DEPLOYING A WORDPRESS WEBSITE USING AZURE CLOUD

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Abstract:

Implementation of serverless computing to lessen the burden of managing the infrastructure. Setting-up a Virtual Machine[VM] to host the WordPress website. And configuring the Azure firewalls to ensure security. Including the bastion to provide enhanced Remote desktop protocol [RDP] and secure shell protocol [SSH] to secure exposure via the public IP address.Enriching the performance of website via multiple availability zones and saving resources through scaling up and down allowing to modify the performance of hardware and thereby reducing the downtime. Running the WordPress website on the virtual machines deployed in Azure portal is our proposal.

Keywords: *Serverless, Virtual machine, wordpress website, Downtime, availability, bastion, deployment.*

I. INTRODUCTION:

Now-a-days serverless computing have reduced the burden of developers since it eliminates the need of thinking about management of infrastructure. Virtual clusters emerged as a great alternative to physical cluster of servers. It offers flexibility, easy access, easy maintanence, easy scale-up and cost effective solution. There Multiple cloud service providers such as Azure, amazon EC2, Oracle Cloud and Google Compute engine. Here, we have demonstrated the characteristics of Azure cloud by deploying the WordPress website using Bitnami WordPress Virtual machine [WVM] . We present a cost effective way of deploying WordPress website. Further, Azure provides free trail and pay-as-you-go pricing models to avoid wastage of money for non-runtime. The free-trail account includes the standard trail account and student account where it provides 100-200 credits which can be used to have basic hands-on in the Azure. Not only azure provides free trail, other cloud providers also have such free trail for a limited period of time. It is also recommend to use sandbox for getting familiar with the Azure platform. Sandbox is real and open Azure environment where you can cloud along with the ACG courses. Variety of tools are available in sandbox account for the training. It is basically found in the microsoft learn platform . It is a great option provided by Microsoft since it doesn't added up with your actual Azure account. You will not be charged. But you will only be getting a limited time and restricted number of sandboxes. You avail the sandbox for 4hours after activation. Where you can perform a good number of works and practice .Such interactive learning enhances the understanding of the cloud concepts and boosts up the deal of learning. Now, down the lane to the on-premises benefits of cloud computing. The Usage of cloud eliminates the purpose of large number of IT staffs to maintain the on-premises hardwares. The cost of investing in IT staffs can be availed to make the Serverless and other systems more efficient . It costs for the initial setup of hardware,servers and licenses.(Initial capital investment) . Not stopped with that, continues to lead the lane costing for upgrade of hardwares and licenses. It requires the investment of more money. Data is the backbone of any business. Losing it makes the organisation to lack its trust. The ransom of losing data may bankrupt the whole organization leading to major legal problems. And in addition, scaling up isn't a easy task either since it requires a huge amount of capital and manpower for setting up new systems.

II. DESCRIPTION:

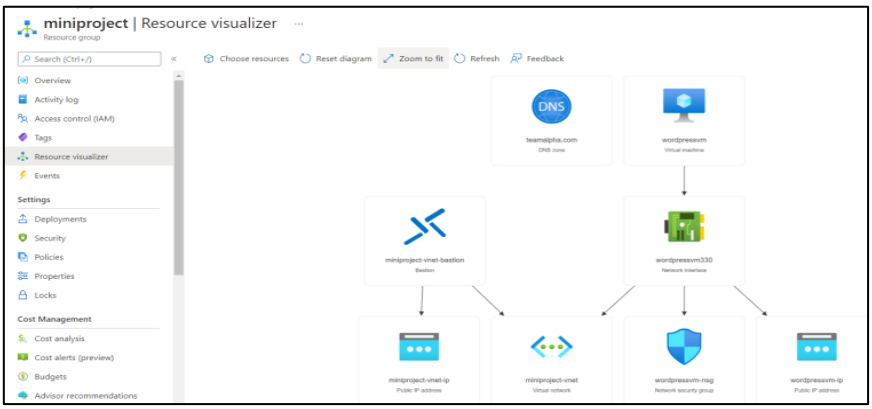
Firstly, Azure student account is signed up and a resource group for the website is built. Secondly, a wordpress virtual machine by Bitnami is deployed. Thirdly, the up address and password for the login webpage can be found in the portal and the serial log page respectively. The user can login and edit the deployed website after the execution of the above stated procedures.

