

LayerZero

LayerZero is a messaging protocol that lets smart contracts on one blockchain send messages to contracts on another.

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AT A GLANCE

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Changelog.

- v0.3.0 (2026-10-14; replaces v0.2.1, publish hash 2f714c0832a06feeaf070ca0001a64645c09ff371981fbcba104963e01f3258): plain-English rewrite for learners. Adds an "At a glance" block, plain explanations of terms specific to this subject, labeled analogies, and "why it mattered" notes for each upgrade. Sources unchanged. No claim changes.
- v0.2.1 (2026-10-14; replaces v0.2, publish hash f35f068169df330e18d0e2836e8c6eb31d162090970c49dd850c0167c78abe85): the page record now shows the published status, version, publish date and proof. Body wording: the policy line now names the Learning Hub. No claim changes.
- v0.2 (2026-10-06; replaces v0.1, sha256 479bc49a7f83924cd2b043217721bbfb13cbebc0033699e8c1650c1f00c722e2): attributed the KelpDAO attack to Mandiant and CrowdStrike, the firms LayerZero Labs retained, with the report's confidence levels (DPRK "with high confidence"; UNC4899/TraderTraitor "with medium confidence"), added zeroShadow's corroborating attribution, and stated that Le Coin has not independently verified it; dated the full incident report May 18, 2026 (published May 20); added the incident report as the source for the 116,500 rsETH figure; replaced an unsupported claim about the most common use with "Messages can carry arbitrary data"; re-cited the X-of-Y-of-N bullets to the Production DVN Configuration and Security Stack pages and added the optional threshold; added the LayerZero Foundation's "Fee Switch Referendum #3" post (December 18, 2025) as the source that ZRO holders vote; replaced "the docs we reviewed do not say" on the default migration with dated wording noting the two-DVN default presets still listed on October 6, 2026; cited the ZRO buybacks line; updated the Learning Hub label.

1. What it is

A messaging protocol

LayerZero is a messaging protocol that lets smart contracts on one blockchain send messages to contracts on another ^[1]. Messages can carry arbitrary data ^[1]; moving tokens between chains, through the Omnichain Fungible Token (OFT) standard, is one use ^[6]. LayerZero Labs owns the multisig that administers the Endpoint contracts and runs one of the verifier services ^[11]. The LayerZero Foundation runs ZRO token votes on a protocol fee ^{[12][13]}.

Analogy, not the mechanism itself: LayerZero is like a postal system between countries, where each sender chooses which inspectors must stamp a letter before it is delivered.

Each app picks its security

Its central design choice is that each application picks its own security ^[1]. Older bridges typically relied on one fixed set of signers, so a failure there put every connected application at risk ^[1]. On LayerZero, each application chooses which independent verifiers must approve its messages, how many, and how long to wait for the source chain to settle ^{[1][4]}.

The April 2026 loss

That flexibility cuts both ways. In April 2026, an application that relied on a single verifier lost 116,500 rsETH after that verifier was fed false data ^{[9][10]}. The incident, and LayerZero's changes since, are covered in What changed.

Related dives

LayerZero is one of the cross-chain routes listed for [Robinhood Chain](#). Chainlink's CCIP, a different design for the same job, is covered in the [Chainlink](#) dive.

2. How it works

Endpoints

Every supported chain has a LayerZero Endpoint contract ^[2]. LayerZero describes the Endpoint as "immutable" and "permissionless": it cannot be upgraded, and anyone can use it ^{[1][2]}. Every message passes through it ^[2]. The Endpoint gives each message a unique ID and a nonce, records the hash of each verified message, and makes sure each one is delivered exactly once ^[2].

OApps and message libraries

Applications built on LayerZero are called OApps ^[1]. An OApp chooses message libraries, which control how messages are emitted and checked ^{[1][2]}.

Verifiers (DVNs)

Messages are checked by Decentralized Verifier Networks (DVNs) ^[3]. A DVN is any service that confirms a message's hash on the destination chain ^[3]. DVNs can use different methods, and "DVN Adapters" let applications plug in other systems, such as native chain bridges ^[3].

The X-of-Y-of-N rule

Each application sets an "X-of-Y-of-N" rule for each route ^{[3][4]}.

- **X required DVNs**, every one of which must sign each message ^{[3][7]}.
- **A threshold Y** of optional DVNs that must also sign ^{[3][7]}.
- **A pool of N** optional DVNs to draw from ^[7].

