DEVOPS: MOTIVATION

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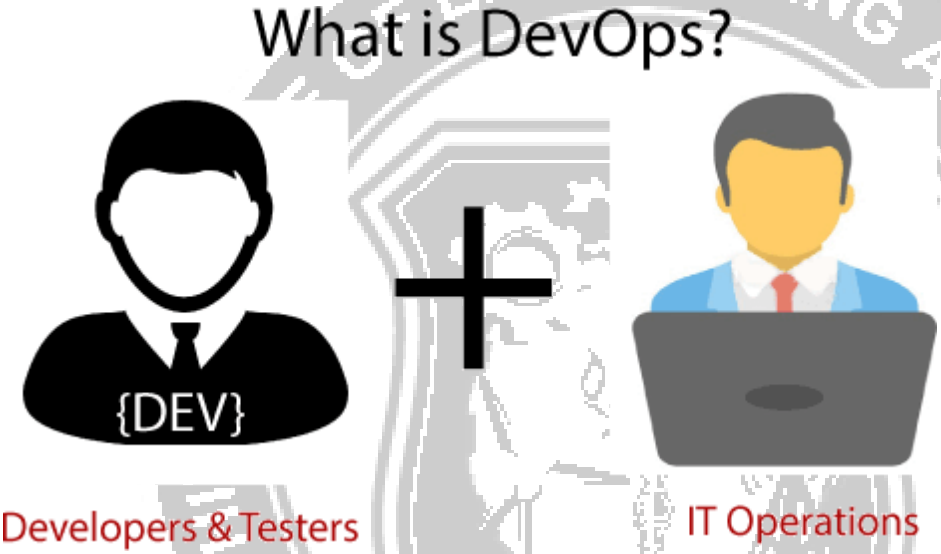
The DevOps is a combination of two words, one is software Development, and second is Operations. This allows a single team to handle the entire



application lifecycle, from development to **testing, deployment**, and **operations**. DevOps helps you to reduce the disconnection between software developers, quality assurance (QA) engineers, and system administrators.

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.

DevOps can also be defined as a sequence of development and IT operations with better communication and collaboration.

DevOps has become one of the most valuable business disciplines for enterprises or organizations. With the help of DevOps, **quality**, and **speed** of the application delivery has improved to a great extent.

DevOps is nothing but a practice or methodology of making "**Developers**" and "**Operations**" folks work together. DevOps represents a change in the IT culture with a complete focus on rapid IT service delivery through the adoption of agile practices in the context of a system-oriented approach.

DevOps is all about the integration of the operations and developmentprocess. Organizations that have adopted DevOps noticed a 22% improvement in software quality and a 17% improvement inapplication deployment frequency and achieve a 22% hike in customer satisfaction. 19% of revenue hikes as a result of the successful DevOpsimplementation.

CLOUD AS A PLATFORM

There are a ton of ways in which every individual can state the meaning of the cloud platform. But in the simplest way it can be stated as the operating system and hardware of a server in an Internet-based data centre are referred to as a cloud platform. It enables remote and large-scale coexistence of software and hardware goods.

Compute facilities, such as servers, databases, storage, analytics, networking, applications, and intelligence, are rented by businesses. As a result, businesses do not need to invest in data centres or computing facilities. They actually pay for the services they offer.

Types of Cloud Platforms

Cloud systems come in a range of shapes and sizes. None of them are suitable for all. To meet the varying needs of consumers, a range of models, forms, and services are available. They are as follows:

- **Public Cloud**: Third-party providers that distribute computing services over the Internet are known as public cloud platforms. A

few good examples of trending and mostly used cloud platform are Google Cloud Platform, AWS (Amazon Web Services), Microsoft Azure, Alibaba and IBM Bluemix.

- **Private Cloud**: A private cloud is normally hosted by a third- party service provider or in an on-site data centre. A private cloud platform is always dedicated to a single company and it is the key difference between the public and private cloud. Or we can say that a private cloud is a series of cloud computing services used primarily by one corporation or organization.
- **Hybrid Cloud**: The type of cloud architecture that combines both the public and private cloud systems is termed to as a Hybrid cloud platform. Data and programs are easily migrated from one to the other. This allows the company to be more flexible while still improving infrastructure, security, and enforcement.

Top benefits of cloud computing

Cloud computing represents a significant departure from how companies have traditionally seen IT services. The following are seven of the most popular reasons why businesses are moving to cloud computing services:

Cost

Cloud storage reduces the upfront costs of purchasing hardware and software, as well as the costs of setting up and operating on-site datacenters-server racks, round-the-clock power and cooling, and IT professionals to manage the infrastructure. It quickly adds up.

Global scale

The ability to scale elastically is one of the advantages of cloud computing services. In other words it simply means that we can decide the processing speed , location of the data centre where data is to be stored, storage and even the bandwidth for our process and data.

Performance

The most popular cloud computing services are hosted on a global network of protected datacenters that are updated on a regular basis with the latest generation of fast and powerful computing hardware.

Security

Many cloud providers have a comprehensive collection of policies, technologies, and controls to help us to enhance our overall security posture and protect our data, applications, and infrastructure from threats.

Speed

It means that the huge amount of calculation and the huge data retrieval as in download and upload can happen just within the blink of an eye, obviously depending on the configuration.

