Building on belief

Making cloud-native tech work for your business

Abstract

Spurred by the success stories of digitally charged businesses, enterprises today are keen to transform using cloud-native technologies. However, cloud-native technology is no silver bullet for a successful digital transformation without a well-defined implementation model.

Cloud-native adoption is an evolving process that aims to convert an idea for business transformation into an executable plan. Misplaced one-size-fits-all notions, however, have led chief digital officers and enterprise architects to use a mishmash of approaches, which results in technologies being considered good only for start-ups or small corporations.

We explore some of the best practices to successfully convert ideas into action for cloud-native programs.

The need to be cloud native

Being agile, resilient, and purpose-driven is key to survival for today's enterprises. Cloud-native technologies use containers, microservices, APIs, immutable infrastructure, serverless technologies, and loosely coupled designs to create applications that achieve these qualities.

For businesses, the following characteristics of cloud-native applications are most relevant for driving value:

- **Loosely coupled:** Enables applications to scale up seamlessly during sudden spikes in demand
- **Packaged into containers:** Ensures business agility by simplifying rollout of incremental changes without breaking other functionalities
- **Domain-driven design:** Enables application development by business functions (domains) with a product owner who best understands the impact of every small change on the business. This gives business functions more control on prioritizing their needs.
- **API-centric:** Enables applications to talk to both internal applications and external APIs, leading to improved ecosystem integration

Beyond the advantages that a cloud-native application architecture provides, there are several other benefits, such as:

- High degree of business sponsorship.
- Commitment to a common purpose both from IT and business.
- Agility, resilience, and adaptability of the final software.
- Ease of APIfication to embrace the partner ecosystems.
- Advantages of the polyglot approach for best-fit solutions.

Let us look at how cloud-native modernization addresses a real-life challenge faced by an enterprise application.

Transforming policy administration for an insurance major

An insurance service provider was facing a host of challenges. While these stemmed from many sources and geographies, a root-cause analysis pointed to a single cause: a slow IT response to a fast-moving, digitalized, regional insurance market demanding continuous changes from IT on its digital channels.

Business partners, brokers, and customers were demanding a new policy administration module, with a frictionless and personalized customer experience, standardized business processes, and technology modernization.

The company decided to use a microservices architecture to create a policy administration system that provided agility and scale. The cloud-native design helped the insurer meet the following goals:

- Flexibility of change: Since the rules of insurance and the product details varied across countries, the cloud-native design enabled product owners to have independent services for their products, and supported new product rollouts.

- 'Always-on' platform: No deployment downtimes, failures due to scaling issues or downtime due to backups helped ensure a better customer experience.

- Control of the software rollout: Since the cloud-native design broke down the monolithic software into independent microservices, individual business function owners no longer needed to wait for others to get their business changes in production. Cycles of new changes to production shortened from two months to two weeks.

- Allow for regional variations: The company needed to run different business rules for regional product sets. The cloud-native design ensured that each region could change their products without impacting the whole company.

- Transparency and governance: As the microservices, integrations, and data stores were all segregated by the line of business, it was now possible to see which product or business line was consuming how many services. This meant that the cost of cloud could be allocated to businesses in a more transparent manner.

The essential steps

Program sponsorship and objectives

The sponsors of cloud-native programs usually fund these projects with a goal of significant improvements in customer experience and growth-centric KPIs. These are expected to be realized through small, continuous increments during the course of the program.

Objectives and business KPIs

After the objectives and business KPI improvement plan have been agreed upon, the target state design can be outlined. Here again, cloud-native programs deviate from a standard cloud application development program that follows industry standard architectures and are not heavily influenced by business goals as long as they are able to meet performance, scalability, and other technical parameters.

A few examples of business KPIs targeted in the insurer's case are:

- 30% improvement in straight-through processing for proposal generation and non-financial changes to policies

- 90% automation of standard customer correspondences

- 50% improvement in customer experience ratings on specific products through omnichannel experiences

Cloud-native programs are particularly challenging as they cannot be delivered using deep technology knowledge alone unlike other cloud programs like migration. While knowledge of technology elements is critical to a successful cloud-native program, the ability to work with businesses in domain-driven design is equally crucial. The key, therefore, lies in choosing a partner with an established measurement framework and who has successfully completed cloud-native programs across customer business lines.

Target state visualization

Unlike conventional transformation programs, where the target architecture is designed toward the end of the requirements gathering phase, cloud-native projects call for the creation of an initial visualization of the proposed target state of the system up-front. This ensures the identification of all essential cloud services required to realize the target state and arrive at an accurate cost of running the solution in production.

Pricing the solution for public cloud

The target state visualization forms the basis of pricing for public cloud services, providing granularity. Cloud-native programs entail many hidden cost elements; hence, customers must choose partners who design and execute cloud-native programs from strategy and assessment to architecture, and finally, to build and support the same on a pay-as-you-deploy model.

A consumption-based service model must be adopted as businesses' appetite for consumption in such programs often fluctuate.

Program execution

With the business approval received, the execution journey begins (see Figure 2).

Cloud-native programs almost always adopt microservices principles, and can be broadly visualized into two disciplines.

- **Microservices design** aims at creating a domain-driven design for the business in scope. This aims at picking up a business function and applying domain-driven design principles to create small independent services.

- **Build** involves the development of these independent functional components, such as 'client', 'proposal', and 'business development' microservices.