The destination accepts a message only when every required DVN has attested and the optional threshold, if any, is met ^{[3][7]}.

Analogy, not the mechanism itself: it is like a contract that needs signatures from certain named partners, plus any few from a wider list of approved witnesses.

Executors

Once a message is verified, someone has to deliver it on the destination chain ^[5]. Executors do this as a paid service, so users do not need gas on every chain ^[5]. Delivery is permissionless: if an executor fails, anyone can pay the gas and complete the delivery by hand ^{[5][11]}.

Omnichain tokens (OFT)

The Omnichain Fungible Token (OFT) standard lets one token exist on many chains with a single overall supply [6]. A transfer burns or locks tokens on the source chain and mints or unlocks them on the destination [6]. New tokens usually burn and mint on every chain [6]. Existing tokens use an "OFT Adapter" that locks them on their home chain [6]. LayerZero's own threat model notes that a forged message can release collateral held in such a "lockbox" [7].

Defaults and the Labs multisig

An application that does not set its own configuration falls back on defaults [11]. These defaults cover block confirmations, message library and choice of DVNs [11]. A LayerZero Labs multisig owns the Endpoints and sets these defaults [11]. That multisig can connect new chains, add new verification libraries (append-only) and change defaults [11]. LayerZero Labs says the defaults are "intended to be for testing only" and that a properly configured application is unaffected by the multisig's powers [11].

3. What changed

Timeline

Date	Event	Source
Dec 2024 to Jun 2026	Four ZRO votes on a protocol fee; all "Off"	[12]
Mar 6, 2026	Attacker begins breach of LayerZero Labs systems	[10]
Apr 18, 2026	KelpDAO rsETH loses 116,500 rsETH	[9][10]
Apr 19, 2026	Labs DVN stops serving single-verifier setups	[11]
May 8, 2026	LayerZero Labs apology and security update	[11]
May 18, 2026	LayerZero Labs incident report (published May 20)	[10]

The KelpDAO incident

KelpDAO's rsETH token used a 1-of-1 setup, with the LayerZero Labs DVN as its only verifier [9][10]. LayerZero Labs' report says the breach began on March 6, 2026, when an attacker socially engineered a Labs developer and moved into the company's cloud environment [10]. The attacker tampered with internal RPC nodes, the servers the DVN used to read blockchain data [10]. Those nodes gave correct answers to monitoring tools but false ones to the DVN [10]. A denial-of-service attack on an external RPC provider then forced the DVN to rely on the compromised nodes [10]. The DVN signed a forged message, and because no second verifier was required, the destination contract released 116,500 rsETH [10].

LayerZero Labs says the on-chain protocol worked as configured and no other application was affected [9][10].

Who did it, per the report

LayerZero Labs retained the security firms Mandiant and CrowdStrike to investigate the incident and provide attribution. In LayerZero Labs' incident report, the two firms attribute the attack to North Korea (DPRK) "with high confidence" and assess "with medium confidence" that it is specifically associated with

the group UNC4899, also known as TraderTraitor ^[10]. zeroShadow, a third firm retained by LayerZero Labs, "provided corroborating attribution," and two independent researchers named in the report also attribute it to UNC4899 ^[10]. Le Coin has not independently verified the attribution.

LayerZero Labs' changes

What changed. LayerZero Labs said on May 8, 2026 that it "made a mistake by allowing our DVN to act as a 1/1 DVN for high-value transactions" ^[11]. Since then ^{[10][11]}:

- Its DVN refuses to be the only required verifier on any route ^{[10][11]}.
- Default settings are moving to 5-of-5 verifiers where possible, and no fewer than 3-of-3 ^[11].
- It is writing a second DVN client in Rust and has tightened how DVNs choose RPC sources ^[11].
- It rebuilt the affected cloud environment rather than patching it ^[10].
- It plans to raise its own multisig from 3-of-5 to 7-of-10 signers where its new OneSig multisig is available ^[11].

The developer docs now warn that "single-DVN production configurations are not safe" ^{[7][8]}. They give a step-by-step guide for moving to multiple verifiers ^{[7][8]}.

Why it mattered. Apps can no longer use the Labs DVN as their only required verifier, and builders have a guide for adding more ^{[7][8][11]}.

