FundifyHub — Cost-first AWS Deployment Guide (Text Only)

Approaches, pros/cons, step-by-step instructions, cost ranges, and a decision flowchart.

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Overview

This guide proposes four deployment approaches with a cost-first mindset. Each section includes tradeoffs, a concrete setup checklist, and rough monthly cost ranges for 100/500/1000 monthly users.

Approach A — Single EC2 + RDS

When to pick

• You want the lowest steady monthly cost and straightforward ops.
• Traffic is moderate and uptime requirements are reasonable (single-AZ).

Pros

• Lowest ongoing cost for always-on workloads.
• Simple debugging (SSH).
• No container orchestration complexity.

Cons

• Single point of failure if single-AZ.
• You maintain OS, Docker, and patching.
• Manual scaling (add another instance or migrate later).

Step-by-step

• Create RDS: PostgreSQL, db.t4g.small (or t3.small), gp3 20GB, single-AZ, private subnet.
• Launch EC2: Ubuntu 22.04 LTS, t4g.medium (or t3.medium), 20GB gp3, SG rules for 80/443 from world, 5432 from EC2 !' RDS.
• Install Docker & Compose. Pull/build images or run docker-compose for frontend, backend, worker, nginx, redis.
• Set environment variables (DATABASE_URL to RDS; secrets via .env or AWS Secrets Manager).
• Run Prisma migrations and seed against RDS.
• Set up TLS (ACM + nginx) and CloudWatch metrics/alarms.

Estimated monthly cost — Approach A

Scenario	Monthly (low)	Monthly (high)
100 users (~10k req)	$45	$95
500 users (~50k req)	$60	$150
1000 users (~100k req)	$100	$250

Assumptions:
- EC2 t3/t4g.medium + EBS gp3; RDS db.t3/t4g.small single-AZ; minimal data transfer.
- Redis on EC2 or ElastiCache (t4g.micro) when needed.

Approach B — ECS Fargate + RDS

When to pick

• You prefer managed container orchestration and easier CI/CD.
• Willing to pay a bit more for reduced ops effort.

Pros

• No EC2 to patch; tasks scale horizontally.

• Good ALB integration and blue/green deployments.

Cons

• Higher base cost for always-on services.
• Task sizing requires tuning to control spend.

Step-by-step

• Build/push images to ECR; create RDS as in Approach A.
• Create ECS cluster (Fargate). Define Task Definitions (frontend/api, worker).
• Create ALB + target groups + listeners (HTTPS via ACM).
• Configure service autoscaling and environment secrets.
• Wire CI/CD (GitHub Actions) to push images and update services.

Estimated monthly cost — Approach B

Scenario	Monthly (low)	Monthly (high)
100 users	$80	$160
500 users	$120	$300
1000 users	$200	$500

Assumptions:
- 2–3 small Fargate tasks + RDS single-AZ + ALB + data transfer.

Approach C — Serverless (Lambda + Aurora Serverless or RDS Proxy)

When to pick

• Workload is spiky or low-average; strong need for auto-scaling.
• You want minimal operations at the expense of tuning cold starts and DB connections.

Pros

• Scales to zero for low traffic (lower idle cost).
• Very low ops overhead.

Cons

• Can get pricey for steady traffic; careful with concurrency and DB connections.
• More moving parts (functions, API Gateway/ALB, DB pooling).

Step-by-step

• Package Next.js backend as serverless handlers or container-based Lambdas.
• Use Aurora Serverless v2 or RDS + RDS Proxy. Limit connections and pool aggressively.
• Use SQS for background jobs or separate small Lambdas triggered by SQS.
• Set infra with IaC (SAM/CDK) and deploy via CI/CD.

Estimated monthly cost — Approach C

Scenario	Monthly (low)	Monthly (high)
100 users	$20	$80
500 users	$60	

		$220
1000 users		
	$120	
		$500

Assumptions:
- Lambda invocations + Aurora Srvls v2 (or RDS Proxy) + API Gateway/ALB.

