

Sovereign Cloud Stack

Open Source Cloud & Container Stack for Federated Sovereign Infrastructure (Gaia-X)

Using Sovereign Cloud Stack to Achieve Digital Sovereignty

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Cloud Expo Europe, 2022-05-11

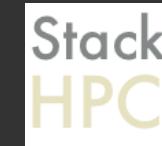
Gefördert durch:

Digital Sovereignty ... What?

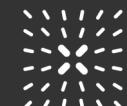
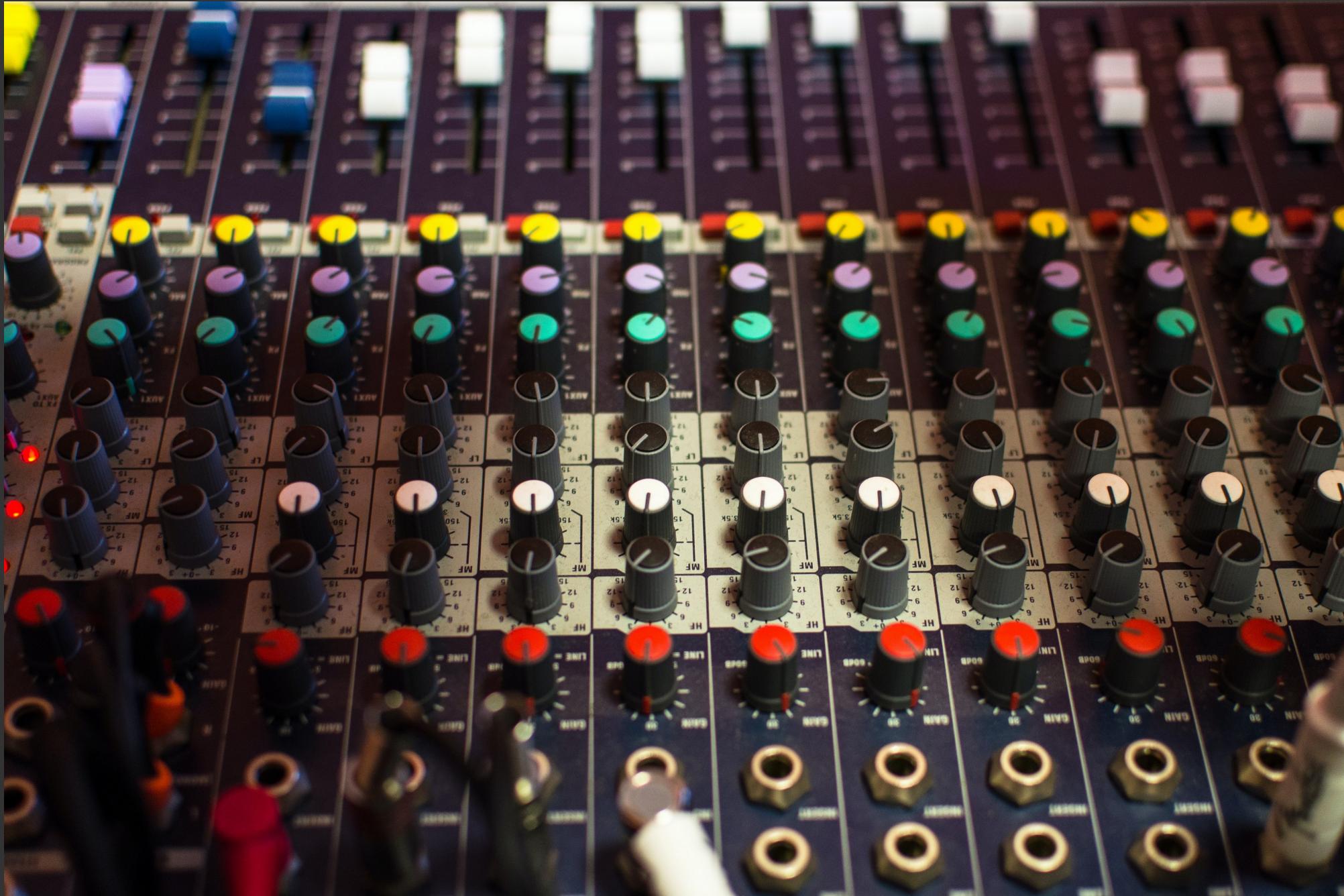


