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ECLIPSE[®]
FOUNDATION

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

**EclipseCon202
3
Ludwigsburg
17.10.2023**

Agenda

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

Intro

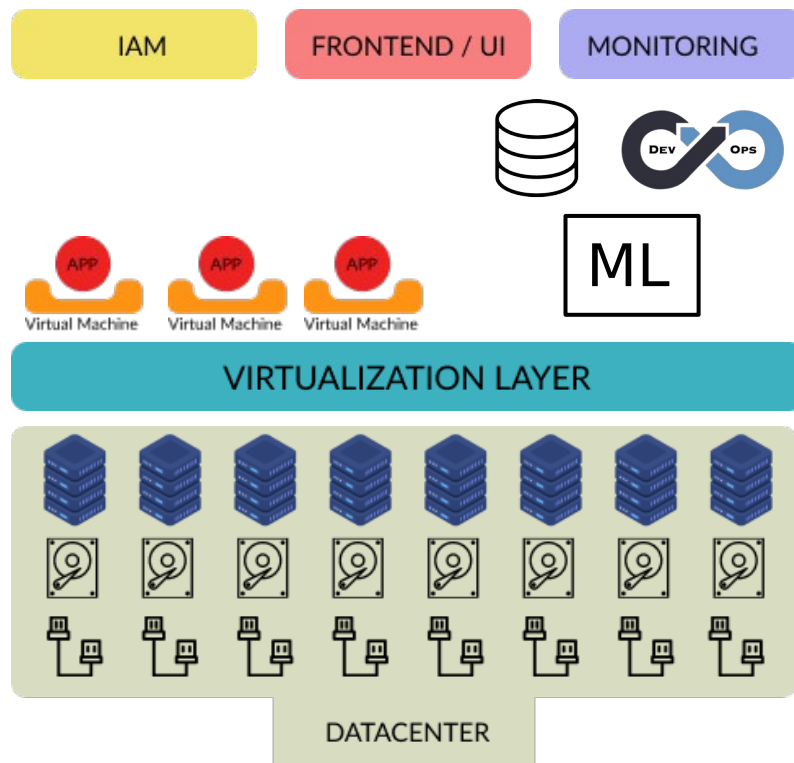
- Technology decisions create dependencies
- Most digital services and solution will be cloud based
- How much are you in control of these dependencies and what is their severity/risk
- Aspects of dependency
 - Control over data
 - Ability to migrate
 - Contractual
 - ...



Cloud Computing Definition (NIST)

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

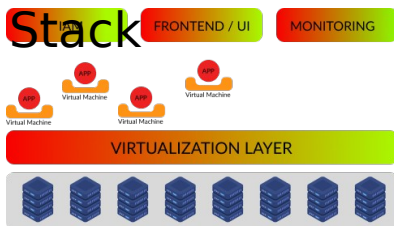
Cloud Computing Stack



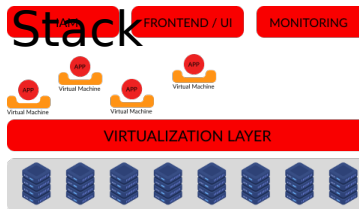
Different Cloud Computing Offerings

?

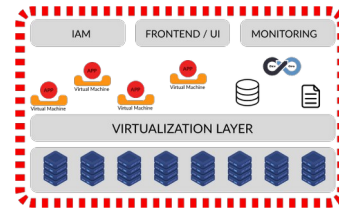
Open source



Proprietary



Hyperscaler



Digital
Sovereignty

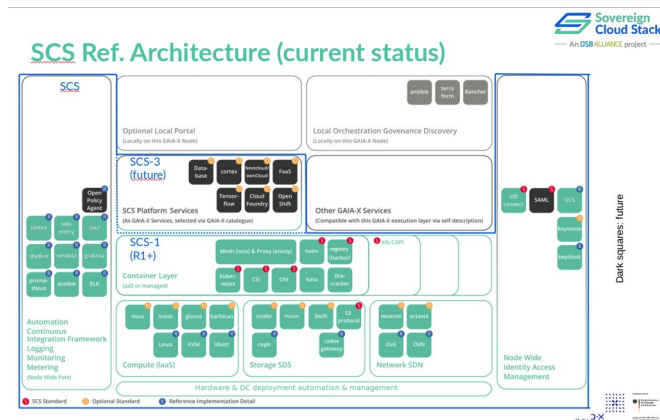
The Sovereign Cloud Stack

- **Standards** for Components and Configurations
- **Certification System** for communicating the compliance of standards
- **Product Documentation** as implementation and operational support for users

