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Microsoft Azure DevOps Solutions Certification (AZ-400)

COURSE OUTLINE

Azure AZ-400

MODULE 1: Introduction to Azure DevOps

MODULE 2: Implementing Continuous Integration

MODULE 3: Build Containers with Azure DevOps

MODULE 4: Designing a Dependency Management Strategy and Managing

Artifact Versioning

MODULE 5: Setting up Release Management Workflow

MODULE 6: Implementing Deployment Models and Services

MODULE 7: Implement and Optimize Continuous Feedback Mechanism

MODULE 8: Azure Tools: Infrastructure and Configuration, and Third-Party Tools

MODULE 9: Implementing Compliance and Security

MODULE 10: Azure Case Studies

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Implementing Deployment Models and Services

Topics

Following are the topics covered in this module:

- Deployment Modules and Deployment Options
- Azure IaaS and PaaS Services
- Serverless and HPC Computer Services
- Azure Service Fabric
- Deployment Patterns

Objectives

After completing this module, you should be able to:

- Understand deployment modules and deployment options
- Configure Azure IaaS and PaaS
- Configure serverless and HPC computer services
- Set up Azure Service Fabric
- Implement deployment patterns
- Demonstrate Feature Flag Management using LaunchDarkly
- Deploy a dockerized app to Azure web app for containers

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TCS Solutions

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IT Services by TCS

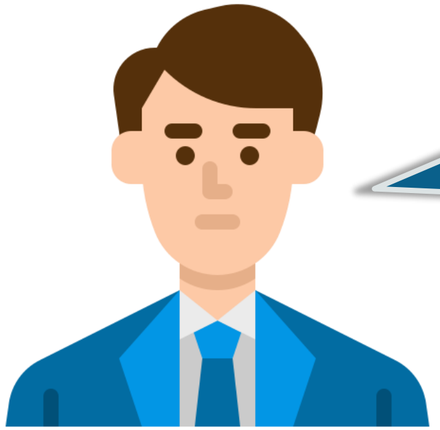
- Tata Consultancy Services is an Indian multinational information technology services and consulting company. It provides web development services for other organizations. So, problems are inevitable
- TCS hired Mr. Rajesh as a DevOps Engineer to address the issues and cater business to other organizations

The Issues

There are two issues that TCS is facing:

- While deploying the application separately → When ever there is a requirement, the application has to be deployed separately. This is a real challenge most of the times
- While scaling the application when required → For companies like Flipkart, there is a requirement of scaling the application during the Big Billion Sale since there is a lot of traffic faced these days

The Research



Mr. Rajesh
DevOps Engineer

I’ve finished my research. The two issues can be addressed by using:

- Docker-based deployment
- Implementing feature flag management using LaunchDarkly

The Solution (Contd.)

Docker

- Docker makes it easier to create, deploy, and run applications by using containers
- Containers allow a developer to package up an application with all the parts it needs

Feature Flag Management with LaunchDarkly

- Feature flags help separate eployment from release
- LaunchDarkly enables development and operations teams to deploy code at any time, even if a feature isn't ready to be released to users

Introduction to Deployment Modules and Deployment Options

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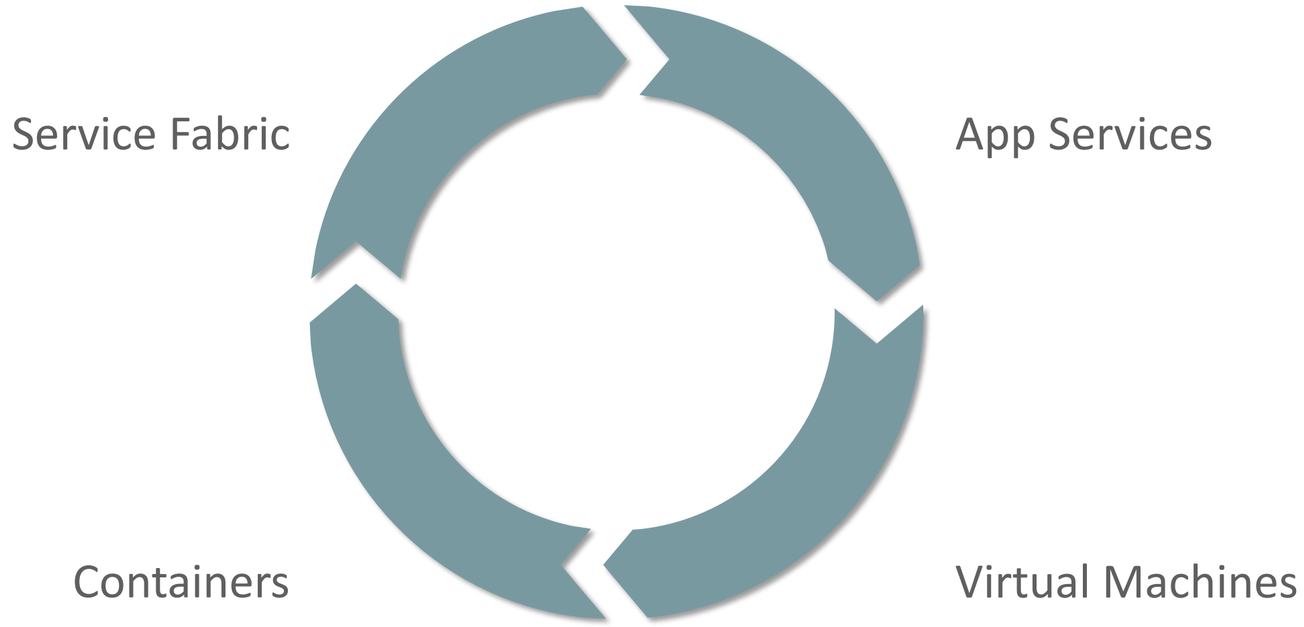
Deployment Module: Overview

Deployment modules refer to the modes of deployments available for applications. They can be deployed as:

- Platform as a service (PaaS)
- Infrastructure as a service (IaaS)

Deployment Options

Deployment Options are used for application deployment on PaaS and IaaS.



