



Azure Automation Platform (AzAP)

Problem Statement

The requirements of AzAP, sourced from multiple connects with various esteemed customers of Wipro, across the sectors and internal Architect Hubs of Wipro. The objectives of the platform, from the very beginning, was to identify various real-time challenges of cloud infrastructure and configuration deployment and resolve the same with an automation platform.

- A platform to support Azure resource deployments with responsive user interface and best practices.
- Provision of cloud based big and complex enterprise architecture using readymade blueprints.
- Provision of creating architecture from scratch and as per the business requirement.
- Provision of creating architecture blueprints.
- Management of Azure resources and properties.
- Configuration of deployed infrastructure resources.
- Management of configuration and properties.
- A low code platform for utilizing the modern IaC technologies for cloud resource deployments and configurations.
- Maintaining infrastructure and configuration deployments through various phases of deployments, like Validation, Deployment, Rollback.

Features

Capabilities

Infrastructure

Blueprint

- **One click** creation of Infrastructure projects using readymade blueprints.
- **Flexible and scale out** options for infrastructure architecture creation.
- **Easy navigation** for blueprint search using categories and easy understanding of blueprint architecture through pictorial presentation.
- **DIY** option for infrastructure architecture creation from scratch.

Deployment

- **Management of deployment life cycle with well defined states**
- **One click trigger** for deployment validate, deploy and rollback.

- **8 E2E** readymade architecture blueprints
 - Azure Windows VM Blueprint
 - Azure Linux VM Blueprint
 - N-Tier Web App (IaaS)
 - N-Tier Web App (PaaS)
 - Application Integration using Azure Event Grid
 - Basic enterprise integration on Azure
 - Azure Functions in a hybrid environment
 - Deploy Microservices with Azure Container Apps
 - Mobile Applications
 - Modernize Enterprise Applications with Azure Service Fabric
- **15+** basic infrastructure blueprints

Configuration

- **One click** creation of Configuration projects
- **Flexible and scale out** options for configuration setup

Deployment

- **Management of deployment life cycle with well defined states**
- **One click trigger** for deployment

- **5+** re-usable Ansible playbooks
 - Apache web server role for Linux
 - IIS web server role for Windows
 - SQL DB server role for Windows
 - Vnet Peering role
 - Ping

