Cloud Computing: Concept, Technology, and Architecture Project Report

20B1WCI532

Web Application hosted using VERCEL

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Deployment Process Report

Household Services Web Application Deployment on Vercel

Acknowledgment

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Abstract

This report documents the deployment process of a Flask-based Household Services web application on the Vercel platform. The project implements a comprehensive service management system with multiple user roles, real-time service tracking, and secure authentication. The deployment process utilized Vercels CLI tools and Git integration for continuous deployment, ensuring a seamless transition from development to production.

Introduction

The Household Services web application is built using Flask, a lightweight WSGI web application framework in Python. The application provides a platform for connecting service professionals with customers while maintaining administrative oversight. This report focuses on the deployment methodology and technical considerations involved in hosting the application on Vercels cloud platform.

Objective

• To document the systematic deployment process of a Flask application on Vercel
• To outline the technical requirements and configurations necessary for deployment
• To provide a reference for future deployments and maintenance
• To highlight the challenges faced and their solutions during the deployment process

Components

1. Project Structure Preparation

household-services/
├── app/
│ ├── __init__.py
│ ├── models/
│ ├── routes/
│ ├── templates/
│ ├── static/
│ ├── run.py
├── requirements.txt
├── vercel.json

2. Required Configuration Files

vercel.json

```
{
  "version": 2,
  "builds": [
    {
      "src": "./run.py",
      "use": "@vercel/python"
    }
  ],
  "routes": [
    {
      "src": "/(.*)",
      "dest": "run.py"
    }
  ]
}
```

3. Deployment Steps

Environment Setup

npm install -g vercel
vercel login

Database Configuration

- Set up SQLite database on Vercel
- Configure environment variables

Project Initialization

vercel init
vercel link

Deployment Execution

vercel --prod

Advantages and Disadvantages

Advantages

Zero Configuration

- Automatic HTTPS/SSL certification
- Built-in CI/CD pipeline
- Automatic branch deployments

Performance

- Global CDN distribution
- Automatic scaling
- Edge network optimization

Developer Experience

- Simple CLI interface
- Real-time logs and monitoring
- Easy rollback capabilities

Disadvantages

Limitations

- Maximum execution time of 10 seconds
- Limited filesystem access
- Cold starts on serverless functions

Cost Considerations

- Bandwidth limitations on free tier
- Additional costs for premium features
- Database hosting costs

Future Scope

Performance Optimization

- Implementation of caching strategies
- Asset optimization and compression
- Database query optimization

Feature Enhancement

- Integration with additional payment gateways
- Real-time notifications system
- Mobile application development

Infrastructure Improvements

- Implementation of Docker containers
- Multi-region database deployment
- Advanced monitoring and analytics

Conclusion

The deployment of the Household Services application on Vercel demonstrated the platform's capability to host Flask applications effectively. The process highlighted the importance of proper configuration and environment setup. While there were challenges regarding serverless limitations, the benefits of automated deployment and scaling capabilities outweighed the drawbacks.

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