



CURRENT SETUP



GCP 3-Year CUD

e2-standard-4
4 vCPU / 16 GB RAM
Ubuntu Server + Docker

YOUR APPLICATIONS

- Docmost** Documentation
- InvenTree** Inventory
- n8n** Automation
- NPM** Reverse Proxy
- OpenEMR** Medical Records
- OpenProject** Project Management
- pgAdmin** PostgreSQL Admin
- phpMyAdmin** MySQL Admin
- Portainer** Container Management
- NGINX** Web Server
- WordPress** CMS
- Zammad** Ticketing

DOMAIN & ACCESS

- gravelcloud.com**
- Cloudflare** (DNS + CDN)
- Nginx Proxy Manager**
- Let's Encrypt** SSL/TLS
- Remote Access** (Tailscale)

DATA & STORAGE

- Persistent Disk** (VM)
- Cloud Storage** (Backups)
- Snapshots / Images**
- Lifecycle Rules**
- Google One** 2TB (Personal)

BUDGET & SUBSCRIPTION

- 3-Year Committed Use Discount**
- Monthly Cost (Est.)** ~\$50/month
- Billing Alerts & Budgets**
- Monitor Usage & Rightsize**

CERTIFICATION GOALS

- Associate Cloud Engineer** (Yr 1)
- Professional Cloud Architect** (Yr 2)
- Specialization** (Yr 3)
 - Cloud Security
 - Cloud DevOps
 - Data Engineering
 - Machine Learning

36-MONTH GCP EXPERT ROADMAP

22 SKILLS • 36 MONTHS • HANDS-ON PROJECTS • REAL-WORLD APPLICATIONS

YOUR GCP LAB ENVIRONMENT



MONITOR & OPERATE



YEAR 1 – CLOUD ENGINEER

Months 1–12 | Foundation • Infrastructure • Security • Certification

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|---|--|--|
| M1 Compute Engine <ul style="list-style-type: none">VMs, machine typesDisks, snapshotsImages, startup scripts | M2 Linux & Docker <ul style="list-style-type: none">Ubuntu, systemdDocker ComposeNetworks, volumes | M3 Storage & Backup <ul style="list-style-type: none">Persistent DiskCloud StorageBackup & recovery |
| M4 VPC Networking <ul style="list-style-type: none">VPC, subnets, routesFirewall rulesInternal/external IP | M5 DNS & Cloudflare <ul style="list-style-type: none">Cloud DNS, recordsCloudflare, TLSNginx Proxy Manager | M6 Load Balancing <ul style="list-style-type: none">HTTP(S) LBHealth checksSSL, CDN concepts |
| M7 IAM <ul style="list-style-type: none">Users, rolesService accountsLeast privilege | M8 Secrets & Security <ul style="list-style-type: none">Secret ManagerKMS, encryptionSecure configurations | M9 Security Architecture <ul style="list-style-type: none">Audit & hardeningZero TrustApplication security |
| M10 Monitoring <ul style="list-style-type: none">Cloud MonitoringCloud LoggingDashboards & alerts | M11 Cost Engineering <ul style="list-style-type: none">Billing, budgetsCUD utilizationRightsizing | M12 Associate Cloud Engineer <ul style="list-style-type: none">Exam preparationHands-on labsGet certified |

YEAR 2 – CLOUD ARCHITECT

Months 13–24 | Automation • Cloud-Native • DevOps • Architecture

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|---|---|--|
| M13 Terraform I <ul style="list-style-type: none">Providers, resourcesVariables, outputsState management | M14 Terraform II <ul style="list-style-type: none">VPC, firewall, VMDisks, IAMService accounts | M15 Terraform III <ul style="list-style-type: none">Full infrastructureDestroy & rebuildRepeatable deployments |
| M16 Cloud Run <ul style="list-style-type: none">Serverless containersDeploy applicationCompare with VM | M17 Cloud SQL <ul style="list-style-type: none">PostgreSQL/MySQLBackups, HAMigrate an application | M18 Kubernetes (GKE) <ul style="list-style-type: none">Pods, deploymentsIngress, autoscalingMove an application |
| M19 GitHub + GCP <ul style="list-style-type: none">Source controlTerraform integrationInfrastructure pipeline | M20 CI/CD <ul style="list-style-type: none">Build, test, deployContainer registryAutomated pipeline | M21 GitOps <ul style="list-style-type: none">Git as source of truthAutomated deploymentsMinimal console use |
| M22 High Availability <ul style="list-style-type: none">Multi-zone designLoad balancingResilience testing | M23 Disaster Recovery <ul style="list-style-type: none">RPO / RTOCross-region recoveryRun DR drill | M24 Professional Architect <ul style="list-style-type: none">Exam preparationArchitecture designGet certified |

YEAR 3 – CLOUD EXPERT

Months 25–36 | Data • AI • Optimization • Capstone

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|---|--|---|
| M25 BigQuery <ul style="list-style-type: none">Datasets, SQLPartitioning, clusteringBuild analytics | M26 Pub/Sub <ul style="list-style-type: none">Event-driven architectureTopics, subscriptionsBuild a real workflow | M27 Data Pipelines <ul style="list-style-type: none">Dataflow conceptsETL, streamingBatch processing |
| M28 Vertex AI <ul style="list-style-type: none">Models, APIsEmbeddingsVector search | M29 Build AI Application <ul style="list-style-type: none">RAG, AI integrationUse your real dataIntegrate with n8n | M30 AI Automation <ul style="list-style-type: none">n8n + AI + GCPAPIs & workflowsNotifications |
| M31 Performance Engineering <ul style="list-style-type: none">TroubleshootingCPU, memory, I/OOptimize applications | M32 FinOps <ul style="list-style-type: none">Cost per applicationCost optimizationGet more for less | M33 Security Architecture <ul style="list-style-type: none">Full security reviewIAM, VPC, encryptionMonitoring & compliance |
| M34 Design Capstone <ul style="list-style-type: none">GravelCloud architectureMulti-service designDocument everything | M35 Build Capstone <ul style="list-style-type: none">Terraform + CI/CDFull deploymentProduction-ready setup | M36 Destroy & Rebuild <ul style="list-style-type: none">Delete everythingRebuild from codeYou are now a GCP Expert |

MONTHLY LEARNING CYCLE



MONTHLY SUBSCRIPTION PLAN (36 MONTHS)



SUCCESS METRICS

- ✓ Build it
- ✓ Break it
- ✓ Troubleshoot it
- ✓ Secure it
- ✓ Automate it
- ✓ Optimize it
- ✓ Document it
- ✓ Rebuild it
- ✓ Teach it

END STATE (36 MONTHS)

- GCP Expert**
- ✓ Production-ready architecture
- ✓ Full automation with Terraform
- ✓ Secure, scalable, cost-optimized
- ✓ Real-world experience
- ✓ Certifications
- ✓ Documented knowledge base
- ✓ Freedom to build anything