PS - Ansible challenge

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## Overview

Imagine that you have a customer with huge multi technology business application. Moreover, that application tend to be maintained automatically. Automation as one of the CI/CD part chosen to be ansible based. Talking about technologies that application have, it’s based on:

.Net IIS application on windows

.Net core application on linux

Single java application

Java app on tomcat

Java app on jboss wildfly

Customer team don’t want to spend a time performing all jobs manually, so they want to make automation based on ansible roles.

To make sure that PS AppD make all things live, customer provides each technology based application component on development environment where you might proof your power.

## Approach

Approach is to use ansible.

Let me take a couple of moments and introduce you ansible,



From it’s own words:

Ansible is an IT automation tool. It can configure systems, deploy software, and orchestrate more advanced IT tasks.

Ansible’s main goals are simplicity and ease-of-use. It also has a strong focus on security and reliability, featuring a minimum of moving parts, usage of OpenSSH for transport (with other transports and pull modes as alternatives), and a YAML language.

Ansible manages machines in an agent-less manner from a control node.

Here are main concepts of Ansible <https://docs.ansible.com/ansible/latest/network/getting_started/basic_concepts.html>

Getting back to our main challenge, Appdynamics smart minds designed roles that available from ansible-galaxy appdynamics collection and could be used in your playbooks for automating deployment.

<https://www.ansible.com/overview/how-ansible-works>

Sometimes world pushing hard, and some of application components couldn’t be covered easily with automation because of different starting up way and comprehensive settings.

## Environment preparation

### Cloudmachine Application

On the cloudmachine you may find template to start with:

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Called ansible-automation-challenge-0.6

It contains 7 VMs for:

* Java app on tomcat
* Java app on jboss wildfly
* .Net on windows (standard onboarding lab)
* .Net core on linux (Roman Lahinousky netcore challenge)
* Single java application (BDR onboarding lab)
* AppDynamics controller
* Ansible controller host

Create your own application based on that template to participate the challenge.

Some of application components are exposed to interact with users, others represent API that could be pushed with a loadgenerator scripts, also you might see an application that generates load by itself, without any help.

Each application details would be covered in separate section.

### Cloudmachine access

Connect to proper vpn to access VMs

Cicso using anyconnect to access cloudmachine hosts:

<https://confluence.corp.appdynamics.com/display/NETENG/Cisco+AnyConnect+for+ves-appd>

Just add one of following urls in your anyconnect to access application template.

|  |  |  |
| --- | --- | --- |
| URL: | Location: | AnyConnect menu Option: |
| [sjc-cci-vpn-cluster-appd.cisco.com/ssl](https://sjc-cci-vpn-cluster-appd.cisco.com/ssl) | San Jose | ~ CCI AppDynamics - San Jose Duo |
| [bgl-cci-vpn-cluster-appd.cisco.com/ssl](https://bgl-cci-vpn-cluster-appd.cisco.com/ssl) | Bangalore | ~ CCI AppDynamics - Bangalore Duo |
| [Aer-cci-vpn-cluster-appd.cisco.com/ssl](https://aer-cci-vpn-cluster-appd.cisco.com/ssl) | Almere | ~ CCI AppDynamics - Almere Duo |

To access machines use generic-vm private key that designed for public use on cloud machine templates.

## Ansible controller host

As far as main approach is to use ansible, your initial and final point would be here, on ansible controller.

Everything is prepared on that host to start help you automate.

[centos@ip-10-97-10-167 ~]$ ansible --version

ansible [core 2.11.1]

config file = None

configured module search path = ['/home/centos/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']

ansible python module location = /usr/local/lib/python3.6/site-packages/ansible

ansible collection location = /home/centos/.ansible/collections:/usr/share/ansible/collections

executable location = /usr/local/bin/ansible

python version = 3.6.8 (default, Aug 24 2020, 17:57:11) [GCC 8.3.1 20191121 (Red Hat 8.3.1-5)]

jinja version = 2.10.1

libyaml = True

[centos@ip-10-97-10-167 ~]$ ll ansible-challenge/

total 0

[centos@ip-10-97-10-167 ~]$

### Inventory for managing hosts

First of all you need to determine some managed hosts for ansible in inventory file.

