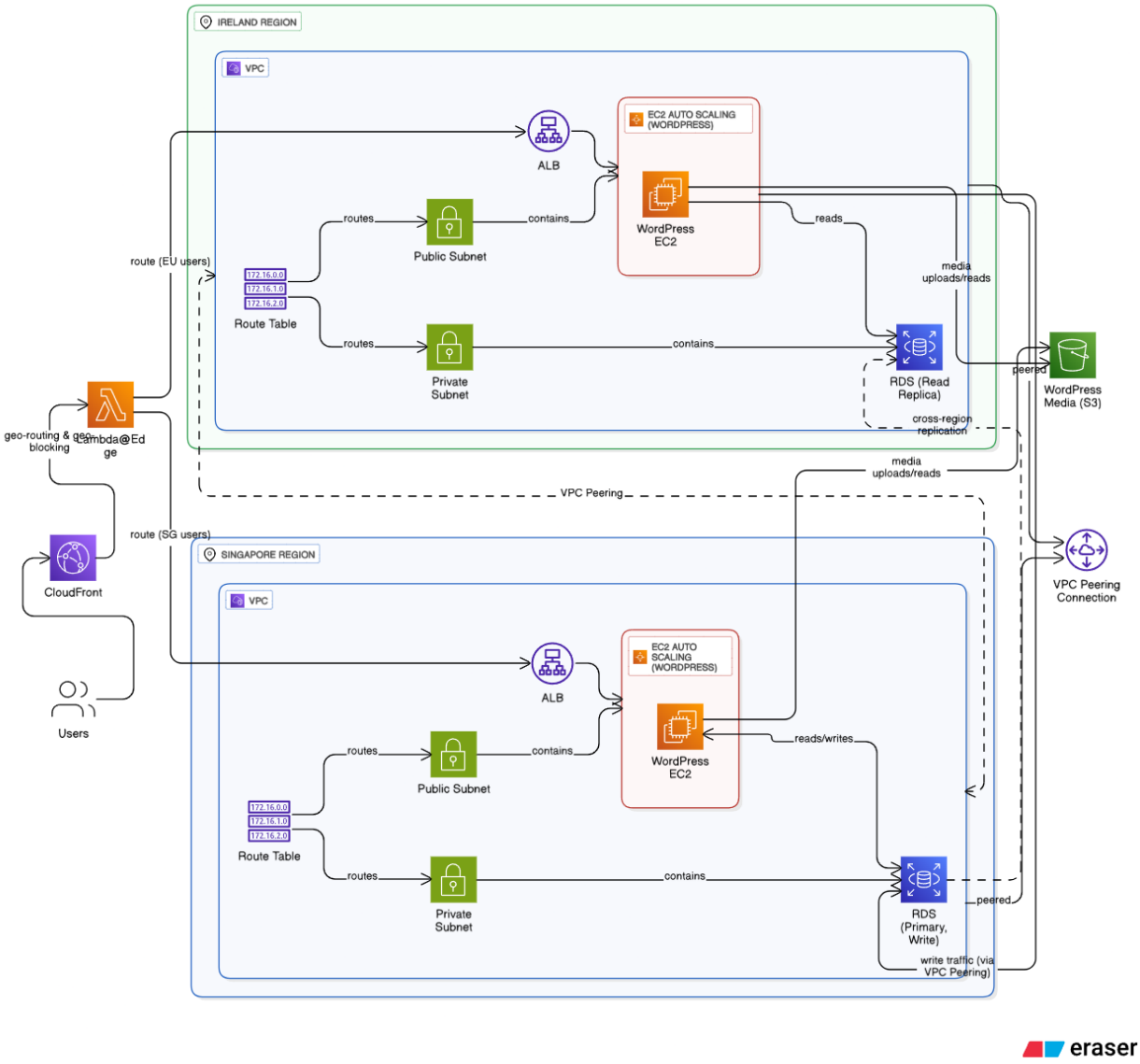
# DevOps Task: Global WordPress Infrastructure on AWS

## 1. High-Level Architecture Diagram

The architecture employs a multi-region strategy with Singapore as the primary region and Ireland as the secondary.

1. **Core Components:**

   **Amazon CloudFront (CDN):** Acts as the entry point for all user traffic. It caches static content globally and uses **Lambda@Edge** to intelligently route users to the nearest regional infrastructure (Singapore or Ireland). It also enforces the required **geographical restrictions**.
2. **Regional Infrastructure (Singapore & Ireland):**
   a. **VPC:** Each region has an isolated Virtual Private Cloud (VPC). The two VPCs are connected via **VPC Peering** to allow secure, private communication between them, primarily for cross region database write operations.
   b. **Application Load Balancer (ALB):** Distributes incoming traffic across the WordPress instances within its region.
   c. **EC2 Auto Scaling Groups:** Automatically adjusts the number of WordPress EC2 instances based on real-time traffic loads (CPU and memory utilization). This ensures performance during traffic spikes and cost-efficiency during quiet periods.
   d. **Amazon RDS (MariaDB):** The primary, writable database is hosted in Singapore. A read-replica is maintained in Ireland to serve local read requests with low latency. All write operations are directed to the primary database in Singapore.
3. **Amazon S3:** Used to offload and store all WordPress media files (images, videos), reducing the load on the EC2 instances and enabling efficient delivery via CloudFront.

