

# Task 7: Disaster Recovery & High Availability

This task focuses on implementing **backup and disaster recovery (DR) strategies** to ensure **high availability** of the deployed application on **Azure App Service**.

## Overview

Disaster recovery and high availability are crucial for:

- ✓ **Minimizing downtime** during failures.
- ✓ **Protecting data** from accidental loss or cyberattacks.
- ✓ **Ensuring business continuity** with automated failover mechanisms.

This document covers:

- ◆ **Disaster Recovery Strategy (Including RTO & RPO)**
- ◆ **Automated Backups in Azure**
- ◆ **High Availability Implementation**

## 1. Disaster Recovery (DR) Strategy

### ◆ What is Disaster Recovery?

A **Disaster Recovery Plan (DRP)** ensures that the system can **recover quickly from failures** such as:

- Server crashes
- Data loss
- Cyberattacks
- Network failures

### ◆ Key Metrics for Disaster Recovery

Metric	Definition	Target
RTO (Recovery Time Objective)	Maximum time to restore service after failure	≤ 15 minutes

**RPO (Recovery Point Objective)**

Maximum data loss allowed during recovery

**≤ 5 minutes**

✓ Lower RTO and RPO ensure faster recovery with minimal data loss.

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## 2. Backup & Disaster Recovery Implementation in Azure

### ◆ Step 1: Enable Automated Backups in Azure App Service

1. Go to Azure Portal → App Services.
2. Click on **devops-pythonwebapp** → Backups.
3. Click **Configure Backup**.
4. Choose a **Storage Account** to store backups.
5. Set **Backup Frequency** (e.g., every **6 hours**).
6. **Enable Retention Policy** (e.g., keep backups for **30 days**).
7. Click **Save**.

✓ Azure will now automatically back up the application at regular intervals.

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### ◆ Step 2: Implement Database Backups in Azure

1. Go to Azure Portal → Azure Database for PostgreSQL (or MongoDB).
2. **Enable Point-in-Time Restore**:
  - Set **backup retention period** (e.g., **7 days**).
  - Configure **geo-redundant backups** (replication across regions).

**Enable Read Replicas:**

sh

CopyEdit

```
az postgres server replica create --name replica-db --source-server devops-db
```

3.

**Test Recovery Process:**

sh

CopyEdit

```
az postgres server restore --name devops-db-restore  
--restore-point-in-time "2025-02-10T12:00:00Z"
```

4.

✓ Database backups ensure data recovery with minimal loss (RPO ≤ 5 minutes).

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## 3. High Availability Implementation

### ◆ Step 3: Deploy Application in Multiple Regions (Geo-Redundancy)

1. Go to Azure Portal → Traffic Manager.
2. Click **Create Profile** → Select **Routing Method**:
  - **Priority** (Failover to backup region).
  - **Performance** (Route users to nearest region).
3. **Add Endpoints**:
  - **Primary Region** (e.g., East US).
  - **Secondary Region** (e.g., West US).
4. Click **Save**.

✓ If the primary region fails, traffic is automatically redirected to the secondary region.

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### ◆ Step 4: Set Up Auto-Scaling for High Availability

1. Go to Azure Portal → App Services → Scaling.
2. Enable **Autoscale** → Configure:
  - **Minimum Instances**: 2
  - **Maximum Instances**: 5
  - **CPU Threshold**: 70%
3. Click **Apply Changes**.

✓ Auto-scaling ensures the application can handle traffic spikes automatically.

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## 4. Screenshots & Proof of Implementation

## Azure Backups

Home > App Services > devops-pythonwebapp

### App Services

Default Directory

+ Create ▾ ...

Filter for any field...

