

THE INTERNET OF THINGS

Why a more connected world requires hyper-security



EDITOR'S INTRODUCTION

Better connecting data, making more use of that data and improving processes are key aims of retailers as they seek to compete more effectively than ever. Connecting up abilities and devices across their organisation to share information is therefore critical and is the cornerstone of an integrated Internet of Things.

But the opportunity doesn't come without risk. In this ebook, produced in association with our partner security/productivity software and cyber-services company BlackBerry. We look at how a connected network of IoT devices can help to improve business processes, introduce new capability and give a better experience in everything from the store to the supply chain.

We look at its definition and what it can do for retailers. But we also examine the challenges in implementing the Internet of Things – primarily the risk around security. It's a challenge not to be taken lightly since data breaches and their subsequent loss of consumer trust already cost retailers dearly. Add in the connection of multiple devices and the risk increases yet further.

This makes finding the right partner and technology to overcoming security concerns vital. Retailers have to be confident that their more widely connected enterprise environments

are safe from compromise and that they are indeed introducing benefit to the business rather than simply just risk.

We look at retailers who are already making use of the an integrated Internet of Things and at how tier two retailers need to follow suit, working with trusted partners on security implementations if they don't have the skill to do it themselves. ■

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Liz Morrell is an experienced retail and business news and features journalist who has more than 15 years' experience of writing about the retail sector. She loves all things retail but just wishes her "research" (insert shopaholic tendencies here) didn't cost her quite so much.

SPONSOR'S INTRODUCTION

BlackBerry is a trusted security software and services company that provides enterprises and governments with the technology they need to secure the Internet of Things. Based in Waterloo, Ontario, the company is unwavering in its commitment to safety, cybersecurity, and data privacy, and leads in key areas such as artificial intelligence, endpoint security and management, encryption, and embedded systems.

The Internet of Things represents the next great wave in business transformation. BlackBerry is leading the way with a single platform for securing, managing and optimizing how intelligent endpoints are deployed in the enterprise, enabling our customers to stay ahead of the technology curve that will reshape every industry.

BlackBerry Spark Communications Services is the BlackBerry Communications Platform as a Service (CPaaS) solution. It allows you to embed secure communication capabilities into apps and smart devices: easily snap rich chat, voice, video and data transfer into mobile and web apps and smart devices. Flexible APIs connect to the core functionality of your app to create nuanced interactions between business processes, users, machines and IoT devices.

"At BlackBerry we think about security, with privacy as the first

tenet. We're creating technologies that enable machines and humans to interoperate seamlessly and safely," says Shiladitya Sircar, Vice President of Identity and Messaging at BlackBerry.

With end-to-end encryption, digitally signed messages, and guaranteed data delivery, Spark Communications Services is a secure CPaaS solution that's easy to integrate. ■



BlackBerry is an enterprise software and services company focused on securing and managing IoT endpoints. The company does this with BlackBerry Secure, an end-to-end Enterprise of Things platform, comprised of its enterprise communication and collaboration software and safety-certified embedded solutions

WHY IT'S TIME RETAILERS EMBRACE THE INTERNET OF THINGS TO MAXIMISE OPPORTUNITIES

Consumers and retailers alike have realised the benefits of the Internet of Things – a world of connected devices that allows intelligent communication between the internet and devices ranging from smart speakers to wearables to smart household appliances.

But whilst its potential has been recognised on the consumer side there is a bigger opportunity that retailers need to embrace if they are to improve their business processes, make better use of their data and as a result maximise their selling power to customers.

It extends beyond that of the consumer world into the enterprise arena, allowing all connected devices to speak to each other securely within a retailer's own business and supply chain in order to work more effectively together.

The benefits of this are potentially huge. In 2015 McKinsey Global Institute estimated in its Unlocking the Potential of the Internet Of Things report, that IoT could have a total potential economic

impact across industry of up to \$11.1 trillion a year by 2025. Within retail it estimated this figure could be as high as £1.2 trillion, including things such as self-checkout, layout optimisation and smart customer-relationship management.

The same report suggested that interoperability between IoT systems and devices is critical. However, it also suggested that most IoT data remained unused – suggesting that industries could do much more to use data for optimisation and prediction.

