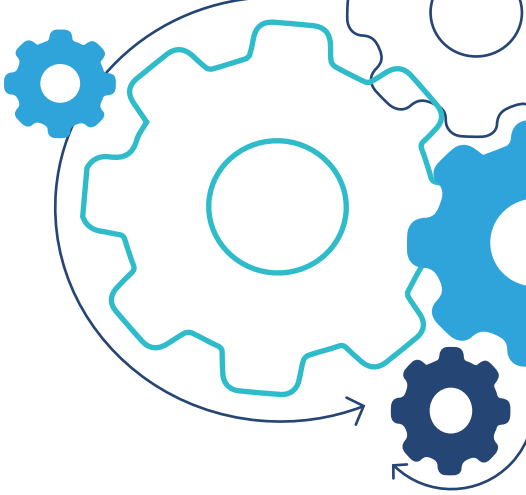
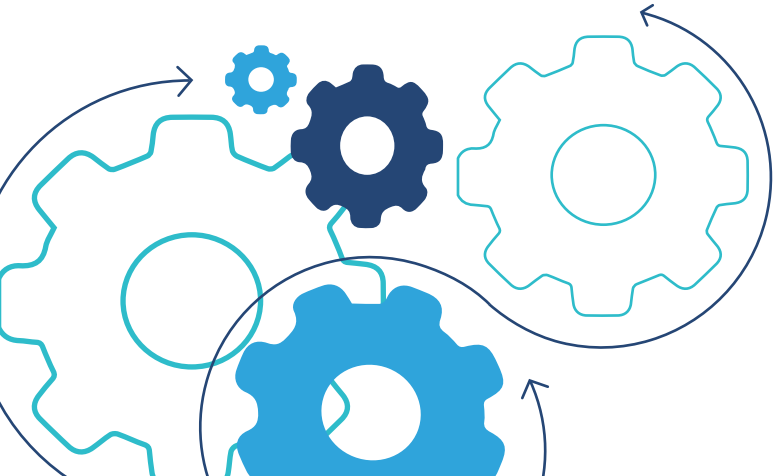
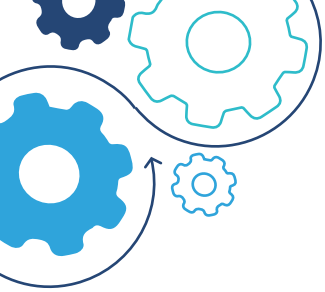


BreakFree Solutions

BreakFree Enterprise DevOps Framework





Introduction

Everyone is looking to take advantage of the benefits cloud computing offers. However, most enterprise IT cloud computing efforts involve replicating on-premise infrastructure in the cloud (i.e. Infrastructure as a Service (IaaS), automated VMs). To actually take advantage of the benefits of cloud — elasticity, increases in development velocity, lower operational overhead from automation, and increased workload resilience — the focus needs to shift to enabling cloud-native capabilities, applications, and products.

Meanwhile, start-ups and software development companies using Agile development techniques have championed the DevOps operating model enabling them to take full advantage of cloud. Enterprise IT needs to follow suit and practice DevOps. This means adopting continuous delivery pipelines, infrastructure automation, and Agile and cross-functional teams.

Many enterprise IT organizations are struggling to adopt and practice DevOps. DevOps cannot be obtained overnight simply by writing a check. It's a transformational approach to core processes. It takes time, dedication, and especially a team that can implement DevOps practices, many of which will fly against a company's previous mode of operation. DevOps cannot be obtained by just procuring tools. Make no mistake, "tools" play a major role, but many enterprise IT groups are now realizing that tools are only a piece of the puzzle.

Over the past several years, vendors and partners selling tools as the "solution" to DevOps, as well as consultants framing DevOps as being all about culture, have forged a gap between infrastructure teams who want to operate cloud manually, and developers who want to do DevOps without the infrastructure team's help.

BreakFree Solutions has worked with several organizations to help them adopt a true DevOps operating model. Patterns, best practices, and common approaches emerged that led us to develop the **BreakFree Enterprise DevOps Framework**. This framework helps close the gap between infrastructure and development teams and provides a guide for scaling DevOps across enterprise IT in order to fully realize the benefits of cloud computing, the substantial impact of automation, continuous integration/ continuous deployment (CI/CD) pipelines, and cloud platform solutions.

