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Migrating on premises VM to AWS

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***Abstract*- Cloud computing, it is the use of remote servers on the internet to store, to manage and to process the data, rather than doing it on a local server we do it on remote server, this is what cloud computing is. Virtual Machine Migration is a powerful management technique that gives the data centres operators who operates the business, the ability to make fit for the placement of VMs in order to better satisfy performance intended, improve resource utilization and facilitate system maintenance activity. Teleportation is another name of virtual machine migration. To transfer a virtual machine from one host to another we need a live migration which means that the migration can be done will in powered on state. In this paper we are implementing the concept of Virtual Machine Migration, and how we can migrate a VM from a local host to AWS Cloud using AWS EC2 and S3.**

Key terms – Cloud Computing, AWS, EC2, S3, IAM, Virtual Machine, Migration, On-premises.

I.INTRODUCTION

From the few decades, IT resources become a lot powerful, having high processing capabilities and an outsized amount of storage capacity, that attracts user, developers and also service providers to use these types of resources. People is moving towards cloud maybe for cloud computing or for cloud storage, developer build the application or web application and wants to deploy it on cloud using cloud service, where we just deploy the application and then we have to pay as per our usage. By using Microsoft Azure and Amazon Web the services are delivered in the form of hardware, software, storage, platform, database etc.

Cloud computing is on-demand delivery of computer power, database, storage, applications and other it resources via the internet with pay- as-you-go pricing. Because of the increased demand for cloud resources, cloud suppliers handle warehouse size data center, this massive scale centers offer over thousands of computing servers which are connected by high-speed communication links. VM migration over a WAN network takes a fairly large amount of migration time because of the bulk

amount of data transfer of storage migration, and the defective behaviour of WAN links having relatively large overheads. There
is a need for Virtual Machine Migration are like upgrading, balancing resources usage, virtual machine failures, etc. There are two types of virtual machine migration techniques these are: 1. Live or hot Migration: The movement of virtual machine from one physical host to another while being powered on. Virtual machine host is copied to target host. After transformation to target host. After transformation to target host the source host state is terminated or discarded and at last network is connected to the target host and the virtual machine starts in target host. 2. Regular or Cold Migration: Migration of virtual machine will be done at the powered off, so in case of powered off the configuration files, log files, and the disk of VM are moved from source host to the target host. Here VM are not required to be an shared storage, also in cold migration no CPU checks are

applied and the shortage time is large. Technical & Business problems Elasticity in terms of Resource Scheduling Governance problems like legal, compliance needs Technical factors of cloud Infrastructure

On different aspect, when all resources has been shifted to the cloud then there might be a chance to overload of virtual machine of that cloud data center. So here is requirement of migration of virtual machine from source node to destination node.
Virtual machine migration is additionally called teleportation. In virtual machine migration, system administrators move these virtual items between physical servers or alternative hardware items. In an effort to facilitate this, a new kind of migration has evolved called 'live virtual machine migration'. Live migration involves moving these virtual machines deprived of closing down a client system. Modern services often provide live migration functionality to make it easier to move virtual machines without doing a great deal of other administrative work.

