Using Ansible to Deploy Workloads on Microsoft Azure

Follow along with a free Azure account. Sign up: https://aka.ms/freeazure

Stuart Kirk, RHCA – Open Source DC Migration, Microsoft
Zim Kalinowski – Software Engineering, Microsoft

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Follow along with a free Azure account

- Visit https://aka.ms/freeazure to sign up
- Log in to your Azure account and access a “Cloud Shell” by visiting https://shell.azure.com
- Configure your cloud shell to provide output in “Table” format by executing “az configure” and choosing option “3” Table
- Begin stepping through the instructions (do not just execute the script!) in the file execution-script.sh
- You can clone the github repo or view it in a web browser:
  - git clone https://github.com/stuartatmicrosoft/Ansiblefest2018

Stuart Kirk

Open Source Technology Solutions Professional
Microsoft Corporation

- Home: Ann Arbor, Michigan
- Entirety of Career in Open Source: Dell, Cisco, Red Hat
- Joined Microsoft & Started with Ansible in 2016
- RHCA, RHCE, RHCDS, MCSA: Linux on Azure
- Favorite thing to do with Ansible: Extending client's Ansible deployments seamlessly into Microsoft Azure

- Twitter: @StuartAtMSFT
- LinkedIn: https://www.linkedin.com/in/stuartkirk

Zim Kalinowski

Software Engineer
Microsoft Corporation

- Home: Shanghai, China
- Working on Open Source, previously involved mostly in Embedded Systems
- Started with Ansible in 2017
- Favorite thing to do with Ansible: new modules

- LinkedIn: https://www.linkedin.com/in/smarterphone/

Creating a Service Principal & Connecting to Azure

- az account list
- az ad sp create-for-rbac --name="stkirk-ansiblefest" --role="Contributor" --scopes="/subscriptions/x“

- echo "export AZURE_CLIENT_ID=" >> $HOME/.bashrc
- echo "export AZURE_SECRET=" >> $HOME/.bashrc
- echo "export AZURE_SUBSCRIPTION_ID=" >> $HOME/.bashrc
- echo "export AZURE_TENANT=" >> $HOME/.bashrc

Creating a Service Principal & Connecting to Azure

- AZURE_SUBSCRIPTION_ID = Subscription
- AZURE_TENANT = Tenant
- AZURE_CLIENT_ID = AppId
- AZURE_SECRET = Password

```
[stkirk@stkirk-fedora ~]$ az ad sp create-for-rbac --name="stkirk-ansiblefest" --role="Contributor" --scopes="/subscriptions/wh7e5gd8-92h4-93f7-q8d4-t56295hf73bb"
AppId                                 DisplayName        Name                        Password                              Tenant
------------------------------------  -----------------  --------------------------  ------------------------------------  ------------------------------------
52f8ba96-21rq-7265-z383-e6ee22d6j8ea  stkirk-ansiblefest  http://stkirk-ansiblefest  72962831-2720-4hew-y297-11812e9a8f00  07f720fe-11r4-58er-84be-2d7az071ye00
```

Agenda

- Create a new Azure resource group
- Create an Azure application gateway
- Create a new Linux VM in Azure
- Create a MySQL Database using Azure PaaS
- Install the Mattermost application onto the VM and connect it to MySQL
- Test the application
- Shut down the virtual machine and create a “golden” disk image of the VM
- Create a virtual machine scale set (VMSS) with load balancer from disk image
- Connect the Azure application gateway to the VMSS
- Test the application

What is our process?

