CLOUD NATIVE
Application development at the speed of business
CLOUD-NATIVE COMPUTING, THE LATEST WAVE OF DIGITAL DISRUPTION, MAKES THE CLOUD A FORCE FOR CREATING BUSINESS VALUE.
ARE YOU A CLOUD NATIVE OR JUST A CLOUD MIGRANT?

Increasingly, organizations are finding that they have hit a wall when it comes to delivering new kinds of value and innovation from their existing cloud strategies.

That’s because they have mainly focused on application migration—moving old apps and functionality onto a cloud platform. Sure, that “lift and shift” model was fine for a while—emulating old-world applications and architectures—but being in the cloud has much more import to the business.

Winners in the new economy will be those who have unlocked the benefits of cloud—higher agility, speed to innovation and lower IT costs. But the journey to cloud requires careful navigation and commitment.

For many organizations, unlocking the next level of cloud benefits requires a different approach. Companies should adopt a new, “cloud-native” mindset—reorganizing people, processes and workflows, and creating applications with the cloud specifically in mind.

Cloud native is the future of application development, with massive potential for business impact—the ability to move an idea into production quickly and efficiently.
ADOPTING THE CLOUD-NATIVE MINDSET

Organizations can take advantage of the distinctive, inherent characteristics of the cloud platform such as bi-directional innovation, faster speed to value, more rapid new-product ideation, and greater elasticity, scale and resiliency with cloud native.

Cloud-native technologies, according to the definition developed by the Cloud Native Computing Foundation, “empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds.” To that definition, however, it is important to add, “to innovate faster and enable the business to react to marketplace events with more agility.”

Organizations need to chain together the various technologies, processes and services of cloud native to produce an outcome that has actual business value.

That is, cloud native is much more than just a programming model or a new way of writing code. It changes the entire lifecycle of how requirements are collaboratively incepted, coded, tested and deployed.
By adopting a cloud-native approach, IT, more than ever before, can contribute directly to business value.

Cloud-native computing is the latest wave of digital disruption. Being digital means moving from surface-level efficiency plays to true transformation. Both new entrants and incumbents are using digital to drive business advantage. They are redefining the rules, roles and resources to become giants of disruption.

The ultimate goal of cloud native is to improve the speed and efficiency of service assembly, enabling the business to react faster to market change.

For example, because of the disruption from e-commerce competitors, retailer The Home Depot needed to figure out how to compete more effectively. By leveraging cloud-native architectures and continuous delivery practices, the company went from spending six weeks to develop one application and get it in production to deploying new code every 15 minutes.²

In another example, retailer Gap Inc. used cloud-native application architectures for price optimization and can now handle 6,000 price adjustments every four hours.³

Microservices, which lie at the core of the cloud-native application architecture, represent the functionality of the business. In this respect, cloud native is a new and closer kind of partnership or codependence between IT and the business.
Let’s break it down

As discussed, all actual development or programming should be driven by business events/requirements and serve business needs. These can include competitive or marketplace events; new products and services; innovation; and end-user/client/customer interactions.

Then, cloud native is comprised of four layers when it comes to technology and process. First is the architectural style itself, which defines the development process, which in turn uses the production process, which then runs code on the execution platform.

Having the architectural tenets or paradigms in place is critical to true cloud-native computing. If you miss one of them, you miss the combinatorial effects of the current IT era.
In today’s technology era, cloud is the execution platform; to the left are DevOps processes, which are driven by Agile development—all of which are a result of today’s microservices architectures, which are driven and invoked by business events.

**Business Events/Requirements**
All development should be driven by business requirements and serve business needs.
- Competitive or marketplace events
- New products and services
- Innovation
- End-user/client/customer interactions

**Microservices Architecture Style**
Defines the development process
- Requirements
- Views
- Decoupling
- Componentization
- Governance
- Encapsulation
- Fail-fast design
- Instrumentation

**Agile Development Process**
Uses the production process
- Architecting
- Planning
- Development
- Testing
- TDD/BDD
- Integration
- Release
- Operations

**DevOps Production Process**
Runs code on the execution platform
- Source control
- Deployment
- Repo management
- Release management
- Configuration control
- Packaging
- Tracing
- Collaboration

**Cloud Execution Platform**
Extremely flexible delivery platform
- Automation
- Runtime platform
- Service discovery
- Image/container registry
- Service catalog management
- Scheduling
- Choreography
Microservices Architecture

By structuring applications as a collection of loosely coupled services, microservices strengthen continuous delivery and deployment.