II.LITERATURE SURVEY

According to the office definition, cloud computing may be a promising paradigm as compared with ancient IT (Mell and Grance, 2009). Cloud may be a many-sided paradigm, whereby it provisions procedure resources on-demand via network connections to their subscribers with none effort to attach with suppliers (Armbrust et al., 2009). This bonanza is occasion for each startup firms while not IT infrastructure and enterprises with their existing IT infrastructure, thus it shortens barrier to the business entry. The former can take benefit of public cloud whereas the latter can exploit hybrid cloud architecture or even federated cloud from different providers (Altmann and Kashef, 2014). With cloud adoption, the cost (CAPEX) is omitted, then total value of possession (TCO) is barely reborn to operational expenditure (OPEX) (Perumal and Subbiah, 2014). Since cloud service adoption has escalade trend in recent years, to scale the services by suppliers on their DCs wants reduction in OPEX. Inefficient resource allocation makes DCs underutilized, increasing electricity consumption, dioxide emissions and climate changes furthermore (Khani et al., 2016, Weber and Koomey, 2010). Server sprawl could be a development, within which cloud DCs suffer from underutilized distributed servers. According to the report in (Uddin et al., 2013), approximately 30% of cloud servers utilize their resource capacity only from 10 to 15 in percent. To prevent resource wastage ensuing of low utilization, server consolidation is expeditiously applied by leverage VM migration to pack servers' work into minimum range of physical machines. Emerging technologies leverage cloud computing as infrastructure; so, cloud is tied with new technology web of things (IoT) whereas its objective is to create everything sensible like sensible house, sensible applications and sensible devices normally (Botta et al., 2016, Distefano et al., 2015). Cloud services take good thing about service orientated design (SOA) to deliver technology- and platform- freelance net services to their subscribers; per se, the performance of net services is about between customers and suppliers within the sort of SLA (Hosseini Shirvani et al., 2017). Also, that the service level objects (SLO) area unit network metrics to be met is decided by the favourite quality of service (QoS) in SLA; during this regards, sometimes customers' and providers' objectives have conflicts (Dechouniotis et al., 2015). Also, cloud computing with cooperating wireless body space network (WBAN) serves e-Health application business whereas the electronic chip ingrained in garments or ballyhoo the patient's skin to watch patient's health and real time queries to rescue him/her in emergency things (Diallo et al., 2014).The aforementioned instances are only limited examples to show ubiquitous use of cloud computing infrastructure for emerging technologies. With integration of cloud in technologies such as IoT, Big Data management, WBAN, Vehicular Ad-hoc Network (VANET) and etc.

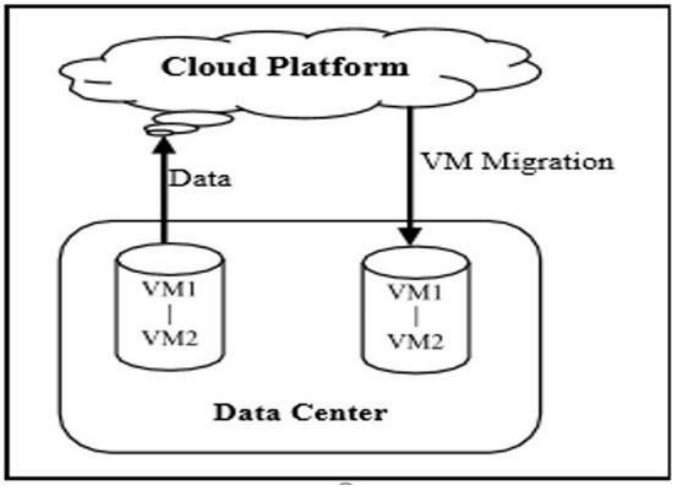
there exists varied conflicting necessities in each client and supplier views to be met (Botta et al., 2016).For example, VM migration happens over inter/intra network links for load equalization to dump overladen servers into underutilized servers whereas it should meet the requirement of QoS- intensive applications. Moreover, to forestall one purpose of failure for creating fault tolerant systems, VM pictures ar transferred from unhealthy nodes to healthy nodes via live VM migration techniques so it should cut back overall time period (Nagarajan et al., 2007). This approach will increase handiness and system reliableness also.Statistics in works published by (Jian-ping et al., 2014, Kusic et al., 2009) stipulates that idle servers consume 70%, approximately two third, of full-loaded servers; the reason why power management schemes in some DCs monitor servers' utilization in dynamic time intervals to trigger VM migration for consolidation of underutilized servers (Jian-ping et al., 2014).To meet same desires for rising technologies, exploitation cloud computing live and non-live VM migrations area unit wide triggered at intervals and across cloud DCs to provision their requirements; thus this job is completed by hypervisor in virtualized cloud. VM migration may be a resource-intensive method as a result of it unendingly consumes servers' cycles, information measure and memory (Deshpande et al., 2012, Deshpande et al., 2011); thence, the sensible approaches can take over the matter since untimely/aggressive VM migrations within/across DCs cause performance degradation and saturate links of LAN/WAN boundaries.