HETZNER

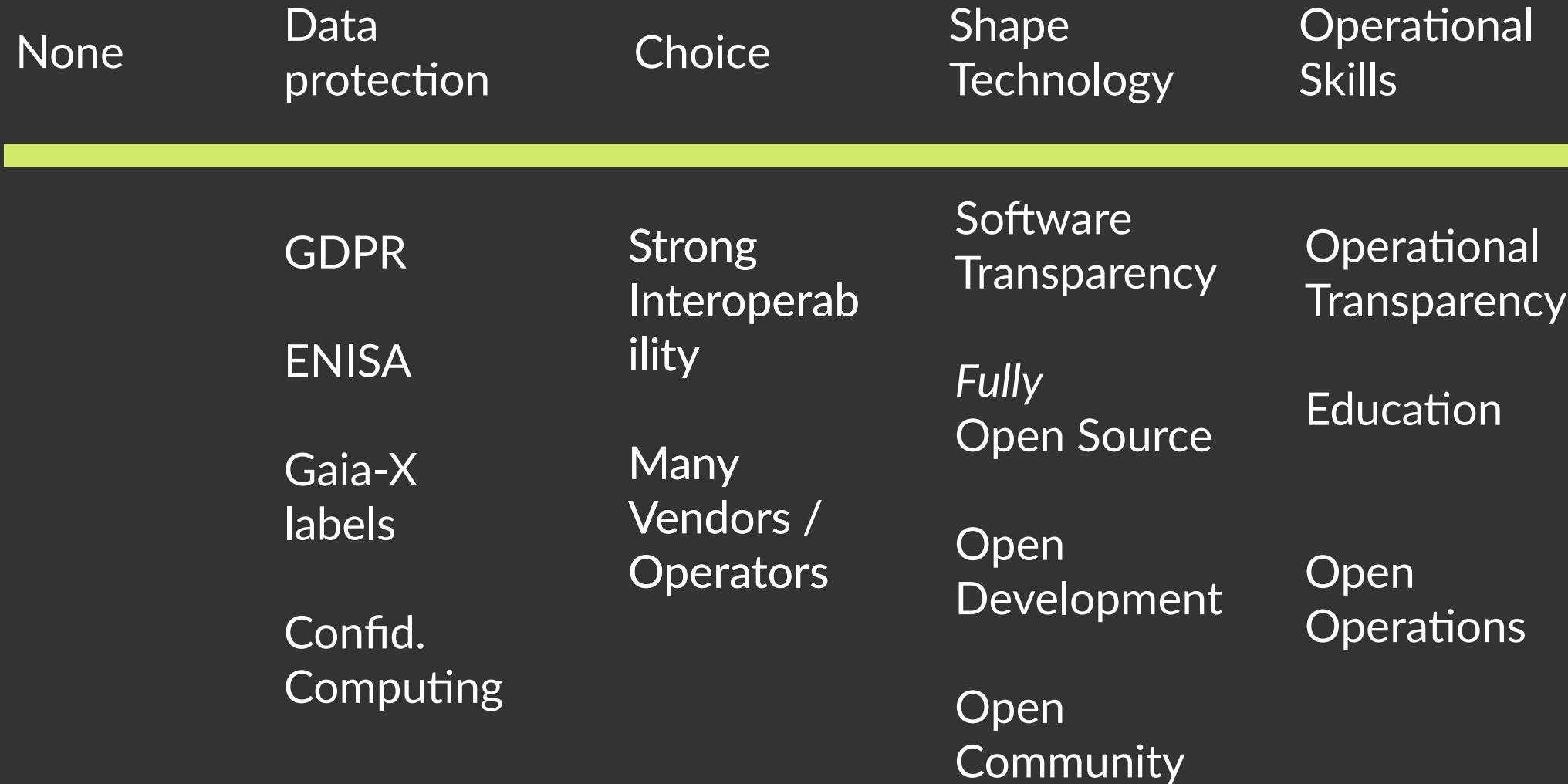
IONOS



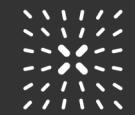
Who is in control?



