<table>
<thead>
<tr>
<th>Frost &amp; Sullivan Perspective</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>3</td>
</tr>
<tr>
<td>Challenge #1: Consolidate and Virtualize Data Center Infrastructure</td>
<td>4</td>
</tr>
<tr>
<td>Solution</td>
<td>4</td>
</tr>
<tr>
<td>JetBlue Business and Technology Challenges—Value Creation Opportunities</td>
<td>4</td>
</tr>
<tr>
<td>Challenge #2: Maintain Continuous Operations</td>
<td>5</td>
</tr>
<tr>
<td>Solution</td>
<td>5</td>
</tr>
<tr>
<td>Challenge #3: Faster Deployment of New Terminals</td>
<td>7</td>
</tr>
<tr>
<td>Solution</td>
<td>7</td>
</tr>
<tr>
<td>Challenge #4: Provide Superior Customer Service</td>
<td>7</td>
</tr>
<tr>
<td>Solution</td>
<td>7</td>
</tr>
<tr>
<td>Conclusion</td>
<td>8</td>
</tr>
<tr>
<td>About Verizon</td>
<td>9</td>
</tr>
<tr>
<td>About JetBlue Airways</td>
<td>9</td>
</tr>
</tbody>
</table>
FROST & SULLIVAN PERSPECTIVE

Enterprise IT managers are reassessing what it takes to deliver services to the business successfully, as they are held accountable for aligning technology investments with meeting business goals. As a result, many are taking a close look at how managed service can help. Managed services, which covers a range of services—managed network services, managed security, managed hosting, managed voice, managed cloud services—can help deploy new technology solutions quickly, and reduce the maintenance burden on internal network and IT teams.

In a managed service offering, the provider contributes technology and expertise, while the customer retains control and oversight of applications. Both parties share accountability for achieving specific outcomes, thus creating a true partnership between the provider and the customer. According to a recent Frost & Sullivan end-user survey, the top three business objectives that enterprise IT decision makers expect to achieve from managed services are:

1. Improve business continuity
2. Reduce internal responsibility for network and IT operations
3. Future-proof technology investments

For IT decision makers, the benefit of investing in managed services is that they can turn to a single trusted advisor, from whom they may already have been purchasing equipment and services, to provide complete end-to-end management across all of their network, IT, and services. As technology options grow in number and complexity, and as IT departments accept greater accountability for investments, partnering with a managed service provider can be a smart choice.

Following is a case study of how JetBlue, a US-based airline operator, is using managed services across a wide range of network and IT solutions to improve its operational efficiency.

About JetBlue

- Sixth largest passenger airline in the United States
- Passengers carried: Over 38 million annually
- Flights Operated Daily: 1000
- Destinations Served: 101

BACKGROUND

JetBlue Airways is the sixth largest passenger carrier in the U.S., based on available seat miles (ASM), and carries over 38 million customers, annually, with an average of 1000 daily flights serving 101 destinations, also known as “Blue cities.” JetBlue operates from six primary cities in the United States and differentiates itself from larger carriers through superior in-flight services offered at competitive ticket costs. The company achieves this by keeping its cost structure low and focusing on fewer, but high-value geographies.

JetBlue competes in a highly capital-intensive industry that is sensitive to changes in fuel prices, serving passengers that are sensitive to average ticket fares. The airline industry is extremely competitive and is influenced by external factors such as national and international economic conditions, weather-related disruptions, and industry consolidation.
In an effort to increase its presence and not be limited to flight services only, JetBlue is undergoing a business transformation from an airline to a “travel service provider.” The company’s new branding as “The most caring travel service provider” is aimed at offering packaged travel bundles that include hotels, car rentals and other add-on vacation activity experiences. JetBlue, like most large organizations, relies on the latest technologies and technology providers to ensure its operations run smoothly and effectively, to remain competitive in the market.

**JETBLUE BUSINESS AND TECHNOLOGY CHALLENGES—VALUE CREATION OPPORTUNITIES**

**Challenge #1: Consolidate and Virtualize Data Center Infrastructure**

JetBlue wanted to consolidate its critical business operations data—which was distributed across four different data centers—into three data centers. In the process, the airline wanted to embrace virtualization technologies to future-proof its infrastructure investments. Through the Data Center Rationalization (DCR) Program, JetBlue aimed to transform its data centers into a software defined data center (SDDC) architecture, to achieve the following goals:

- Improve responsiveness by reducing time-to-production for new applications and change management
- Expand use of automated controls in provisioning and operations support
- Reduce time delays and errors from manually-intensive processes
- Reduce time-to-market and costs inherent in procurement and support of separate, physical devices providing point solutions
- Evolve the IT team to an “internal service provider” that can quickly develop and deploy technology solutions to improve experience of internal and external customers

Additionally, JetBlue, being in the airline industry, is subject to strict data compliance and governance requirements. Considering the amount of personally identifiable information (PII) and data that airlines collect through travel bookings, the airline organizations are required to meet several state and country-specific regulations to ensure data protection. Hence, ensuring adherence to Payment Card Industry (PCI) and Sarbanes-Oxley Act (SOX) compliance was a key goal that JetBlue wanted to achieve through its data center rationalization efforts.