Four years on and the chance to make more of data still exists and it's this ability to extend the scope and benefits of the Internet of Things capabilities that makes the concept of a layer of enterprise-grade security for the IoT so exciting, since for retailers it will allow them to better anticipate and react to customer needs.

DEFINING THE INTERNET OF THINGS FOR RETAILERS

The Internet of Things offers huge potential for retailers to transform business processes and enable new

“IT’S ABOUT GETTING THAT ENGAGEMENT WITH THEIR CUSTOMERS AND DRIVING THAT BACK IN TO THE SUPPLY CHAIN SO REALLY DRASTICALLY CHANGING THEIR BUSINESS”

business models since it connects items existing within the Internet of Things on a much broader level opening up new opportunities as a result. It’s no longer about standalone devices connected to the internet to increase their functionality but about the connection of these systems or devices to the internet AND to each other – allowing them to share and exchange information in more standard ways and increasing knowledge and functionality as a result.

“Where BlackBerry gets involved is the intersection of IoT technology and enterprise business processes,” says David Arnold, solutions architect at BlackBerry.

Certainly, the scope for improving business processes through the use of IoT is impressive and is highlighted in the original McKinsey report, which suggested business-to-business applications could capture nearly 70% of the value of IoT.

WHAT A SECURE INTERNET OF THINGS OFFERS RETAILERS

Within the retail sector specifically

KEY BENEFITS OF THE INTERNET OF THINGS IN BUSINESS

- New channels of communication
- Better analysis, flow and use of data throughout the business
- Ability to increase sales through more targeted marketing, improved customer knowledge
- More informed business processes

adoption of the Internet of Things enables retailers to improve business processes and maximise sales potential by getting closer to the customer and their needs than ever before through true data-driven decision making.

Specifically, it is the process of using the data opportunities through the business to better inform and better manage business processes – whether that’s interactions with the customer, movement of stock or better reacting to demand for goods manufactured for sale. “It’s about looking at all of these IoT touchpoints and bringing that into the enterprise business process,” says Arnold.

“Part of that is the store-end and retailers taking customer data from loyalty plans, vouchers and ereceipts and doing more with it. It’s about getting that engagement with customers and driving that back in to the supply chain so really drastically changing their business model. It’s not just about collecting mobile data but doing something valuable with it and keeping it secure throughout,” he says.



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It also allows for a much more seamless experience for the customer which – if embraced to its fullest possible extent – could see retailers' customers presented with even more relevant offers instore, tailored to products they have already researched online with payment taken automatically through contactless checkout as an example.

A secured Internet of Things in a retail setting also exploits and makes the most of customer demand for more technology instore to improve their shopping experience. Since shoppers are already showrooming whilst in store and purchasing online then making more use of their data and the flow of their interactions allows retailers to better target them instore with specific promotions and offers that can prevent losing them to showrooming. The connection of such customer-facing offers – and a more seamless customer experience

5 WAYS RETAILERS CAN USE THE INTERNET OF THINGS TO IMPROVE PROCESSES

- Better tracking products to make stocktaking more accurate
- Monitoring and optimisation of delivery vehicles and their routing
- Developing new products based on real customer demand and trends
- Adjusting pricing more dynamically (eg changing price on digital shelf edge labels or adjusting promotions dependent upon stock levels)
- Connecting technology instore – for example allowing smart dressing rooms to securely collect information to offer discounts and enable 'customers also bought' suggestions

as a result – is more likely to lead to better customer loyalty and therefore improved lifetime customer value.

The advantage of a secure Internet of Things isn't just at a smart store level however but extends to behind the scenes logistics and management

instore, securing the IoT items that might be doing RFID tag reading and allowing retailers to bring in large volumes of stock but instantly know what's there and connecting that information back. "Retailers can use RFID to identify their stock so that the location of those goods in the store and their delivery flow can all be tracked and managed. That's really powerful as a traditional stock take takes many hours so the more accurate that they can be in knowing what they should have speeds up that stock take process," says Arnold.

A secure network of IoT sensors also allows retailers to more effectively monitor the logistics trail throughout. Within distribution IoT can allow retailers to better monitor the location of their vehicles helping them to improve management of the logistical process of deliveries, optimise routing and therefore save time on delivery. It is also about driver enablement such as its use in driver workflow to advise on changes of route for example, says Arnold. "BlackBerry's secure software adds the peace of mind to this mind-blowing technology – it is about helping to optimise process so that we can deliver more in transit to any particular location," he says.

