

The Sharpest Edge



Critical Steps in Edge Computing

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 Introduction

Businesses are fighting for competitive advantage through the smart use of *data*, the delivery of excellent *customer service* and the adoption of *new technologies*.

***Your edge computing strategy* can help facilitate all of these if it properly planned and deployed. This guide takes you on that *journey*.**

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Edge computing is set to remain one of the tech ‘buzzwords’ of 2016. The discussion about edge has, to date, been tied closely to the internetofthings; the connected cars, fridges and bins that are not yet impacting the lives of consumers or driving serious revenues for businesses.

However edge has the potential to **impact business in numerous pragmatic and immediate ways**. It is already being used by many organisations to deliver competitive advantage by improving the delivery of digital services to a global customer base. There has growing interest in edge of network solutions in recent years, and yet many organisations are still seeking to demystify edge. These businesses want to look beyond the hype and understand if, and how, edge computing can help them solve the business challenges they face today.

“edge has the potential to impact business in numerous pragmatic and immediate ways”

With this in mind, this eBook has been developed to provide insight into why edge computing is important for today’s organisations, how it can help deliver on digital business strategy and the stepping stones required to set up edge of network facilities.

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The Strategic Edge

Most IT leaders want to do more than simply **'keep the lights'** on, but organisational pressures have forced their department to remain reactive, rather than proactively exploring new technologies. Yet today's corporate environment is changing, and as technology innovations are becoming the primary driver of **business innovation**, IT leaders need to show they're adding value. To enable organisations to stay relevant and competitive, IT must operate as a strategic partner, building an infrastructure that enables seamless delivery of the services customers expect, whenever they expect them.

Not just individual businesses but industries as a whole are becoming digitally defined. Innovative services such as Uber, Netflix and Amazon have disrupted the playing field and radically altered the expectations of customers. Today, consumers demonstrate **zero tolerance for outages** or downtime, and are quick to switch vendors if these become an issue. Additionally, in a world where data rules, they demand that the services or products they purchase are more attuned to their needs.

“technology innovations are becoming the primary driver of business innovation”

In this climate businesses must **keep pace with customer demand or die out**. And this is where edge computing can deliver. Edge will help redefine how an organisation can develop its services, deliver them to its customers and then efficiently manage its own operations. Change is coming.

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Understanding Edge

Edge computing is the process of moving computing power **away from the core of the data centre** to the edges of the network, **closer to where customers are based** and digital interactions are taking place. This approach significantly reduces latency, providing multiple benefits to businesses who value digital service delivery.

Indeed, there are numerous reasons for a business to consider an edge computing strategy:

- **SPEED OF DELIVERY** - Edge computing reduces the need to transport information to a core data centre, which can lead to delays in data being received and processed. This latency issue is less than ideal when customer expectations are veering towards realtime service delivery. By placing computing resources at the edge, services such as apps that process payments, display retail catalogues or deliver content can operate in real time.
- **AVAILABILITY** - Edge computing can help businesses boost system resilience. Many organisations operate multiple sites across different countries or cities. When any part of the IT infrastructure fails, the operation of these sites can be compromised with the potential to seriously impact revenue and reputation. By enabling computing resources at the edge it is possible to keep these remote sites functioning irrespective of failings at the core.

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- **STORAGE** - Storage is another area where edge computing can play a role in helping businesses deliver better customer services. At a time when storage volumes, database optimisation and big data interrogation are hot topic, many organisations are struggling to convert technology investments into customer (and business) value. But there are emerging leaders in this space. For example, Netflix's deployment strategy is edge focused and involves hosting archives as close to end users as possible to give them the best quality streaming experience.
- **DATA ANALYTICS** - Edge also enables businesses to speed up data analysis. Data is the lifeblood of many digital businesses, helping them to derive insight into customer behavior and market trends. As organisations grow their use of locationbased services, personalised content, and preemptive marketing, this insight is crucial. However, data is only valuable for as long as it is current. By placing analytics at the edge businesses can derive actionable insight faster, helping them to stay ahead of competitors and customer expectations.

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Getting Started with Edge

The term **'paradigm shift'** is probably used too frequently within the tech world, but in terms of what edge computing will do to enterprise IT, it's not far off. As part of the wider phenomenon of the **Internet of Things** (IoT), technology professionals are starting to worry about how to manage a vastly multiplied fleet of connected devices, each multiplying the data flowing into the business. Edge offers exactly these challenges, and so its delivery will rely on a considered, staged approach.

The starting point for any edge strategy should involve an understanding of **what the business needs to deliver to its customers**, and therefore what IT needs to deliver to its customers lines of business. Set the expectation early that this process will not be as simple as an email exchange or an hour in a meeting room. Extensive **inter-departmental collaboration** is absolutely essential to ensure that technology delivery aligns to business outcomes.

