Optimize Your Infrastructure with Intelligent Cloud Operations

Abstract

The cloud represents the ideal environment for businesses with its relatively low costs, on-demand scale and continuous availability. But like any other technology, it also has to be ironed out and sculpted to achieve what is needed. This thought paper targets CIOs, business IT leaders, heads of infra support, and aims to address challenges and shortcomings with cloud operations. It proposes an intelligent, technology driven solution that starts right from cloud migration to disaster recovery and delivers tangible benefits like cost and service optimization, and an agile, robust computing infrastructure that meets current and future demands.

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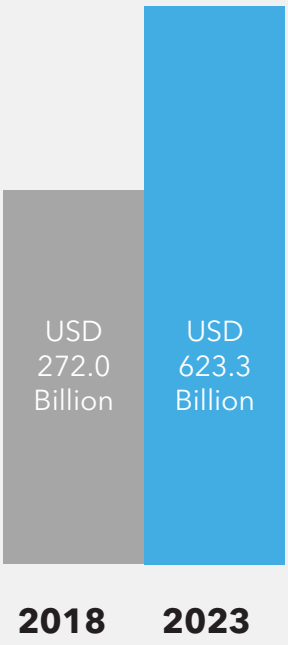
Introduction

The role of the cloud has transformed from offering basic compute and storage opportunities for business organizations to being one of the key drivers of modern business transformation. It allows enterprise organizations to consume IT services without worrying about underlying infrastructure or maintenance. And, the pay per use model has only highlighted the simplicity in harnessing the cloud as an efficient model to drive business agility.

Attractive Opportunities in Cloud Computing Market



CAGR

18.0%

- The global cloud computing market size is estimated USD 272.0 billion in 2018 and expected to reach USD 623.3 billion by 2023.
- The market growth can be attributed to the growing adoption of cloud computing services, globally.
- Increase in the adoption of hybrid cloud service is expected to provide growth opportunities for vendors in the market.

Figure 1: Global Cloud Computing Market

With the surge of multi-cloud and hybrid-cloud models, almost every enterprise is looking to build a cloud strategy as they want to reach a steady-state of operations quite fast. Stats show that nearly **90%** of all companies will be using some form of the cloud in the next two years.

According to a research, the global cloud computing market size will grow from USD 371.4 billion in 2020 to USD 832.1 billion by 2025, at a Compound Annual Growth Rate (CAGR) of 17.5% during the forecast period. The research shows the immense opportunities available for cloud service providers. Major drivers such as **automation, enhanced customer experience**, and the need for lower cost savings continue to push cloud service providers to innovate and drive best-in-class services.

More than half (**55%**) of organizations currently use multiple public clouds, with **21%** saying they use three or more.

Source: IDG Cloud Computing Executive Summary

WHY CLOUD OPERATIONS GAIN IMPORTANCE

Unlike traditional IT infrastructures, the cloud model offers infrastructure connectivity that is not limited by diverse geographic location. It offers a computing environment that embraces **diverse applications and workloads**. On the flip side, regular manual monitoring and maintenance of cloud infrastructure is next to impossible. But, it delivers **speed, scalability, and agility** with proper fine tuning. The underlying computing environment needs to function like a well-oiled machine that is capable of providing an **always-on, low-latency**, and continuously optimized environment for workloads. In other words, it requires constant refinement, optimizations, and management.

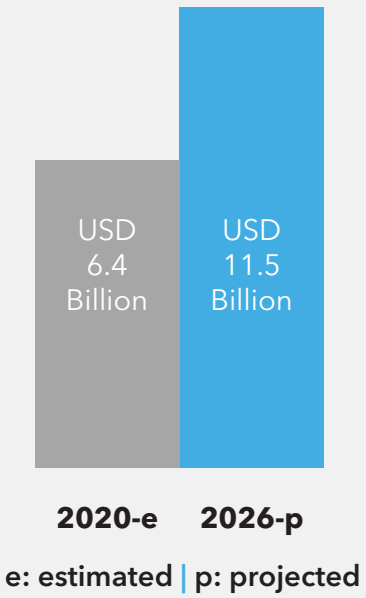
With the industry embracing Work from Home as the new frontier, managing on-premise applications takes a backseat because of the new social distancing norms that are applicable. This puts business-facing IT applications at high risk if they are not monitored and managed properly. Modern-day enterprise workloads are huge and complex, requiring constant management and monitoring. With this new normal, the need for Cloud operations becomes critical as they bring in a layer of remote accessibility and help service providers maintain a "**business-as-usual**" approach.