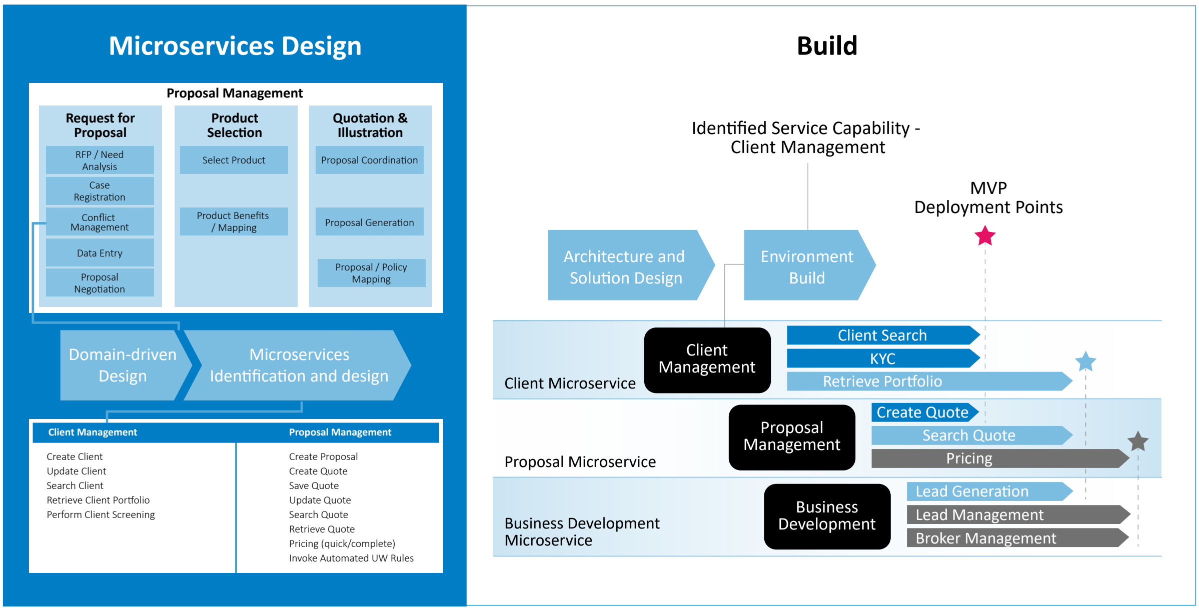

Figure 2: Program execution approach

The road less travelled

In spite of the cloud-native promise, adoption across enterprises is still sparse for a few reasons.

1. Cloud is often seen as the 'new ERP' because it brought into the bespoke application development community, architects, scrum leads and product owners a high degree of accountability on KPIs and business outcomes. This is a major shift from the traditional software development programs, which were mostly modeled around delivering approved requirements from business.

2. Hyped expectations from cloud-native programs is another deterrent. Large enterprises cannot change their operating structure, policies, and procedures overnight and embrace a completely radical new way of working. When they start their cloud-native programs, 99% of other projects in the enterprise are still running on traditional models.

3. Cloud-native technologies—including container platforms, service mesh products, API management suites, and event-driven integration software—are evolving faster than one can keep pace with. This makes the solution and architecture a race against the release of the next set of new products.

4. Enterprise applications are designed to hold and display a high amount of data that users can access and work upon easily. Hence, a sudden move to loosely coupled architectures is not an easy transition for most businesses.

5. The level of tooling required for visualization of the existing code structure of applications, and poor documentation of inter-process communication—like how each logical segment of the application is talking to another—make it even more difficult to create domain models from the existing application code. Therefore, it is not uncommon for consultants to suggest a complete 'new domain model design' for such programs. This often leads to a constant cycle of reconciliation between the existing app and what the new model proposes to do.

Ingredients of success

All of the above must be strongly supported by a rich set of tools and architecture blueprints, POC benchmarks, pre-built technology solutions, and frameworks and templates that consolidate the partner’s best practices for cloud-native development. This ensures that enterprises feel comfortable using them.

It is strongly recommended that, at a minimum, the partner must have the following:

- Cloud service provider-accredited cloud-native reference architectures for the business domain

- High-quality code scanning and dependency analysis tools wherever an existing code base is available and needs to be refactored

- POCs that are pre-built based on the reference architectures proposed – to illustrate the promise versus delivery ratio

- Documentation templates for architecture, along with high- and low-level designs for microservices, which are tested and can sail through the design and architecture approvals smoothly

Conclusion

Companies embarking on a cloud-native program must never lose sight of the core objective, which is to create business value. Without a clear mandate, the program will neither receive business sponsorship nor solve problems effectively. A cloud-native program, when successfully completed, can achieve a complete cultural shift in the organization. Enterprises must join forces with partners who have proven experience and success stories in this subject. The right team, tools, processes, and, most important, a mindset which truly believes that the transformational abilities of software are the secret to success.

About the author

Siddhartha Gupta

Siddhartha Gupta is Global Head of Application Modernization in TCS’ Microsoft Business Unit at TCS. He has over 20 years of experience working with global customers in healthcare, publishing, financial services, and retail sectors to build applications and systems focused at creating business value. He is a proponent of TCS’ cloud modernization strategy and adoption paths, and evangelizes the adoption of cloud-native applications and integrations for enterprises to drive business benefits.

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Contact

Visit the Microsoft Business Unit page on https://www.tcs.com

Email: BusinessAndTechnologyServices.Marketing@tcs.com

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