Levels of sovereignty



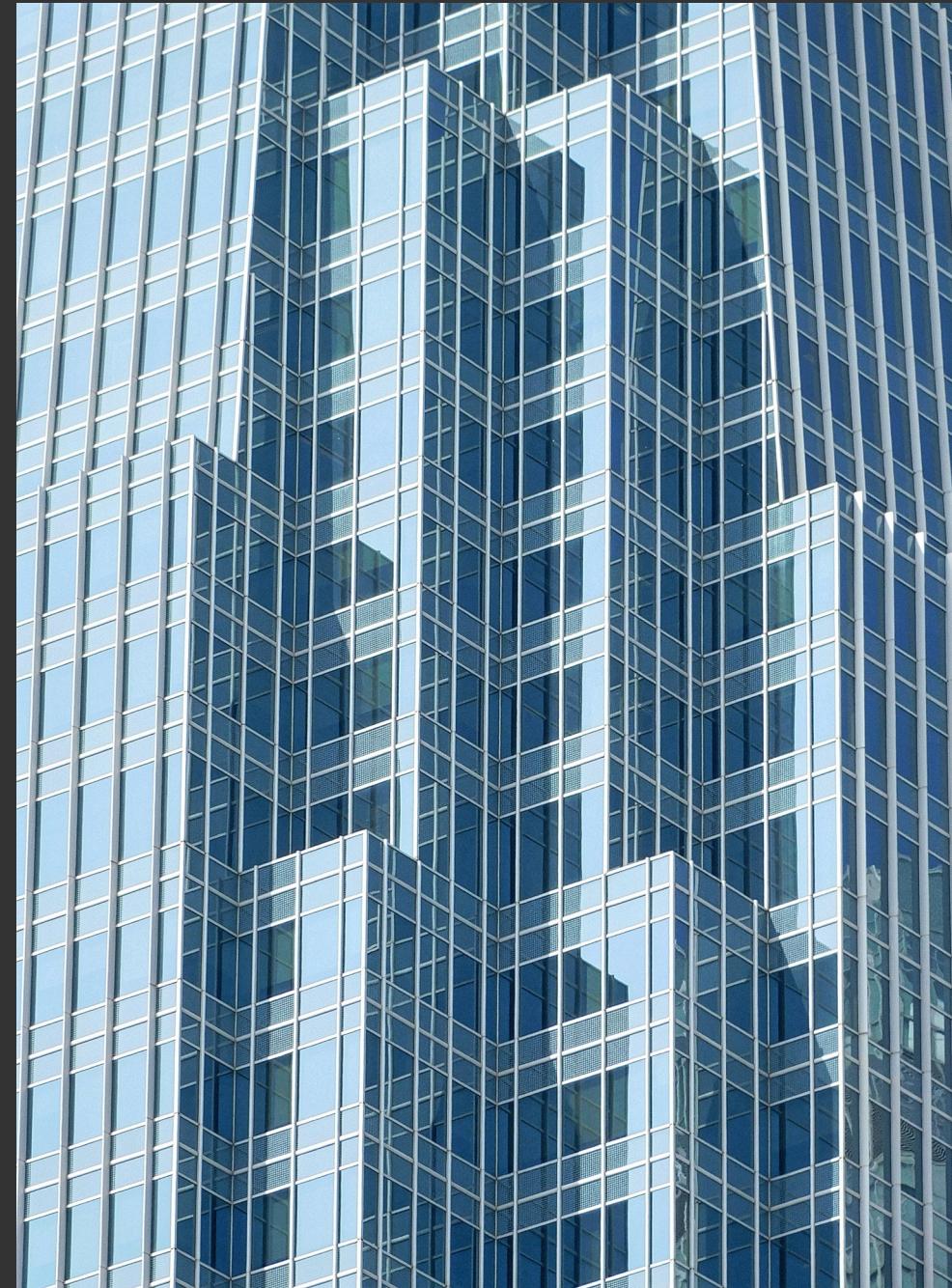
Recommendation: Thu, 11:15, Digi Trans Keynote Theatre:
 Peter Ganten: Digital Sovereignty and the Cloud: Everything is at stake



Openness?

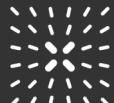


Transparency?





Sovereign Data requires ...





... sovereign infrastructure ...



