Building Resilience for the Long Run

How Travel & Hospitality companies can stay agile during business disruption
About AWS Travel and Hospitality

AWS Travel and Hospitality is the global industry practice for Amazon Web Services (AWS), with a charter to support customers as they accelerate cloud adoption.

Companies around the world, across every segment of the travel and hospitality industry - and of every size - run on AWS. This includes industry leaders like Airbnb, Avis Budget Group, Best Western, Choice Hotels, DoorDash, Dunkin’ Brands, Expedia Group, Korean Air, McDonald’s, Ryanair, SiteMinder, Sysco, Toast, United Airlines, and Wyndham Hotels. These companies and many others are transforming their business by leveraging technology to enhance customer experiences and increase operational efficiency.

For more information about AWS Travel and Hospitality, please visit [aws.com/travel](http://aws.com/travel). Keep up-to-date with executive insights and industry viewpoints at the AWS Travel and Hospitality [Blog](http://aws.com/travel). Click [here](http://aws.com/travel) to be contacted by an AWS representative.
Foreword

It has been said that challenges should not paralyze you but help discover who you are. We have seen time and again that immense challenges can bring about incredible innovation. That is especially true today. Around the globe, travel and hospitality companies are taking advantage of the flexibility of the AWS Cloud to innovate quickly and meet their needs during these trying times.

Faced with disruption – whether a localized weather event or a pandemic that spans continents – travel and hospitality companies respond and rebuild. Each disruption presents different challenges, while each company has different needs during those times. Across the AWS Travel and Hospitality team, we work with industry customers across many different parts of the world, of every different size and segment of the industry. It’s this breadth and diversity of customers that grants us a unique perspective, to recognize common themes, challenges and solutions specifically at times of disruption. As more and more customers asked us to share our insights, learnings and recommendations, we started documenting and cataloging them, which has become this E-book.

During times of business disruption, companies go through three stages:

1. **Response**: Dealing with the immediate impact of a rapidly changing, uncertain environment;
2. **Continuity**: Adjusting to ongoing restrictions or limitations of previous ways of operating while executing business continuity plans and adjusting to ‘new’ operating environments; and
3. **Recovery**: Determining how best to manage excess supply while both meeting and stimulating demand as restrictions ease, markets reopen and consumer confidence returns.

Structured into the three phases identified above, and intended to be consumed over time, this e-book highlights opportunities for companies to optimize and automate your technology systems and processes, while enabling new services and capabilities to meet a changing environment. You will find commentary about building a resilient organization, and inspiration for how to organize innovation in the face of disruption.

Looking beyond cloud technologies, this e-book also features services that are tailored for travel and hospitality companies – including Alexa for Hospitality, Amazon Hub, Amazon Advertising, Amazon Business, Amazon Pay and Audible.

In uncertain times, there is one certainty: Game-changing innovations born out of necessity will improve the way we travel, dine or lodge in the future. And it will not end here. As time goes on, more solutions will come as the travel and hospitality industry looks to rebuild, recover, and thrive.

Sincerely,

David Peller
Global Head, AWS Travel and Hospitality
Getting Started

The goal of this e-book is to be a reference guide for travel and hospitality executives who we hope will consult it often because the contents add real value to their business. While the e-book is not meant to be comprehensive, we do focus on key business priorities that companies tell us best fits their needs as they recover from business interruptions. The AWS team – your AWS account manager, in particular – is available to work with you to further define opportunities unique to your business.

Many of the AWS recommended services described in this e-book can be accessed and deployed directly through the AWS Management Console. It is good practice to have members of your team actively monitor the cost optimization recommendations from AWS Trusted Advisor – and regularly report its prescriptive advice and actions taken to the leadership.

In addition to this e-book, there is a wide selection of helpful resources on our AWS Documentation website, such as user guides, developer guides, and other content. Your AWS account team, AWS Solutions Architects, AWS Professional Services and members of the AWS Partner Network (APN) are all available to support you and your organization. As you consider and deploy the various services and practices recommended, we look forward to supporting your company on your journey ahead.
Chapter 1

Building Resilience for the Long Run
Building Resilience for the Long Run by Phil Le-Brun

In a cartoon circulating on the internet, a management team sitting around a conference table comes to a consensus that digital transformation is not a priority for their business. Meanwhile, the reader sees a wrecking ball with the word “Pandemic” written on it swinging towards their office building.

The recent business disruption due to COVID-19 is a stark wake-up call to companies that being more agile through digitally transformation would have enabled them to have adapted faster in the face of uncertainty. Digital transformation is an imperative for all companies but perhaps particularly for travel and hospitality providers since they are more directly affected by consumers sheltering at home. Fleets of aircraft have been grounded, restaurants were shuttered, and hotels seeing sharp drop offs in guests have been repurposing their rooms as temporary shelters for health care workers.

While this black swan event will pass, other challenges will undoubtedly appear: supply chain interruptions, geopolitical events, and trade wars, among other disruptive events. Companies have to be prepared to weather these storms while continuing to keep on top of day-to-day business challenges – such as changing consumer demands, and staying ahead of competition and innovative disruptors. In many cases, companies that make decisions quickly, learn from challenges, and pivot as needed are the ones most likely to grow.

During the pandemic, brands saw first-hand how critically important it was to send targeted communication to customers and employees quickly, manage costs as revenue dropped off, and have the right tools in place for employees to work remotely. They also had to ensure that their supply chains remained resilient, and the workforce and customers remained healthy as they sanitised offices and implemented social distancing, among other immediate tasks.

In times of duress, what separates leaders from laggards is this: Agility. Agile companies are better prepared to adapt to market changes – and thrive. And any company can learn to be agile. There is a silver lining to disruptive events: History shows that from crises, innovative thinking blossoms. We see this happening again today.

Lessons Learned

We at Amazon Web Services (AWS) have spent a lot of time with customers talking about digital transformations. We commonly encounter a perception that digital transformation means implementing new technology-enabled customer channels or making a tech system or tool more customer-centric. The reality is more expansive: ‘Being digital’ also requires a culture that supports an agile business posture beyond just technology. Truly agile organisations share a number of characteristics including rapid decision-making, a willingness to experiment and learn, and a deeply shared purpose – underpinned by agile technology.

A few examples from our enterprise customers illustrate what these attributes look like in practice. One company had discussed expanding its remote-working capability for a couple of years but did not take meaningful action due to legal and financial issues, as well as concerns from leadership. Overnight due to COVID, the same company was forced to implement remote-working systems – and it worked. Lessons that could not have been anticipated by discussions around a conference table were rapidly learned in practice and integrated into their HR and leadership processes.

Another company went from receiving tens of thousands of customer calls a month to getting more than that daily. In 24 hours, we spun up Amazon Connect – a pay-as-you-use call center in the cloud – to handle the exponentially greater demand. For these companies in the cloud where demand grew exponentially, AWS-based e-commerce platforms scaled seamlessly for most. Others saw their sites scale but encountered bottlenecks in their legacy, on-premises components such as single sign-on and customer databases. Some discovered that their on-premises legacy infrastructure and applications could neither ramp down to reduce operating costs, or scale up to meet demand.
At the other end of the spectrum, cloud-enabled companies were able to reduce infrastructure spending rapidly as consumer demand fell. Finally, several companies were able to communicate rapidly with customers, due to well-curated and maintained customer databases from loyalty programs.

What do these stories illustrate? Crises typically expose underlying weaknesses in companies. These weaknesses are usually a combination of problems with business models, cost controls, culture, and technological capabilities. So how can companies adapt and thrive in a ‘new normal’ environment post-crises? Here are a few solutions.

- **Friction-free commerce now includes being contact-free.** The debate over the benefit of contactless payments is likely over. Companies need to look at their end-to-end customer journey not just to remove friction, but also personal contact, whether checking in at a hotel, ordering food, or boarding a plane. Sustainable contingencies are required to maintain social distancing rules should these be required longer term.
- **Digital channels are a necessity, especially for food service.** Delivery and other e-commerce channels will grow in importance with customers, but also act as partial mitigation where physical purchases are impractical.
- **Data has never been more important.** This is true about your customers and understanding your business in real time. The ability to quickly and sensitively communicate with customers is both a business need and a societal expectation. This extends into everything we do in hospitality and travel – ‘care’ is a new social currency.
- **Cash preservation and liquidity are critical.** This is key, not just because of reduced demand, but also due to the uncertainty of future tax burdens. Business continuity plans, often discussed but deferred, are no longer confined to preventing technology failures. They now include the ability to react elastically to changes demanded by current circumstances.
- **Understanding and directing resources toward what differentiates you is imperative.** Is managing a data center of equal importance as innovating for the customer or driving efficiencies in the supply chain? This economic drag will pose challenges for a while, even post-crisis. As such, it makes ‘doing more with less’ even more relevant. As normality returns, there will also be a limited window to regain and then grow market share.
- **Workforce and customer flexibility will be the new norm.** Build on the lessons of today by giving your employees flexible work options. You will benefit from better productivity and increased loyalty.
- **Travel time saved is being used for upskilling.** AWS offers comprehensive training and certification. The more people you have in your business who understand the art of the possible, beyond merely technology, the more opportunities there will be to improve customer experience and drive operational efficiencies.
- **Supply chain implications must be considered.** Fluctuations in demand and supply will continue. This includes the prepositioning of assets in anticipation of a resumption of normality, and cost-hedging strategies.

Across the travel and hospitality industry, AWS and our enterprise customers are increasingly focused on the end-user experience, not just operational efficiencies. These, along with business resilience, will become even more important as competitive differentiators. So consider what digital transformation will mean to your business, and make an honest appraisal about whether you are taking to heart the need to be agile.

**Here are three actions you can take now to be prepared for the new normal:**

1. Look at your digital transformation program and assess how to accelerate it. Appoint a single leader from your executive team to lead it, and make sure to bring clarity on what transformation means at all levels of the organisation.
2. Accelerate your cloud migration plans with a bias towards prioritising those elements that will give you the benefit of scalability and cost control.
3. Shore up any temporary measures you have taken to enable flexible working. This should include assessing your call center and its ability to support remote working, and investing more, if needed, in people-centric security measures.

The AWS Enterprise Strategy team, along with the rest of AWS, embraces our leadership principle of customer obsession, is here to share learnings and to help with your digital transformation journey.
Chapter 2
Innovating through Disruption
Innovating through Disruption by Richard Halkett

Crisis draws us back to where we are comfortable. And this is a global crisis like no other in recent memory, especially for the travel and hospitality industry. In response, many companies are preserving capital and hurrying to protect what appears to be their ‘core business.’ At best, most are choosing modest adjustments and incremental change. Plans for innovation are cast aside, an endeavor that is nice-to-have for when times are good. But the innovation imperative continues, and those who innovate now will thrive in the recovery.

First, a trip down recent memory lane. During the 2007-2008 global financial crisis, when many were concerned about the future of the travel and hospitality industry, innovations in business models, customer engagement, and technology emerged to create the marketplace we have today. Airbnb launched in August 2008, Uber in March 2009, followed by Square later that year. By 2010, we were able to use our third-generation iPhones to conduct business that was not even possible when the first model was launched three years earlier.

But these companies were startups with little at stake and everything to gain. What is an established company to do? According to a Harvard Business Review article titled ‘Roaring out of Recession,’ only 9% of established companies emerged stronger after the Great Recession while 17% went bankrupt, and the rest performed roughly the same as pre-recession. So what did that 9% do differently? They ‘reduce costs selectively by focusing more on operational efficiency than their rivals do, even as they invest relatively comprehensively in the future by spending on marketing, R&D, and new assets.’[1] Success means prioritization, and intelligent investment.

In this pandemic, travel and hospitality companies are beset by challenges – and surrounded by opportunities, too. To thrive, companies are going to have to do (even) more with (even) less. Amazon’s approach to innovation is one way of tackling the challenge, and it could have elements helpful to others in the present climate. In our experience, innovating successfully depends on rapidly determining where to innovate, what solution to focus on, and how to build.

