



Gefördert durch:



aufgrund eines Beschlusses  
des Deutschen Bundestages



SCS 2024-12-11

# Sovereign Cloud Stack: Introduction for Parldigi

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<https://scs.community/>  
<https://github.com/SovereignCloudStack/>



# One platform - standardized, built and operated by many.



# Sponsoring for our idea ...



## SPRIN-D

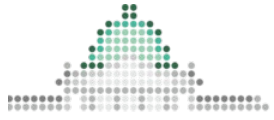
Very supportive.  
Fast to support project with paid research contract.  
Good advice for first supported project.



## BMWK

Very supportive.  
Bound by slow alignment and decision processes.  
Lots of projects ...





Parldigi

## Funding proposal (12/2020)

Collaboratively written in .rst and managed with git.

Huge work items master spread sheet, extracted data with python (ODSReader) into doc. Needed several times, e.g. when we discovered that we can not deduce VAT.

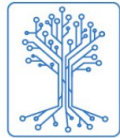
Also handed in offers to substantiate cost calculations and avoid money to be locked. (1st year only, not very successful ...)

6 months till notice of funding  
Lost money and people.

### Vorhabenbeschreibung

(zur vertraulichen Behandlung)

Zum Projekt GAIA-X



GAIA-X

**Vorhaben:** Sovereign Cloud Stack

**Akronym:** SCS



**Schlagworte zum Vorhaben:**

GAIA-X, SCS, Digitale Souveränität, Infrastruktur, Cloud,  
Föderierung, Open Source, Infrastructure as Code, OSB Alliance

**Antragsteller:**

Open Source Business Alliance – Bundesverband für digitale Souveränität e.V.  
Breitscheidstr. 4  
70174 Stuttgart

Fon: +49 711 90715-390

Fax: +49 711 90715-350

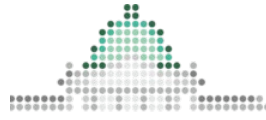
vertreten durch:

Peter Ganten (Vorstandsvorsitzender)

E-Mail: ganten@osb-alliance.com

Version: 2020-12-21

# Sovereign Cloud Stack Deliverables



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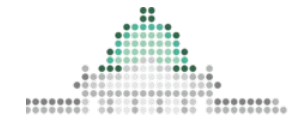
Certifiable Standards