Others

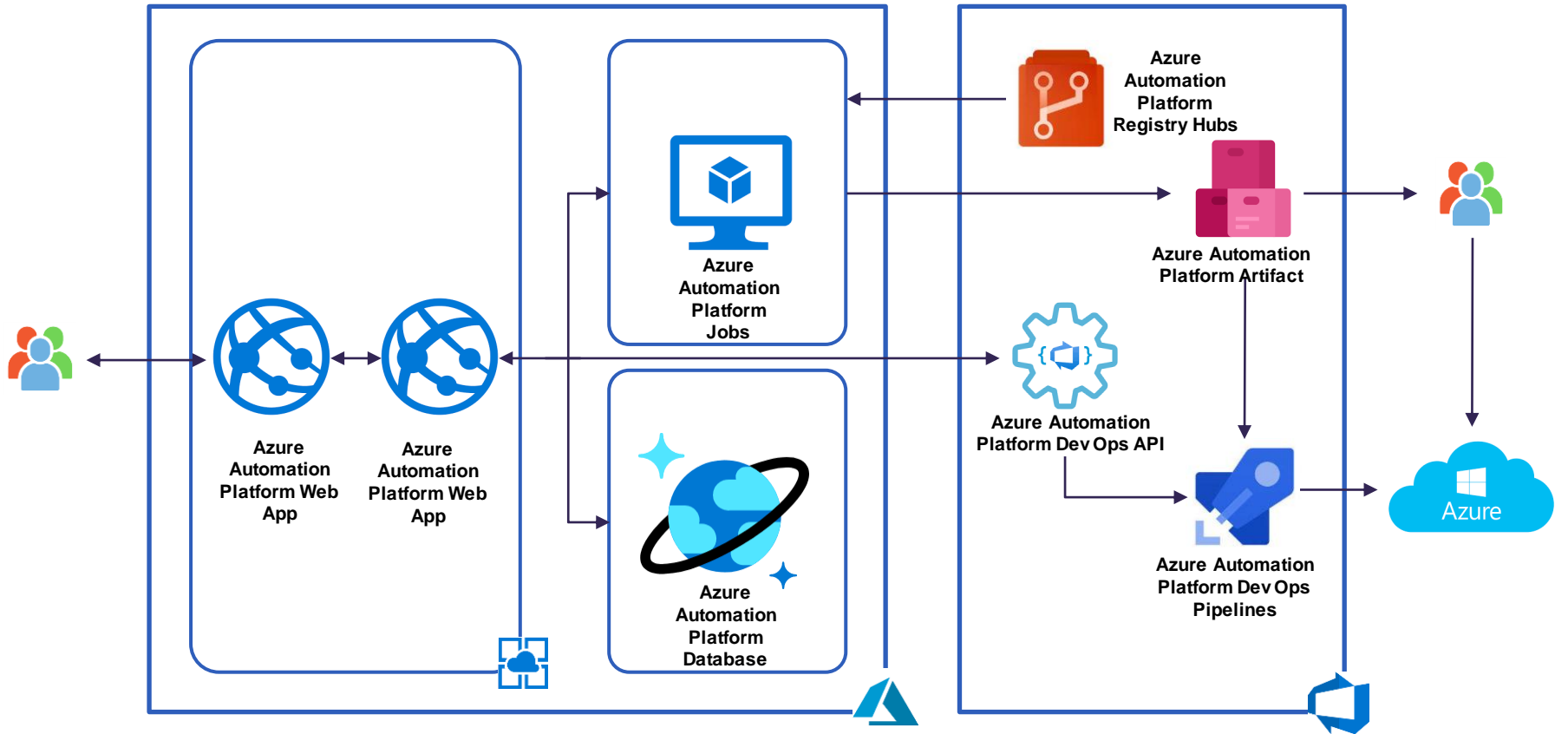
- Create and Manage Terraform, Ansible resources
- Create and Manage infrastructure blueprints

- **70+** re-usable Terraform modules

Business Benefits

- Helped to reduce 80% of time on deployment, configuration & management.
- It Manages the services using a simple GUI.
- Teams within an organization can easily collaborate on the infrastructure using the terraform registry.
- Easily generate repeatable infrastructure for various environments with ready-made Blueprints.
- Configure software easily using Ansible playbooks.
- Provides secure authentication using SSH.
- It uses human readable YAML files for configuration management, so no additional coding skills are required.

Architecture



- This section describes the solution architecture of AzAP in detail. The platform is hosted on Azure. For easy deployment and management of the various components of AzAP, Platform as a Service (referred as PaaS hereafter) solutions of Azure have been used extensively, compare to other models, like Infrastructure as a Service (referred as IaaS hereafter), etc.
- The above diagram represents AzAP solution architecture, covering all technical components and their connectivity/relationships with each other.

Components	Description
AzAP Web Application	<p>AzAP web application is an Angular based web application. User can access the web application using web browser. The web application is responsive is nature.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none"> • Azure App Service • Angular v-12.0.5
AzAP API Application	<p>AzAP API application is a .NET Core based web API application. The application connects various components of AzAP to each other. Based on the design principal adopted for AzAP, all the components are made de-coupled to each other. The relationships are established using the web API application only. The API application is hosted in Azure App Service.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none"> • Azure App Service • Web API .NET Core 3.1



Components	Description
AzAP Scheduler Jobs	<p>AzAP Scheduler Jobs are group of PowerShell scripts which are scheduled to run using Windows Scheduler Tasks. The scripts and scheduler tasks are hosted inside an Azure Windows VM. The jobs perform the long running back heavy duties, such as –</p> <ul style="list-style-type: none"> • Deployable NuGet package creation for infrastructure and configuration deployments • Automated writing of Terraform and Ansible files • Cloning of required modules from AzAP Registry Hubs • NuGet package upload to AzAP Artifact library <p><u>Solution Components</u> Azure Windows VM NuGet PowerShell PowerShell Modules for newtonsoft.json and YAML Go Lang Go Lang Modules for Hashicorp Configuration Language (referred as HCL hereafter) GIT SCM</p>
AzAP Database	<p>The database is a MongoDB database. The database is hosted in Azure Cosmos DB API for MongoDB. All data associated with AzAP are stored in the database.</p> <p><u>Solution Components</u> Azure Cosmos DB API for MongoDB</p>





