

The Most Popular Organization's Projects

30 December, 2023

INSTRUCTOR: ME

If they never heard it, it's a waste of your fucking time.

Beginner:

CNCF:

- Database: <https://github.com/tikv/tikv>
- Automation & Configuration: <https://github.com/project-akri/akri> [Slack](#) (Channel #akri)
- Monitoring: <https://github.com/foniod/foniod>
- Automation & Configuration: <https://github.com/kcl-lang/kcl>
- Application Definition & Image Build: <https://github.com/krator-rs/krator> [Slack](#)
- Container Runtime: <https://github.com/krustlet/krustlet>
- Runtimes: <https://github.com/krustlet/krustlet>
- Scheduling & Orchestration: <https://github.com/kube-rs/kube> (Channel #kube)
- Security & Compliance: <https://github.com/parallaxsecond/parsec>
- Streaming & Messaging: <https://github.com/tremor-rs/tremor-runtime>
- Coordination & Service Discovery: <https://github.com/xline-kv/Xline>

CNCF essential components written in rust:

- Kubernetes storage simplified: <https://github.com/openebs/openebs>
- Ultralight, security-first service mesh for Kubernetes:
<https://github.com/linkerd/linkerd2>

Apache:

- SQL Query Engine: <https://github.com/apache/arrow-datafusion>
 - access data freely: <https://github.com/apache/incubator-opendal>
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- Distributed Query Engine: <https://github.com/apache/arrow-ballista>
 - an open source universal secure computing platform, making computation on privacy-sensitive data safe and simple:
<https://github.com/apache/incubator-teaclave>
 - Apache Dubbo Rust implementation: <https://github.com/apache/dubbo-rust>
 - Apache Arrow DataFusion Python Bindings:
<https://github.com/apache/arrow-datafusion-python>
 - Apache Iceberg: <https://github.com/apache/iceberg-rust>

Kata Containers : (openstack)

- Kata Containers runtime to build a standard implementation of lightweight Virtual Machines (VMs): <https://github.com/kata-containers/kata-containers>
- Secure and fast microVMs for serverless computing:
<https://github.com/firecracker-microvm/firecracker>
- cgroups-rs crates which is a Native Rust library for managing control groups under Linux: <https://github.com/kata-containers/cgroups-rs>

Mozilla:

- ccache with cloud storage: <https://github.com/mozilla/sccache>
- A project for generating C bindings: <https://github.com/mozilla/cbindgen>
- a multi-language bindings generator: <https://github.com/mozilla/uniffi-rs>
- an implementation of QUIC: <https://github.com/mozilla/negotiation>
- a tool to collect and aggregate code coverage data for multiple source files:
<https://github.com/mozilla/grcov>
- Firefox Application Services: <https://github.com/mozilla/application-services>
- supply-chain security: <https://github.com/mozilla/cargo-vet>
- Parser for ISO Base Media Format aka video/mp4:
<https://github.com/mozilla/mp4parse-rust>
- Modern cross-platform telemetry: <https://github.com/mozilla/glean>
- A simple, humane, typed key-value storage solution: <https://github.com/mozilla/rkv>

Eclipse:

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- provides in-vehicle software components: <https://github.com/eclipse/kuksa.val>

Arch :

- collaboratively maintained Arch Linux documentation:
<https://wiki.archlinux.org/title/ArchWiki>About> **contribute** for mailing lists & channel
 - A CLI tool to determine the rebuild order of provided package(s);
<https://gitlab.archlinux.org/archlinux/arch-rebuild-order>
 - CLI tool for querying the reproducibility status of the Arch Linux packages:
<https://gitlab.archlinux.org/archlinux/arch-repro-status>
 - GitLab metrics exporter: <https://gitlab.archlinux.org/archlinux/gitlab-exporter>
 - A secure helper daemon that watches several aspects of the Arch Linux infrastructure and makes sure that certain conditions are met:
<https://gitlab.archlinux.org/archlinux/gluebuddy>
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Blockchain Technologies:

- Cumulus, Substrate and Polkadot into a single new repository:
<https://github.com/paritytech/polkadot-sdk>
 - Parity is a blockchain infrastructure company that provides tools and services for building decentralized applications.
 - Polkadot is a multi-chain platform that allows interoperability between different blockchains
 - Substrate is a framework for building customizable blockchains.
 - Cumulus is to Write Parachains on Substrate
 - to write smart contracts in Rust for blockchains built on the Substrate framework:
<https://github.com/paritytech/ink>
 - WebAssembly interpreter: <https://github.com/paritytech/wasmi>
 - Rust [JSON-RPC](#) implementation: <https://github.com/paritytech/jsonrpc>
 - Ethereum compatibility layer for Substrate: <https://github.com/paritytech/frontier>
 - Submit extrinsics (transactions) to a substrate node via RPC:
<https://github.com/paritytech/subxt>
 - Alternative client for Substrate-based chains: <https://github.com/paritytech/smoldot>
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- Collection of crates used in Parity projects:
<https://github.com/paritytech/parity-common>
 - Collection of Useful Bridge Building Tools:
<https://github.com/paritytech/parity-bridges-common>
 - Polkadot Telemetry service: <https://github.com/paritytech/substrate-telemetry>
 - Experimental blockchain database: <https://github.com/paritytech/parity-db>
 - Lightweight, efficient, binary serialization and deserialization codec:
<https://github.com/paritytech/parity-scale-codec>
 - Setup and deployment tool for developing Wasm based smart contracts via ink!:
<https://github.com/paritytech/cargo-contract>

Near protocol:

- To create and restore their accounts by utilizing OIDC protocol:
<https://github.com/near/mpc-recovery>
- Core contracts like reference staking pool, lockup, voting, whitelist, multisig:
<https://github.com/near/core-contracts>
- Tools to build NEAR smart contracts with **Zig**: <https://github.com/near/near-sdk-zig>

Solana Labs:

- A high-performance, Web-Scale blockchain marketplaces platform that can handle up to 65,000 transactions per second: <https://github.com/solana-labs/solana>
- A collection of Solana programs maintained by Solana Labs:
<https://github.com/solana-labs/solana-program-library>
- Rust virtual machine and JIT compiler/interpreter for eBPF programs:
<https://github.com/solana-labs/rbpf>
- Move language compiler with LLVM support: <https://github.com/solana-labs/move>

Future:

- <https://github.com/ziglang/zig>

Notes:

What is CNCF?

Why and What Cloud native solves?

The advantage of this solution is that when you want to migrate from the previous microservice architecture to a Cloud Native architecture, you can avoid massive changes on the business side by using a Service Mesh solution directly.

In the beginning part of the article, we mentioned that containerization technology uses a shared kernel, and the shared kernel brings lightness but creates a lack of isolation. If container escape occurs, the corresponding host may be attacked. Therefore, to meet these security challenges, technologies such as secure containers have been introduced.

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In addition, although container images provide a standardized delivery method, they are prone to be attacked, such as supply chain attacks.

Similarly, the introduction of K8s has also brought about challenges in component security. The increase in components has led to a rise in the attack surface, as well as additional vulnerabilities related to the underlying components and dependency levels. At the infrastructure level, migrating from traditional physical or virtual machines to K8s involves infrastructure transformation costs and more labor costs to perform cluster data backups, periodic upgrades, and certificate renewals.

Also, in the Kubernetes architecture, the apiserver is the core component of the cluster and needs to handle all the inside and outside traffic. Therefore, in order to avoid border security issues, how to protect the apiserver also becomes a key question. For example, we can use Apache APISIX to protect it.

Apache APISIX is a Cloud Native API gateway under the Apache Software Foundation, which is dynamic, real-time, and high-perf

