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Cloud Native: The New Normal for Migrating to Cloud

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In today's digital economy, enterprises are keen to transform their businesses by innovating and differentiating themselves in an increasingly competitive marketplace. Organizations recognize the need to boost their agility, and to adopt an "experiment more, fail fast" approach.

However, many enterprises are feeling frustrated at not being able to do so effectively, due to the legacy model of application development that is entrenched within their organization. Several businesses find themselves tied up with expensive, hard-to-change proprietary software, and inflexible processes. At the same time, organizations such as Google, Amazon, Netflix and Facebook, as well as many start-ups, have already demonstrated that a frenzied pace of sustained innovation can be achieved. For example, Amazon apparently deploys a new application every 11.7 seconds, while Netflix rolls out changes to its systems 1000 times a day, and Facebook undertakes a biweekly update of its mobile messaging app. One of the key ingredients of the success of such new-age organizations has been their extensive usage of open-source technologies, commodity hardware and cloud.

Not surprisingly, other organizations want to emulate these enterprises, but at the same time ensure compliance with their security policies. Most have already embraced cloud computing in some way or the other. However, for many companies, the first step is to use the cloud for eliminating the infrastructure overheads and other capital expenditure associated with on-premise IT setups. For some industries, it is also not possible to adopt public cloud computing due to security and regulatory reasons. Still, these organizations are adopting on-premise platforms such as Pivotal Cloud Foundry or Red Hat's OpenShift. A number of these businesses, though, are beginning to realize that infrastructure is just the tip of the iceberg. While the infrastructure-as-a-service (IaaS) model does allow enterprises to get access to the requisite infrastructure quickly, that alone is not enough to enhance their agility. Enterprises also need to architect applications differently as they should be able to handle the pace of changes without impacting availability or performance. Architecting for failure is often adopted to build more robust systems that can be deployed frequently. Applications are also expected to support multiple channels for access, including mobile apps and browsers.

The availability of new technologies, architectural patterns, tools and processes can now enable companies to build robust applications at the pace they want to. Development teams can develop lean and easy-to-change microservices exposed as APIs and deploy the same in container technologies such as Docker. Enterprises can also use the Continuous Integration, Continuous Delivery / Deployment (CI/CD2) approach by leveraging DevOps-enabled responsive processes.

While organizations can pursue each of these paths independently, they would benefit the most by using all or most of them in tandem. For example, systems could be architected as microservices. However, if they are not deployed independently, only a fraction of the potential benefits would be realized. Collectively, these systems are called cloud native.

Cloud native applications can support rapid changes in applications, besides giving organizations the flexibility to unveil or roll back new builds faster. The 12-factor principles – including using a single codebase for better revision control and isolating dependencies –can serve as the foundation of cloud native applications.

Enterprises are already developing new applications to be cloud native compliant. In case of legacy applications, enterprises have begun adopting a phased approach by first putting applications in containers, and then re-architecting them part by part. Indeed, the cloud native approach also enables organizations to take the initial steps toward migration, while having the option of reverting to the status quo if required. Moreover, cloud native applications can be flexibly designed based on whether the organization is having an all-in arrangement with its cloud provider or if the company wants to be cloud agnostic or somewhere in between.

To summarize, enterprises can reap the following benefits by adopting a cloud native approach for developing applications, irrespective of whether they prefer public, private or hybrid clouds:

• Support innovation and differentiation through rapid development and rollouts (with rollbacks, if required)
• Create robust, horizontally scalable and fault-tolerant, self-healing applications that can be deployed on commodity hardware
• Ensure compliance with security norms and other industry-specific regulations
• Create consistency and uniformity across application development processes, including integrated DevOps, and tools by addressing common underlying concerns and adopting best practices
• Modernize legacy applications and reduce 'technical debt'
• Embrace a 'right-fit' approach, with the flexibility to choose different technology stacks within the same application

About the Author

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Kiran Killedar is a head architect at LTI, with a rich experience of having worked closely with business SMEs over almost 20 years to conceive and develop scalable and extensible enterprise solutions. He has helped various clients through continuous evaluation, recommendation, and planning associated with the adoption of cloud native technologies – with a focus on private cloud providers like OpenShift and Pivotal. As an AWS Certified Associate Architect and Pivotal Accelerated Lab Certified Cloud expert, Kiran has led architecture consulting and transformation initiatives across business domains.

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