2010

gaia-x



and it'd better be solid



2018

gaia-x



Sovereign Cloud Stack vision

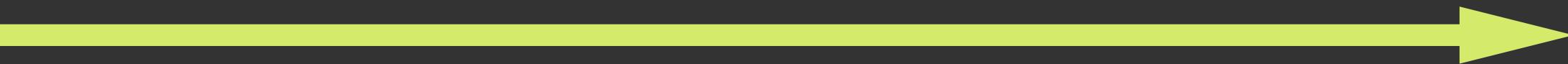
None

Data protection

Choice

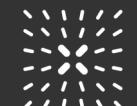
Shape Technology

Operational Skills



Achieve all levels of digital sovereignty

- 1) GDPR / Data protection / Data security
- 2) Real choice by many (collaborating!) providers with strong interoperability: Standardization & Certification
- 3) Fully open functional stack (Four Opens, OSS Health Check) as reference implementation
- 4) Full transparency over operations stack, operational practices (Open Operations)



Sovereign Cloud Stack project

Started end of 2019

Funded by BMWK (German Fed. Min. for Economic Affairs & Climate Action) since summer 2021

Run by Open Source Business Alliance e.V. with half a dozen employees (growing to a dozen)

Open Community contributions

Paid contractor work (awarded via public tenders)

Closely working with Gaia-X

SCS project is neutral orchestrator within the SCS ecosystem, partners do business as CSP, services providers, etc.

Project page: <https://scs.community/>



SCS ecosystem

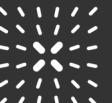
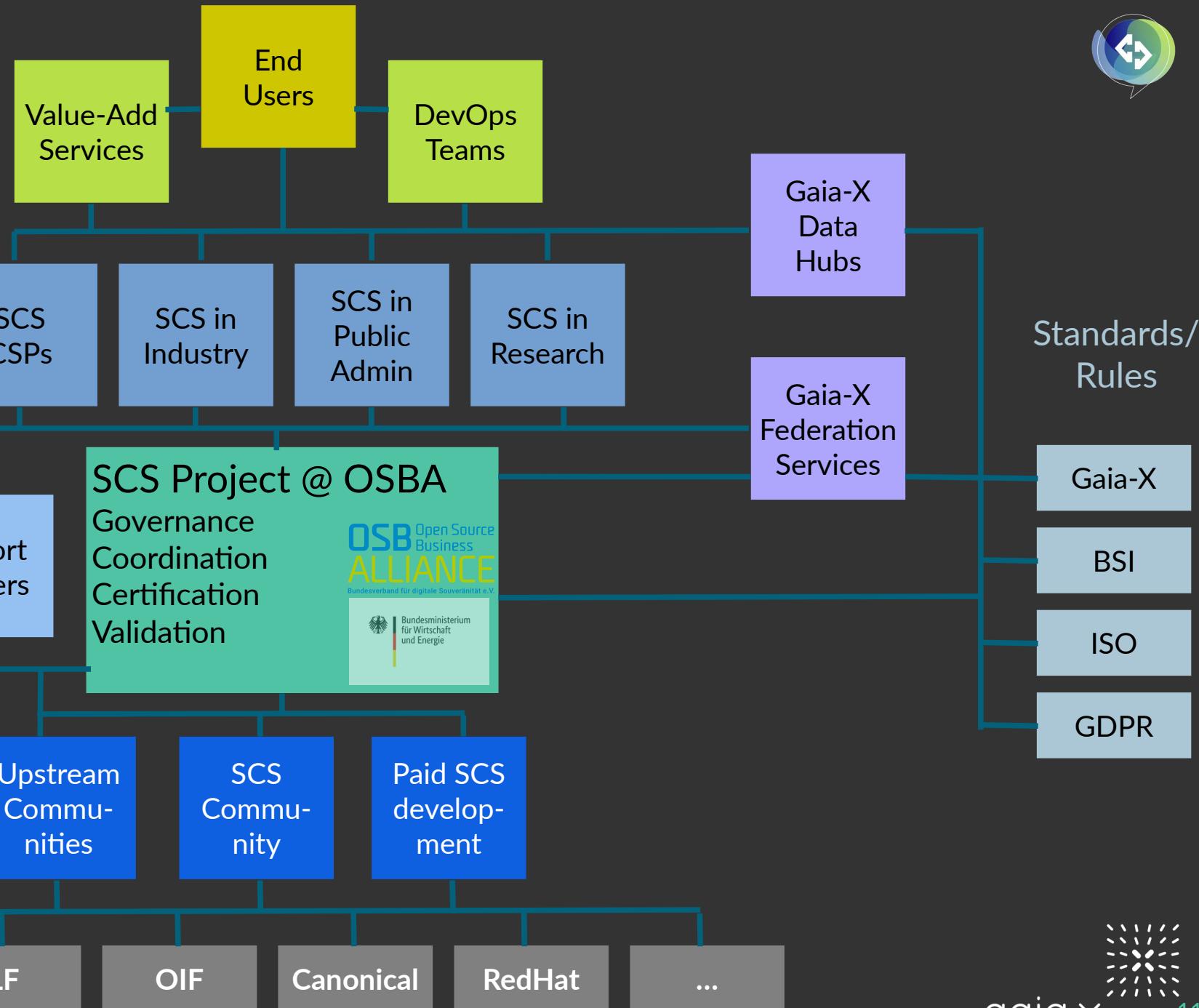
SaaS/PaaS