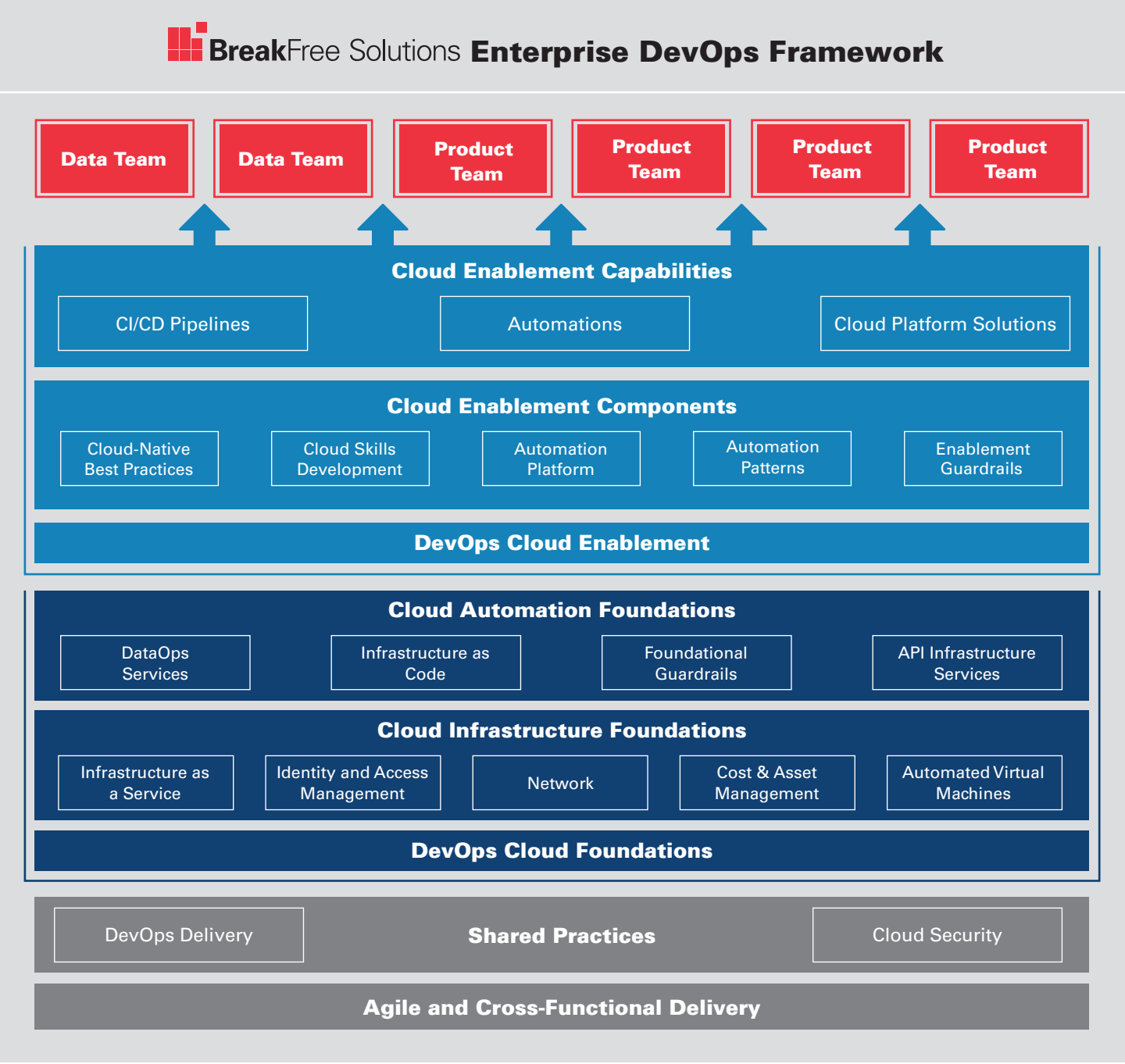
> ***"We approached cloud wrong so many times. We finally figured it out, and the key to it all was empowering developers to securely use as many of the cloud services as possible, on-demand, and with minimal barriers. Ultimately, we had to put the foundations and enablement capabilities in place to say "yes" as fast as possible."***
>
> **– Director of Cloud, Fortune 500 Financial Institution**

> ***"Infrastructure and operations just kept showing up with automated virtual machines and service tickets, and that's not what our product teams wanted or needed. Once they started delivering pipelines, platform services, and developer-centric infrastructure as code, we could actually start utilizing cloud without having to go it on our own."***
>
> **– VP of Development, Global Manufacturer**

BreakFree Enterprise DevOps Framework Overview

The **BreakFree Enterprise DevOps Framework** enables delivery of what data and product teams are asking for: CI/CD pipelines, automations, and cloud platform solutions. The framework is structured to effectively guide clients to institute Agile and cross-functional delivery, shared practices for DevOps delivery and cloud security, cloud foundational services, and cloud enablement services.

