ARC VIEW

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Industrial Edge Platforms Are the Foundation for Modern Enterprise Architecture

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Summary

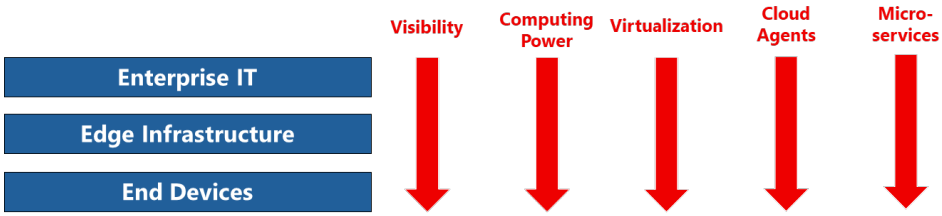
Industry is undergoing a transformation driven by the continued integration of IT-native frameworks and the extension of enterprise architecture into OT spaces. Computing power is moving towards the edge of industrial systems, virtualization technologies like Kubernetes are enhancing how industrial software is orchestrated, and software-defined control strategies are transforming industrial automation. These concepts can provide numerous benefits for OT stakeholders but require comprehensive platform solutions to fully unlock their business value. These edge platforms drive data-driven decision making, provide consistent management tools, and streamline operations for the modern enterprise.

Integration of technologies and frameworks such as edge computing, virtualization, and software-defined control can provide greater efficiency and agility for OT stakeholders but require comprehensive end-to-end platform solutions to fully unlock business value.

Industrial Edge Platforms Are Critical to Navigating Fundamental Shifts in Enterprise Architecture

In the context of the growing importance of edge computing, IT technologies and frameworks are increasingly permeating industrial spaces as an extension of the digitally transforming enterprise. A major factor in this integration is the expansion of industrial edge application orchestration through containerization technologies like Kubernetes. These virtualized frameworks allow software applications to flexibly share the same physical resources, significantly optimizing hardware usage and reducing the need for legacy devices with dedicated workloads. Industrial edge platforms

utilizing these modern frameworks can orchestrate and automate the deployment and management of edge applications, ensuring consistent performance regardless of the underlying infrastructure.



Enterprise Technology and Frameworks Are Descending to the Industrial Edge as IT and OT Realms Increasingly Intersect

Enabling Software-Defined Control Strategies

A pivotal development in industrial architecture is the ongoing convergence of industrial automation and software-defined control. Traditional industrial automation systems, which often relied on proprietary hardware, are increasingly being replaced by more flexible, software-defined solutions. Software-defined control supports the shift towards improved interoperability and streamlined configuration, enabling enterprises to tailor their control systems to specific operational needs while avoiding vendor lock-in. These software-defined control systems can be easily updated to ensure that industrial operations will remain agile and responsive to evolving demands.

Maintaining Operational Integrity

Industrial environments have a long legacy of on-premises systems due to their emphasis on real-time operations, security, and reliability. Contemporary architectural paradigms such as edge computing, virtualization, and application orchestration represent promising advancements for OT spaces, but their implementation must be aligned with the operational goals of industry. The arrival of new industrial edge software platforms has made it possible to maintain this operational integrity while also benefiting from contemporary architectural paradigms. Technology users that make use of these platforms can harness the benefits of the industrial edge without needing to give up the robustness of a fully on-premises solution.

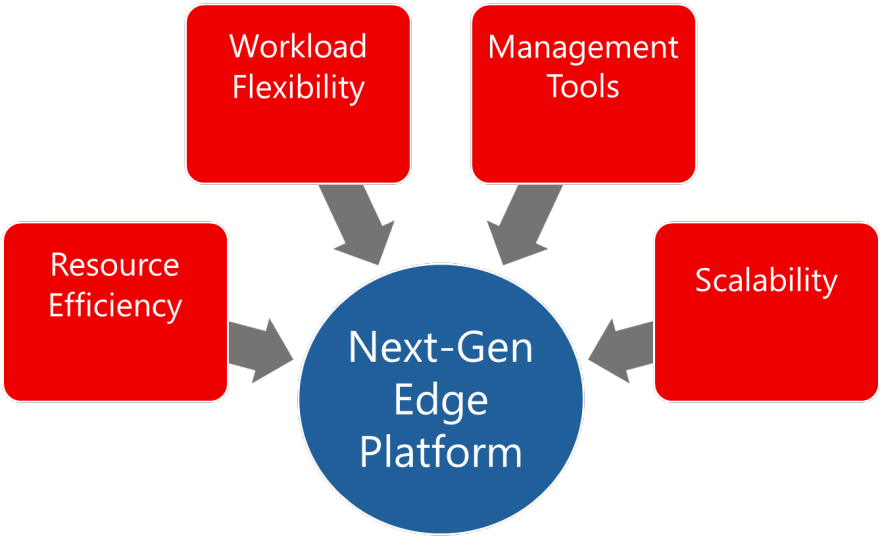
Unlocking Business Value from OT Data

Parallel to these technological and architectural shifts, there is a growing need for comprehensive edge platforms to enable the data-hungry

applications that are evolving the way enterprises generate value at the industrial edge. This includes the more well-established predictive maintenance and process optimization applications, but also the new use-cases for industrial AI, among others. The proliferation of sensors and connected devices represents a huge opportunity to power these emerging applications, but industrial data is widely underutilized. The benefits of new technology will only be realized if the underlying edge data is accessible and well-managed.

A Platform Approach to Managing the Industrial Edge

The necessity for an end-to-end industrial edge platform is increasingly evident as industries strive to harness the full potential of their OT resources. These platforms serve as the backbone for real-time data processing, analytics, and decision-making, and manage the architectural shifts and technological advancements outlined above in a streamlined and user-friendly way.



An End-to-End Industrial Edge Platform Provides the Foundation for an Efficient, Data-driven Enterprise.

Effective industrial edge management is crucial for maintaining operational integrity and bridging the gap between OT resources and enterprise data intelligence. Built into an industrial edge platform is the ability to easily perform device provisioning, software update management, network monitoring, cybersecurity diagnosis, application orchestration, and other

functions, significantly reducing management complexity. Unified in a single platform, holistic management practices ensure a resilient and secure industrial edge environment that can serve as the foundation for a data-driven enterprise.

Red Hat Is Platforming the Next Generation of Industrial Architecture

Drawing from decades of experience with Linux and open-source development, Red Hat solutions ensure scalable and consistent platforms that can adapt to the rapidly evolving needs of industrial environments. The company's extensive partner ecosystem facilitates straightforward integration with the many technologies that are shaping the software-defined world. Red Hat's deep understanding of the domain-specific requirements of industrial systems ensures that their solutions are precisely tailored to conjoin best-in-class enterprise frameworks with the needs of OT stakeholders.

The Red Hat Industrial Edge Platform is a comprehensive solution designed to optimize industrial operations by extending sophisticated enterprise capabilities to the edge of industrial networks in a user-friendly way. Built on Red Hat's industry-leading open-source technologies, this platform provides a flexible foundation for managing diverse industrial edge environments.

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Unifying the foundational elements from the company's deep product portfolio, the industrial edge platform delivers the diverse functionality necessary for a holistic edge management solution. Its real-time operation capabilities keep pace with the intensive demands of industrial automation scenarios, while an open, standards-driven design ensures interoperability and a stable foundation for scaling into the future.

Red Hat Partners with Industrial Automation Vendors to Deliver Comprehensive Edge Solutions

Red Hat is forging strategic partnerships with industrial automation suppliers to deliver comprehensive industrial edge platform solutions. By integrating powerful frameworks such as containerization, edge computing, and software-defined control into their platform, Red Hat and its partners

are creating robust, scalable solutions for the modern industrial enterprise. These collaborations with major automation suppliers illustrate Red Hat's commitment to providing solutions tailored to the unique requirements of industry.

Red Hat and Intel Collaborate on Industrial Edge Platform

Designed in collaboration with Intel, Red Hat's industrial edge platform provides a scalable and flexible approach to modernizing industrial controls. The platform seamlessly integrates established technologies from the IT realm into an OT-friendly solution that delivers real-time control, network automation and management, cybersecurity assessment, and more. Built on open standards, the platform's clear roadmap for the future and best-in-class developer support offers a consistent foundation for the future of industrial automation.

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Red Hat and Schneider's Open Automation Infrastructure

Red Hat has also formed a strategic collaboration with Schneider Electric and Intel to expand the capabilities of Schneider Electric's EcoStruxure ™ Automation Expert through the release of a Distributed Control Node (DCN) software framework for more autonomous operations on the shop floor. By combining Red Hat's open-source platform expertise with Schneider's energy management and automation leadership, this collaboration is ushering in modern, software-defined control solutions for the industry.

The availability of Red Hat's industrial edge platform on Schneider's EcoStruxure™ Automation Expert is aligned with the goals and values of the Open Process Automation Forum (OPAF), an industry initiative that advocates for open, standards-based process automation systems. This alignment underscores the partnership's commitment to fostering a collaborative and interoperable industrial ecosystem that can ensure seamless integration across diverse OT environments and reduce management complexity. With these principles in mind, Red Hat's platform approach eliminates the headaches of dedicated and proprietary hardware in favor of an open control architecture that can ensure consistent performance.

Red Hat and ABB Deliver Operations Excellence

Red Hat has established a strategic partnership with ABB, a global leader in industrial automation and digitalization. This collaboration consists of the availability of the company's operational data manager ABB Ability Edgenius on Red Hat's Edge platform portfolio. The Red Hat OpenShift platform brings together a comprehensive set of tools and services for application development and deployment, extending Edgenius to data-rich edge environments where it is needed most.

Red Hat OpenShift *is a comprehensive application platform that unifies a comprehensive set of tools and services for application development, deployment, and management. OpenShift offers a complete feature set for traditional, cloud-native, and AI workloads.*

To further support the most resource-constrained deployments, Edgenius is also available for Red Hat Device Edge, the company's lightweight platform solution that offers consistent device and application management for deployments at the far-edge. By leveraging the analytics capabilities of Edgenius with Red Hat's flexible and consistent platforms, the companies deliver enhanced automation capabilities for a variety of challenging use-cases.

The partnership is pursuing software virtualization, edge orchestration, and cybersecurity in a single, converged solution. The migration to Red Hat's platforms enables scalability from small single node systems to hyperconverged clusters, simplifying development and management through capabilities such as zero touch provisioning and remote network configuration. The unified platform supports critical use cases like low-latency data extraction from control systems, security-focused device onboarding and policy management, speedy delivery of microservices, and more.

Red Hat Device Edge *combines foundational elements of the Red Hat portfolio specifically optimized to provide operational consistency all the way to remote and resource-constrained far edge environments.*

Red Hat as an Industrial Solution Partner

Whether you are seeking solutions for the problems of today or driving innovation for your company's future, Red Hat is the solution partner you're looking for. The industrial world is experiencing a rapid influx of new ideas and technology, and navigating this changing landscape alone can be a daunting prospect. Automation suppliers, systems integrators, and end users should start a conversation with Red Hat to learn how their decades of

experience in open-source innovation, comprehensive support services, and extensive partner ecosystem can help implement your company's goals.

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