(Infra)
Providers

Services

Development
Community

Found/Orgs



SCS choice ...



HETZNER



T-Systems Sovereign Cloud powered by Google Cloud
Volle Public Cloud Funktionalität für die Digitalisierung – volle Souveränität inklusive



Kick Start for the First Sovereign Cloud Platform for the Public Sector in Germany: SAP and Arvato Systems Announce Partnership

February 3, 2022 by SAP News



NUTANIX™



IONOS



cleura C



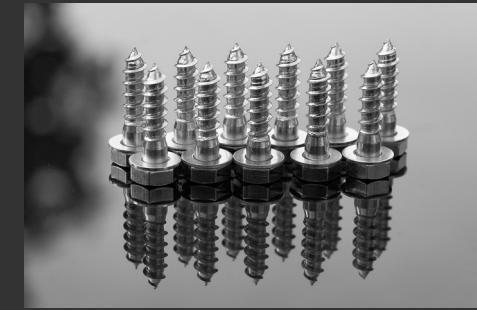
plusserver



SCS standards & certification

Reuse existing Open Standards

- Must have a fully open and capable (reference) implementation
- Ideally with conformance tests
- Examples: CNCF conformance tests, S3, OIDC, OpenStack powered trademark tests
- Contribute improvements (e.g. tests) back upstream



SCS: Fill gaps (for PaaS/SaaS DevOps teams)

- Done: IaaS flavor naming and standard flavors
- Done: Image metadata
- WIP: Definition of regions, availability zones, ...
- WIP: k8s cluster management (k8s cluster-API)