Moving further up the supply chain retailers also have the potential to better match customer demand and trends with products by using IoT devices within the Internet of Things to feed information back throughout the business and supply chain to manufacturing, allowing

RETAILERS' CONCERNS AROUND THE INTERNET OF THINGS

- Being first-mover
- Element of risk
- Fear of security
- Daunted by challenge
- Worries about stores being compromised
- Possibility of internet sites being hacked
- Integrity of customer data post GDPR

manufacturing on a real-time basis. "Traditionally the process of taking trends and driving them back to manufacturer has been quite a slow process," says Arnold. "With a truly secure Internet of Things we can really drive that process. We can capture the data instore and see what customers are looking at without necessarily buying and we can transmit all that information with complete confidence in the security of the data," he says.

THE CHALLENGES THAT RETAILERS FACE

As we have examined there are numerous benefits to be had from the adoption of the Internet of Things throughout a retailer's business – from manufacturing to distribution to store. But it's perhaps the scale of the potential that can prove overwhelming for retailers. Whilst it's easy to see the opportunity from better connecting all devices throughout the retail business to talk to each other the challenge of doing so and the perceived risks that brings can mean that many retailers are failing to address such

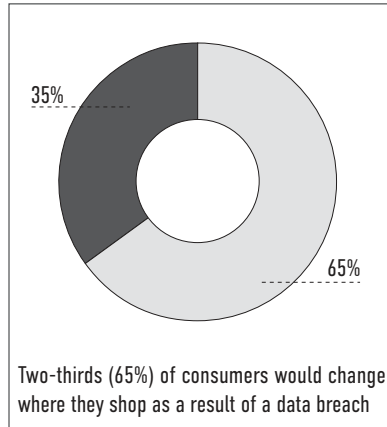
opportunities and risk being left behind.

“I don’t think retailers are doing as much as they should be in customer engagement and Internet of Things technologies,” says Arnold. “There’s a lot of talk and there’s a lot of tactical projects rolling out but they are not looking at the bigger picture. I think retailers feel the need to connect everything up but the challenge is that there is risk just like there is in any customer model.” he says.

And of course, it requires a technology specialism that many retailers are simply lacking, meaning that they are looking for a solution or technology that can take that risk away. “Retailers aren’t traditional technology houses and we have had lots of conversations with retailers where they said they wouldn’t know what to do in that space,” says Arnold.

Having the right technology platforms to enable such a plethora of connected devices as that offered by the Internet of Things and to manage that risk is crucial, says Arnold. “We can provide the technology platforms to connect those dots. It removes some of that risk and therefore the challenge becomes more one of coming up with the idea rather than the execution,” he says.

The biggest challenge that retailers face within this is security. With more devices connected the greater the risk of the environment becoming unsafe and it’s this challenge that retailers primarily need to overcome if they are to embrace the Internet of Things and the benefits it offers.



WHY SECURITY IS THE BIGGEST STUMBLING BLOCK (ALTHOUGH RETAILERS DON'T NECESSARILY REALISE IT)

When it comes to the Internet of Things there has always been a slight nervousness around security – such as worries that smart speakers are eavesdropping when they shouldn’t. Extend the connectivity of devices not just to the internet but to each other and it’s no wonder the potential for misuse makes retailers nervous.

Arnold says that in his discussions with retailers it is the issue of security that prevents them taking action, although retailers don’t always recognise that as their stumbling block. “We don’t necessarily think that it’s security itself that is immediately recognised as a problem but when you start talking to them you find it is security. It’s the concern of risk around using customer data, the introduction of GDPR and what happens if their



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stores are compromised or if their internet sites are hacked. So, when you dig deeper the barrier is actually always security. It's retailers asking, 'how could our processes be disrupted'," he says.

Opening up their enterprises is naturally a worry for retailers – especially since the potential for untrusted devices to gain access and make major changes to their business, such as hacking websites or adjusting instore pricing, is a possibility with more devices connected to each other.

And the challenge is even more daunting given the high profile data breaches the retail industry – like many others – has already faced even before more devices are connected. In a world where protection of data is more important than ever it's no surprise that retailers are concerned.

