Cloud-Enabled Enterprise Transformation: Driving Agility, Innovation and Growth

Whether used for process optimization or modernization, cloud solutions bring much-needed flexibility to enterprises struggling to stay ahead of changing markets.
Executive Summary

In an increasingly challenging business environment, enterprises can no longer expect to thrive on the basis of existing business and IT strategies. Many businesses run on a mix of disparate legacy and modern IT platforms, caused either by organic growth or mergers and acquisitions. Faced with continuous business change, few companies have taken the time to standardize their applications and computing infrastructure. Continuing to run the business in this sub-optimal environment results in significant opportunity costs, as companies are unable to develop the business capabilities needed to innovate and seize new markets.

But unlike the time-consuming, expensive application modernization projects of a decade ago, transformation initiatives based on social, mobile, analytics and the cloud (the SMAC Stack™) are cost-effective and efficient. The cloud, in particular, provides a natural platform for optimizing existing IT systems to increase operational efficiencies while driving business agility and growth. More companies are leveraging cloud computing to become more nimble, innovate more quickly and create greater value for customers, whether through business process transformation and innovation, or by modernizing their application platform or data center architectures.
A Platform for Growth

In all of its forms — including infrastructure as a service (IaaS), software as a service (SaaS), business process as a service (BPaaS) and platform as a service (PaaS) — the cloud enables businesses to offload a variety of computing and business tasks to service providers, thus avoiding the expense and complexity of running their own technology systems. Through the cloud, companies can optimize their capital and operational expenditures, shift to a per-use pricing model, reduce hardware and software costs and speed time to market.

The benefits to the business include faster responsiveness, improved customer experience, expanded reach, higher quality and enhanced collaboration. In our extensive work with clients, we have seen firsthand how the cloud can help increase profitability, agility, product innovation and customer retention, as well as enable companies to venture into new markets with new revenue streams. Enterprises are also leveraging the cloud to break down organizational silos and drive collaboration.

To help companies on their transformation journey, we developed the Cloud-Enabled Enterprise Transformation Fabric, which incorporates a methodology, tools (including accelerators), services and best practices for cloud-enabled transformation. This approach has enabled hundreds of companies in the U.S., Europe and Asia/Pacific to quickly adopt public, private and hybrid cloud services, while lowering risk, often in one to six months’ time.

As shown in Figure 1 (next page), the Cloud-Enabled Enterprise Transformation Fabric encompasses:

- **Cloud-enabled business process transformation**, leveraging cloud models to optimize fundamental processes through simplified, harmonized and innovative industry and functional activities that enhance core business value.
- **Cloud-enabled business innovation**, leveraging cloud-based social, mobile and analytics technology (typically SaaS, PaaS and BPaaS) for mobile enablement, device updates and monitoring; big data analytics; and collaboration.
- **A cloud-enabled application platform rationalization methodology** that leverages cloud models (typically SaaS, PaaS and IaaS) to build agile applications that are extensible, technologically advanced and able to take on evolving business requirements.
- **A cloud-enabled data center modernization methodology** in which cloud models (typically IaaS) are used to untangle and replace the organization’s complex and costly legacy infrastructures with data centers that are more efficient and flexible to meet fluctuating demand.

Achieving Business Objectives

To realize tangible business value with cloud computing, enterprises should begin by envisioning their desired end state. With the plethora of possibilities that cloud computing models offer, we encourage enterprises to evaluate their IT infrastructure, applications and business processes to gauge the potential benefits of the cloud. Figure 2 (see page 6) illustrates pre- and post-transformation states for different types of cloud initiatives. Figure 3 (see page 7) shows the steps involved in a hypothetical application rationalization engagement.
Cognizant’s Cloud-Enabled Enterprise Transformation Fabric

Transformation Consulting Services
Strategy, envisioning, business case, planning, architecting, change management

