Streamline network automation with Red Hat

Network automation is essential for the energy sector

The energy sector is undergoing rapid digitalization. Utilities, power producers, and oil and gas operators are modernizing their infrastructure to support the growing adoption of advanced technologies such as distributed energy resources (DERs), advanced metering, real-time monitoring, and digital substations. Energy organizations are investing in predictive maintenance and expanding remote or autonomous operations. Networks in this vital industry have become more than a way to transport data. They are now connecting critical devices and environments.

Every newly connected asset, from supervisory control and data acquisitions (SCADAs) to edge compute platforms running analytics and smart devices, adds complexity and potential vulnerabilities. End users need greater grid visibility and more digitized field operations, while data volumes at each endpoint continue to grow rapidly. With so many devices, configurations, security policies, and performance requirements to manage, operating these networks manually is no longer practical.

Getting a comprehensive view of how the network is installed, configured, and performing is growing increasingly complex. Managing installations manually is slow, fragmented, and prone to error, making troubleshooting or expanding even more challenging. When IT teams configure networks one command line at a time, they increase the risk of downtime, weaker performance, limited agility, and cybersecurity threats.

Energy-sector pressures intensify the urgency of network automation. Pressures such as:

- **Aging infrastructure and unstable networks.** Legacy equipment mixed with modern digital systems often creates inconsistent configuration and reliability challenges.
- **Information and operational Technology (OT) workforce gaps.** The energy sector faces a lack of skilled network engineers who are experienced with advanced OT protocols, substation automation, or deterministic operational networks.
- **Escalating cybersecurity risk.** Critical infrastructures are targeted progressively. Energy organizations cannot rely on manual configurations, updates, or zero trust segmentation to protect their widespread systems.
- **Need to scale with speed.** Rapid expansion of DERs, grid-edge devices, and digital field operations requires energy organizations to provision, safeguard, and manage networks at a faster pace than traditional manual methods allow.
- **Regulatory and compliance requirements.** Standards such as North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP), International Electrotechnical Commission (IEC) 61850, and International Society of Automation (ISA)/IEC 62443 demand strict, auditable controls and consistent configuration governance.
- **Cost and uptime.** Outages caused by misconfigurations or equipment faults carry extreme financial, operational, and safety consequences.

A scalable, security-focused network automation approach

Red Hat® Ansible® Automation Platform is a unified automation solution that helps streamline and manage network and IT operations across complex, multivendor environments. It gives organizations the ability to automate tasks like device provisioning, configuration updates, software deployment, and security enforcement—which helps boost operational efficiency and reduce manual errors.

In addition, Ansible Automation Platform replaces error-prone command-line tasks with repeatable automation content. Instead of requiring users to write their own playbooks from scratch, the platform provides a vast library of prebuilt and well-tested collections that serve as trusted starting points. Teams can extend and adapt these collections to fit their environments, helping maximize consistency and reliability across deployments and ongoing management—even for users without extensive networking or coding expertise.

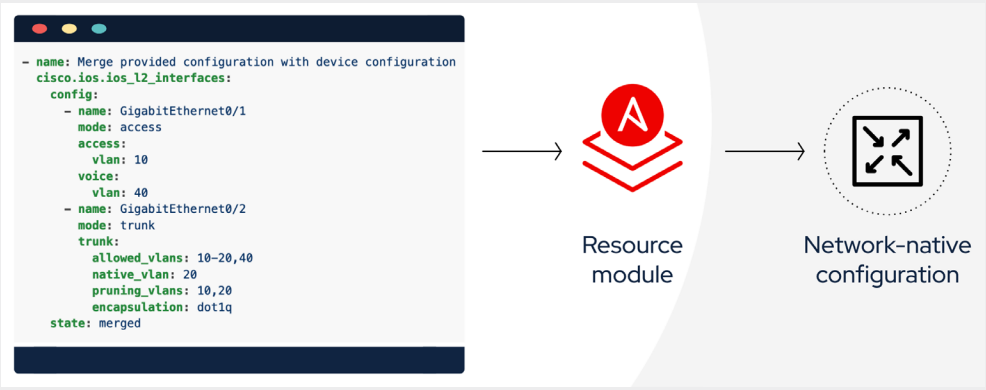

Figure 1. An example of a playbook using Ansible Automation Platform

With Ansible Automation Platform, businesses can:

1. Streamline network management

- **Automated device configuration.** Ansible Automation Platform can orchestrate the configuration of switches, routers, and firewalls across substations, DER sites, and grid-edge networks. Replacing manual command-line tasks reduces human error and gives skilled staff time to focus on higher-value work.
- **Software updates and patching.** Keeping devices updated is critical for both security posture and performance. Ansible Automation Platform allows patches and updates to be scheduled, eliminating delays and inconsistencies that are common with manual methods. This process increases reliability and reduces exposure to cyber threats.
- **Workflow orchestration.** Complex operational changes such as setting up new substations, activating DER sites, or integrating new grid-edge equipment require precise coordination. Ansible Automation Platform can orchestrate these workflows end to end, accelerating processes and reducing the risk of downtime.

2. Improve operational efficiency and security posture

- **Minimized downtime.** By automating repetitive and error-prone tasks, Ansible Automation Platform helps keep networks running smoothly, reducing the likelihood of outages or costly service interruptions.
- **Efficient troubleshooting.** Standardized and tested playbooks allow issues to be identified and resolved more efficiently. Instead of relying on individual expertise, teams can apply proven processes to restore operations in less time, increasing resilience in the face of challenges.
- **Scalable automation.** As energy environments grow, manual management becomes untenable. Using its extensive library of pretested collections, Ansible Automation Platform scales with expanding networks. Organizations gain the confidence that their automation will evolve with them instead of becoming another bottleneck.

3. Adjust to meet business demands with ease

- **Adaptable framework.** Energy environments develop over time, from regulatory changes to new technology integrations. Ansible Automation Platform provides a common platform with the flexibility to update configurations efficiently, keeping energy organizations innovative without overburdening staff.
- **System integration.** Modern energy operations depend on connected systems, such as SCADA and advanced distribution management systems (ADMS). Ansible Automation Platform has a versatile library of application programming interfaces (APIs) built for effective interoperability and bridges these systems with the network, helping to integrate different systems cohesively. Operations that ordinarily require complex manual effort become more efficient.

Red Hat Ansible Automation Platform gives organizations the confidence to scale and streamline their operations, taking control of critical network device needs while meeting the pressures of cost, staffing, and cybersecurity. With automation, organizations can adapt efficiently, run strategically, and stay competitive.

Learn more

Contact a Red Hat subject matter expert to learn more. Explore Red Hat technology solutions to find out how Red Hat can assist with your network automation needs.

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