Efficiency unleashed: digital transformation in operations delivered on a global scale

Foreword from Cisco

Technology is one of the most effective tools industrial organisations have to achieve the operational efficiency so vital to thriving in today's tough economic environment. However, using this tool effectively without costly missteps takes expertise that spans a wide range of specialisms.

Over three decades ago, BT and Cisco forged a partnership dedicated to delivering this expertise and the solutions that stem from it. As global organisations with complementary skills and capabilities, we're better together; we deliver better results, and have the track record to prove it.

We understand and share your belief that any investment you make in technology must work hard and make a long-lasting difference to your performance. Therefore, our focus never wavers from your desired outcomes and, just as we adapt and change within our partnership to provide market-leading services, we create solutions that can adapt and change to support your evolving ambitions.

Your big picture is our starting point. From there we build out, drawing on our local presence with a global reach into 180 regions, and our innovative, industry-changing technologies to optimise your industrial efficiency.

Bring the vision, and we'll deliver the capabilities to get you there.

This whitepaper is designed to give you a sense of how we'll achieve this. Our partnership team is standing by to answer any subsequent questions you may have about your journey to optimisation.

David O'Hara
Director of Industrial IoT
Routes-to-Market for EMEAR, Cisco
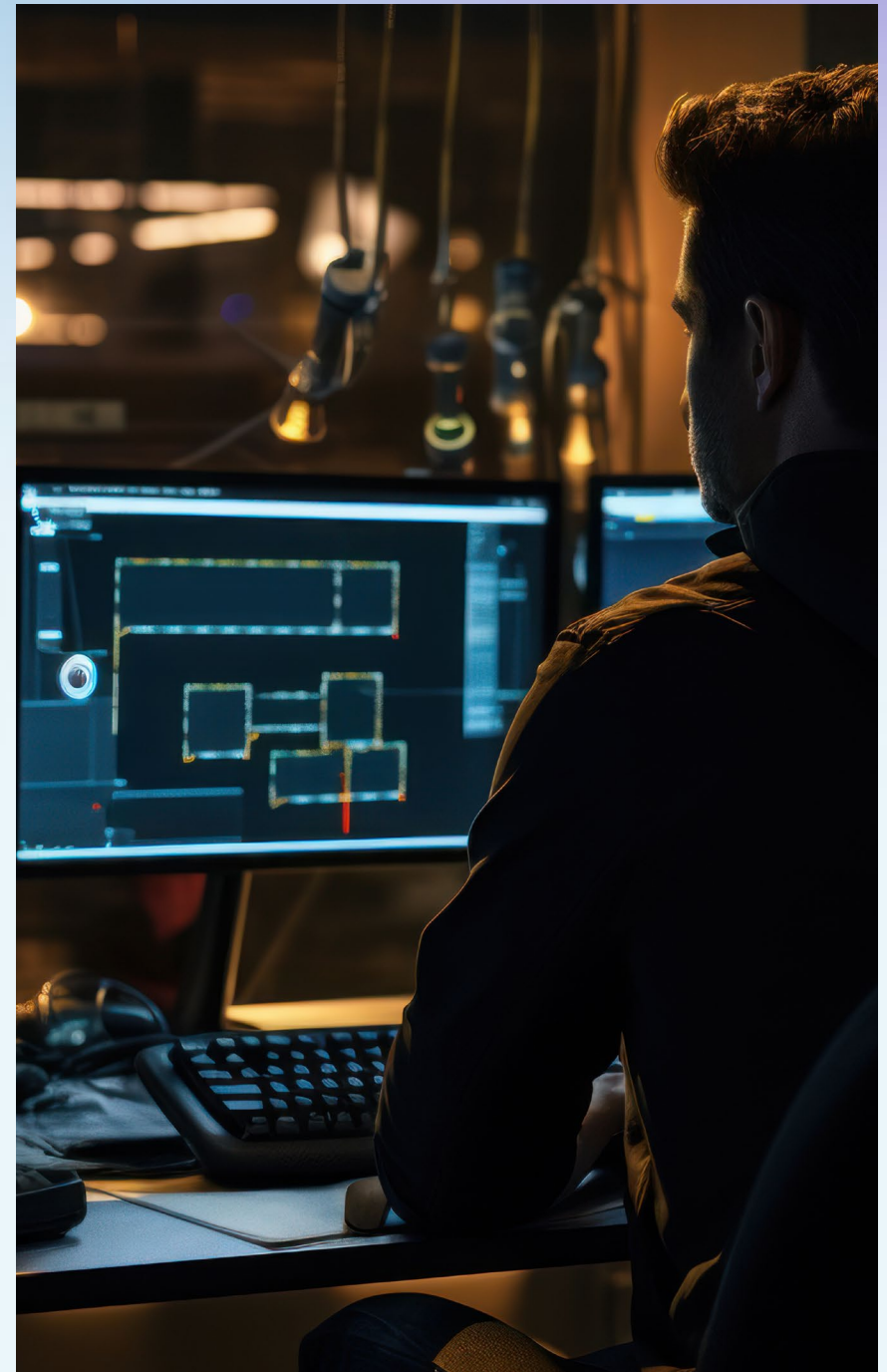
The industrial optimisation question