Modular Open Source  
Reference Implementation



Operational Knowledge

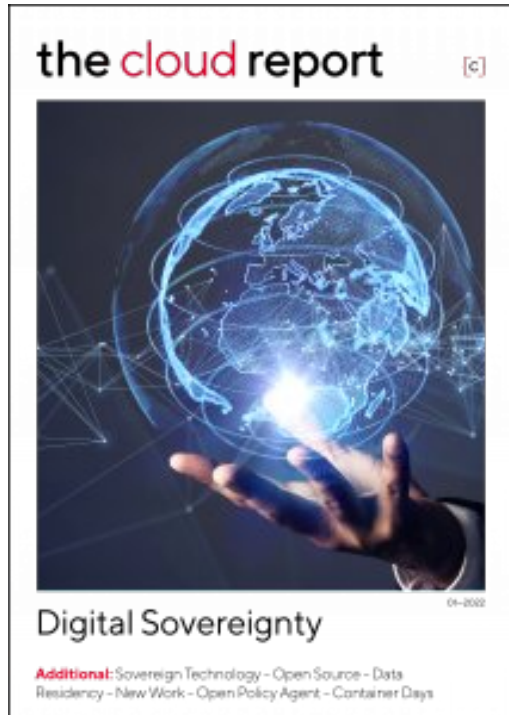
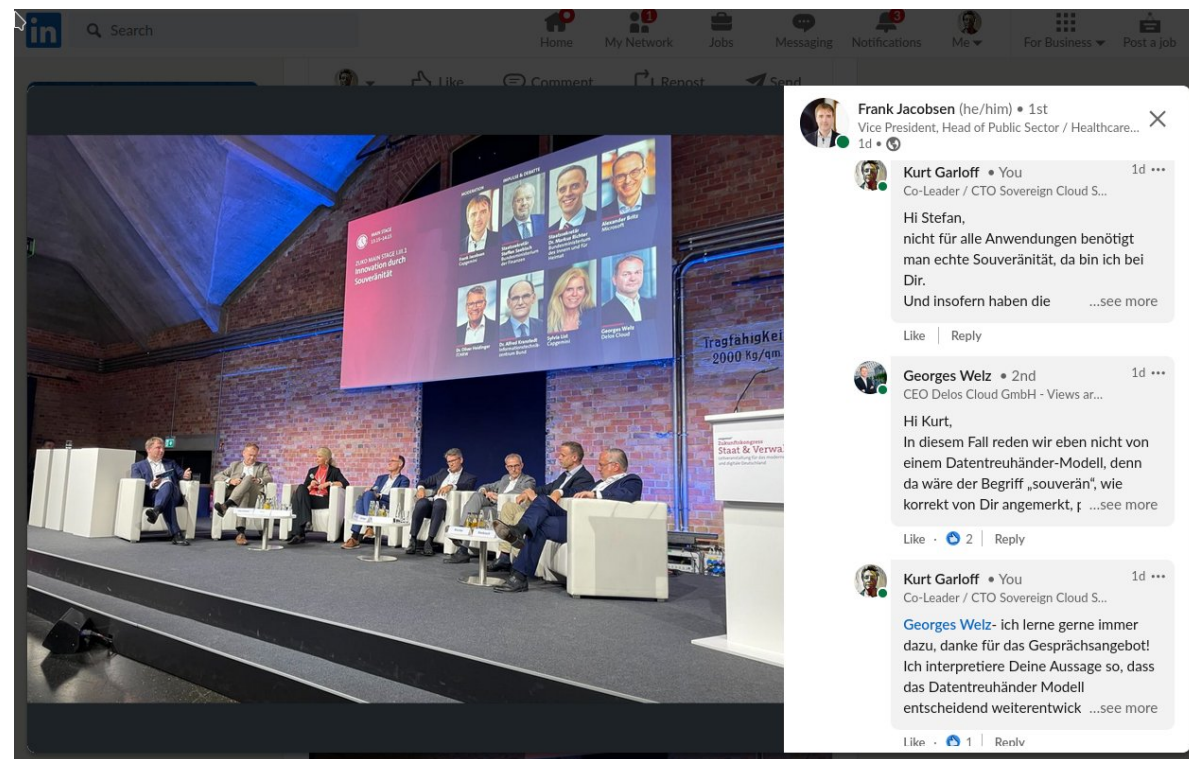


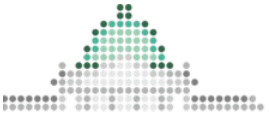
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# Sovereignty debate

Sovereignty has become a marketing term :-)

- Providing data protection (GDPR compliance) is a good start ... “data sovereignty”.
- Ability to chose (without redoing automation/integration)
  - Ability to use many providers and federate
  - Requires technical standards/compatibility **SCS**-compatible
- Ability to shape technology and innovate “technological sovereignty”
  - Requires 4 Opens **SCS**-open
- Skills to understand and operate infrastructure
  - Open Operations **SCS**-sovereign





# Digital Sovereignty & SCS Certification

## Levels of digital sovereignty

4: Operational Transparency and accessible Knowledge (Skill building)

3: Technological Transparency and ability to contribute and shape

2: Choice between many operators, insourcing option (on-premise)

1: Compliance with regulation (GDPR)

## SCS Certification Level

4: “SCS-sovereign” – Ops/IAM stacks are OSS; transparency on monitoring and incidents, contribution to Open Operations (5 Opens)

3: “SCS-open” – SBOM for functional stack available and fully OSS (4 Opens)

2: “SCS-compatible” – technical compatibility (conformity tests from CNCF, OIF, SCS)

1: (Not SCS-specific): ENISA/Gaia-X labels & legal rules



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# SCS Standards





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- Introduction
- Certification ▼
- Scopes and Versions ▼
  - SCS Compatible IaaS
  - SCS Compatible KaaS
- Standards** ▼
- Global ▼
  - scs-0001 >
  - scs-0002 >
  - scs-0003 >
  - scs-0004 >
  - scs-0112 >
- IaaS ▼
  - scs-0100 >
  - scs-0101 >
  - scs-0102 >
  - scs-0103 >
  - scs-0104 >
  - scs-0110 >
  - scs-0111 >
- KaaS ▼
  - scs-0200 >
  - scs-0210 >
  - scs-0211 >
  - scs-0212 >
  - scs-0213 >

## Overview

Standards are the core deliverable of SCS. By standardizing the open source software components of a cloud computing stack, their versions, how they are to be configured, deployed and utilized, SCS guarantees the reproducibility of a certain behavior of this technology.