Examples abound when it comes to the way service providers have had to scale up to serve the surging demands of businesses operating from home. MarketsandMarkets mentioned that Microsoft Team platform users increased to 44 million globally due to the high demand for collaboration solutions. Google, Cisco, Zoom, Netflix, YouTube, and Amazon are among the list of service providers who've had to meet the surging demand from customers. The kind of scalability that these service providers have exemplified during disruptive times is a compelling reason to for service providers to hone and perfect the way they deal and manage cloud operations.

PROLIFERATION OF AI AND IoT

Today, the cloud is also home to IoT devices. These interconnected devices make up **edge computing**, which means that data processing takes place on the devices rather than taking a roundtrip to the cloud. According to research, the IoT cloud market will touch USD 6.4 billion in 2020 and increase to $11.5 billion by 2025. Flexera's report states that IoT services experienced the fastest growth among enterprises at 21 percent, followed by container-as-a-service and machine learning and artificial intelligence (ML/AI), both of which came in at 17 percent.

Attractive Opportunities in the IoT Cloud Platform Market



CAGR

12.6%

- The IoT cloud platform market is estimated to be USD 6.4 billion in 2020 and projected to reach USD 11.5 billion by 2025, at a CAGR of 12.6% during the forecast period.
- Proliferation of IoT devices, need to increase operational efficiency and goverment initiatives for R&D activities related to IoT are some of the driving factors for the IoT cloud platform market.
- Rising demand for IoT-enabled digital transformation of businesses and increasing demand for system integrators are the factors expected to provide growth opportunities for the IoT cloud platform market during the forecast period.

Figure 2: Growth of the IOT Market

Source: Secondary Literature, Expert Interviews, and Markets and Markets Analysis

Besides IoT, AI (Artificial Intelligence) is also gaining importance on how to deliver more powerful cloud solutions by addressing concerns that most organizations face by layering algorithms, managing insights and data patterns, and optimizing workflows. The symbiosis between AI and the Cloud has spawned off new smart devices like Alexa, Siri, Google Home, where customers get connected experiences like playing a song, making a purchase, adjusting room temperatures–-all through verbal cues. AI and cloud will function as two sides of the same coin, the reason being that AI needs massive amounts of datasets, technical talent, and infrastructure. And that's where the cloud comes in, by way of giving access to massive infrastructure at very minimal costs, it accelerates AI access to companies that need it.

> According to Statista, the global value of the AI market will surpass more than an estimated $89 billion annually by 2025. A significant percentage of that value will occur as artificial intelligence powers cloud computing—and as cloud computing will act as an engine to increase the scope and impact of AI in the broader market."

TRENDS WITHIN CLOUD OPERATIONS

The cloud is an exciting example of distributed computing. It allows for a seamless computing environment to be shared by multiple workloads through private, public, or hybrid cloud models. But, with various vendors offering integrated cloud services to entice customers, the critical part of cloud management gets blurred and begins to pose challenges. Hence, the key to deciding upon the right cloud service provider hinges on 2 things: looking at your business needs from a long-term perspective and looking at the core areas the service provider has to offer.

Decision makers need to consider the pandemic that dominates the news headlines and have a futuristic eye for their business. The following trends give buyers an idea of how they want to invest in view of the state of their business operations and the current economic disruption.

01 Managed service providers will choose among cloud providers and select the nimble ones that align with customer needs.

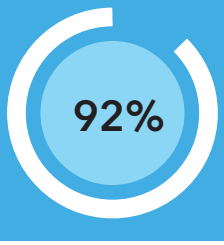
02 Mature organizations will be looking at private clouds instead of public ones to save expenditures.