- **IT LEADERSHIP** - There are likely to be conflicting demands between departments. **Lines of business** will argue their respective priorities, and IT itself will have entrenched beliefs about what is possible. The company's **Board** is also likely to have a broader strategic vision for what the business needs to achieve. But within that challenge lies a significant opportunity for the technology leadership to serve as a wider **consultant into the business**. IT should take on responsibility for translating the technical possibilities of edge computing into tangible and sustainable business outcomes.

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- **UNDERSTAND THE NEED** - Understand the **types of data and transactions** that need to be accounted for in these processing nodes. For example are you serving media to customers in a retail store where there's a need for potentially high bandwidth media, or are you having to crunch significant transactional data to make a **real time** assessment of inventory needs? It might be both. Lines of business are not likely to understand, or give consideration to, the difficulty in delivering a truly secure and resilient edge strategy. Having their buyin to what is feasible and what is not will avoid later misalignment.
- **PRIORITISE** - The criticality of the functions being served at the edge have to be fully explored. Are they 'zero latency' transactions whereby risk and loss are likely to be incurred with any significant delay? Or are they less mission critical? It's highly unlikely that everyone will have their every need accounted for, and this prioritisation process must occur early. It will strongly influence technology strategy, procurement and deployment. Not every business function demands the absolute in responsive technology, and so **IT leaders must be clear** in identifying the practicality, cost and commercial value of each deployment node.

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- **DIVERSE CHALLENGES** - It is important to note that there is **no 'one size fits all'**. Edge computing can consist of anything from installing micro data centres in key locations to adding analytics capabilities via embedded devices or even storage facilities. The unifying factor is the need for remote management, so that IT teams are still able to monitor, analyse and maintain infrastructure, wherever it is located. Additionally, it's worth remembering that **edge computing will not always refer to a physical, on-premise solution**, rather it could well involve a colocation cloud strategy enabling processing power to be deployed closer to remote business locations.

Only once you have mapped out what best practice customer service delivery looks like across core locations can you take the next step to map out the critical infrastructure that is required to enable this type of customer interaction.



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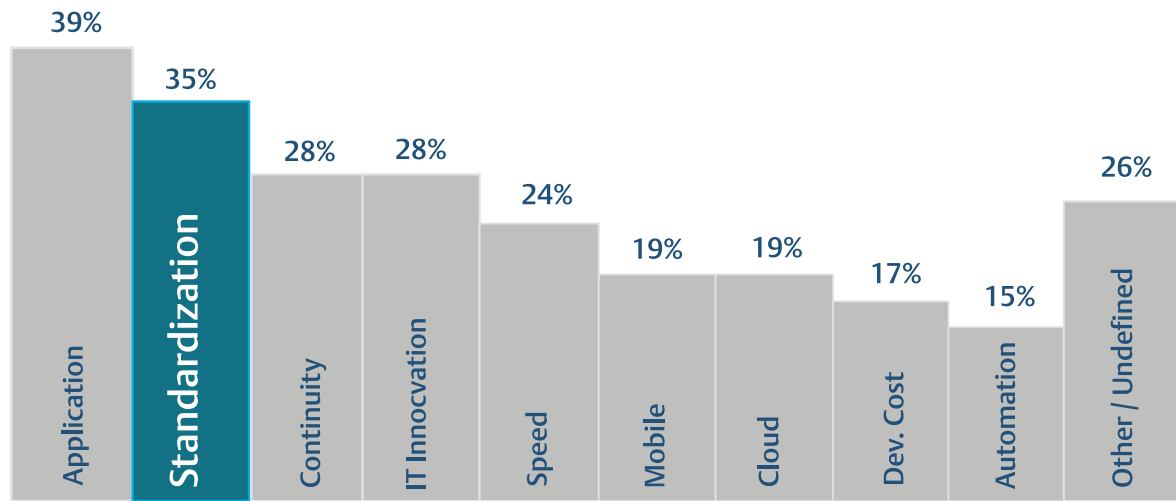
While edge computing offers myriad **benefits**, businesses must also be aware of the **challenges** incumbent in deploying an edge strategy. Again, IT cannot be a passive player as the demands placed upon it will otherwise become too large. There are many facets to consider as you move towards an edge model, but three key elements to consider are:

SIMPLICITY

An edge strategy is **unlikely to be simple**. IT teams will be managing multiple locations which are often using differing hardware and software depending on the function being served. It's essential to scrutinise solutions branded as 'edge' within the market, then to assess internal commitments such SLAs, break/fix processes and remote support. It may even demand a restructuring of the IT team itself (e.g. a greater number of mobile or flexible workers, an increase in overall staffing). Common to many IT teams will be a desire to standardise the solutions that are in use, as it will allow the alignment of SLAs, systems knowledge and vendor support. We recently conducted a survey about what mattered to organisations that are moving to an edge strategy:

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Emerson survey results, n=54

This drive towards simplicity also impacts the edge strategy beyond IT, and reinforces the importance of an **ongoing interdepartmental group** who can align the infrastructure plan to the business plan. The simplest strategy will be the one that allows the business to achieve its goals without imploding the IT team; **if IT is overstretched then edge computing ceases to be a competitive advantage**. In this, IT must take the lead to understand the target outcomes and offer the right solution. Without this leadership, there will always be a risk that expectations cannot be met.