SCS standards are discussed, developed and maintained in the community by the corresponding teams (see Track in the table below), which naturally include existing users of SCS.

\*Legend to the column headings: Draft, Stable (but not effective), Effective, Deprecated (and no longer effective).

Standard	Track	Description	Draft	Stable*	Effective	Deprecated*
<a href="#">scs-0001</a>	Global	Sovereign Cloud Standards	-	-	v1	-
<a href="#">scs-0002</a>	Global	Standards, Docs and Organisation	v2	-	v1	-
<a href="#">scs-0003</a>	Global	Sovereign Cloud Standards YAML	v1	-	-	-
<a href="#">scs-0004</a>	Global	Regulations for achieving SCS-compatible certification	v1	-	-	-
<a href="#">scs-0112</a>	Global	SONiC Support in SCS	v1	-	-	-
<a href="#">scs-0100</a>	IaaS	SCS Flavor Naming Standard	-	-	v3	v1, v2
		Supplement: Implementation and Testing Notes	w1	-	-	-
<a href="#">scs-0101</a>	IaaS	SCS Entropy	-	-	v1	-
		Supplement: Implementation and Testing Notes	w1	-	-	-
<a href="#">scs-0102</a>	IaaS	SCS Image Metadata Standard	-	-	v1	-
<a href="#">scs-0103</a>	IaaS	SCS Standard Flavors and Properties	-	-	v1	-



# Existing public providers

← → ↻ 🏠 <https://docs.scs.community/standards/certification/overview> 67% ☆

**SCS** Standards For Operators For Contributors For Users Community FAQ GitHub ⚙️ 🔍 Search ctrl K

	Name	Description	Operator	SCS-compatible IaaS	HealthMon
Introduction					
<b>Certification</b> ▾					
Scopes and Versions >					
Compliance Check Pipeline					
Standards >					
	<a href="#">gx-scs</a>	Dev environment provided for SCS & GAIA-X context	plusserver GmbH	✓ v4	HM
	<a href="#">aov.cloud</a>	Community cloud for customers	aov IT.Services GmbH	● -	HM
	<a href="#">CNDS</a>	Public cloud for customers	artcodix GmbH	✓ v4	HM
	<a href="#">pluscloud open (4 regions)</a>	Public cloud for customers	plusserver GmbH	prod1: ✓ v4, v5 prod2: ✓ v4, v5 prod3: ✓ v4, v5 prod4: ✓ v4, v5	HM1 HM2 HM3 HM4
	PoC KDO	Cloud PoC for FITKO	KDO Service GmbH / OSISM GmbH	✓ v4, v5	(soon)
	PoC WG-Cloud OSBA	Cloud PoC for FITKO	Cloud&Heat Technologies GmbH	✓ v4	HM
	<a href="#">REGIO.cloud</a>	Public cloud for customers	OSISM GmbH	✓ v4, v5	HM
	<a href="#">ScaleUp Open Cloud</a>	Public cloud for customers	ScaleUp Technologies GmbH & Co. KG	✓ v4, v5	HM
	<a href="#">sysleven (2 SCS regions)</a>	Public OpenStack Cloud	SysEleven GmbH	dus2: 🟠 v3†† ham1: 🟠 v3††	(soon) (soon)
	<a href="#">Wavestack</a>	Public cloud for customers	noris network AG/ Wavecon GmbH	✓ v4, v5	HM

