DEVOPS

The DevOps is a combination of two words, one is software Development, and second is Operations. This allows a single team to handle the entire application lifecycle, from development to **testing, deployment**, and **operations**.

DevOps promotes collaboration between Development and Operations team to deploy code to production faster in an automated & repeatable way.

DevOps helps to increase organization speed to deliver applications and services. It also allows organizations to serve their customers better and compete more strongly in the market.

# **Why DevOps?**

The operation and development team worked in complete isolation.

After the design-build, the testing and deployment are performed respectively. That's why they consumed more time than actual build cycles.

Without the use of DevOps, the team members are spending a large amount of time on designing, testing, and deploying instead of building the project.

Manual code deployment leads to human errors in production.

Coding and operation teams have their separate timelines and are not in synch, causing further delays.

# **Continuous Integration**

Continuous Integration is also known as CI. It is a development method that is required several times a day by developers to integrate the code into a shared repository.

Each check-in process involves automating the build and allowing teams to detect problems early. By integrating regularly, we can quickly detect errors, and locate the errors very easily.

# **DevOps Methodology**

* **The Teams:** Mission or project and cloud management.
* **Connectivity:** Public, on-premise, and hybrid cloud network access.
* **Automation:** Infrastructure as code, scripting the orchestration and deployment of resources.
* **On-boarding Process:** How the project gets started in the cloud.
* **Project Environment:** TEST, DEV, PROD (identical deployment, testing, and production).
* **Shared Services:** Common capabilities provided by the enterprise.
* **Naming Conventions:** Vital aspect to track resource utilization and billing.
* **Defining Standards Role across the Teams:** Permissions to access resources by job function.

# **DevOps Tools**

### **1) Puppet**

### **2) Ansible**

### **3) Docker**

### **4) Nagios**

### **5) CHEF**

### **6) Jenkins**

### **7) Git**

### **8) SALTSTACK**

### **9) Splunk**

**DEVOPS COMPONENT**

### **1) Build**

Without DevOps, the cost of the consumption of the resources was evaluated based on the pre-defined individual usage with fixed hardware allocation. And with DevOps, the usage of cloud, sharing of resources comes into the picture, and the build is dependent upon the user's need, which is a mechanism to control the usage of resources or capacity.

### **2) Code**

Many good practices such as Git enables the code to be used, which ensures writing the code for business, helps to track changes, getting notified about the reason behind the difference in the actual and the expected output, and if necessary reverting to the original code developed. The code can be appropriately arranged in **files, folders**, etc. And they can be reused.

### **3) Test**

The application will be ready for production after testing. In the case of manual testing, it consumes more time in testing and moving the code to the output. The testing can be automated, which decreases the time for testing so that the time to deploy the code to production can be reduced as automating the running of the scripts will remove many manual steps.

### **4) Plan**

DevOps use Agile methodology to plan the development. With the operations and development team in sync, it helps in organizing the work to plan accordingly to increase productivity.

### **5) Monitor**

Continuous monitoring is used to identify any risk of failure. Also, it helps in tracking the system accurately so that the health of the application can be checked. The monitoring becomes more comfortable with services where the log data may get monitored through many third-party tools such as **Splunk**.

### **6) Deploy**

Many systems can support the scheduler for automated deployment. The cloud management platform enables users to capture accurate insights and view the optimization scenario, analytics on trends by the deployment of dashboards.

### **7) Operate**

DevOps changes the way traditional approach of developing and testing separately. The teams operate in a collaborative way where both the teams actively participate throughout the service lifecycle. The operation team interacts with developers, and they come up with a monitoring plan which serves the IT and business requirements.

### **8) Release**

Deployment to an environment can be done by automation. But when the deployment is made to the production environment, it is done by manual triggering. Many processes involved in release management commonly used to do the deployment in the production environment manually to lessen the impact on the customers.