

# The flexible supply chain

Using the cloud to support agile and resilient logistics



# Editor's introduction

It's become common to say that the Covid-19 pandemic has forced retail to skip a decade, or at least a number of years, in its development. The recent change has been striking: during May 2020, the UK saw a 14 percentage point increase in the share of retail taking place online to 33%.<sup>1</sup> There is no sign of a sudden drop-off, with the ONS reporting that 31% of sales were made online in June.<sup>2</sup>

While these numbers sound good for online retailers, it's too early to bank on this shift being permanent. As the queues outside some recently reopened stores showed, some customers will return to stores as soon as possible. Others who had previously not shopped online will continue to do so.

Accordingly, we have already seen many retailers quickly adapting their operations, switching stores to fulfilment centres and adding new click and collect options.

However, Covid-19 is just a catalyst for a shift that was underway anyway, with the unpredictability of peak season, store closures and economic uncertainty already forcing retailers to make quick changes to their operations. As Holland & Barrett's head of web operations said, Covid-19 has meant an acceleration rather than a change of direction.

All of this adds up to retailers needing to build adaptability and scalability into their supply chains, which have to be ready for peaks and troughs in customer demand.

This is why many retailers are moving their IT estates to the cloud, which allows resources to be scaled up and down when needed, eliminating the need for redundancy in systems. As we will see in this whitepaper, to fully take advantage of the opportunities presented by the anytime-anywhere customer, retailers need an IT system that can be anytime-anywhere as well.

There are myriad benefits from using the cloud compared to in-house logistics IT systems, whether it is greater resilience or IT teams being liberated from upgrade cycles to take a more strategic view of business development.

This whitepaper will examine the emerging new paradigm in retail and how cloud-native software can support this transition.



Alex Sword  
Editor

1 <https://www.ons.gov.uk/businessindustryandtrade/retailindustry/bulletins/retailsales/may2020>

2 <https://www.ons.gov.uk/businessindustryandtrade/retailindustry/bulletins/retailsales/june2020>

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# Sponsor's introduction

It is not just our daily routines that have been forced to change as a result of Coronavirus, the pandemic has fundamentally changed the way we do business too.

A recent article in Forbes indicated that ecommerce maturity has accelerated by as much as six years over the last five months and it's this type of changing consumer behaviour that is forcing brands and policymakers alike to do things differently.

As a result, global CIOs and business leaders are having to quickly embrace new, iterative ways to engage with customers (and suppliers), adapting to new ways of working, investing in technology innovation, and revisiting their business resiliency and agility plans for long-term success.

For many companies, a dynamic, agile and flexible supply chain that can translate market feedback into rapid operational change is still aspirational. However, the recognition of the benefits microservices can bring and the development of cloud-native solutions means that a more agile and responsive supply chain is now more accessible than ever before.

Coronavirus has highlighted many shortcomings in all sorts of legacy models: from technology, to communities, to businesses, to global economies. And while there remain many challenges ahead, there have been positive developments over the last five months too, not least in the retail and supply chain spaces.

While challenging, the changed consumer and business landscape accelerated by the pandemic have underlined the multiple benefits of modular, scalable cloud and microservice models, especially when it comes to supply chain dynamism and agility.

If we have learned anything from the daily briefings from around the world over the last six months, it is that predictions about how things might develop during this pandemic, or what we should expect next, are impossible to make with any degree of certainty.

The only thing that we can say with any authority is that retail businesses who adopt a fluid, agile and flexible approach to their IT solutions will be able to pivot quickly and effectively enough to adapt to shifting customer expectations thus succeeding against whatever backdrop they are presented with in the short and longer-term.

“ Coronavirus has highlighted many shortcomings in all sorts of legacy models: from technology, to communities, to businesses, to global economies ”

## About Manhattan Associates

Manhattan Associates is a technology leader in supply chain and omnichannel commerce. We unite information across the enterprise, converging front-end sales with back-end supply chain execution. Our software, platform technology and unmatched experience help drive both top-line growth and bottom-line profitability for our customers.