Approach D — Hybrid (ECS for web/API, EC2 for workers)

When to pick

• Web/API fits containers well but workers are long-lived/cheaper on EC2.

Pros

• Reduce Fargate cost for long-running workers.
• Keep managed orchestration for web/API.

Cons

• Two operational surfaces (ECS + EC2).

Step-by-step

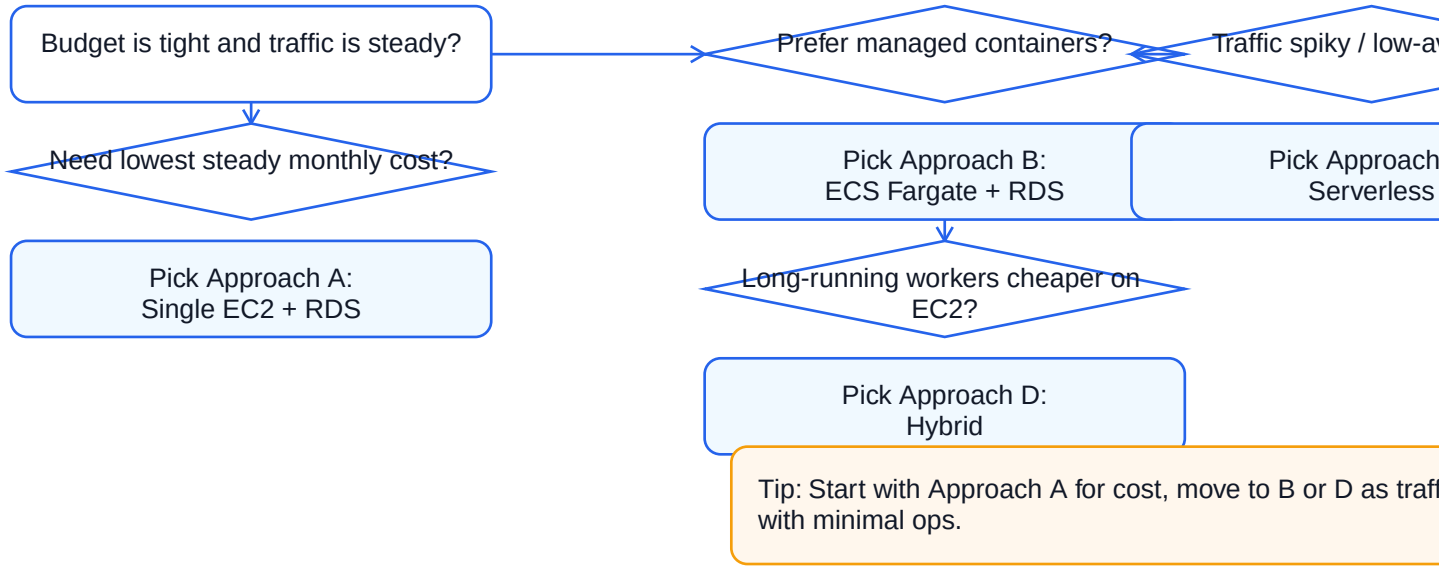
• Run frontend/API on ECS Fargate behind an ALB.
• Run worker on small EC2 (t4g.small); connect to the same RDS.
• Share VPC + security groups; centralize logs (CloudWatch).

Estimated monthly cost — Approach D

Scenario	Monthly (low)	Monthly (high)
100 users		
	$80	
		$180
500 users		
	$120	
		$350
1000 users		
	$220	
		$600

Assumptions:
- ALB + 1–2 Fargate tasks + 1 EC2 worker + RDS.

Which approach should I choose? (Flowchart)



Runbook checklist

- IAM: minimal roles/policies, rotate keys, use instance/task roles.
- Networking: RDS in private subnets; restrict SG to least privilege.
- Secrets: use AWS Secrets Manager or SSM; avoid committing .env.
- Observability: CloudWatch logs/metrics/alarms, SNS notifications.
- Backups: RDS automated backups; snapshot before destructive changes.