Streamline network automation with Red Hat

Network automation is essential for the future of manufacturing

Manufacturing technology is transforming rapidly. Factories are moving toward smarter, more connected operations that rely on technologies such as connected Internet of Things (IoT) sensors, AI, robotics, and cloud computing. In this environment, networks are not just about connectivity; they form the backbone that supports real-time communication, data sharing, and coordination across production floors, business systems, and cloud environments.

Even in factories that are slow to change, with every new connected device, whether it is a sensor on a machine, an edge computing platform, or a real-time analytics tool, networks become more complex and vulnerable. Coupled with organizational objectives to add additional remote operations and visualize full global productions, data volumes are growing rapidly, and so are the number of endpoints. Manually managing, configuring, and securing these networks is no longer practical. Each device can have its own protocols, security requirements, and performance needs, creating a heavy operational burden.

Manual approaches to network management are slow, fragmented, and error-prone. It is difficult to get a total view of how the network is installed and configured, leading to additional challenges for troubleshooting or expanding. Configuring networks a single command line at a time risks downtime, weaker performance, limited agility, and increased cybersecurity threats. These challenges only grow as digital operations expand.

External pressures add to the urgency for automation, such as:

- **Unstable networks.** Networks that lack cohesion and may not be optimally configured, which can lead to reliability challenges.
- **Shortage of skilled staff.** IT and network experts are too busy or too few in number to handle complex manual management, and the staff that are there lack operational technology (OT) network knowledge.
- **Escalating cybersecurity risks.** Threats demand consistent, automated defenses; manually watching each individual device and configuration is not practical and can result in oversights.
- **Rising cost pressures.** Manufacturers must improve uptime, lower expenses, and reduce errors to stay competitive.

Network automation can help address key manufacturing challenges by allowing organizations to create standardized and tested configurations that improve stability, trustworthiness, and compliance. It reduces repetitive manual tasks, accelerates the deployment of connected devices and robotics, and supports predictive maintenance. Automation also helps enforce consistent security policies and delivers rapid responses to threats. By creating a more reliable and predictable environment, it gives manufacturers the scalability and flexibility to adapt production when needed while maintaining the operational consistency that OT teams prioritize.

A scalable, security-focused network automation approach

Red Hat® Ansible® Automation Platform is a unified automation solution that helps manufacturers streamline and manage network and IT operations across complex, multivendor environments. It gives organizations the ability to automate tasks such as 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 every user 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 deep networking or coding expertise.

How Ansible Automation Platform helps address network automation challenges

Ansible Automation Platform strengthens manufacturing networks in practical ways that support workers, mitigate risk, and provide the adaptability needed in today's complex operating environments. It does this through:

1. **Streamlined network management**

   - **Automated device configuration.** Ansible Automation Platform can orchestrate the configuration of switches, routers, and firewalls across the factory. By replacing manual command-line tasks, it reduces human error and frees skilled staff to focus on higher-value work.
   - **Software updates and patching.** Keeping devices updated is critical for both security posture and performance. Ansible Automation Platform pushes patches and updates uniformly, eliminating delays and inconsistencies that come with manual methods. This improves reliability and reduces exposure to cyber threats.
   - **Workflow orchestration.** Complex changes such as bringing new production lines online or integrating new equipment require precise coordination. Ansible Automation Platform orchestrates these workflows end to end, accelerating processes and reducing the risk of downtime.

2. **Improved operational efficiency and security posture**

   - **Minimized downtime.** By automating repetitive and error-prone tasks, Ansible Automation Platform helps keep networks running smoothly, reducing costly interruptions in production.
   - **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, improving resilience in the face of challenges.
   - **Scalable automation.** As factories expand and device counts grow, manual management becomes untenable. Using its large library of pretested collections ready for a large variety of use cases, Ansible Automation Platform scales to handle larger environments. This gives organizations confidence that their automation will grow with them instead of becoming another bottleneck.

3. **Flexibility to meet business demands**

- **Adaptable framework.** Manufacturing environments evolve over time, from shifting customer demands to new technology integrations. Ansible Automation Platform provides a common platform with the flexibility to update configurations efficiently, allowing businesses to stay ahead without overburdening staff.
- **System integration.** Modern manufacturing depends on connected systems such as industrial IoT platforms and enterprise resource planning (ERP) tools. Ansible Automation Platform has a versatile library of application programming interfaces (APIs) that are built for grand interoperability and bridges these systems with the network, helping organizations cohesively integrate different systems. This streamlines operations that would otherwise require complex manual effort.

Critical modern manufacturing systems networks are too complex to effectively manage manually. Ansible Automation Platform gives organizations the confidence to scale and streamline their operations and take control of their critical network needs while meeting the pressures of cost, staffing, and cybersecurity. With automation, factories can adapt efficiently, run strategically, and stay competitive.

Learn more

Connect with our industrial subject matter experts today to learn more, or explore the industrial sector solutions page to discover how Red Hat can help with your network automation needs.

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