Shirudo explained: eBPF “shields” that protect a running Linux service before the patch lands

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Short answer: Shirudo is an open-source runtime from OpenAI and Cisco that lets operators load a temporary eBPF “shield” into a running Linux system to block a vulnerable code path while a permanent patch is prepared, without restarting the service. OpenAI announced it on 23 November 2026. It matters technically because patching can take days or weeks and an exploit and a legitimate request can share the same operation, so blocking a whole system call can take the service down.

TL;DR The short version

- Shirudo, from OpenAI and Cisco, loads a temporary eBPF 'shield' into a running Linux system to block a vulnerable code path until a patch is ready.
- Unlike a web application firewall it sees what the process does, and works without restarting the service.
- A shield is a stop-gap, not a fix; practise on non-production machines first.

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What is Shirudo?

According to OpenAI, Shirudo (Japanese for “shield”) is a runtime that helps teams protect Linux systems during the gap between a vulnerability becoming known and a patch being deployed. A shield is a small, targeted safeguard. Operators can test whether a shield blocks the behaviour that exposes the flaw while allowing legitimate requests, and once they approve it, deploy it while the service keeps running.

How it works

- **eBPF.** Shirudo uses eBPF, a Linux technology that runs small programs at specific points inside the kernel, to observe suspicious activity and apply a narrow protection.
- **Live protection.** Shields can block vulnerable code paths without a restart, and operators can watch how a proposed shield would affect applications before enforcing it.
- **Trusted deployment.** Shields are cryptographically signed and verified before loading, the Linux eBPF verifier checks them against its safety rules, and kernel security controls restrict unauthorised changes.
- **Hardware-backed record.** A Trusted Platform Module (TPM) supports a verifiable record of protections being loaded or removed.
- **Agents under operator control.** The design gives AI agents programmable controls to investigate a vulnerability, draft a shield and validate it against the exploit and real workloads, while security teams decide

what is deployed.

Results reported by the source

In a controlled test described by OpenAI, a shield generated with Codex blocked a Java4Shell exploit attempt against a running Elasticsearch service without a restart. The shield added an input check to Java's Base64 decoder and attached directly to the running process; the exploit input was rejected while Elasticsearch kept running. That is a single worked example, not a measured success rate. For the underlying flaw, see the Java4Shell OpenJDK Base64 vulnerability.

What is new compared with earlier approaches

Virtual patching usually sits at the network edge, in a web application firewall, where it sees requests but not what the process does with them. A kernel-level shield acts at the operating-system operation itself and can be narrowed to one process. The trade-off, which the announcement itself names, is that an exploit and a legitimate request may rely on the same Linux operation, so the shield has to be specific enough to keep the service available.

Limitations and open questions

- The project is described as a first step, and the long-term goals (automatically generated permission policies, restoring systems to a verified known-good state) are stated as aims, not features.
- A shield is a stop-gap, not a fix. It reduces exposure during the patch window and does not replace the patch.
- OpenAI's announcement is the source for the design and the test. Independent evaluation of false positives and kernel-version coverage was not part of what was read.

How to try or apply it

1. Follow the VM quickstart in the project docs to sign, load and verify a test protection on a non-production machine.
2. Use the self-guided lab from Isovalent that OpenAI links, to practise applying and removing a shield.
3. Define who may approve a shield, how it is signed, and how its removal is recorded, before using it on a production service.
4. Keep the real patch on the plan: log the shield against the vulnerability ticket and remove it after patching.

What it means for security and infrastructure teams

Patch windows are a policy problem as much as a technical one. A signed, reversible, auditable temporary control gives change-management a middle option between "patch now and restart" and "accept the risk". Shirudo is licensed under BSD 2-Clause, with its BPF programs dual-licensed under BSD and GPL, so you can read the code before you trust it. See also DevSecOps and least privilege.

Frequently asked questions

- **What is Shirudo?** An open-source runtime from OpenAI and Cisco for loading signed eBPF shields into running Linux systems as temporary protection.

- **Does it need a restart?** No. The announcement says shields can be applied while the service continues running.
- **What licence does it use?** BSD 2-Clause, with BPF programs dual-licensed under BSD and GPL, according to OpenAI.
- **Does it replace patching?** No. It is meant to protect systems while teams build and roll out a fix.

Related reading

- What is DevSecOps?
- What is zero trust?
- SSHole: OpenSSH musl Linux vulnerability
- Certified Technical Practitioner

Sources and currency

Sources were read on 24 November 2026. Products, rules and standards change, so check the linked originals before you rely on any detail.

> Related credential: Certified Technical Practitioner. Explore the exam facts and syllabus.

Sources and further reading

1. OpenAI. OpenAI and Cisco introduce Shirudo. 23 November 2026. openai.com/index/introducing-shirudo.

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