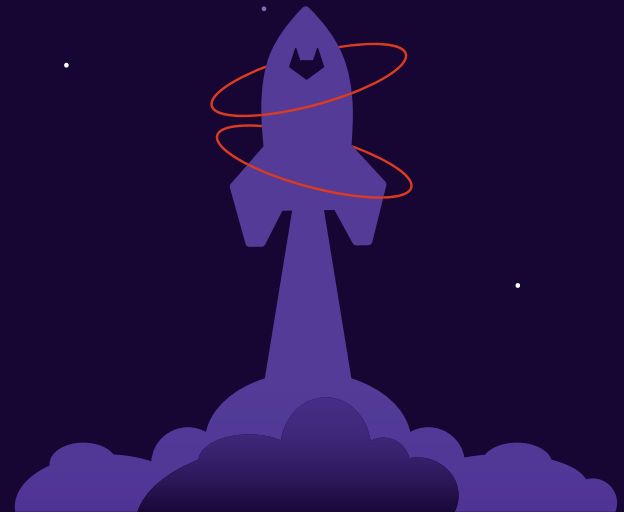


# GitOps: A foundation for your cloud journey



## How GitOps helps with the expansion of infrastructure boundaries

Organizations are under immense pressure to increase deployment speed but are often limited by the boundaries of infrastructure. Whether it's the type and size of the environment, a lack of knowledge, or outdated architectures, infrastructure teams can hit a productivity wall that prevents them from keeping pace with their development teams. The widespread adoption of cloud computing and cloud native technologies in development creates the need for infrastructure teams to keep up.

Automation should be among the very first things put in place to address this challenge. By establishing sound processes before moving to the cloud and a “continuous everything” development methodology, you lay a sound foundation for the future.

**Enter GitOps**



GitOps is an operational framework that takes DevOps best practices used for application development (such as version control, collaboration, compliance, and CI/CD) and applies them to infrastructure automation.

Simply stated, GitOps uses the Git repository which contains descriptions of the desired production environment infrastructure, and pairs it with automated processes to ensure the production environment matches the desired state outlined in the repository. This translates to delivering better software, faster!



GitOps applies a developer-centric approach to operating infrastructure by using developer tools like:

1. the Git repository for version control,
2. the merge request for collaboration, and
3. CI/CD for automation.

A GitOps framework makes infrastructure automation possible, and while automation has value in itself, it's not the only advantage to GitOps. Organizations that adopt GitOps enjoy other benefits that can make a long-term impact.

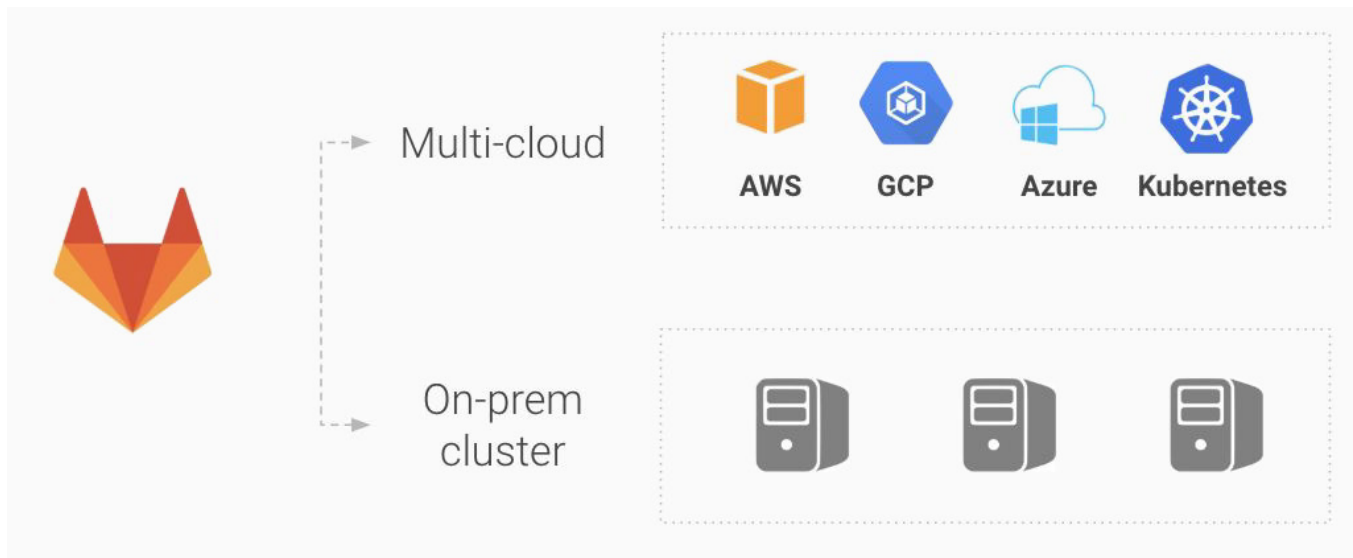
- **Reduced costs and downtime.** Automation of infrastructure definition and testing eliminates manual tasks, improves productivity, and reduces downtime due to built-in revert/rollback capability. Automation also allows for infrastructure teams to better manage cloud resources, which can also improve cloud costs.
- **Collaboration on infrastructure changes.** Since every change will go through the same change/merge request/review/approval process, senior engineers can focus on other areas beyond the critical infrastructure management.
- **Faster time to market.** Execution via code is faster than manual point and click. Test cases are automated and repeatable, so stable environments can be delivered rapidly.
- **Simplified auditing.** Using GitOps, all changes made to environments are stored in the git log, making audits simple.
- **Less risk.** All changes to infrastructure are tracked.
- **Less error prone.** Infrastructure definition is codified and repeatable, making it less prone to human error.
- **Improved access control.** There's no need to give credentials to all infrastructure components, since changes are automated (only CI/CD needs access).
- **Collaboration with compliance.** With GitOps almost anyone can propose a change, which opens the scope of collaboration broadly while strictly limiting the number of people with the ability to finalize a change.