Implementation Services
Configure, build, extend, integrate, test, deploy

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<td>Leveraging BPLaaS, SaaS</td>
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<th>Mobility Enablement</th>
<th>Collaboration</th>
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<th>Application Engineering/DevTestOps</th>
<th>Application Migration &amp; Integration</th>
<th>Applications XaaS/SaaS Enablement</th>
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<td>Leveraging PaaS, IaaS</td>
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<th>Virtual Infrastructure Management</th>
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<td>Leveraging IaaS</td>
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Managed Services
Operations, support, billing, change management

Figure 1

CLOUD-ENABLED ENTERPRISE TRANSFORMATION: DRIVING AGILITY, INNOVATION AND GROWTH
### Before and After the Cloud

<table>
<thead>
<tr>
<th>Optimizing business processes</th>
<th>Before Transformation</th>
<th>After Transformation</th>
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<tr>
<td>• Fragmented, duplicate and costly processes.</td>
<td>• Harmonized and streamlined processes across the organization.</td>
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<td>• Functional silos, inflexible workflows.</td>
<td>• Unification of siloed processes.</td>
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<td>• Isolated process improvement projects.</td>
<td>• New business processes defined and enabled for social and mobile.</td>
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<td>• Processes that are difficult to scale globally and that create compliance challenges.</td>
<td>• Rapid adaptation of existing processes to business changes.</td>
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<tr>
<td>• Lack of integration between master data management and business process management.</td>
<td>• Emphasis on transformation and enterprise-wide programs over narrow process improvement projects.</td>
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<tr>
<td>• Lack of alignment between data governance and process governance.</td>
<td>• Standardized capabilities operating through shared services, configured for local markets as required.</td>
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<tr>
<th>Business innovation through SMAC</th>
<th>Before Transformation</th>
<th>After Transformation</th>
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<td>• Implementation of on-premises hardware and software in order to pursue SMAC-oriented projects, including collaboration, sentiment analysis and data warehouses.</td>
<td>• New possibilities available for social, mobile and analytics due to cloud’s flexibility and ease of use.</td>
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<td>• Periodic need to augment Infrastructure to accommodate peak loads, increasing inefficiency.</td>
<td>• Ability to use technology infrastructure and applications only when needed, greatly enhancing efficiency.</td>
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<th>Rationalizing application platforms</th>
<th>Before Transformation</th>
<th>After Transformation</th>
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<td>• Applications with performance and scalability issues, as well as high costs.</td>
<td>• Lower costs and faster time to address scalability requirements.</td>
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<td>• Applications with non-optimal infrastructure usage due to seasonal loads.</td>
<td>• Faster time to deploy application changes.</td>
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<td>• Batch processes with sub-optimal usage cycles.</td>
<td>• Standardized test, development and production environments through PaaS.</td>
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<td>• Applications that reach the limitations of their designs as their use changes over time.</td>
<td>• Faster time to market.</td>
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<td>• Continuous maintenance of applications, increasing complexity and making it exceedingly costly, time-consuming and risky to introduce changes.</td>
<td>• Increased business agility.</td>
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<td>• Developers who struggle to determine what code is doing and where/how to make changes, especially when documentation is outdated or missing.</td>
<td>• Lower IT infrastructure investment (Cap-Ex).</td>
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<th>Modernizing data centers</th>
<th>Before Transformation</th>
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<td>• New initiatives within the enterprise struggling to gain quick access to IT infrastructure.</td>
<td>• Efficient provisioning of development, testing and staging environments.</td>
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<td>• Continual additions to overhead expense through procurement of additional hardware/software.</td>
<td>• Standardization of development and testing environments, improving productivity and reducing costs.</td>
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<td>• IT workloads severely constrained by infrastructure provisioning and scalability limitations.</td>
<td>• Use of on-demand capacity, reducing cost of owning new environments.</td>
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<td>• Need for data center consolidation/optimization.</td>
<td>• Scalability and customization.</td>
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<td>• Suboptimal storage practices.</td>
<td>• Lower cost, greater agility and security.</td>
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<td>• Challenges with managing nonstandard and heterogeneous environments.</td>
<td>• Regional hosting capabilities.</td>
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<td>• Pay-per-use model and lower management costs.</td>
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<td>• Fast deployment of servers, enabling rapid reaction to change.</td>
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<td>• Improved WAN scalability.</td>
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<td>• No local IT teams; self- and remotely managed virtual data centers.</td>
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<td>• Reduction of product and technology lifecycles, from weeks or months down to hours or minutes.</td>
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Cloud in Action