III. PROPOSED WORK

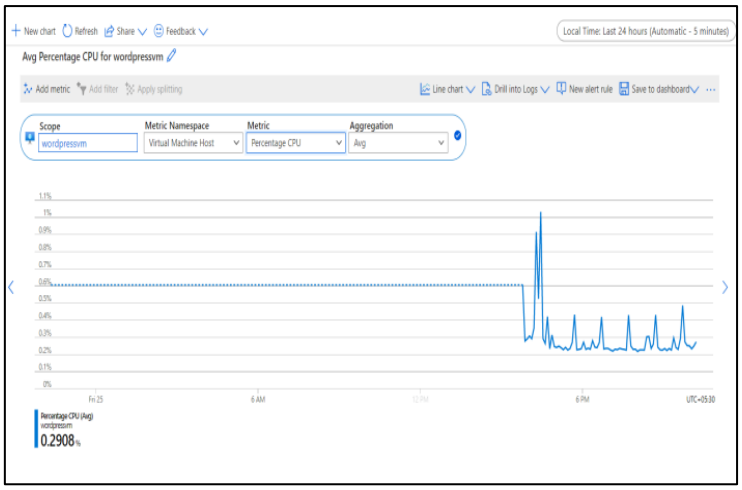
The concept of cloud computing and image deployment have been incorporated in this system. Image deployment is the direct deployment of any application with the template provided by the software provider in the marketplace of the cloud platform. Instead of owning the on-premises servers these virtual environments can be used for reducing the maintainence

and enhancing the security of data. In on-premises,you take all the risks, but in cloud you are asked only to manage your virtual desktop and data . The background works are taken care by the cloud service provider i.e. microsoft. Here in cloud , someone else owns the server,hires IT people,rents real-estate and configures the codes. Owning a private server costs higher paying way for a shared hosting wherein one physical machine shared by a hundreds of businesses.

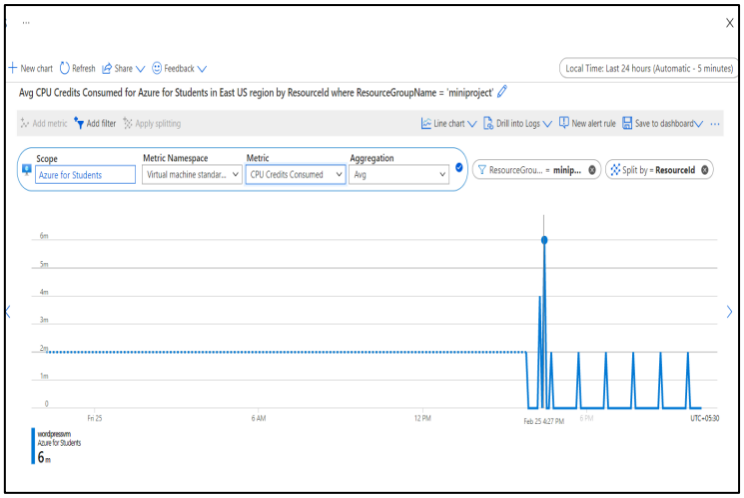
A resource group named "miniproject" is created with the use of azure platform. In other way, it can also be created using the Azure console or visual studio. Resource group is the logical collection of VM, Storage, web apps and all other resources. Virtual network named "rg-website-vnet" . Vnet filters the traffic in between the subnets . The data packets are directed between the subnets . Each subnet holds each resources. The bastion, IP , network security group [NSG] and vm wordpress IP are interfaced to the WordPress VM. NSG provides the DDOS protection and improves the firewall of the website. Additionally, the recordsets for the registration of domain name have been created using Azure DNS service.