To cope with the problem, the modern datacenters exploit storage attached network (SAN) in LAN boundary; therefore, it does not need to transfer VM storage across DC because all the servers can uniformly access to SAN devices.But, within the WAN boundary, VM pictures should be transferred from storage via WAN links together with VM memory daemon, therefore it consequently prolongs execution time and saturates WAN links (Deshpande et al., 2012, Riteau et al., 2011).On the opposite hand, since DCs ar in and of itself heterogeneous, DVFS-enabled servers will facilitate towards power management. These variety of servers will alter their frequency-voltage combine per employment volume to cut back power consumption (Wu et al., 2014).Also, DVFS technique will be applied on alternative peripherals like cache, RAM, DISK except for CPU supported their utilization information measure necessities (Deng et al., 2011, Ghasemi and dealer, 2011, Gurumurthi et al., 2003, Mittal and Zhang, 2012). to enhance potency of DVFS theme, it will take advantage of identification approaches whereas resource consumption determined by employment will be recorded so resource requests to be expected in future; during this regards, the theme will change resource frequency-voltage try supported load prediction (Hotta et al., 2006, Mittal and Zhang, 2012).Although miscellaneous cloud computing studies are given within the literature regarding economic, privacy, and security problems, etc., there's a transparent lack of survey studies on VM migration, server consolidation, and DVFS techniques .To fill this gap, we tend to gift totally different schemes to classify commonalities and discrepancies between the views of researchers, supported metrics derived from the literature. Finally, open problems, challenges, and future directions square measure mentioned for up existing schemes and approaches.

Cloud computing provides a number of large computing infrastructures for large scale data centers, which contain dozen of physical nodes with multiple virtual machines running on them. These VMs could also be migrated across different physical nodes on demand to achieve various goals. Modern day cloud based datacenters contain hundreds of virtual servers that host different critical applications ranging from those that run for a few seconds to those that run for longer periods of time, some popular cloud based applications are MS Office 365, dropbox, CRM software Salesforce.com, meanwhile cloud based Netflix stream movies and TV programs to members across the world

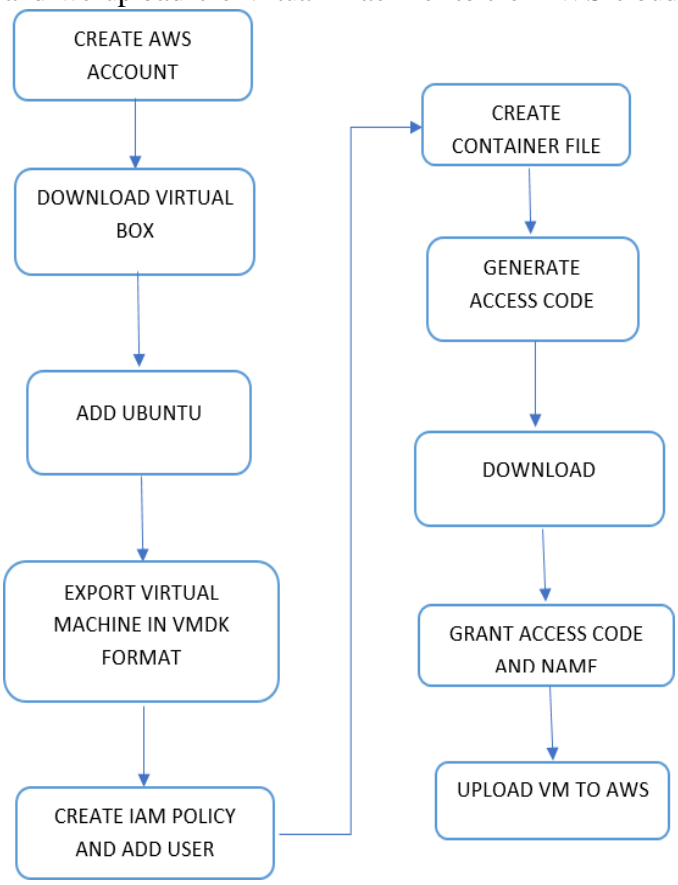
Live migration is a very important feature of virtualisation where a running VM is seamlessly moved between different physical hosts. Source VM's hardware state, storage, memory and network resources are often utterly affected to a target host while not disrupting the consumer or running applications. However, live VM migration can consume significant bandwidth (500 Mb/s for 10 seconds for a trivial web server VM), so these non-negotiable overheads need to be considered when scheduling migration. Higher workload density in combination with network bandwidth intensive migration can lead to network congestion. To secure the bandwidth for VM migration, it's necessary to control user traffic, if we can find a mechanism to predict bandwidth that required for VM migration on the source Physical Machine (PM), and then limiting the user traffic on both source and destination PM, it can guarantee the minimum bandwidth that required to execute VM migration and will avoid network bottlenecks. Given the above analysis, the main objective of this research is to investigate and design a decentralized bandwidth aware autonomic intelligence framework for live VM migration to manage the workload of physical servers.

