Functional Requirements for Cloud Architecture

1. Introduction

This document outlines the functional requirements for the cloud architecture project. The requirements listed herein serve as a blueprint for system design and implementation.

2. Scope

The scope includes requirements related to computing resources, networking, storage, security, scalability, and other major architectural domains in the cloud environment.

3. Functional Requirements

1. **User Authentication & Authorization**
   - Support for user registration and secure login.
   - Role-based access control for users and administrators.

2. **Resource Provisioning**
   - On-demand creation and deletion of virtual machines (VMs) or containers.
   - Automated resource allocation based on user requests.

3. **Networking**
   - Private and public network configurations.
   - Load balancing between instances.

4. **Storage Management**
   - Persistent and temporary storage options for workloads.
   - Automated backup and restore functionalities.

5. **Monitoring & Logging**
   - Real-time monitoring of system health and resource usage.
   - Centralized logging for auditing and troubleshooting.

6. **High Availability & Fault Tolerance**
   - Automatic failover mechanisms for critical services.
   - Redundant components to ensure service continuity.

7. **Auto-Scaling**
   - Automatic scaling of resources based on load.

8. **API Access**
   - RESTful APIs for resource management and automation.

9. **Security**
   - Data encryption at rest and in transit.
   - Compliance with relevant security standards.

4. Non-Functional Requirements

- System should support at least 99.9% uptime.
- All user actions should have a response time under 2 seconds.
- System must be scalable to accommodate up to 10,000 concurrent users.
- Data backup must occur at least once per day.

5. Glossary

Term	Definition
VM	Virtual Machine
API	Application Programming Interface
RBAC	Role-Based Access Control