Automating Our World

Logan Doux – Tennessee Valley Authority
Red Hat Summit – 5/9/2019
Agenda

The Tennessee Valley Authority provides reliable power 24/7 to over 10 million customers in 7 states. With such an responsibility, reducing downtime for mission-critical applications is a priority. Join us as we discuss the migration, tuning, and maintenance of one of our key business critical applications.

- Who – Who TVA is and what we do
- What – The problem we were trying to solve
- How
  - What we have working so far
  - What problems we had to overcome
  - What comes next
- Questions
Disclaimer

The following content is not intended to promote or endorse any product, company, or service by TVA. All products, companies, and services mentioned are only in reference to our implementation.

Your results will vary
## Introduction and Background

### Who is TVA
- Federal corporation created in 1933
- Nation’s largest government-owned power provider
- Provides electricity generation, electrical grid management, river and land management for Tennessee River valley
- Serves over 10 million people in portions of seven states

### What We Manage
- 16,200 miles of transmission lines
- 268 total generating units
- 293,000 acres of land
- 11,000 miles of river shore
# Introduction and Background

## What was the problem?
- Large, enterprise-level, safety-critical systems with multiple integrations
- Old legacy hardware
- Required multi-day outage windows for system maintenance and upgrades
- Complex system – hard to troubleshoot
- Limited redundancy capabilities

## Goals of Project
- Simplify complexity
- Increase uptime
- Migrate to newer hardware
- Better performance
- Consistent maintenance windows

## What was Done
- Migrate from legacy physical hardware to modern virtual hardware
- Upgrade to latest version of RHEL
- Performance Tuning
- Automation
Automation

**Satellite**
- Implementation of standard operating environment (SOE)
- Management of patches

**Ansible & Ansible Tower**
- Standardized patching process
- Playbooks to manage integrations
- Coordination of playbooks
- Configuration management
- Scheduling of tasks
Automation

**Red Hat Insights**
- Tuning recommendations
- Preventative troubleshooting
- Compliance with Red Hat best practices

**Red Hat CloudForms**
- Orchestration
- Push-button patching
Challenges and Obstacles

• Lack of experience with new tools
• Customer hesitation
• Technical surprises
• Internal policies
Next Steps

• Refine existing automation
• Develop new automation for integrating systems
• User education
• “Fully self-driving” automated patching