III. SYSTEM DESIGN ARCHITECTURE



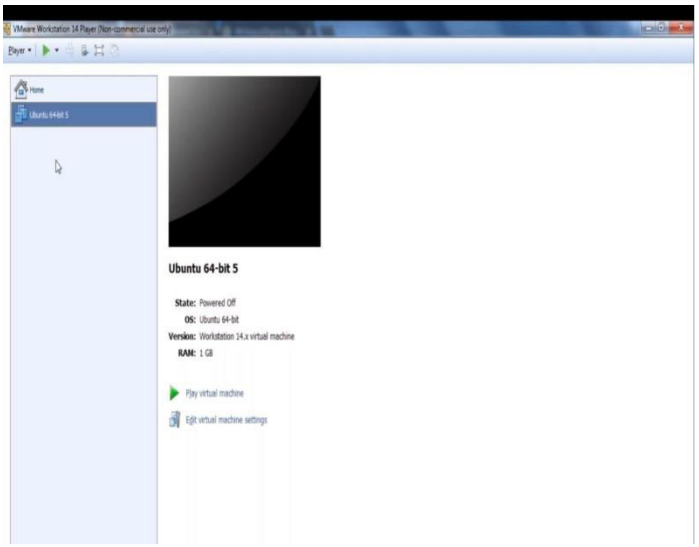
PROPOSEDFRAMEWORK :

In this project, we are dealing with migrating on-premises Virtual machine to AWS cloud. While doing so, we first create a virtual machine in virtual box and then we install a virtual machine of obuntu 64 bit. Then, we go the AWS console, where we create some policy and then finally we generate the access code and we upload the virtual machine to the AWS cloud.

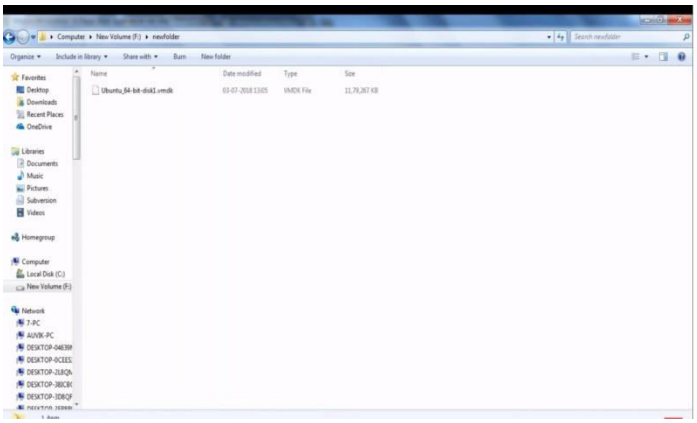


IV. IMPLEMENTATION

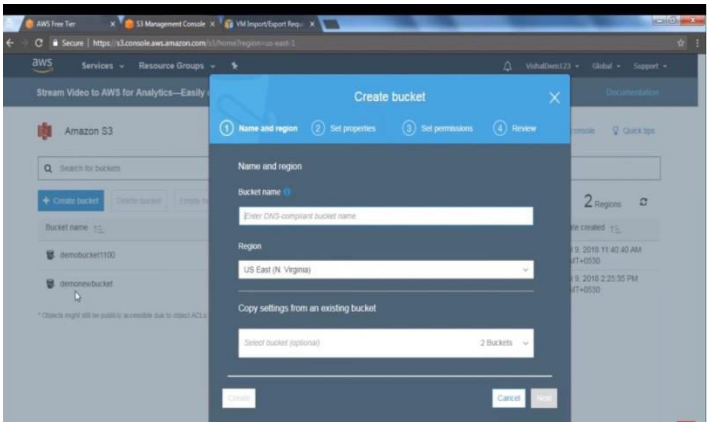
- Create a virtual machine using virtual box. Ubuntu 64 bit.