Multisig signer disclosure

In the same May 8 post, LayerZero Labs disclosed that about three and a half years earlier a signer had used a multisig hardware wallet for a personal trade ^[11]. The signer was removed and wallets were rotated ^[11].

Fee switch votes

What changed. ZRO holders have voted four times on whether to turn on a protocol fee, up to the cost of verifying and executing each message ^{[12][13]}. Fees collected would be converted to ZRO and burned ^[12]. Every vote, the latest from June 20 to 27, 2026, ended "Off" ^[12].

Why it mattered. Users have not paid a protocol fee, because every vote ended "Off" ^[12].

4. What is open

Security depends on each app

LayerZero's model puts the security choice on each application ^[1]. LayerZero Labs now polices its own DVN's participation, but the protocol "continues to enforce whatever each application configures" ^[10]. Users of a given token have to check that token's configuration to know what protects it. The Labs-recommended steps are to pin configurations, set block confirmations high enough to avoid reorganizations, and require at least two DVNs ^[11].

Dependence on defaults

Applications that rely on defaults are, in LayerZero Labs' words, "fully reliant on the LayerZero Labs multisig" ^[11]. The migration of defaults to 5-of-5 where possible, and no less than 3-of-3, was described as in progress in May 2026 ^{[10][11]}. As of October 6, 2026, LayerZero's Security Stack page still lists default presets with two

required DVNs, and says defaults "may change without notice" ^[3]. We found no primary source saying the migration is complete.

Correlated verifiers

Two DVNs from the same operator, cloud or verification method can fail together ^[7]. LayerZero's own guidance ranks diversity by operator, infrastructure, method and jurisdiction ^[7]. Not every DVN is deployed on every chain, so some routes cannot yet use multiple independent verifiers ^{[7][8]}.

Recovery and liability

The incident report (dated May 18, 2026) mentions token tracking and seizure efforts with zeroShadow and law enforcement ^[10]. The outcome, and how losses were handled between KelpDAO, its users and LayerZero Labs, are not covered in LayerZero's primary sources we reviewed. KelpDAO's own account was not reviewed for this draft.

Fee switch and ZRO

The protocol fee has never been switched on ^[12]. Whether and when it will be is a governance question with no date. The Foundation's site also describes ZRO buybacks ^[12], which this dive does not cover.

What this page leaves out

By Learning Hub policy, this dive carries no price, market value, dollar loss figures or usage-volume figures, including those in LayerZero's own posts. Those go stale, and News covers them.

Sources

- 1 LayerZero Docs, "What is LayerZero?" <https://docs.layerzero.network/v2/concepts/getting-started/what-is-layerzero>
- 2 LayerZero Docs, "LayerZero Endpoint." <https://docs.layerzero.network/v2/concepts/protocol/layerzero-endpoint>
- 3 LayerZero Docs, "Security Stack (DVNs)." <https://docs.layerzero.network/v2/concepts/modular-security/security-stack-dvns>
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- 5 LayerZero Docs, "Executors." <https://docs.layerzero.network/v2/concepts/permissionless-execution/executors>
- 6 LayerZero Docs, "Omnichain Tokens." <https://docs.layerzero.network/v2/concepts/applications/oft-standard>
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- 8 LayerZero Docs, "Migrating from a Single-DVN Configuration." <https://docs.layerzero.network/v2/get-started/migrating-from-single-dvn>
- 9 LayerZero Blog, "KelpDAO Incident Statement" (April 19, 2026). <https://layerzero.network/blog/kelpdao-incident-statement>
- 10 LayerZero Blog, "LayerZero Labs KelpDAO Incident Report" (May 20, 2026), with linked full report dated May 18, 2026. <https://layerzero.network/blog/layerzero-labs-kelpdao-incident-report> and <https://layerzero.network/publications/kelpdao-incident-report.pdf>
- 11 LayerZero Blog, "LayerZero Update" (May 8, 2026). <https://layerzero.network/blog/an-overdue-apology>
- 12 LayerZero Foundation, "LayerZero Fee Switch Referendum." <https://layerzero.foundation/fee-switch>
- 13 LayerZero Foundation, "Fee Switch Referendum #3" (December 18, 2025). <https://info.layerzero.foundation/fee-switch-referendum-3-cbb4a1b904d3>

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Holding the Corner.

Not financial advice.