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SECURITY

With computing resources deployed across multiple edge locations, security threats become an important part of the equation. Edge computing security is not a simple equation however, and it is important to bear in mind that there are **two sides to the discussion**. On the one hand, edge may open more entry points to your network increasing security concerns. On the other, having simplistic devices sitting beyond the edge may actually prove to be very low vulnerability and hence an effective way to distribute your compute.

“businesses can no longer rely on protecting the perimeter - they need to be able to protect data and devices wherever they reside”

Getting your edge strategy right will involve a **robust, multi-layered security solution**. IT teams not only need to be able to detect security threats, they must also have the capability to seal off and protect the wider system. Endpoint protection is an important consideration, given that edge computing can increase the volume of embedded devices on the system. Finally, data backup is critical so that business data information can be restored quickly should a data breach occur.

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CORPORATE CULTURE

As with any major technology implementation, the technology itself is not the only factor that needs careful management. Organisations pursuing an edge strategy cannot forget the **cultural changes** that will be required to deploy it effectively. From the Board to the intern, **a shift in corporate thinking** is required. In its own right this encompasses many facets:

- Each individual playing their part in maintaining a secure technology environment.
- Teams making proper use of the data and customer interaction opportunities provided by the technology, so it doesn't become a cash sinkhole.
- Ongoing interdepartmental conversions to ensure the constant refinement of the strategy.
- IT teams staying abreast of their businesses' goals and challenges is critical.
- Be transparent with the successes and failures of the deployment.



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Some IT managers may find edge a difficult concept to work with. In the same way that BYOD has demanded a recalibration of what it is to control corporate assets, so too edge will demand new perspectives on physical proximity and device management. But it need not prove to be a long term headache, as many of the technologies required for edge are already commonplace within their armoury. Where IT pros will have to think hard is in the specific solution selection, and the subsequent deployment and service model. We've selected three areas in which data centre and facilities managers will be able to use their expertise:

RACK MANAGEMENT

Even at the node level, the experience that IT professionals have in managing data center racks, server rack cabinets and enclosure will be invaluable in your edge deployment. Despite being at great distance from the core data centre, **the node will require performance IT and networking equipment.** This will vastly multiply the number of sites with enterprisegrade rack enclosures each containing precision cooling, uninterruptible power, rack PDUs, and wiring management. This demands a **comprehensive infrastructure plan.**

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REMOTE DEVICE MANAGEMENT

When you're multiplying the data centre technologies across your IT estate, you will have to vastly expand your **device management strategy**. With the absence of a dedicated onsite team for 24/7 support, IT teams should expect increased demand for **remote management** coming from all directions.

Having an effective approach to centralised asset management will be invaluable in maintaining your estate. But in terms of **delivering continuous business outcomes, a critical step will be to establish** highly secure remote access and controlled desktop access. These steps can enhance the performance of your node, while reducing the risk of incurring a security breach. Finally, by exploring the potential of alternative service delivery models such as hosted virtual desktops, there is an opportunity to stabilise or even cut costs.



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UPS

Once you have committed to an edge strategy, it's clear that it will become a **part of your business infrastructure** - possibly a critical part. As such **IT and facilities will be held to account** if these operations suffer unplanned downtime at the cost of revenue or reputation. Many such nodes will be reliant on **uninterruptible power supplies (UPS) and power distribution units (PDU)** to enable them to maintain data centrelike performance. Not all nodes will impose the demands of a mission critical data centre, but we expect to see a trend towards nervous lines of business demanding maximum possible resilience. IT must be prepared for this.

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The delivery of an effective edge computing strategy isn't going to happen overnight. As much as it will be a technology challenge, so too it will rely on the contribution of many stakeholders and their teams. The most successful IT leaders will be those who combine a deep understanding of their business demands with an effective approach to translating their data centre experience into the multiple, less dense nodes. Certainly it will be new ground for many. But with this risk comes an enormous reward as IT delivers an increasingly pivotal role within the business.

As you begin these discussions, and progress them through to a plan for your refreshed infrastructure, you will undoubtedly have a lot of questions to ask. We have heard these questions many time before, answered them and helped customers deploy successful edge strategies.

Watch the video on SmartCabinet™
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