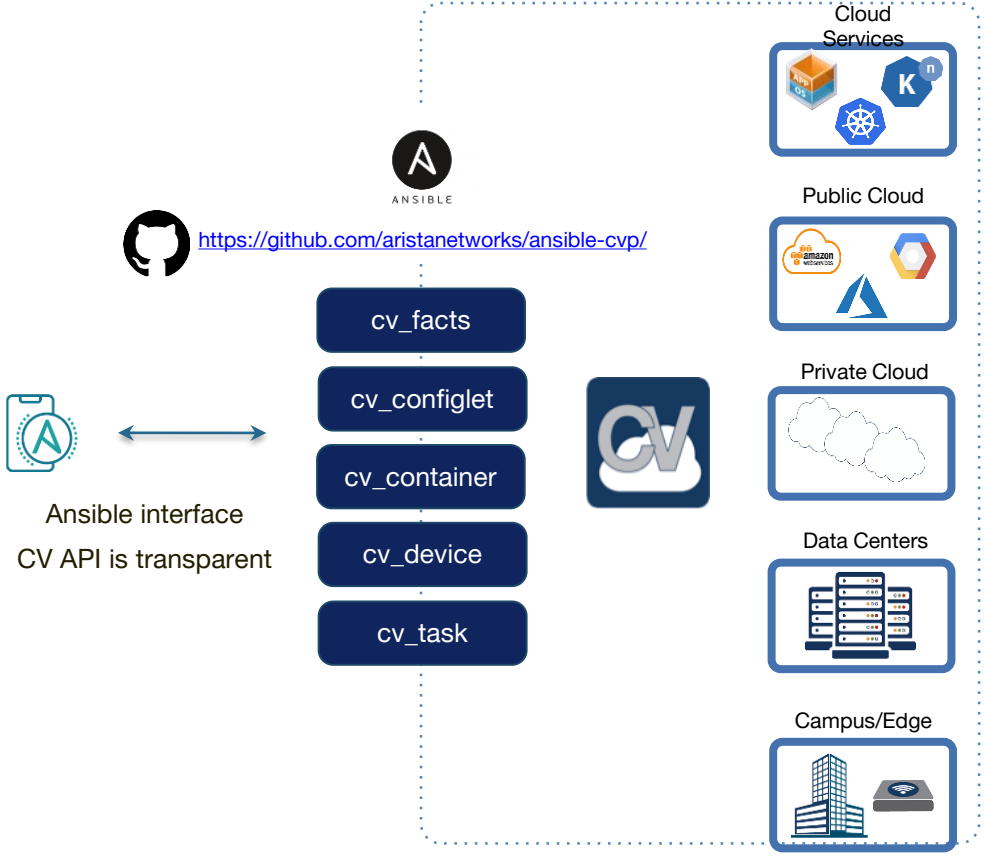
Adoption of Ansible and CloudVision

https://github.com/aristanetworks/ansible-cvp/

- Ansible-CV modules published in GitHub (public)
- Updated for each new CV release (backwards compatible with CV 2018.2.x)
- Support via GitHub issues raising
- Northbound CV API interface is transparent to the user
- Limit required knowledge to the Ansible domain

Press Releases Tech Target SDX Central

Ansible-CVP modules structure



Complete documentation in GitHub

cv_facts – Get status
- Lists containers/device and container/device info
- List of configlet and configuration
- List of tasks and status

cv_configlet – Manipulate configlets
- Adds / Removes configlets
- Updates Configlet configuration

cv_container – Manipulate containers/images
- Adds/Removes Containers
- Adds/Removes devices and configlets and images to/from containers

cv_device – Manipulate devices
- Provisions / Resets devices
- Add / Removes Configlets and Images from Devices

cv_task – execution
- Executes/cancels pending tasks

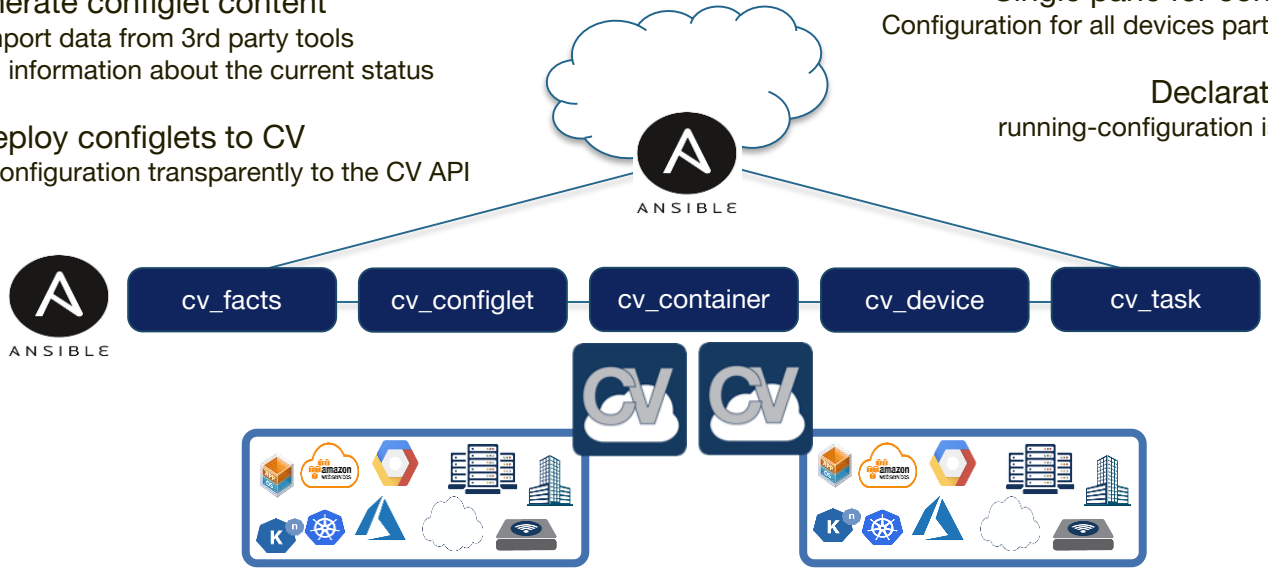
Ansible as MoM (manager of managers) for configuration

Generate configlet content
Can import data from 3rd party tools
Modules feed information about the current status

Deploy configlets to CV
Modules apply configuration transparently to the CV API

Single pane for configuration generation
Configuration for all devices part of a service: Switches/FW's/ LB's

Declarative model
running-configuration is based on desired state



Consistency
Pre/post snapshots
Push intended configuration with correct ordering

Control
Pushed configuration (optionally) requires approval before execution

Full visibility
Trace changes with real time telemetry of all the variables

Synchronization
Synchronize configurations across multiple CV instances