DevOpsSchool

Course curriculum · November 2026

LEVEL 04 OF 04 · ADVANCED

Etcd Advanced Training

Design, tune and upgrade production etcd for high availability, performance and disaster recovery at scale.

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	47 topics · Foundation to Advanced
Hands-on labs	4 labs
Formats and fees	Live, 1:1, 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/etcd/etcd-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 Etcd course path, you will be able to:

1

Run reliable etcd clusters

Deploy secure, highly available etcd clusters with TLS, RBAC and correct member counts.

2

Protect critical cluster state

Back up, restore and recover etcd for Kubernetes and other platforms with tested runbooks.

3

Tune and troubleshoot etcd

Use metrics and maintenance tasks to keep etcd fast, healthy and within quota.

WHAT THE ADVANCED LEVEL ADDS

Performance, high availability, disaster recovery and upgrades

Hands-on: Upgrade and recover production etcd. Perform a rolling minor-version upgrade of a secured cluster under load, then run a full disaster recovery from snapshot and verify the data.

WHO SHOULD ATTEND

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

BEFORE YOU START

- The Intermediate level, or equivalent hands-on experience.
- You can already: Operate etcd day to day: compact, defragment, monitor key metrics, run it for Kubernetes and troubleshoot common failures.
- 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

Etcd Advanced Training agenda

47 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: Key-value concepts, Raft basics and etcdctl

Included from Foundation

1. What etcd is: distributed, strongly consistent key-value store, CNCF graduated project and the backbone of Kubernetes
2. Core concepts: keys, values, revisions, MVCC history, prefixes and the flat keyspace of the v3 API
3. Raft consensus basics: leader, followers, terms, log replication, quorum and why clusters use 3 or 5 members
4. Architecture: gRPC API, Raft module, write-ahead log (WAL), snapshots and the bbolt backend
5. Installation: release binaries, systemd unit, Docker container and checking etcd --version
6. Single-node start: data-dir, listen-client-urls, advertise-client-urls and the default ports 2379 and 2380
7. etcdctl basics: ETCDCTL_API=3, endpoints flags, put, get, get --prefix, del and output formats (json, table)
8. Watches: watch a key or prefix, watch from a past revision and observing changes in real time
9. Leases and TTL: lease grant, put --lease, keep-alive and automatic key expiry
10. Cluster health: endpoint health, endpoint status, member list and identifying the leader
11. Use cases: configuration storage, service discovery, leader election and distributed locks
12. First example: start a three-member local cluster and verify replication by killing one member

DAY 2 — Essential: Cluster setup, transactions, security and backups

Included from Essential

13. Static cluster bootstrap: initial-cluster, initial-cluster-state, initial-cluster-token and peer URLs
14. Discovery options: static configuration, DNS SRV discovery and configuration files (YAML)
15. Transactions: etcdctl txn with compare, success and failure branches, compare-and-swap patterns
16. Distributed coordination: etcdctl lock, etcdctl elect and the clientv3 concurrency package
17. Transport security: client and peer TLS, cfssl or OpenSSL certificates, client-cert-auth and trusted CA
18. Authentication and RBAC: user add, role add, role grant-permission with key ranges and auth enable
19. Snapshots: etcdctl snapshot save, snapshot status and scheduled backups
20. Restore: etcdutl snapshot restore into a new data-dir, new cluster token and member names
21. Membership changes: member add, member remove, member update and learner members
22. Client libraries: Go clientv3 basics, timeouts, retries and connection to multiple endpoints
23. Logging and configuration review: log levels, logger zap settings and config validation

DAY 3 — Intermediate: Maintenance, monitoring, Kubernetes integration and troubleshooting

Included from Intermediate

24. Compaction: revision and periodic auto-compaction, auto-compaction-mode and history retention
25. Defragmentation: etcdctl defrag per member, reclaiming space and safe scheduling
26. Storage quota: quota-backend-bytes, NOSPACE alarms, alarm list and alarm disarm
27. Monitoring: /metrics endpoint, Prometheus scraping and Grafana dashboards for etcd
28. Key metrics: wal_fsync_duration_seconds, backend_commit_duration_seconds, leader changes, proposals failed, db size

29. Kubernetes and etcd: kubeadm stacked versus external etcd topologies and API server flags
30. Kubernetes data in etcd: /registry key layout, reading objects with etcdctl and why not to edit them directly
31. Encryption at rest for Kubernetes secrets: EncryptionConfiguration, providers and key rotation
32. Backing up Kubernetes control planes: etcd snapshot procedures for kubeadm and managed alternatives
33. Troubleshooting: lost quorum, slow disks, clock skew, leader election storms and request timeouts
34. Network troubleshooting: peer connectivity, TLS errors, firewall rules for 2379 and 2380
35. Automation: backup scripts, systemd timers or Kubernetes CronJobs and health check alerts

DAYS 4-5 **Advanced: Performance, high availability, disaster recovery and upgrades** New at this level

36. Hardware and disk sizing: SSD or NVMe, fsync latency targets, dedicated disks for WAL and data, memory planning
37. Performance tuning: heartbeat-interval, election-timeout, snapshot-count and benchmarking with the benchmark tool
38. High availability design: odd member counts, failure domains across zones, and latency limits between members
39. Large clusters: request size limits, watch scalability, lease load and keyspace growth control
40. Disaster recovery: full cluster rebuild from snapshot, single member replacement and runbook drills
41. Upgrades: rolling upgrades between minor versions (3.5 to 3.6), downgrade support and pre-upgrade checks
42. Security hardening: certificate rotation, minimal RBAC, network isolation and CIS Kubernetes etcd checks
43. Multi-tenant and multi-cluster: namespacing with key prefixes, gRPC proxy and separate clusters for events
44. Operating at scale: etcd for large Kubernetes clusters, separating events, API server watch cache effects
45. Observability and SLOs: request latency SLOs, alert rules for leader loss, quorum risk and db size growth
46. Governance: backup retention policy, restore testing cadence, change control and audit of access
47. Capstone: design, deploy and document a production etcd cluster with HA, TLS, monitoring and tested DR

PRACTICE

Hands-on labs

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

FOUNDATION **Run a three-member etcd cluster**
Start three etcd members locally, write and watch keys with etcdctl, stop one member and prove the cluster keeps quorum and data.

ESSENTIAL **Secure, back up and restore etcd**
Enable TLS and RBAC on a three-node cluster, take a snapshot, simulate data loss and restore the cluster from the snapshot.

INTERMEDIATE **Diagnose and repair a struggling cluster**
Trigger a NOSPACE alarm and slow-disk symptoms, read the metrics in Grafana, then compact, defragment, disarm and restore normal operation.

ADVANCED **Upgrade and recover production etcd**
Perform a rolling minor-version upgrade of a secured cluster under load, then run a full disaster recovery from snapshot and verify the data.

HOW YOU CAN LEARN

Formats and fees

The same agenda in four 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**
1:1 live training (online)	Max 8-10 hours, one-to-one	The same agenda, taught one-to-one by the trainer. Starts immediately, without waiting for the next batch; sessions planned around your working hours, at your pace.	**INR 99,999**
Self-paced video	1-year LMS access	All four Etcd 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).	**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 ETCD 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. 1:1 training can start immediately; corporate 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/etcd/

ENROL OR RESERVE A SEAT **Etcd Advanced Training**	WHATSAPP · INDIA **+91 99057 40781**
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