Industrial Infrastructure: Laying the Foundation for Industry 4.0

The First Step Toward Unlocking New Business Benefits

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The transition to Industry 4.0 is well under way, and its emerging technologies like machine learning, edge compute, and robotics are rapidly changing the current state of manufacturing. Manufacturers that have been able to implement these new technologies successfully are seeing major business benefits, including reduced costs, improved product quality, increased safety, and optimized throughput.

However, before manufacturers can reap the rewards that come with implementing new Industry 4.0 technologies, they first need to ensure that the foundational infrastructure that can support these new technologies is in place. As it stands, many facilities currently lack the appropriate industrial infrastructure needed to support Industry 4.0 initiatives. In fact, over half of manufacturers experience difficulty in deploying and integrating digital technologies.

The IT professionals tasked with overseeing many of these initiatives are being faced with new job responsibilities, stakeholders, and challenges. As manufacturing becomes more seamlessly integrated into the enterprise, IT and Operational Technology (OT) job responsibilities are becoming more closely aligned. Moving forward, building out new partnerships between these areas will be vital for the success of Industry 4.0 initiatives.

Connection can help address the new challenges faced by IT and OT professionals, while also working to establish robust and secure industrial infrastructure within factory and warehouse spaces. From the first planning meeting to implementation and oversight, Connection can ensure that manufacturing facilities are prepared for a successful industrial transformation.

Industry 4.0 Is Already Reaping Rewards

In recent years, businesses have been rapidly accelerating their investments in Industry 4.0 technologies. Currently, 84% of business leaders are pursuing or evaluating smart factory initiatives.

Business leaders that may have once been skeptical of Industry 4.0 can now see the ROI that these technologies are bringing to manufacturing spaces. Leaders that have invested in these technologies are seeing a 20.4% increase in revenue from their non-digital competitors over a four-year span.

As a result, business leaders are looking to IT professionals to carry out the implementation of these new technology initiatives.

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Industry 4.0 Creates New Stakeholder Demands

The merger of OT and IT domains creates a new set of stakeholder needs to address. This includes challenges across IT, Production, and Maintenance teams.

IT Challenges

One issue IT professionals currently face in the manufacturing sector is a proliferation of endpoints and networks that are not fully managed. While these infrastructure elements are initially created by production teams, the IT team typically shoulders the burden of maintaining uptime, ensuring security, and controlling costs.

Production Challenges

Production is tasked with maximizing uptime, which can be difficult with aging infrastructure and inconsistency across facilities.

Additionally, production workers have a limited ability to integrate data across silos, plants, and teams. This lack of standardization between OT and IT, along with production's lack of resources and skills, impacts their ability to scale Industry 4.0 initiatives.

Maintenance Challenges

Maintenance is accountable for facility and machine maintenance, managing the physical security, building controls, and safety across multiple departments.

Integrating building management, security, and other systems with the needs of Production, Warehouse, and R&D departments can be a challenge. As solutions and systems blend across all of these departments, it can be difficult to stay up to speed with current processes.

Integrating IT and OT

One challenge that remains consistent across IT, Production, and Maintenance is a lack of integration between the departments. New partnerships between these job functions need to be established for organizations to maximize their Industry 4.0 initiatives. Connection can help address the key challenges that each team faces, and develop solutions to meet various stakeholder needs.

Build Industry 4.0 on a Firm Foundation

Connection works with manufacturers to ensure that they have reliable power sourcing, modern and secure networks, appropriate cybersecurity protocols, and an established backup and disaster recovery plan. Additionally, Connection can assist organizations with an efficient and secure migration to the cloud and/or the edge.

Protect Operations with Reliable Power

Power outages in the manufacturing industry can be catastrophic to an organization. Not only do these failures lead to decreased productivity, but every minute of downtime can cost customers as well. Unfortunately, these kinds of failures are not uncommon. 31% of organizations experienced downtime due to power, network, or other infrastructure failures.

Connection can improve power reliability to meet your organization's specific needs. Through uninterruptible power supply (UPS), stand-by generators, Power over Ethernet (PoE) technology, and managed services, we can ensure your manufacturing spaces remain reliably powered.

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To resume operations as quickly as possible in the event of a power outage, Connection can help select and install UPS and stand-by generators. These machines are vital to maintaining or restoring power to facilities or mission-critical devices in the event of a power disruption.

Connection can also use PoE technology to improve power reliability. PoE uses an ethernet cable to carry both data and electrical power to devices, instead of having separate cables for each. PoE power comes from a central source rather than a collection of power outlets, allowing for straightforward power backup via the network.

Connection's Managed Power Services assist IT departments with the daily maintenance that is required to keep manufacturing spaces up and running, enabling staff to focus on other initiatives. Through our power partners, we can monitor power backup hardware, proactively correct issues, and ensure power solutions are ready when you need them.

Updating Networks Is a Top Priority

More than 36.8 billion Industrial Internet of Things (IIoT)-connected devices will be in use by 2025, a 107% increase since 2020. With the rapidly increasing number of connected devices, the demand on a network's bandwidth, agility, and speed within manufacturing spaces has never been higher.