In addition to improving modularity and making applications easier to develop and test, microservices enable different development teams to create, deploy and scale their services independently. Organizations can break down their monolithic applications into discrete components, each of which can then be developed, scaled and maintained independently.

IDC research has found that 100 percent of businesses with “optimized” cloud adoption (organization-wide cloud strategies and policies) have adopted microservices compared to just 18 percent of those with an “ad hoc” approach—just lines of business or other groups experimenting with the cloud.4

IDC also found that, by 2021, 80 percent of application development will take place on cloud platforms using microservices and cloud functions.5
Serverless Architecture

Serverless is a cost-effective method of enabling microservices. It is a way to deploy applications while leaving all infrastructure details to the cloud provider.

These event-driven, function-centric systems are becoming an ever-more essential capability for playing in today’s digital ecosystems. Serverless architectures enable developers to focus solely on revenue-generating functions, and not waste time on non-value-added infrastructure issues.
Agile Development

Agile is all about coping with and driving change—making development processes fast and easy.

By splitting the development process into time windows and providing a continuous feedback loop, Agile enables rapid, more-effective development—and the creation of super-nimble organizations that can innovate quickly.

Consider an example from the U.S. Air Force. Although the organization has a huge technology budget, 70 percent of it was previously going toward just maintaining existing infrastructure. Only 30 percent was going toward research and development and new software. By implementing Agile practices and developing apps to run on multiple clouds, the Air Force now finds that 70 percent of its budget is going toward R&D and 30 percent toward maintaining existing infrastructure.6
DevOps focuses on speed and how quickly a program can get from the design stage into production. It’s largely about automation—i.e., eliminating the need for human involvement in the production process.

By equipping developers and infrastructure experts with the same tools to track and control changes in both code and infrastructure—treating it all as software assets—DevOps lets you create a production environment within days or hours, rather than in the weeks or months previously required.

According to IDC survey data, organizations use DevOps to manage, on average, 25 percent of their application portfolio today, and expect that percentage to rise to nearly 33 percent in five years. Strong adoption of DevOps suggests that the development methodologies are already in place to support the adoption of cloud-native development practices and the development of cloud-native applications.
Cloud

Cloud is an extremely flexible delivery platform. It can support many different architectural and deployment styles, from big, monolithic systems, to large, virtual-machine deployments, to nimble clusters of containers, to large farms of serverless functions.

Cloud is flexible enough to carry most of the IT architectures from the last 20 years. Again, however, to get the maximum business benefits and value from the cloud, one should understand that the platform itself is only one part of the overall cloud-native picture.
Cloud native delivers scale, resiliency and agility—both for the business and developers—that are almost impossible to achieve with pre-cloud architectures.

By using the cloud-native approach—beginning with business events and carrying over to all four elements of the technology process tenets—leading organizations across industries are not simply migrating their systems to the cloud. Instead, they are creating modular and flexible open platforms that can advance a company’s digital agenda, create greater business agility and speed development.

A bank, for example, can use this approach to develop application programming interfaces (APIs) that allow third-party systems to connect to its own, expanding the reach of the bank’s mobile-banking capabilities beyond browsers and mobile phones. Additionally, it enables enterprises to change their business models to “as-a-service.”

For example, some manufacturers track the operation of their devices in the field and proactively send out service techs before a failure. The company can thus change its selling model to not selling a device but selling the operation of the device—a profound change to the way companies do business that is made possible by the cloud.
Accenture leveraged cloud-native development to help a global hospitality company implement a digital key system, using Bluetooth™, proximity and other technologies to let hotel guests unlock their room doors with their mobile phone.

Using a cloud-native approach—with a microservices-based architecture, Agile development processes, DevOps tools and a cloud delivery platform—Accenture was able to develop this capability in just four weeks.

The solution enabled the company to fully leverage its digital ecosystem, including the various reservation pipelines and other reservation brokers.
CLOUD-NATIVE DEVELOPMENT IS ABOUT MORE THAN THE TECHNOLOGY

Meeting the challenges of cloud-native development and making a strategic move will often necessitate changes to processes, operations, people and culture.