Reliability

Since data can be replicated at several redundant locations on the cloud provider's network, cloud storage makes data backup, disaster recovery, and business continuity simpler and less costly.

OPERATIONS

1. IAAS: Infrastructure As A Service (IAAS) is means of delivering computing infrastructure as on-demand services. It is one of the three fundamental cloud service models. The user purchases servers, software data center space, or network equipment and rent those resources through a fully outsourced, on-demand service model. It allows dynamic scaling and the resources are distributed as a service. It generally includes multiple-user on a single piece of hardware. It totally depends upon the customer to choose its resources wisely and as per need. Also, it provides billing management too.

2. PAAS: Platform As A Service (PAAS) is a cloud delivery model for applications composed of services managed by a third party. It

provides elastic scaling of your application which allows developers

to build applications and services over the internet and the deployment models include public, private and hybrid.
Basically, it is a service where a third-party provider provides both software and hardware tools to the cloud computing. The tools which are provided are used by developers. PAAS is also known as Application PAAS. It helps us to organize and maintain useful applications and services. It has a well-equipped management system and is less expensive compared to IAAS.

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3. SAAS: Software As A Service (SAAS) allows users to run existing online applications and it is a model software that is deployed as a hosting service and is accessed over Output Rephrased/Re-written Text the internet or software delivery model during which software and its associated data are hosted centrally and accessed using their client, usually an online browser over the web. SAAS services are used for the development and deployment of modern applications.
It allows software and its functions to be accessed from anywhere with good internet connection device and a browser. An application is hosted centrally and also provides access to multiple users across various locations via the internet.

Difference between IAAS, PAAS and SAAS :

Basis Of	IAAS	PAAS	SAAS
Stands for	Infrastructure as a service.	Platform as a service.	Software as a service.
Uses	IAAS is used by network architects.	PAAS is used by developers.	SAAS is used by the end user.
Access	IAAS gives access to the resources like	PAAS gives access to run time	SAAS gives access to the end user.

Basis Of	IAAS	PAAS	SAAS
	virtual machines and virtual storage.	environment to deployment and development tools for application.	
Model	It is a service model that provides virtualized computing resources over the internet.	It is a cloud computing model that delivers tools that are used for the development of applications.	It is a service model in cloud computing that hosts software to make it available to clients.
Technical understanding.	It requires technical knowledge.	Some knowledge is required for the basic setup.	There is no requirement about technicalities company handles everything.
Popularity	It is popular among developers and researchers.	It is popular among developers who focus on the development of apps and scripts.	It is popular among consumers and companies, such as file sharing, email, and networking.

Basis Of	IAAS	PAAS	SAAS
Percentage rise	It has around a 12% increment.	It has around 32% increment.	It has about a 27 % rise in the cloud computing model.
Usage	Used by the skilled developer to develop unique applications.	Used by mid-level developers to build applications.	Used among the users of entertainment.
Cloud services.	Amazon Web Services, sun, vCloud Express.	Facebook, and Google search engine.	MS Office web, Facebook and Google Apps.
Enterprise services.	AWS virtual private cloud.	Microsoft Azure.	IBM cloud analysis.
Outsourced cloud services.	Salesforce	Force.com, Gigaspaces.	AWS, Terremark
User Controls	Operating System, Runtime, Middleware, and Application data	Data of the application	Nothing

Basis Of	IAAS	PAAS	SAAS
Others	It is highly scalable and flexible.	It is highly scalable to suit the different businesses according to resources.	It is highly scalable to suit the small, mid and enterprise level business

Advantages of IaaS

- The resources can be deployed by the provider to a customer's environment at any given time.
- Its ability to offer the users to scale the business based on their requirements.
- The provider has various options when deploying resources including virtual machines, applications, storage, and networks.
- It has the potential to handle an immense number of users.
- It is easy to expand and saves a lot of money. Companies can afford the huge costs associated with the implementation of advanced technologies.
- Cloud provides the architecture.
- Enhanced scalability and quite flexible.
- Dynamic workloads are supported.

Disadvantages of IaaS

- Security issues are there.
- Service and Network delays are quite a issue in IaaS.

Advantages of PaaS –

- Programmers need not worry about what specific database or language the application has been programmed in.
- It offers developers the to build applications without the overhead of the underlying operating system or infrastructure.
- Provides the freedom to developers to focus on the application's design while the platform takes care of the language and the database.

- It is flexible and portable.
- It is quite affordable.
- It manages application development phases in the cloud veryefficiently.

Disadvantages of PaaS

- Data is not secure and is at big risk.
- As data is stored both in local storage and cloud, there arehigh chances of data mismatch while integrating the data.

Advantages of SaaS

- It is a cloud computing service category providing a wide range of hosted capabilities and services. These can be usedto build and deploy web-based software applications.
- It provides a lower cost of ownership than on-premises software. The reason is it does not require the purchase orinstallation of hardware or licenses.
- It can be easily accessed through a browser along a thinclient.
- No cost is required for initial setup.
- Low maintenance costs.
- Installation time is less, so time is managed properly.

Disadvantages of SaaS

- Low performance.
- It has limited customization options.
- It has security and data concerns.