To determine where to innovate – the ‘innovation space’ – it is vital to rapidly differentiate between one-way and two-way doors.[2] One way doors are those decisions that are hard to undo – those impacting life and health, major capital investments, or decisions that could damage customer trust. Even in this present climate, those decisions should be carefully thought through. By contrast, two-way doors are easy to undo and with great potential for learning – more so by doing than by further analysis. The present crisis should encourage leaders to walk through the two-way door and see what may be on the other side. Put more bluntly, if your team is motivated to experiment, the cost is low and there is the chance to learn – why not give it a try?

When you have determined where you’re going to innovate, investing in the right innovations is more important than ever. Moving fast means moving further in the wrong direction if you make an early error. At Amazon, we focus relentlessly on our end customer to guide our innovation. In his 2016 letter to shareholders, Amazon founder and CEO Jeff Bezos said, “Even when they don’t yet know it, customers want something better, and your desire to delight customers will drive you to invent on their behalf.”[3]

So – very practically – ask yourself some searching questions. First, who is the customer? Not a segment of people or a generic persona that could be anyone’s customer, but who is your customer? Next, what is their most pressing problem or opportunity? Again, be specific. Given the already massive challenge of innovating successfully, your chances of solving two or more problems at once is vanishingly small. Choose one, and focus on it. Notice that you have not – yet – even thought about a solution. You are just understanding, empathizing, considering.

Then, given this customer with that problem, or opportunity, how could you delight them? You enter a process of iteration. Sketch out a solution and – again being specific – describe what the main benefit or opportunity would be to this customer you first identified. Have you delighted them? Perhaps not. Does that mean the solution is not yet right? Probably. Or perhaps – just maybe – you have learned something new about your customer by looking at them and their problem in this way and need to go back to the previous step.
Finally, you have it: a customer, a problem, and a solution. At Amazon, the next step in our process is to produce three documents. [4] First, a press release is written as if the product or service has been launched. This helps frame the issue at hand. We focus on the customer’s need, not competitors or profits. It is not written in industry jargon, and everyone should be able to understand it. This one-page document is supported by a ‘Frequently Asked Questions’ (FAQ) document, where we list all of the questions a customer or internal stakeholder may have – and then answer them one by one. It sharpens the idea, and saves time because one document should answer reader questions. This is the PR-FAQ, and it is the document that underpins every innovation in Amazon. It guides our experimentation – which is what comes next.

To experiment quickly – especially now – you need to defray the costs of innovation. This means making experimentation fast and easy by using tools, automation, and agile development to rapidly build, validate, test, scale or abandon experiments. It means building and using services where you pay only for what you use rather than capacity that sits idle. And it also means that once you have a winner, you can scale securely and reliably to all your customers at once – without extensive and costly roll-out plans. With these in place, only one’s pride is at stake when an experiment does not work out. But you can embrace the rich lessons obtained at low cost, and move on to the next project.

For travel and hospitality companies, there is no surefire way to innovate, but you can improve your chances of success. As Jeff Bezos said in his 2015 letter to shareholders, “Given a 10 percent chance of a 100 times payoff, you should take that bet every time. But you’re still going to be wrong nine times out of 10.” However, taking those bets is crucial because, “big winners pay for so many experiments.” Looking at the world right now, there has never been a time when this is more true.

1 https://hbr.org/2010/03/roaring-out-of-recession
2 https://blog.aboutamazon.com/working-at-amazon/6-things-that-make-amazon-a-best-workplace-for-innovators
3 https://blog.aboutamazon.com/company-news/2016-letter-to-shareholders
4 https://blog.aboutamazon.com/working-at-amazon/6-things-that-make-amazon-a-best-workplace-for-innovators
Chapter 3

Adapting to Business Interruptions
Greek philosopher Heraclitus may well remind us that “the only constant in life is change.” Travel and hospitality companies already know all too well that change is part of doing business as usual. Inclement weather such as typhoons or hurricanes, geopolitical events like civil unrest at popular tourist destinations and even seasonal promotions from a competitor that siphons customers away – all are par for the course for the industry. But extraordinary times caused by global cataclysms like pandemics, or steep economic crises such as the 2008 Great Depression, bring on extreme pressures that uncommonly challenge the resiliency of organizations.

Whatever the crisis, actions taken by companies in the earliest days of the disruption will likely have long-term consequences. Of course, the first step is to stabilize operations. But once the immediate operational challenges are met, the forward-thinking leader must start planning for the future.

One of first orders of business is to reduce the cost structure of the company for long-term efficiency in the face of uncertain revenue growth. Executives must work proactively to reduce operational costs by such things as suspending or terminating non-essential projects, reducing discretionary spending and optimizing labor cost. This preserves capital and assures business continuity while freeing-up resources to invest into new, near-term priorities. For companies in the cloud, there is an opportunity to scale down capacity to meet the actual needs of the business while being ready to ramp back up as demand returns.

### Business Case – TUI

TUI Group is the largest tourism company in Europe. It operates 1,600 travel agencies and online portals, five airlines, more than 400 hotels and 17 cruise liners – all to serve more than 27 million travelers and guests in 180 regions. Its subsidiary, TUI Destination Experiences, is the world’s largest provider of destination experiences, operating in 49 countries and serving 14 million guests each year.

When COVID-19 hit, TUI’s tours and activities were negatively affected. But the company worked rapidly to harness technology and offset the effects of the pandemic. Leaders of [TUI Destination Experiences](https://www.tui.com) took a proactive approach and quickly adapted its AWS environments to match the reduction in business volume. It ramped down on its server use to preserve capital. Within a few weeks, TUI was able to cut costs by 55%.

"After the COVID-19 outbreak impacted our business, we began working on adapting our AWS infrastructure to the new situation. It took just days to see first results and weeks to see impressive cost-savings. As a result, we are now more cost- and performance-conscious than we were before. That culture shift is something we will take with us long after this unprecedented situation has passed."

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**Miguel Angel Coll Alonso**
Head of Technology Domain
TUI Destination Experiences
In this phase, travel and hospitality companies deal with the immediate impact of a rapidly changing, uncertain environment. Transaction volumes could rise exponentially, but not from new business. While companies scramble to serve travellers and guests who have existing reservations – assuring them that trips have not been cancelled, or processing their changes, cancellations and refunds – at the same time they also have to deal with declines in new reservations, resulting in lost revenue. Meanwhile, corporate headquarters, field offices and operational facilities shift to working remotely, straining existing systems, network and connectivity solutions, and security frameworks, even as companies attempt to spin up new solutions to mitigate working-from-home challenges. Compounding matters is that companies urgently seek to preserve cash by minimizing discretionary spending, and suspending major projects or investments – including optimizing and automating potentially variable expenses, such as the cloud.

Business Priority: Optimize Operations

When faced with a business disruption that results in a revenue decline, senior leaders often seek financial relief by extending loan terms, laying off employees or closing offices to keep the company afloat. However, there are more sustainable and impactful ways to reduce operating costs. By optimizing IT, companies can realize efficiencies that endure, which in turn leads to cost savings in the long term. Before cloud computing came about, companies would pay for more technical assets than they needed, to ensure they had enough capacity to handle operations at peak activity levels. With AWS, these same companies only pay for resources they actually use, and know that they can instantly scale up or down according to the needs of their business. This reduces operating costs, while providing flexibility to meet changing user demand, such as in the case of business disruptions when sales fall off.

While there are many reasons that companies choose to go to the cloud, two of the most common are **agility** and **elasticity**. With AWS, our customers can quickly provision resources as they are needed, deploying hundreds or even thousands of servers in minutes. As such, companies can quickly develop and deploy new services; it also means teams can experiment and innovate more quickly and frequently. On the flip side, as quickly as companies ramp up, they can also wind down fast without risk, in the case of ending a service or lower-than-expected demand.

AWS Recommendations

In the first – or ‘response’ – phase of disruption, travel and hospitality companies must move quickly, optimizing their operations to adapt to the fast-changing situation. For example, as travelers cancel vacation plans en masse due to the pandemic, travel and hospitality providers must find a way to be able to handle the volume of requests virtually. AWS provides a number of services to enable customers to take informed decisions to both lower their immediate costs of operations, while optimizing environments to provide greater resiliency for the future.

They are the following:

1. **AWS Trusted Advisor** is like having a personal, customized cloud expert on your team. The service helps travel and hospitality customers with real-time guidance to assist with provisioning resources according to AWS best practices. The tool analyzes AWS environments and provides recommendations to optimize cloud infrastructure.
Trusted Advisor helps customers increase security and performance, reduce overall costs, and monitor service limits. Customers can use Trusted Advisor as part of their regular operating practice and to continually maintain optimal performance for their applications. Trusted Advisor Best Practices explores a rich set of checks and recommendations across five categories: cost optimization, security, fault tolerance, performance, and service limits.

2 The AWS Limit Monitor proactively tracks resource usage and sends notifications as you approach limits, so you will not go over what you had planned to use. It is easy to deploy and leverages the AWS Trusted Advisor Service Limits’ checks as well as Service Quotas. Limit Monitor also displays usage and thresholds for specific AWS services while centrally managing your usage caps.

3 The AWS Well-Architected Tool helps review the state of AWS workloads and compares them to the latest architectural best practices to make sure the system is performing optimally. Checking to ensure each workload is up to modern standards results in immediate and long-term benefits. For example, there are insights to be gained from switching to smaller and low-cost instance families (from the 275 Amazon EC2 instance types available for virtually every business need), controlling components, initiating exception management, or pausing Amazon Redshift and RDS instances when they are not being used. Just define the workload and answer a set of questions regarding operational excellence, security, reliability, performance efficiency and cost-optimization – and you will get a plan on how to architect for the cloud using best practices, which includes creating a more efficient, lower-cost architecture. The tool is based on the AWS Well-Architected Framework, developed to evaluate architectures and implement designs that will scale over time.

4 AWS Cost Explorer enables travel and hospitality customers to visualize, understand, and manage their AWS costs and usage. Custom reports analyze total costs and usage across all AWS accounts, enabling customers to dive deeper, identify trends, determine cost drivers, and detect anomalies.

When travel and hospitality companies want to minimize their utility costs, they do so by reducing the use of HVAC (heating, ventilation and air conditioning) systems when offices or facilities are empty. With AWS, they can do the same thing with instances, which are servers that are spun up to run applications. With their Amazon EC2 (compute) and Amazon RDS (relational database) instances, they can use AWS Instance Scheduler to configure custom start and stop schedules – perfect for development and testing environments used only during weekday office hours. The solution is easy to deploy, and helps reduce operational costs for both development and production environments. Companies who use this solution to run instances during regular business hours can cut costs by about 70% compared to running those instances 24 hours a day, 7 days a week.

Similarly, for companies using Amazon WorkSpaces, which lets employees quickly access and use virtual desktops anywhere on any approved device, Amazon WorkSpaces Cost Optimizer is another cost-saving solution from AWS. It analyzes WorkSpaces usage data and automatically applies the most cost-effective billing option, whether hourly or monthly – which comes in handy when usage is unpredictable.
As travel and hospitality companies look to optimize their operations in response to business disruption, they face the challenge of having to do even more with even less. Automation lets companies efficiently manage repetitive processes cost efficiently, without manual intervention. This leads to increased service availability, improved accuracy and certainty, freeing up scarce resources to focus on what really matters.

AWS Recommendations

Once cloud resources are available on demand and can be scaled up or down as needed, companies will now have extra bandwidth to embrace innovative operating models. One area of improvement: Many companies use their cloud resources as they would a legacy data center, with the internal IT team provisioning more servers than needed to prepare for peak demand resulting in overcapacity.