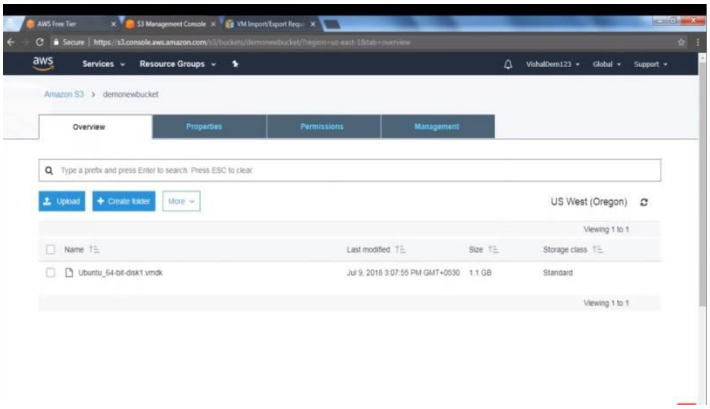
- Export the virtual machine in a format of vmdk.



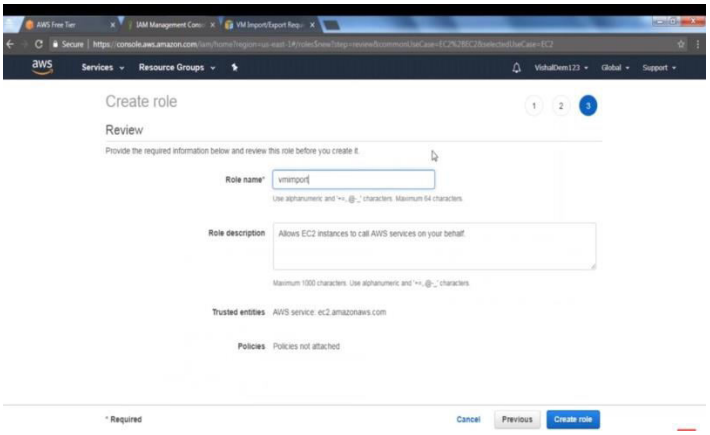
- Create a aws free tier account and then create a S3 bucket.

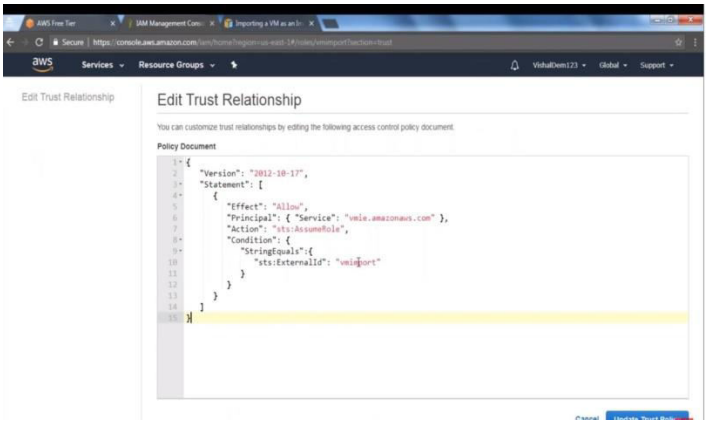


- Upload the vmdk in S3 bucket.

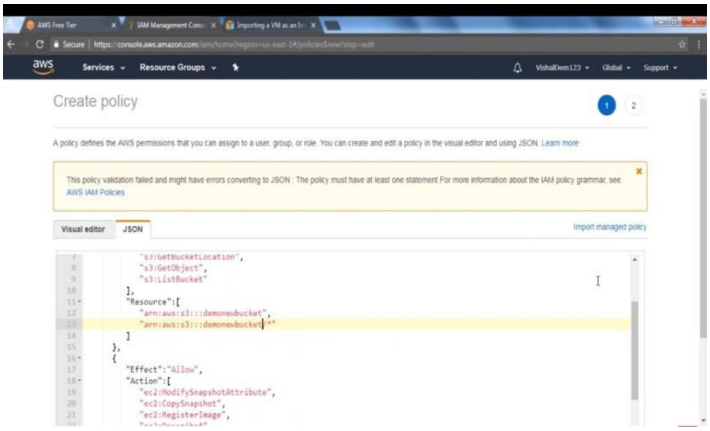


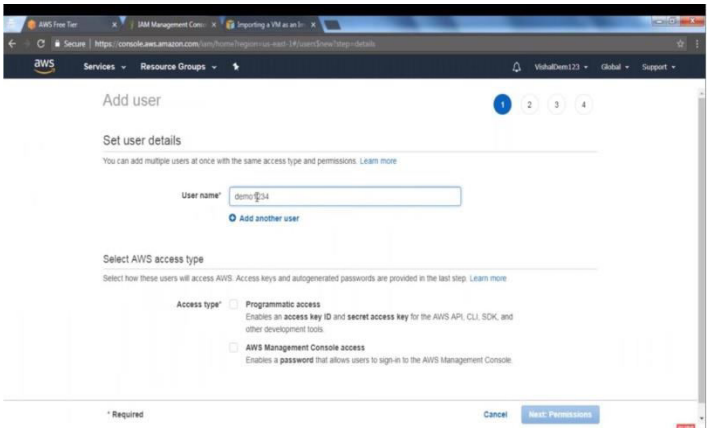
- Go to IAM and create roles and then edit the trust relationships so that aws allows us to upload the Virtual machine in the Cloud.



