**3-Tier Architecture with Auto-Scaling, Load Balancers, and RDS**

This documentation describes the architecture, setup, and components of a 3-tier infrastructure for deploying scalable applications on AWS. This setup uses two load balancers (internal and internet-facing), auto-scaling for high availability, and a secure RDS database.

## Architecture Overview

This 3-tier architecture consists of three primary layers:

1. **Presentation Layer (Web Tier)** - Internet-facing layer where users connect to the application.
2. **Application Layer (App Tier)** - Private layer for processing business logic and interacting with the database.
3. **Database Layer (Data Tier)** - Layer for managing data using Amazon RDS, isolated from the public internet.

### Architecture Components

* **Auto-Scaling**: Ensures high availability and adjusts the number of instances based on traffic.
* **Load Balancers**: Two load balancers manage traffic across tiers:
  + **Internet-Facing Load Balancer**: Distributes incoming requests from users to public-facing instances in the web tier.
  + **Internal Load Balancer**: Manages requests within the application and database layers.
* **Amazon RDS (Relational Database Service)**: Provides a secure and scalable relational database.

## Setup Steps

1. **Launch Public and Private Subnets**:
   * Create VPC with separate public and private subnets.
   * Place web servers in public subnets and application servers and RDS in private subnets.
2. **Configure Auto-Scaling Groups**:
   * Set up auto-scaling groups for both the web and application layers.
   * Define scaling policies based on CPU utilization or request count.
3. **Set Up Load Balancers**:
   * **Internet-Facing Load Balancer**: Directs traffic from users to the public-facing web servers.
   * **Internal Load Balancer**: Routes traffic between the web tier and application tier within the private network.

4. **Deploy Amazon RDS**:

* Configure an RDS instance in a private subnet for secure data storage.
* Set security groups to allow only the application layer instances to connect to the RDS instance.

5. **Define Security Groups**:

* Web Tier: Allow HTTP/HTTPS traffic from the internet.
* App Tier: Allow traffic only from the internal load balancer.
* Database Tier: Restrict access to only the app tier security group.

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| Internet User |

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| Internet-Facing Load |

| Balancer (ELB) |

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| Public Subnet |

Web Tier (Public)|

| EC2 Auto-Scaling

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Internal Load |

| Balancer (ELB) |

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Private Subnet |

App Tier (Private)

EC2 Auto-Scaling

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Amazon RDS

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