Using automation solves the problem by bringing in the agility, speed, visibility, and scalability needed to respond to a constantly changing technology landscape. AWS has a variety solutions to enable travel and hospitality customers to automate and manage their cloud investments.

1. When travel companies break down traditional silos, they gain system-wide visibility that enables them to make data-driven decisions and resolve issues. Amazon CloudWatch is a monitoring service – provided to DevOps engineers, developers, and managers – that collects, accesses, and correlates data on a single platform across their AWS resources, applications, and services. Customers gain operational efficiencies by setting alarms and automating actions based on pre-defined metrics or machine learning-based algorithms that identify anomalies.

2. AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, it is easy to setup application scaling for many resources across multiple services in minutes. The service provides a simple, powerful user interface that lets you build scaling plans for resources including Amazon EC2 instances and Spot Fleets, Amazon ECS tasks, Amazon DynamoDB tables and indexes, and Amazon Aurora Replicas.

AWS Auto Scaling makes scaling simple, with recommendations that let you optimize performance and costs – or a balance of both. If you are already using Amazon EC2 Auto Scaling to dynamically scale your Amazon EC2 instances, you can now combine it with AWS Auto Scaling to scale additional resources for other AWS services. With AWS Auto Scaling, your applications will always have the right resources at the right time.

3. As highlighted in the prior section, AWS Instance Scheduler automates the provisioning and suspension of Amazon EC2 (compute) and Amazon RDS (relational database) services based on fixed schedules, which are ideal for managing specific technical environments required only at certain times, rather than 24x7 – such as those used for application development and testing. Companies that use Instance Scheduler to run instances during regular business hours have found that they can save up to 70% compared to running the instances 24 hours a day.

4. Similarly, AWS customers can automate their use of storage classes as well as their compute requirements. Amazon Simple Storage Service (S3) stores trillions of objects, and processes millions of requests for them every second. Travel and hospitality customers count on S3 to support their backup and recovery, data archiving, data lake, big data analytics, hybrid cloud storage, cloud-native storage, and disaster recovery needs.

S3 Intelligent-Tiering makes it easier for customers to take advantage of S3 without having to develop a deep understanding of data access patterns by incorporating two access tiers: frequent access and infrequent access. For a small monitoring and automation fee, S3 Intelligent-Tiering monitors access patterns and moves objects that have not been accessed for 30 consecutive days to the infrequent access tier. If the data is accessed later, it is automatically moved back to the frequent access tier. The bottom line: Customers save money even under changing access patterns, with no performance impact, no operational overhead, and no retrieval fees.
As part of our customer care improvement initiatives, we wanted to offer access to support 24/7 and allow our customer care agents to spend more time on our customers that have more challenging needs that require a human touch. We wanted to leverage AI technology powered by AWS in order to boost our customers’ experience. Cation Consulting’s approach was to put itself in the shoes of Ryanair customers and build a solution based on Amazon Lex and Amazon SageMaker that answered Ryanair’s specific needs. Since the launch in June 2018, the Ryanair chatbot has handled almost 3M customer conversations across English, Italian, Spanish, French and German. We see the Ryanair chatbot as an extension of our customer care team which has played a key role in enhancing our customers’ experience.

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Lee Reddin
Head of Service Design, Ryanair
2 Offloading customer service to highly automated, self-service and digital channels can alleviate the pressure on contact centers, increase capacity and lower the cost of handling customers. Service chatbots can be deployed quickly and handle very large volumes simultaneously. Services including Amazon Lex and Amazon SageMaker are used by travel and hospitality customers to rapidly deploy customer self-service options. For example, see how European airline Ryanair was able to answer customer questions rapidly and easily using Amazon Lex and Amazon SageMaker.
For travelers, flying on their preferred airline to meetings, staying in a particular hotel, and eating in a favorite restaurant are some of life’s most fulfilling moments. Yet disruption can upend all these best-made plans. During these times, the need for companies to communicate with customers clearly and regularly is more important than ever.

**AWS Recommendations**

It is necessary to communicate swiftly, providing clear, timely and personalized information at times of disruption and uncertainty. Consumers want to know whether a flight has been cancelled, a tourist destination remains open, whether they will get a refund, among other queries. Travel and hospitality organizations have the opportunity to communicate effective, personalized messages using the most appropriate channel that is useful to consumers right now – as well as periodically providing support and empathy, but always with detailed, actionable information.

1. **Amazon Pinpoint**, **Amazon Personalize**, **Amazon Simple Email Service (SES)**, and **Amazon Simple Notification Service (SNS)** enable companies to gain a deep understanding of their customers, and engage them with personalized messages through the channels they prefer. Amazon Pinpoint lets marketers and developers deliver customer-centric engagement experiences. Amazon Personalize can create recommendations based on a consumer’s specific needs, known preferences and previous interactions. Amazon SES will help digital marketers send marketing, notification, and transactional emails. Amazon SNS is a simple and secure way to send text messages to large numbers of consumers. These services enable travel and hospitality companies to flexibly and affordably engage their travelers and guests with personalized, timely and relevant communication through many channels.

2. **NLX** helps travel and hospitality companies automate and optimize their customer engagement through automated, managed chat and voice applications using Amazon Connect and Amazon SageMaker. The NLX solution enables travelers to check their flight or hotel booking status, make changes to their existing reservations, explore refund options, and more. **Pypestream** provides conversational AI solutions for travel and hospitality companies with pre-built conversation designs. It enables companies to rapidly deploy intelligent chatbot solutions to automate business critical transactions, including cancellations, ring or other service inquiries.
As travel and hospitality companies deal with disruptive events, it is easy to overlook their own internal needs. Office workers, support teams and contact center agents may no longer have access to company facilities, and will likely be required to work remotely. But quickly providing system access to employees working remotely while at the same time maintaining data integrity and security controls often become incompatible companions.

**AWS Recommendations**

1. **Amazon WorkSpaces** enables large numbers of employees to work remotely quickly. It is a managed desktop-as-a-service solution that lets companies call up Windows or Linux desktops in minutes. It is a scalable, cost-effective, secure solution for remote workers that will ensure uninterrupted operations.

   "As an essential business to support local restaurants and promote the safety of our drivers, GrubHub leveraged Amazon WorkSpaces to ensure business continuity and support the safety of our employees by moving all departments to a Work From Home (WFH) model. The Corporate Cloud Services team at GrubHub was able to scale from a handful of Amazon WorkSpaces to over 1,200 in two days. Amazon WorkSpaces easily accommodated our real-time customer communication and contact channels allowing 100% of our workforce and new employees to be WFH, accelerating our BYOD (Bring Your Own Device) strategy. GrubHub will be able to sustain our high-quality standards for customer service during this uncertain time while having the ability to scale up or down quickly based on new information and changing work patterns. GrubHub now has the flexibility to control cost and scale this virtual desktop environment to meet the current needs and future needs of our customers, restaurant partners, and drivers for whatever comes next."

   Justinian Fortenberry
   Chief Information Security Officer, Grubhub Holdings, Inc.

2. In cases where only one or a few applications need to be available to remote workers, as might be the case for a contact center agent, companies can use **Amazon AppStream 2.0**, a fully managed application streaming service. Companies can easily scale to any number of users across the globe without acquiring, provisioning, and operating hardware or infrastructure.
3 **AWS Client VPN** enables secure and scalable remote network access. This is a fully-managed, pay-as-you-go VPN service that elastically scales to support thousands of remote users. Client VPN is designed so employees can access any company resource, both within AWS and on premises, from any location, with one console to manage all connections. Create Client VPN endpoints, associate them with VPC subnets, and set up authorization rules so users can access the resources they need – whether using laptops or mobile devices.

4 **Single Sign On access to resources** makes it easy to centrally manage access to multiple AWS accounts and business applications and provide users with single sign-on access to all their assigned accounts and applications from one place. With AWS SSO, easily manage SSO access and user permissions to all accounts in AWS Organizations centrally. SSO configures and maintains all the necessary permissions for accounts automatically, without requiring any additional setup in the individual accounts. Assign user permissions based on common job functions and customize these permissions to meet specific security requirements. AWS SSO also includes built-in integrations to many business applications, such as Salesforce, Box, and Office 365.

5 **Amazon Chime** enables chat, voice calls, and video meetings, both inside and outside the organization. It is a secure solution that can be accessed from anywhere on any device. Employees will never miss a meeting again, as Amazon Chime will call on all devices when it is time to start or join a meeting.

6 **Amazon WorkDocs** is a collaboration tool that lets colleagues easily share documents, provide feedback, and edit documents in real time. Amazon WorkDocs is a fully managed, secure content-creation, storage, and collaboration service. Documents and other content are stored centrally, but can be accessed from anywhere on any device. It is a cost-effective service that lets customers to retire legacy infrastructure by moving file-sharing to the cloud.
Chapter 4

Preparing for the Future
After taking steps to support customers, employees and business partners, reduce operating expenses and implement business continuity or contingency plans, travel and hospitality companies now transition to managing their ongoing operations. During the first phase, airlines would have cancelled flights and services, accommodation providers and restaurants companies would have suspended operations, and cruise lines recalled their fleets.

As companies adapt to the disruption, they begin to look forward, evaluating how to sustain operations through the uncertain period ahead as they do not know when they will be able to resume full operations again. Depending on the nature of the disruption, this phase of continuity could be short – or long. Such uncertainty causes travel and hospitality companies to seek longer-term solutions to maintain a base-level of operations and protect their business.

Some companies choose to go further. They recognize that their organizations will emerge a different entity from the one that entered the crisis. They realize that ‘business as usual’ no longer means ‘business the way it was.’ So they bring forward plans to modernize and transform almost every aspect of their business – from how they deliver guest experiences and manage operations, to how they build, handle and deploy technology resources to become truly resilient organizations.

For example, Elenium Automation is a passenger experience company and AWS Partner, focused on improving the journey of air travelers using automation and technology built on AWS. When the industry was upended by new restrictions, Elenium had to adapt and assist their customers in sustaining operations. Elenium was able to pivot their focus to provide a service the industry needed: touchless health screenings.

While no one knows how long this service will be needed, it allows their company and others to continue to operate in the heat of the crisis. Elenium quickly developed a self-service technology that can detect a passenger’s temperature, heart rate and respiratory rate and ask a series of questions from a distance of up to 1.5 meters at airport touchpoints such as a kiosk, bag drop, security or immigration; the device becomes a screening station for potential symptoms of COVID-19. The kiosk is likely to be iterated on, but its early version served an important function during the continuity phase.

“The travel and hospitality industry will get through this. When COVID-19 happened, it made a lot of sense to repurpose our technology for the broader population because people won’t want to touch surfaces when they are allowed to travel again. I’m proud Elenium has been able to quickly develop technology to give airlines and airports the potential to rebound more quickly.”

Aaron Hornlimann
CEO, Elenium Automation
As companies adjust to the ongoing crisis and get through addressing the immediate spike in consumer queries and concerns, the next step is executing business continuity plans. For some, this requires a material change to operations. Businesses that heavily rely on physical locations for sales, such as restaurants, hotels and airports, potentially close facilities or adapt to changing demand by adjusting service delivery models – for example, restaurants offering only take-out and delivery, or hotels only partly opening accommodations, with reduced ancillary services. For many companies, actions also include instituting furloughs or even permanent workforce cuts. Companies that are confident of surviving or know they can rebuild will start to look ahead: How to manage their complex organizations with less capital for investment and fewer resources amid a changing operating environment. This could include consolidating their supplier base, reducing the number of providers, systems and applications used, rethinking existing legacy providers with punitive licensing arrangements and evaluating the broader adoption of cloud to provide greater agility and flexibility. The mantra for this phase is "do (even) more, with (even) less."

