

AN INTRODUCTION TO AKKA

For building highly concurrent, distributed, and fault-tolerant event-driven applications.

Created by Erik Azar / @eazar

What is Akka?

Akka is an Open Source toolkit and runtime, inspired from the Erlang and OZ programming languages. It uses the Actor Model for building Reactive Systems that scalable, resilient and responsive.

Akka Toolkit

The Akka toolkit is made up of the following features:

Akka Actors

Lightweight event-driven processes that support a simple and high-level abstraction for concurrency and parallelism.

An actor can have multiple children that it supervises, each defining their own fault-handling supervisor strategy.

All communication is done through asynchronous message passing. When not processing messages, other than the memory they allocate, they do not consume resources while in a suspended state.

Akka Fault Tolerance

Like Erlang, Akka uses the let it crash semantics.

Supervisor hierarchies can span over multiple JVMs to provide truly fault-tolerant systems.

Akka Location Transparency

Everything in Akka is designed to work in a distributed environment.

All interactions with an Actor are asynchronous.

You do not have direct access to an Actor and must use message passing to request information from it.

Akka Persistence

Uses *Event Sourcing* to ensure all changes to an actors state are stored as a sequence of events.

Enables stateful actors to persist their internal state so it can be replayed when an actor is started, restarted after a JVM crash or by the supervisor, or migrated in a cluster.

Directory of persistence plugins available for many storage systems.

Akka for Microservices

Akka Actors can be moved between boundaries, reducing the risk of building microservices too early.

The persistence of an actor should be an internal concern of the actor.

Actors are, in essence, granular microservices themselves, making it difficult to sneak around the barrier and violate the separation.

DEMO

Akka: <http://akka.io/>

OZ/Mozart: <https://github.com/mozart/mozart2>
[https://en.wikipedia.org/wiki/](https://en.wikipedia.org/wiki/Oz_(programming_language))
[Oz \(programming language\)](https://en.wikipedia.org/wiki/Oz_(programming_language))

Erlang: [https://en.wikipedia.org/wiki/](https://en.wikipedia.org/wiki/Erlang_(programming_language))
[Erlang \(programming language\)](https://en.wikipedia.org/wiki/Erlang_(programming_language))

<http://www.erlang.org/>

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