TAKEING TO THE SKIES: HOW AIRLINES CAN BENEFIT FROM CLOUD ADOPTION
As COVID-19 spread around the world, the world came to a screeching halt. While many industries faced disruptions in their supply chains and business models, the travel and hospitality industry was probably the worst affected, with demand dropping to the lowest the industry had ever experienced. Not only did the pandemic affect projects in the pipeline, but it also exposed the weaknesses of existing business models. Historical norms and patterns of operations that the industry depended on in the pre-COVID era were no longer valid to make business decisions. With the cessation of travel due to border restrictions, the industry struggled, and the situation was made worse by legacy ecosystems and age-old business models which prevented travel companies from adapting to the situation. Example: Revenue management algorithms that calculate the fares based on demand and capacity failed as they were not tuned for such drastic drop in demand.

The pandemic brought to the surface the industry’s weaknesses such as rigid static systems, segregation of systems, predefined manual rules which prevented travel companies from adapting to the situation. Even though the industry has been evaluating cloud adoption and pivoting to digital technology, it has happened only in pockets. True business value cannot be derived if the infrastructure, applications, and services are not fluid enough to make dynamic changes based on real-time information and offer personalized packages to fliers.

In 2018, 95% of airlines offered Web check-in while only 54% offered mobile check-in – when the pandemic hit, they had to quickly deploy contactless check-in.

As new patterns of customer behavior continue to emerge, airlines have to evolve fast to keep their customers engaged. The agility to respond to sudden changes, and the capability to define new business models is only possible by creating a smarter enterprise. While many airline companies have been on a digital transformation journey for many years, it should be targeted at the cloud, and designed to be business focused.

The shift to the cloud can make a significant difference when it comes to extreme disruptions in existing business models, such as weather or pandemics by ensuring robust security, compliance and risk mitigation. It can also lead to significant improvement in operational efficiency and productivity by increasing margins and preventing revenue leakage and fraud. Migrating to the cloud will also support business growth with shorter time-to-market cycles, ability to innovate (fail fast, learn faster) when expanding into new markets. It will also enhance customer service with unlimited self-service options and insight-driven hyper-personalized products.

Cloud adoption will transform many touchpoints for a travel enterprise:

1. Customer facing
   a. Improved passenger self-service
   b. Migrate or build new customer portals
   c. Call center automation
   d. Leverage speed of development and agile architecture

2. Software-as-a-service (SaaS) adoption
   a. Pay-as-you-go based on passenger / booking / flight / aircraft usage
   b. Vertical business value-driven packages

3. Analytics, AI / ML and innovation
   a. Seamless travel experience
   b. Proactive disruption management
   c. Newer applications have cloud native-first strategy
   d. Real-time analytics, IoT, smart meters

4. Datacenter (DC) migration to infrastructure-as-a-service (IaaS)
   a. Reduce capex / opex in cash-crunch situation
   b. Total DC exit where regulation permits
   c. IT, development / test environment, dynamic workload systems moved to IaaS or platform-as-a-service (PaaS)
   d. Reduce carbon footprint

5. Enterprise resource planning (ERP), supply chain, workforce management
   a. Migrate to cloud platform for ERP and supply chain products
   b. Integration of on-premise operational technology (OT) systems

6. Safety and security
   a. Focus on cloud-first safety and security infrastructure
   b. Global integration

Cloud adoption delivers tangible benefits across the airline value chain. Enterprises need to re-evaluate their focus areas in the end-to-end travel journey. The next generation of tech-savvy millennial travelers prefer hyper-personalized engagement and high-levels of service. Airlines can use the downturn to transform their value chain so that they are prepared to serve customers when demand returns.
<table>
<thead>
<tr>
<th>Focus Areas</th>
<th>Pre-Travel</th>
<th>Travel Experience</th>
<th>Post Travel</th>
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<tr>
<td>Hyper Personalized Traveler engagement</td>
<td>• Inspirational Campaigns</td>
<td>• Seamless travel (self-service tools, virtual assistance, real-time communication, touch less engagement)</td>
<td>• Feedback capture</td>
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<td>• Personalized Messaging</td>
<td>• Recommendations (airport, in-flight &amp; destination)</td>
<td>• Loyalty program &amp; engagement</td>
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<td>• Traveler touchpoints &amp; triggering</td>
<td>• Integrated servicing (taxi, hotel, travel services)</td>
<td>• Integrated social apps</td>
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<td></td>
<td>• Safety &amp; security planning</td>
<td>• Safety &amp; Security monitoring</td>
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<tr>
<td>Improved Service Levels</td>
<td>• Quality of services monitoring</td>
<td>• Business continuity</td>
<td>• Feedback analysis and automated follow-up</td>
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<td>• Infra flexibility/Scalability</td>
<td>• Connected customer care services</td>
<td>• Seamless Loyalty partner products and services</td>
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<td>• Automated/virtual call center</td>
<td>• Agent on demand</td>
<td>• Virtual customer service</td>
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<td></td>
<td>• Legacy Modernization</td>
<td>• Command center &amp; automated alerting</td>
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<td>Revenue &amp; Cost Optimization</td>
<td>• Demand &amp; Competition watch</td>
<td>• Recommendation engine to the agents for ancillary sales</td>
<td>• Back-office automation (RPA)</td>
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<tr>
<td></td>
<td>• Automated revenue planning &amp; management</td>
<td>• Resource Optimization</td>
<td>• Automated IT &amp; Service analytics and recommendations</td>
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<td></td>
<td>• Infrastructure Consolidation</td>
<td>• IaaS/PaaS services on demand</td>
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<td></td>
<td>• Schedule optimization</td>
<td>• Pay as you go licensing</td>
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<tr>
<td></td>
<td>• Proactive Disruption Management</td>
<td>• Automated IT monitoring and proactive alerting</td>
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<tr>
<td>Innovation Platform</td>
<td>• Dynamic marketing, packaging, pricing, yield and offerings</td>
<td>• Proactive travel notifications, suggestions, recommendations</td>
<td>• Customer analytics</td>
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<td>• AI/ML based recommendations</td>
<td>• Intelligent virtual assistant (voice/chat bots)</td>
<td>• Dynamic offerings</td>
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As new business / technology shifts and buying behavior patterns emerge, airlines need to alter their business models to remain competitive. The table illustrates the current state of cloud adoption by airlines:

<table>
<thead>
<tr>
<th>Marketing &amp; Commercial</th>
<th>Operations</th>
<th>Passenger Services</th>
<th>Corporate</th>
<th>Enterprise IT &amp; Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales &amp; Marketing</td>
<td>Aircraft Scheduling &amp; Management</td>
<td>Reservation &amp; Ticketing</td>
<td>Legal/Procurement/Contract Management</td>
<td>Enterprise Services</td>
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<tr>
<td>Products &amp; Services</td>
<td>Crew Management</td>
<td>Customer Care/Call Center</td>
<td>Security/Compliance</td>
<td>IT Service Delivery</td>
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<tr>
<td>Revenue Management</td>
<td>Network Operations Control</td>
<td>CRM/Loyalty</td>
<td>Billing &amp; Payments</td>
<td>Technology &amp; Architecture</td>
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<td>Schedule Planning</td>
<td>Airport/Ground Operations</td>
<td>Travel Portal &amp; Self-Service</td>
<td>Revenue Accounting</td>
<td>IT Infrastructure</td>
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<tr>
<td>Fleet / Crew/Resource Planning</td>
<td>MRO/Engineering</td>
<td>In-flight Services</td>
<td>HR &amp; Finance</td>
<td>Digital &amp; innovation</td>
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<tr>
<td>Cargo</td>
<td>Baggage</td>
<td>iRROPS Management</td>
<td>Training &amp; Development</td>
<td>IT Support &amp; Monitoring</td>
</tr>
<tr>
<td>B2C Portals</td>
<td>Catering</td>
<td>Quality Assurance</td>
<td>Data &amp; Business Intelligence</td>
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### Key Business Functions
- **Sales & Marketing**
- **Products & Services**
- **Revenue Management**
- **Schedule Planning**
- **Fleet / Crew/Resource Planning**
- **Cargo**
- **B2C Portals**

### Maturity Levels
- **Maturing**
  - Enterprise functions and B2C portals are typically the first and easiest pathway for airlines to move to cloud. E.g. Qantas moved 70% of their Enterprise apps onto cloud.
  - Lifting & shifting of matured apps like various Sabre or Amadeus product suites can reduce cost of operations and Infosys cloud migration tools can expedite the process.
  - Airlines can also utilize the short-term heavy computing needs for running special processes like Jeppesen Crew roster optimization for few days every month.

- **Advancing**
  - Customer Experience functions are seeing an accelerated cloud and new technology adoption fueled by customer experience transformation.
  - 80% of top airlines have already planned for improving customer experience and cloud plays a significant role in implementation.
  - Typically the systems should be cloud native solutions like self-service portals, modern call center solutions.
  - Many of the Airlines are in the advanced stages in moving their IT systems onto cloud for producing the right insights.

- **Evolving**
  - Core Operations like CRS / DCS are lagging due to non-availability of true cloud solutions. Good number of top airlines still use legacy core systems considering the risk of replacement. The product companies have also slowed in cloud adoption because of the large investment required for upgrading the products into cloud native.
  - These are quite product heavy and need to bring a PaaS offering.
  - IBIS/Flight suite has upgraded the crew and ops solution as iFlight NEO and being used by multiple airlines now.

Infosys Airline Cloud solution offers accelerators for home-grown applications, reusable templates for building new applications, standard connectors for key airlines products, airline API foundation coupled with cloud services and partnerships with key hyper scalers.
Infosys’ end-to-end Airline Cloud not only helps enterprises migrate to the cloud faster, but also helps reduce their total cost of operations by leveraging an Enterprise Discount Program with most cloud service providers.

Infosys Cobalt, a set of services, solutions and platforms, enables airline enterprises to build cloud-first capabilities by leveraging the Infosys Cloud Community of business and tech innovators, achieve faster speed-to-market by capitalizing on 200+ cloud-first solution blueprints, and co-create new solutions.

Infosys’ Airline Cloud grows organically by adding accelerators, connectors to industry-leading products, and new engagement models to help enterprises become resilient and future-proof their business model.

The COVID-19 pandemic has forced the airline industry to evaluate and rationalize their cost structure. Airlines need to respond to this disruption without losing their competitive edge. Airlines should take advantage of the lull in travel to modernize their enterprise landscape with the cloud.

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