As noted, our Cloud-Enabled Business Transformation Fabric addresses key business areas that can be transformed via the use of cloud computing. Cognizant Cloud Steps is a comprehensive, tool-based framework that dictates how we do that work. In our experience in the field, Cognizant Cloud Steps accelerates the time to results by 25% to 40% on average, enabling our clients to realize benefits quickly.

See the case studies (pages 8-11) to read more about the transformational benefits of our Cloud Steps methodology.
Quick Take

Global Shipping Company Improves Customer Experience through the Cloud

We recently helped a large global shipping container company transform its business processes. The company sought to boost customer intimacy and improve operational efficiency on a global scale but faced the following challenges:

- A non-unified view of global customers.
- Long quote generation, review and approval processes.
- Poor user experience and sub-standard adoption of existing enterprise systems designed to support key business processes.
- Fragmented data and execution around key business processes.
- Lack of collaboration among global teams.
- Inability to analyze accurate market data to improve decision-making.

The company looked to cloud-based models to help meet its business objectives. We designed, built and deployed a solution running on a SaaS-based public cloud platform for more than 3,000 employees in 55 regions. The system featured:

- Rich user experience and collaboration features.
- Flexible and extensible architecture built on the cloud.
- Tight integration with the company’s core applications to manage customer subscriptions and trade interests.
- Accurate data enabled by bi-directional synchronization to identify and tag duplicate entries.
- Unified data views and quote process on a single screen to provide seamless experience to users.

The shipping container company achieved significant benefits through its migration to the cloud, including:

- Forty percent reduction in time for quote generation and dispatch.
- Simplified sales process due to data consolidated in one application.
- Increased user adoption resulting from richer user interface (85% during the first week of operation).
- Cost reduction by approximately 23%.
- Simplified process for creating, sending and filing quotes.
- Improved operational, sales and market-related decision-making.
- Improved productivity and customer intimacy across sales, marketing, service and supporting operational functions.
Quick Study

Engineering Design Firm Offers Innovative Client Service through the SMAC Stack

We recently helped a company that provides engineering design solutions enhance its business innovation through the SMAC Stack. The company was looking for an information modeling solution to provide its clientele with greater insight into improving the operational performance of its buildings throughout their lifecycles. The solution needed to enable the following:

- Collect inputs from thousands of sensors installed throughout the buildings, providing insight for self-sustaining, economical building projects with minimal environmental impact.
- Handle a massive volume of sensor data in real time. Typical commercial buildings have 3,000 to 5,000 sensors emitting data every five minutes. The amount of data generated in a configuration of this size is about 3GB to 5GB per day. At larger sites, several buildings with many more sensors produce much higher volumes of data per minute.
- Push sensor data onto a platform to make it accessible from various locations for computation processing and analysis.
- Manage this data for business analytics and visualization in the building computer-aided design models.
- Perform quick computations and deviation analytics to analyze energy usage trends and make better decisions.

We designed and implemented a public-cloud-based big data solution for the company to offer to its customers. The solution used a cloud-based database to overcome legacy system limitations on scalability and software license costs. We designed the sensor-reading applications to work with various kinds of data from different types of sensors. The solution encompassed cloud-based big data integration using REST APIs; data storage and processing that leveraged Hadoop Distributed File System; and custom reporting via dashboards.