03 Multi-clouds will reduce the duration of vendor lock-in periods.

04 Hybrid cloud adoption will be the dominant strategy going forward.

05 Distributed clouds will support expanded service availability.

06 By 2023, the leading cloud service providers will have a distributed ATM-like presence to serve a subset of their services for low-latency application requirements.



92% of organization's IT environment is at least somewhat in the cloud today.

Source: IDG Cloud Computing Executive Summary

51% of enterprises reported using cloud managed service providers (MSPs) to manage public cloud use.

Source: Flexera Cloud Report 2020

BUT, THESE CLOUD CHALLENGES HAMPER CLOUD OPERATIONS

Security Issues

This is, by far, the biggest challenge across the cloud spectrum. There has been widespread news about data security breaches, compromised credentials, broken authentication, exposed APIs – all because you can't see where and how your data is being handled and stored. With different vendors tailoring the underlying infrastructure with customized offerings, there is no real visibility or a concerted effort to maintain security—moreover, the idea of security changes from vendors to vendors. According to the Rightscale report, only 29% of respondents have acknowledged that security is a significant challenge, while 49% dismiss this as not much of a problem.

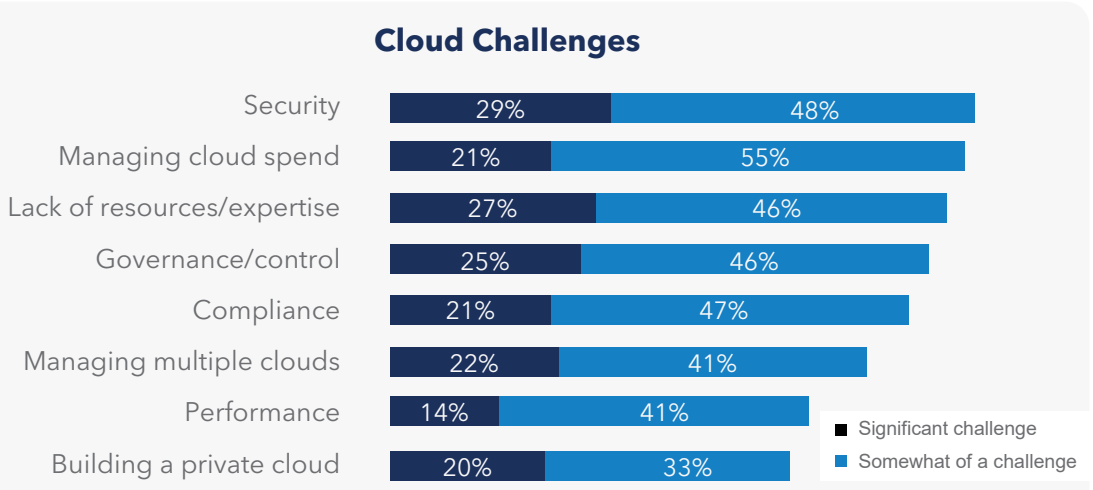


Figure 3: Cloud Challenges

Source: RightScale 2018 State of the Cloud Report

Performance Issues

The moment you migrate your workloads to the cloud, it is the service provider who can keep your momentum and agility humming. If your service provider is down, you are down too. This situation is not very uncommon as most prominent players have been through **service outages** at some time in the past. This calls for real-time monitoring and management.

Cost Control

You can control/optimize only what you measure. This is the basic mantra for cloud operations. Without clear visibility into what your CSP (Cloud Service Provider) is providing you with, you may be spending a lot more dough than what is needed. The 2020 Rightscale report captures the most common drivers to measure cloud progress. For most of it, cloud computing gives you reduced costs by pay-as-you-go models. But the on-demand and scalable nature of the cloud can give you surprises if your CSP does not have **automated billing** and **monitoring**. Moreover, cloud provider pricing structures are quite hard to decipher, and one needs to take a close look to uncover opportunities.