Becoming certified  
Compliant cloud environments

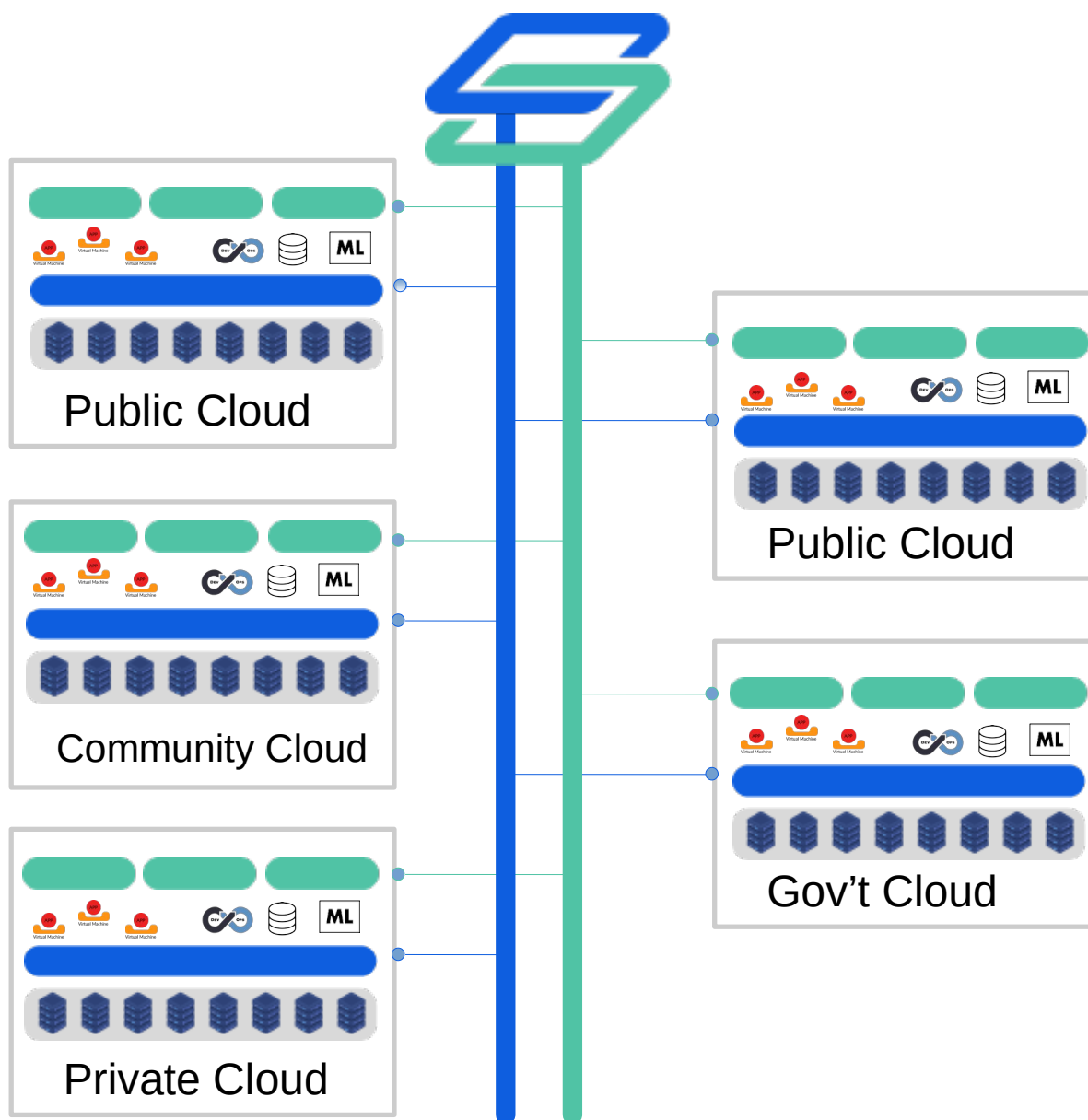
Daily updated standards conformity result (here: IaaS SCS-compatible)

Health Monitor dashboard: Public real-time monitoring of errors and performance



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# Federated Infrastructure



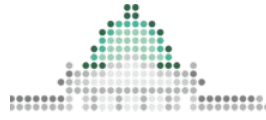
**Built on Common standards**

... for users of cloud services to enable mobility of workloads

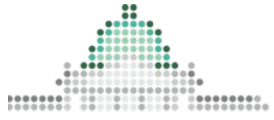
... for cloud service providers to offer standardized lock-in-less services

... for the ecosystem to build knowledge and skills on a common technical and organizational foundation

