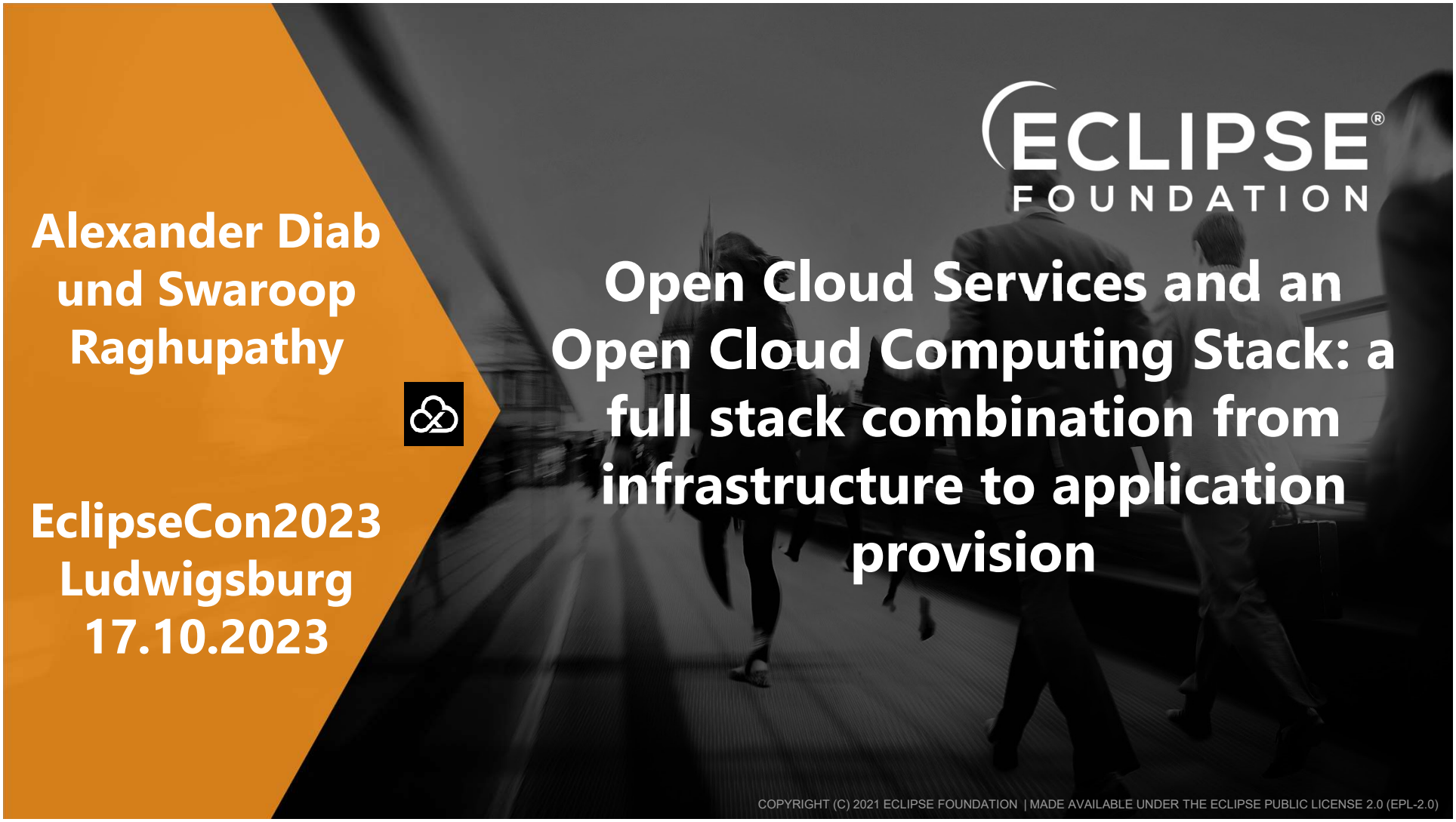


Open Cloud Services and an Open Cloud Computing Stack: a full stack combination from infrastructure to application provision

Alexander Diab
und Swaroop
Raghupathy

EclipseCon2023
Ludwigsburg
17.10.2023

Agenda

- Digital Sovereignity on Cloud Computing
- What is cloud computing
- What is a cloud computing stack
- The Sovereign Cloud Stack
- A Virtual Hyperscaler
- Eclipse Xpanse

