

### Infrastructure as Code at CBC/Radio-Canada's Media-over-IP Data Center

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In collaboration with Carl Buchmann **ARISTA** 











Dual networks / SMPTE ST 2022-7 redundancy ↓ latency ↓ packet drop ↓ jitter

Layer 3 routing, VRF, ACL, QoS, SDN, PIM, IGMP

#### COMPLEX

- Continuous news
- Generalist Radio and TV
- Streaming
- On-demand

### HIGH AVAILABILITY



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- Generalist Radio and TV
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### HIGH AVAILABILITY



Freq. updates

Cont. deployment

### **EVOLUTIONARY**





### PHASE 1: MULTIPLE SOURCES OF TRUTH (MSOT)







### PHASE 2: IaC WORKFLOW

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### LEVERAGING DevOps PRINCIPLES

#### PLANNING

Design system changes and updates to for all network aspects including adding new features and functionality

#### DEVELOPMENT

Create valid running configurations that can be discussed and validated by expert network engineers



#### LEARNING

Gather feedback from end users on features, functionality, performance and business value for planning of next release

#### DEPLOYMENT/OPERATIONS

Changes are pushed to production and telemetry data is monitored for fault and errors.

#### INTEGRATION

Changes are merged into the existing codebase and tested against current running configuration.

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https://www.ibm.com/cloud/learn/devops-a-complete-guide

### CBC/RADIO CANADA MEDIA NETWORK





## EXTENSIBLE AUTOMATION FRAMEWOR



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### WHAT IS ARISTA VALIDATED DESIGN (AVD)

#### Provides Complete Lifecycle of Fabric provisioning (Day 0,1,2)

- Build Documentation
- Build EOS Configuration
- Build Network Ready For Use (NRFU) test cases
- Build DHCP configuration file to prepare ZTP process
- Simplify onboarding for arista.cvp collection

summary i	otals			
Total Tests	Total Tests Passe	Total Tests Failed		
187 148		39		
DUT	Total Tests	Tests Passed	Tests Failed	Categories Failed
DUT	Total Tests	Tests Passed	Tests Failed	Categories Failed
DC2-BL1A	26	15	11	Interface State, LLDP Topology, MLAG, BGP
DC2-BL1B	26	18	8	Interface State, LLDP Topology, MLAG, BGP
	IA 7	7	0	-
DC2-L2LEAF		41	0	-
DC2-L2LEAF	41			
DC2-L2LEAF DC2-LEAF1A DC2-LEAF1B	41 41	33	8	LLDP Topology, IP Reachability, BGP
DC2-L2LEAF1A DC2-LEAF1A DC2-LEAF1B DC2-SPINE1	41 41 23	33 15	8	LLDP Topology, IP Reachability, BGP LLDP Topology, IP Reachability, BGP

\$ ansible-playbook dcl-fabric-deploy-cvp.yml --tags build

PLAY [Build Switch configuration] \*\*\*\*\*\*\*\*\*\*\*



### **PROVISIONING BUILDING BLOCKS**



Cloud Vision provides Change Control and Provisioning Engine

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### ARISTA AVD ECOSYSTEM

Molecule

action -molecule -avd





Adam Mack - Solution Architect - RedHat Ansible: *"This is outstanding as we can reduce the mean time to production with the AVD roles for our customers and let them rest easier knowing most of the heavy lifting was done for them ."* 

NetDevOps Community

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### AUTOMATION WORKFLOW BACKED BY ANSI BLE-AVD





### EXTENDING ARISTAAVD



https://github.com/cbcrc/ansible -avd



#### EXTEND:

- **W**multicast IPv4 as required by AMCS
- backup-link standby
- AVD ID to .csv documentation

#### MODIFICATIONS:

- MLAG peer ip addressing
- igmp-snooping for RT media network
- bgp listen range prefix, to optionally accept a list of prefixes

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### **BUILDING A COMMUNITY**



#### Real Time Media network

- Template for RT media network
- Best practices based on our experience
- Learn from other broadcasters