In June 2018 Dixons Carphone admitted a data breach it initially thought had hit 1.2 million customers. A month

later it revealed it was actually 10 million customers. Such breaches not only cost in terms of detection, management and fines but also damage a retailer's credibility. The cost per record of a data breach in the retail sector is estimated to be \$177, according to The Ponemon Institute. In 2018 PwC reported that nearly two-thirds (65%) of consumers would change where they shop as a result of a data breach.

"Many retailers look at companies they respect and yet they are making mistakes [in terms of data breaches]," says Arnold. "It's understanding what those mistakes are and giving decision makers confidence but also all the information that they need so that they can justify that decision making process," he says.

And there is a worry about the products themselves that are being created – with many, such as lock manufacturers who are moving into the IoT space not having the security

expertise needed to protect their devices fully. Retailers and device partners are looking for products and solutions that offer that security and peace of mind, allowing them to make the most of the Internet of Things.

WHY RETAILERS SHOULD OVERCOME THEIR SECURITY CONCERNS AND EMBRACE THE INTERNET OF THINGS

As we have seen there is an urgent need for retailers to embrace a secure Internet of Things – ranging from better customer engagement instore to better meeting customer needs with on-trend products manufactured according to customer demand.

Overall the Internet of Things allows retailers to better connect their businesses and their data. “Collecting data and looking at it in a dashboard/holistic model is where the enterprise model comes together. It’s about securing all of your endpoints and allowing the data to be transmitted from them securely so the retailers can access the information and from there make real-time decisions based on live information. That’s the biggest power in the enterprise of things,” says Arnold.

As a result, a secured Internet of Things is something that many larger retailers are already looking at and smaller retailers need to be ready and willing to make the same leap of faith. “Large vendors and non-traditional stores like Amazon will embrace this technology and they will probably get it fairly right first time because they

“IT’S ABOUT SECURING ALL OF YOUR ENDPOINTS AND ALLOWING THE DATA TO BE TRANSMITTED FROM THEM SECURELY SO THE RETAILERS CAN ACCESS THE INFORMATION AND FROM THERE MAKE REAL-TIME DECISIONS BASED ON LIVE INFORMATION.”

will involve big consultants. If we go down the chain just one or two levels in terms of vendor size, how do those smaller vendors keep pace with the big guns?” says Arnold. “They won’t be able to build everything themselves so relying on a trusted partner like BlackBerry can help those tier two vendors keep pace with the tier one players.”

Arnold says retailers are already embracing the Internet of Things for a number of business case uses. “With the big physical traditional retailers we are seeing a trend to minimise staff throughout the supply chain but particularly instore. Yet the demand is to increase their revenues as they are under pressure from the internet retailers and perhaps are minimising their storefront presence so they’ve got to get the most out of staff. The first point is getting them out on the shop floor increasing upsell, increasing cross sell and using them to drive the

backend process. "This amplifies the needs to connect people up because there are fewer people on the ground and retailers need to make revenue and increase efficiencies throughout the whole supply chain," he says.

It's also of huge interest for those large traditional retailers that have their own logistics operation. "We're hearing that the motivation is around minimising the risk and driving a real time assessment of what's actually going on with their supply chain," says Arnold.

And retailers also need to recognise that it's a trend that won't go away since it's delivering the fast, agile change that retailers need in today's ultra-competitive environment. "Technology can really make a difference to the bottom line here. It's about instantly driving decisions all the way through that design, manufacture and distribution, retail workflow," says Arnold.

"You will see much more connectivity and much more real-time intelligence being used in process. It's very easy for Amazon to optimise their processes

"THERE'S A REAL REQUIREMENT TO CONNECT PEOPLE AND IMPROVE COMMUNICATION BECAUSE THERE ARE FEWER STAFF 'ON THE GROUND' – AND RETAILERS NEED TO MAKE MORE REVENUE AND INCREASE EFFICIENCIES THROUGHOUT THE WHOLE SUPPLY CHAIN"

because it was always built with effectively the Internet of Things in mind. Their entire process is driven by technology and by data collection. Traditional retailers by embracing the Internet of Things probably will never get as close as the pure play retailers but they can get to within striking distance but they then have the advantage of instore customer engagement to sell the value of their offering," he says. ■

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123 Cannon Street,

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ISSN 1759-0582

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An ebook produced by InternetRetailing in association with BlackBerry | July 2019