The following is a visual representation of the BreakFree Enterprise DevOps Framework.



In order to provide data and product teams the ability to effectively consume cloud resources and enable cloud-native development, Agile infrastructure and operations teams need to build cloud platforms and CI/CD pipelines that enforce cloud-native design principles through DevOps. Additionally, it is imperative to adopt Infrastructure as Code (IaC) and implement automated guardrails to ensure secure, compliant, and cost-effective use of cloud.

Agile & Cross-Functional Delivery

To ensure success in today's cloud-native and DevOps-driven world, a foundation of Agile and cross-functional delivery is essential. Agile delivery ensures an iterative, customer-focused approach to building services, capabilities, and platforms.

Cross-functional teams foster a culture of learning, promote innovation, enable quicker feedback loops, and connect teams to their main goal. Through use of Agile Scrum, which consists of sprints, daily meetings, product artifacts, and team dynamics, cross-functional teams eliminate silos, improve communication and collaboration, and ultimately increase business velocity.

Shared Practices

DevOps Delivery

DevOps delivery refers to establishing DevOps processes and leveraging best practices and patterns across teams. DevOps delivery ensures teams practice what they preach through use of infrastructure as code, automated testing, CI/CD pipelines, and other DevOps technical best practices. DevOps delivery also ensures the processes governing how cloud is built and operated can meet the velocity requirements of the teams consuming it without sacrificing quality or control.

Cloud Security

Good cloud security is very different than security practices for on-prem infrastructure. Demand for high-velocity delivery of cloud capabilities and solutions mandates a new approach to security and compliance. Ensuring that cloud-based solutions are secure and compliant require the integration of typically segmented processes, including control library creation, regulatory mapping, solution design, and standard operating procedure implementation and execution. Cloud security ensures that solutions and data in the cloud are secure and compliant and can be rapidly applied through reusable control sets, designs, and automations. Cloud security shared practices are designed to be integrated with cloud solutions and executed by cross-functional teams.

DevOps Cloud Foundations

Once Agile and cross-functional delivery and shared frameworks are in place, building the DevOps cloud foundations can begin. This quickly establishes cloud computing as a competitive and attractive option for IT initiatives. All foundational services must be built in a minimally viable, Agile-centric way that aligns with the requirements and objectives of cloud enablement efforts. Over time, foundational services mature and focus on continuous alignment with cloud enablement needs, remediate any and all known bottlenecks, increase self-service, and lower operational overhead.

Cloud Infrastructure Foundations

Identity & Access Management: Processes and technology that enable rapid integration into centralized identity and access management for cloud-based applications, platforms, and providers.

Network: Network technologies enable rapid configuration of secure, high-speed, low latency connectivity to public cloud provider services, clouds, and datacenters with a central focus on API, and cloud-native communications that utilize low-cost and high-bandwidth Internet connectivity.

Cost & Asset Management: Processes and technologies that enable automated digital asset identification, cost reporting, chargeback, control, and optimization for cloud-based solutions.

Centralized Logging and Monitoring: Centralized and programmatic logging and monitoring is critical for keeping track of events or errors. It is also used to collect and analyze metrics to understand system behavior.

Infrastructure as a Service (IaaS): Computing infrastructure that can be provisioned and scaled on-demand. IaaS eliminates the cost and complexity of managing physical servers and datacenter infrastructure.

Automated Virtual Machines: Fully automated IT services for virtual machine infrastructure that increase the efficiency of ITIL-based operations and engineering capabilities.

Cloud Automation Foundations

DataOps Services: Provide data and product teams secure, compliant, and programmatic access to data for use in development, delivery insights, analytics, and business intelligence.

Infrastructure as Code (IaC): A method to provision and manage IT infrastructure through the use of source code rather than through standard operating procedures and manual processes. IaC helps automate the infrastructure deployment process in a repeatable, consistent manner. It requires the same software development lifecycle capabilities and CI/CD pipelines used in application software development. Cloud should only be configured through IaC.