# SECTION 1:

## THE NEED FOR SPEED

Retailers don't get to choose the circumstances they operate in. It's safe to say few of them would choose the various challenges they now face: a pandemic, economic uncertainty and ever-more demanding customers.

Of these challenges, the Covid-19 pandemic in particular has exposed already existing weaknesses in supply chains. A recent study led by the University of Warwick found that 80% of products had experienced some sort of fluctuation in demand during the pandemic, with respondents generally reporting being more effective at meeting decreases in demand than increases.<sup>1</sup> For example, grocery items and essentials saw a spike in demand, but due to their non-perishable nature they will have seen a subsequent period of depressed demand due to customers over-buying to stockpile.

On the other hand, sectors such as fashion were hit from two directions: not only were customers not visiting stores but they were no longer going out, so required fewer outfits. Fast fashion retailer Zara stated in its recent financial results that its flexible supply chain had been "pivotal" in responding to the crisis. As the pandemic hit the retailer was able to cut inventory by 10% and cut operating expenses by 21% to \$1.4 billion in the quarter, limiting the damage from depressed revenues.

On aggregate, there has been a shift towards ecommerce, although far from enough to replace the sales lost from physical stores. Online retail sales grew 72% year-on-year in the UK in May, according to Mastercard SpendingPulse, while 85,000 companies have launched online stores.

Where demand has shifted from physical to online stores or grown in the case of the DIY and home improvement sectors, retailers that have been able to quickly add or remove capacity have benefitted at least in the short term.

Uncertainty remains over how solid this demand will be in the future. If there is a fast resolution to the crisis in the form of a vaccine then the balances of physical and online retail may shift back towards pre-crisis levels.

However, there are now numerous examples demonstrating how loosening of restrictions can lead to a resurgence in the virus. In the UK, several areas have been placed under new "local lockdowns" in response to a surge in cases there. The point is that neither higher nor lower than pre-Covid levels of demand will be set in stone and retailers cannot plan exclusively for either.

### **Economic uncertainty**

Covid-19 also has knock-on effects. The shutdown and negative impact on consumer confidence is expected to damage the economy severely and for a prolonged period, with potentially huge impacts on consumer spending as job losses hit wallets. These job losses are expected to grow hugely as government support for companies and employees is withdrawn.

To blame all of this on Covid-19 would be short-sighted. The global economy has faced a number of disruptions recently, whether it is the continuing wrangling over the UK's future relationship with the EU or the US's escalating trade war with China. According to a recent report, 72% of companies have experienced external disruptions in their manufacturing supply chain over the last 10 years.<sup>2</sup>

“ The challenges of the pandemic have underlined the multiple benefits of modular, scalable cloud and microservice models ”



This is evident in the fact that even before the pandemic, retailers faced hugely variant demand. Assessments of the retail market in the UK for 2019 shows total sales for 2019 decreased by 0.1%, compared with 1.2% growth in 2018, according to the British Retail Consortium (BRC). Across November and December 2019, sales declined 1.2%.

Fast fashion retailer Zara saw revenues fall during the pandemic but was able to minimise damage through cutting back on inventory

### The modern consumer

While Covid-19 has led to a greater proportion of retail taking place online, a rapid evolution in consumers' shopping habits was already well underway.

Consumers are increasingly demanding the ability to shop across channels according to their own choosing. A survey by JRNI in 2019 showed that 74% of consumers research products online and then buy them in store, while 57% of consumers look up products in store and purchase them online.<sup>3</sup>

Services like Google's local inventory ads are further eroding this barrier, with retailers now able to present their available stock online to shoppers in the local area who have searched for an item.

Meanwhile, click and collect, where customers buy products online and pick them up in store was growing in popularity even prior to the pandemic: GlobalData forecasted it to grow 45% between 2018 and 2023.<sup>4</sup> One survey of over 2000 UK consumers found that 42% were more likely to use click and collect since the impact of Covid-19.<sup>5</sup>

Offering these different services means having a supply chain which can reroute goods to the channel where they are needed at a specific time. Why, for example, should a click and collect order be fulfilled from a dedicated ecommerce warehouse rather than the store itself? Retailers will need visibility over orders and inventory regardless of channel to make these joined-up services work.

