THE NINE PIECES OF THE CLOUD-NATIVE PUZZLE

Both established and startup organizations often begin their cloud journey with public or private cloud adoption, and then "lift and shift" certain functions of their operations or software delivery cycle to the cloud. While that's not a bad way to start, it doesn't deliver the powerful, strategy-altering impact of becoming completely cloud-native.

A cloud-native architecture includes up to nine key technologies and practices that help reduce costs, accelerate time to market, improve scalability and achieve new levels of business agility and competitive advantage. When fully leveraged and combined with robust automation, cloud-native architectures provide for better system resiliency and manageability, and allow your teams to make high-impact changes frequently and predictably while minimizing risk.

Not every organization adopts all the following cloud-native practices, but the more you implement, the more your cloud benefits will click into place, and the better your solution will perform. It's much like piecing together a puzzle.

A single piece doesn't provide you with much in the way of clarity, but as you place each piece, the picture becomes clearer. The same can be said for cloud-native technologies, tools and practices.

With the adoption of culture changes, development practices and cloud technologies, you create a holistic, cloud-native strategy that will help you become more agile, allowing your company to adapt to market changes and grow rapidly in line with demand.

CULTURE
DevOps culture | Test-driven development | Microservices architecture

PRACTICES
Agile methodologies | Automated configuration management | Containerization

TECHNOLOGIES
DevOps tools | Public cloud vendors | Platform-as-a-service

01

DEVOPS CULTURE

Becoming cloud-native starts with a culture shift, especially for an established organization. If your team is accustomed to owning monolithic applications, they'll find their roles and responsibilities changing under a cloud-native strategy. Developers will work closely with operations engineers, security and support staff, and each team becomes responsible for a small, well-defined aspect of your organization's products or services.

02

AGILE METHODOLOGIES

Agile development and deployment methodologies aim to produce code quickly in an iterative fashion that allows teams to build on ideas without breaking existing features. These practices also enhance cross-organizational communication and improve the accuracy of development pipelines. An agile development team is flexible, adaptable and able to move quickly in the face of change.

03

DEVOPS TOOLS (GIT, JENKINS)

When used across the entire organization, common project management and version control tools help to simplify, streamline and, most importantly, automate development tasks and practices. These tools allow developers to work in isolated branches and iterate on small, clearly defined deliverables. Once code is production-ready, it gets merged into an automated continuous integration and continuous delivery (CI/CD) pipeline that moves the changes through testing, validation and delivery, often without hands-on involvement.

04

TEST-DRIVEN DEVELOPMENT

Automated testing is a cornerstone of DevOps and CI/CD. By developing tests alongside each feature and feeding those tests into the automated CI/CD pipeline, your teams produce a reliable regression system that catches potential errors early in the pipeline. These tests can rapidly pinpoint the introduction of errors, allowing developers to quickly find and fix issues before they cause problems in production.

05

AUTOMATED CONFIGURATION MANAGEMENT (ANSIBLE, PUPPET, CHEF)

Automated configuration management tools allow your operations teams or full-stack developers to produce production-like environments without error, every time. These tools also provide seamless elasticity across your production environment to handle spikes in demand without requiring human involvement.

06

PUBLIC CLOUD VENDORS (AMAZON WEB SERVICES, AZURE, GOOGLE CLOUD)

The draws of public cloud include the promise of infinite scalability and managed total cost of ownership (TCO). However, the physical architecture provided through the public cloud is just the tip of the iceberg. Now in their mature state, these providers offer rich platforms of services and resources that can rapidly accelerate your move toward cloud-native development practices.

07

MICROSERVICES ARCHITECTURE

In a cloud-native environment, developers learn to architect code so that each feature is distilled down to its smallest working components. Each of these microservices runs independently in self-contained environments so that it can use best-fit technologies for compute, memory, storage and data management. And because each microservice is self-contained and small, changes are less likely to introduce regression errors across your overall solution.

08

CONTAINERIZATION (DOCKER, KUBERNETES)

While microservices development accelerates cloud-native development, containers hold the secret to unlocking the full potential of distributed delivery. By exposing the microservice through a defined API and wrapping a piece of functionality with the full infrastructure stack needed to make it operate at its maximum level of efficiency, you can then deploy the service wherever it's needed. That includes deploying to multiple public and private clouds, and securely opening the API for access for consumption by your internal teams, business partners or the general public.

09

PLATFORM-AS-A-SERVICE (PAAS) FRAMEWORKS (OPENSHIFT, CLOUD FOUNDRY)

As you produce a library of containerized microservices, your operations and support teams could quickly become overwhelmed with management tasks. That's where PaaS frameworks like OpenShift and Cloud Foundry come into play. These systems help automate deployment and management across your multicloud architecture and provide detailed analytics to help optimize your operational environments. They simplify even the most complex cloud environments and empower a small staff to manage and maintain environments without the burden of administrative tasks.

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