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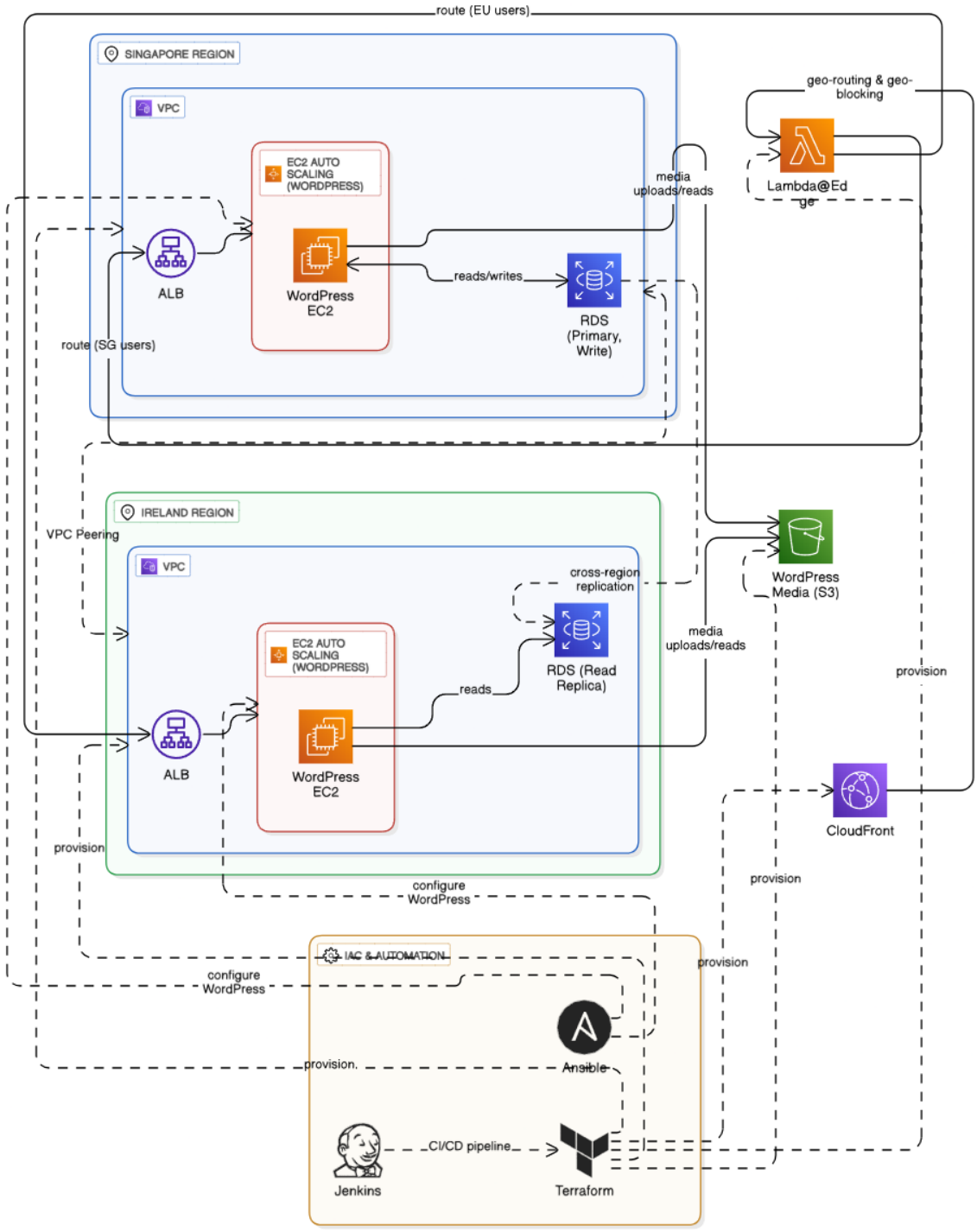
## 2. Pipeline and tools

Jenkins is used to validate, plan and apply the terraform stack.
Ansible and cloud-init are used to configure the ec2s (jenkins and wordpress).
S3 is used to store the terraform remote state and provide state locking.


route (EU users)
SINGAPORE REGION
VPC
EC2 AUTO SCALING (WORDPRESS)
ALB
WordPress EC2
reads/writes
RDS (Primary, Write)
media uploads/reads
geo-routing & geo-blocking
Lambda@Edge
route (SG users)
IRELAND REGION
VPC Peering
VPC
EC2 AUTO SCALING (WORDPRESS)
ALB
WordPress EC2
reads
cross-region replication
RDS (Read Replica)
media uploads/reads
WordPress Media (S3)
provision
CloudFront
provision
provision
configure WordPress
IAC & AUTOMATION
configure WordPress
provision
Ansible
provision
Jenkins
CI/CD pipeline
Terraform

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