**Efficient IT Operations**

Once companies transition into the continuity phase – where they manage operations with a new level of business activity and adjusted transaction volumes – they can take additional steps to become more efficient in their IT operations. This is crucial because companies look for structural efficiencies to sustain themselves for the long-term. Common characteristics of this phase include the removal of redundant infrastructure, consolidation of IT suppliers, third party applications and one-off solutions, review and cleanup of security policies, and transparent reporting of IT costs across key business units – all while making their value more visible to other stakeholders in the organization.

As travel and hospitality companies adapt to the new operating environment, they can begin to implement efficiencies, factoring in adjustments to their own teams and organizational structure, budget and resource constraints, and baseline capacity requirements for compute, storage and database. With these insights, companies can better reserve IT capacity, secure lower operating costs, and right-size computing services to meet their needs. To identify structural efficiencies, they can determine new procurement models for provisioning applications; evaluate alternatives to traditional, proprietary and expensive software that has inflexible licensing terms; and consolidate on a common cloud platform to achieve scale, efficiency, agility and flexibility to deliver sustained resiliency.

**AWS Recommendations**

1. During the continuity phase, travel and hospitality companies are well placed to adjust structurally and lower their IT costs. This follows the initial ‘response’ phase when companies are first adjusting to the new operating environment – and paying for just the right amount of computing and IT resources required to meet their needs. While the on-demand nature of cloud computing offers flexibility, companies with a visibility into their compute requirements can take advantage of alternative purchase models to lower their costs. With an understanding of the baseline level of the required compute capacity, AWS recommends the use of **Reserved Instances** to secure longer-term savings. Similarly, for certain compute requirements such as data analysis and batch processes, which do not require continuous availability of compute capacity, customers can take advantage of the significantly lower cost option of **Spot Instances** to meet their needs:

   - **Reserved Instances (RI)** enable AWS customers to reserve specific compute (Amazon EC2) capacity, ideal for running applications with steady state usage. Depending on the level of commitment made, customers are able to secure discounts of up to 72% compared to on-demand compute pricing. The **Reserved Instance Marketplace** enables organizations to buy and sell Reserved Instances among AWS customers.
**Spot Instances** enable customers to provision compute resources at predictable prices that are up to 90% lower than on-demand instances. Spot Instances offer the massive scale of AWS, and are ideal for data analysis, image and media processing and for maintaining web services during peak periods.

Another option to secure longer-term IT efficiencies come from **Savings Plans** – a flexible pricing model for AWS Compute Services. This model offers lower prices on Amazon EC2 instances usage, regardless of instance family, size, operating system, tenancy or AWS Region, and also applies to AWS Fargate and AWS Lambda usage. Savings Plans can deliver savings of up to 72% of AWS compute usage provided the company commits to using a specific amount of computer power (measured in $/hour) for a 1- or 3-year period.
Travel and hospitality companies of all sizes find themselves with a complex technology landscape – with a myriad of “point solutions”, one-off providers, integration challenges and risks, and fragmented operations. Disruptive events compel companies to streamline their operations, in order to drive greater efficiency and a lower total cost of ownership. Reducing complexity by consolidating operations with a smaller number of providers yields unexpected benefits – from the demands on legal teams required to negotiate and manage contracts with each provider, through finance teams who manage procurement process, billing and payment operations, through to the IT teams supporting each of the applications, tools and systems. With fewer services to support, consolidation has the added benefit of enabling IT teams to deepen their expertise of mission-critical platforms.

AWS Recommendations

When a crisis occurs, the benefits of the cloud – agility, cost savings and elasticity – truly shine like never before. For many companies looking to embark on their cloud journey, the first step will be to assess and catalog their existing on-premises infrastructure and architecture, application portfolio, and existing third-party licensing obligations. With this information, companies can assess their ability to streamline operations, understand areas of potential cost savings and efficiencies, and develop a program to consolidate services.

1. **AWS Application Discovery Service** helps companies assess their consolidation options. They begin by examining their organization’s current readiness for operating in the cloud. Our tools help them assess their on-premises resources and build a right-sized, optimized cost projection for running applications in AWS. The initial evaluation should include a quick review of the company’s readiness by completing the Cloud Adoption Readiness Tool to evaluate strengths and opportunities for improvement. This initial assessment could lead to a deeper engagement with TSO Logic, an AWS company, which provides a total cost of ownership (TCO) projection for AWS based on your actual utilization of resources and our experience in helping customers optimize their compute, storage, database, networking, and software licenses on AWS. When you only need to generate right-sized EC2 instance recommendations for running on-premises workloads in AWS, use AWS Migration Hub.

2. The **Optimization and Licensing Assessment (OLA)** lets companies identify all software licenses in their environment regardless of platform, application, or geography. With this data and multiple presented scenarios, organizations can then right size their licenses based on actual resource consumption (ARC).

3. Travel and hospitality companies increasingly use **AWS Marketplace**, a digital catalog with thousands of software listings from independent software vendors, to find, test, buy, and deploy software that runs on AWS. Consolidating procurement of third party applications and services through Marketplace can streamline operations, accelerate the deployment of new services and reduce costs. Travel and hospitality companies have chosen Marketplace to buy and deploy software from providers including AppDynamics, Commvault, Crowdstrike, Databricks, Delphix, Fortinet, Micro Focus, Nasuni, New Relic, Palo Alto Networks, Talend and more, in the categories below.
4 As companies look to streamline their IT operations, another area to make more efficient is disaster recovery, which is traditionally complex and expensive to manage. **CloudEndure Disaster Recovery** service can address these issues. IT disasters such as data center failures, server corruptions, or cyber-attacks not only disrupt your business, but also cause data loss, impact your revenue, and damage your reputation. CloudEndure Disaster Recovery minimizes downtime and data loss by providing fast, reliable recovery of physical, virtual, and cloud-based servers into AWS. CloudEndure Disaster Recovery continuously replicates your machines into a low-cost staging area in your target AWS account and preferred Region. In the case of a disaster, you can instruct CloudEndure Disaster Recovery to automatically launch thousands of your machines in their fully provisioned state in minutes. By replicating your machines into a low-cost staging area while still being able to launch fully provisioned machines within minutes, CloudEndure Disaster Recovery can significantly reduce the cost of your disaster recovery infrastructure.

5 With travel and hospitality companies increasingly relying on digital channels for their business, the provision of fast, efficient, secure and cost-effective global content distribution services becomes ever more important. This is another area where companies can streamline their IT operations and consolidate their supplier base, lower their costs and improve resiliency. **Amazon CloudFront** is a fast Content Delivery Network (CDN) service that securely delivers data, videos, applications, and APIs globally with low latency and high transfer speeds. CloudFront works seamlessly with services including **AWS Shield** for DDoS (Distributed Denial of Service) mitigation, Amazon S3, Elastic Load Balancing or Amazon EC2 as origins for your applications. Amazon CloudFront offers a compelling alternative to traditional CDN providers and services, with a simple, pay-as-you-go pricing model with no upfront fees or required long-term contracts.

6 Travel and hospitality companies are awash with data but potentially not always extracting the most value from it. With data often stored in closed or point solutions, a first step for companies is to unleash and use their data. Modern, fit for purpose cloud-native data services enable applications to be globally available, operate with microsecond latency, handle millions of requests per second, operate with zero downtime, pay for only what is used, and managed efficiently. Streamlining the acquisition, storing, management and processing of data across an organization not only drives greater efficiency, it can yield richer insights, too. To get started, **AWS Lake Formation** is a centralized, curated, and secured repository that stores all organizational data, both in its original form and prepared for analysis. A data lake enables a company to break down data silos and combine different types of analytics to gain insights and guide better business decisions. AWS Lake Formation is a service that makes it easy to set up a secure data lake in days.
In addition to storing proprietary (first party) data in an AWS data lake, companies can also store and make use of third-party data. The AWS Data Exchange makes it easy to find, subscribe to, and use third-party data in the cloud. Existing data assets can be supplemented by using qualified data suppliers for additional insights. Data sources related to the recent COVID-19 pandemic have been made available, many at no cost, to help with business continuity and recovery planning. These include NinthDecimal with hospitality visitation data, Trivago with price per night hotel data, Kochava Collective with airport visitation data, Foursquare with restaurant foot traffic data, and many more.

C3.ai built a COVID-19 Data Lake on AWS. The data lake pre-establishes important linkages in disparate COVID-19 data sets sourced from all over the globe, so researchers can easily navigate and explore the data features that may be of interest (e.g., diagnosis, age, locale, preexisting condition, etc.) and perform sophisticated data science. The Travel Recover Inside Portal (TRIP) powered by 3Victors, ARC (Airlines Reporting Corporation) and Boston Consulting Group is an easy-to-access Tableau interface for the global travel community to navigate the challenges surrounding COVID-19. It aims to help customers and the industry to better understand the impacts of this pandemic and monitor air travel’s recovery. 3Victors data can also be ingested and integrated into the AWS COVID Data Lake.
In the face of business disruption, many companies are compelled to layoff or furlough team members, both in the field and at corporate headquarters. As these companies progress through the continuity phase, they focus their scarce resources on activities that maintain or drive their strategic advantages and differentiation. For technology teams, this creates a conflict between managing legacy systems and technologies while innovating to deliver new services and capabilities. Companies that are able to unburden their teams from the heavy-lifting of managing repetitive tasks, or processes that add little to no direct value to travelers will achieve longer-term resiliency.

AWS Recommendations

Maintaining and managing traditional on-premises infrastructure and data centers offer little differentiation for travel and hospitality companies. Designing, installing, administering, optimizing, patching, maintaining and overseeing the security and integrity of data centers do not bring in additional business. The good news is that companies no longer need dedicated resources or engage in repetitive cycles of work to make an accelerated journey to the cloud. AWS has a range of services and capabilities for travel and hospitality companies to alleviate their resource constraints, setting them free to focus on their strategic advantages:

1. **AWS Managed Services (AMS)** unburdens the organization from infrastructure operations so that it can direct resources toward differentiating its business. An independent research paper published by Forrester revealed an average 243% ROI from such initiatives.

2. **AWS Professional Services** provides assistance through a collection of offerings that help achieve specific outcomes related to cloud adoption. AWS also delivers focused guidance through our global specialty practices, which cover a variety of solutions, technologies, and industries. In addition to working alongside our customers, we share our experience through tech talk webinars, white papers, and blog posts that are available online.

3. **AWS IQ** enables companies to find, securely collaborate with, and pay AWS Certified third-party experts for on-demand project work. Experts on AWS IQ can help get projects started and completed faster by offering hands-on help remotely for a wide range of activities, such as hosting websites, migrating databases, setting up networks, building analytics solution, or optimizing AWS service usage.

4. **AWS Database Migration Service**, **AWS Server Migration Service**, and **CloudEndure Migration** are three services that allow for rapid modernization and cloud adoption. Modernize without worrying about compatibility, performance disruption, or long cut-over windows. Replicate source machines into an AWS account without causing downtime or impacting performance making it easier for organizations to coordinate large-scale migrations.

5. The AWS **Migration Acceleration Program (MAP)** exists to provide consulting support, training and investment to accelerate cloud adoption, build strong operational foundations, skills and capabilities, and to help offset some of the initial costs of migration. MAP includes a methodology for executing legacy migrations as well as a robust set of tools to automate and accelerate common migration scenarios including MAP for Database and Analytics, MAP for Contact Centers, MAP for SAP, MAP for Storage, MAP for VMWare, and MAP for Windows.

6. **Revenue Management Architecture for Airlines** and **Revenue Management Architecture for Lodging** enables travel and hospitality companies to migrate an on-premises revenue management system to AWS to add real-time capabilities on source data of choice, improve the flexibility and agility of reporting and analytics, and reduce the total cost of ownership (TCO) by using Spot Instances and big data architecture.

7. **Swiss Aviation Software / AMOS on AWS** is a Maintenance and Repair Organization (MRO) software AMOS implementation on AWS that provides airlines with a highly available, resilient, and cost-effective architecture.
8 **Airline Information Management System (AIMS)** Implementation on AWS is a crew management and operations control software. AIMS implementation on AWS provides airlines a highly available, resilient, and cost-effective architecture.