IT professionals understand that a fast, secure, and updated network is necessary to support increasing volumes of IIoT devices and data flows, so they are making it a top priority. In fact, 44% of enterprise IT professionals agreed that network upgrades were their number one priority.

Connection can assist IT professionals to improve the speed and reliability of networks in a variety of ways. We provide both wired and wireless network connections to better integrate OT and IT functions, Software Defined Wide Area Network (SD-WAN) to connect the many locations of an enterprise together (including offices, factories, and data centers), and Cellular Backhaul to support increasing network connectivity alternatives.

To ensure security within your networks, Connection offers a number of different services that can be tailored to your organization's specific needs. These include installing firewalls, Deep Packet Inspection (DPI), Intrusion Detection System (IDS) and offering Industrial Protocol Support.

Connection can assist with implementing traditional firewalls to protect an organization's data and boost passive cybersecurity. Additionally, Connection can aid with implementing DPI, which analyzes the full content of a data packet before making an informed decision on whether or not to allow it through. DPI can identify and block threats like malware, while preventing data leaks and other security failures.

Connection also recommends intrusion detection systems (IDS) to monitor a network for suspicious activity and report it before malicious actors damage your network's infrastructure.

For a more complete view of our Network Transformation Services, visit the following links:

- Network Assessment and Design helps you better understand your current capabilities and future opportunities.
- Network Optimization builds on network assessment findings to expand your capabilities and reduce operational costs.
- Network Infrastructure Managed Services implements day-to-day management of and protection of your network.

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Secure Legacy and IIoT Devices

The rapid increase in the number of connected IIoT technologies presents considerable security risks. IIoT devices, their networks, their data transfers to and from the cloud, and their interfaces with end users all need reinforcement to ensure network integrity.

Legacy technology is another threat to the security of industrial infrastructure. With the average factory being 25 years old, and machinery that averages nine years old, OT systems running on aging software and machinery can put manufacturers at risk for costly operational failures.

With these increased security risks, manufacturing has been experiencing a rapidly increasing number of cyberattacks. A recent report from NTT found a 300% increase in manufacturing attacks worldwide this past year alone. Security and data breaches within industrial spaces can lead to significant losses of time and money, sometimes even leading to entire manufacturing facilities being shut down while systems are repaired and restored.

Connection can help you manage these security risks. First, we'll determine how best to address the vulnerabilities within your network by conducting an assessment of your organization's connected devices. Then, we'll devise a plan to secure the risks associated at each endpoint.

Next, legacy equipment can be secured with modern protocols converters and end-of-life support that allows manufacturers to securely connect to the enterprise. This eliminates the need for all-or-nothing solutions that either isolate or upgrade outdated equipment, allowing companies to continue using machinery with long lifecycles.

Starting at the OT edge and all the way through to enterprise management infrastructure, data centers, and into the cloud, Connection can ensure your company's digital workspace is secure.

Backup and Disaster Recovery

Since the risks associated with industrial infrastructure can never be completely eliminated, it's crucial to have a backup and recovery strategy in place to maintain manufacturing processes when a disaster does inevitably strike. Whether it's a power or network failure, cybersecurity breach, or another event, mission-critical functions must be immediately restored.

Connection can work with you to help devise an Industrial Business Continuity and Disaster Recovery Plan to maintain operations within your manufacturing space in case of an emergency.

Connection can also scan for vulnerabilities to help decrease the risk level of a disaster occurring in the first place, and we can conduct assessments on offline backups to minimize impacts if a disaster does occur.

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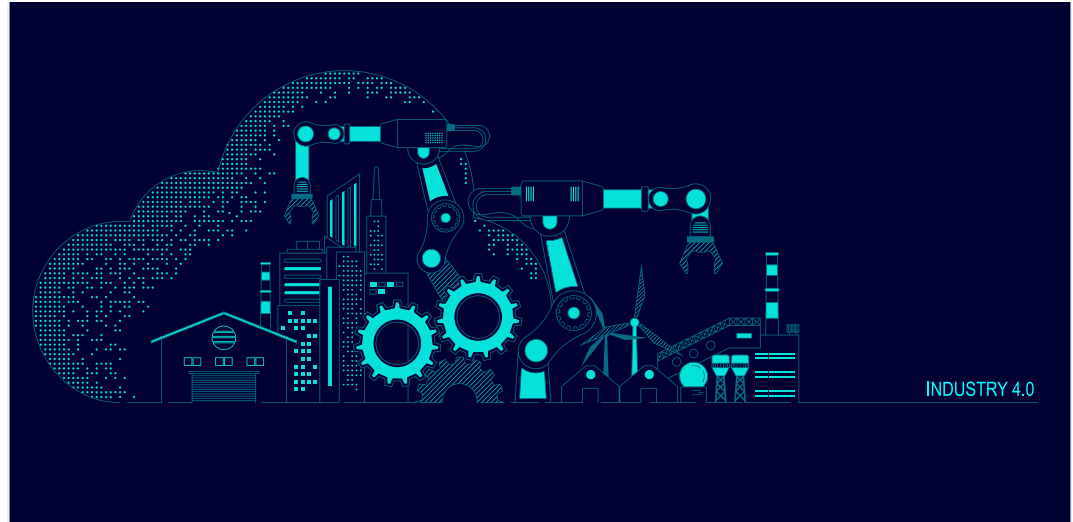
Only 20% of cloud migrations are actually complete.

