

From Developer to Cloud Engineer

First Three AWS Maturity Levels

Docker · ECS Fargate · Terraform



Today's Journey

1. **The Gap:** Why infrastructure feels different from app development
2. **The Framework:** Three clear AWS maturity levels to follow
3. **The Path:** Practical steps to become cloud-comfortable
4. **The Tools:** Docker, ECS Fargate, and Terraform fundamentals
5. **Next Steps:** Resources and realistic growth opportunities

My goal: Help you build a **bridge** from development to cloud infrastructure

About Me: From Code to Cloud

- I started as a developer — mostly PHP & Laravel
- Led engineering teams at startups and scaleups
- Now I help SaaS companies design scalable, cost-effective AWS setups
- Previously founder of Dataswitcher (exit in 2024)
- Now founder of ElasticScale — AWS specialists focused on automation

My AWS Journey: The Reality

- December 2018: Started with ElasticBeanstalk thinking "how hard can it be?"
- First deployment: *excitement* → confusion → *panic* → eventual success
- Learned that cloud has **many moving parts**
- Made costly mistakes (left resources running, VPN data transfer explosion)
- Found that step-by-step learning worked better than trying to understand everything
- Now: Comfortable designing complex infrastructure, but still learning daily

The best path isn't knowing everything—it's knowing how to find what you need

Opening: Why This Talk?

- You're a developer — you understand logic, state, APIs, debugging
- But infrastructure feels like a different world:
 - Slow feedback
 - Poor testing
 - Hard to learn outside of work
- I was overwhelmed at first too (and still sometimes am!)
- This talk helps you build a *bridge* into cloud

Who This Talk Is For

If you are:

- A developer who has **deployed apps** but never owned infra
- Someone who's **seen AWS Console** but feels lost in IAM, VPCs, or EC2
- Looking to add **DevOps skills** without burning out

Then you're in the right place 🎯

Developers Make Strong Cloud Engineers

- I hope to excite you with this talk to take your first steps in AWS
- Deep understanding of abstraction and control flow
- Comfort with tools, automation, and debugging
- You already think in *systems* — infrastructure is just another layer
- DevOps \neq development — it's thinking broadly about delivery and operations

Similar to programming languages, people in infra also have biases!

What Makes Infra Hard?

- You can't really test it locally
- Feedback is *delayed* — requires apply/deploy
- Errors can cost money
- Most tutorials skip the messy stuff (networking, state, permissions)
- Complexity layers build on other complexity layers
- AWS teaches you wrong things (ie. use the console in their docs)

Infra Code vs App Code

Aspect	Application Code	Infrastructure Code (Terraform)
Local execution	Yes	No (only cloud)
Feedback loop	Immediate	Slow (plan/apply/deploy)
Testability	Unit/integration	Static analysis, drift detection
Cost of error	Usually recoverable	Can be real \$\$\$
Intent	Imperative (how)	Declarative (what)

Framework: 3 Maturity Levels

- Level 1: Containerize it (Docker)
- Level 2: Run it in the cloud (ECS Fargate)
- Level 3: Automate it (Terraform)
- Everything beyond that? You'll learn *by doing* — internships, jobs, real-world constraints

Stay Focused, Learn with Purpose

Learning AWS can feel like drinking from a firehose.

- ✗ Don't try to master *everything*
- ✓ Focus on *what you need right now*

📌 Example:

- Learn ECS Fargate
- You'll *encounter* VPC
- First ask: *What is a VPC?*

One Layer at a Time

- Don't dive into VPC endpoints, NAT gateways, routing tables
- Until you *need* them for your app

🧠 Learn just-in-time, not just-in-case

Let your real-world use cases guide the direction of your learning

Protect Your Wallet First

- Create a free AWS account
- **Important:** Set up a \$0 budget alert immediately

AWS Console → Budgets → Create → Zero-spend budget

Simple Cost Control

- Right-size tasks (CPU/memory)
- Use Fargate Spot for non-critical workloads
- Tag resources for cost allocation
- Schedule scaling based on traffic patterns

Small optimizations compound over time

Common Beginner Pitfalls in AWS

- ✗ Leaving resources running = surprise bill
- ✗ Using root credentials for daily work
- ✗ Skipping IAM roles and relying on “admin access”
- ✗ Not using budget alerts or tagging resources

■ The cloud is powerful — but **also very easy to misuse**

Essential Security Practices

- **Docker:** Use non-root users, scan images
- **ECS:** Task-specific IAM roles, no access keys
- **Terraform:** Use remote state storage
- **Network:** Restrict SSH access by IP

Security isn't extra—it's fundamental at each step

Networking Basics You Need

- **VPC:** Your private AWS network
- **Public subnet:** Has internet access
- **Security Groups:** Firewall rules (open only needed ports)

Understanding these fundamentals prevents most common issues

Slides + instructions

You can find the slide deck + resources to get started here:



Level 1: Run It Locally with Docker

Goal: Build consistent, portable apps

Learn:

- Dockerfile syntax
- `docker build`, `docker run`, exposing ports
- Container debugging

Unlearn:

- “It works on my machine” — local \neq production

Level 1 – Code Snippet

We've made a simple PHP application (see repository)

1. Dockerize the PHP application
2. Use the PHP/Apache image
3. Bonus-point #1: Use docker compose
4. Bonus-point #2: Use PHP-FPM and nginx instead

Stuck? Check how Laravel is Dockerized

Why Move From Docker to ECS?

