A Deep Dive on Edge+Automation

The emergence of edge computing has been swift and broad across the business technology scene around the world. For enterprises and organizations that are eyeing or using the technology within their own operations, edge computing can make them more agile, more efficient and better prepared to grow their businesses in the global marketplace.

Fueling the rapid proliferation of edge computing is the cascading growth of data that is generated, pre-processed, used and located away from traditional data centers. We are also seeing increased data growth from the steady acceleration in IoT device deployments and by other business use cases where enterprises are realizing the value of having and using their data at the edge of their networks.

Edge computing is one of the fastest growing technology needs in the world today for enterprises of all types and sizes. More companies are finding that mission-critical edge services can help them boost quality and accelerate innovation.

But like the broad topic of cloud computing, edge computing can be complicated, difficult to deploy and manage, and require specific expertise to make it work as a well-lubricated part of an organization's vast technology infrastructure.

A critical topic when discussing edge computing is the need for automation to make it easier to run and manage the complexities of edge infrastructures, especially when problems or failures arise. That can be particularly challenging for edge computing because edge sites are typically located in remote places far from the traditional management and observability regiments and where trained IT personnel are not readily available.

Such operational concerns require consideration from the start of an edge computing deployment. Once companies begin seeing the benefits of the technology, they must be ready to increase its use and grow its possibilities by automating as much as possible to make it all work successfully.

Overcoming Edge Computing Challenges Through Automation

The complexity of deploying and managing edge computing infrastructures, includes concerns about maintaining and monitoring edge sites of varying sizes, requirements and staffing levels. Here are some of the specific edge computing challenges that integrated, smart automation can overcome, while also adding deep value for IT teams and leaders.

Process optimization struggles. With a potentially unlimited number of unique edge computing sites within a company's infrastructure, manually optimizing processes for efficiency can be an impossible ongoing task. Automation of these processes also leads to lower times for disruptions, reduced time to market and higher customer satisfaction rates, which is critical for all industries.

Automation can improve workforce safety within dangerous industries. Many industries have operations that can be dangerous for the people working around them, including industrial facilities, oil and gas operations, mining and more, where things can literally explode at any time. By automating many of the operational tasks and dependencies, workers' safety can be dramatically improved by keeping them away from potentially dangerous situations. When it comes to industrial edge scenarios unscheduled outages or shutdowns due to safety issues can have major financial impacts. This is where broad automation in dangerous locations is so vital amid the convergence between IT and OT.

The need to reduce security threats. IT security is always a challenge for enterprises, but it is even more challenging for edge computing deployments located in extremely remote sites. Security standardization through automation can help solve this issue by bringing much better overall system visibility to enterprises and their IT staff. By better controlling edge computing assets and quickly identifying deviations and security concerns affecting devices and related systems by using automation, enterprises can be smarter in reacting when threats surface within edge deployments in remote locations, where it is difficult to send technicians in a short time.

Dealing with brownfield site challenges. Many organizations have difficult brownfield environments within their infrastructures that require extra time and effort to properly monitor and utilize. And those brownfield sites may have a multiple of devices in a multi-vendor and hybrid architecture, making them more complicated and excellent candidates for automation. For these challenging scenarios, automation can help by simplifying or abstracting the edge computing complexities of the sites for IT staff or site operators. The big challenge is ensuring that automating these already difficult brownfield sites is easy to do because enterprises cannot add this extra operational burden on operators and engineers who are already managing this infrastructure.

Solving automation needs for edge computing deployments at scale. As edge computing deployments and infrastructure grow for businesses, they become more challenging to manage at scale. For this issue, a flexible automation architecture that expands and adapts to customer needs as they grow is critical.

Turning to the Red Hat Ansible Automation Platform

With all the challenges of ensuring that edge computing best serves enterprises and ultimately their customers, having help to make it work smoothly is critical.

That's where Red Hat® Ansible® Automation Platform can play important roles in bringing integrated automation and improved management to edge computing deployments for companies

of all kinds. Red Hat Ansible Automation provides broad capabilities across industries including retail deployments and industrial segments such as manufacturing, oil and gas, and transportation.

The platform can deploy applications to Human Machine Interface (HMI devices) in the field. It can automate operational activities such as applying patches, hardening security, disabling ports, generating signed certificates, registering devices into inventory systems, and more without having a technician at the site. Many of these services can be done by an operator using a mobile phone where a click of a button authorizes Ansible Automation Platform to run multiple tasks and handle all the dependencies.

By simplifying the operations and ensuring that all devices have the same version of applications, settings and configurations, the edge systems will be consistent across locations for greater efficiency. This also simplifies Day 2 support in the future by maintaining consistency across the ecosystem.

CUSTOMER SUCCESS STORY

In the process of evaluating Red Hat and its Edge offerings, we were able to hear from a few customers on how Red Hat's platform has helped them achieve their goals.

The North American branch of Alstom, a European railway company, turned to Red Hat to improve its railway communication strategy through edge computing. With Red Hat Ansible Automation Platform and Red Hat Enterprise Linux, Alstom was able to transform its railway IoT devices to a flexible and more modern data solution. Alstom has reduced manual processes by automation management and new application deployment, with updates delivered in real time.

In the retail space, The Schwarz Group, one of the largest retail groups in the world, automated its IT infrastructure with Red Hat Ansible Automation platform. With a consistent platform, the retailer was able to improve delivery time for innovative applications and digital services and enhanced risk management with role-based system access.

How Red Hat Solves Edge Computing Automation Issues

The growth and importance of edge computing is continuing to inspire a broad ecosystem of supported products and services to help make the technology more manageable for enterprises. Powering that growth is open source, which is becoming the prevalent approach to deliver on edge computing interoperability, security and ease of operation across public clouds, private data centers and edge locations. Industry veteran Red Hat is well-positioned for this market, due to its ability to leverage a diverse ecosystem of providers and software vendors, its in-house innovation and its broad open source, device-agnostic platforms that focus on delivering security, automation and performance for organizational IT infrastructures.

Red Hat's broad product lines use a common platform and tool sets from edge to core to cloud, which help enterprises reduce the required skills needed to keep them running and bring in business value. Red Hat OpenShift, Red Hat® Enterprise Linux® (RHEL) and its other platforms provide operational consistency and portability of applications, while ensuring consistent application lifecycles, hardened security and powerful development processes.

When building and operating mission-critical edge computing deployments, integrated and comprehensive security capabilities and protections are essential for success, making Red Hat an excellent partner candidate for edge environments. The need to drive robust operations is never more relevant when you factor in the sheer breadth and scale of edge computing deployments.

Red Hat has long led the market with its powerful open source platforms, expertise, services and commitment to its customers around the world. The edge computing marketplace is just the latest enterprise growth area where Red Hat's work, reputation and quality will help businesses take their technology infrastructures to the next level.