... for solution providers that want to build on a common platform



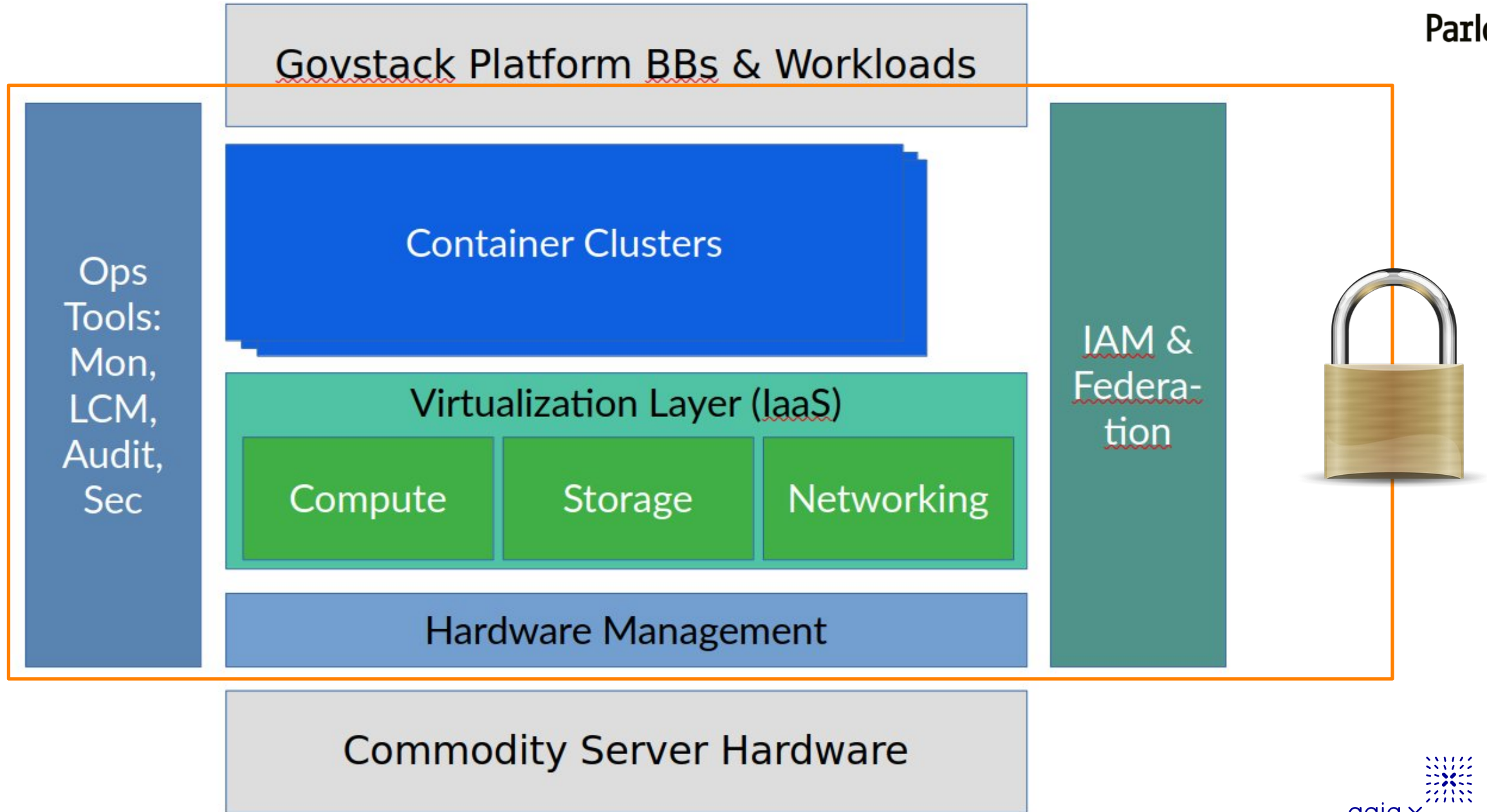
# SCS Software (Reference Implementation)



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# SCS Architecture (Reference Architecture)

building it up from the ground





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## Really open

Open has become a marketing term :-)

### SCS Open Source Health Check

- Four Opens: Fully Open Source, Open Development, Open diverse Community, Open Design
- Maturity, Security & Maintenance
- Activity & Adoption

Github issues, PRs, project board, minutes, ...  
Meets (Jitsi), Matrix, MLs,

### Open Operations

Joint knowledge building for excellent operations

### Upstream first!

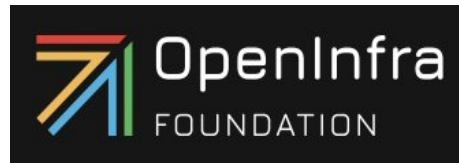
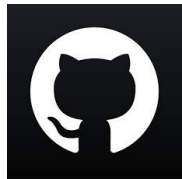
Healthy community with tender contractors, employees, volunteers