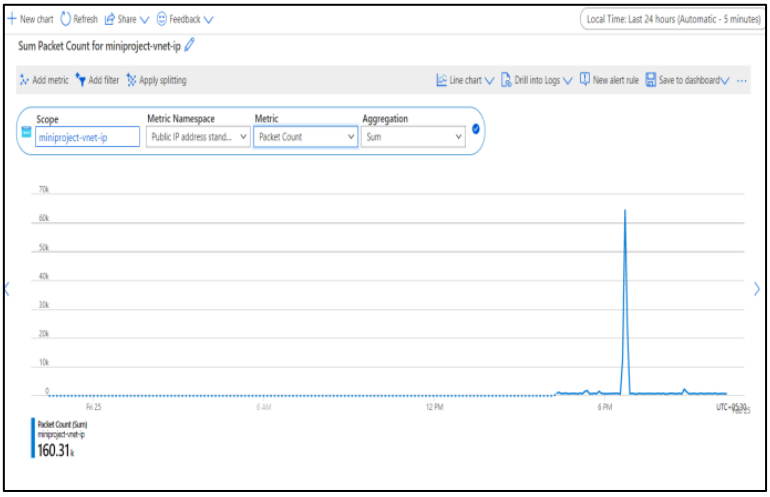
The Azure metrics continuously monitors the data of system and describes the aspects of the system. The CPU percentage metrics provides the pictorial knowledge of the performance of CPU during the runtime of machine.



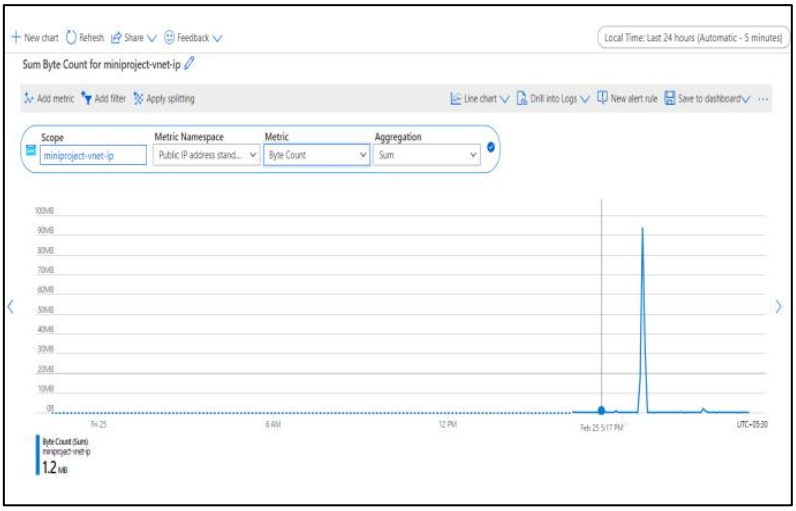
The CPU credits consumed page provides the number of credits consumed by the CPU for the functioning of VM and other resources.



Number of packets tranceived among the subnets shown by the packet count metrics available in the portal

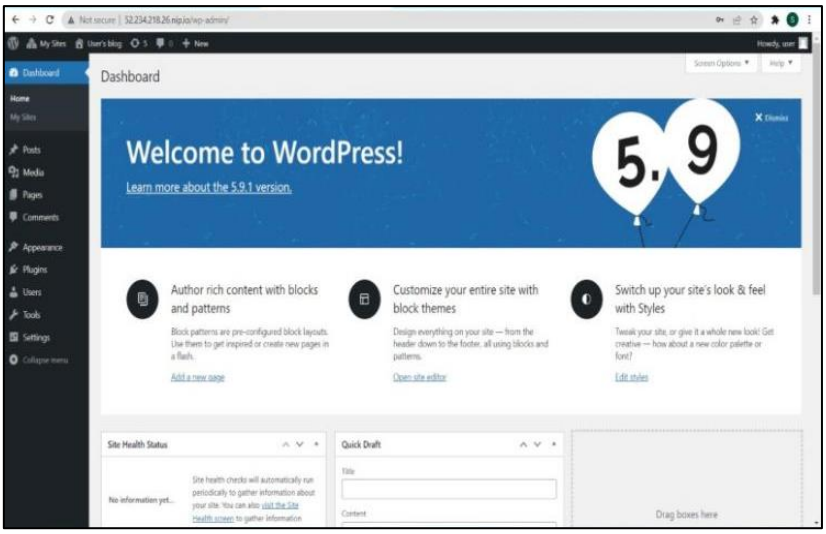


Byte count recorded is described by the byte count log available

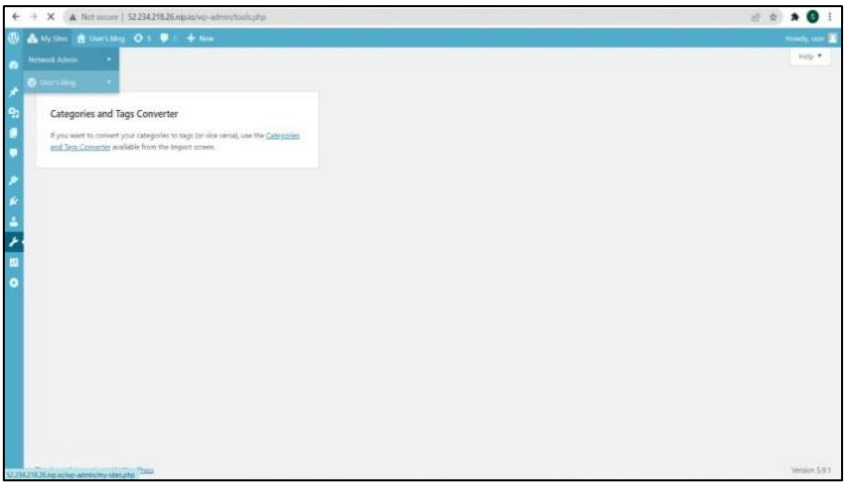


The deployed website have several webpages consisting of Dashboard, Home, Mysites, posts,media, Plugins, Appearance control board, Users,Tools And settings etc..,The administrator of the blog (wordpress website) can allocate and modify the role of users . The

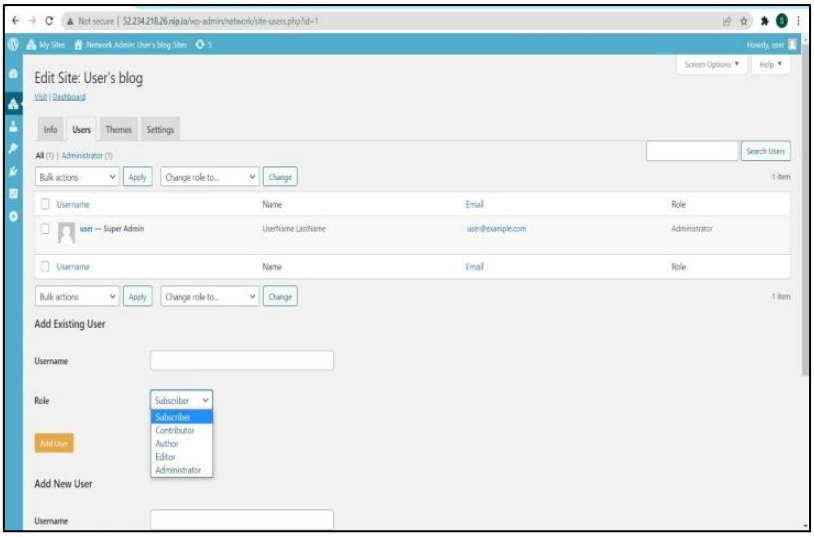
roles include admin, subscriber, contributer,author and editor. The roles are assigned using the email id verification.



The website consists of admin site and the user blog. Admin site is where website management, security assignment and other backend processes are performed. User blog is what the outsider world sees when browsed the website link.



User blog can be edited and the real time users can send comments and direct messages and can access the content of blog.