### Competition

The ecommerce world is highly competitive, with consumers now able to find hundreds or thousands of potential sellers for any product online using increasingly sophisticated filters. Shoppers are able to shop anywhere and find items abroad that are either more expensive or not available in their home market.

Retailers also face a challenge from the all-encompassing marketplaces, with Amazon's product range now numbering in the hundreds of millions. With ecommerce, there is no limit to the number of products that a retailer can display except the supply chain.

“ Retail businesses who adopt a fluid, agile and flexible approach to their IT solutions will be able to pivot quickly and effectively ”

# SECTION 2:

## CLOUD-ENABLED COMMERCE

While retailers can't choose the environment they operate in, they can choose the tools they deploy against these challenges.

The physical supply chain has advanced rapidly, with automated production and global transport networks squeezing the time between a product being manufactured and the consumer receiving it. The advent of the fast fashion retail model is a testament to how lean these supply chains can become.

In spite of these advances by many retailers, the IT stack used to manage supply chains has not always evolved with them. The current challenges facing retailers have harshly exposed the vulnerabilities in legacy IT systems, built in the days when the only option was to build bespoke ecommerce IT stacks and run them on their own servers. When new capabilities were added, these had to be designed and bolted on to these same IT systems.

While these systems have served retailers well in the past, there are features which have made them less suitable to the prevailing market conditions:

- Firstly, and crucially in times of unpredictable demand, they are difficult to scale. This means that to be able to handle escalating volumes during peak the systems have to carry built-in redundancy all year round.
- They also mean that large amounts of IT resources and time are absorbed in handling periodic update cycles, which are the only way to add new functionality to the platforms.
- Operating an on-premise data centre requires real estate and energy, with no economies of scale or preferential rates from higher usage.
- Different parts of the stack are siloed: as different software had to be built to handle each part of the chain there is no central repository where all of these streams are brought together.
- New capabilities cannot be added as they are developed; adding a new function to the system is a long-term and CapEx-heavy project. Additionally, customisations of the system are rarely preserved when the software is upgraded to a new version.

### The silver lining

One of the biggest shifts in IT in the last decade has been the emergence of the cloud, which is set to continue in the 2020s: IDC predicts public cloud spending will grow from \$229 billion in 2019 to nearly \$500 billion in 2023, with a five-year compound annual growth rate of 22%.<sup>6</sup>

There is reason to believe this interest is increasing as a result of the pandemic. A global survey of 250 IT leaders from mid-sized organisations and enterprises found that more than 80% have increased their overall cloud usage, with 60% noting that they believed this increase would continue and only 22% saying it had levelled out.<sup>7</sup>

The concept of the cloud is simple: one provider such as Google, Amazon or Microsoft runs a centralised data centre hosting computing and data storage for multiple clients. The company's IT team having to directly manage the infrastructure is replaced by an ongoing relationship with the customer service team of the cloud provider, backed by a contract which guarantees a certain standard of service.

When assessing the benefits of the cloud, it's important to distinguish between "cloud-enabled" and "cloud-native". A cloud-enabled application is simply an application that runs in on-premise servers but is engineered



“ A dynamic, agile and flexible supply chain can translate market feedback into rapid operational change ”

to be remotely available. A cloud-native application is built and deployed in the cloud, meaning that it can take full advantage of the technology's true capabilities.

When a retailer has the R&D and established technology expertise of an Amazon, they may be able to seek genuinely unique innovations from building bespoke technology (which was where the cloud service Amazon Web Services came from in the first place).

In most cases this won't be the case, especially when the main cloud providers have such a head start. A helpful concept here is contrasting heavy lifting with fine-tuning: not everything has to be directly managed by the retailer to gain the maximum benefit of it.

Retailers are experts in finding the right products to sell and selling them, and it is here where they can most usefully seek to find an advantage over competitors. Trying to wring a small amount of margin out of risky, large-scale, bespoke IT infrastructure may end up simply sapping resources from where they would be most useful.