Deployment Options: App Services

It is a service option provided by Azure, which maintains the underlying infrastructure. The services include:

Web App: To host a web application

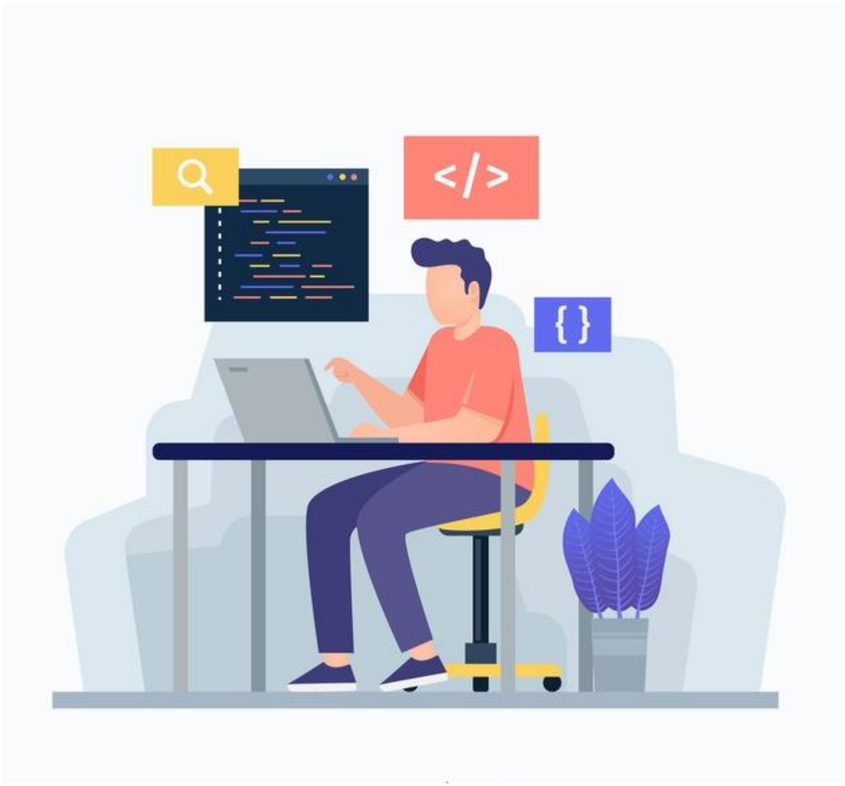
Mobile App: To host the backend application

Function App: To write a function

Logic App: To configure workflow

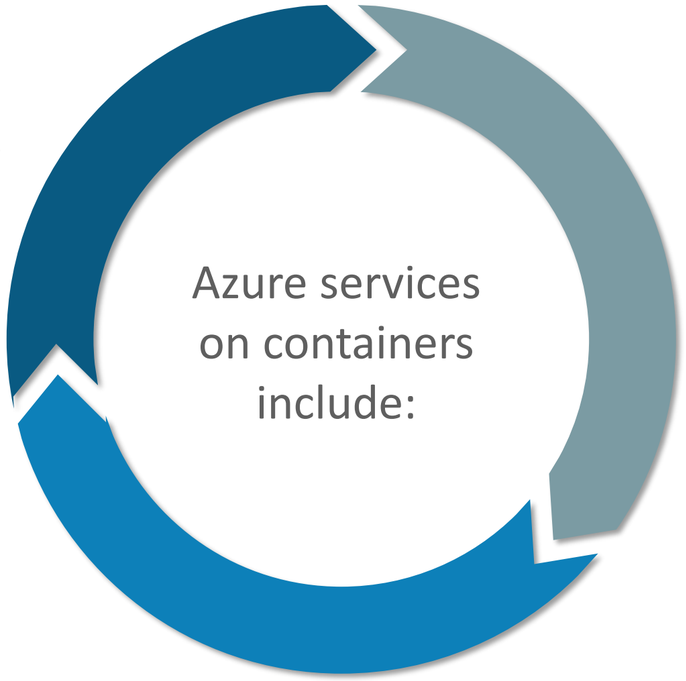
Deployment Options: Virtual Machines

Virtual Machine is a service provided by Azure (part of IaaS).



Deployment Options: Containers

A container is used for application deployment and for packaging the application and all of its dependencies.



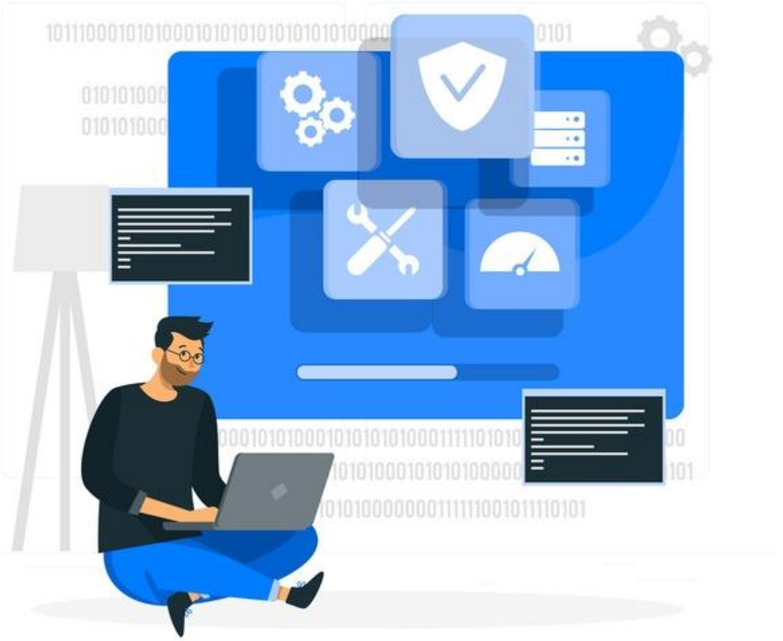
Azure Container Registry

Azure Kubernetes Service

Azure Container Service

Deployment Option: Service Fabric

It is a distributed systems platform that helps in packaging, deploying, and managing microservices and containers.