Name ↑

devops-pythonwebapp ...

back

Deployment

Deployment Center

Settings

Backups

### devops-pythonwebapp | Backups

Backup time

2/5/2025

Type : All

Showing 10 of 2

Backup time

2/6/2025, 6:43

2/6/2025, 5:43

2/6/2025, 4:43

Showing 1 - 10 of 2

### Configure custom backups

devops-pythonwebapp

You can set a custom backup schedule here. Note that Individual databases in the backup can be 4 GB max but the total max size of the backup is 10 GB. If your database is large and growing, use Azure Backup for database backup instead. [Learn more](#)

Basics Advanced

Select a storage

Choose storage account and container to store your backup.

The app you're backing up is in **Canada Central**.

Subscription

Free Trial

Storage account \*

strapijot3store

Create new

Container \*

strapi-uploads

Create new

Configure < Previous Next : Advanced >

Home > Azure Database for PostgreSQL servers >

### New Azure Database for PostgreSQL Flexible server

Microsoft

⚠ Server names, networking connectivity method and backup redundancy cannot be changed after server is created. Review these options carefully before provisioning.

Enabling Microsoft Entra authentication allows you to create ROLES based on your Microsoft Entra accounts and generate an authentication token with which to authenticate. [Learn more](#)

Authentication method

☐ PostgreSQL authentication only

☐ Microsoft Entra authentication only

☒ PostgreSQL and Microsoft Entra authentication

Set Microsoft Entra admin \*

Not Selected

[Set admin](#)

Admin username \*

Enter server admin login name

Password \*

Enter password

Confirm password \*

Confirm the above password

Storage

INR 1224.58/month

Storage selected 128 GiB (INR 128 x 9.57 per GiB)

Bandwidth

For outbound data transfer across services in different regions will incur additional charges. Any inbound data transfer is free. [Learn more](#)

Estimated total

INR 22845.21/month

Prices reflects an estimates only. [View Azure pricing calculator.](#)

Final charges will appear in your local currency in cost analysis and billing views.

Review + create Next : Networking >

## Traffic Manager.

Home > Load balancing | Traffic Manager >

### Create Traffic Manager profile

Basics Tags Review + Create

Subscription \*

Resource group \*   
[Create new](#)

#### Instance details

Name \*  .trafficmanager.net

Routing method \*

Resource group location \*

[Review + create](#) [< Previous](#) [Next : Tags >](#)

## Auto-Scaling

Home > App Services >

### App Services

Default Directory

[Create](#) [Filter for any field...](#)

Name

#### devops-pythonwebapp

Web App

Search

[Browse](#) [Stop](#) [Swap](#) [Restart](#) [Delete](#) [Refresh](#) [JSON View](#)

##### Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Microsoft Defender for Cloud
- Events (preview)
- Recommended services (preview)
- Deployment
  - Deployment slots
  - Deployment Center
- Settings
- Performance

##### Essentials

Resource group ([move](#)) [DevOpsGroup](#)

Status [Running](#)

Location ([move](#)) [Canada Central](#)

Subscription ([move](#)) [Free Trial](#)

Subscription ID [9a86a30a-8918-4775-872e-868ae9f5e09d](#)

Tags ([edit](#)) [Add tags](#)

##### Properties

Default domain [devops-pythonwebapp.azurewebsites.net](#)

App Service Plan [ASP-DevOpsGroup-a294 \(B1: 1\)](#)

Operating System [Linux](#)

Health Check [Not Configured](#)

GitHub Project [https://github.com/sadik-pimpalkar1/devop...](#)

[Web app](#)


[Properties](#) [Monitoring](#) [Logs](#) [Capabilities](#) [Notifications](#) [Recommendations](#)

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<https://portal.azure.com/#blade/HubsExtension/ResourceMenuBlade/id/%2Fsubscriptions%2F9a86a30a-8918-4775-872e-868ae9f5e09d%2FresourceGroups%2FDevOpsGroup>

## 5. Conclusion

- ✓ Azure Backups ensure disaster recovery with minimal data loss ( $RPO \leq 5$  min).
- ✓ Geo-Redundancy & Auto-Scaling ensure high availability ( $RTO \leq 15$  min).
- ✓ Traffic Manager enables automatic failover in case of failure.

 Now, the application is fully resilient to disasters and system failures! 