<https://docs.scs.community/>

- **Reference Implementation** for a turnkey solution

<https://github.com/osism>

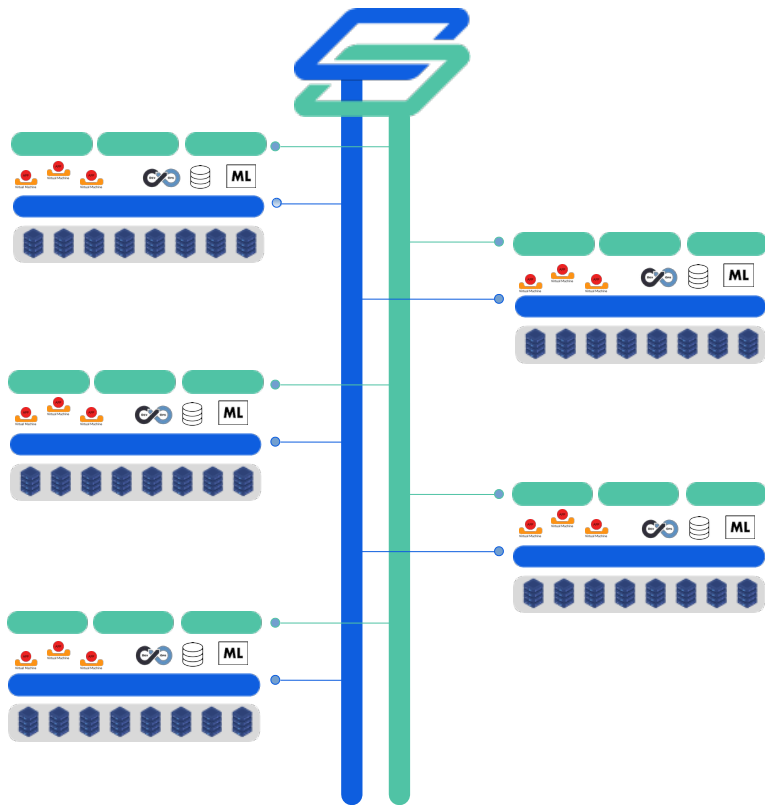


SCS compatible clouds

This is a list of clouds that we test on a nightly basis against our `scs-compat.lib` certification level.

Name	Description	Operator	IaaS Compliance Check	HealthMon
gx-scs	Dev environment provided for SCS & GAIA-X context	plusserver GmbH	compliant passing	HM
pluscloud open - prod1	Public cloud for customers	plusserver GmbH	compliant passing	HM
pluscloud open - prod2	Public cloud for customers	plusserver GmbH	compliant passing	HM
Wavestack	Public cloud for customers	noris network AG/Wavecon GmbH	compliant passing	HM
REGIO.cloud	Public cloud for customers	OSISM GmbH	compliant passing	Dashboard

A virtual hyperscaler

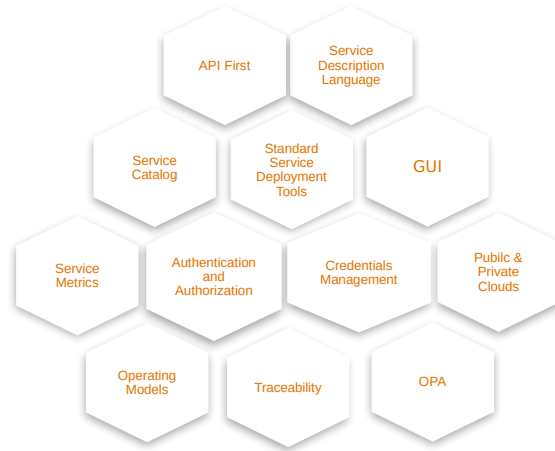
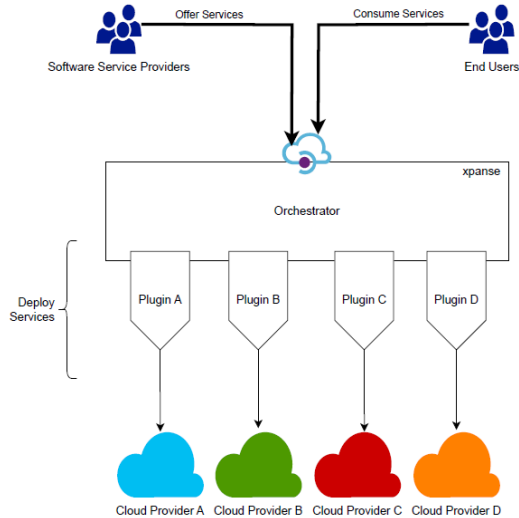