**Solution**

JetBlue selected Verizon as the single point of contact for its network and IT needs, including managing critical data center operations. When JetBlue discussed its requirements with Verizon, it was clear that a hyper-converged infrastructure and software defined data center (SDDC) solution would be the way to go. In a hyper-converged and SDDC infrastructure, the compute, storage, security and networking resources in a data center are all virtualized and software-defined. Key highlights of the solution include:

- The virtualized architecture provides cost-effective scaling, as opposed to the traditional model of continually deploying new hardware to fulfill growing IT needs.
• By embracing the virtualized architecture, JetBlue was able to consolidate all its critical applications into the three data centers, which support automated provisioning of VMs, OS Images, Firewall Rules and Load Balancers using Software Defined Blueprints.

• Verizon hosts and manages JetBlue’s IT applications in its data centers and manages the hosted services all the way up to the operating system stack, as well as providing managed application support services for the critical ecommerce platform.

“With Verizon’s hyper-converged, software-defined architecture, implementation of new virtual servers was reduced from days to minutes, which enables near real-time augmentation of resources in our ecommerce environment for fare sales. This means we can introduce additional capacity in minutes to improve platform performance and provide a better customer experience.”

– Eash Sundaram, EVP of Innovation, and Chief Digital & Technology Officer at JetBlue Airways

As part of the managed services offering, Verizon is in the process of developing a catalog-based approach for JetBlue to consume IT services and components that are fully orchestrated using software defined control. JetBlue is expanding these capabilities into a Hybrid Cloud architecture, integrating public clouds and its internal private cloud. For example, JetBlue envisions a future when it will automatically acquire elastic compute resources from public clouds (Microsoft Azure, Google Cloud, Amazon Web Services) when private resource utilization has peaked.

Challenge #2: Maintain Continuous Operations

JetBlue wanted to maintain business continuity with little or no impact on the airline’s service operations. The need for a solid business continuity and disaster recovery (BC/DR) strategy became apparent when there was a power outage in one of JetBlue’s data centers, and it took a couple of hours to get all infrastructure back up and running. Traditional active/backup data center and disaster recovery architectures were no longer sufficient for the expanding airline. JetBlue leadership’s vision was to attain a “continuous operations” model for flight control, even in the total loss of a data center.

“Flight system disruptions have large-scale impact on an airline’s operation, and even the slightest service disruption can cause severe brand damage in the current social media era. We looked at our data centers and realized we needed to have the requisite backup infrastructure, networks and automation in place such that we have “continuous” operations; and, in case of disruption, the failover between our critical data centers happens in minutes in case of disaster,” says Mr. Sundaram.

Solution

Verizon developed an active-active-standby data center integration architecture to achieve resiliency and geo-redundancy. JetBlue’s critical flight control applications are hosted in two separate Verizon data centers, in Maryland and Virginia, which operate as a single virtual site in an active-active mode, with a tertiary Verizon facility in Colorado that acts as a far-site backup location.
The three data centers are connected over Verizon's Private IP or MPLS-based VPN service, as well as dedicated links of 10 Gbps, forming a triangle to provide a high level of resiliency.
Challenge #3: Faster Deployment of New Terminals

JetBlue operates terminals in excess of 100 airports in the United States, the Caribbean, and Central and South America. The airline is always strategically looking for opportunities to expand into additional markets. To maintain smooth terminal operations, JetBlue sought help with managing the terminal network infrastructure (phone, LAN, security, UPS, etc.) so that its personnel could focus on flight operations and customer service. “When we are looking to expand to new Blue Cities and open an airport terminal, the last thing we want the ground crew to worry about is whether the technology is working. We needed a partner that could take on the end-to-end management of our terminal network infrastructure,” says Mr. Sundaram from JetBlue.

Solution

JetBlue turned to Verizon for help improving the management of network assets across its operating airports. From phone lines and data circuits to security and the LAN, Verizon collaborates with the airport to manage it all.

