XMops Accelerate

Software Requirements Specification

TEAM-02

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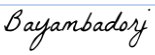
Bayambadorj Burentogtokh	Developer		2024-03-02
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1 Introduction

This document outlines the requirements for XMOPS Accelerate, a centralized control plane designed to streamline and accelerate redundant tasks for the team, such as WordPress deployments in three different versions, monolithic, highly available and lightsail, IAM roles and policy updates, and infrastructure provisioning.

1.1 Purpose

The purpose of this SRS is to provide a comprehensive description of the XMOPS Accelerate software, serving as a guideline for developers to understand its functionalities and requirements. This document is intended for project stakeholders, including project managers, developers, and the quality assurance team.

1.2 Scope

XMOPS Accelerate automates the deployment of wordpress infrastructure components, enabling secure login and access control, and providing a user-friendly interface for deployment management. The software aims to enhance efficiency, security, and control over deployment processes. This document will cover the functionalities, user interactions, and technical specifications without delving into the implementation details.

1.3 Definitions, Acronyms and Abbreviations

- AWS: Amazon Web Services
- IAM: Identity and Access Management
- SRS: Software Requirements Specification
- EC2: Elastic Compute Cloud.
- RDS: Relational Database Service
- HTTPS: Hypertext Transfer Protocol Secure

2 Overall Description

XMOPS Accelerate is a new system developed to replace manual deployment processes with an automated, secure, and efficient solution. It serves as a component of a larger ecosystem, designed to integrate seamlessly with AWS services.

2.1 Product Features

- **Automated infrastructure deployment** : Automating infrastructure deployment involves streamlining the process of setting up various components through user-friendly interfaces. This includes providing intuitive forms for inputting deployment parameters. With a focus on flexibility, XMOPS supports a range of deployment options, such as installing WordPress applications on monolithic setups, Lightsail instances, and High Availability configurations. The provisioning of infrastructure is automated, ensuring efficiency and consistency across deployments.

- **Secure authentication mechanism**: To ensure a reliable and secure authentication mechanism for Xmops team members, Amazon Cognito will be implemented leveraging its robust user authentication and authorization capabilities. Additionally, XMOP have enhanced security measures by incorporating multi-factor authentication (MFA), requiring users to authenticate using multiple verification methods such as SMS codes or email verification. This multi-layered approach significantly strengthens the security of our login process, mitigating the risk of unauthorized access and ensuring the confidentiality of sensitive data within our systems.

- **User-friendly interface for deployment management :** XMOP deployment management interface prioritizes user-friendliness and efficiency for team members. It offers a clear overview of ongoing and completed deployments, along with quick access to configuration settings. A simple form interface facilitates input of deployment parameters, while a comprehensive deployment history provides valuable insights for future planning. This approach ensures that users can easily manage deployments and access relevant information, ultimately streamlining the deployment process and enhancing productivity.

- **Centralized control of deployment processes:** In response to the need for centralized control over deployment processes, XMOP empowers the Xmops team with a comprehensive solution to effortlessly manage deployments across various infrastructure types. By maintaining a historical record of past deployments, including

detailed information such as deployment details, timestamps, and associated parameters, the system ensures transparency and accountability for auditing and reference purposes.

2.2 System Requirements

Minimum requirements include an AWS account, internet connectivity, and support for Terraform.

2.2.1 Software Requirements

The minimum software requirements are listed below:

- Terraform greater than version 1.0
- Python version 3.9
- Aws CLI must be installed and configured
- AWS account

2.2.2 Hardware Requirements

The software has no hardware requirements.

2.3 Documentation

The software will be accompanied by a comprehensive user manual, a developer's guide, and API documentation, ensuring ease of use and extendibility.

3 System Architecture

All the three different architectures of XMOPS Accelerate are modular, comprising front-end, back-end, and integration with AWS services. It utilizes Terraform for infrastructure automation and Amazon Cognito for authentication, ensuring a scalable and secure environment.

3.1 Highly Available Architecture

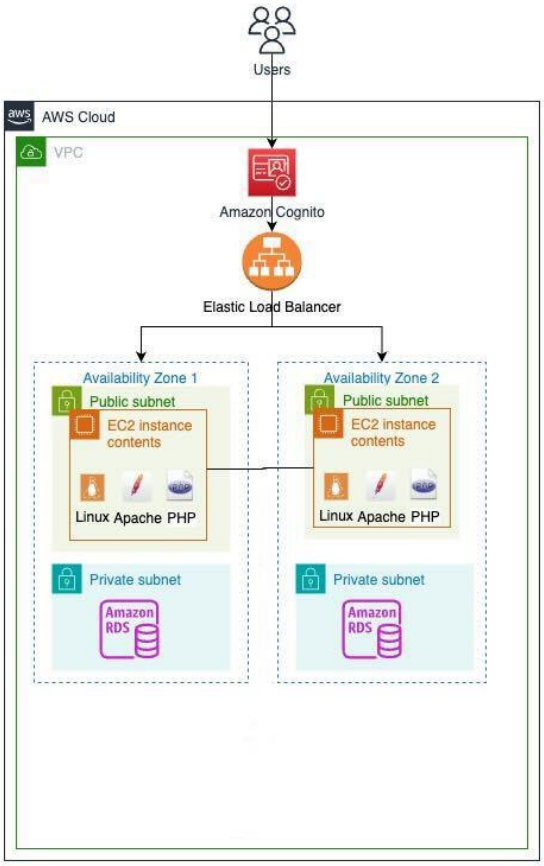

Figure 1 Higly Available Architecture

High Availability refers to a system or architecture that is designed to minimize downtime and ensure continuous operation. It typically involves redundant components and failover mechanisms. Supporting deployment in High Availability setups means providing options for creating robust and resilient systems. In our architecture we have elastic load balancer to balance the flow of incoming traffic, and we are planning to replicate the whole system in one additional availability zone as a fallback option to reduce the downtime.

