DevOpsSchool

Course curriculum · November 2026

LEVEL 04 OF 04 · ADVANCED

Envoy Advanced Training

Run Envoy at scale as an edge gateway and mesh data plane with tuned performance, high availability and hardened security.

LIVE ONLINE **Max 8-10 hours**	CORPORATE (DAY-WISE) **5 days · Days 1-5**	SELF-PACED VIDEO **1-year LMS access**
BATCH SIZE **Max 10 learners**	NEXT BATCHES **1st of every month · weekends: first Saturday**	CERTIFICATE **Verifiable certificate of completion**

Foundation	Essential	Intermediate	Advanced
1 day · Included	2 days · Included	3 days · Included	5 days · This curriculum

INSIDE THIS CURRICULUM

What you will achieve	Outcomes and level focus
Who should attend	Audience and prerequisites
Agenda	48 topics · Foundation to Advanced
Hands-on labs	4 labs
Formats and fees	Live, self-paced, corporate
Trainer and reviews	Rajesh Kumar
Enrolment	Batches, payment, contacts

WHY DEVOPSSCHOOL

- Rated 4.6 on Google
- 1,500+ verifiable certificates issued in the public registry
- Trainer Rajesh Kumar: 20 years in industry
- Small batches: max 10 learners, every session recorded

Course page: www.devopsschool.com/courses/envoy/envoy-advance-training.html
Talk to us: WhatsApp +91 99057 40781 · +1 (469) 756-6329 · contact@DevOpsSchool.com · reply within 1 hour

OUTCOMES

What you will achieve

By the end of the Envoy course path, you will be able to:

1

Configure Envoy with confidence

Build Envoy listeners, routes and clusters for edge and internal service traffic.

2

Secure and observe traffic

Apply mTLS, JWT, RBAC and rate limits and expose metrics, logs and traces.

3

Run Envoy at scale

Operate Envoy dynamically through xDS, Gateway API and service mesh with high availability.

WHAT THE ADVANCED LEVEL ADDS

Service mesh, performance, high availability and edge scale

Hands-on: Load-test and harden an Envoy edge. Benchmark an Envoy edge gateway with Nighthawk, tune concurrency and overload settings, and prove zone failover with outlier ejection.

WHO SHOULD ATTEND

- Experienced Envoy practitioners responsible for quality, security and scale.
- Senior engineers, architects and leads who design and troubleshoot Envoy solutions.
- Teams making Envoy an organisation-wide standard.

BEFORE YOU START

- The Intermediate level, or equivalent hands-on experience.
- You can already: Drive Envoy dynamically with xDS, secure traffic with authentication and authorization filters, and troubleshoot it in production.
- Basic computer skills and a laptop with a stable internet connection for the live sessions and labs.
- This curriculum includes every earlier level, so it is complete on its own.

AGENDA · FOUNDATION TO ADVANCED

Envoy Advanced Training agenda

48 topics. Each level builds on the one before it, so this curriculum lists every earlier level in full. Days are for corporate (day-wise) delivery; live online batches cover the same agenda in max 8-10 hours.

DAY 1 — Foundation: Proxy architecture, installation and first configuration

Included from Foundation

1. Why Envoy: L4 and L7 proxy, edge proxy, sidecar and service mesh data plane roles, CNCF graduated project
2. Envoy architecture: single process, worker threads, connection handling, non-blocking event loop and hot restart
3. Core building blocks: listeners, filter chains, network filters, HTTP filters, routes, clusters and endpoints
4. Installation: envoyproxy/envoy Docker images, official packages, func-e and verifying the version with envoy --version
5. Bootstrap configuration: envoy.yaml structure, static_resources, node identity and the admin block
6. HTTP connection manager: codec types, stat_prefix, route_config, virtual hosts and the router filter
7. Routing basics: prefix, path and header matching, host rewrite and direct responses
8. Clusters: STATIC, STRICT_DNS and LOGICAL_DNS discovery, connect timeouts and load assignment
9. Admin interface: port 9901, /stats, /clusters, /config_dump, /ready and /logging
10. Access logging: file and stdout access logs, default format and custom format strings
11. Validating configuration: envoy --mode validate, reading startup logs and common YAML errors
12. First example: front two backend services with path-based routing on a single listener

DAY 2 — Essential: Load balancing, resilience, TLS and observability

Included from Essential

13. Load balancing policies: round robin, least request, random, ring hash and Maglev, plus locality weighting
14. Health checking: active HTTP, TCP and gRPC health checks and passive outlier detection
15. Timeouts and retries: route timeouts, idle timeouts, retry_on conditions, retry budgets and backoff
16. Circuit breakers: max connections, pending requests, requests and retries per priority
17. TLS termination: DownstreamTlsContext, certificates, SNI-based filter chain matching and ALPN
18. Upstream TLS and mTLS: UpstreamTlsContext, client certificates and validation contexts
19. Traffic shifting: weighted clusters for canary and blue-green releases, request mirroring
20. Header manipulation: adding and removing request and response headers, x-forwarded-for and x-request-id
21. gRPC and HTTP/2: proxying gRPC services, gRPC-Web filter and HTTP/2 upstream settings
22. Statistics: counters, gauges and histograms, Prometheus scraping via /stats/prometheus
23. Distributed tracing: OpenTelemetry tracer, trace context propagation and sampling
24. TCP proxy and other protocols: tcp_proxy filter, Redis and MySQL network filters overview

DAY 3 — Intermediate: Dynamic configuration, xDS, security filters and troubleshooting