Azure IaaS and PaaS Services

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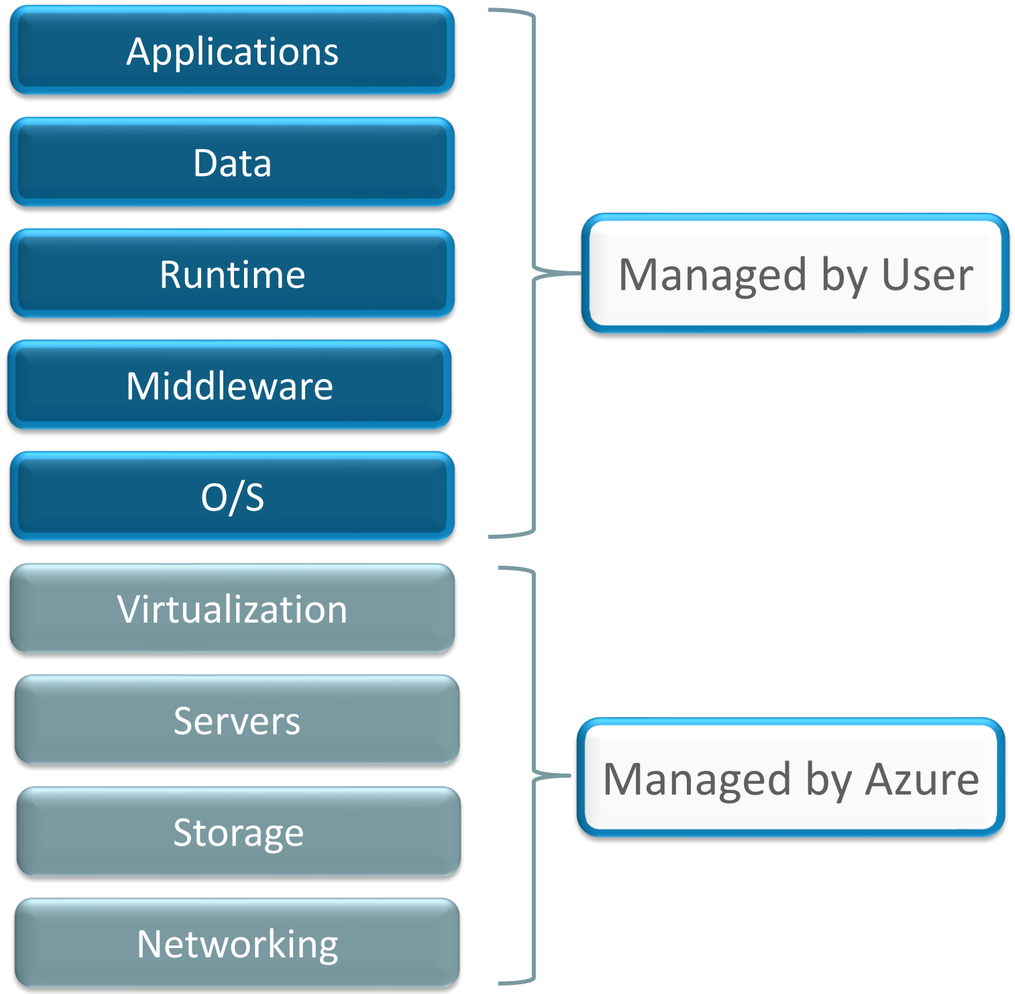
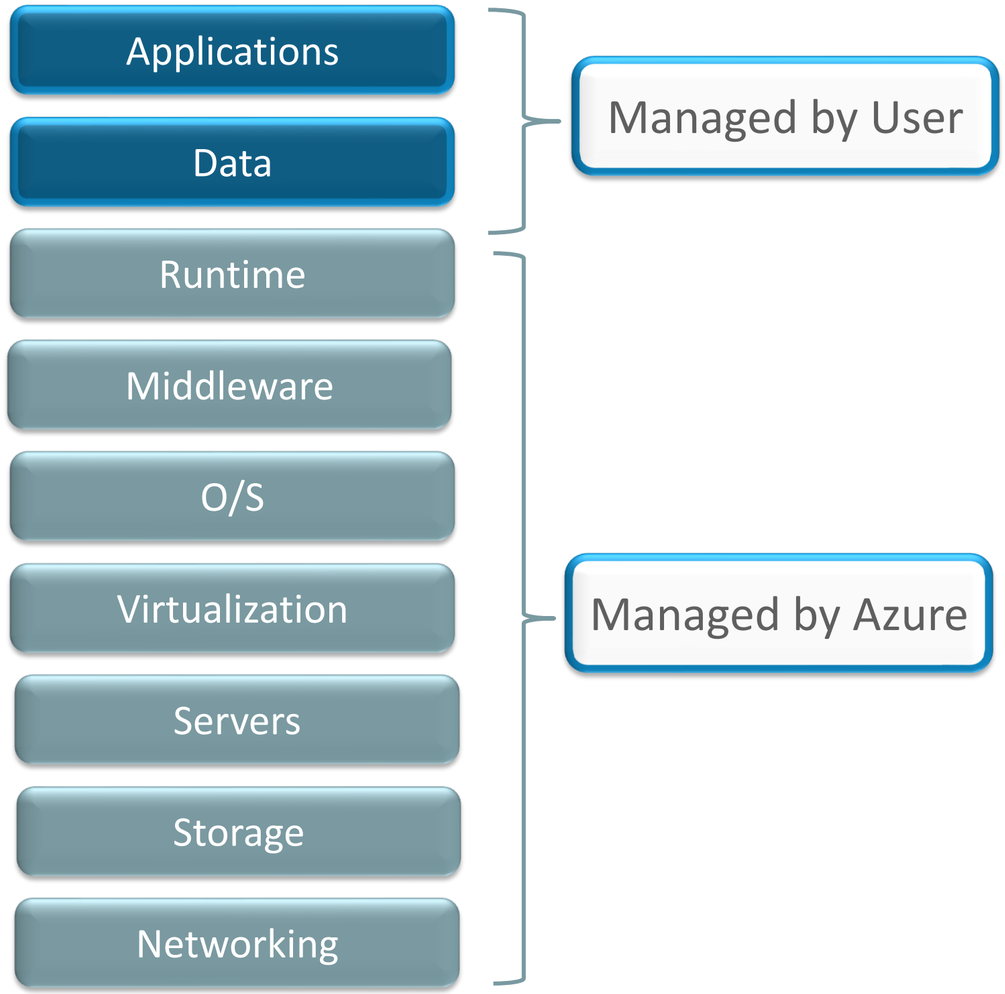
Azure IaaS Services

Azure IaaS Services host the infrastructure components available in an on-premises data center, helping in quickly creating a hybrid environment while mitigating the infrastructure costs.



