Step-by-Step guide(Route 53, WAF, Load Balancer, EC2 with Auto Scaling, EFS, and RDS in a VPC)

Step 1: Set Up the AWS Architecture Using the AWS Console

Step 1: Log in to AWS Management Console

- **Where to Go:** Open your browser and go to console.aws.amazon.com.
- **Action:** Sign in with your AWS account credentials.

Step 2: Create a VPC with Public Subnets

- **Where to Go:** In the AWS Console, search for "VPC" in the top search bar and click "VPC."
- **Action:**
  - Click "Create VPC."
  - Select "VPC and more."
  - Name: my-vpc.
  - IPv4 CIDR block: 10.0.0.0/16.
  - Number of Availability Zones: 2 (e.g., us-east-1a, us-east-1b).
  - Number of public subnets: 2.
  - Click "Create VPC."

Step 3: Set Up Route 53 for DNS

- **Where to Go:** Search for "Route 53" in the search bar and click "Route 53."
- **Action:**
  - Click "Hosted zones" in the left menu.
  - Click "Create hosted zone."
  - Domain name: Enter your domain.
  - Type: Public hosted zone.
  - Click "Create hosted zone."
  - Note the DNS name servers (NS records) for later use.

Step 4: Configure WAF (Web Application Firewall)

- **Where to Go:** Search for "WAF & Shield" in the search bar and click "AWS WAF & Shield."
- **Action:**

- Click "Create web ACL."
- Name: my-web-acl.
- Region: Your region.
- Add rules: Click "Add rules," select "Existing Rule" or "Create Rule," and create a rule (e.g., block SQL injection).
- Click "Next," associate it with a resource later (e.g., Load Balancer), and click "Create web ACL."

Step 5: Set Up an Application Load Balancer

- **Where to Go:** Search for "EC2" in the search bar and click "EC2."
- **Action:**
  - In the left menu, click "Load Balancers."
  - Click "Create Load Balancer."
  - Choose "Application Load Balancer."
  - Name: my-alb.
  - Scheme: Internet-facing.
  - VPC: Select my-vpc.
  - Subnets: Choose the 2 public subnets (us-east-1a, us-east-1b).
  - Listeners: Add HTTP on port 80.
  - Security group: Create or select one allowing HTTP (port 80).
  - Target group: Create a new target group (e.g., my-target-group), protocol HTTP, port 80.
  - Click "Create Load Balancer."

Step 6: Launch EC2 Instances with Auto Scaling

- **Where to Go:** In the EC2 dashboard, click "Launch Templates" in the left menu.
- **Action (Launch Template):**
  - Click "Create launch template."
  - Name: my-launch-template.
  - AMI: Choose Amazon Linux 2.
  - Instance type: t2.micro (free tier eligible).
  - Key pair: Select or create a key pair.
  - Security group: Create or select one allowing HTTP (port 80) and SSH (port 22).
  - Click "Create launch template."
- **Action (Auto Scaling Group):**
  - In the left menu, click "Auto Scaling Groups."

- Click "Create Auto Scaling group."
- Name: my-asg.
- Launch template: Select my-launch-template.
- VPC: Select my-vpc.
- Subnets: Choose the 2 public subnets.
- Target group: Select my-target-group.
- Desired capacity: 2, Minimum: 1, Maximum: 4.
- Click "Create Auto Scaling group."

Step 7: Set Up Elastic File System (EFS)

- **Where to Go:** Search for "EFS" in the search bar and click "Elastic File System."
- **Action:**
  - Click "Create file system."
  - Name: my-efs.
  - VPC: Select my-vpc.
  - Click "Create."
  - Mount the EFS to your EC2 instances
  - Edit /etc/fstab

Step 8: Set Up RDS (Database)

- **Where to Go:** Search for "RDS" in the search bar and click "RDS."
- **Action:**
  - Click "Create database."
  - Choose "MySQL."
  - Template: Production or other.
  - DB instance identifier: my-rds.
  - Master username: admin.
  - Master password: Set a password.
  - VPC: Select my-vpc.
  - Subnet group: Create a new one with your VPC subnets.
  - Public access: No (for security).
  - Security group: Allow port 3306 from your EC2 instances.
  - Click "Create database."

Step 9: Link Route 53 to Load Balancer

- **Where to Go:** Go back to "Route 53" > "Hosted zones."

- **Action:**
  - Select your hosted zone.
  - Click "Create record."
  - Record name: www (or leave blank for the root domain).
  - Record type: A – IPv4 address.
  - Alias: Yes, select "Alias to Application Load Balancer."
  - Choose your region and my-alb.
  - Click "Create records."