Bringing Edge Computing to new Frontiers

Extending a Strong IBM and Red Hat Value Proposition with Eurotech's Edge Computing Building Blocks, Deep into the World of Operational Technologies.

Increasing Relevance of Edge & Edge Computing

Data respectively information derived from raw data is what drives the 4th industrial revolution. Higher levels of operational excellence and the adoption of new, often market-changing business models, require a deeper integration of the information technology world with the world of operational technology (OT). Digital transformation is a term encompassing the many facets of a journey that leads to a more agile, on actual data based business environment. And: successful digital transformation requires real-time insights into all aspects of businesses and organisations, including levering possible sources of vital data in the field. This can only be achieved by enabling and leveraging best practice IT architectures and technology, while catering to the specific requirements in OT environments.

IBM and Eurotech Collaboration & Vision

IBM and Eurotech, share a vision to bring OT and IT into a software defined, open, standards-based ecosystem approach. By combining Eurotech's OT capabilities and compute products with IBMs powerful enterprise software and container management solutions, customers can benefit from integrated and validated combined offers that significantly reduce risk and effort, when extending these solutions into demanding environments.

A prominent example is the use of Edge Analytics by IBM Cloud Pak for Data on Eurotech's Rugged Edge Computers, deployed leveraging IBM's Edge Application Manager, to enable AI-supported Business Decisions in the Field. Depending on application requirements also other elements of IBM's Cloud Pak offerings can be deployed this way.

"The integration of IBM Cloud Pak for Data to build and train analytics models that IBM Edge Application Manager can deploy onto Eurotech's Edge Computing Hardware, including our High-Performance Edge Computers, significantly lowers the barrier of entry for customers that need to leverage computational power for AI and analytics applications in challenging environments." Robert Andres, CSO Eurotech.

Success in Edge means embracing diversity - it is an ecosystem play

The "field" could mean anything from a ticketing machine in a subway, to a packaging machine at the end of a manufacturing process, from a power generator to a cargo locomotive, from autonomous working construction machines to precision farming equipment. Already these few examples show how diverse, how application specific especially the hardware aspect is, in this world of operational technologies. Different, often challenging environmental requirements (temperature ranges, shock & vibration, sealing & IP rating, etc.) have to be met, enforced by required vertical certifications & tests. Deep understanding of OT processes and requirements are necessary to provide sub-systems and systems that from a legal, technical, service and commercial perspective are competitive.

Such diversity requires an ecosystem approach with expert players, rooted in the different verticals, IT and OT, focussing on openness and the ability to integrate at all levels. A great foundation for any open ecosystem is a clear commitment to open standards and open source. That is true for competitive hardware designs but also for the required software building blocks. IBM, Red Hat and also Eurotech show an impressive track record for supporting and contributing to the open source community. This translates into an openness in architecture and in integration capabilities that ensure that ever changing or new requirements and technologies can be easily adopted. This is an important factor when it comes to ensuring the customers competitiveness and value proposition to their respective markets.

Focus on Total Cost of Ownership!

Another fundamental underlaying principle is the focus on optimising the total cost of ownership of a digital information infrastructure that reaches far into the OT environment, into field assets ranging from smart devices and roof-top HVACs to manufacturing floors and autonomous vehicles. The digitally transformed enterprise or organisation requires constant adjustments and enhancements, from the integration of new, game changing sensor technology to adjustments in business logic, from dynamic updates of analytical models to security updates. A focus on a total cost of ownership approach does take into account not only economies of scale but also substantial cost elements like device & asset management, hardware & software life cycle management, communication, and security.

IT / OT Integration

Interaction with sensors, actuators, smart devices and field protocols is one important aspect of integration, typically addressed with I/O centric IoT Gateways (systems or integrated CPU boards) that perform the communication, data normalisation and basic business logic processing at this level. With data intensive and time-sensitive applications there comes a need to economically compute these huge amounts of data locally, at the very edge. Advanced analytics and AI technology needs to be deployed on rugged, application optimised edge computing platforms. This results not only in a steadily increasing demand for edge computing that ranges from very powerful High Performance Edge Computers and Edge Servers to IoT Gateways, (with and without hardware acceleration for the different applications), but also scaling, dev-ops optimised, seamlessly integrated solutions, from the IT cloud / datacenter to the OT compute edge.

It is important to note, that in many situations, especially where safety and other critical aspects (for example on the process control side), play an important role, the IT / OT integration is happening in steps, in non-intrusive ways.

What Eurotech brings to the Ecosystem - Edge Computing Platforms & Open IoT Stack

Eurotech, is a leading provider of rugged and industrial-grade embedded boards and systems, Edge computing platforms and Internet of Things (IoT) enablement solutions, deeply rooted in an operational technologies world.

Edge computing platform

Eurotech`s rugged, computer systems are fan-less and sealed compute platforms designed for harsh environments and demanding applications as diverse as industrial, energy and transportation, including autonomous vehicles, manufacturing, collaborative robots, security & surveillance and railways.

These highly reliable systems, regardless whether edge computing systems, IoT gateway products or the platforms built on Eurotech's HPC technology are passively or warm water cooled and come with a wide range of CPU, hardware acceleration (GPUs & AI), I/O, communication, GPS and storage options to address different edge computing needs.


