

BLUE GREEN DEPLOYMENT

Blue-Green Deployment is a software release management strategy designed to minimize downtime and reduce the risks associated with deploying new versions of an application. It achieves this by maintaining two separate but identical environments: **Blue** and **Green**.

Here's how it works:

Key Concepts of Blue-Green Deployment:

1. Two Environments:

- **Blue Environment:** This is the live environment where the current version of the application is running and serving users.
- **Green Environment:** This is the environment where the new version of the application is deployed and tested. Initially, no user traffic is directed here.

2. Deployment Process:

- The new version of the application is deployed in the **Green environment** without affecting the **Blue environment**, which is currently serving traffic.
- Once the deployment and testing are successful on the **Green environment**, traffic is switched from **Blue** to **Green** (typically via a load balancer).
- The **Blue environment** is kept idle or used as a backup in case the new version in **Green** encounters issues.

3. Switching Traffic:

- A load balancer or DNS configuration is used to route user traffic. Initially, it directs traffic to the **Blue environment**. After the new deployment, traffic is switched to the **Green environment**.
- If any issues are detected, the traffic can easily be switched back to **Blue** for a rollback, minimizing downtime and the impact on users.

Benefits:

- **Zero Downtime:** Users experience no disruption because the application is always available in one of the two environments.
- **Easy Rollback:** If there is an issue with the new version in the **Green environment**, you can quickly roll back to the **Blue environment**.
- **Testing in a Production-like Environment:** The new version is tested in a live, production-like environment (the **Green environment**) before receiving live traffic.
- **Safer Deployments:** Reduces the risk of failed deployments impacting users.

Diagram of Blue-Green Deployment:

- **Blue Environment (Live)** → User traffic goes here.
- **Green Environment (Staging)** → New version is deployed and tested here.
- **Switch** → After testing, user traffic is switched from Blue to Green.

Typical Workflow:

1. Deploy the new application version to the **Green environment**.
2. Test the application in the **Green environment**.
3. Switch traffic to the **Green environment**.
4. Monitor performance and functionality.
5. If any issues occur, revert the traffic back to the **Blue environment**.

Common Tools Used:

- **Load Balancers** (like AWS ELB) for routing traffic between environments.
- **CI/CD Tools** (like Jenkins) to automate deployment processes.
- **Configuration Management** (like Ansible) to manage infrastructure and deployments.