9 **IFS/MXI Maintenix® Software on AWS** uses AWS to create a highly available, secure, flexible, and cost-effective architecture to host IFS Maintenix® Aviation Maintenance Management Software.

10 The **Database Freedom Program** is a unique program designed to assist customers migrating from traditional database engines to cloud-native ones on AWS. AWS meets the needs of modern applications by offering a range of purpose-built databases enabling customers to focus on innovation.

11 Internally within travel and hospitality companies, employees often spend valuable time trying to search for essential information, whether related to their day-to-day tasks or to serve their customers. **Amazon Kendra** is a highly accurate and easy to use enterprise search service that is powered by machine learning. Kendra delivers powerful natural language search capabilities to websites, applications and enterprises so employees can more easily find the information they need within the vast amount of content spread across organizations.

12 Companies that design and code their own applications could inadvertently engineer expensive procedures into their builds, for example, consuming wasted CPU cycles. **Amazon CodeGuru** is like having a distinguished engineer on call, 24x7. It locates the most expensive lines of code in apps and provides specific recommendations to correct them.

CodeGuru is powered by machine learning, best practices, and hard-learned lessons across millions of code reviews and thousands of applications profiled on open source projects and internally at Amazon. With CodeGuru, you can find and fix code issues such as resource leaks, potential concurrency race conditions, and wasted CPU cycles. CodeGuru supports Java applications today, with support for more languages coming soon. CodeGuru helps you catch problems faster and earlier, so you can build and run better software.
Amazon Device Farm can be used to streamline testing and integration of web sites and mobile apps. AWS Device Farm is an application testing service that improves the quality of web and mobile apps by testing them across an extensive range of desktop browsers and real mobile devices without having to provision and manage any testing infrastructure. The service enables the ability to run tests concurrently on multiple desktop browsers or real devices to speed up the execution of test suites, and generates videos and logs to help quickly identify issues with the app.

The following companies have chosen to build their business on AWS, and offer solutions in this area. Cloud-native ISVs like Infor (Hospitality Management Suite), IBS Software (Aviation and Hospitality), Upserve (Restaurant Management) or Toast (Point of Sale System) deliver core applications for Travel and Hospitality, enabling customers to move more rapidly to the cloud, bypassing traditional on-premises software applications.
Disruption often fosters greater collaboration between lines of business and their technology teams. Developing a shared understanding of the ‘art of the possible’ and enabling teams to self-serve creates efficiency and builds longer-term resiliency. Upskilling and re-skilling teams can accelerate innovation and the launch of new services, reduce reliance on expensive third parties and contractors, and create new development opportunities for internal talent. Technologists can upskill or re-skill on cloud knowledge, business workers can broaden their acumen, field staff are trained on revised corporate policies and evolving standard operating procedures.

**AWS Recommendations**

1. The advantages of cloud computing – agility, flexibility, cost savings, accelerated innovation and going global in moments – can all be enhanced by having a well-trained team on hand. AWS provides a wide range of training and certification options from digital to classroom-based learning paths, relevant to different roles and responsibilities within any company. [AWS Training & Certification](https://aws.amazon.com/training) provides content built by experts at AWS and updated regularly to keep pace with AWS service updates, so companies can be sure employees are learning the latest and keeping their cloud skills updated and relevant.

2. Ensuring that your frontline workers are equipped to deliver outstanding levels of customer service is imperative during the ‘continuity’ phase. Each team member will need to learn about revised corporate policies, standard operating procedures, and health and safety regulations. Declining a traveler from a flight, responding to a sealed delivery package tampering, or ensuring unseen housekeeping procedures to a guest are not one dimensional interactions. [Amazon Sumerian](https://aws.amazon.com/sumerian/) can create immersive situational training that will empower your staff.
Chapter 5

Thriving in the New Normal
As travel and hospitality companies turn their attention to recovery, it means customization, adaptation and re-invention begins. Out of necessity, in a moment of crisis, innovation can flourish. With the agility afforded by cloud computing, together with the breadth and depth of services available through AWS, travel and hospitality companies can test, learn and innovate quickly to meet new business opportunities. This becomes the start of a long-lasting digital transformation which in turn enables companies to thrive.

Recovering from disruption for many travel and hospitality companies often means adopting new ways of serving travelers and guests. For restaurant operators – which potentially were unable to welcome guests on their properties for a period of time – enabling digital ordering, take-out and delivery became business necessities. To handle sharply increased delivery orders, companies need to provide seamless customer experiences via personal and relevant communications that scale with increases in demand. For example, Braze provides a comprehensive customer engagement platform helping customers succeed in the new normal.

“Leading global delivery brand Deliveroo is an exemplar of what’s possible with the right technology. Working with Braze, Deliveroo was able to automatically move data between layers of their technology stack. That data agility made it possible to manage and evolve the company’s marketing strategy and process, while also giving teams across all regions seamless access to any data captured by Braze. Deliveroo was able to break down silos, improve time-to-value, and democratize data access. All of the company’s global teams are now able to explore data and identify insights for their specific regions and share findings with the company as a whole, supporting more frequent experimentation and reducing the amount of time the CRM team spent fielding data requests by 8x.”

Ido Bar Oz
Strategic Cloud Alliance Director, Braze
As restrictions ease, markets reopen and consumer confidence grows, companies will need to determine how best to return supply while both meeting and stimulating demand. Prioritizing supply (which hotels or restaurant units to reopen and when, which flight routes and frequencies to provision), and how to price and distribute this supply, will require entirely different channel management, forecasting and revenue management models. Re-engaging, hiring and retraining furloughed and new employees will need to be finely balanced to meet demand while not getting ahead of such demand. Some franchisees or operators will not reopen; deciding how to fill these voids might be the incumbent’s challenge, and a challenger’s opportunity. Guest and traveler expectations for their physical wellbeing, health and safety will likely have changed, which in turn will require new policies, procedures and operating models for the delivery of physical services. The concept of guest loyalty, together with the tone, nature and engagement models for marketing and communication will need to adjust, and the ‘legacy’ of millions or billions of credits awarded during the immediate The response will impact revenue and operations for the foreseeable future.

### Business Priority: Employee and External Communications

Ensuring that employees have access to company policies and procedures is essential. Documentation such on-boarding and new hire orientation materials, company updates and other essential materials also are important for employees to have. Sharing of digital assets and communication is also likely to be required with third party contractors, suppliers and others organizations.

**AWS Recommendations**

Traditional collaboration or communication platforms are expensive to configure and maintain, or do not work well outside the confines of a typical office environment. Flexible services that can scale up and scale down as required, and provisioned on a pay-as-you-go basis, offer much more flexibility to ever-changing and dynamic business requirements.

1. **Amazon WorkDocs** makes it easy to collaborate with others from anywhere and easily share content, provide rich feedback, and collaboratively edit documents. It can help retire legacy file-sharing infrastructure by moving file shares to the cloud. Amazon WorkDocs is a fully managed, secure content creation, storage, and collaboration service where you can easily create, edit, and share content. Because it is stored centrally on AWS, you can access it from anywhere on any device. There are no upfront fees or commitments. Pay only for active user accounts, and the storage used.

2. **Amazon Chime** enables meetings, chat, and the ability to place business phone calls with a single, secure application from anywhere. No need to switch between applications to collaborate with others, where users can go instantly from a chat to a call, share their screen, and even invite more people to join the meeting.
3 **Amazon Connect** enables companies to have a fully operational contact center that can be operated virtually, anywhere. Agents, Supervisors, Managers, and Admins can work remotely and still be able to perform all their normal contact center activities. Agents can make and take calls. Supervisors can monitor and coach agents in real time as if they were sitting in the same office. Managers can view dashboards, run reports, monitor service levels, listen to call recordings, and track performance, all from home. Amazon Connect contact center can be set up in minutes and will be ready to start providing the best possible customer service.

“RedAwning serves tens of thousands of vacation rental guests each month. With Amazon Connect and Amazon Lex, we are able to serve our guests more quickly, while also improving efficiency for RedAwning. Using Amazon Lex, we built Scarlett, a virtual assistant that can access our reservation database using AWS Lambda. Through Amazon Connect with Amazon Lex, Scarlett answers calls, engages naturally with guests, and then quickly matches them with their reservations. Scarlett can resolve the issues guests most frequently call about without the need to interact with a human agent, which allows us to easily scale our operations to match our rapidly growing customer base. Using this Amazon Lex integration with Amazon Connect, we no longer have expensive per agent license costs, nor the complexity of having to manage telephony, providing us with 10 times the functionality at 1/10th the cost.”

**Tim Choate**  
Founder and CEO  
RedAwning

4 **Whispir Crisis Communication** provides a Workflow Communication as a Service (WCaaS) platform, to quickly and cost-effectively solve immediate communication needs. Communication during a period of disruption is critical to an organization’s efforts to prioritize the health and safety of all stakeholders, conduct tracing to respond to any statutory requests, maintain achievement of business performance metrics, and quickly recognize and respond to unforeseen events that may arise.

5 **AllyO** provides an AI-based recruiting platform to provide high scale and efficient full-cycle recruiting and employee engagement. **ALICE** offers a digital platform for hotels to manage tasks and communication between hotel staff members and to engage guests using channels such as SMS or Facebook Messenger. ALICE is also used by hotel managers to ensure service is being delivered in a consistent manner and the hotel complies with brand standards.
The recent pandemic has placed increased scrutiny on hygiene and cleanliness, which in turn accelerates the demand for, and adoption of, contactless solutions. As new standards for personal space and protecting wellness evolve, the entire end-to-end journey and experience has to be reassessed for travelers and guests. Restaurants are removing menu cards and bill holders. Airlines and hotels may require check-in via a personal device. Touchless biometrics, digital IDs, self-service, automation, and mobile apps will have a crucial role to play. Touchless technology was advancing at a steady pace as seen in the growth of mobile, digital wallets. Now, it is being fast-tracked.

AWS Recommendations

Travel and hospitality companies will likely need to support new requirements for social distancing, higher levels of cleanliness and will need to rethink service levels and product offerings. Similarly, travelers and guests will likely want to minimize their interactions with common-use systems, and want to manage more interactions through self-service or digital channels. As companies rethink how to deliver high-quality interactions, new types of interfaces will become commonplace. More services will likely be enabled through voice-enables capabilities, while virtual assistants and immersive technologies will become more widespread.

1. **Amazon Lex** is a service for building conversational interfaces into any application using voice and text. It provides the advanced deep learning functionalities of automatic speech recognition (ASR) for converting speech to text, and natural language understanding (NLU) to recognize the intent of the text, to enable you to build applications with highly engaging user experiences and life-like conversational interactions. **Amazon Polly** is a service that turns text into lifelike speech, allowing you to create applications that talk, and build entirely new categories of speech-enabled products. Polly's **Text-to-Speech** (TTS) service uses advanced deep learning technologies to synthesize natural sounding human speech. With dozens of lifelike voices across a broad set of languages, companies can build speech-enabled applications that work in many different countries. Amazon Polly's **Brand Voice** can create a custom voice for your company. This is a custom engagement where you will work with the Amazon Polly team to build a voice for the exclusive use of your company.

2. **Amazon Alexa Skills** are like apps for Alexa, and provide a new channel for content and services. It lets customers use their voices to perform everyday tasks such as checking the news, listening to music, playing a game, and more. Organizations and individuals can publish skills in the Alexa Skills Store to reach and delight customers on hundreds of millions of Alexa devices.
Three dimensional (3D), augmented reality (AR) and virtual reality (VR) immersive experiences are breathing new life into user experiences, increasing user engagement with brands and improving productivity in the workplace. **Amazon Sumerian** brings a new dimension to web and mobile applications. The service makes it easy to create engaging 3D front-end experiences and is integrated with AWS services to provide easy access to machine learning, chatbots, code execution and more. As a web-based platform, your immersive experiences are accessible via a simple web browser URL and can also run on popular hardware for AR/VR. Bring your destination to life with a virtual concierge, through life-like avatars and more.