## Achieving multi-cloud success with GitOps

The cloud has enabled new ways of designing software for immense resilience and scale. Designing an application with a cloud architecture in mind is cloud native—taking advantage of containers, microservices, service meshes, and other technologies native to cloud environments. That said, businesses want to choose cloud providers for their inherent value and use the services that best meet their needs. A multi-cloud future gives organizations the flexibility to deploy anywhere and run workloads across multiple clouds.



Choosing a cloud provider should depend on the company's business objectives, it should not be constrained by technology, and GitLab wants to enable every one of our customers to have this freedom," says Sid Silbrandij, co-founder and CEO at GitLab.



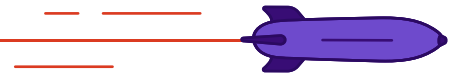
GitLab helps achieve this multi-cloud journey by supporting multiple cloud providers and avoiding reliance on cloud-dependent processes that will give teams consistent workflows. Instead of prioritizing infrastructures or working within the confines of a certain cloud, development teams can spend more time creating applications that add real business value to their users.

The infrastructure teams can then leverage the GitOps workflow using GitLab CI/CD to automatically deploy infrastructure code and automatically apply it to the cloud environment of choice. Resources that were changed are updated in your cloud environment and resources that are removed from the infrastructure code are automatically spun down and deleted. This enables infrastructure teams to write infrastructure code, commit it to the Git repository, and take full advantage of all the benefits of the DevOps process.

GitLab provides a complete end-to-end DevOps platform that allows development and infrastructure teams to have the same productivity metrics and the same governance, regardless of which cloud they use.



# Operating at cloud-speed



In the cloud of tomorrow, enterprises large and small are able to function at “cloud speed” thanks to a cohesive cloud strategy that begins with a solid GitOps workflow. That said, GitOps isn’t magic; it just takes developer tools you already know and wraps them in a DevOps-style workflow. This allows for better revision tracking, fewer costly errors, and quick, automated infrastructure deployments that can be repeated for a multi-environment or even multi-cloud setup. With GitOps, you can:

- **Eliminate or minimize manual steps** and make deployments faster, repeatable and reliable.
- **Reduce mean time to repair** as you can quickly roll back to an earlier, stable state.
- **Improve infrastructure maintenance** by standardization and change tracking.
- **Gain better security and compliance** by enforcing access control and security checks.

Learn more about how your organization can benefit from a GitOps workflow. With GitOps from GitLab, you can manage and deploy to physical, virtual, and cloud native infrastructures (including Kubernetes and serverless technologies) across different cloud platforms. Working with the right partners can increase your odds of success by minimizing the learning curve and helping to build, maintain and run your environments.

Contact us to learn more about how GitOps can work in your environment.