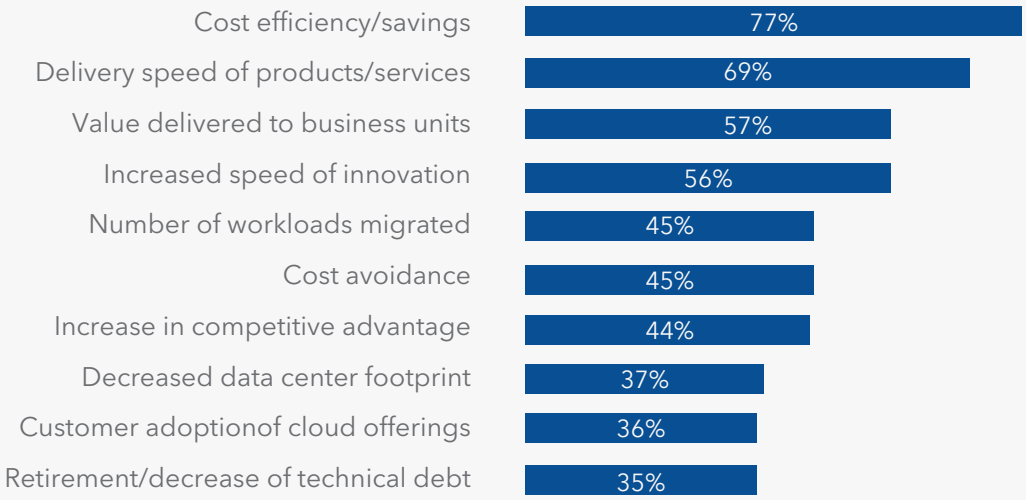


Figure 4: Top metrics for assessing cloud goals

Source: Flexera 2020 State of the Cloud Report

Governance & Compliance

Most CSPs also waver when it comes to providing **fail-safe governance** over the underlying IT infrastructure they have. This leads to challenges and difficulties encountered in delivering services like provisioning, commissioning, and decommissioning instances. With the broad availability of vendors, each one would have a differentiated view of providing services that may not be compliant specific or in tune with what customers need. CSPs should operate on well-defined policies that use standard and fair practices to control and maintain assets that are in line with your organization's goals. **Compliance** is another gray area. The moment a company moves its data to the cloud, adherence to data compliance regulations like **HIPAA, SOX, PCI DSS** becomes paramount. These are mandatory requirements for organizations, and they need to find vendors who adhere to these standards.

Lack of Expertise

The varying multi-cloud workloads that organizations move to the cloud require specialized knowledge. At the same time, the cloud technology landscape is also changing. With this growing imbalance, organizations find it tough to get the necessary expertise and have a tough time keeping up with tools. There is always a continual need for strong knowledge across the tools landscape.

ADDRESS CHALLENGES WITH THE RIGHT TECHNOLOGY FRAMEWORK

Change is the only constant. Workloads and customer environments (enterprises and SMBs) keep frequently changing as business dynamics change.

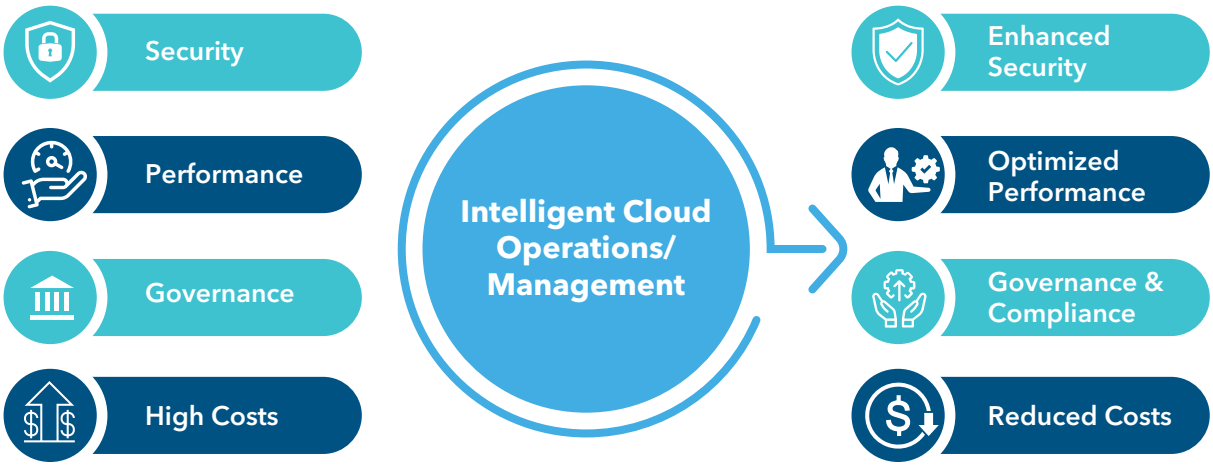


Figure 5: Address challenges with a technology powered framework

Cloud operations, an erstwhile afterthought, is now a high priority action point for customers migrating and adapting to live in the cloud. CSPs should realize that with the right technology framework, they can provide customers a much better and efficient service lineup that resonates well with customer objectives. NelsonHall's recent survey indicates that buyers are now expecting to house **42%** of their landscapes in the cloud by 2022. Moreover, Flexera's State of the Cloud Report shows that 70% of SMB workloads and data will reside in a public cloud within the next 12 months.

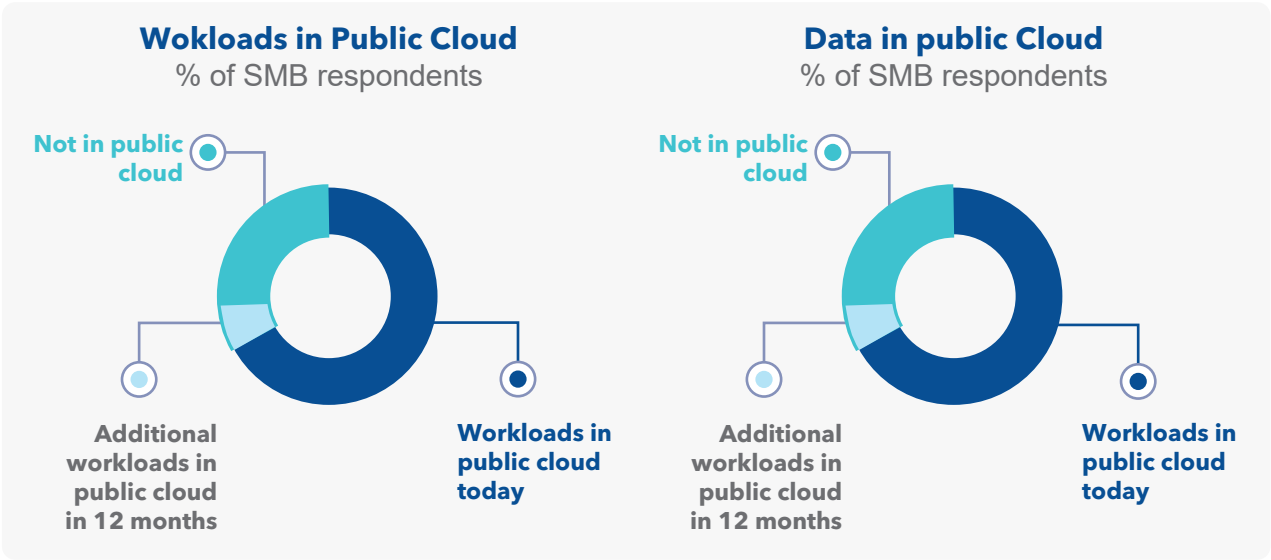


Figure 6: Flexera's State of the Cloud Report

DRIVE ECONOMIES OF SCALE WITH INTELLIGENT CLOUD OPERATIONS

Cloud operations deal with continuous optimization, monitoring, and constant upkeep of the computing environment to facilitate an able, secure, and robust environment for your applications. With the increasing complexity and varying needs of business applications, an **integrated approach** is necessary to drive outcomes. New-age technologies like AI, ML, analytics, and automation bring in a whole new degree of **automation, integration, and readiness** that takes most of the pressure away and give enterprise organizations more time for strategic developments with consistent returns on their investments.

CSS Corp's Cloudops services portfolio provides provisioning, automation, and orchestration, multi-cloud brokering, cloud DevOps, disaster recovery, governance, and cost optimization, giving you lowered TCO, higher ROI, agility, real-time scale, and availability. The following diagram illustrates the offering.

Figure 7: CSS Corp's Cloud Service Portfolio

CSS Corp's cloud operations services help organizations fast track their movement to the cloud, use best practices to help them settle in, and reap the benefits. Our cloud operations follow a holistic approach and cover the following phases:

Planning and Provisioning

Modern-day workloads are too complicated, demanding, and changing. On the other side, the vast IT infrastructure that makes up the cloud is readily available. It is not an easy task to correctly ascertain workloads and zero in on the most cost-effective cloud service provider. Poorly configured migration plans often tend to bloat costs fast because the cost of computing resources varies. Though this may not tip the scales overnight, it will present itself as a hidden cost sooner or later.

Our approach has business ready blueprints for immediate deployment to help enterprises and SMBs. Together with the environment (platform and infra) as a service, we can accelerate the process of finding suitable candidates through automation and drive **continuous optimization.**

App Development (Cloud DevOps)

Integrating security best practices is critical to maintain application stability and mitigate threat vectors. With the number of code revisions that most applications are built on, security needs to be enhanced and enforced at every stage of the development process. With seamless integrations to a host of popular tools, our app development brings on preconfigured DevSecOps scripts, Docker management, and application-specific CI/CD to give your applications a secure and stable development environment.

Governance

Governance is all about managing your instances, deployments, and security aspects on the cloud. Cloud governance is unlike traditional IT governance where you have visibility on parameters such as costs, users, and applications. Cloud governance involves a framework of policies and standard practices involving cost optimization, resiliency, security, or compliance. Strengthened by robust data policies and compliance to international standards like GDPR, PCI-DSS, and ISO 27001, customers need not worry about varying data policies and regulations. Through governance, we provide capacity and performance management, billing and reporting, cost and usage reports, SLA management – all through an automated dashboard.

Management, Metering, and Monitoring

This is where the action is. We manage cloud instances, incidents, and events through automation and digital technologies. With AI and ML, enterprises gain a complete view of their instance health, **environment status,** and get **advanced warnings and alerts** through our state-of-art early warning system. This system gives out alerts whenever the thresholds are disturbed. By an "early warning," critical areas can be fixed, corrective action can be taken well before shutdown.

Disaster Recovery

Cloud operations are never complete without disaster recovery (DR). With **near time failover capability,** our cloud disaster recovery services ensure your business continuity through continuous data protection. Our DR services take out the pain of narrowing an apt service provider by providing you with a suite of tools for disaster management. Our partnership with leading cloud vendors helps us understand our client's needs and craft customizable solutions that are aligned to their business goals.

CLOUD OPS USE CASES IN THE REAL WORLD

Today, we live in a world of the connected economy. Consumers need “always-on services” that power “always-available experiences.” So there's pressure on vendors to implement, execute, and scale rapidly to meet the growing demand of customers, with no disruptions to services. Two common use cases where cloud operations help organizations and CSPs in real-world situations are shown below.

USE CASE 1: CUSTOMIZED CAMPAIGN MANAGEMENT FOR INCREASING SALES PIPELINE

USE CASE 2: OPTIMIZING CLOUD SPEND THROUGH AUTOMATION AND ADVANCED ANALYTICS

REALIZE MORE VALUE WITH CLOUD ACCELERATORS

The roadmap to the cloud is complex and daunting. While most providers offer you most of the services described in the previous section, cloud accelerators can speed up most of the process involved giving you automated processes, faster turnarounds, and accurate results. This fast tracks your cloud adoption and gives you agility and nimbleness upfront. CSS Corp brings key cloud transformation solutions from its Innovation Labs.