The company realized the following benefits from the project:

- Allows clients to reduce their energy consumption.
- Networked sensors and a next-generation analytics tool play a huge role in driving insights for clients and implementing the most efficient and sustained energy strategies.
- Financial savings of 10%, including a 50% reduction in the costs associated with third-party big data processing tools.
- More effective use of data center computing facilities.
Telecommunications Company Optimizes Ad Campaigns through Application Rationalization

We recently helped a provider of telecommunication and IT solutions transform its application platforms to speed time to market. The company’s offerings include digital out-of-home (DOOH) delivery of advertising and promotional content for digital signs and channels during predetermined time slots. It needed to boost the performance of its hosted DOOH solution in order to speed the processing of campaign changes.

For the DOOH solution to make optimal placement decisions regarding advertising and promotional content, the system must be capable of complex analysis and plotting of data. The computational demand for plotting grows exponentially with the number of signs, channels and slots.

The company required faster processing speeds, without increasing hardware costs. It also needed better scalability to rapidly support additional customers, significantly more signs, and new capabilities such as disaster recovery involving multiple data centers in different geographic regions. The existing infrastructure’s costs and inflexibility made these goals unattainable.

We worked on the evaluation, solution design and implementation of a high-performance computing solution based on a cloud platform. We conducted the initial assessment and functional analysis of the DOOH plotting algorithm for feasibility in the cloud. We used a cloud-enabled solution to modify existing DOOH code and facilitate parallel processing of large volumes of requests.

The company achieved significant benefits from the project, including:

- Reduction in content plotting time from 21 hours to 22 minutes.
- Substantial reduction in hosting costs for DOOH.
- Elimination of redundant infrastructure for each account.
- Infrastructure capable of scaling dynamically with business volume.
- Potential multitenant plotting service so the company can offer the solution as a SaaS offering to large-volume accounts.
Quick Take

News Leader Increases Agility, Reduces Time to Market with Data Center Modernization

We recently helped a news market leader that operates in the U.S., the UK, Europe, Middle East, Africa and India. The company’s application landscape consists of 70-plus applications spanning diverse technologies, such as .NET, MySQL, J2EE, Perl and Oracle. Its data center consisted of 400-plus servers spanning Linux, Windows and Solaris.

The client wanted to decommission its data center and migrate all the servers and applications to a third-party managed hosting provider, implementing server virtualization where possible.

We led the migration of all the applications to the new managed hosting provider and oversaw the application assessment, planning, re-engineering, testing and execution of the data center migration. In collaboration with the company’s IT team, we designed a migration roadmap that was mindful of the application complexity and business criticality of this project. We were responsible for installing the more than 70 existing applications in the new environment in conjunction with the managed hosting provider.

Throughout the migration process, we conducted various levels of application testing to validate that the migrated applications were working as expected in the new environment. We were also responsible for providing the cut-over support to the new environment.

The company achieved significant business benefits, including:

- Decreased server footprint by 30% through decommissioning and virtualization, driving cost savings.
- Reduced capital expenditure and maintenance costs.
- Greater business agility, reduced time to market, better stability and more reliable services.
- Implementation of a disaster recovery architecture, increasing business resilience.
- Highly scalable and flexible infrastructure, enabling agility.
Cognizant Cloud Steps

As shown in Figure 4, Cognizant Cloud Steps constitutes:

- **A tested transformation process:** This eases the enterprise's journey to a future-state cloud model.
- **Best-in-class tools:** These tools cover cloud assessment, governance, migration and management of cloud-based systems.
- **Pre-built solution blueprints:** Pre-defined components accelerate the adoption of cloud in high-traction use cases. For example, the blueprint for the collaboration cloud would contain the necessary rationale for adopting collaboration solutions; approaches for how the cloud resolves typical pain points; a model architecture for the solution; identification of Cognizant and third-party tools that have been evaluated to address these challenges and form a part of the solution architecture; and expected benefits from implementation of this solution.
- **Cloud “landing zones:**” Support for hybrid cloud landing zones is provided, be it building a cloud at the client’s premises, helping the client use third-party cloud services or leveraging our best-in-class cloud infrastructure.