**Amazon Machine Learning** models running video analysis on cameras and use of natural language processing for rich normal voice customer interactions will need a different approach to implementing technology. This is not just large-scale centralized compute and storage but leveraging and managing sophisticated edge devices. This personalized, customer sentiment-driven experience will extend the personality of your organization, as the voices and exchanges will become an integrated extension of your brand image.

The following companies have chosen to build their business on AWS, and offer solutions in this area: **Elenium Automation** develops touchless self-service kiosks for seamless passenger journeys. **Anyvision** enables touchless screening with their AI Recognition Platform. **Parsons** provides an integrated suite of solutions including Health Status Authentication Software and touchless screening kiosks. **Wipro** created a Temperature Monitoring solution that relies on body scans, dedicated temperature stations and checkpoints.
As travel and hospitality companies plan for recovery, there is a need to identify the travelers and guests that would like to be the first to return – and those that would follow soon after. Companies likely have nuggets of data spread across their multiple systems and departmental silos that would provide invaluable insights.

Essential questions include ‘What are the markets we are going to restart? What are the products we are going to sell? How are the products changing and how are we going to communicate these changes to our customers? What information do customers need to make informed decisions? Which customers should we go after?’ A centralized customer data solution would help answer all these questions.

AWS Recommendations

The Single View of Customer is a data lake solution, which is a central repository of customer information, including demographic data, past transactions, and the loyalty status, that is available across all lines of business. It can be analyzed to support tailored messages (marketing), appropriate products suggestions and recommendations (sales), timely notifications (operations), and seamless contact center experience (customer service).

There are two aspects to consider when evaluating a SVOC: the IT cost savings component by streamlining integrations and breaking down silos, thus avoiding replication of data and constant transfer among the silos; and the revenue potential generated by the line of business by having timely, consistent, and accurate access to customer information whenever needed. AWS has specific solutions for travel and hospitality companies:

1. **Customer Identity Graph for identity resolution** provides a single unified view of customers and prospects by linking multiple identifiers such as cookies, device identifiers, IP addresses, email IDs, and internal enterprise IDs to a known person or anonymous profile using privacy-compliant methods. It also captures customer behavior and preferences across devices and marketing channels. It acts as a central hub and enables targeted advertising, personalization of customer experiences, and measurement of marketing effectiveness.

2. **The AWS Data Platform for Airlines and Data Platform for Lodging** both address the operational and analytics needs of airlines and lodging companies respectively, using open data standards, purpose-built databases, and extensible server-less architecture. These data platforms aim to gradually replace the Enterprise data warehouse platforms and operational data stores traditionally used, with reduced total cost of ownership while improving the service levels and business agility.

3. **The AWS Data Platform for Airlines with Master Data Management (and Data Platform for Lodging with Master Data Management)** enhances the above data platforms by using master data management (MDM) tools to identify unique travelers and duplicates in loyalty membership. This approach allows for developing a single view of customer for up to 70% of the travelers and beyond loyalty members who account for 30-35% of the travelers.

4. **Streaming Airline Ticket Shopping Insights** provides predictive analytics on airline shopping data. 3Victors implemented an AWS a cloud-based architecture to capture and durably store over 10Tb of daily streamed air shopping data messages into a data lake. Dozens of ETL jobs run at regular intervals to populate use case specific data ponds. Simultaneously, the implementation provides an extensible, real-time predictive analytics pipeline for demand forecasting and deal classification.

5. **Reltio** combines modern Master Data Management software with data-driven applications into a connected customer 360 view. With Reltio’s data platform, travel and hospitality companies can power their transformation with connected customer data to drive hyper-personalization at scale, accelerate real-time operations at scale and simplify compliance with customer consent and privacy laws at scale.
Travelers and guests seek accurate information when researching, planning, booking and experiencing destinations, restaurants or recreational places of interest. These potential customers want a personalized experience; they want to be recognized – particularly when they’ve engaged previously with a brand or service – and they want to feel as if their specific needs and desires are being met. While true during business as usual, their wants and desires are amplified in times of disruption. As travel and hospitality companies start to recover, they will want to create personalized offers and serve those offers at the right place and time in order to stimulate demand.

AWS Recommendations

The very essence of travel and hospitality is about personal, customized, tailored experiences. Putting the right offer or appropriate communication in front of the right customer, at the right time can have a significant impact on any business. The following services are available to help:

1. Based on more than 20 years of recommendation experience, Amazon Personalize enables travel and hospitality companies to improve customer engagement by powering personalized product and content recommendations, and targeted marketing promotions. Using machine learning, Amazon Personalize creates higher-quality recommendations for your websites and applications. It is possible to get started without any prior machine learning experience using simple APIs to easily build sophisticated personalization capabilities in just a few clicks. Amazon Personalize will process and examine data, identify what is meaningful, allow a machine learning algorithm to be selected, and train and optimize a custom model based on available data. All the data is encrypted to be private and secure, and is only used to create recommendations specifically for your users. You pay only for what you use, and there are no minimum fees and no upfront commitments.

2. Amazon Pinpoint enables marketers and developers to deliver customer-centric engagement experiences. Better experiences lead to stronger customer relationships and reduces customer churn. In today’s digitally transformed world, it is more important than ever to have a deep customer understanding and to engage them with personalized messages through their preferred channel.
3 **Amazon Connect** is an easy-to-use omnichannel cloud contact center that helps travel and hospitality companies provide superior customer service at a lower cost. More than 10 years ago, Amazon's retail business needed a contact center that would give our customers personal, dynamic, and natural experiences. We couldn't find one that met our needs, so we built it. We've now made this available for all businesses, and today, thousands of companies use Amazon Connect to serve millions of customers daily.

4 The **Intelligent Email Responder** comprehends the intent, identifies the next-best-action, and compiles all the data required using microservices for responding to a customer email. This can drastically reduce the time an agent takes to respond to an email and will help reduce the backlog of emails and improve the response time to the customer.

“Setting up Amazon Connect was straight forward and seamless, enabling us to be operational within a couple of hours. The ability to offer our franchise customers a callback instead of waiting on the phone has improved their experience resulting in a dramatic increase in our customer satisfaction (CSAT) score. Using Amazon Connect, we will be able to decrease costs and realize significant time savings in how quickly we can process the customer calls.”

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**Neville Hamilton**
VP Technology Business Management
Subway Franchise World HQ, LLC

5 **Personalization Using AI/ML for Airlines** and **Personalization Using AI/ML for Lodging** show how to integrate the customer information data platform (Single View Of Customer) with the **Amazon Personalize** engine, and enable interaction with the customer on their preferred communication channel using **Amazon Pinpoint**. This architecture can be used to reduce the cost of sending emails and eliminate integration costs by consolidating multiple email and SMS vendors by using **Amazon Pinpoint**.

6 The **Customer Engagement using AI/ML for Airlines** and **Customer Engagement using AI/ML for Lodging** Reference Architectures improve customer experience and brand loyalty by personalizing interactions with travelers and guests, while improving call times and response times. These architectures make it easy to quickly recognize travelers and guests, their needs and intent, and optimize interactions leveraging Amazon Connect and Amazon Lex to reduce call handling times.

7 **AI Social Media Dashboard Solution** lets you gain insights into the customer’s conversations and deepen brand awareness by analyzing social media interactions. This solution automatically provisions and configures the AWS services necessary to capture multi-language tweets in near real-time, translate them, and store both the raw and enriched datasets durably in the solution’s data lake. Analyze this data and create meaningful dashboards powered by **Amazon QuickSight** to visualize and understand customer sentiment.
8 **Clickstream Analytics Solution** (with Cambridge Technology) builds a clickstream analytics solution in about 30 minutes. It integrates AWS services such as Amazon Kinesis Data Firehose, Amazon Simple Storage Service (Amazon S3), Amazon Elasticsearch Service, Amazon Redshift, and Amazon QuickSight. The clickstream analytics solution provides streaming data ingestion, which can process millions of website clicks (clickstream data) a day from global websites; provides near real-time visualizations of web usage metrics such as events per hour, visitor count, and referrers; offers the ability to build a recommendation engine with Amazon Redshift application programming interfaces (APIs); provides the ability to publish website clickstream data to Amazon S3, Amazon Redshift, and Amazon Elasticsearch Service; and analyze and visualize clickstream data by using Kibana and Amazon QuickSight.

9 **Magento** is an open-source e-commerce platform, providing rich, out-of-the-box features, customization, and seamless third-party integrations. It is possible to run this content management for e-commerce websites on AWS. This Quick Start automatically deploys Magento Open Source (formerly Community Edition) on AWS: It builds a cluster that runs Magento along with optional sample data, experiments with custom themes and a view of the web store. The deployment uses Amazon Aurora or MySQL on Amazon RDS for database operations, Amazon EFS for shared storage between EC2 instances, and an Amazon ElastiCache cluster with the Redis cache engine to improve application load times.

10 **Amazon Fraud Detector** is a fully managed service that makes it easy to identify potentially fraudulent online activities such as online payment fraud and the creation of fake accounts. Companies typically use fraud detection applications to identify fraudsters and stop them before they cause costly business disruptions. However, these applications often rely on business rules that don’t keep up with the changing behaviors of fraudsters. More recent fraud detection applications have tried to use machine learning but frequently use a one-size-fits-all approach based on general data sets and fraud behaviors not specific to each unique business. Amazon Fraud Detector overcomes these challenges by using data, machine learning (ML), and more than 20 years of fraud detection expertise from Amazon to automatically identify potentially fraudulent online activity to catch more fraud faster.

“Since our founding, we have used technology to enable our local teams to focus on caring for homes and guests, while maximizing revenue for vacation home owners. We’re excited about the introduction of Fraud Detector because it means we can more easily use advanced machine learning techniques to accurately detect fraudulent reservations. Protecting our ‘front door’ from potential harm enables us to focus on making the vacation rental experience seamless and worry-free.”

**Eric Breon**
Founder and CEO of Vacasa
11 Capillary provides an omnichannel platform that supports both transactional and behavioral activities across multiple channels including on property, e-commerce, mobile sites, and apps. Clevertap is a mobile marketing solution that brings together user data from online and offline channels and helps travel and hospitality companies retain their users for life. Volara develops tools to enable hotels to manage Amazon Alexa for guest and staff engagement. Whistle uses artificial intelligence and workflow automation modules for its Whistle guest text messaging platform. NLX’s Amazon Alexa Skill for Airlines enables travelers to check in, book seat upgrades, check their flight status, and perform other tasks – seamlessly via voice.

12 Amperity intelligently stitches customer data from travel and hospitality systems and line of businesses together by building a single view of customer and managing customer needs throughout their journey. SimilarWeb provides market Intelligence to understand consumer behavior for OTAs, airlines and hotels. Tealium’s Customer Data Hub unifies Marketing, Customer Experience and Business Intelligence to connect disparate data sources.
Opportunity: Airline Operations

As airlines seek to enhance their resiliency and sustain their operations through any type of disruption, moving key operational systems to the cloud – and AWS in particular – enhances agility, flexibility and lowers cost. Key operational systems include those managing crew operations (planning, scheduling, bidding, allocating, training, and recovery), maintenance operations (planning, schedule, and inventory planning) and ERP / back office operations (inventory planning, tracking, ordering, etc). Single View of Operations (SVOO) is the centralization of operation data into an AWS data lake, where inputs are System-wide data (airplanes movements), turn data (operations at the gate), and maintenance data.