3.2 *Lightsail Architecture*

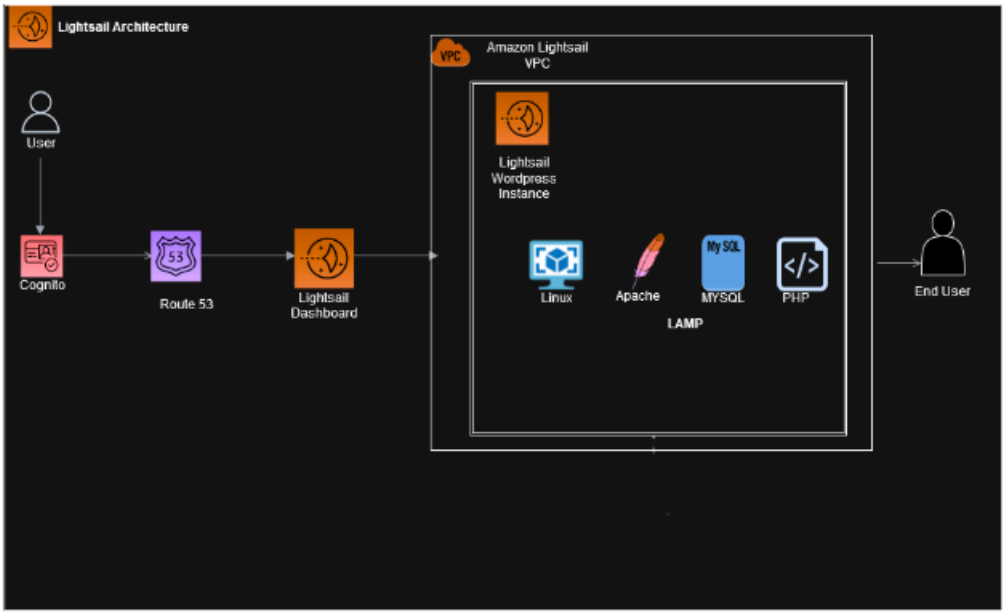

Figure 2 Lightsail Architecture

Lightsail is a simplified cloud computing platform provided by Amazon Web Services (AWS). It makes it easy to set up and deploy applications in the cloud. Supporting deployment on Lightsail instances means providing options specifically tailored for this platform. So, in lightsail architecture we do not need to install the wordpress components manually, and do not need to inject the installation script in our code.

3.3 Monolith Architecture

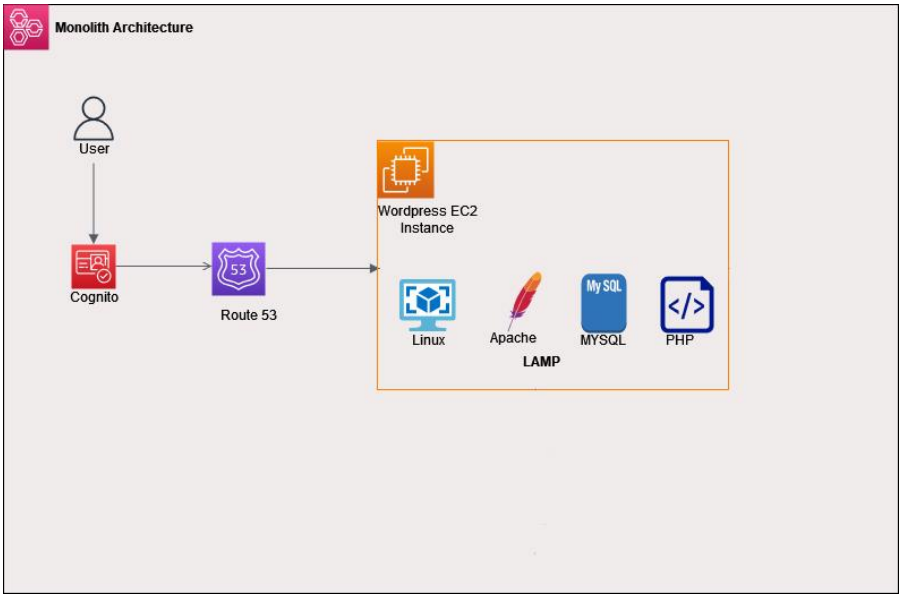

Figure 3 Monolith Architecture

A monolithic application is built as a single, cohesive unit where all the components are interconnected and work together. It's a more traditional way of designing software. In our monolith architecture we only have one instance to host all the required components of the system.

4 Interface Requirements

4.1 User Interfaces

The software provides an intuitive web-based interface, allowing users to manage deployments, view deployment history, and configure settings with ease.

4.2 Hardware Interfaces

As a cloud-based solution, XMOPS Accelerate requires minimal hardware interface, primarily relying on internet connectivity and a web browser.

4.3 Software Interfaces

XMOPS Accelerate integrates with AWS services, including EC2, RDS, and Amazon Cognito, facilitating seamless infrastructure provisioning and management.

4.4 Communication Interfaces

The software uses HTTPS for secure communication over the internet, ensuring data integrity and confidentiality.

References

[1]https://docs.google.com/document/d/1OW1CPaENwW4WqOsZkILAx7mr1DdAPayE8vm37lVoTZY/edit#heading=h.vvvbst9d7ici.