There are several benefits of cloud-native IT infrastructure:

#### **Run systems anywhere**

Due to its built-in remote access capabilities and security features, the cloud allows employees to work remotely. It offers a single view of the truth which can be accessed via any device. For example, if a new pick-and-pack station needs to be added in a store which has been shuttered due to Covid-19, it can be quickly added through a mobile device.

Each operative within the retailer can operate with the same 360-degree view of the customer, meaning that a query about a delivery, for example, can be resolved by a member of in-store staff using a mobile device. As working patterns shift to embrace remote working, being able to access all services in the cloud will be increasingly useful.

#### **Unified view of data**

Running all supply chain applications in the cloud allows a retailer to fulfil an order from wherever has the best availability at a given moment. Instead of channels, allocation of stock can be determined by pre-set rules which can take account of multiple factors such as where stock is most available, where is nearest to the consumer and where staff capacity is highest.

Historically, order allocation has been hardcoded so that an ecommerce order has to come from an ecommerce warehouse and stores have to be supplied from store warehouses. This legacy process has not kept up with consumer buying habits.

Retailers can achieve more sales, including across the whole assortment, due to higher availability. They can fulfil orders more quickly and cheaply and save on fulfilment costs by sourcing the order from closer to the customer.

They can also gain additional use from store estates by using them as fulfilment centres, while offering additional work for store staff during periods of low footfall: stores are located closer to urban centres, effectively providing a distribution centre in the heart of a city. Retailers can unify channels and reduce the time to serve click and collect customers by fulfilling them within the store rather than from an ecommerce warehouse.

Smarter allocation also allows retailers to take advantage of excess stock in a store without having to discount it.

“Retailers are experts in finding the right products to sell and selling them, and it is here where they can most usefully seek to find an advantage over competitors”

**Microservices approach**

A cloud-native application treats each service as a discrete operation or microservice. This means each microservice can be removed from the stack or added without risking losing other functionalities. Additional computing power can be added or removed from different components as and when it is needed.

**(Effectively) infinite scalability**

The various sources of uncertainty affecting retail at the moment mean that being able to easily add resources when needed is one of the key benefits of the cloud. When one of the services within the stack approaches its maximum capacity for computing power, the cloud can automatically add more computing power to it, rendering outages unlikely. At the same time, computing power can be subtracted from services when demand dips, reducing cost.

**More strategic IT approach**

Using the cloud frees up the time and planning resources of IT teams to make more strategic decisions. Rather than managing an on-premise server or preparing for a new major system update, retailers can make strategic decisions about what capabilities their customers want and how to add them.

**As-a-service model/service level agreement/monthly subscription**

The factors mentioned in Section 1 are leading to less certainty about long-term investments in IT. According to IDC, worldwide IT spending will decline 5.1% in constant currency terms this year to \$2.25 trillion due to the economic impact of the COVID-19 pandemic.<sup>8</sup> IDC expects that while services spending will fall due to a lack of large capital-intensive projects, infrastructure spending will still see moderate growth due to the continuing shift to the cloud.

The as-a-service, subscription-based model of the cloud means that retailers can add new capabilities on a more provisional basis, without being tied into hardware with 10-year life cycles.

**Analytics**

The leading public clouds, such as Google, have built-in machine learning and analytics capabilities which allow them to gain insights from historical data and use these to make operations more efficient.

“ Using the cloud frees up the time and planning resources of IT teams to make more strategic decisions ”



**ON-PREMISE**

- Software is run on company’s own servers on its property
- Difficult to scale without adding additional physical resources
- New functionality is added via longer-term update cycles



**CLOUD**

- Applications are run off-site, hosted on third-party servers
- Scalable: more computing power can be added to an application as needed at short notice
- Ongoing management: speed and agility of deployment with reduced
- Versionless software, meaning that upgrades take place automatically and without manual intervention from the IT team



# CASE STUDY:

## PET SUPPLIES PLUS MAKES ITS SUPPLY CHAIN MORE AGILE WITH MANHATTAN ASSOCIATES' CLOUD-NATIVE WMS

Pet Supplies Plus is a US-based retailer of pet food, pet supplies and services such as grooming. The company has over 500 locations across the USA, which function both as stores and distribution centres.

