



Scope of Work

Program/Project	Network Automation Integration
Revision No/Date	2/13/2020
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Initiative/Project Description

Integrate the framework for network automation for the CHC Network Engineering team. Network automation will:

- Maintain overall business stability and continuity
- Standardize our build consistency
- Minimize the impact of human error.
- Reduce manual steps in building simple and complex tasks.
- Enhance Quality Assurance of work.
- Decrease project timelines.

Key Objectives:

1. Create a structured Network Automation Framework that is specific to the CHC Network Engineering standards for both Engineering and Operations team use.
2. Identify technologies to be automated
3. Deploy Ansible Servers and Toolsets.
4. Design test environment.
5. Create build standards and build consistency for internal and external customers.
6. Test playbook and scripts.
7. Deploy playbooks for production builds.
8. Create and update all documentation
9. Implement training modules for Engineering to effectively learn Standard and Best Practices for Network Automation.
10. Apply development process to identified technologies

Project Scope

In Scope:

- Everything damn thing

Out of Scope:

- Network Support hand-off and training

Milestones

Discovery

- Collect current automation scripts in circulation
- Determine technologies to be automated
- Identify security concerns or gaps with moving to automation
- Identify toolsets that will be used for Automation

Pre-Implementation Analytics

- Review Recent Network Generated Sev1 Outage trends
- Capture current build time for manual processes
- Check consistency of builds for existing technologies

Framework Development

- Develop standards for each toolset
 - Ansible
 - Version of Ansible deployed
 - Default language used in coding
 - Template Engine for Variables
 - GitLab
 - Create Team Page within GitLab (NetAnsibleDevOps)
 - Secure Access to Team Page
 - Create Individual Projects per technology
 - VSCode
 - Default Source Code Editor
 - Default set to YAML defined specs for tool
- Develop and Provide standards for Automation Playbooks
 - Develop Standards, Structure and Formats for Playbooks
 - Identify user interaction with Playbooks
 - Develop framework and structure on data inputs for operation
 - Identify Output format and locations
 - Design and develop verification report
- Build out the Network Automation environment
 - Stand up Linux Servers
 - Build out the automation network within the Production Domain
- Infrastructure connectivity
 - Update Firewalls with rules to allow Ansible access to destination devices
 - Update destination device ACLs to allow Ansible Access

Technologies Development Process *(Outlined steps below will be repeated per technology)*

- Coding
 - Gather modules for associated technology
 - Transfer input tables to formatted data structures
 - Create Playbooks for associated technologies
- Testing
 - Begin initial testing within Sandbox environment
 - Open testing environment for super-user
 - Document results and resolve any outstanding issues
- Deployment
 - Release code for production environment builds (super-users only)
 - Monitor and manage live production
 - Update code patches (as necessary)
- Training

- Provide training for remaining Network Engineers (non super-users)
- Upload all documentation to central repository (SharePoint)

Operational Documentation

- Creation of SOP's and training documents for network automation workflow.
 - Network Automation Flow Docs
 - Network Automation User Guide
 - Ansible Runbook
 - GitLab Runbook
 - VSCode Runbook
 - Automation Runbook (Overall Architecture)

Internal Training (Network Engineering)

- Network automation training
 - Ansible
 - GitLab
 - VSCode
- Network Automation work flow process
 - Architecture
 - Data Flows

Support Teams

Technical Support

- Network Automation Team (Ansible)
- Identity IQ Team (GitLab)
- Network Automation Team (VSCode)
- Linux Systems Team (Ansible Servers)

Risks

- Resources to build the framework
- Hitting deadlines
- Insufficient development/testing environment
- Potential Security???

Initial Timing

- Initial Kick-Off Call: 11/1/19
- Project Plan Build: 1/13/20-1/17/20
- Project Time Line: 2/1/20-5/1/20
- Go Live: TBD-June 2020

Key Performance Indicators (Performance Productivity)

Metric	Definition of Metric	Key Performance Indicator Expectation	Report	Frequency	Responsible Party	Baseline Metric
Build Time	Time it takes to complete a specific build by technology		Excel Spreadsheet	Weekly	Automation Team	
Error Reduction	Number of CR's that have to be revisited because build was done incorrectly		Dashboard	Weekly	Automation Team	
Build Consistency	Compare current build configurations with new automation standards		Word	Monthly	Automation Team	

Executive Sponsor	
Name	Role
Neal Britt	Sr Director Network Engineering

Core Project Team	
Name	Role
Larry Carter	Network Engineering (Automation Team)
Jose Rios	Network Engineering (Automation Team)
Todd Gay	Sr. Manager Network Engineering
Key Contributors-Super Users	
Name	Role
Rob Defreitas	Network Engineering (ACI)
Nancy Vanasse	Network Architect
Daniel Callaway	Network Engineering