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DevOps: The Oxygen for Modern Software Delivery

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Businesses today are under great pressure to continuously deliver new value to their customers, at a faster pace. With most of the business innovation delivered through software solutions, IT delivery needs to be agile with the shortest possible turnaround time and driven by a continuous process. Given these imperatives, organizations should actively consider adopting DevOps. DevOps is a business-driven software delivery paradigm that fosters continuous innovation of the application management lifecycle, and directly delivers high business value to the organization and its customers.

DevOps has been in the limelight for the past few years and is now increasingly in demand from companies seeking to provision high-speed, superior quality and cost-effective solutions around various diversified technologies. DevOps can help enterprises make software deliveries faster, stable and continuous by promoting a culture where people use the right set of tools for automation, lean processes, increased agility and higher productivity.

Consistent digitalization and high-performance IT structures are imperative in this regard, as demonstrated by renowned companies like Facebook, Netflix and Uber, which have pioneered the implementation of DevOps for agile, automated software deployment. Traditional enterprises, on the other hand, largely follow DevOps at their own pace, which may not be leveraging the full potential that it has to offer.
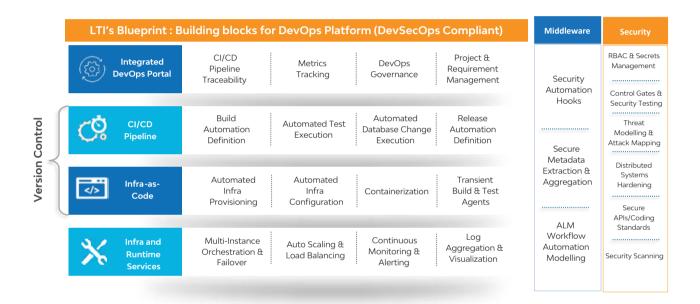
Enabling DevOps Transformation

Enterprises struggle to understand where to start from or how to enable DevOps. Well, DevOps is more of a mindset and cultural shift. Therefore, adopting it requires a top-down approach where the senior management must get convinced first and then cascade the idea down to the project and product delivery units across the organization. But technically enabling DevOps needs a bottom-up approach where the initiative begins with a few projects and then expands to all relevant projects or products.

Your DevOps transformation journey must begin with a maturity-based assessment of your current projects or portfolios, based on the following five key assessment vectors:

Culture and collaboration — **Application lifecycle process** — **Infrastructure management** — **Feedback and monitoring** — **Metrics alignment**

The DevOps Blueprint: Be Healthy, Live Long, Be Happy

Any DevOps-based platform solution should be based on a robust foundation architecture that is secure, highly scalable to accommodate future needs, and should yield ROI to your organization. Here is a snapshot of the architecture that we typically recommend building a DevOps Platform solution:

LTI's Blueprint : Building blocks for DevOps Platform (DevSecOps Compliant)

	Column 1	Column 2	Column 3	Column 4
Integrated DevOps Portal	CI/CD Pipeline Traceability	Metrics Tracking	DevOps Governance	Project & Requirement Management
CI/CD Pipeline	Build Automation Definition	Automated Test Execution	Automated Database Change Execution	Release Automation Definition
Infra-as-Code	Automated Infra Provisioning	Automated Infra Configuration	Containerization	Transient Build & Test Agents
Infra and Runtime Services	Multi-Instance Orchestration & Failover	Auto Scaling & Load Balancing	Continuous Monitoring & Alerting	Log Aggregation & Visualization

Version Control spans CI/CD Pipeline and Infra-as-Code.

Middleware
- Security Automation Hooks
- Secure Metadata Extraction & Aggregation
- ALM Workflow Automation Modelling

Security
- RBAC & Secrets Management
- Control Gates & Security Testing
- Threat Modelling & Attack Mapping
- Distributed Systems Hardening
- Secure APIs/Coding Standards
- Security Scanning

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The Future of DevOps

I foresee seven major trends reshaping the DevOps landscape in the coming years:

Multi-cloud adoption

Enterprises will embrace the multi-cloud as competition heats up between cloud vendors and the fear of lock-in becomes more prevalent. The increasing diversity of cloud services is already leading to the adoption of hybrid and multi-cloud infrastructures.

Emerging DataOps

We will see a shift in the technology marketplace, where companies providing tools and platforms that facilitate easy development and deployment of data-intensive applications will have a competitive edge. As the DataOps trend gains traction in the future, developers managing the data infrastructure will be expected to do more.

Convergence of IT and business

Being efficient alone will not suffice anymore for companies seeking to sustain relevance in the next decade. Organizations will have to boost their agility significantly by leveraging IT aggressively, to prosper.

DevSecOps

Security teams need to understand that DevOps is quickly changing how IT operates, and hence partner with IT and application development teams much earlier in the planning and execution lifecycle. Going forward, security will be built into the DevOps pipeline, instead of it being bolted on post facto.

Automation gaps

Compliance and security concerns are the driving factors behind enterprises no longer putting up with automation gaps and missing artifacts in DevOps. Batch jobs, databases, machine learning models, data from legacy applications and everything else will have to be integrated with the DevOps pipeline in the future.

Serverless Computing

Function as a service will unlock vast opportunities in the cloud. More and more companies are moving their data to the cloud, entering a serverless world. They are becoming less interested in how technology works, and keener on figuring out how it can automate customer relationship management and workflow. Businesses also now want to understand how they can smoothly integrate in-house technology with third-party assets and analyze data effectively so that their employees can focus more on contributing value rather than monitoring infrastructure.

Artificial Intelligence (AI) and Machine Learning (ML)

Enterprises could leverage AI and ML to greatly optimize their DevOps environment. AI helps in managing complex data pipelines and creating models that can feed data into the app development process. By 2020, it is expected that AI and ML will overtake IoT in orchestrating digital transformation.

About the Author

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R Vijaykumar is a Lead Technical Architect and heads the DevOps practice at LTI. He has more than 20 years of diversified IT experience and specializes in delivering DevOps solutions and services. His latest focus area revolves around designing out-of-the-box solutions based on modern DevOps practices, Cloud and Containerization. He strongly believes in DevOps-driven delivery, as well as in the potential of DevOps to foster adoption of the next-generation IT delivery model.

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