- Certifiable Standards enable interoperability
 - Migration between clouds
 - Scaling across clouds
- Certifiable Standards enable collaboration between
 - CSPs
 - Technology provider
 - Service companies
 - software vendors
- SaaS providers can create and market platform independent services

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

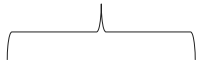
- > Same xpanse-plugin can be used for any SCS
- > Data portability / Service portability becomes easy to implement.
- > One service template can be used on all SCS based clouds.

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

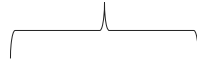


React



Docusaurus

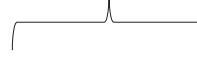
Backend



Code Repos



IaC



docker

Governed By



Eclipse Xpanse Community Expansion

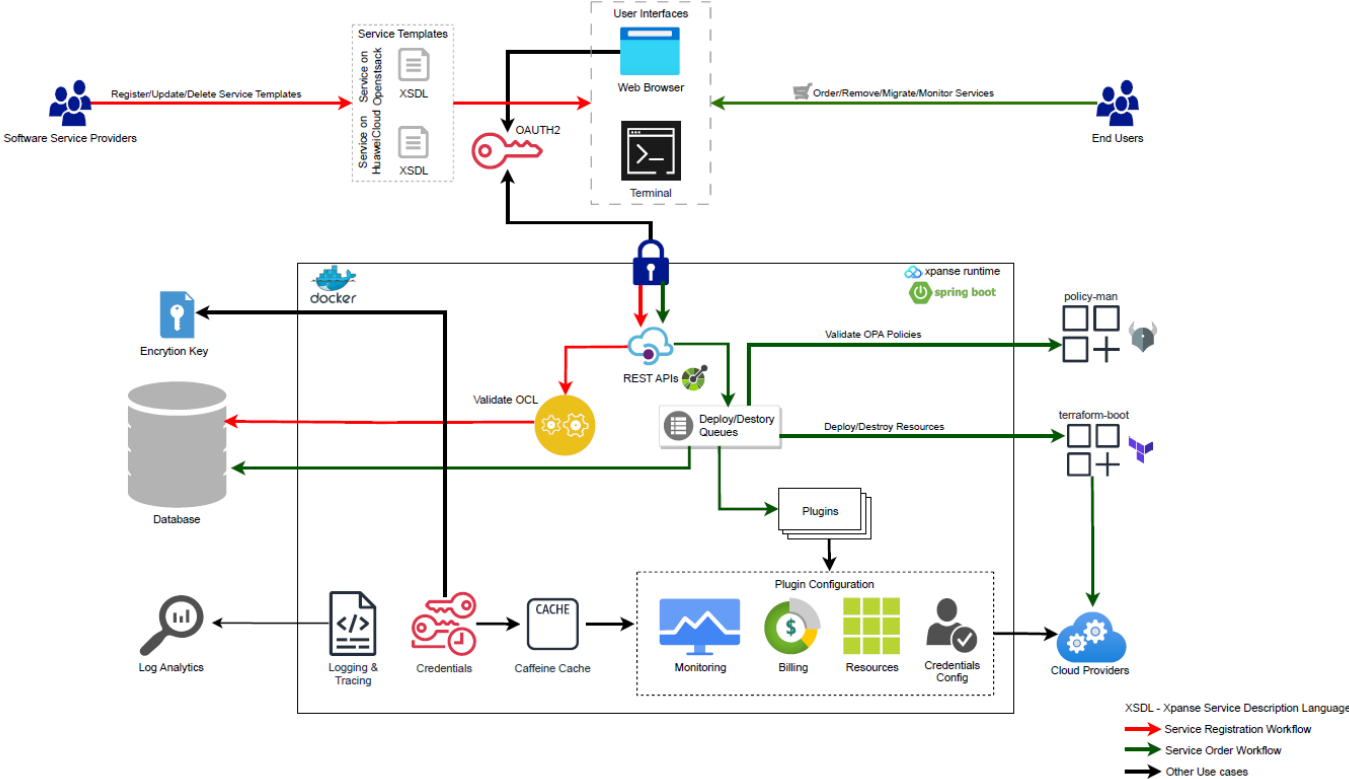
We wish to expand the Xpanse community and partners in all possible ways.

- > 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.