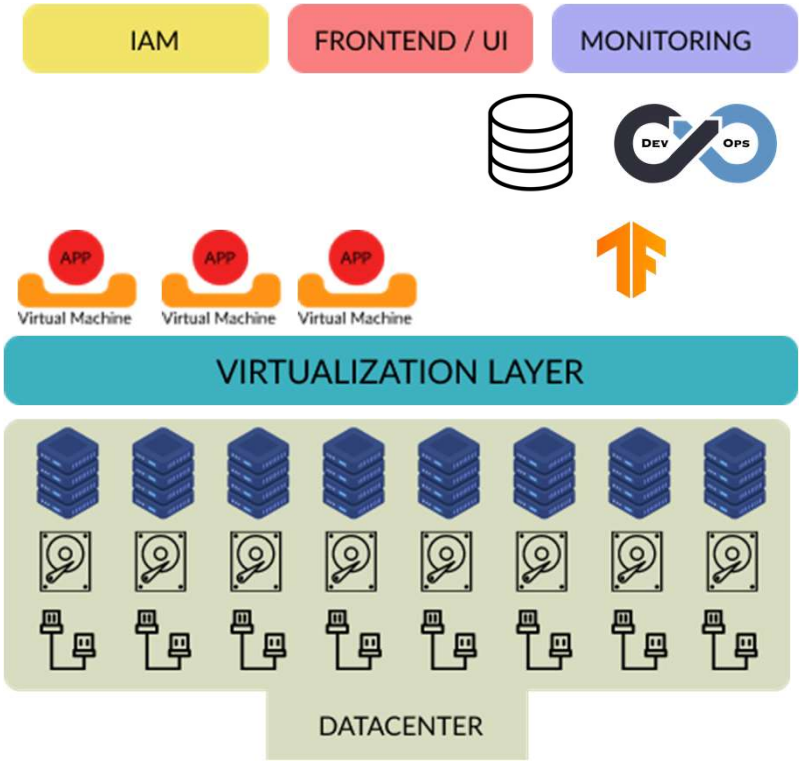
Intro

- Technology decisions create dependencies
- Most digital services and solution will be cloud based
- How much are you in control of these dependencies and what is their severity/risk
- Aspects of dependency
  - Control over data
  - Ability to migrate
  - Contractual
  - …

Cloud Computing Definition (NIST)

- Self Service
- Network Access
- Ressource Pooling
- Elasticity
- Measurement Service

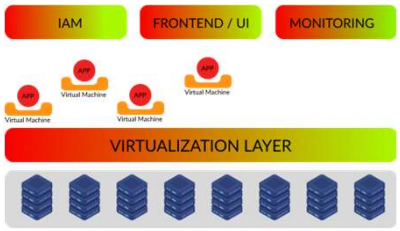
Cloud Computing Stack



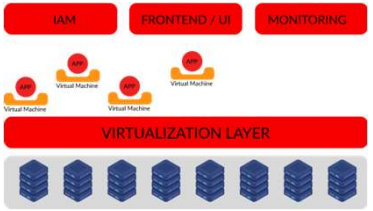
Different Cloud Computing Offerings

?