You've got a working container. Great!

But to run it for real users, you'll need:

- **A scalable hosting solution**
- **Networking** that exposes it to the internet
- **Logs and monitoring** when things go wrong

That's where ECS Fargate comes in.

Level 2: Deploy It to the Cloud (ECS Fargate)

Goal: Run your container in production

Learn:

- IAM roles and policies (basic access model)
- ECS Task Definitions, Clusters, Services
- Security groups and public subnets

Unlearn:

- "Cloud setup needs to be perfect from day one"

Level 2 – Console Flow

1. Push image to ECR
2. Create ECS Cluster
3. Define task (image, CPU/memory, port)
4. Create service and assign it to public subnet + load balancer
5. Use CloudWatch for logs

Outcome: Your app runs in production, no server management

Stuck? Use [AWS Copilot](#) and see how it deploys

Why ECS Fargate?

- Abstracts away EC2
- No nodes, no patching hosts
- Pay-per-task
- Ideal for small teams or devs getting started
- Easier than EKS/Kubernetes
- Note - no free tier!

Why Move From ECS to Terraform?

Your app runs in the cloud now — nice!

But how do you...

- Recreate it for staging or a teammate?
- Track changes over time?
- Avoid "ClickOps" drift?
- Apply it again, consistently, in another region?

That's where **Infrastructure as Code (IaC)** comes in

Level 3: Automate It with Terraform

Goal: Reproducible, version-controlled infrastructure

Learn:

- Terraform CLI basics: `init`, `plan`, `apply`, `destroy`
- Resource definitions: ECS, ALB, IAM, VPC
- Terraform state management

Unlearn:

- That clicking through the AWS Console (ClickOps) is a scalable strategy

Level 3 – Terraform Code

1. Write Terraform code to deploy:

- i. An ECS cluster
- ii. An ECS service
- iii. A single ECS task in a public VPC subnet (with public IP)

Stuck? See the repo for a starter template but try yourself first

Beyond Level 3: Learn in the Wild

- Networking (private subnets, public subnets, NGW)
- CI/CD tools (GitHub Actions, CodePipeline)
- Metrics & logs (CloudWatch, Datadog)
- Advanced IAAC automation (Terraform) or different tools (CloudFormation)
- Security (WAF, IAM boundaries, secrets management)
- Team-specific architecture (EKS, Kafka)

These only make sense **in context**, working with a team or during an apprenticeship

Realistic Next Steps

- Containerize a real app (yours or opensource) - tip try N8n
- Deploy manually, then automate with Terraform
- Apply for DevOps internships or shadowing roles
- Pair with a senior DevOps engineer

Realistic Timeline

Level	From Tutorial to Confidence
Docker	1 - 2 weeks of daily use
ECS Fargate	3 - 4 weeks
Terraform	1 - 2 months

Progress happens in small steps, not overnight

Learning Resources

- [Adrian Cantrill courses - 20% discount](#)
- [AWS Skill Builder - many free](#)

Start with Adrian Cantrill's free Tech Fundamentals Course & then with Skill Builder. Aim to get your first AWS Certificate (Cloud Practitioner) to learn about the services available. Plan the date first, then start learning!

Real life case-study - Worldatlas.com

- Dockerized their PHP8 Symfony app
- Performance tuning (Nginx, PHP-FPM, Varnish, Redis)
- Autoscaling Fargate & serverless Aurora
- 350 million requests per month

Direct support?

Try these perplexity.ai searches:

- 🔍 terraform ecs fargate public subnet
- 🔍 aws copilot tutorial
- 🔍 cloudwatch log group missing logs
- 🔍 terraform output values example

Don't memorize — learn what to search!

Final Checklist: Your First Cloud Deployment

- ✓ Containerize your app with Docker
- ✓ Deploy it to ECS Fargate manually
- ✓ Automate deployment with Terraform
- ✓ Protect your wallet with budget alerts
- ✓ Learn from mistakes and keep iterating

You don't need to know everything. You just need a **path**.

Let's Keep in Touch

If you're curious about DevOps or cloud and want to take your **first real steps**, I'm happy to help.

Just reach out — even if you're unsure where to begin or when you are frustrated about your progress. 📧 alex@elasticscale.com

Also add me on LinkedIn for bi-weekly AWS tips:

