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CLOUD PLATFORM ENGINEERING - A WAY TO EMPOWER DEVELOPERS AND DRIVE AGILITY IN THE HYBRID CLOUD

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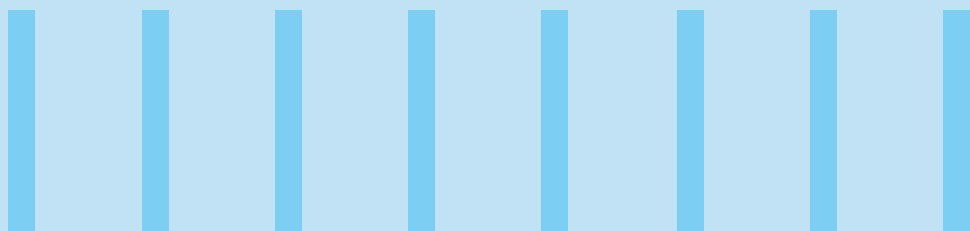
Enterprises are gearing up for digital transformation as it provides new avenues for IT to handle business needs and is the only way forward to ensure business survival. Technologies such as the Cloud, Machine Learning, AI, Analytics, and IoT act as catalysts for this transformation. These technologies have the capability to bring about disruptive changes to the business, and the Cloud is the key enabler that propels the adoption of these disruptive technologies.

Today, while choosing a cloud service provider to transform the existing landscape and also build new generation business applications, factors such as compatibility of the cloud hosting environment for the applications, individual capabilities of the cloud service providers (CSP), de-risking, cloud cost control, and compliance requirements assume significance. Enterprises are looking beyond one cloud service provider to address these factors comprehensively and effectively.

Taking an organization on the path to transformation, with one or more cloud service providers, starts with laying the right foundation in terms of the cloud platform. The cloud platform streamlines the process of adopting cloud services through a well-defined catalog that meets organizational process, compliance, and operational needs.
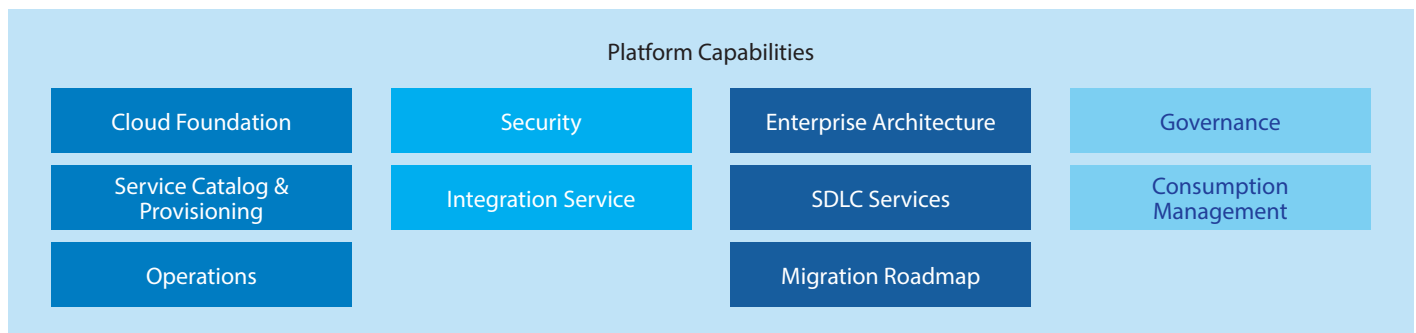
Infrastructure and platform services in an IT organization have been traditionally delivered as a managed system. However, to meet newer development methodologies and operating models of Agile and DevOps, the platform must be engineered to ensure developer empowerment supporting full-stack operating models.
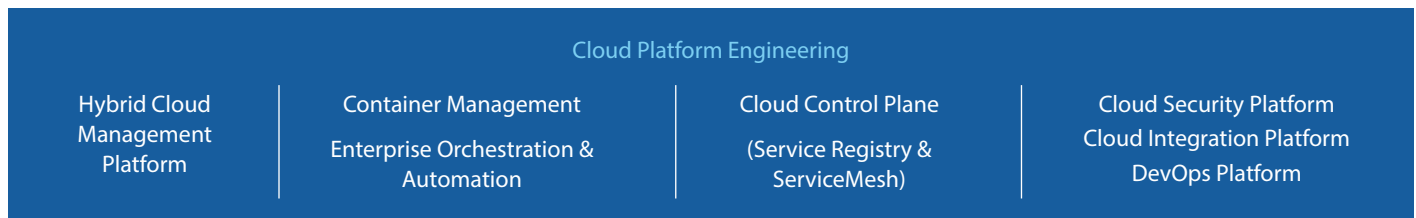
Engineering the Platform