Cloud native is not just substituting one technology for another, nor is it just a different programming model. Companies should be prepared for more widespread change.

Already, 40 percent of employers report talent shortages. And, with significant upshifts expected in skill requirements, that gap is likely to increase dramatically. In fact, by 2020, it is estimated that more than a third of the desired skillsets of most jobs will be comprised of skills not yet considered crucial today.
SOME CHALLENGES OF CLOUD-NATIVE DEVELOPMENT

Change roadmaps are likely to be aggressive. Buy-in from the business to support, enable and fund cloud-native development is essential. And, of course, some “fear of the unknown” is likely to occur.

Managing the business case

Making the business case for cloud native requires thinking beyond just cost and operational efficiency to areas such as improved speed and business agility, a better customer experience and a reduction of technical risk.

- Operational efficiency
- Improved delivery speed and business agility
- Improved customer experience
- Reduction of technical risk

Managing complexity

Also needing to be managed are new complexities in platforms, operating models and security. Multiple platforms need to be operated as companies wind down the old and spin up the new.

- Platforms
- Code/reuse management
- Operating models and governance
- Multi-platform security
- Financial and other forms of risk

Managing change

Finally, organization, people and culture change need to be effectively managed. Roles and responsibilities are likely to change, as will skills definitions.

- Required training and readiness
- Aggressive change roadmaps
- Fear of the unknown
GOING CLOUD NATIVE: WHERE TO START

Here are some key insights and to-dos related to deepening your own maturity in cloud-native development.

**NO. 01**
Create an organization that is more service-oriented.
Instead of traditional function-based structures, organize your teams around specific services or capabilities.

**NO. 02**
Enable your developers.
Provide access to all the tools, automation and training your developers need to drive business results from cloud native.

**NO. 03**
Use modern and up-to-date architectures.
Cloud native means using microservices and a more responsive type of architecture.

**NO. 04**
Rearchitect your organization to keep pace with cloud-native development.
The business should be able to generate requirements fast enough and at the same pace as the technicians.

**NO. 05**
Enjoy the cloud-native journey.
Cloud native represents a renaissance for developers, putting them once again front and center in developing business-critical software.
Accenture is on the leading edge of cloud-native development.

Accenture tailors leading practices and proprietary tools and platforms in all cloud varieties (public, private, multi and hybrid) across multiple types of delivery platforms (IaaS, PaaS and SaaS) for an individualized journey to cloud. We collaborate both with our clients and cloud vendors to extract enhanced value from the cloud, leveraging deep, specialized industry experience. We can use verticalized applications, systems, implementations and approaches on all leading clouds, in coordination with our clients’ engineers and solution architects.

We emphasize complex cloud services including artificial intelligence, Internet of Things (IoT), Big Data, predictive analytics and machine learning. Our end-to-end, application-led offerings deliver benefits faster at every stage of the cloud journey—from strategy and business case development to migration, optimization and management and digital transformation.

Accenture is on the leading edge of cloud-native development. We build under extreme workload conditions so that your solution will scale across the enterprise. We have more than 25,000 engineering professionals. Our industrialized methodologies, cross-industry leading practices and development rigor can help you gain business value from cloud native faster and with less risk.

Beyond our work with clients, we are also helping to shape and define cloud native in the IT industry. We are a contributing member of the Cloud Native Computing Foundation (CNCF). Accenture is recognized as a key ecosystem partner for SAP, Oracle, Salesforce, Microsoft, Workday, Amazon Web Services (AWS), Google, ServiceNow and Pegasystems—and has been working in the cloud for more than a decade.

Our innovative assets and ecosystem relationships can help you kickstart development.
IT’S TIME TO MAKE YOUR MOVE.

According to one survey of IT decision-makers’ priorities over the next couple of years, half of them said that they are currently using or evaluating (or plan to use or evaluate within 10 months), cloud-native architectures. It’s important to move quickly with cloud native to remain competitive. Seek out the support you need and begin developing skills and gaining experience, because cloud native is the future of application development with massive potential for business impact.

With an agile and flexible approach to enterprise technology, tomorrow’s leaders can build the boundaryless systems that create new spaces for ideas and partnerships to flourish.

Is your business ready to join them?
REFERENCES

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About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 459,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives.
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