



- Inorder to run the software application on the IaaS infrastructure, application deployers has to do the below.
1. download the appropriate platform software that is needed for running the software application
 2. procure necessary licensing to use them
 3. install the platform software on the IaaS infrastructure and perform necessary configurations needed for running the application
- Most of these platform softwares are complex to install and configure, there will be separate administrators like
1. Weblogic server administrators
 2. Oracle database server administrators
 3. IBM Webspehere administrators
- etc
- Need to hire the specialized resources and deploy them on the job of installing and configuring them
- Every platform software can be installed and configured in multiple modes like
1. standalone
 2. cluster = the software is installed/configured to work on array/multiple machines
- We need specialized resources/team that are highly skilled in installing/configuring these platform softwares on cluster environment
- cluster installations: complex and very time-consuming
4. There is no guarantee the platform software that is installed and configured works in the production environment. So we need someone to validate the installation/certify it that it works on the production-grade environment
 1. security team
 2. performance engineering team
 5. Whenever the topology of the application is changed, the platform software administrators has to spend lot of time in tuning or configuring the platform software in adding or removing a node to the cluster. (scale-out/scale-in): of the platform software should be taken care manually by the platform software administration team.
 6. backup/restoration of the platform software on the Infrastructure should be managed by the platform software administration team
 7. upgrading/patching of the platform software should be taken care by the Platform software administration team. (post upgradation/patching) : certifying the env should be taken care by platform team

All the above duties/responsibilities in managing the platform softwares has to be done at a scale (lot of machines) in a enterprise business environment. So the time required in carrying these duties is very high

So to help us in automating most of these takes or activities devops tools are brought into picture

The business organization has to hire team of devops engineers that takes care of implementing the automation process in managing these platform softwares. The devops engineers has to identify what are the platform softwares/configurations that are required for running the software applications and use devops tools like

1. shellscripting
2. python
3. ansible
4. chef
5. puppet
6. salt stack

etc

in installing and configuring these platform softwares through automation.

For eg.. upon procuring the infrastructure from IaaS provider (cloud, datacenter etc), the devops engineers quickly runs these automation scripts that are written using any of the above technology stack, that will install/configure the necessary platform softwares on the infrastructure so that the env will be ready for deploying/hosting the application.

But there are lot of challenges in the above process:

1. need to hire expertise devops engineers who are skill-full in devops tools and necessary platform softwares as well
2. should invest huge amount of time/cost in implementing the automation for installing/configuring the platform softwares through automation scripts
3. validating the infrastructure produced by these automation has to be done
4. patching/upgradation has to be handled through automation

It looks like hand-in-hand upon procuring the infrastructure from IaaS managing/maintaining the Platform software along with cloud lifecycle operations like

1. provisioning (run platform software automation scripts in installing)
2. deprovisioning (run platform software automation scripts to uninstall / backup any data/configurations necessary)
3. scale-out/scale-in (need to have scripts in-place to configure platform software for adding/removing a node to the cluster)
4. scale-up/scale-down (during these operations the IaaS will be restarted, we need to have automation scripts to bounce the platform software across all the nodes of the cluster)
5. backup/restore = The IaaS provider is responsible for backing up the infrastructure and restore when crashed. but we need to have necessary automation scripts in backing up the platform software bits/configurations, so that incase of crash we should be able to restore them
6. start/stop/restart = again automation scripts should be in-place to handle the restart of the infra

From the above we can understand either manually or through devops automation managing the platform software on the IaaS infrastructure is an tedious job and incurs huge cost, time and maintainance required in running them.

To overcome all the above challenges in installing/configuring and managing the lifecycle of the platform softwares, the cloud providers has provided PaaS services.

PaaS (Platform as a Service) service

Most of the cloud providers offers PaaS services aspart of their cloud platform.

Cloud Provider = PaaS (managed service: database)

oracle database server instance

- |-IaaS
- |-PaaS (downloading, licenses, installing, configuring) database

provision (standlone/cluster): oracle database 12c instance (cloud provider: all the industry best-practices) = dont need to certify or validate this env

- security
- performance
- production (works)

max: 10 minutes

deprovision = backup data

scale-out/scale-in = database cluster

scale-up/scale-down = restart database cluster

backup/restore

start/stop/restart = paas service