Solutions

1. Federal Aviation Administration (FAA) Swim Data Lake enables real-time delivery of relevant aeronautical flight and weather information to help airlines optimize their operations. It is composed of two parts: FAA SWIM ingestion and normalization data, and the formatting and readiness of the data for real-time use. While the first part is U.S.-centric, the second part can be deployed on any System-wide data source.

2. Aircraft Turn Tracking centralizes the operations data for airplane movements, enables monitoring of the activity at the gate and identifies bottlenecks, which then triggers notifications and optimization opportunities. Using fixed angle cameras, this architecture tracks activities, including airplane gate time, together with the movement of equipment and personnel used for the catering, refueling, bag handling, cleaning and gate operations. AWS is used to capture turn events, analyze turn data, and provide dashboards, tracking tools, and triggers. Camera usage and computer vision enables consistent, accurate tracking of the discrete turn events, which can be used to put in place processes, measure their effectiveness, and continuously improve both turn cycle times and turn variation times.

3. Predictive Maintenance Using Machine Learning Solution deploys a machine learning model and a sample dataset of turbofan degradation simulation data to train the model to recognize potential equipment failures. Companies can use this solution to automate the detection of potential equipment failures and provide recommended actions to take. The solution is easy to deploy and includes a sample dataset, but you can modify the solution to work with any dataset.

4. Aircraft Predictive Maintenance reference architecture is aimed at reducing unscheduled maintenance delays and cancellations using artificial intelligence/machine learning. Flight delays and cancellations caused by unscheduled maintenance issues are estimated to cost airlines US$120,000-300,000 per aircraft per year, potentially translating to $60 million to $150 million annually for an airline with 500 aircraft. Implementing predictive maintenance solutions that leverage the aircraft log, sensor, and maintenance data can reduce this cost by up to 25%.

5. Swiss Aviation Software / AMOS on AWS is a Maintenance and Repair Organization (MRO) software AMOS implementation on AWS that provides airlines with a highly available, resilient, and cost-effective architecture.

6. Airline Information Management System (AIMS) Implementation on AWS is a crew management and operations control software. AIMS implementation on AWS provides airlines a highly available, resilient, and cost-effective architecture.

7. IFS/MXI Maintenix® Software on AWS uses AWS to create a highly available, secure, flexible, and cost-effective architecture to host IFS Maintenix® Aviation Maintenance Management Software.

8. SAP on AWS offers the largest cloud-native virtual instances certified for SAP HANA in production, multiple certified storage options, and the ability to run SAP on bare metal instances. With AWS, accelerate innovation by extending SAP systems to an extremely broad and deep set of cloud services.
Opportunity: Airport Operations

Reopening, operating, and expanding airport terminal operations are complex endeavors as they rely on both airline traffic, for the air side, as well on the passenger traffic, on the ground side. For the air side: hangars, refueling, towing, catering, cleaning, bag-handling need to be planned. On the ground side are check-in, bag drops / bag claims, security checks, immigration and gate operations, need to be ramped up or down, with airport concessions such stores, parking and ground transportation, are notified and coordinated.

Solution

Airport Terminal Optimizer is a system for airports with multiple terminals that uses schedules published to OAG (up to 330 days in the future), operating costs, terminal and gate configurations to optimize terminal and gate openings when experiencing drastically reduced schedules. The solution also allows for generating what-if scenarios based on reconfiguration capabilities of terminals and gates.

Opportunity: Lodging Insights

As accommodation and lodging providers look to prioritize operations in markets with signs of recovery following a period of disruption, real-time information on customer search trends, airline and transportation schedules, product perceptions, travel policies, regulations and restrictions are factors that should be considered to stimulate, and promote demand. Data used by revenue management systems can be used to identify potential demand across locations, cities, and markets.

Solution

The Property Optimizer for Lodging reference architecture uses a diverse set of data sources, including airline schedules, airline shopping data, lodging shopping data, and current bookings and stays to help accommodation and lodging providers forecast demand and optimize the gradual opening of properties. Data is ingested and processed in a standardized way to generate time-series demand forecast data corrected for global events and enabling generation of what-if scenarios. Additional leading indicators can be sourced from the company trusted sources (e.g. loyalty programs, credit cards sales, affiliates) as well as the AWS Data Exchange.

Opportunity: Optimizing Forecasting

For travel and hospitality companies, there's always inventory and resources to plan, track, stock, and use. Having an effective supply chain management solution to reduce inventory and carrying costs, avoiding stock out, and tying them back to actual demand requires accurate forecasting and demand planning. Forecasting is based typically on historic trends, purchase behavior, and stocking capabilities for products and items that are known and have been purchased in the past. However, where there is no history, the products and resources are new, or there is a disruptive event that radically changes behaviors, traditional models no longer work. For all these reasons, companies including Amazon use machine learning to perform demand forecasting and inventory planning, based on adaptive models that rely on real-time signals – and can be adjusted with additional signals and events as required.

Solution

Amazon Forecast is a fully managed service that uses machine learning to combine time series data with additional variables to build forecasts. Amazon Forecast does not require machine learning experience to get started. Companies only need to provide historical data, plus any additional data that may impact forecasts. Complex relationships are hard to determine on their own, but machine learning is ideally suited to recognize them. Once data is provided, Amazon Forecast will automatically examine it, identify what is meaningful, and produce a forecasting model capable of making predictions that are up to 50% more accurate than looking at the time series data alone. Amazon Forecast is a fully managed service, so there are no servers to provision, and no machine learning models to build, train, or deploy. Customers pay only for what they use, and there are no minimum fees and no upfront commitments.
Chapter 6
Cross-Amazon Opportunities
AWS has worked across our Amazon family to develop exclusive opportunities for the travel and hospitality community. We hope you will learn something new about these other companies and maybe even be inspired to work together.

Welcome guests back with touch-free hospitality experiences in which guests can learn about your services and amenities by just using their voice. Our hospitality-ready features are designed so guests can naturally engage with Alexa.

With customized skills, Alexa simplifies tasks such as playing music, ordering room service, controlling in-room temperature or lighting, finding restaurants and attractions, and even checking out. Deliver voice immersive experiences so you can delight your guests and improve your teams’ productivity.

**Bring guest services to life with Alexa**
Alexa allows you to customize your hospitality experience so guests can access your services and amenities from the comfort of their room, using just their voice. Our hospitality-ready features are designed so guests can naturally engage with Alexa. Guests can just ask:

- “Alexa, order room service”
- “Alexa, call the front desk”
- “Alexa, help me check out”

**Personalize guest experiences with Alexa**
Alexa becomes the hub of the room, creating a guest-centric experience through the power of their voice. Alexa provides an experience that all guests can enjoy. By just asking, guests can:

- “Play music by station, genre, artist”
- “Control in-room devices by voice”
- “Find restaurants and attractions”

**Empower your staff with Alexa**
Alexa for Hospitality transfers guests' requests for hospitality services to the right team immediately, allowing for responsive service. And by routing routine tasks – such as housekeeping or room-service requests – Alexa for Hospitality enables your staff to focus on the guest interactions that matter most.
## Participating Brands

<table>
<thead>
<tr>
<th>Brand</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volara</td>
<td>Provides fully integrated real-time contactless customer engagement solutions and touchless environmental controls</td>
</tr>
<tr>
<td>Intelity</td>
<td>Provider of comprehensive guest engagement and staff management platform for the hotel, casino, cruise, and luxury residential markets</td>
</tr>
<tr>
<td>NetTech Inc.</td>
<td>Works directly with you to make your voice assistant feel like a direct extension of your hospitality team to your customers</td>
</tr>
<tr>
<td>SevenRooms</td>
<td>Empowers operators to create a seamless and totally connected front-of-house experience for guests</td>
</tr>
<tr>
<td>Virtual Concierge</td>
<td>AI-powered voice technology for the hospitality industry that can be customized to each property</td>
</tr>
<tr>
<td>Ivy</td>
<td>Provider of real-time artificial intelligence guest communication solutions for the hospitality industry</td>
</tr>
<tr>
<td>Xplorie</td>
<td>Provider of vacation experiences to the hospitality industry</td>
</tr>
</tbody>
</table>

### Get Started

Alexa for Hospitality along with trusted Solution Providers is offering discounted devices, subscriptions, and implementation services with our limited time promotion.

**The Offer**

The promotion runs through December 31st, 2020. Only contracts signed by December 31st, 2020 will qualify for the promotional terms. The promotion is valid for the U.S. only. Complete this [form](#) to get started.
Amazon Advertising accelerates businesses of all sizes by providing ad solutions and audience insights so brands can create relevant campaigns – reaching the right customers, with the right message, at the right time – and produce measurable results. Gain access to:

- **Brand building**: Generate awareness of your brand story to create connections, inspire discovery, and grow loyalty.
- **Trusted environment**: Feature your brand, product, and message in trusted environments to encourage consideration and create brand halo.
- **Ads for every stage of the funnel**: Reach and inspire customers at every point in their purchase journey – watching, browsing, researching, or ready to take action.
- **Measurement and results**: Measure your campaigns, both on and off Amazon, so you can see how they are performing to help improve results and maximize efficiency.
- **Deeper audience insights**: Deliver your message and tell your story to the right audiences based on first-party shopping, streaming, and listening behaviors, allowing you to discover what your customers are passionate about, motivated by and inspired to do.

**How We Work: Connecting Brands with Customers**

From generating awareness to engaging valuable audiences, brands can connect with consumers online and offline with solutions that are naturally integrated into their daily lives. Whether in customers’ kitchens with Alexa, in their living rooms with Fire TV, on their doorsteps with delivery, or on mobile while they’re on-the-go – these touchpoints, combined with Amazon Advertising’s impressive reach and loyal customer base, provide a suite of tools and insights to help advertisers understand audience preferences and attitudes to drive informed marketing decisions. With millions of observed behaviors captured every day, and a breadth of ad products, Amazon Advertising can use audience signals to reach customers wherever they are in their purchase journey – whether it is searching for household supplies, renting a movie, deciding next summer’s vacation, or picking tonight’s dinner. Amazon Advertising can help you achieve business goals by aligning your media objective with a carefully curated strategy that will resonate among our shared customers.

**Why Amazon Advertising for your business?**

As marketers worldwide face a new and challenging reality, Amazon Advertising is focused on providing partners with the tools needed to build resiliency and inspire growth. The core expectation that consumers have of brands, particularly in times of crisis, is that they will do what is right for their employees, suppliers, customers, and society at large. Perception is key. Marketers should focus messaging on reinforcing customer relationships and communicating brand values. A survey of consumers globally found that there is a clear expectation that companies should play their part in crisis response, with 78% of consumers believing brands should help them in their daily lives, and 75% saying brands should inform people of what they’re doing.1

Here’s where Amazon Advertising can help. In this ‘new normal,’ customers are leaning on Amazon now more than ever. From prioritizing delivery of medical supplies and high-demand products, to helping customers stay connected and informed through Alexa and at-home devices, Amazon is working to support our collective community. When advertising alongside Amazon, you are given the tools necessary to differentiate your brand and build strong customer relationships by delivering relevant messages in a brand-safe environment.

**Strategy & Tactics: Building Customer Relationships**

In our experience with customers, trust is built by delivering consistent and transparent experiences. A focus on building trust in the short-term, translates to loyalty in the long-term. Customer loyalty is the foundation of resilient businesses because loyalty influences three key behaviors: the price a customer is willing to pay; the degree to which a competitor’s marketing activities can change customers’ behavior; and how regularly the customer buys from your brand.
With a focus on rebuilding and growth, our recommendation for advertisers is to implement strategies that reinforce customer relationships while emphasizing value. To do this, Amazon recommends a two-pronged approach with a mix of high-impact, brand-building strategies paired with efficient, conversion-driving tactics.

- **Awareness:** Use video and Amazon devices to quickly engage your target audience. Video ads and Amazon devices offer an opportunity to connect on a deeper level from the outset, by establishing a relationship and visually educating customers about your brand’s unique value.