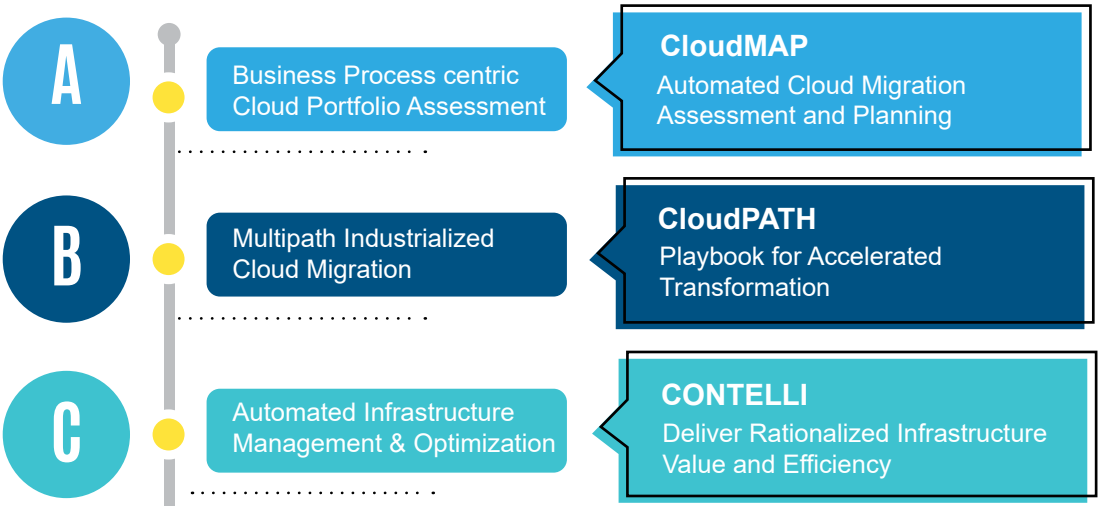


Figure 9: CSS Corp Cloud Accelerators

With cloud accelerators, we have designed tools that expedite different phases of your cloud journey – starting from migration to disaster recovery.

CloudMAP automates assessments, migrations, provisioning to reduce manual dependence, and ensures integrity and speed. This means there is automatic provisioning of instances, workload assessments, segmentation, feasibility analysis, and classification by creating "candidates" for migration. CloudMAP also gives you cloud monitoring and security, a **cloud roadmap plan, readiness assessment, hybrid cloud orchestration.**

CloudPATH offers real-time runbook services that help you continually test whether your migration workloads are functioning correctly in the new environment and makes necessary changes and modifications as required. This is important to avoid application slowdowns and no-shows. CloudPATH helps you with **application and data migration**, remediation services, public, private, and hybrid cloud setups.

CONTELLI is an **AI-driven cognitive automation platform** for the cloud and infrastructure. CONTELLI gathers event data from a network of sensors and everything it is connected to and makes use of AI to arrive at actionable insights by correlating the data. Using ML (Machine Learning), it learns and ascertains when infrastructure components are most likely to fail (by comparing live data to thresholds) and takes premeditated steps to avoid failure or downtime. With built-in automation support, it accelerates processes and provides visibility to critical parameters on a real-time dashboard. Being available on a SaaS-based platform, CONTELLI reduces TCO, increases operational agility and consistency with continuous optimizations resulting in seamless IT infrastructure that enables you to provide "always-on" experiences.

GAME-CHANGING INDUSTRY BENEFITS

CSS Corp's cloud solutions have transformed the business landscape for most of our clients and given them a stable and robust environment that exudes **service continuity, agility, and low latency.**

One of our clients, a large global FMCG major, had a largely decentralized ecosystem that had over 2.5 K digital assets. Their underlying IT ecosystem was disintegrated due to its global scale of operations. As a result, there was low utilization of infrastructure, longer implementations for marketing campaigns with limited scope for any changes. Moreover, rolling out global changes across their various points of presence was difficult because each region had its heterogeneous mix of web applications spread across multiple DC's (Datacenters). They wanted to move to a unified digital ecosystem that gave them:

1. Improved business agility and service availability
2. A standard technology platform to fast track marketing assets with regional content delivery architecture
3. A digital marketing ecosystem that's future-ready for growth
4. Standardized toolsets and processes for efficiency

CSS Corp used its IP CloudMAP and CloudPATH to migrate the client's workload to the cloud. We provided dedicated and shared hosting for client's 1300 VMs (Virtual Machines) and 4000+ brand websites and microsites.