"When a new gate opens up, various airlines will bid for it. Once JetBlue wins a bid, we bring in Verizon. They have developed customized managed services that address all our terminal operations needs and manage those facilities for us. Verizon enables us to spin up new services quickly and easily, which can be scaled up and down as our business needs change" says Mr. Sundaram.

Challenge #4: Provide Superior Customer Service

JetBlue takes pride in offering superior customer services—whether at the gate, during the flight or with those calling the company’s customer service department. “JetBlue operates a couple of contact centers that serve our customers, but we have been focused on hiring remote, home-based agents to have flexible staffing arrangements. We needed a managed contact center solution that would efficiently route to remote agents at distributed locations.” JetBlue was looking to outsource its entire voice and contact center infrastructure to a managed service provider that can cover all of its terminals and corporate offices.

Solution

Verizon manages the entire voice and contact center solutions portfolio for JetBlue, including the airline’s Avaya enterprise voice solution, along with primary and backup SIP trunks deployed at terminals and corporate offices. Contact centers are cost centers for businesses—requiring omni-channel integration (email, chat, voice)—but are critical for continued customer loyalty. JetBlue’s hosted contact center solutions are also fully managed by Verizon, helping the contact centers and remote agents operate at peak efficiency by tackling disruptions before or as soon as they occur. Future plans include integrating JetBlue’s contact centers with its ecommerce assets, which the airline is developing under its Digital 2020 program.
In order to achieve its strategic goals, JetBlue partnered with Verizon, which not only offered an exhaustive portfolio of enterprise solutions, but also reduced the internal IT team’s burden by taking over day-to-day management activities, and providing operational and engineering support,” says Mr. Sundaram.

CONCLUSION

JetBlue has witnessed measurable, improved operational efficiency—virtual servers can be deployed in minutes vs. days, additional security features can be deployed on the go and the internal IT team can focus on providing value-added services—since deploying the hyper-converged and SDDC infrastructure at its data centers and outsourcing management to Verizon. The airline’s IT staff are able to deploy network and IT infrastructure quickly as JetBlue adds new cities to its growing network, while keeping costs low due to the virtualized nature of Verizon’s data centers. The highlight of the virtualized, managed service approach is the level of automation and orchestration that has been built into the infrastructure, with the ability to make changes quickly, as opposed to lengthy turnaround times in the past.

Verizon’s managed services portfolio continues to grow as it adds software-defined networking and network function virtualization services. These enable business users to buy bandwidth and network functions, such as virtualized security or virtualized WAN optimization, in an on-demand fashion, to deploy a truly dynamic WAN. The partnership with Verizon allows JetBlue to better position its environment for the future and keep up with technology changes, while providing the option to extend the SDDC capabilities to the WAN edge at its airports and corporate centers, using the software-defined WAN functionality.

Verizon’s network-centric focus, with its ability to offer a wide range of services including voice, network, cloud, security and managed services, appealed to us. We chose Verizon because of the company’s consultative approach and its willingness to develop specific, tailored solutions that best meet our needs. While Verizon brings a strong technical and account management team to our strategic partnership, its innate ability to integrate into our culture has allowed us to truly operate as one team, which is invaluable to our business,” says Mr. Sundaram of JetBlue.

Roopa Honnachari
Industry Director – Business Communication Services & Cloud Services
Stratecast | Frost & Sullivan
rshree@frost.com
ABOUT VERIZON

When enterprises take advantage of technology, they don’t just drive business; they change the world. At Verizon, we believe your technology should be as focused on your business as you are. That’s why we tailor our technology solutions to help you create connected products, delight your customers, manage devices around the globe and deflect sophisticated cyber threats. We work behind the scenes to help organizations large and small get all they can from technology. You may know Verizon only as the company making your smartphone work. But we’re also the company helping 94% of the Fortune 1000 work. To find out how Verizon can help you use technology to innovate and transform your business, visit us at www.verizonenterprise.com/products.

ABOUT JETBLUE AIRWAYS

JetBlue is New York’s Hometown Airline®, and a leading carrier in Boston, Fort Lauderdale-Hollywood, Los Angeles (Long Beach), Orlando, and San Juan. JetBlue carries more than 40 million customers a year to 102 cities in the U.S., Caribbean, and Latin America with an average of 1,000 daily flights. For more information please visit www.jetblue.com.
Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today’s market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies?

For information regarding permission, write:
Frost & Sullivan
3211 Scott Blvd
Santa Clara CA, 95054