Open IoT Stack

Eurotech Edge computing solutions, are offered in combination with Eurotech's IoT Edge Middleware ESF (Everyware Software Framework), a feature rich IoT Edge Framework that scales from embedded Linux devices to powerful Edge servers, where it runs in containers.

ESF provides flexible device twin modelling over the leading field bus protocols across multiple vertical industries. Edge developers can leverage the rich IoT middleware functionality using powerful APIs, deploy full-fledge application running natively or use ESF Wires to visually compose data pipelines from their Edge devices. Everyware Cloud complements ESF on the Datacenter / Cloud side and provides the features to manage data, IoT gateway life cycle and integrate with the enterprise IT.
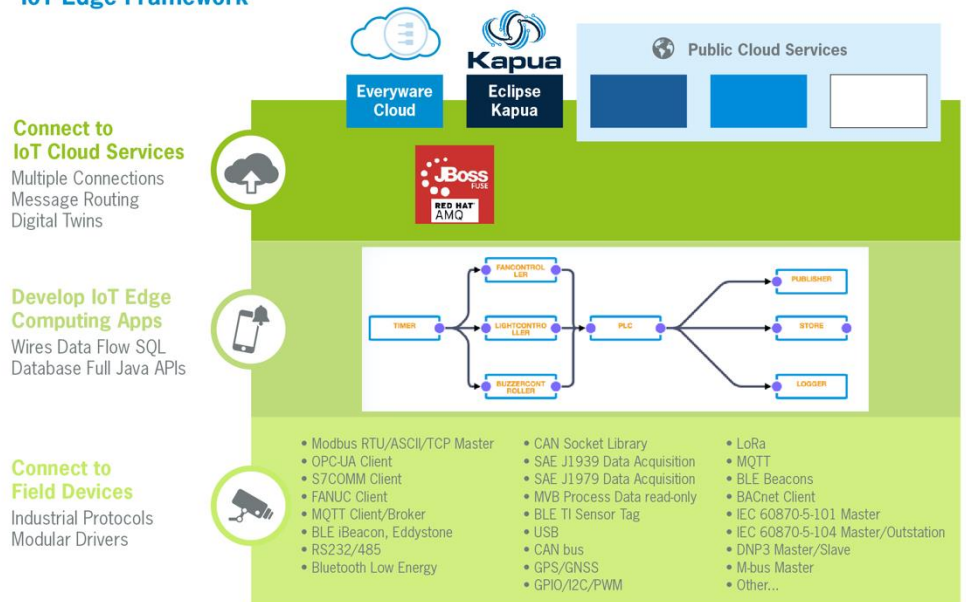
Eurotech's Edge Computing - Vertical and Application Optimised

Eurotech`s focus is on industries with typically valuable assets in the field, developed to support the specific value proposition of the companies using & deploying them, requiring long product life support, dependable partners and solutions that are application optimised.

- Industry 4.0,
- Industrial Automation and Supply Chain Management,
- Real-time Equipment Monitoring and Diagnostics

- Public Transport
- Rolling Stock & Railway Management
- Intelligent Mobility & Autonomous Vehicles
- Construction Macines & Mining
- Smart & Precision Farming

- Smart Grid and Power Distribution,
- Power Generation,
- Energy Management,
- Water Management,
- Intelligent Buildings,
- Waste Management

- Remote Device Management & Diagnostic,
- Data Analysis and Monitoring,
- Connected Healthcare,
- Pharmaceutical Production,
- Life Sciences

- Defense and Aerospace applications,
- First responders,
- Commercial Off the Shelf (COTS) products that meet Size, Weight and Power (SWaP) requirements

The learnings from our nearly 3 decades of working in these industries has shaped our software driven approach to IT and OT integration and forms the very foundation for how IBM and Eurotech are collaborating to enable the next wave of software centric digital transformation.

Core Elements of the Announcement

The combined edge computing solutions from IBM and Eurotech will enable businesses to collect and analyse data in real time, thus gaining meaningful insights into their day to day operations.

The rugged (and where required high-performance) hardware from Eurotech will help clients extend compute and analytical capabilities to rough and demanding environments, addressing the needs of various vertical markets including industrial (manufacturing, energy & utilities) to mobile solutions (transportation, construction, agriculture and rolling stock). Cloud Pak for Data deployed leveraging IBM's Edge Application Manager, enables AI-supported Business Decisions in the Field, becoming a seamless extension to the enterprise IT infrastructure.

Furthermore, the combination of Eurotech's Everyware Software Framework (ESF) with IBM's Edge Application Manager enabled on Eurotech devices, opens and simplifies direct access to IoT data for Data Scientists and DevOps teams. To ease the development on edge devices, ESF provides flexible device twin modelling over the leading field bus protocols across multiple vertical industries.

"Applications deployed with IBM's Edge Application Manager enabled on Eurotech devices leveraging Eurotech's Everyware Software Framework (ESF) opens access to IoT data for Data Scientists and DevOps teams, allowing them to more efficiently build, deploy and manage AI enabled edge applications at scale." Marco Carrer, CTO Eurotech

This will make enterprise operations easier by leveraging the recommendations and actions suggested by AI & analytics at the edge. Better business outcomes can be achieved with a reduced latency combined with state-of-art data security, resiliency and uninterrupted productivity.