End to End Continuous Deployment and Auto Scaling Application using Kubernetes.

Omkar Cheriyal

Department of Computer Engineering,

AnantraoPawar College of Engineering,Pune.

e-mail:omkarcheriyal@gmail.com

Shubham Patil

Department of Computer Engineering,

Anantrao Pawar College of Engineering,Pune.

e-mail:patilshubham20101998@gmail.com

Neeraj Koparde

Department of Computer Engineering,

AnantraoPawar College of Engineering,Pune.

e-mail:neerajkoparde123@gmail.com

Keshav Tomar

Department of Computer Engineering,Anantrao PawarCollege of Engineering, Pune.

e-mail:keshavtomar1771@gmail.com

Abstract—**In today's world the technology is used extensively in our day to day lives.And various technology consists of both software and hardware.To develop these softwares we face various difficulties in organizations and companies such sometimes software gets delayed before deployment and sometimes testing is not done on right time.So to avoid these mistakes.Industries have figured out various ways to tackleit.One such way is combine Development's and Operation's work under one roof called DevOps.Devops is not a role but amindset and a philisophy to work under an organizations.So in this article we have decided to talk about DevOps technology.Our Project is also based on same.**

I.   INTRODUCTION

DevOps is field which require study lot of tools and technologies. First of all we should have good knowledge of operating system which is based on linux distribution. It may consist of ubuntu, CentOS, RedHat Enterprise Linux are some of them there are so many distributions of linux but these are widely used in organizations. After having god knowledge of operating system we should have good knowledge of version control systems like Git and Github.

The Development team will write the code for organizatins applications. They will work in team so to contribute to the code organizations are using version control systems like git and GitHub. The operations team will approve the commit request and for that purpose we should also have hands on knowledge of git and GitHub.

The works of DevOps teams is on different tools. One of the tool is jenkins The jenkins is widely used in industries for creating CICD pipeline. The pipeline is used to continuously integrating the code from development team and continuously deploying the code on any container orchestration technology.

For the applications there are so much dependencies to add the dependencies developers has to face so much problems. So there are build tools in market for java projects we have ant maven gradel. These tools helps developers to deal with dependencies which are also used in pipeline for continuous integration purpose. Then we have tool called docker which is container technology on which images for containers are created out of that image we can run mant containers which are instances of our applications but in very small size which helps to create dependent less applications.

For container orchestration we have another tool called kubernetes which makes sure that your application never goes down and number of instances of your application which you have mentioned are always present according to gartner report by 2022 85% of industries are going to move on kubernetes.

II. Literature Survey

In this section we have gone through some of the research works similar to our work. We have gone through some research papers to analyze the work for our project.

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Prajval mohan , and team has done some work on Docker Swarm and Kubernetes they have done their work nicely but I found there is some .Deficiency in the tools which they have used for their project they felt it enough but I think they should include more tools for theit project

Trapti Gupta and Abhishek Dwived has some work done with kubernetes for healthcare section they have also done good work but dealing only with kubernetes is noy under devops we should have also great knowledge on another tools so that our work will be very effictive.

sihan kim and their team has also done some great work on horizontal pod autoscaler which is part of kubernetes but only talking about hpa is little bit wrong because kubernetes is vast field which have many topics to include.

I.   Prasanna J also written some information on use of kubernetes in healthcare domain. His study on kubernetes is very good we have got some good points to take down from him we have gathered some greate information from him to deal with the .project this was greate

article to oure project we also learned about use of various resources in kubernetes He had used the resources like network policies ingress controller for his work which is very good to learn PROBLEM STATEMENT

In Today's world we require the applications to be developed in very less time and to develope the complex applications we should atleast need 6 months of time but to overcome the problem when we use devops for developing the applicatons is almost take half time due to its simplicity and way the various tools are used in the devops world or we can say the technology and the methodlogy also make sure that all the work from start to end.

II.   EXPERIMENTATION

III. When we have used the waterfall methodology for doing the same project it was very difficult to develope and deploy the application which we were managing but when we gone through the agile methodology it was very quik to build test create image and push it to dockerhub and also manage the application on the kubernetes. When we have gone through the DevOPs the time to create and deploy the application was very much decreased and there was no difficulty in managing the application. The journey with the tools was very good and when we gone through the procees of building the code testing of the

code creating image of the application deploying the application to kubernetes and monitoring the application was very nice. We learn so much things out of process.

IV. CONCLUSION

PFrom this we can conlude that Devops is very efficient and time Saving process in an organization.And it has various advantages.We also conclude that nowadays Devops Engineer are high in demand due to their skillsets and market requirement.And its is very easy to manage as it can be saved on cloud.And it acts as bridge between Development team as well as operation team.As soon as Developer makes some changes it gets reflected in DevOps side and if there some errors or faults Developer gets notified.

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