The fact that digitalising production operations and logistics will lead to more efficiency, higher quality, and improved output isn't headline news. However, what's less talked about – and is probably more helpful than a heavy focus on the benefits of digitalisation – is understanding and guidance on how to reach that point. How do organisations achieve their optimisation ambitions?

Clear drivers, but a less clear roadmap

Our industrial customers with globally distributed sets of plants are clear that their goal is to achieve operational excellence to reduce unplanned downtime, equipment purchasing and material flow. At a high level, they want:

A forward leap in process optimisation	Greater protection of Health, Safety and Environment (HSE)	Support in meeting Environmental, Social and Governance (ESG) commitments	Increased supply chain efficiency
They want to use live performance monitoring to make the best use of resources during production, resulting in improved, Overall Equipment Effectiveness (OEE) and Takt times. They accept that a consistent data environment will be essential to supporting the Artificial Intelligence (AI) adoption that'll be so critical to identifying and implementing improvements.	They want to continually improve the safety of employees and the industrial workplace by introducing increased monitoring / warning systems and using automation to remove humans from risky spaces. Environmental / cost consciousness drives careful use of both natural and energy resources, without impacting efficiency or productivity.	They want specific capabilities to manage the risks and opportunities associated with the environmental and social forces organisations face, such as climate change. In this context, they want clear pathways to build sustainability into any industrial infrastructure changes.	They want greater visibility to drive increased predictability and smooth right-component, right-destination, right-time operations. The aim is a supply chain that has real-time awareness and the intelligence to spot, react to and avoid disruptions.

Industrial organisations know these outcomes can't be achieved simply by adding point solutions here and there into their operating environment but, at the same time, the case for broader infrastructure changes is also somewhat unclear. How can they bridge this gap?

Understand the industrial optimisation challenges

Every team can agree that optimising production and warehousing efficiency, quality and output would drive the organisation forward. The challenge lies in finding the best way to reach that point, and it begins with acknowledging the current barriers, many of which link together or overlap, adding to the complexity.

Our experience from customer projects over a long period distils into four areas that are holding global companies back from optimisation.

1. Collecting and transporting the right data at the right scale

Optimising a machine requires frequent data sampling that, multiplied by all the machines in the environment, generates huge amounts of data to move. Organisations are finding that their infrastructure isn't capable of collecting and analysing (or transporting the data to the cloud for analysis) without adversely impacting edge and global infrastructures – namely the local area network (LAN), WAN, security and cloud.

2. Securing OT data, even if it's not merging with IT

Anything that connects to Industrial Automation and Control Systems (IACS) is a potential threat to security, and this is a hot issue. Organisations are struggling to instantly detect and identify connections to their OT LAN or wireless network, even though this is increasingly part of compulsory security audits. For organisations that are bringing Operational Technology (OT) and IT together, security is a nuanced challenge that has to follow and protect data from its generation through to analysis. It's about securing more than just one, all-encompassing channel between OT and IT – it needs multi-faceted defences of the assets that produce the data, the data itself as it travels, and also as it's processed – either locally or in the cloud.

3. Measuring and combining data into actionable insight

Being able to forecast and adapt to disruptions depends upon continually measuring the status and performance of all elements of the supply chain, both internally and externally. This near real-time data feed involves a detailed network of sensors, data exchange and analysis that can only be achieved through a broad digitalisation roadmap, rather than isolated 'within the factory' changes – and organisations can be unsure how to proceed.