Azure PaaS Services

Azure Platform as a service is a development and deployment environment where applications are developed and deployed.



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Serverless and HPC Computer Services

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Serverless Services

It helps build applications faster by eliminating the need to manage infrastructure

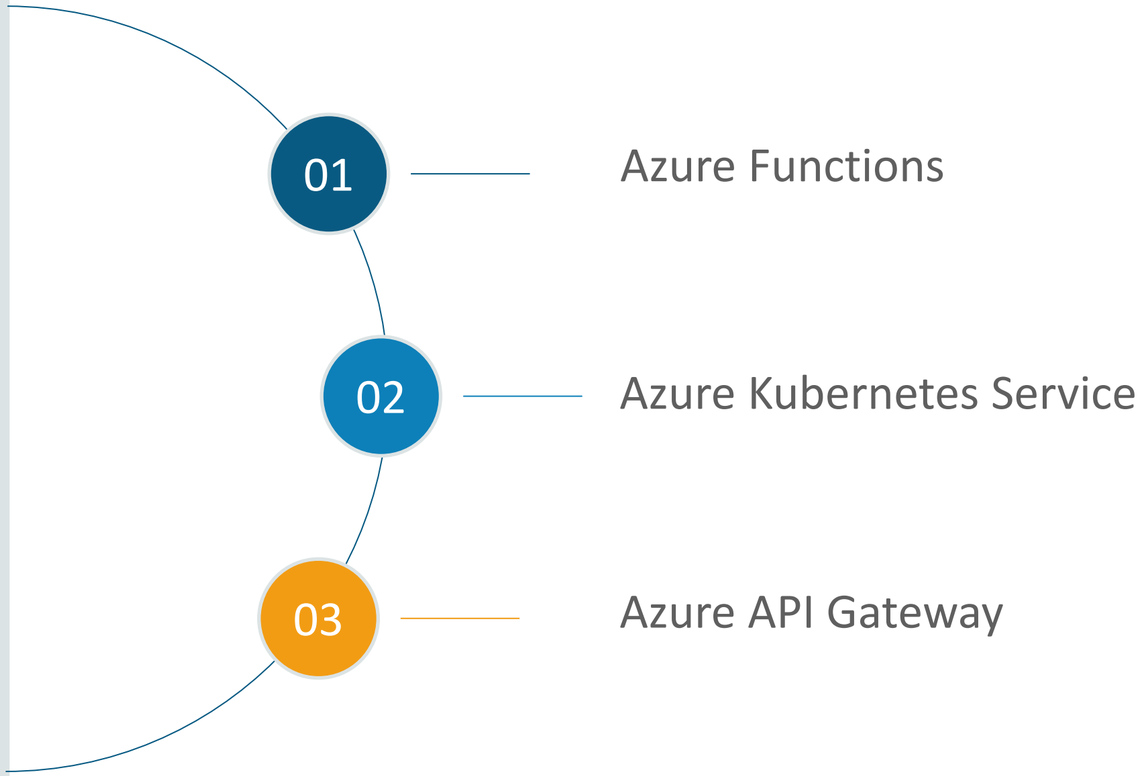
It helps strengthen the focus on business logic and deliver more value

It helps in optimizing resources

Benefits of Serverless

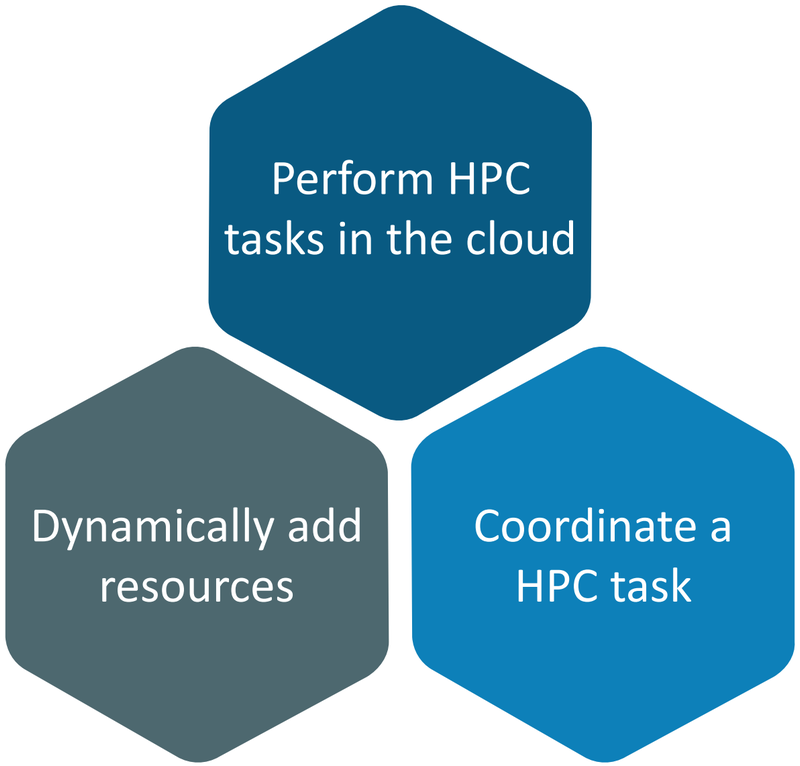
Azure Serverless Services

Azure offers the following serverless services:

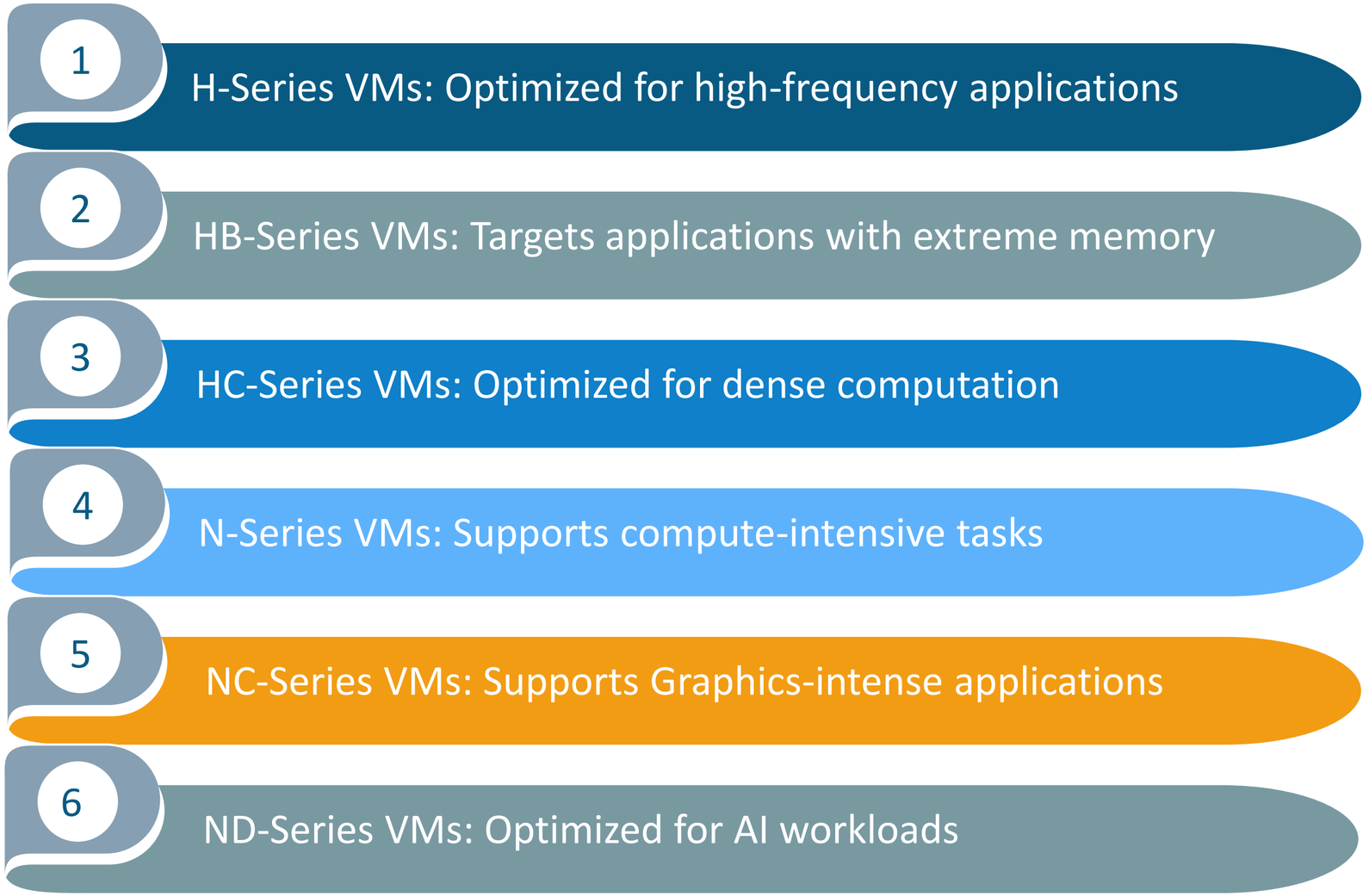


HPC

HPC refers to High Performance Compute resource and is used to perform complex calculations. Azure helps to:



VM Instances Supporting HPC



Azure Service Fabric

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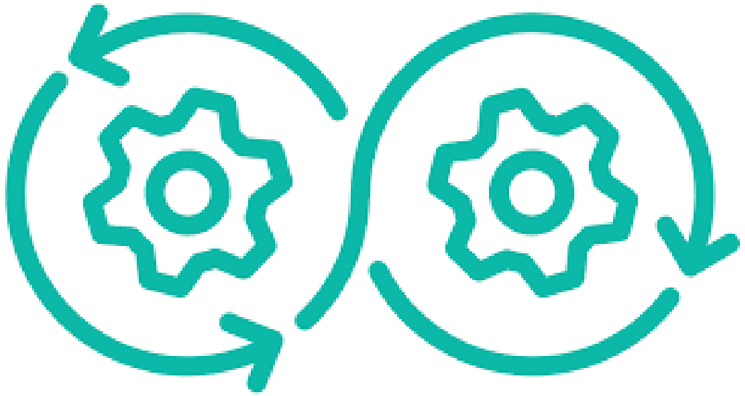
What is Azure Service Fabric?

Azure service fabric is an azure service used for Microservice-based development.

The application can be split into various microservices with isolated functionality