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**Cognizant’s Cloud Steps: An Anatomical View**

Cognizant Cloud Steps:
A comprehensive tool-based framework that accelerates cloud-enabled transformation by 25%-40%.

- Application migration solutions.
- Engineering optimization solutions.
- Business innovation solutions.
- Cloud assessment engine.
- Hybrid cloud governance foundation.
- Cloud app migration foundry.
- Hybrid cloud management fabric.
- Assess & plan.
- Set up.
- Migrate.
- Manage.
- Cloud @ customer
- Cloud @ partner
- Cloud @ Cognizant

Productivity Gain (10%-30%)
Cost Optimization (25%-50%)
Faster Deployment (10%-40%)

Figure 4
Determining the Business Value from Cloud

Use of the cloud can enhance business and operational agility, as well as deliver cost savings. Enterprises need to look beyond cost savings as they evaluate the potential value that cloud can bring to their businesses.

To determine IT cost savings, companies can compare the cost of their current infrastructure, facilities, utilities, platform software licenses and maintenance fees (DBMS, middleware, etc.), application software licenses and maintenance fees (CRM, HR, etc.), upgrades, patches and IT labor with the equivalent infrastructure in a cloud model. With cloud, IT operating costs must take into account the provider fees for compute, storage and network requirements, as well as provider fees for platform licenses and internal IT labor costs to manage provider services and remaining internal services.

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The consumption-based model offered by cloud drives a shift from Cap-Ex to Op-Ex. On-demand, pay-as-you-go models maximize the leverage of capital available to acquire IT and business services while minimizing the risk to the business in the capital used for initial investments and ongoing maintenance charges.

Measuring improvements in business agility usually depends on the unique key performance indicators (KPIs) that enterprises track for themselves. These metrics might include:

- Percentage reduction of development cycle time is a measure of productivity.
- Ratio of development cost to annuity revenue and growth in market share for existing channels could indicate ROI on IT.
- Percentage gains in average operating cost per employee, per business transaction, or number of transactions per support full-time equivalents (FTEs) are all measures of productivity.
- The rates of customer retention and renewals might quantify product/service quality.
- Percentage gains in growth rate of new channels/client acquisition could quantify business growth.

Looking Ahead

As enterprises explore the use of cloud models in their transformation journeys, it will be crucial for them to understand the business value of cloud adoption. Only after clearly understanding their own needs should organizations begin the tactical efforts of migrating data and applications from the current environment to the cloud.

Continuing economic uncertainty and unforeseen business conditions require operational flexibility to support growth, whether organic or via acquisition, while enabling innovation. The cloud provides the infrastructure and pay-as-you-go consumption model to contend with – and thrive under – today’s fast-changing business environment.
About the Authors

Jai Venkat is a Corporate Vice President who leads Global P&L and Business Acceleration for Cognizant’s Cloud Services business unit. In this role, he oversees cloud-enabled business transformation across infrastructure (IaaS), application platforms (PaaS), software and business process as a service (SaaS and BPaaS) initiatives. Jai previously held practice, consulting and sales/go-to-market leadership roles, managing large portfolios in the areas of technology-enabled business transformation and emerging technologies. He can be reached at Jai.Venkat@cognizant.com | LinkedIn: www.linkedin.com/in/jaivenkat.

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About Cognizant

Cognizant (NASDAQ: CTSH) is a leading provider of information technology, consulting, and business process outsourcing services, dedicated to helping the world’s leading companies build stronger businesses. Headquartered in Teaneck, New Jersey (U.S.), Cognizant combines a passion for client satisfaction, technology innovation, deep industry and business process expertise, and a global, collaborative workforce that embodies the future of work. With over 50 delivery centers worldwide and approximately 171,400 employees as of December 31, 2013, Cognizant is a member of the NASDAQ-100, the S&P 500, the Forbes Global 2000, and the Fortune 500 and is ranked among the top performing and fastest growing companies in the world. Visit us online at www.cognizant.com or follow us on Twitter: Cognizant.