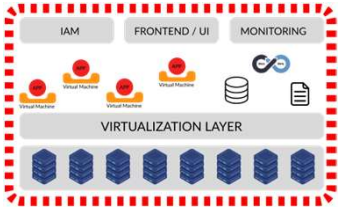
Open source Stack



Propietary Stack



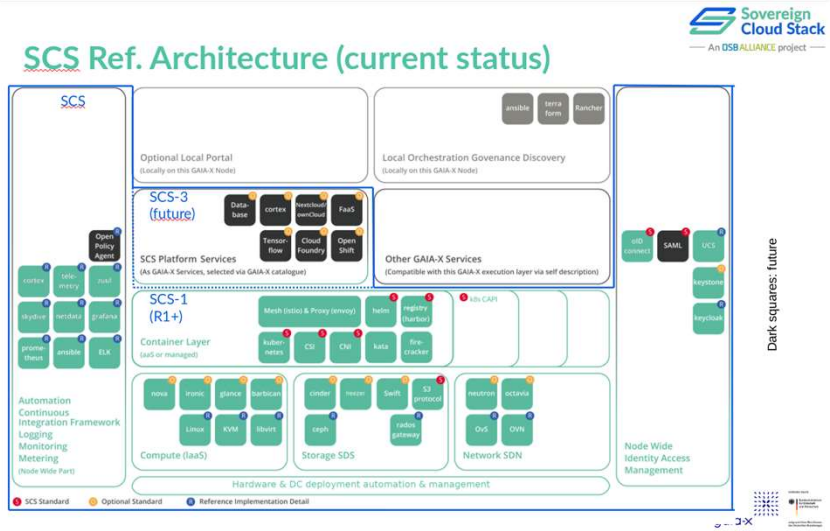
Hyperscaler



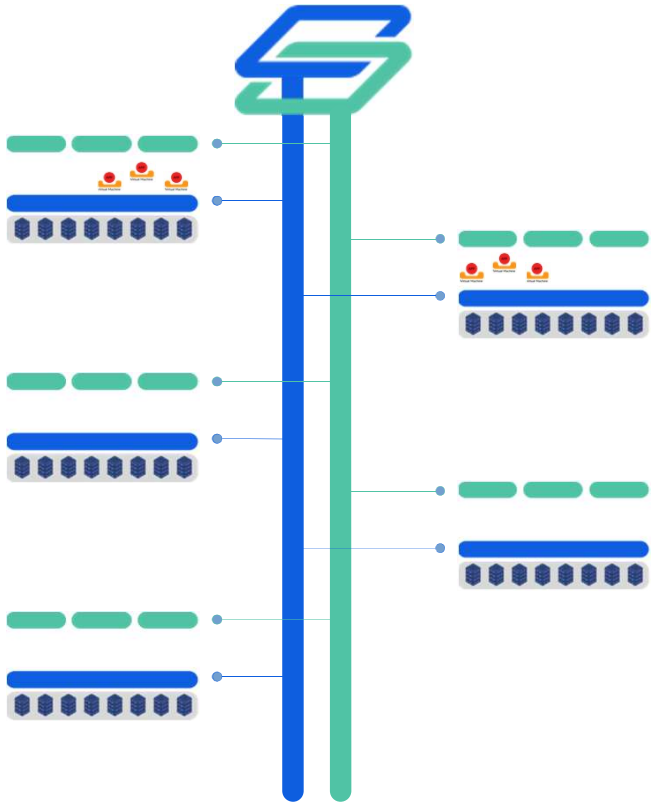
Digital Sovereignty

The Sovereign Cloud Stack

- **Standards** for Components and Configurations
- **Certification System** for communicating the compliance of standards
- **Reference Implementation** for a turnkey solution



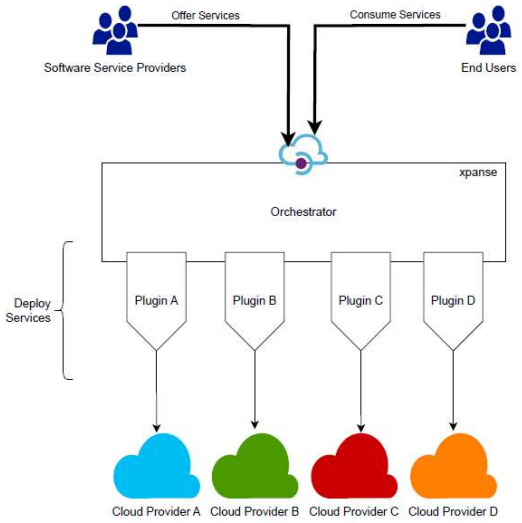
A virtual hyperscaler

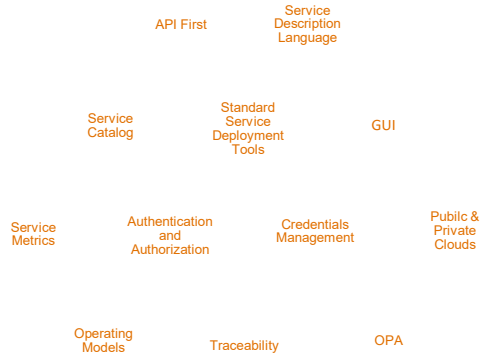


- Certifiiable Standards enable interoperability
  - Migration between clouds
  - Scaling across clouds
- Certifiiable Standards enable colaboration between
  - CSPs
  - Technology provider
  - Service companies
  - software vendors
- SaaS providers can create and market platform independent services

Eclipse Xpanse – An OSC Project

Xpanse is an Eclipse Foundation incubated project under OSC working group which aims to build a framework to offer and consume native cloud services in an unified and fully portable way.





Live Demo

SCS + Xpanse

- Same xpanse-plugin can be used for any SCS
- Data portability / Service portability becomes easy to implement.
- One service template can be used on all SCS based clouds.

Possible Operating Models

- One central Xpanse runtime.
- One Xpanse runtime on each cloud.
- Run Xpanse on enterprise/teams to work as self-service portal.

Eclipse Xpanse – Tech Stack

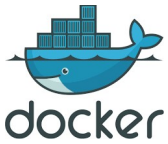
Frontend

Docusaurus

Backend

Code Repos

IaC



Governed By

ECLIPSE FOUNDATION

Eclipse Xpanse Community Expansion

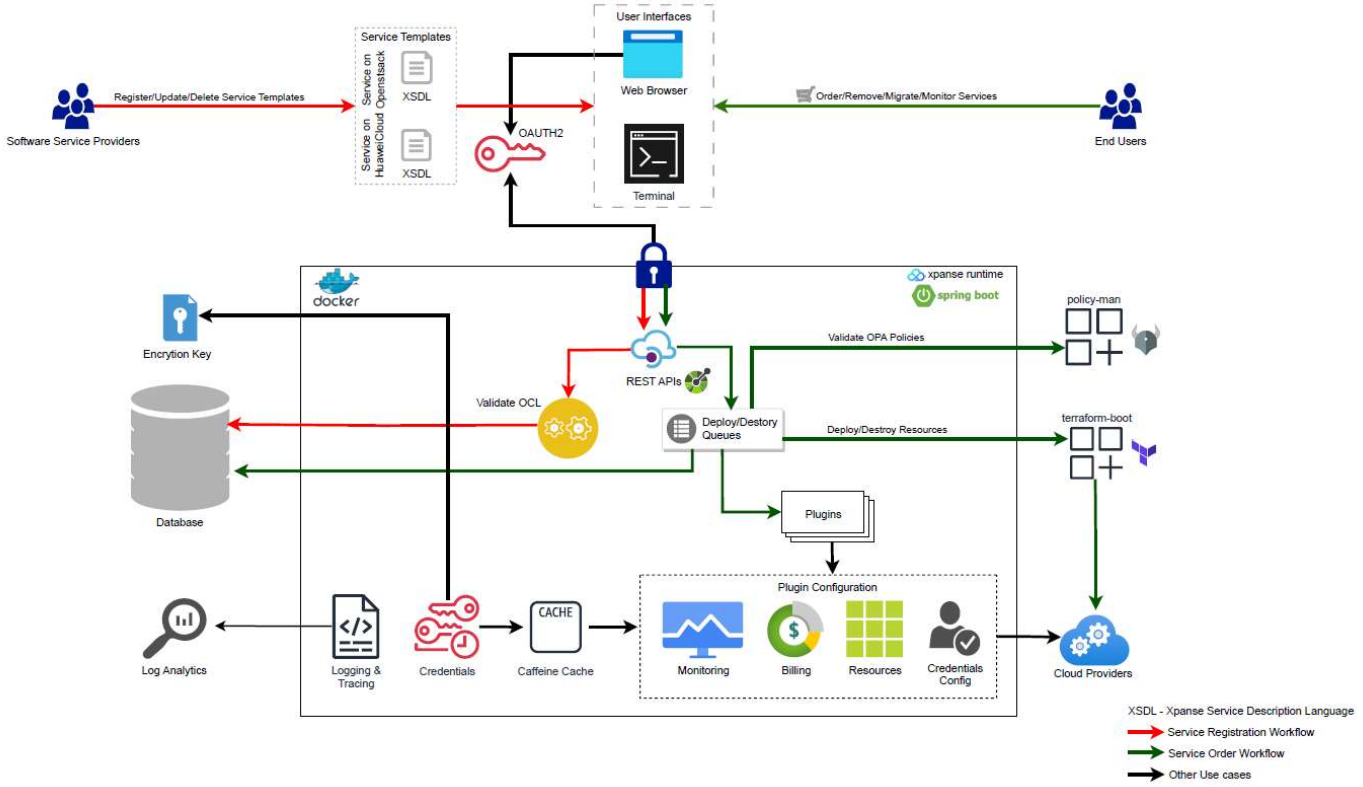
We wish to expand the Xpanse community and partners in all possible ways.

- Developers to contribute to our development tasks – we have a strong and interesting product backlog.
- Add plugins to more cloud service providers.
- Partners who wish to use Xpanse, test and provide feedback.
- Partners who can also support in bringing in their ideas, defining backlog and requirements.

Thank You

Annex – Backup Slides

Eclipse Xpanse - Architecture



Features Extensibility

- All functionalities can be switched
  - OAUTH – Zitadel can be replaced with any other provider.
  - DB – MySql can be replaced with any other provider
  - Plugins can be enabled, disabled, added as required.
  - Service deployers can be added as required.
  - Terraform-boot can be enabled/disabled.

Eclipse Xpanse Stack

Xpanse stack consists of all applications required to run the complete xpanse runtime in production mode.

- Terraform-boot – A RESTful wrapper for terraform written in Java.
- IAM – configurations for deploying and configuring oauth providers. Currently we support Zitadel.
- Database – We support MariaDB and can be extended other DBs as well.
- UI – Nginx based webserver
- Policy-man – A Restful wrapper for evaluating OPA policies written in GoLang.

Note – All components can be deployed as containers.

Backlog

- OPA
- Cloud credentials from SaaS provider.
- Extend traceability and observability.
- Implement light weight workflow for service migration.
- Data portability use cases
- Billing
- Move to OpenTofu as soon as it is available.