It’s allowed to create you YAML-based inventory, so as INI-one.

<https://docs.ansible.com/ansible/latest/user_guide/intro_inventory.html#intro-inventory>

Great reference is on the docs where

ansible\_host is very useful parameter for storing in inventory.

You may find that for some of your hosts are non-standard, with different users or systems.

That could be also managed with ansible.

* ansible\_user for ubuntu-based host would required.
* Ansible communicates with Windows with ntlm using winrm module <https://docs.ansible.com/ansible/latest/collections/ansible/builtin/winrm_connection.html>

### Ping from ansible

Once you have any host with it’s own name in your inventory file you may check basic communication between ansible controller and managed host

[centos@ip-10-97-10-167 ansible-challenge]$ ansible tomcat -m ping -i hosts

tomcat | SUCCESS => {

"ansible\_facts": {

"discovered\_interpreter\_python": "/usr/bin/python3"

},

"changed": false,

"ping": "pong"

}

For pinging windows ansible is using other ansible module: win\_ping

<https://docs.ansible.com/ansible/2.5/modules/win_ping_module.html?highlight=win_ping>

Next step here is to install AppDynamics ansible galaxy collection:

<https://github.com/Appdynamics/appdynamics-ansible>

ansible-galaxy collection install appdynamics.agents

## AppD Controller

Login to enterprise console admin@appd

Login to controller appd@appd

Make sure that your controller is working and license is up to date.

Apply license (generate your own if outdated).

Grab the controller communication variables.

According to ansible .NET agent role example <https://github.com/Appdynamics/appdynamics-ansible>, you would need next controller parameters:

# Your controller details

controller\_account\_access\_key: "123456" # Please add this to your Vault

controller\_global\_analytics\_account\_name: "customer1\_GUID" # Please add this to your Vault

controller\_host\_name: "XXXXXXXXX"

controller\_account\_name: "customer1" # Please add this to your Vault

enable\_ssl: "true"

controller\_port: "443"

enable\_proxy: "true" #use quotes please

proxy\_host: "10.0.1.3"

proxy\_port: "80"

These variables might become common for all your agents, and it might be helpful to create a variable file and include it later, like it mentioned in other example:

---

- hosts: all

tasks:

- name: Include variables for the controller settings

include\_vars: vars/controller.yaml

## Machine-agents installation

Example from galaxy-collection is pretty straight-forward

<https://github.com/Appdynamics/appdynamics-ansible#machine-agent>

Don’t be shy with copy-paste it to your own ansible playbook yaml file, include your controller variables configuration and run it.

ansible-playbook machine-lin.yaml -i hosts

After couple of minutes you would be able to get performance metrics on the Servers tab of controller.

### TIP

If you want to get verbose output on what’s happening behind the scenes while executing playbook, just add -v, -vv, or -vvv

ansible-playbook machine-lin.yaml -i hosts -vv

## Database agent installation

Simple role, <https://github.com/Appdynamics/appdynamics-ansible#db-agent> allows you to install DB agent.

I recommend you to install it on controller itself and make sure that it connects to controller. You might be able to do it on Admin page with DB agents tab.

## Application component: Tomcat

Based on role from galaxy collection

<https://github.com/Appdynamics/appdynamics-ansible#instrument-apache-tomcat>

Don’t forget apply variables from the var file

One word about setenv.sh – it’s a Catalina script which is started with initial java process. Your environment might not have it. Don’t worry, role would create it for you. Only you need to take really care – proper path to setenv.sh

After successful agent registration you might generate traffic on tomcat application page:

http://<tomcat-host>:8080/examples/

http://<tomcat-host>:8080/examples/websocket/index.xhtml

Text

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As an additional playground, you’re able to log in management console of tomcat:

Management console http://<tomcat-host>:8080/manager

admin@AppDynamics!257

or tomcat@AppDynamics!257

## Application component: JBOSS

Based on role from galaxy collection

<https://github.com/Appdynamics/appdynamics-ansible#instrument-jbosswildfly>

Applying variables from the var file is a good approach instead of applying them from the ansible playbook

Instrumenting JBOSS with appdynamics roles don’t forget about user under which JBOSS is running. You’re able to figure it out right on the host.