Containers containing the microservices can be deployed to Service Fabric

Service Fabric: Advantages

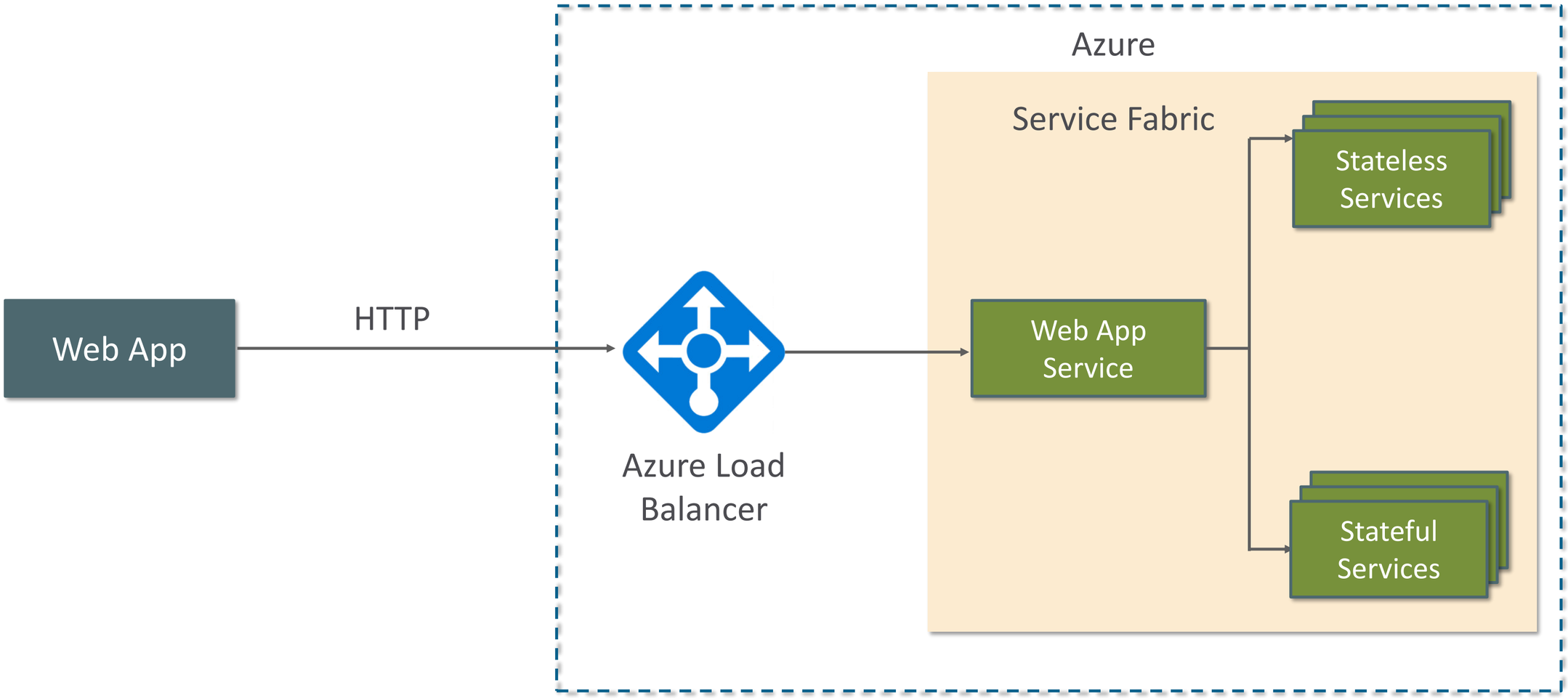
Scalability of individual microservice

Development of stateful or stateless application

Quick application deployment

Connectivity to CI/CD tools

Service Fabric: Architecture



Introduction to Deployment Patterns

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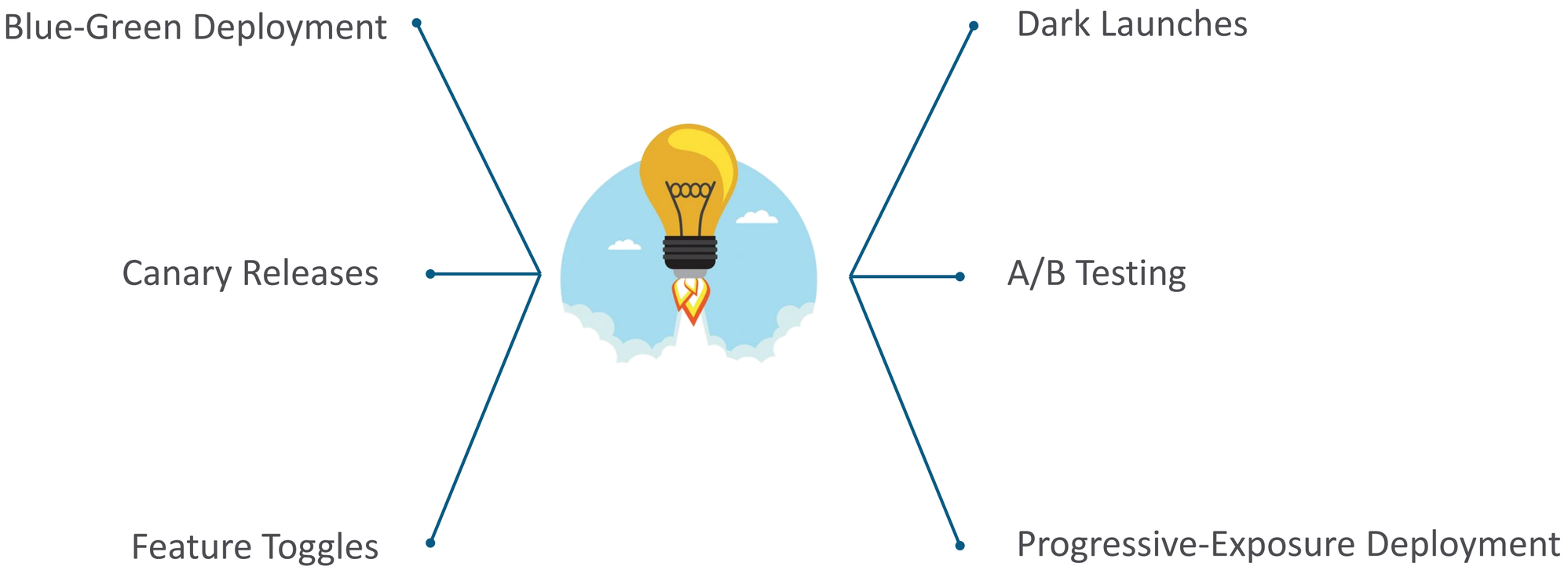
Deployment Pattern

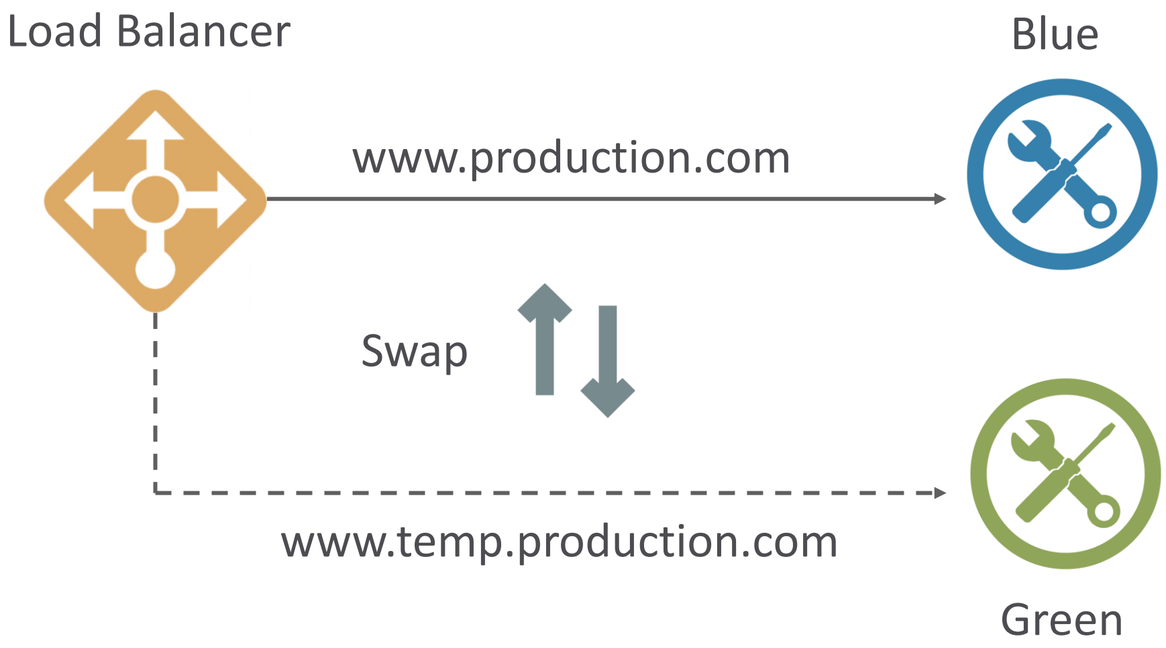
Deployment pattern refers to automating the deployment of the application with accuracy and the least downtime.