4. Scaling efficiency globally

Standardisation is the key to scaling, which means first identifying the best blueprint for an optimised operation, and then orchestrating it at a global level. This involves navigating through different suppliers' procedures, processes and interfaces – a significant task when you consider that scaling up across ten different countries typically includes interacting with several hundred different suppliers. Organisations often face a host of small contracts without any real power of negotiation on a global scale, and a complex mix of different sets of regulations, environmental influences and technological foundations.

Three steps to achieving new levels of efficiency

You can't optimise what you can't measure - so collecting, sharing, moving and analysing data with the right frequency, speed and security is essential to increasing efficiency. The process of using the data path to define infrastructure, connectivity and overlaid technologies generally follows three steps.

1. Build a resilient network base

The initial focus is establishing foundations capable of supporting the technologies of today and into the future. This review-remediate-refresh stage is critical to making sure that subsequent developments can happen smoothly, effectively and securely. Your network should have:

- the ability to collect and process data locally with edge computing, as well as sharing it securely across the organisation and wider ecosystem

- architecture and design to support connected 'things' and big data flows

- robust low latency connectivity architecture between OT and IT, plant networks and clouds, and within the supplier ecosystem - this could include satellite services for remote locations, 5G private networks within plants or private connectivity for critical data traveling to clouds

- security built in by design to secure data in travel and at rest, no matter what environments it moves through

- easy templating and scaling across global sites, regardless of differences in regulation, environmental influences and technological foundations

- in-built adaptability and support for next-generation systems.

2. Add the technologies that transform operations

With robust foundations in place, this second phase sees the integration of technologies specifically selected and architected to meet your current goals, with potential built in to evolve to meet future goals, too. The likely focus will be on:

- sensor networks to feed IoT applications and computer vision

- AI and machine learning capabilities to raise your operational excellence to the next level, particularly in terms of sustainability, health and safety, efficiency and quality

- Virtual Reality and Augmented Reality technologies.

3. Scale globally to reap the benefits

Once you have an efficient and effective technological environment up and running, you'll be in a position to expand that out across your global operations with:

- centralised monitoring and orchestration to deliver control and enhanced security

- secure and auditable infrastructure that can easily comply with local regulations

- the ability to grow without any of the limitations you currently experience.

A powerful partnership for operational optimisation

We began this paper with the question: 'How do organisations achieve their optimisation ambitions?', and a significant part of the answer comes from drawing on the tried-and-tested expertise of solution providers. We've taken this approach one step further, combining the power of BT and Cisco into a strong partnership that delivers best-in-class solutions in every area you need.

These are our core credentials in industrial optimisation:

Heritage and experience in infrastructure and connectivity

We've worked in partnership with Cisco for three decades now, designing, implementing and supporting customer networks in 180 countries and territories. We have a deep understanding of how critical these deployments are to customers' operational environments such as manufacturing and logistics. And we have the experience to make sure that you can connect, collect and process the data and assets that will drive better operational insights and outcomes for your business in a secure and predictable way.

Easy access to globally recognised design expertise

Our experts will start by working through your requirements in depth. This will include exploring the business outcomes you want to achieve, the devices and assets you need to connect, the necessary data flows, and your critical requirements around availability and security. Only then will we draw on our extensive portfolio of validated designs to create the secure, resilient connectivity you're looking for.

Secure network connectivity to protect operational efficiency

To keep your data private and your operational connectivity uninterrupted, we'll incorporate a range of Cisco security capabilities throughout your solution. For example, Cisco's Industrial Networks proposition has rugged switches, routers and wireless equipment to support your industrial control protocols while meeting the toughest industry certifications.

Effective support for the alignment of OT and IT

The combination of Cisco's connectivity management capabilities and our deep networking service expertise, experience and footprint means we can deliver an end-to-end network service. This runs from the device in your manufacturing plant through to your cloud-based data platform, and brings together your OT and IT networks into an efficient whole.

All the scale and reach you need

Both independently and together, we have a strong track record of supporting organisations to operate globally and at scale, so we naturally build your potential requirements for this into our solutions from the very start. Plus, regardless of the scope of your plans, our deployment capabilities and experience mean that we'll deploy your technology choices to meet your programme goals and timescales.

Say 'yes' to operational excellence

We're ready to create a bespoke route to help your organisation use digitalisation to achieve greater efficiency, higher quality and improved output across your operations.

Get in touch with your account manager to scope out your operational excellence pathway and say 'yes' to a brighter future.