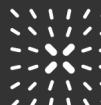


Federation

- Allow OIDC user federation

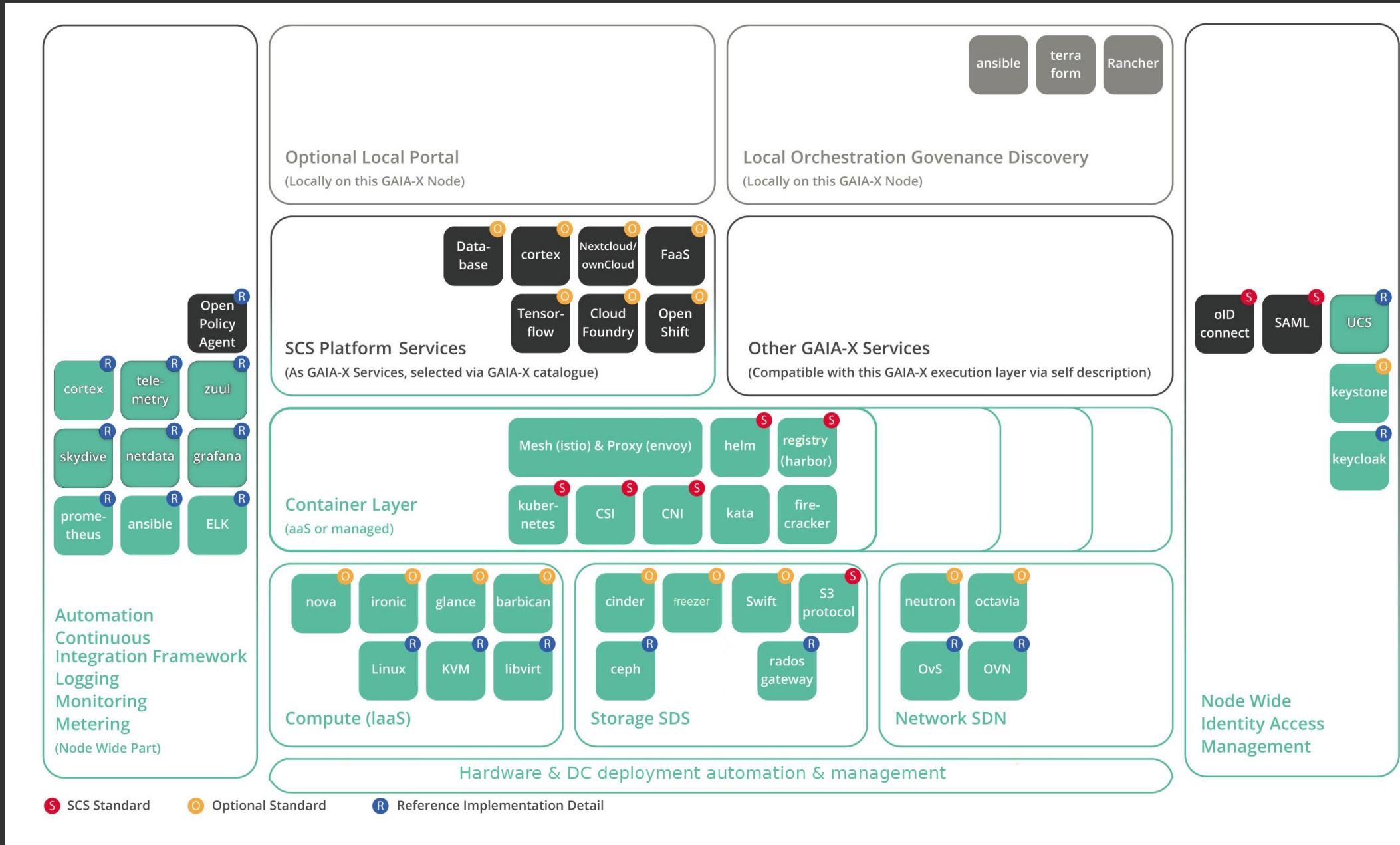
Gaia-X

- SSI federation (future)
- Collaboration with Gaia-X Federation Services
- Self-Description generation for IaaS/CaaS/KaaS/...





SCS reference implementation architecture



SCS reference implementation status

Consists of OSI compliant (OSS health check surviving) upstream components

- Participating in & contributing to upstream communities

All SCS work fully OSS (github.com/SovereignCloudStack)

- Modular code, developed by growing community in an agile way

Release R2 (v3.0.0) from 2022-03-23

- Secure, Stable & sustainable base layer (OSISM)
- Bare Metal automation
- Complete IaaS stack (includes OpenStack Xena)
- Ready for federation (OIDC) & GXFS
- Operational stack (Lifecycle Management, Monitoring, Alerting, ...) included
- K8s Cluster-API based container cluster management (KaaS) - API/CLI only



Roadmap for R3 (Sept 2022)

- Encrypt all data at rest (opt-out possible)
- Standardize k8s cluster management across providers (also non-SCS IaaS)
- Strengthen CI framework and coverage
- Conformance tests (IaaS)
- Document and validate a set of IAM federation use cases
- Later: PaaS, Edge setups, Network encryption, ...



SCS reference implementation adoption

Two public clouds in production with complete SCS stacks since > 1 year



PlusCloud achieved a BSI C5 certification in Nov '21



SCS validated in Gaia-X Hackathons and Betacloud & PlusCloud customers

Adoption continues...