- **Performance:** Once the customer is aware of your brand’s services, separate yourself from the competitive pack with targeted display ads reaching customers wherever they browse – on or off of Amazon. Focus messaging on key benefits so you can lead customers to make an informed purchase.

**Participating Brands:** Airbnb, Avis, Hilton, Chick-fil-a, Domino’s, McDonald’s

**International Considerations**

| Global Availability of Amazon Advertising Products |
|----------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                | US   | CA   | MX   | UK   | DE   | FR   | IT   | ES   | JP   | IN   | AU  | UAE |
| Sponsored Ads  | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Amazon Display  | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Amazon Business Display | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| IMDb Display and Video | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Kindle E-reader  | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Fire TV         | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Fire Tablet     | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Amazon Audio Ads | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Amazon Video Ads | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |
| Amazon DSP (Programmatic Display and Video) | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓   |

**Get Started**

**Offers.** We recognize you’re challenged to do more with less. To help stretch advertising dollars further, Amazon is offering full creative services as added value. We are also extending our 2020 incentive offers for U.S. campaigns to new and existing partners across our portfolio of ad products:

- **Offer 1 – Video:** Over-the-top (OTT) video advertisers on Fire TV are eligible to receive 20% bonus impressions on investments up to $150K.
- **Offer 2 – Amazon Devices:** Fire TV and Fire TV advertisers are eligible for a one-time impression match (up to $25K) on the same product as their paid media.
- **Offer 3 – Display:** Programmatic and Amazon.com display advertisers are eligible to receive 10% bonus impressions on investments up to $150K.

*Note: For any investment over the amounts listed above, there are tiered added value options available upon request.

Offers vary globally, so connect with an [Amazon Advertising](https://aws.amazon.com/travel) expert to discuss your unique business needs and how our solutions can help. Send us an email to learn more at: HospitalityAds-Inquiries@amazon.com
Amazon Business allows you to discover a faster, smarter way to buy for business—giving you more time to focus on moving your organization forward. We help you shape purchasing processes and simplify buying so you can gain efficiency and drive organizational growth.

- **Simplify buying**, save time and accomplish more with a familiar user experience, convenient delivery, and vast selection.
- **Reduce costs** with competitive pricing and selection, and flexible payment options.
- **Manage purchasing** in ways that work for your organization. Turn purchasing into a value driver for any organization at any stage of growth.
- **Streamline procurement** processes to save time and money, and increase your organization’s productivity.
- **Drive efficiency**: Manage tail spend and increase productivity across your organization with customized workflows and integrations.
- **Get visibility**: Get real-time data to make smarter budgeting and purchasing decisions with tools and custom reports to analyze spend data.
- **Gain control**: Enable teams to purchase with flexibility, while maintaining compliance with organizational policies and preferences.

Business Prime gives you the best of Amazon for business. Get premium savings and convenient shipping for everyone on your team, and advanced procurement benefits to help manage your team. One Business Prime plan covers your entire business account.

- **Fast, FREE business delivery**
  - Unlimited FREE Two-Day shipping on over 100 million eligible items
  - FREE Same-Day delivery or One-Day shipping on eligible orders
  - FREE Consolidated shipping on eligible bulk orders
  - Amazon Day - Receive all eligible business orders on the same day each week—you choose the day

- **Fast and easy business purchasing**
  - Purchase with the familiar shopping experience of Amazon.com
  - Transparent and predictable membership costs
  - Integrates with select EDI or cXML-based plugins

- **Progressive Discounts**
  - Unlock lower prices and save money on the products your organization buys the most
  - Guide your buyers towards items with volume-based discounts for your organization

- **Set controls with Guided Buying**
  - Guide employees to approved products or supplies
  - Reduce rogue spending by enforcing purchasing policies

- **Analyze data with Spend Visibility**
  - Turn your procurement data into rich dashboards and reports
  - Gain insights that lead to more savings opportunities
  - Save time by customizing the reports that your organization regularly uses

- **Instant Customer Feedback**
  - FREE third party benefit, provided by Delighted
  - Use industry-standard survey methodologies to effectively measure customer sentiment and unlock vital insight

“We see big opportunities to shift more purchasing through Amazon Business. We get more savings, more flexibility, more control.”

Chris Tiesman
Chief Financial Officer
CSAT Solutions
Participating Brands
Intel, Vacasa, Uber

AWS Offer
Business Prime Enterprise Plan for eligible AWS Travel and Hospitality customers for $499 for the first year and $10,099 per year to renew. Offer valid for first 100 customers only. Valid through 7/31/20.

Sign up for a free 30-day trial of Business Prime
www.amazon.com/businessprime

Flexible payment terms
- Buy now and pay later with an additional 30 days to pay your invoice upon approval
- Prioritize cash flow to run and grow your business

Business Documentation Management
- With Amazon WorkDocs for Business Prime, easily search, and collaborate on all of your business documents including invoices, receipts, and other files from a single, secure location

Optimal Deployment
- Get expert assistance from Amazon Business Professional Services to help you achieve optimal visibility and policy settings via your Business Prime features
Amazon Hub seamlessly integrates with your location to provide customers a reliable and convenient solution to pick-up and drop-off* their Amazon parcels. Amazon Hub Lockers and Amazon Hub Counters are located across the world ranging from transport hubs, hotels, shopping centers, supermarkets and convenience stores to universities, offices, public amenities, community spaces and residential properties. With automated click & collect services, customers can pick-up or return their parcels directly in your location.

How does it work?

**Amazon Hub Locker** - Automated, self-service kiosks where customers can pick-up or return their parcels. How it works:

- Customers select your store as a pick-up location.
- Drivers will deliver packages directly to your Locker, typically once a day.
- Customers scan or type their pick-up code.
- Customers collect their packages/parcels

**Amazon Hub Counter** - Customers can pick-up their parcels from store Counters in our partner locations. How it works:

- Customers select your store as a pick-up location.
- When a driver arrives, onsite team scan all packages for your location; this sends a pickup code to your customers.
- When a customer arrives, scan or enter their pick-up code. The code is available in an email, SMS, or in a notification from the Amazon app.
- Scan all packages out and hand parcels to the customer.

Why Amazon Hub for your business?

- **Customer convenience**: Exceed visitor amenity expectations and develop loyalty by offering the accessibility of an Amazon Hub solutions where products can be sent directly to the Locker/Counter with same day and next day shipping options.
- **Monetize unused space**: Increase foot traffic and the potential for on-site conversions of non-guests who choose to utilize Amazon Hub services.
- **Prioritize staff’s bandwidth**: Eliminate the need for visitor package management and give staff time back to focus on customer-focused enhancements.

**Participating Brands**: Burger King, Hilton Supply Management
Get Started

AWS Offer
• **Amazon Hub Locker Rent Program**: Post-portfolio review, for all A/B Locker locations Amazon can pay partner 12 months of rent (i.e. $50/month).
• **Amazon Hub Locker Promotion Program**: Amazon can include the partner’s coupon code alongside the pick-up code, helping to drive on-site conversion from Amazon customers.
• **Amazon Hub Counter Fee Program**: Amazon can pay per-parcel fee (i.e. $0.10/package).

International Considerations
Amazon Hub solutions can be explored in North America, Italy, Spain, United Kingdom, France, Germany, Austria, Australia and Japan.

*Returns are not enabled in all countries
**Programs and campaigns slightly vary by country and location

Next Steps
1 Email: AmazonHub-Hospitality@amazon.com
2 Provide the following information:
   * POC (name and email address):
   * HQ Location (i.e. Address of headquarters/office):
   * Type of Business (i.e. Restaurant, Hotel, Airport, etc.):
   * Are you looking to explore Amazon Hub Locker?
   * Are you looking to explore Amazon Hub Counter?
   * Please list the countries that you’re looking to explore (North America, Italy, Spain, United Kingdom, France, Germany, Austria, Australia and Japan)
3 ways Amazon Pay supports travel and hospitality businesses

The way your customers purchase items online is evolving. They expect a simple, convenient, trusted buying experience on your site. Amazon Pay makes it easier for hundreds of millions of customers around the globe to quickly check-in and checkout on your site using the details already stored in their Amazon account.

1. **Enable a seamless shopping experience across channels**

Shopping is not what it used to be. Today’s shoppers want a simple and integrated checkout experience across channels. In a recent research report conducted by the Baymard Institute and commissioned by Amazon Pay, we found that 70% of online desktop and mobile shoppers who add a product to their cart never complete the purchase, and that the average ecommerce company’s site can increase its conversion rate by 35% solely through better checkout design[1]. Read how Vacatia used Amazon Pay to improve their mobile shopping experience.

2. **Easy integration and dedicated support**

For merchants already working with a major shopping cart solution provider, it’s possible to easily integrate Amazon Pay into your commerce experience without a major time commitment for your business. Read what Chief Commercial Officer at GoGo had to say about the integration process in our blog post, Common questions about Amazon Pay.

3. **Amazon Pay for Alexa Skills**

Leverage Amazon innovation to reach customers around the world through an interaction as natural as voice, powered by a seamless payment processing flow. Sell real-world goods and services such as tickets, car pick up services, food, and more. For example, the British rail operator Virgin Trains is able to sell train tickets to customers directly through their Alexa-enabled device².

**Introduce your business to Amazon shoppers**

By adding Amazon Pay to your site, you’re offering hundreds of millions of Amazon customers a fast and familiar way to check out. You will also be eligible for an invitation to participate in a business accelerator campaign that can put your brand in front of Amazon customers.*

This campaign can include feature placement for your brand in highly visible Amazon Pay marketing channels such as:
- Spotlight exposure in our newsletter to Amazon customers
- Exclusive social media promotions across Amazon Pay social channels
- Inclusion in our Possible with Pay blog series
- Hero banner take-over on the Amazon Pay website
- Featured promotion in our webinar series

**AWS Offer**

Activate Amazon Pay by September 30th to be eligible for an invitation to participate.

**Next Steps**


*Participation in the marketing campaign is by invitation only. Invitations are made at Amazon Pay’s sole discretion. If invited, you may be required to accept additional terms to participate.
Audible for Business provides teams of all sizes a mobile collection of thousands of curated audio titles and original workshops exploring the most essential skills in business to scale personal and professional development, enrich teams, enhance culture, and improve productivity.

With 30+ categories to choose from, Audible for Business empowers teams to explore both hard and soft skills, across topics like: collaboration, belonging, communication, innovation, and leadership.

How does Audible for Business work?
Organizations simply purchase a bundle of titles for sharing based on team size. Your initial purchase launches your organization’s account and unlocks all of the features and benefits of Audible for Business.

To get started, simply
1. Purchase a bundle of titles. Title bundles are recommended by Audible for Business based on team size.
2. Invite as many team members as you like to access Audible for Business.
3. Your balance is drawn down only when team members add titles to their library.

There are no costly integrations or add-ons, so you’ll be up and running in minutes. Once invited to the program, team members can sign up with a new or existing Amazon account, and start listening immediately.

Additionally, as an account admin, you can track engagement metrics and have the flexibility to add or remove team members at any time.

International Considerations
Audible for Business is available for purchase to any organization based in the United States. For those organizations, we support team members globally regardless of country (excluding US embargoed countries).

Participating brands
Zillow, Intel, Cigna, Toyota, Home Depot, SpaceX

Get Started
AWS Offer
To lend additional support, Audible for Business is extending promotional pricing for all AWS clients who sign up before September 30, 2020. We will extend the low price of $9.95 per title for the first package purchase up to 1,000 titles (regularly priced $14.95 per title).

Next Steps
Email Justin Manning (manjusti@audible.com) or visit audible.com/business to learn more.

For more information about AWS Travel and Hospitality, please visit aws.com/travel. Keep up-to-date with executive insights and industry viewpoints at the AWS Travel and Hospitality Blog. Click here to be contacted by an AWS representative.