Secure, Real-Time Cloud Environments

Cloud services allow manufacturers of all sizes to streamline complex production processes, enhance collaboration, and increase flexibility within operations. Because of the significant business benefits that the cloud offers, it's no surprise that the overwhelming majority of enterprises have begun their migration to the cloud.

However, only 20% of cloud migrations are actually complete. This demonstrates just how complex and time-consuming a move to the cloud can be for an organization. Additionally, poorly executed migrations can lead to disruptive and expensive repair efforts later.

Connection can conduct customized Cloud Assessments to identify which of your applications and workloads are cloud-ready, which ones need more time, and which ones should stay on-premises. We also offer Cloud Managed Services to help you make the most of your cloud assets with increased performance and cost-effectiveness.

Connection also offers many alternative "as a Service" models, to ensure your cloud strategy is managed the way your organization requires. These services include:

• **Backend as a Service (BaaS)** to automatically manage the backend of cloud infrastructure

• **Disaster Recovery as a Service (DRaaS**) to backup data and IT infrastructure into the cloud, allowing organizations access and functionality after a disaster

• **Security as a Service (SECaaS)** to manage cloud security

• **Unified Communications as a Service (UCaaS)** to deliver all unified communications (such as instant messaging and web conferencing) through the cloud

• **Co-Location services** to offer alternatives to on-premises tech estates

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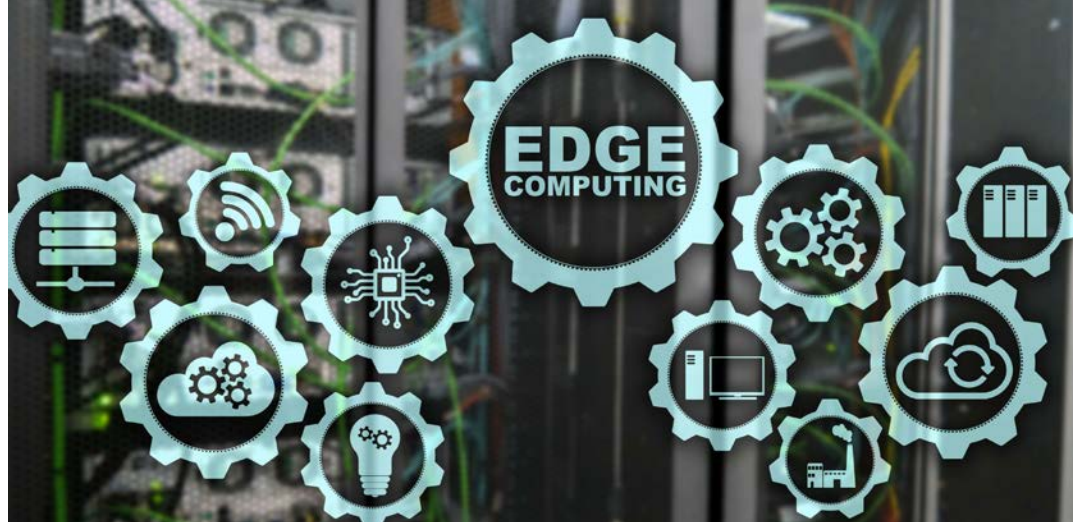
Low-Latency Edge Computing

Edge computing provides manufacturers with computing power to handle extremely time-sensitive data analysis and decision-making. Whether it's predictive analytics, improved maintenance and monitoring of manufacturing operations, or simply local data analysis, edge computing provides significant advantages.

First, an edge computing implementation eliminates some of the network bandwidth and latency concerns associated with the remote processing of huge quantities of manufacturing data. Secondly, edge computing can support predictive maintenance algorithms. Finally, edge computing can help a manufacturing business make quick decisions about a local production environment to increase overall productivity.

Connection can help manufacturers design, implement, and maintain edge-computing environments. Additionally, Connection can ensure these environments are secure from the edge to the data center, whether these data centers are owned or accessed through a third party relationship.

Accelerate Your Move Toward Industry 4.0

At Connection, our manufacturing specialists come from the same real-world settings you work in every day. After working full-time as IT leaders in manufacturing companies, we thoroughly understand the pressures and risks you face first-hand.

This specialized experience helps us provide the insight you need to achieve a productive and safe transformation of your OT and IT assets. By guiding you through all of the necessary steps to building a solid and secure industrial infrastructure, we can ensure that your manufacturing spaces are fully prepared for a move to Industry 4.0.

Contact us today to learn how to get started.

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