Included from Intermediate

25. Dynamic configuration: xDS APIs LDS, RDS, CDS, EDS and SDS, filesystem-based dynamic config and ADS
26. Control planes: go-control-plane, snapshot cache, versioning, ACK and NACK handling
27. Secret discovery service: rotating certificates without restarts, integration with SPIFFE and SPIRE
28. Authentication: JWT authn filter with JWKS, OAuth2 filter and ext_authz with an external authorization service
29. Authorization: RBAC filter policies by principal, path and header

30. Rate limiting: local rate limit filter and global rate limiting with the envoyproxy ratelimit service and Redis
31. Extending Envoy: Lua filter scripting and an overview of Wasm filters
32. Kubernetes deployment: Envoy as a Deployment or sidecar, ConfigMaps, readiness and graceful drain
33. Envoy Gateway: Kubernetes Gateway API resources, GatewayClass, Gateway and HTTPRoute
34. Compression, CORS and fault injection: compressor filter, CORS policy and delay or abort faults for testing
35. Troubleshooting: response flags in access logs (UH, UF, URX, NR), /config_dump analysis and debug logging
36. Common failures: 503 upstream errors, TLS handshake failures, route mismatches and DNS resolution issues

DAYS 4-5 **Advanced: Service mesh, performance, high availability and edge scale** — New at this level

37. Service mesh data plane: Envoy in Istio sidecar and ambient waypoint proxies, and how istiod programs it via xDS
38. Edge proxy hardening: Envoy edge best practices, buffer limits, header size limits, and HTTP/1 and HTTP/2 protections
39. Overload manager: resource monitors, load shedding and connection limits under stress
40. Performance tuning: concurrency, connection pooling, keepalives, buffer sizes and benchmarking with Nighthawk
41. HTTP/3 and QUIC: enabling QUIC listeners, alt-svc advertisement and UDP considerations
42. High availability: multiple replicas, zone-aware routing, priority levels, failover and outlier ejection tuning
43. Multi-cluster and multi-region traffic: locality failover, aggregate clusters and global load balancing
44. Hot restart and zero-downtime upgrades: drain strategies, graceful shutdown and version upgrades
45. Observability at scale: stats tag extraction, stat sinks, access log services and tracing sampling strategy
46. Security governance: CVE tracking, supported release policy, image provenance and configuration review
47. Migration: moving from NGINX or HAProxy to Envoy and from Ingress to Gateway API
48. Capstone: design and run a highly available Envoy edge and internal service proxy with mTLS and SLOs

PRACTICE

Hands-on labs

You build these yourself during the course, guided by the trainer.

FOUNDATION **Run Envoy as a reverse proxy**

Start Envoy in Docker in front of two backend services, route by path prefix and inspect traffic through the admin interface and access logs.

ESSENTIAL **Ship a canary release through Envoy**

Terminate TLS at Envoy, add health checks, retries and circuit breakers, then shift 10 percent of traffic to a new version and watch the metrics in Prometheus.

INTERMEDIATE **Secure APIs with dynamic Envoy**

Serve listeners and clusters from a small xDS control plane, protect an API with JWT validation, RBAC and rate limiting, and debug a failing route.

ADVANCED **Load-test and harden an Envoy edge**

Benchmark an Envoy edge gateway with Nighthawk, tune concurrency and overload settings, and prove zone failover with outlier ejection.

HOW YOU CAN LEARN

Formats and fees

The same agenda in three formats. Fees are in Indian rupees as of November 2026; the course page shows them in your currency.

FORMAT	DURATION	WHAT YOU GET	FEE
Live & interactive (online)	Max 8-10 hours	Instructor-led public batch of max 10 learners with demos, labs, Q&A and assignment review. Weekday batches start on the 1st of every month, weekend batches on the first Saturday of every month.	**INR 34,999**
Self-paced video	1-year LMS access	All four Envoy levels, plus 20+ more courses and 50+ tools, at your own pace.	**INR 833/month** billed yearly at INR 9,996
Corporate (day-wise)	5 days for this level	A private batch for your team, on demand. Foundation 1 day, Essential 2, Intermediate 3, Advanced 5 (cumulative). 1:1 training is also available on demand.	**Quote on request**

ASSESSMENT AND CERTIFICATE

Your progress is checked through hands-on labs and assignments at every level. On completion you receive a DevOpsSchool certificate of completion with a unique credential ID that anyone can verify at devopsschool.com/certificates.

INCLUDED WITH EVERY LIVE BATCH

- Every live session is recorded and stays in your LMS for a year.
- Can't attend your batch? Move to next month's batch.
- Free demo class before you pay.
- Free 10-15 minute call with an advisor or the trainer to check the course fits you.

YOUR TRAINER

Learn from Rajesh Kumar

Principal Architect, trainer and mentor in DevOps, SRE, DevSecOps and platform engineering, with 20 years across 8+ software MNCs, including Staff DevOps/SRE Engineer for a leading Japanese mobile-payment platform and Principal DevOps Architect and Manager in Europe.

Profile: www.rajeshkumar.xyz · Videos: youtube.com/@TheDevOpsSchool

20 years in industry	**200+** corporate trainings
10,000+ engineers mentored	**70+** organisations coached

REVIEWS

What learners say

Rated 4.6 on Google · more reviews at devopsschool.com/testimonials and in our video testimonials.

> “Rajesh is very good trainer. Rajesh was able to resolve our queries and question effectively. We really liked the hands-on examples covered during this training program.”
>
> Indrayani, India

> “The training was very useful and interactive. Rajesh helped develop the confidence of all.”
>
> Abhinav Gupta, Pune

START YOUR ENVOY TRAINING

Join the next batch

Weekday batches start on the 1st of every month and weekend batches on the first Saturday of every month, with max 10 learners each. Corporate and 1:1 batches run on demand. We reply within 1 hour.

Pay by UPI, credit and debit cards, net banking or PayPal. Before you pay, read our refund policy. All levels of this course: www.devopsschool.com/courses/envoy/

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