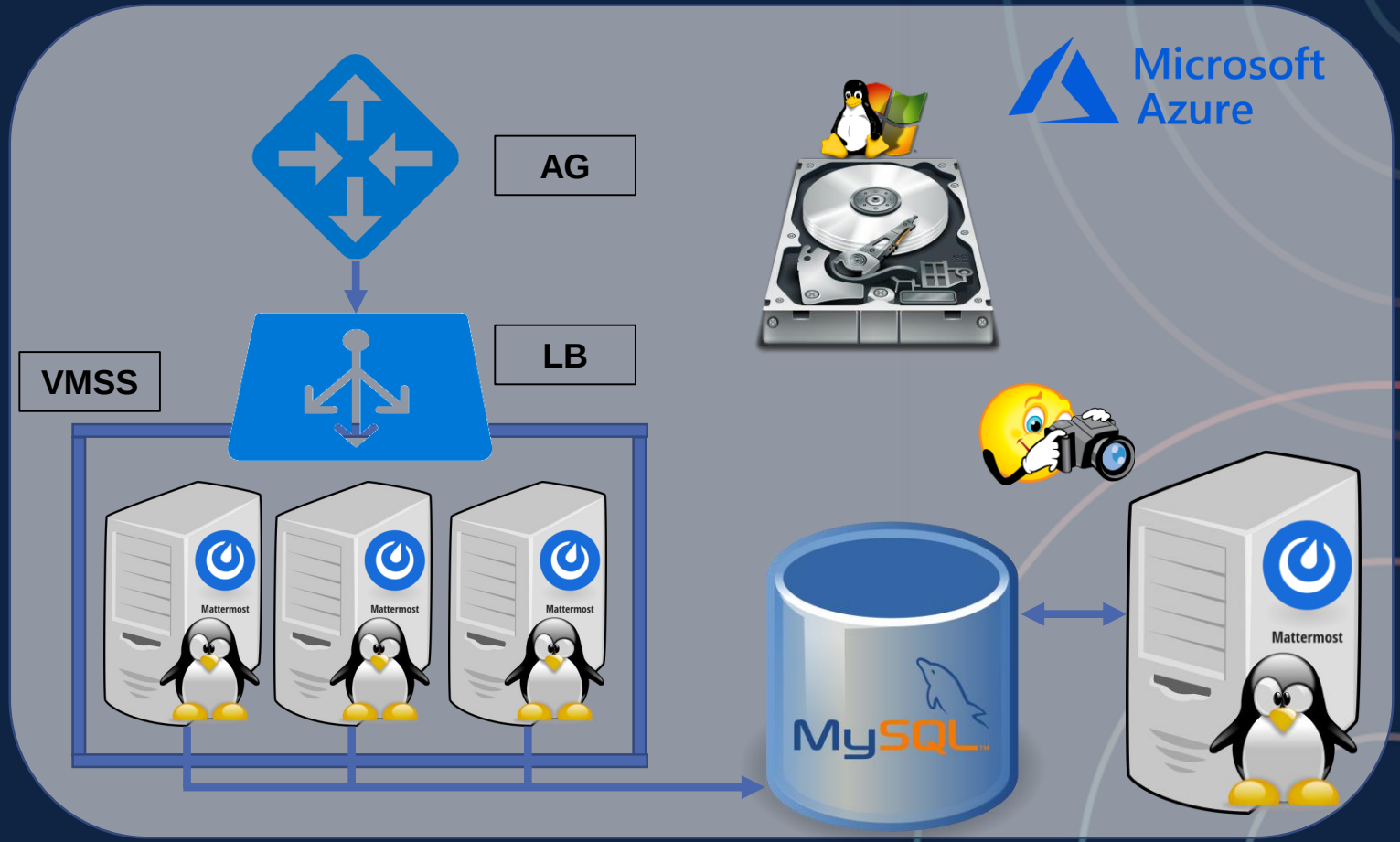
- Work on End to End scenario
- Identify gaps in the process
- Patch the gaps with the azure_rm_resource module or other means available
- Implement new modules or patches to existing modules (future development)

Playbooks

- 00-prerequisites — Create Resource Group & Application Gateway
- 01-mm-vm-deploy — Deploy single VM instance for application
- 02-create-mysql — Create MySQL Azure PaaS database
- 03-mm-setup — Install MatterMost application & connect to MySQL Azure
- 04-create-vm-image — Shut down running VM & Create disk image
- 05-vmss-create — Create Virtual Machine Scale Set (VMSS) from disk image
- 06-appgateway-attach — Connect Application Gateway to VMSS

Process

- 00-prerequisites
- 01-mm-vm-deploy
- 02-create-mysql
- 03-mm-setup
- 04-create-vm-image
- 05-vmss-create
- 06-appgateway-create



Preparing the Ansible VM

- az group create -l eastus -n afaustin

- az vm create -g afaustin -n afaustin --public-ip-address-dns-name afaustin --image OpenLogic:CentOS-LVM:7-LVM:7.5.20180823 --authentication-type password --storage-sku Standard_LRS --accelerated-networking true --size Standard_D2_v2 --admin-username afaustin

- az network nsg rule create -g afaustin --nsg-name afaustinNSG --name allow-ssh2112 --description "Allow SSH Port 2112" --access Allow --protocol Tcp --direction Inbound --priority 110 --source-address-prefix "*" --source-port-range "*" --destination-address-prefix "*" --destination-port-range "2112"

Installing Ansible & the Azure Ansible Modules

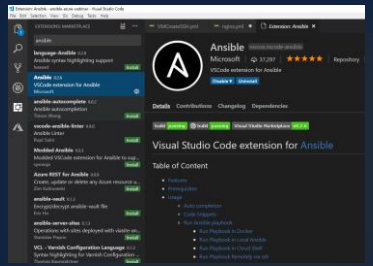
- pip install --upgrade pip
- pip install ansible==2.7.0rc2
- pip install ansible[azure]

DEMO & PLAYBOOK REVIEW

https://github.com/stuartatmicrosoft/Ansiblefest2018

Microsoft | Red Hat

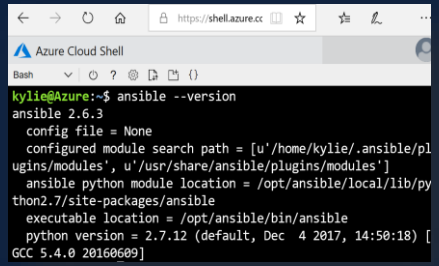
Agentless Cross-Platform Automation in Azure



The Best Dev Experience

Visual Studio Code Extensions
- Autocompletion, Syntax highlighting, Code Snippets, Linting

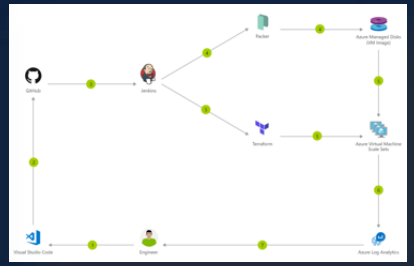
Platform independent
- Use for Ansible deployment to any infrastructure / cloud
- Remote SSH execution anywhere



First-Class Integration

Native project support for Azure resources
- Engineering partner with Ansible engineering
- Long-term roadmaps(influenceable!)

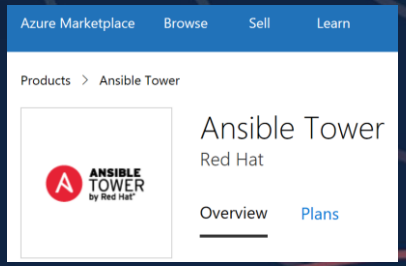
Support in Azure
- Cloud Shell Integration
- Build Ansible modules for Azure resources, including call ARM template and Rest API



Accelerated Customer Success

Clear Guidance
- Documentation Hubs
- Reference Architectures

Cross-Project Solutions
- Solutions for common tool integrations with Azure



Automating in Azure at Scale

Ansible Tower available on Azure Marketplace
- Additional levels of visibility, control, security, and efficiency necessary for today's enterprises.

Pre-provisioned try for free
- Test drive: 2 hours free try without Azure subscription

What's New

New Ansible modules in Ansible 2.7 (Oct 4th, 2018)

- Web App & facts
- App Service Plan & facts
- Traffic manager profile & facts
- Traffic manager endpoint & facts
- App Gateway

→ **Web App Scenario**

- Container Registry facts

→ **Enhanced Container Support**

- MySQL Server/Database facts
- SQL Firewall Rule
- PostgreSQL Server/Database facts

→ **Enhanced DB Support**

- Auto Scale & facts
- Route
- Route Table & facts
- Virtual Machine facts

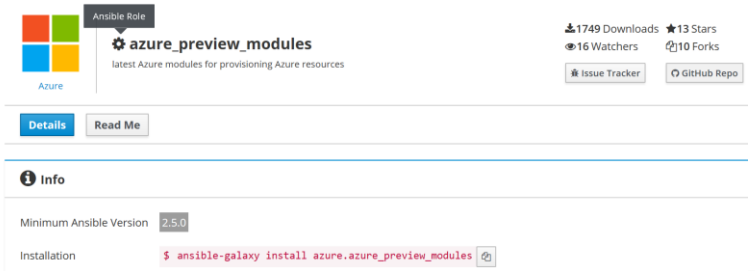
→ **Enhanced VM/VMSS /Networking Support**

Future (influenceable!)

- New modules
- Big data (e.g. HDInsight)
- Middleware services (e.g. Redis Cache)
- More networking capabilities (e.g. Peering, CDN)
- Key Vault + MSI integration
- Dynamic Inventory for VMSS and Availability Set
- More integration stories for Ansible + Jenkins and Ansible + Terraform on Azure

Try Something New?