Using CONTELLI, we provided automated migration and management services. We also enabled DR services on the cloud. Using DevOps, we provided a **CI/CD** pipeline for microservices such as Amazon elastic containerization and lambda. We also implemented iSoc and **WAF (Windows Application Firewall)** to secure and sanitize 6000 websites with 95% incident detection and mitigation.

These changes helped them become agile as they can launch global campaigns in 2 days compared to weeks earlier, with a reduction of 60% in costs across operations. Standards-based compliance lets their brand websites run with 24x7/365 service availability, fail-safe DR (Disaster Recovery), and a global L1/2/3 helpdesk.

Continuous innovations and improvisations mark the order of the day with revamped OS security, automated patch management, recovery, and configuration management.

HAILED AS AN INDUSTRY GAME CHANGER

By building solutions through the optimum intervention of technology, CSS Corp's cloud operations have become the most obvious choice that ticks all requirements of enterprise organizations. Having a holistic approach to the cloud starting from migration to disaster recovery and, by bringing in technology improvements at every touchpoint, CONTELLI won the coveted "Gold **Stevie Award"** for the best cloud monitoring and management solution.

CONCLUSION

Businesses of the future will get more complicated as new technologies and business models emerge, and they will require transformative solutions. To stay ahead of the curve, it is prudent to streamline your operations to meet growing demands while reducing costs. The pandemic has hastened organizations' shift toward cloud. For example, sectors like financial services, which have been slow in making the shift due to security and regulatory challenges are now looking at large-scale cloud engagements (HSBC with AWS and Deutsche Bank with GCP). Moving to the cloud is the most obvious answer to deal with present-day challenges that modern IT infra presents. Operational costs, uncertain revenues, hazy economic recovery timelines, and high distributed workforce are the significant reasons that decision makers need to work with a reliable cloud partner who can improve the internal application landscape via a tailored adoption strategy. By using an AI-driven technology framework for cloud operations, new age service providers like CSS Corp continuously redefine the technology curve for clients with forward-looking solutions that deliver on value and costs.

Additional Resources:

01 Infrastructure, Cloud, Network and Security Services

02 CSS Corp Cloud Services

03 CONTELLI – Harmonize, Automate IT operations

04 Video: Cloud Migrations

References:

- The Global Computing Market will rise from USD 371.4 billion in 2020 to USD 832.1 billion by 2025
- Alternative opportunities in the IoT Cloud Market
- The global value of the AI market will surpass more than $89 billion
- Cloud computing risks and challenges
- What is cloud governance?
- Buyers will house 42% of landscapes in the Cloud by 2022

Phanikishore Burre

SVP & Delivery Head - Infrastructure, Network, Cloud & Security (INCS) Services

Phanikishore has close to two decades of industry experience and heads the Infrastructure, Network, Cloud & Security (INCS) Services at CSS Corp. He has been instrumental in driving large scale IT and Network transformation programs for enterprises, especially in Retail, Consumer Product Goods (CPG), high-tech, telecom and banking and financial services (BFSI). He holds a track record of delivering business value to organizations globally through a consultative approach augmented by effective solution development, and delivery excellence.

Prior to joining CSS Corp, he has had stints in leading organizations like Tesco Hindustan Service Centre, JDA, TCS, etc. At CSS Corp, he is focused on delivering solutions in Cloud, DevOps, Heuristic Automation and Platforms that are enabled to deploy highly scalable customer experience enriching solutions. Phani holds a bachelor's degree in Instrumentation Engineering from Nagarjuna University.

For more information, please write to **info@csscorp.com**