This allows the company to offer an omnichannel experience with a seven-mile radius of each location, including curbside pick-up and home delivery. The retailer does not offer delivery outside this area in order to maximise profitability, considering the low margins inherent in shipping heavy, low-margin products.

Pet Supplies Plus self-delivers as well as contracting to two third-party carriers, with a long-term expectation that most deliveries will be done through the in-house operation.

The company is able to offer same-day delivery if the order is placed early enough, which chief operating officer Miles Tedder says compares favourably to the one to two-day services offered by Amazon and Chewy.

As elsewhere, the impact of the Covid-19 pandemic on Pet Supplies Plus has been decline in footfall and a rise in online ordering. However, Tedder says that it is not a simple case of sales moving online and staying there: physical pet-shopping remains attractive to customers both as an experience in itself and as a means to fully evaluate the products.

Notably the company has seen double-digit acquisition of new customers during the pandemic, many of whom Tedder believes will remain long-term customers.

### Working with Manhattan Associates

As it scales up its store fulfilment operations, the retailer will be going live with Manhattan Active Omni cloud-based store fulfilment in September.

After successfully moving its enterprise resource planning (ERP) system to the cloud, the company chose to work with Manhattan Associates on moving its WMS to the cloud. The company's on-premise WMS was due to be upgraded. Pet Supplies Plus consulted with Manhattan, which was able to offer a cloud-based, versionless WMS.

The cloud-based WMS has been live since 1 May. In that time, the company also experienced 20-25% higher volumes than it usually would.

"As a billion dollar plus company," says Tedder, "we don't run a data centre; with this transition everything we run in the business is cloud-based."



### RESULTS

The retailer now has:

- Access to new features as they are added
- Lower total cost of ownership as it no longer runs a data centre nor has to dedicate the resources of a full-time database administrator
- No more upgrades

"There is none of the added expense, latency, redundancy, versioning or delays associated with data centres."

"We don't have on-premise legacy systems that other retailers have; strategically we've positioned ourselves to take advantage of the cloud."

With the new capabilities in place, the retailer plans to add at least 30-40 new stores during 2020, with more than 50 next year.

"[We plan to] grow the brand, add units and provide services to more customers."



# INTERVIEW: GOOGLE CLOUD

**MARK STEEL, DIRECTOR OF RETAIL STRATEGY & ENGAGEMENT FOR GOOGLE CLOUD EMEA, EXPLAINS WHY RETAILERS ARE TURNING TO THE CLOUD.**

## **Has Covid created a rise in demand for cloud services and why is this?**

In retail companies are constantly looking for ways to drive efficiency, reduce costs, and find opportunities to re-invest into customer facing experiences. The covid pandemic has driven increased need in this space, as many retailers have seen a significant change in consumer demand, varied by sub-segment.

For example, grocery retailers have seen huge increases in demand for online shopping and have turned to cloud technology to help to scale for these new peaks; whilst many specialty retailers have seen demand fall away and have focused on cash management and liquidity and are looking to migrate costly on-premise data centres to cloud based technology.

In addition, the pandemic has driven significant changes in consumer behaviour as shoppers look to embrace new ways of interacting with their favourite brands such as video. Having modern cloud-based infrastructure can help retailers build new experiences quickly and easily gain insight into performance.

## **What are the most common demands you are seeing from customers in the retail space?**

Retail has been impacted dramatically by the current global crisis and this has presented both challenges and opportunities for many retailers. At Google Cloud we partner with retailers to accelerate their digital transformation in a number of ways.

Within ecommerce we are supporting retailers to create modern, cloud-based infrastructures, to capture the shift to online shopping and increased digitally enabled omnichannel experiences. Not only

can retailers take advantage of the benefits of moving to cloud (speed, scaling for peaks, reduced costs), but in creating a microservice-based architecture they can more quickly create new digital experiences, and with less risk.