Deployment Patterns: Types



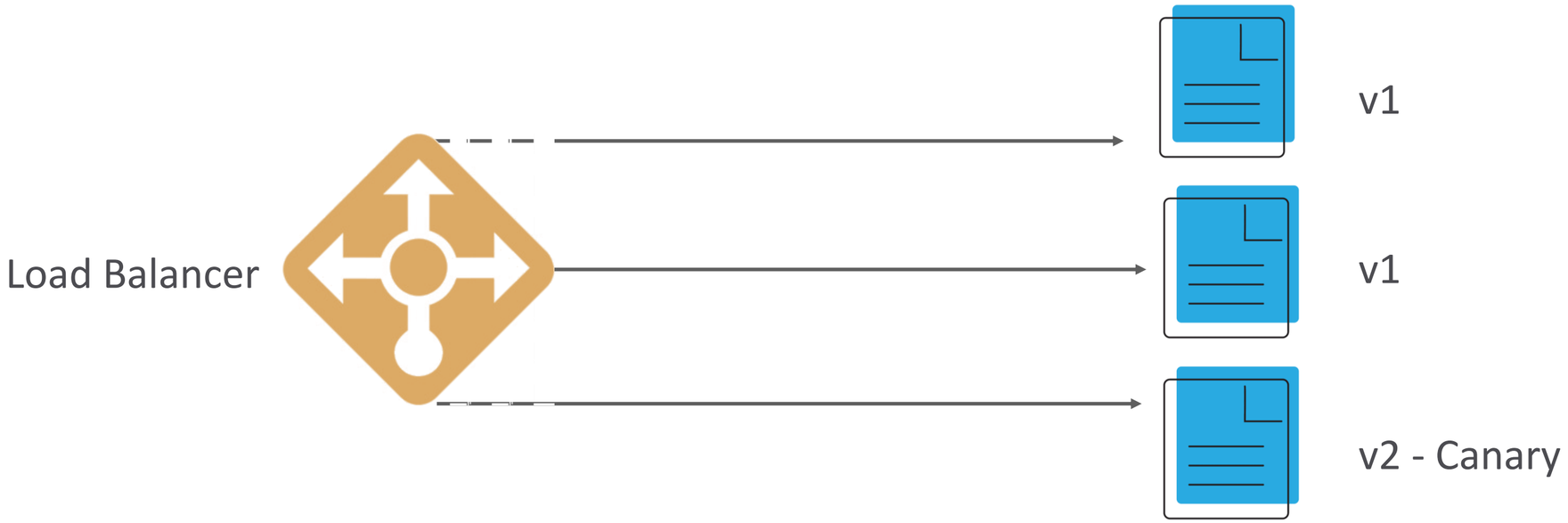
Blue-Green Deployment

This pattern involves two identical deployment servers: One live server and the other for testing.



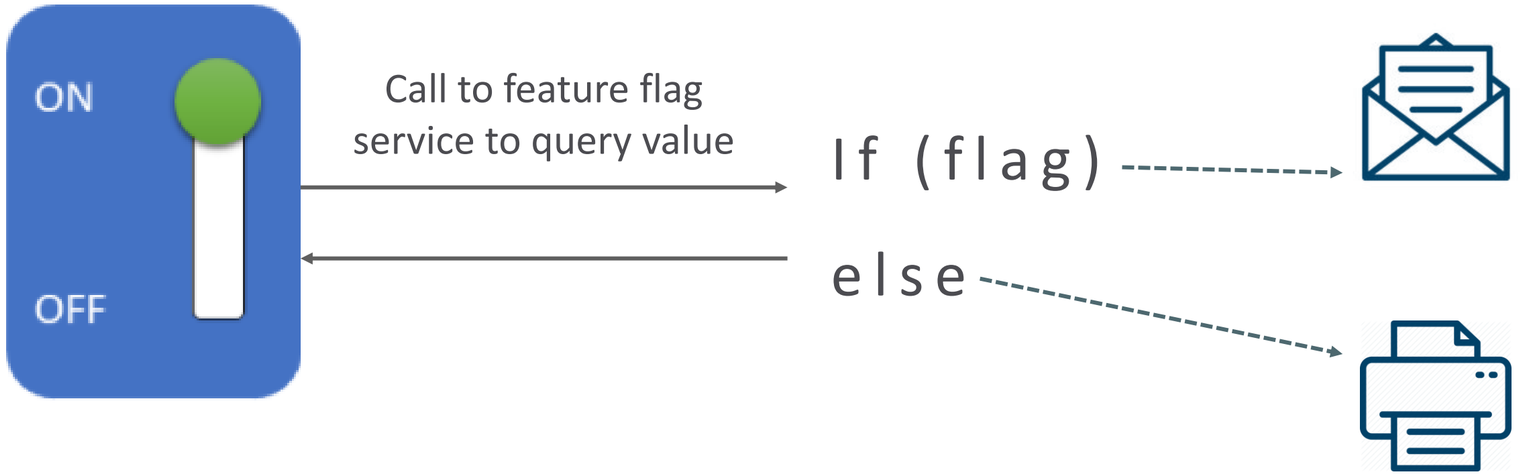
Canary Releases

- In this pattern, new features are exposed to only some users
- Issues are fixed and users are directed to v2-canary deployment