Components	Description
AzAP Registry Hubs	<p>AzAP itself maintains its own registry hubs for Terraform and Ansible modules. There are 2 main registry hubs, Terraform and Ansible respectively. The registry hubs are implemented on Azure DevOps repositories.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none"> • Azure DevOps • Azure DevOps Repo
AzAP DevOps API	<p>AzAP consumes various Azure DevOps APIs for deployment automation, such as triggering various deployment pipelines.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none"> • Azure DevOps APIs




Components	Description
AzAP Artifact Library	<p>AzAP creates various infrastructure and configuration deployment packages in NuGet format. Once the packages are created; uploaded to AzAP Artifact Library by the AzAP Scheduler Jobs.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none">• Azure DevOps Artifact
AzAP Pipelines	<p>AzAP provides options for deployment of infrastructure and configuration to Azure cloud resources. The deployments are accomplished using the Azure DevOps Pipelines.</p> <p><u>Solution Components</u></p> <ul style="list-style-type: none">• Azure DevOps Build and Release Pipelines• Azure DevOps Terraform Extension• Azure DevOps Ansible Extension




Application Screenshots

 **AzAP - Azure Automation Platform**

Welcome  **Debomita Roy (Americas 2 - IDEAS-AEM)!**

- Home
- Dashboard
- Infrastructure 
- Blueprint 
 - All
 - IaaS
 - PaaS
 - iPaaS
 - CaaS
- Project
- Deployment (Infra)
- Configuration 
 - Project
 - Deployment (Config)
- Cost

Popular Blueprints




Azure Windows VM Blueprint

Deploy Azure Windows VM through readymade blueprint.

[Reference Architecture](#)

[Create](#)




Azure Linux VM Blueprint

Deploy Azure Linux VM through readymade blueprint.

[Reference Architecture](#)

[Create](#)




Blank Blueprint

Create your own infrastructure project from scratch.

[Reference Architecture](#)

[Create](#)




N-Tier Web App (IaaS)




Deploy N-Tier Web App (IaaS) through readymade blueprint.


[Reference Architecture](#)

[Create](#)

Features and Benefits

- Automate Infrastructure** 

AzAp is Infrastructure as Code (IaC) Platform for Infrastructure automation on cloud. It Manages the services using a simple GUI. Teams within an organization can easily collaborate on the infrastructure using the terraform registry. Integration with continuous integration platforms like Azure Devops for deploying DevOps pipelines. Easily generate repeatable infrastructure for various environments with ready made Blueprints.
- Automate Configuration** 
- Deployment project lifecycle management** 
- Cost monitoring** 

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Deployment

Project	Environment	Validate	Deploy	Configuration	Decommission
NTierWebAppPaaSdeb					
	DevNTierWebAppPaaSdeb	Validate Logs	Deploy Logs		Decomm Logs
WinVM02Debomita					
	WinVM02DebomitaEnv	Validate Logs	Deploy Logs	Config	Decomm Logs
Windows_VM_Test01					
	Windows_Env01	Validate Logs	Deploy Logs	Config	Decomm
	Windows_Env01-41	Validate	Deploy	Config	Decomm

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Project

Host Group

Association

Playbook

Review & Submit

Add/Edit Project Config:

Project Configuration Id

Project Configuration Name *

Enter Project Name

Project Configuration Description

Enter Project Description

Save

Search By Project Name

List Of Projects:

S.No	Project Name	Description	Status	Created On	Updated On	
1	windowconf01	windowconf01	draft	17/08/2022 07:00 PM	17/08/2022 07:04 PM	