Open Source

OpenInfra FOUNDATION

Four Opens

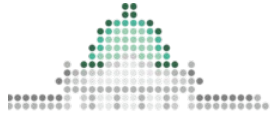
Open Operations





# SCS Knowledge

# Open Knowledge



← → ↻ 🏠 🔒 https://docs.scs.community 🔍 50% ☆ 📄 📥 🗑️ 📌 ☰

 Standards For Operators For Contributors For Users Community FAQ GitHub ⚙️ 🔍 Search

## Welcome to the SCS Documentation

Find user guides, code samples, deployment examples, reference, community pages and more.

<b>Introduction to SCS</b> Get to know SCS better and learn about the background. <a href="#">Get Started</a>	<b>Releases</b> SCS is currently in Release 7. Check out the latest Release Notes. <a href="#">Learn More</a>	<b>Frequently Asked Questions</b> You are curious what SCS is all about, what it can do and what it can't? <a href="#">Get Answers</a>	<b>Existing Public Clouds</b> There are SCS compliant public clouds in production. <a href="#">Test Them</a>
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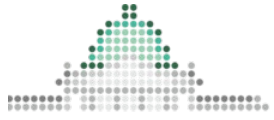
## Architectural Layers

<b>Ops Layer</b> Tooling and infrastructure design for easy, efficient and transparent ways to operate an SCS Cloud. <a href="#">Learn More</a>	<b>Container Layer</b> SCS offers a robust solution for managing container workloads on a Kubernetes infrastructure. <a href="#">Learn More</a>	<b>IAM Layer</b> Working on Keycloak federated identity provider within our Team IAM. <a href="#">Learn More</a>
	<b>IaaS Layer</b> SCS offers OpenStack infrastructure solutions based on KVM virtualization to deploy VM workloads and enabling the container layer optionally. <a href="#">Learn More</a>	

## Additional Resources

<b>Get in touch</b> Come into our Matrix Chat in the SCS   Tech Room. <a href="#">Join Now</a>	<b>Come to our Meet-Ups</b> Our working groups and special interest groups meet weekly or biweekly. When? Find out within our public community calendar.	<b>Standardization in progress</b> Get to know our current Decision Records and Standards. <a href="#">Start Now</a>	<b>Deployment Examples</b> Get to know different ways to deploy SCS with cloud resources or on bare metal. <a href="#">Explore Cases</a>
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<https://openoperations.org/>

## We build a community of practice

Open Operations builds a community of practice to keep the barrier to entry low and create a thriving environment for comfortable exchange.

## We share knowledge

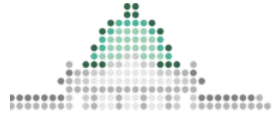
The availability of knowledge and skilled engineers is the limiting factor for many organizations to adopt, leverage, and successfully operate complex technology.

## We're transparent about our incidents

We firmly believe that failures make us experts. The way we handle mistakes is how we become better.

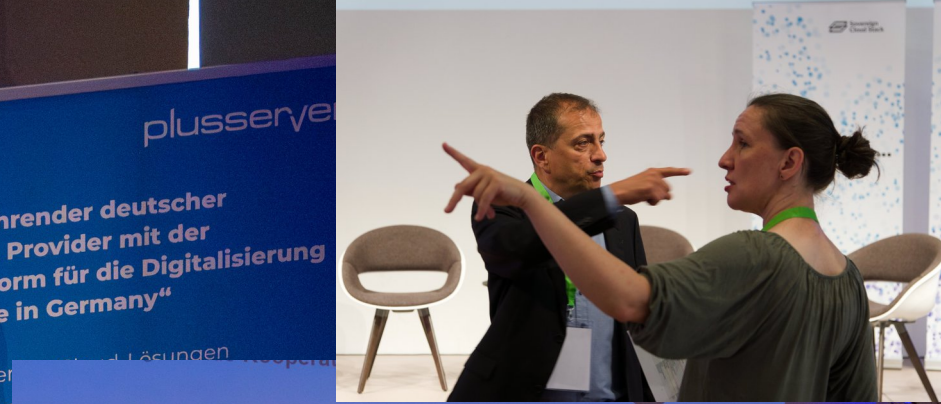
## We're transparent about our operational processes

We share our internal processes for the sake of transparency. We firmly believe that transparency leads to better and more reliable processes.