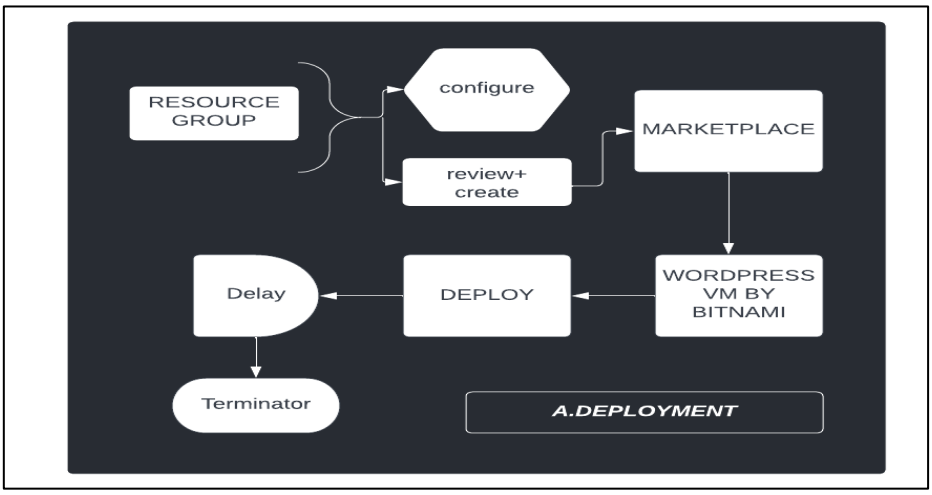
Any downtime can be tackled by the website since the server can be scaled-up anytime the admin prefers.

IV. Working Principle

The WordPress website is hosted by the virtual machine which we deploy in the Azure portal . Here, the virtual machine used is the one provided by Bitnami in the Azure marketplace. WordPress VM hosts the WordPress website. The virtual machine can be set OFF whenever the admin prefers and can save the resources or credits from vain.

V. Block Diagram

V a. Deployment

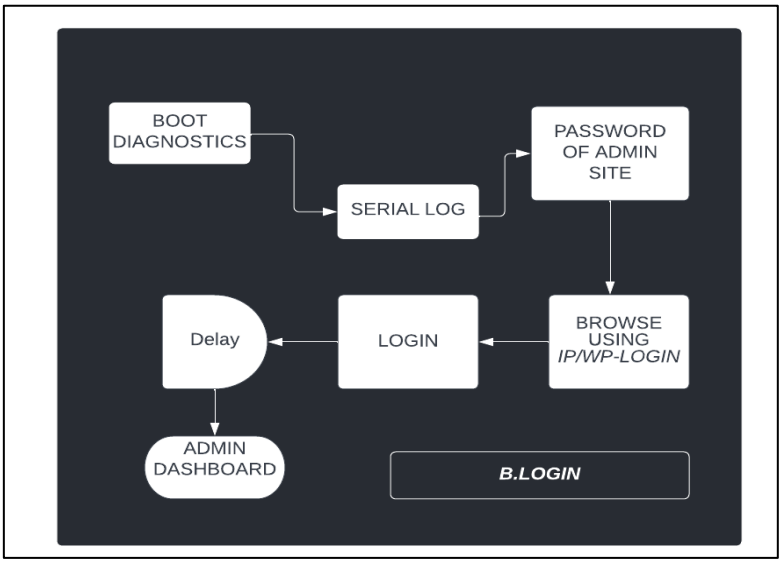


Resource group (Name, subscription, location, ...review+create) --> Marketplace--> WordPress VM by bitnami--> Deploy

The block diagram shows the process of deployment where the resource group is deployed primarily configuring the name of collection, Choosing the appropriate subscription, location , deciding the availability zones . Here the location set is East US and it is completely the user's priority to choose it. Subscription chosen here in this system is the student account subscription which can be availed by making use of the registered organization's email.

Secondly, Go to the marketplace where several applications can be found. WordPress website VM by the Bitnami is deployed and it can also be configured in such a way the VM have been configured.

V b. Login



Boot diagnostics--> Serial log--> password of admin site --> Browse using IP/wp-login--> Login(User, password).