Foundational Guardrails: Used to keep systems safe and secure without sacrificing delivery velocity.

API Infrastructure Services: Custom APIs for accessing existing infrastructure (cloud and on-prem systems) to be used in automations.

DevOps Cloud Enablement

Once minimally viable DevOps cloud foundations are in place, enabling can begin. The ultimate goal is to deliver CI/CD pipelines, automations, and cloud platform solutions to the organization's data and product teams. Cloud consumption and utilization requires enterprise IT to shift their operational, engineering, and architectural processes away from delivering technical services. Instead, shift focus to creating products and capabilities development teams can use on-demand and operate independently. Since cloud providers have become the overall service provider, IT infrastructure and operations teams must shift to developing products and capabilities. This shift, also known as cloud enablement, realigns IT organizations to be more product development driven, thus able to successfully realize and visualize their overall cloud value.

Cloud Enablement Components

Cloud-Native Best Practices: Encompasses all of the methods, architecture patterns, and techniques needed to fully realize the benefits of cloud, and utilizing cloud platform solutions in a cloud-native best practice way.

Cloud Skills Development: The ability to educate data and product teams on how to use cloud effectively.

Automation Platform: The tools needed to deliver CI/CD pipelines, automations, and cloud platform solutions.

Automation Patterns: Patterns and frameworks that data and product teams use to deploy and operate the solutions being developed on cloud.

Enablement Guardrails: Enforce security and architectural best practices. Enablement guardrails are specifically built around CI/CD pipelines, automations, and cloud platform solutions, which are self-service and on-demand.

Cloud Enablement Capabilities

CI/CD Pipelines: Automate the delivery process to remove manual errors, provide standardized development feedback loops, and enable fast product iterations. CI/CD pipelines are a must for cloud-native development platforms.

Automations: Automations include automated testing, automated release, automated scaling and configuration of services. Automations are the frameworks and "glue" that piece together established software development lifecycles, CI/CD pipelines, and the cloud platform solutions in a highly automated, low overhead way. This may also include automations related to DataOps services, centralized infrastructure APIs, automated VMs, or guardrail automations.

Cloud Platform Solutions: All of the platform services that are available to data and product teams that allow them to engineer on cloud. This includes anything that isn't categorized as an IaaS, including Kubernetes, data solutions, serverless, and streaming, to name a few.

Outcomes

Enterprises will see the following positive impacts by establishing DevOps foundational and cloud enablement pieces, as outlined in the **BreakFree Enterprise DevOps Framework,** to deliver CI/CD pipelines, automations, and cloud platform solutions to data and product teams:

- ✓ ***Cloud enablement makes cloud consumption easier and more accessible to data and product teams***
- ✓ ***IT cloud solutions that are in the most demand from data and product teams is delivered at the velocity required by their cloud and digital transformation projects***
- ✓ ***Agile and product-based thinking is at the foundation of everything that is engineered and delivered on cloud***
- ✓ ***Centralized cloud and security operations are highly effective with minimal impact to delivery velocity***
- ✓ ***DevOps becomes the default practice for engineering and delivering IT services throughout the organization***
- ✓ ***DevOps lowers the operational burden of both cloud and on-premise virtualized infrastructure operations***

Learn More

If you are interested in learning more about the **BreakFree Enterprise DevOps Framework**, talk to us about our no-cost collaborative workshop. The three-hour, on-site workshop is led by our DevOps experts and helps your team understand how our framework has already greatly benefited our customers, and how it can benefit your organization's specific needs.

Schedule your **BreakFree Enterprise DevOps Framework** workshop today by reaching out to us at at BreakFreeSolutions.com.

About BreakFree Solutions

BreakFree Solutions are a diverse team of IT experts with skills in cloud-native design, cloud architecture, infrastructure automation, software development, continuous deployment, security, DevOps, and Agile delivery. BreakFree offers practical cloud, DevOps, and automation professional services to enterprise companies. BreakFree's services are based on clearly defined positions on the future of IT operations shaped by our decades of real-world experience.

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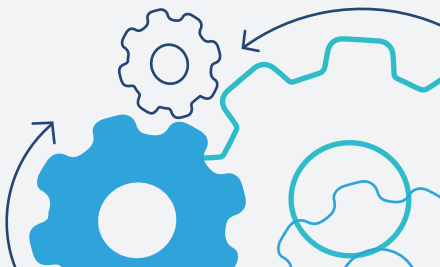

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