Once you’ve done an instrumentation. You might apply a load to application:

JBOSS application is available on http://<jboss-host>:8080/ping/

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Management console is also available on JBOSS for user

admin@Admin!2

## Application component: IIS application pools

Based on role from galaxy collection

<https://github.com/Appdynamics/appdynamics-ansible#net-agent>

Working as expected except one small point. IIS running application pools with .net version 4.0, so consider it while setting up playbook.

Also, you may consider including restart\_app field to automatically pick up application pool processes with .net agent.

To perform load on application pool, there is a powershell script stored on the host.

C:\Lab\GenerateLoad.ps1

You may decide on your own way – run it from ansible, or by the hand.

## Application component: BDR

Java agent role <https://github.com/Appdynamics/appdynamics-ansible#java-agent>

designed for delivering java agent to the host and configure default controller.xml configuration file with controller communication and application – tier – node naming.

Don’t forget that main approach is to deliver every change you need to do on the host with ansible.

In that challenge part you required to design additional tasks in your playbook that would help application start with proper settings.

### Application

Application is BDR onboarding lab with three components running and communication each other.

Both are .net for linux based. You’re able to manage application using /home/centos/BDR/start\_BDR.sh

/home/centos/BDR/stop\_BDR.sh

### Install agent with ansible

You might consider that additional setup for starting app required.

To achieve it, look on lineinfile ansible module. It would allow you to rewrite any file with conditions

### TIP

Ensure to add the -javaagent argument before the -jar argument.

You might dig into concept of ansible playbooks running with handlers. Notifying handler after task might trigger the handler itself.

## Application component: .net core on linux

Based on dotnetcore role from galaxy collection <https://github.com/Appdynamics/appdynamics-ansible/tree/master/roles/dotnetcore>

.net core role designed for delivering.netcore libraries to the host and configure default AppDynamics.json configuration file with blocks about controller communication, application – tier – node naming and full agent feature.

Don’t forget that main approach is to deliver every change you need to do on the host with ansible.

In that challenge part you required to design additional tasks in your playbook that would help application start with proper settings.

### Application

Application is RestaurantGuide API layer, which contains of two components:

Gateway,

OrderFullfillment.

Both are .net for linux based. You’re able to manage components using /home/centos/startAll.sh

/home/centos/killAll.sh

Application logs stored on each folder separately:

/home/centos/Gateway/applogs.txt

/home/centos/Orderfulfilment/applogs.txt

### .NET Core agent installation

<https://docs.appdynamics.com/21.6/en/application-monitoring/install-app-server-agents/net-agent/net-agent-for-linux/install-the-net-agent-for-linux>

To install and run agent properly you would need to specify environment variables with at least 3 variables CORECLR\_\*.

Also you might rewrite configuration file properties with env variables.

Talking a bit more about env variables, they might be applied to the process when it starts.

### Generating load

As far as application is API based, we might load it internally with swagger, or with any POST sender you have.

https://<netcore-host>:6001/swagger

It’s starting up with self-signed certificate, so cert error might occure.

Try out at first create couple Guests.

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To combine and communicate with both application components you might decide to trigger registration visit with restaurantid: 1 (that one exists in DB)

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### TIP

Take a look on starting app script with attention.

Piece of advice here is to start .net applications with env variables. That could require modifying start up scripts.

I used blockinfile ansible module to achieve it. Pretty sure, you are smart enough to repeat it, or even more, design your own way.

You might dig into concept of ansible playbooks running with handlers. Notifying handler after task might trigger the handler itself.

## Conclusion

Hope that you have picture similar to that on your controller:

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## LEARN ANSIBLE

If you like the ansible and want to know more, there are two excellent courses on udemy.

For beginners

<https://cisco.udemy.com/course/learn-ansible/learn/lecture/7133354#overview>

Advanced ansible

[https://cisco.udemy.com/course/learn-ansible-advanced/learn/lecture/7687716](https://cisco.udemy.com/course/learn-ansible-advanced/learn/lecture/7687716%20%201.5)