While the decision to have a hybrid cloud approach (one or more cloud service provider along with existing investments in data center) is justified, enterprises must figure out how to introduce these technologies into the IT landscape, ensuring agility, flexibility, and compliance. The platform team must examine the capabilities to build and manage the hybrid cloud environment while addressing the asks of each stakeholder:

1. Enterprise architects – architecture standards and technical governance

2. Finance – transparent costs and invoices from service providers and cost allocation across units

3. Developer – unified approach to request for resources, bring in right technologies as per application needs, single SDLC or DevOps process and tools across CSPs

4. Operator – single dashboard to monitor and manage the landscape to provide service assurance aided by tools for regular tasks and in-depth troubleshooting

5. Security Operations – consistent policy enforcement, security controls, compliance checks, and cross-platform visibility and capability for investigation across the landscape.

Platform Capabilities

Cloud Foundation	Security	Enterprise Architecture	Governance
Service Catalog & Provisioning	Integration Service	SDLC Services	Consumption Management
Operations		Migration Roadmap	

Such a platform is expected to deliver higher resiliency and greater productivity with lesser dependence on people.

Cloud Platform Engineering

Hybrid Cloud Management Platform	Container Management Enterprise Orchestration & Automation	Cloud Control Plane (Service Registry & ServiceMesh)	Cloud Security Platform Cloud Integration Platform DevOps Platform

The IT function should consider a few significant changes while engineering the hybrid cloud platform -

- Empower the developers to consume services through self-service by utilizing platform as code or as a self-service portal.

- Engineer services to meet the technical and business SLAs and enable operating in a vertically integrated model.

- Provide visibility into end-to-end operational and monitoring metrics to the developers, to get to "you build it, you run it" model.

Operating the Platform

An effectively engineered cloud platform has changed the way IT infrastructure and platform operations are handled and reduces the friction within the application development community.

1. Platform delivered as code enables developers for self-service and self-managing capabilities further allowing application support to manage the platform as well (vertically integrated operating model).

2. This, in turn, allows the platform operation team to focus on

a. Securing and protecting the cloud resources, ensuring recoverability and mitigating threats.

b. Building advanced observability, automation in incident handling, preventing incidents, thereby improving the overall reliability of the system.

c. Governing technology deployment on the cloud addressing factors such as licenses, and compliance.

d. Ensuring cloud economics for billing, chargeback, and optimizing cloud resource consumption.

Enabling Technologies for adopting hybrid cloud

There are several new platform technologies created and utilized by "born in the cloud" companies. These technologies are being widely considered by enterprises as well for engineering the hybrid cloud platform.

- Core platform technology - Container (like Docker, Kubernetes, OpenShift) as the key abstraction for resource management layer and ServiceMesh (like Istio, Linkerd) as the cloud control plane to route, observe, secure, and govern.

- Observability Platform – Elastic, Kibana, Prometheus, Grafana, Zipkin, Jaegar providing deep insights across metrics, logging, and tracing.

- Security Platform – Identity (Spiffe), Key and Secrets Management (Key Vault), encryption.

- DevOps Services – Pipeline (like Jenkins, GoCD), Provisioning (like Terraform) and configuration management (like Chef/ Puppet/ Ansible).

- Scripting – Python, YAML/ JSON, PowerShell, Shell, Templates of CSPs, DSLs based on JSON/ YAML.

For enterprises to accelerate cloud adoption and reap the benefits of the transformation, they need to invest in engineering the cloud platform. The platform will empower the developer and elevate the role of platform operations, and support the platform engineering team that focuses on service introduction, reliability, and resilience. It can be achieved through a structured approach of uplifting processes and people skills while utilizing the best of emerging platform technologies.

About the Author

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Madhan Raj is an Associate Vice President of the Enterprise Cloud business at Infosys and currently leads the cloud solution strategy, which is focused on business-centric cloud transformation. Madhan focuses on cloud disposition, which includes large scale migration of legacy applications as well as developing cloud native applications based on business drivers.

As an IT strategist and enterprise architect, he has designed business-aligned IT solutions for large and complex business systems for Fortune 1000 companies. Madhan has co-authored numerous publications, including Infosys' papers on the role of the cloud and cloud adoption.

Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 14,000 cloud assets, over 200 industry cloud solution blueprints and a thriving community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance comes baked into every solution delivered.

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