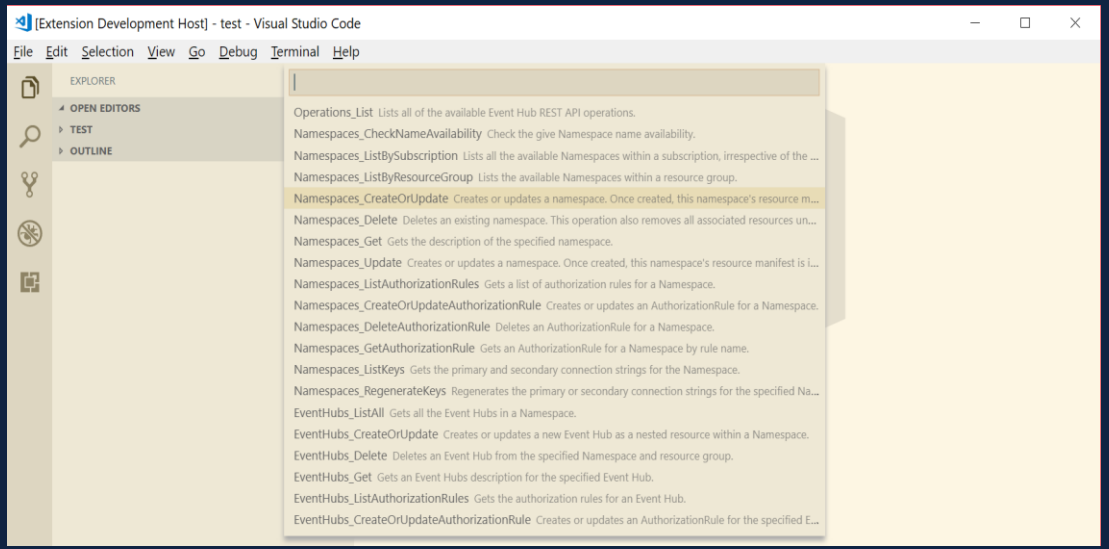
https://galaxy.ansible.com/Azure/azure_preview_modules

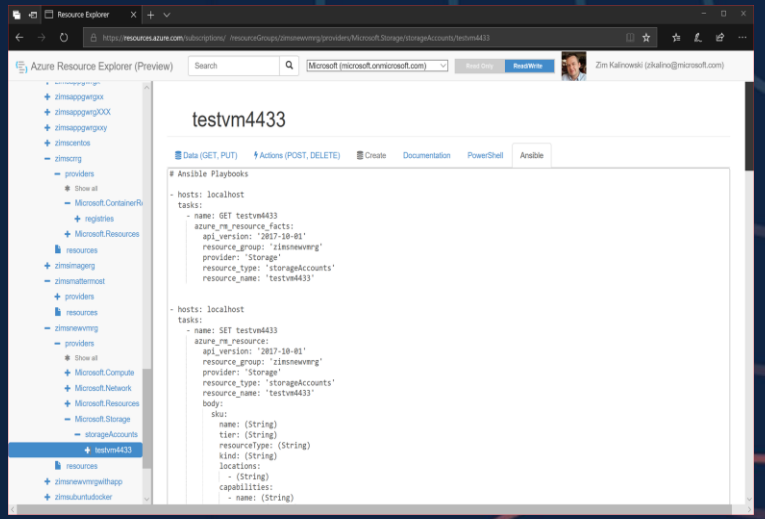


The Azure REST API Module

azure_rm_resource
(PUT / GET / POST /HEAD / PATCH / DELETE / MERGE)

azure_rm_resource_facts
(GET)






```yaml
- name: Call REST API - VirtualMachines_Generalize
  azure_rm_resource:
    # url: /subscriptions/{{ lookup('env','AZURE_SUBSC
    api_version: '2017-12-01'
    method: POST
    resource_group: "{{ resource_group }}"
    provider: compute
    resource_type: virtualmachines
    resource_name: "{{ vm_name }}"
    subresource:
      - type: generalize
```

Other Ansible modules for Azure

- Virtual Machine Extension
- Load Balancer
- Storage
- Network Security Groups (NSGs)
- Virtual Machine Scale Sets (VMSS)
- Availability Sets
- Azure Function App
- SQL / MySQL / PostgreSQL (PaaS Services)
- Azure Container Instance (ACI)
- Azure Container Registry (ACR)
- Azure Kubernetes Service (AKS)
- Creating System Images
- Azure Key Vault

Useful Links

Developer Hub for Ansible:

- http://docs.microsoft.com/azure/ansible

Azure Modules:

- https://github.com/ansible/ansible/tree/devel/lib/ansible/modules/cloud/azure

Visual Studio Code Extension:

- https://marketplace.visualstudio.com/items?itemName=vscoss.vscode-ansible

Azure Preview Modules:

- https://galaxy.ansible.com/Azure/azure_preview_modules/

Useful Links

Azure Playbook Samples:

- https://github.com/Azure-Samples/ansible-playbooks

Contact

- #ansible-azure IRC channel
- https://webchat.freenode.net/?channels=ansible-azure

Group: Ansible on Azure

- AnsibleonAzure@service.microsoft.com

Don’t Forget to Visit

Ansible + VSCode: Accelerate Ansible Playbooks

- Catherine Zhu, Alfred Sin
- Wednesday, Oct 3 1:30PM - 2:15PM

THANK YOU!

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