DevOpsSchool

Course curriculum · November 2026

LEVEL 04 OF 04 · ADVANCED

Tuf Advanced Training

Design TUF-based distribution for an organisation, plan compromise recovery and connect TUF to the wider software supply chain.

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	44 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/tuf/tuf-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 Tuf course path, you will be able to:

1

Understand update security

Explain TUF roles, metadata and the attacks they prevent in software distribution.

2

Build TUF repositories

Create, sign, publish and consume TUF metadata with python-tuf and other implementations.

3

Operate TUF safely

Manage keys, delegations, rotation and compromise recovery for production update systems.

WHAT THE ADVANCED LEVEL ADDS

Enterprise distribution, compromise recovery and supply chain integration

Hands-on: Capstone: secure organisational update service. Design and build a TUF repository with offline root, delegated team roles and CI signing, then run a key compromise drill end to end.

WHO SHOULD ATTEND

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

BEFORE YOU START

- The Intermediate level, or equivalent hands-on experience.
- You can already: Manage TUF keys and delegations safely, automate signing in CI and rotate keys without breaking clients.
- 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

Tuf Advanced Training agenda

44 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: Software update security and TUF roles

Included from Foundation

1. Software update risks: compromised repositories, mirrors and signing keys in real supply chain incidents
2. What TUF is: The Update Framework specification, CNCF graduated project and its design goals
3. Attacks addressed: arbitrary software, rollback, freeze, mix-and-match, endless data and fast-forward attacks
4. Top-level roles: root, targets, snapshot and timestamp and what each one signs
5. Metadata files: root.json, targets.json, snapshot.json and timestamp.json structure and fields
6. Signatures and thresholds: multiple keys per role and why thresholds limit key compromise
7. Expiration and versioning: expiry dates, version numbers and how clients detect stale data
8. Client workflow: the update steps from trusted root to downloading and verifying a target
9. Where TUF is used: Sigstore root of trust, PyPI PEP 458, Notary v1 and Uptane for vehicles
10. Tool setup: python-tuf install and project layout in a Python virtual environment
11. First look: reading a public TUF repository's metadata and verifying signatures by hand

DAY 2 — Essential: Building repositories and clients with python-tuf

Included from Essential

12. Metadata API: creating and editing Root, Targets, Snapshot and Timestamp objects with python-tuf
13. Key generation: Ed25519 and ECDSA keys, key IDs and securesystemslib signers
14. Building a repository: adding targets, hashing files, signing and writing metadata to disk
15. Consistent snapshots: hash-prefixed target and versioned metadata file names
16. Publishing: serving metadata and targets over HTTPS from a static web server or object storage
17. ngclient: configuring the Updater, local metadata cache and trusted root bootstrap
18. Downloading targets: get_targetinfo, download_target and integrity checks
19. Refreshing metadata: timestamp and snapshot refresh cadence and handling expired metadata
20. Delegations basics: delegating target paths from the targets role to team roles
21. Error handling: bad signatures, rollback detection and expired metadata exceptions
22. Other implementations: go-tuf, rust-tuf and tough and how they interoperate

DAY 3 — Intermediate: Key management, delegations and pipeline automation

Included from Intermediate

23. Offline and online keys: keeping root and targets keys offline and automating timestamp and snapshot
24. Hardware-backed keys: YubiKey, HSM and cloud KMS signers for TUF roles
25. Key rotation: rotating root keys with chained root versions and replacing compromised keys
26. Delegation patterns: path-based, terminating and multi-role threshold delegations
27. Hashed bin delegations: distributing large numbers of targets across bins for scale
28. CI automation: signing and publishing metadata from GitHub Actions or GitLab CI with protected secrets
29. Repository Service for TUF (RSTUF): API-driven repository management and background workers
30. Integrating with package managers: adding TUF verification to an internal artifact distribution flow

31. Monitoring metadata health: expiry alerts and verifying published metadata continuously
32. Testing clients: simulating rollback, freeze and mix-and-match attacks in test suites
33. Troubleshooting: version mismatches, clock skew and cache corruption on clients

DAYS 4-5 **Advanced: Enterprise distribution, compromise recovery and supply chain integration** — New at this level

34. Threat modeling the update system: role separation, key custody and blast radius per role
35. Compromise recovery: revoking keys, re-signing metadata and forcing clients past fast-forward attacks
36. Root key ceremonies: quorum signing, witnessed procedures and audit records
37. Multiple repositories: TAP 4 mapping files and requiring agreement across repositories
38. Succinct hashed bin delegations: TAP 15 for very large target sets
39. Uptane concepts: director and image repositories for automotive and embedded updates
40. Sigstore integration: how the Sigstore TUF root distributes Fulcio and Rekor trust material
41. Supply chain alignment: combining TUF with in-toto attestations, SLSA provenance and SBOMs
42. Scale and performance: CDN distribution, metadata size control and client bandwidth
43. Governance: TAP process, key holder policies, metadata expiry standards and incident runbooks
44. Capstone: a secure update service for an internal tool with offline root, delegated teams and CI signing

PRACTICE

Hands-on labs

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

FOUNDATION

Inspect and verify TUF metadata

Download metadata from a public TUF repository, decode each role file and trace how the client verifies a target from the trusted root.

ESSENTIAL

Publish and consume a signed update

Build a small TUF repository with python-tuf, publish a new version of an artifact and use ngclient to download and verify it.

INTERMEDIATE

Automate signing and rotate a key

Move timestamp and snapshot signing into a CI job, delegate a path to a team role and rotate one root key while existing clients keep updating.

ADVANCED

Capstone: secure organisational update service

Design and build a TUF repository with offline root, delegated team roles and CI signing, then run a key compromise drill end to end.

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 Tuf 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 TUF 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/tuf/

ENROL OR RESERVE A SEAT
Tuf Advanced Training

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