The block diagram shows the login process. The login credentials can be found in the boot diagnostics page where the serial log section contains the password for the admin login . Browsing with IP address along with a suffix "/wp-login" results in the login page of site. Logging in with the name "User" and Password "abcdefgh123#@_267". Successful logging occurs when the admin entered the appropriate username and password.

VI. Software Used:

VI a. Azure portal

Microsoft is an American multinational computer technology company. Azure is a cloud service owned by Microsoft . Cloud computing can be done through multiple ways making use of visual studio, cloud shell and azure portal. It is a web based console alternative to the coding tools. Easy build, manage and monitoring.

VI b. Virtual machine

VM is a logical server runs on any cloud platform . It provides functionality of the physical server. But can be managed remotely instead of commuting to workplace. Multiple virtual machines can be run. You are not asked to pay for underutilized VM. It follows pay-as-you-go model where you pay for only you use.

VI c. Network Security group(NSG)

It restricts the negative traffic. It follows rules to screen the inbound and outbound traffic to protect it from DDOS attacks and tightens the firewall to enhance security

VI d. Interface

Interface (wordpressVM330) interfaces the IP address, NSG, bastion with the WordPress Virtual machine.

VI e. Resource Group

Resource group "miniproject" is a logical collection of WordPress VM, Vnet, IP address and all other subnets. All the resources are unified within a resource group to access it swiftly.

VI f. Resource

Resources are the manageable items in Azure cloud. Namely virtual machine, Storage accounts, webapps etc..,

VI g. VNet

Azure Vnet is the fundamental building block of the network. It makes the resources in each subnet to safely communicate with each other.

VI h. Bastion

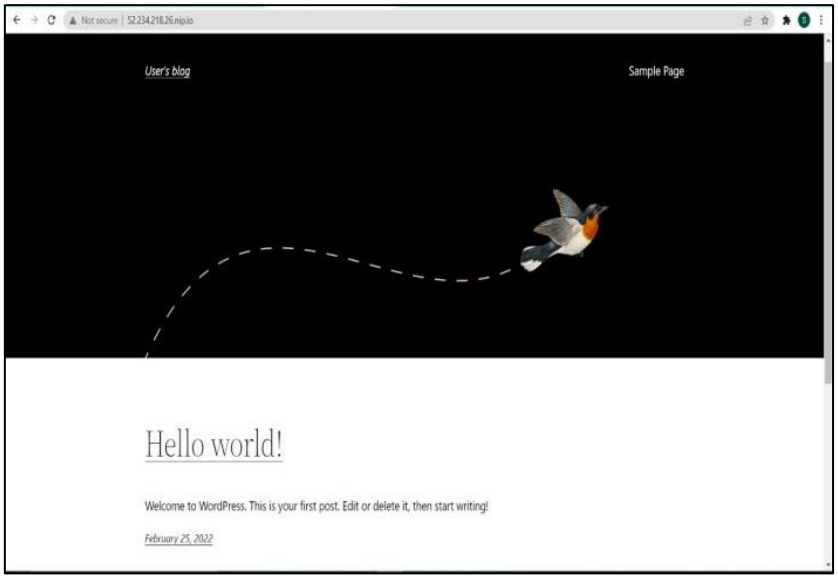
Azure Bastion provides safer Remote desktop protocol RDP and Secure shell protocol SSH. It protects the website from exposing the public IP.

VI i. Disk

During the process of deployment of VM , the storage disk size can be allocated based on the type of subscription. Here it is wordpressVM OS disk.

VII.Result

The following images displays the outputs of our proposal. It consists of the user blog page , admin dashboard. Cloud instances saves the time and effort of developer as the developer can work up on crucial things instead of taking care of primary set-ups. This demonstrates the benefits and perks of cloud computing mainly the microsoft Azure cloud.



VIII.Conclusion

Employing cloud services to deploy a website is rapid, cost effective, easy maintenance and secure solution when compared to coding and building it using a physical computer. And finally, serverless computing aids a great hand in hosting the website with minimal resources. In this scientific era, cloud is the next destination for all the storage,Devops, administration duties. This paper benchmarks the values of cloud computing and can be used for more higher end works like face recognition, IOT,AI etc.,

IX. REFERENCES

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