# SCS Adoption

# SCS Summit 2024



# Supporting companies and organizations



Upcoming:

+BASF

+TLRZ

+sys eleven

+LinuxHotel

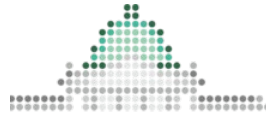
23 Technologies			
SPRIN-D			

Existing CSP	Future CSP	SCS compat	Impl. Partner
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Flexible, secure,  
digitally sovereign  
office collaboration  
solution

Standardized, secure,  
digitally sovereign  
infrastructure

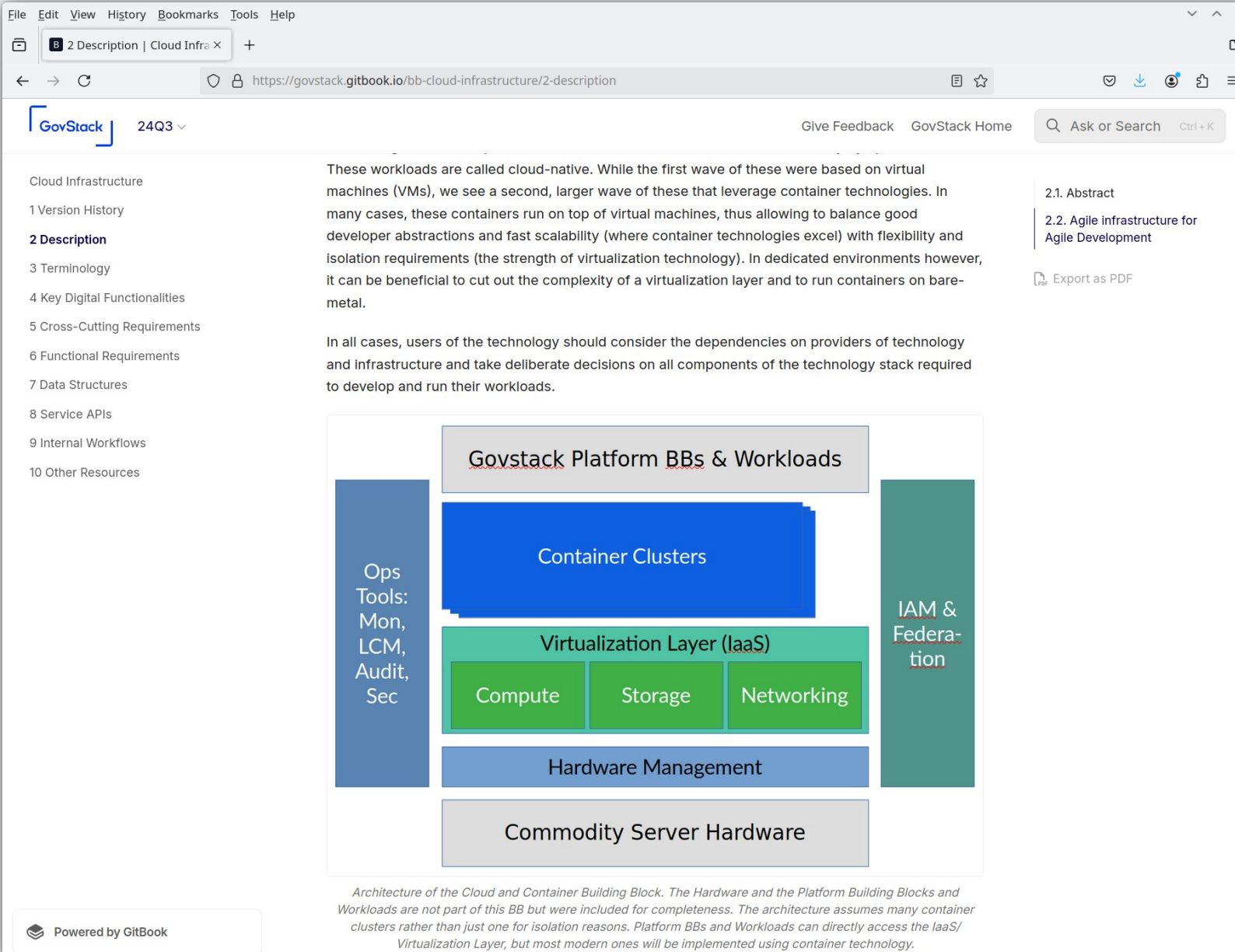


# SCS Future

# GovStack Specs for Cloud Computing



<https://govstack.gitbook.io/bb-cloud-infrastructure>



The screenshot shows a web browser window with the URL <https://govstack.gitbook.io/bb-cloud-infrastructure/2-description>. The page content includes a table of contents on the left, a main text area with two paragraphs, and a diagram of the cloud architecture. The diagram shows a stack of layers: Commodity Server Hardware at the base, followed by Hardware Management, a Virtualization Layer (IaaS) containing Compute, Storage, and Networking, Container Clusters, and Govstack Platform BBs & Workloads at the top. Sidebars include 'Ops Tools: Mon, LCM, Audit, Sec' on the left and 'IAM & Federation' on the right.

These workloads are called cloud-native. While the first wave of these were based on virtual machines (VMs), we see a second, larger wave of these that leverage container technologies. In many cases, these containers run on top of virtual machines, thus allowing to balance good developer abstractions and fast scalability (where container technologies excel) with flexibility and isolation requirements (the strength of virtualization technology). In dedicated environments however, it can be beneficial to cut out the complexity of a virtualization layer and to run containers on bare-metal.

In all cases, users of the technology should consider the dependencies on providers of technology and infrastructure and take deliberate decisions on all components of the technology stack required to develop and run their workloads.

**Govstack Platform BBs & Workloads**

**Container Clusters**

**Virtualization Layer (IaaS)**

Compute    Storage    Networking


**Hardware Management**

**Commodity Server Hardware**

Ops Tools: Mon, LCM, Audit, Sec

IAM & Federation