Data and analytics is another key area of focus for retailers right now, with many retailers holding lots of customer data, but not yet extracting value from this asset. Our BigQuery data platform comes with machine learning out of the box, so retailers can start to benefit from machine learning powered analytics to drive personalised experiences and real-time business decision making.

In particular many retailers are focusing on how best to manage their complex and often fragmented supply chain infrastructures, and in particular, how best to predict where and when to hold inventory to best satisfy consumer demand. Google Cloud is partnering with a number of retailers to bring an AI-led, data enabled approach to demand forecasting.

## **Why are logistics and supply chain companies moving to the cloud?**

We're seeing logistics and supply chain companies increasingly choose cloud technologies to take advantage of the speed, innovate and flexibility that cloud can provide. Specifically with Google Cloud, our flexible approach to scaling for peaks in demand is proving really valuable to our partners as they look to drive business growth during increasingly volatile times.

At Google Cloud we've focused in on providing complete flexibility for our partner customers. Our technology allows Google Cloud customers to scale capacity as needed to confidently manage traffic spikes like on Black Friday and only pay for their needs by

receiving suggestions on how to optimise usage. Google Cloud customers also benefit from the huge network infrastructure in regions all around the world, meaning low latency and high security, with new regions being introduced all the time.

We're also seeing a big focus on cost management as companies want to take advantage of the reduced up front investment, and 'pay for what you use' model that cloud can offer, often re-investing the significant savings into developing new applications and improving customer outcomes.

**Can you outline Google Cloud's work with retail customers and how you solved their problems?**

We are bringing the best of Google and Google Cloud when it comes to working with customers.

As an example, we have been working with one heritage, UK-based retail group to re-platform their ecommerce platform, using a microservices-based concept and Google Kubernetes Engine so that they can test new capabilities faster and continually deliver superior digital experiences for customers. We are also working together to create a data management platform, leveraging AI and machine learning to automate decision-making and provide more accurate customer insight and segmentation, ultimately creating smarter service and a better consumer experience.

By working with Google Cloud solutions, another customer - a leading US-based home improvement retailer - can provide their associates visibility to the things each customer needs, like item location

“ We're also seeing a big focus on cost management as companies want to take advantage of the reduced up-front investment, and 'pay for what you use' model that cloud can offer ”

within a local store, despite unique store layouts. In addition, this retailer can also empower their associates with Google Cloud's BigQuery by providing timely data to help keep 50,000+ items stocked at over 2,000 locations, to ensure website availability, and provide relevant information through the call centre.

**Google Cloud's infrastructure powers Manhattan's Manhattan Active solutions.**



# CONCLUSION:

Every disruption produces winners and losers. Whether it is the new pressures of Covid-19, long-term economic uncertainty or the evolution of customer expectations, retail is once again in a position where it has to quickly adapt to a new reality.

Being able to change has always been important – we can all call to mind numerous examples of companies which have dropped out of the Fortune 500 in the last two decades as they failed to fully embrace the potential of digital transformation.

What is different about today is that circumstances are constantly changing; a drop in demand today could mean a surge tomorrow. The Covid-19 pandemic has been an extreme case study for the fluctuations in supply and demand which are now becoming routine for retailers.

Retailers need the tools in place to respond to both peaks and troughs. This is why cloud-native tools are gaining ground across a number of industries, including retail.

The cloud gives retailers the flexibility to accommodate the sorts of fluctuations in business which are set to be omnipresent. As it is available as a service, with monthly billing rather than a large one-off lump sum, retailers can gain the benefits of new tools without committing to an investment that will take a decade to deliver ROI.

There are other developments on the horizon: this decade will see huge leaps forward in the use of automation in operations and logistics, including the use of “cobots” which can work alongside humans. Retailers are not looking to overhaul their operations but simply automate and optimise processes. Antiquated IT systems will struggle to accommodate to these changes, while with the cloud cobots or robots will be able to easily slot into existing processes as simply another workflow.

Retailers which take advantage of the cloud will find themselves in a better position to not only weather the storms of 2020 but also grasp the opportunities of the 2020s.

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