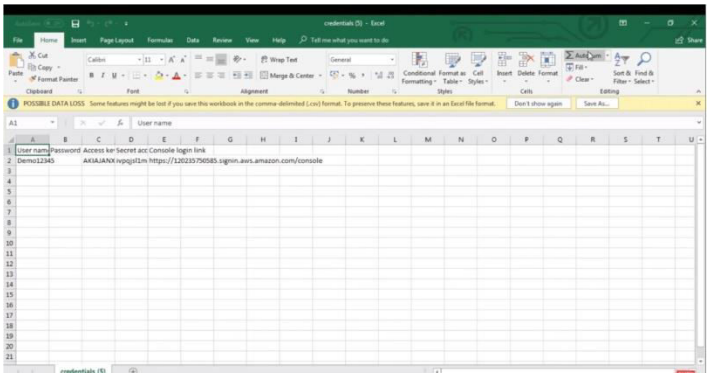


• Now create policies and add user and allow the user to access the programmatic access.

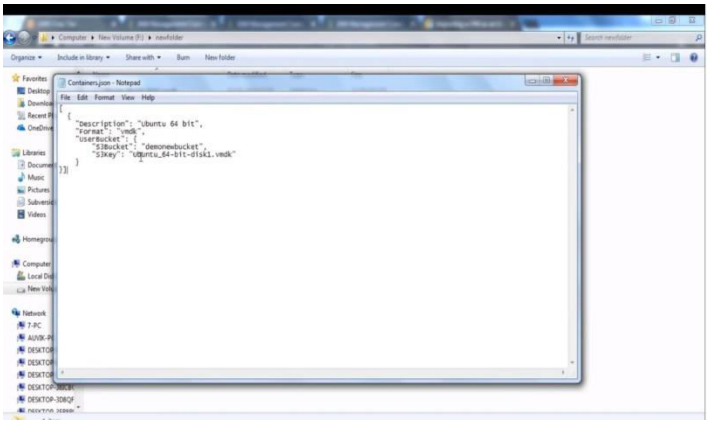




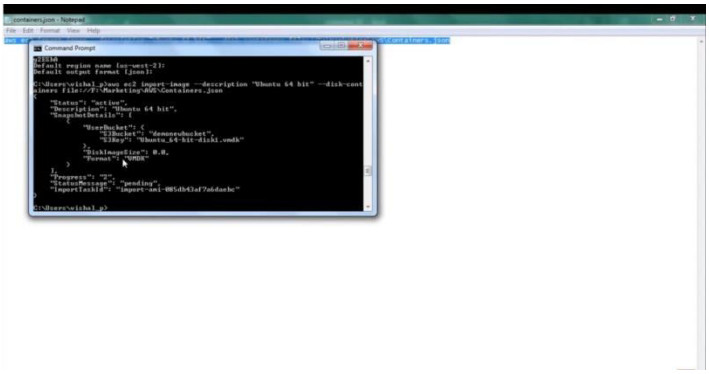
• Now set all the policies and download the csv file when we find the access code which helps us in uploading the virtual machine to cloud.



• Now create a container file and store the information.



• At last in command prompt we have to provide the information and then we can start uploading our virtual machine in aws cloud.



V. CONCLUSION

In this proposed work, we are dealing with how we can migrate Virtual Machine into the cloud. Here we learn about how virtual machine works, and it is useful to do activity which are not capable of doing such things. That's why we are going to virtual machine for our work. In this work, we deal with AWS to make our work done. While applying the steps, we are easily able to migrate our virtual machine to the AWS cloud. We can learn make things about AWS services like S3, how we can create S3 bucket and services like IAM where we can add or create user and edit some permissions which help us to get connected in AWS cloud. We learn about different policies of AWS, which finally helps us to done our work properly.

VI. REFERENCES

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