*Architecture of the Cloud and Container Building Block. The Hardware and the Platform Building Blocks and Workloads are not part of this BB but were included for completeness. The architecture assumes many container clusters rather than just one for isolation reasons. Platform BBs and Workloads can directly access the IaaS/ Virtualization Layer, but most modern ones will be implemented using container technology.*

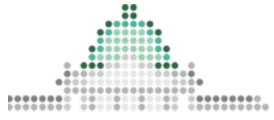


**Sovereign Cloud Stack**  
**Sovereign Cloud Stack**

**Building Block**  
Cloud Infrastructure (Level 2)

**Full Report**

ministerium  
schaft  
schutz



# Protection&Control: Sustainable future of the SCS idea: Two entities, idea & brand are in the non-profit organisation

## Forum SCS-Standards @ OSBA e.V.

Holds the IP rights on the **SCS brand** (and is thus unique), sets the rules for the brand usage

Charitable / Non-profit (OSBA)

Cares for and orchestrates a fair and transparent ecosystem as „neutralizer“.

Further development of **Standards** und **Certifications**, employs staff for this

Membership and usage fees from Operators and Partners (prerequisite for brand usage)

Creates visibility and trust in the market and the whole ecosystem

Collaborates with upstream communities

Partner for „certification-only partners“

## OSS Technology companies

Partner for users of the SCS Software (**Reference Implementation**)

Brand usage only possible within the limits set by Forum SCS @ OSBA e.V.

Further development, warranty, maintenance and backend support for SCS Software, subscriptions (for maintenance & support, CRA, ...)

Several such commercial entities exist: OSISM, sysself, dNation, Cloud&Heat, ...

Central entity that creates a turnkey product (with coordinated policies, roadmap, maintenance, support) and orchestrates cross-stack common dev needs: S7n Cloud Services GmbH

Implementation partner ecosystem



# 14 SCS initial partners found the Forum SCS-Standards in the OSB Alliance e.V.

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*The Forum SCS-Standards ensures that the continuous development of the SCS Standards and the certification rules and measures is guaranteed and takes place in an open, transparent process. The Forum SCS-Standards sees itself as a committee in which the rules of the SCS community are jointly discussed and decided.*

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## SCS Questions?



<https://scs.community/>

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

<https://github.com/SovereignCloudStack/>