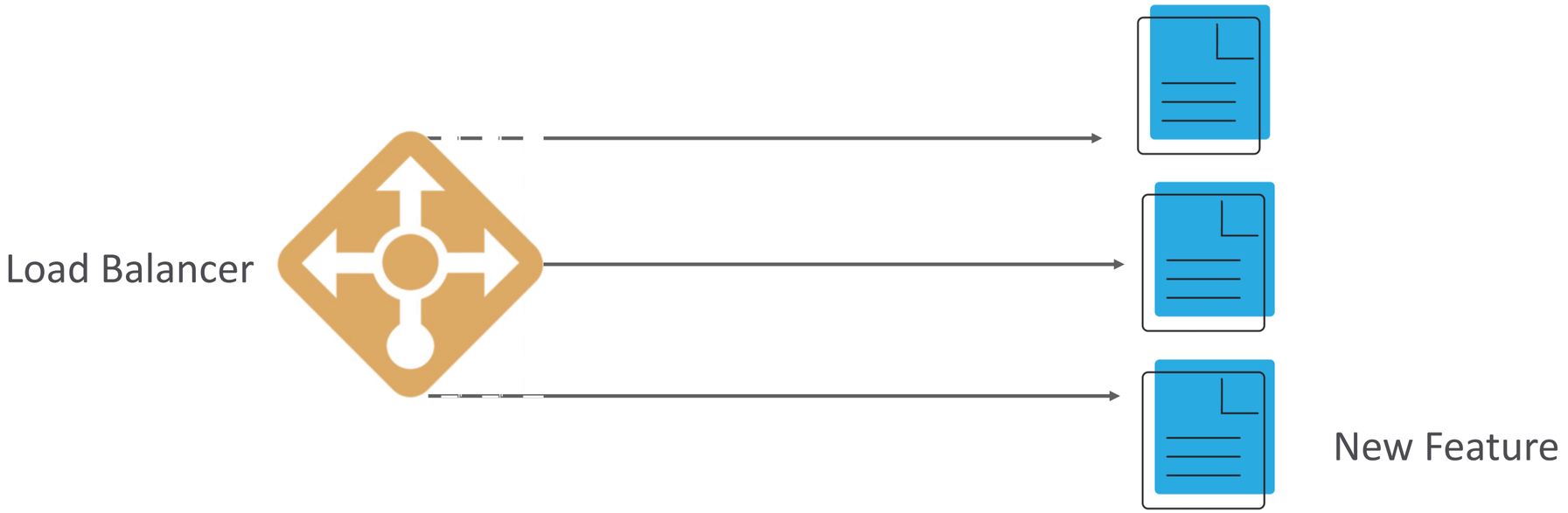
Feature Toggles

It uses feature toggling like on/off. It is a kind of conditional access for users to roll back changes.



Dark Launches

- It is similar to canary release and Feature Toggles
- The difference in this pattern is that the user is not aware of the new features



A/B Testing

A/B Testing compares two versions of a webpage or app to determine which performs better

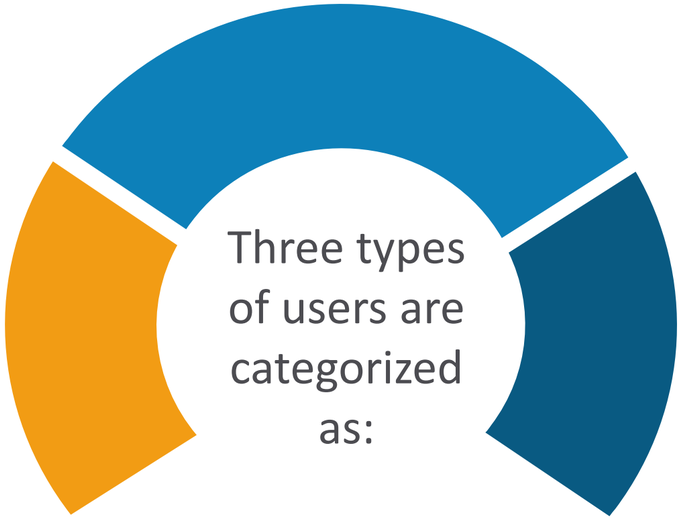
Progressive-Exposure Deployment

It allows the release to various types of users progressively

Progressive-Exposure Deployment: Types

Early Adopter: The deployment happens for early adopters after getting the required approval

Canaries: These users voluntarily test features when released



Users: Post testing, the deployment is done to get approval

Demo: Feature Flag Management using LaunchDarkly

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Demo: Deploying a Dockerized App to Azure Web App for Containers

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Summary

Deployment Options: App Services

It is a service option provided by Azure, which maintains the underlying infrastructure. The services include:

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Azure IaaS Services

Azure IaaS Services host the infrastructure components available in an on-premises data center, helping in quickly creating a hybrid environment while mitigating the infrastructure costs.

- Applications
- Data
- Runtime
- Middleware
- O/S

Managed by User

- Virtualization
- Servers
- Storage
- Networking

Managed by Azure

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Benefits of Serverless

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VM Instances Supporting HPC

1. H-Series VMs: Optimized for high-frequency applications
2. HB-Series VMs: Targets applications with extreme memory
3. HC-Series VMs: Optimized for dense computation
4. N-Series VMs: Supports compute-intensive tasks
5. NC-Series VMs: Supports Graphics-intense applications
6. ND-Series VMs: Optimized for AI workloads

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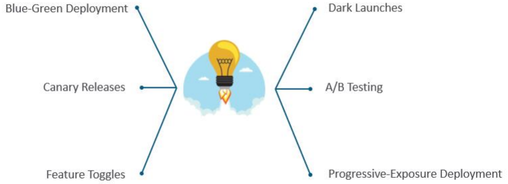
Deployment Patterns: Types



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Progressive-Exposure Deployment: Types

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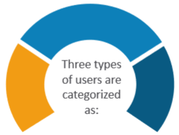

Canaries: These users voluntarily test features when released

Users: Post testing, the deployment is done to get approval

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Thank You

For more information please visit our website
www.edureka.co