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► How Industry 4.0 Is Moving to the Edge



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IoT 4.0 at the Edge:

A watchword of business intelligence nowadays, the Internet of Things (IoT) 4.0 offers nothing less than to entirely digitize your company's operations. IoT data-collection devices are already ubiquitous in the manufacturing world, and are projected by Business Insider to reach over 5 billion by 2020.

The Internet of Things 4.0 combines with smart sensors to automatically gather your data at distributed points, transmitting critical business intelligence including analytics and diagnostics. All this data and decision-making is rapidly becoming decentralized, making businesses more agile and able to make decisions remotely. It all translates to more efficient processes, improved security, and lower operational costs.

Industry 4.0 at the Edge

However, to handle all this big data and to successfully implement IoT 4.0, industrial and IT businesses will need extremely short latency times for effective M2M communication. That's where **Edge computing** delivers the speed you need. The move toward edge computing is driven by the ubiquity of mobile devices, the lower cost of computers, and the massive number of online devices comprising the Internet of Things.

The Edge is nothing new--IT professionals and plant managers have always deployed computers in distributed locations. Edge computing relegates data control from your central network to the periphery (or 'edge') of the internet where your smart devices, wireless sensors and other Internet-enabled devices are located. Using localized computing, Edge deployments store all this big data to reduce your cloud dependence.

For example, Edge sites manage your smartgrid, i.e. your energy distribution, grid services, and components at a local level, providing your high-speed internet and television. In fact, Edge data centers support 75% of all local internet usage. Municipal utilities including water and power also utilize the Edge, while electronic tolling is another common example (E-ZPass, or automated license-plate readers).





Why Move to the Edge?

While the Internet of Things enables you to centralize control over the systems that run your plant processes or IT infrastructure, it needs to approach real-time speeds. Naturally, with all its smart devices and sensors, IoT 4.0 is already starting to heavily depend on Edge deployments. Edge computing supports the IoT world by enabling more efficient communication and bringing the network closer to the data to reduce latency.

In many business areas, the datacenter has been replaced with a cloud datacenter which in turn has been replaced with a 'fog' datacenter. The fog offers specific cloud services for data storage, while some information is also collected/sent at the local level as with Edge computing. An edge deployment is a flexible physical deployment (often with less than ten footprints), so you can convert any building space into a server room (no raised floor required, etc.).

With the deployment of IoT, edge computing speeds up the process of collecting data from smart sensors distributed across the factory floor or remote installation. Critical data remains local, reducing security risks. If your information network model currently houses your major processing and storage operations at a home data center, consider moving to the edge.

But HOW, exactly?

Not every IT staffer or factory manager has the free choice of where to build, the power to modify servers, or the staff to design a datacenter from scratch. Consequently, Edge deployments are located on oil rigs, in hazardous plant areas, on cruise ships--just about anywhere.

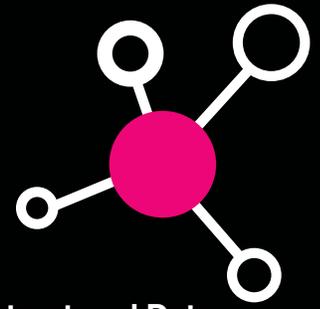


Bringing manufacturing and data transfer together at the heart of your business.



Infrastructure: Edge and Industry 4.0

As systems and sensors produce terrabytes of data, manufacturers will have to reconsider how they manage information to run their operations.



Unstructured Data
Explodes 100x
every 10 years



\$56T

IoT spending
by 2021

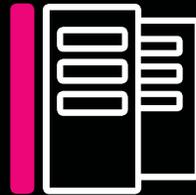


40 ZB
in 2020

By 2020 the Digital
Universe will be
40 Zettabytes,
2X over 2012



20 ZB
in 2012



2.8M

Edge data
centers by 2020



50B

IoT devices by 2020



Where Do IoT and the Edge Meet?

When it comes to data, you're probably like everyone else--you want it now, you want it local, and most importantly you want to be able to apply it. Edge computing enables businesses to keep all that big data at a more local level so they can analyze it and react to it much more rapidly.

With the Edge, you can support the Internet of Things at the exact points you need, enabling all these internet-connected, online products and services. Additionally, Edge monitoring and security solutions will allow for IT managers to continually monitor datacenter conditions, all from a centralized position.

As important as the Edge is, even more so is its implementation. The Edge and the IoT are a closed loop supporting each other. However, deploying edge computing for IoT devices can be a complex task. Just as with traditional IT footprints, physical Edge deployments require their own diverse considerations, precautions, and equipment.

Prioritize for your specific Edge deployment. For example, PUE (Power Usage Efficiency) is a very important performance metric for both traditional and Edge datacenters. However, PUE is not critical for modular datacenter applications which don't occupy a traditional datacenter space, but you'll still need to have efficient cooling and power distribution solutions.

All of these considerations will require a unique awareness from IT staff and plant managers, so it will help to have an initial appreciation of the complexities. When planning to move your data to the Edge, security and stability are the most critical considerations. Of course, edge deployments must still support all your traditional infrastructure and hardware. Your own unique needs may include one or more of the following features:

- Flexibility
- Security
- Complexity
- Scalability
- Modularity
- Expandability
- Portability

So how can you navigate all these challenges to realize the business benefits? How do you 'Change for the Better'?

Make a Change for the Better, With Rittal



Rack:
Enclosures for any configuration



Cooling:
Closed loop and in-row cooling solutions



Monitoring & Security:
CMC III remote monitoring solution



Power:
UPS Power solutions

Rittal Takes the Industrial Internet of Things Beyond the Borders of Possibility

IT and Industrial Converge at the Edge of the Network

From subway tunnels to cruise ships to the manufacturing floor, Edge network computing is enabling the Internet of Things and revolutionizing the speed of control and data analysis. Information from sensors, scanners, tags and other devices cascades without latency into edge-focused servers. Mission-critical decisions are implemented, saving time, resources and energy.

IIoT: Where IT and industrial meet



Edge Computing

Mission-critical data is close to the gateway. High density computing with a small footprint. Data analysis from the floor in near-real time.



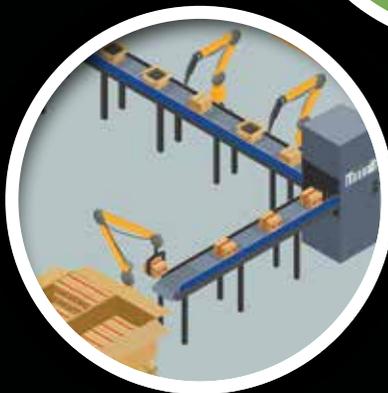
Self-Sufficient Transportation

From self-driving cars and commercial trucks to subway cars, transportation needs to be connected in real time to GPS satellites, control centers and logistic operations.



Interconnected Energy

Everything from oil platforms and pipelines to wind turbines and solar panels provide instant analysis of performance and uptime from the edge to the cloud to centralized operations.



Smart Manufacturing

Sensors and scanners provide real-time intelligence and analytics of machinery and inventory to guarantee optimal performance of equipment and facilities.

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or contact Rittal Data Center Sales at 847-240-4630 or datacentersales@rittal.us.

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Turn to Rittal

Rittal can help manufacturers extend their IT infrastructure into industrial environments. As IT enclosures, climate control and rack systems move into environments with fluctuating temperatures, air-driven contaminants and small footprints, Rittal NEMA-rated, turnkey solutions reduce deployment time, deliver scalability, and improve energy efficiency.

Contact Rittal and move your business to the Edge so it can compete at the speed of Industry 4.0.

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