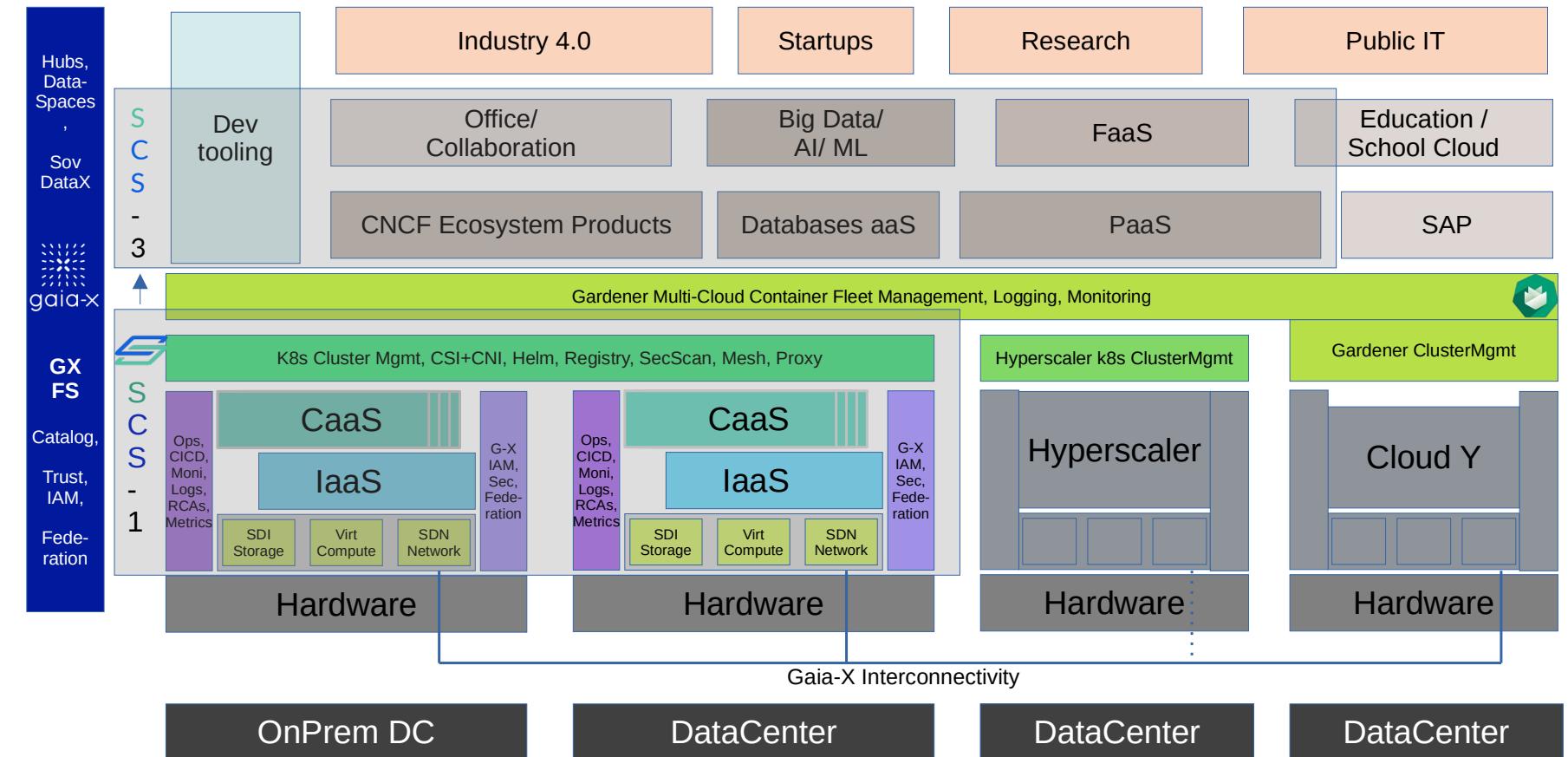
- Soon: Third public cloud (with full SCS)
- PoCs in industry and with public sector IT providers (DE)
- Modules used by various partners (see logos on homepage)
- Ecosystem of service companies emerging (training, consulting, implementation, support, ...)

Formal SCS certification program to be launched this summer for more CSP partners

- SCS compatible: Compatibility / Interoperability testing
- SCS open: Technological transparency (fully open functional stack)
- SCS sovereign (later): Operational transparency



Building federated clouds



Adapted from
Acatech
Whitepaper on
Digital
Sovereignty
(3/2021)

Addressing the Operations challenge: Tooling

File Edit View History Bookmarks Tools Help

Dashboard - Nextcloud SCS Usage — OSISM Testbed docu ara | Playbook reports: 1... +

192.168.16.5:8120

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 ara Playbooks Hosts API Documentation About

Search and filter

ARA

Status Report Date	Duration	Hosts	Tasks	Results	Ansible	Controller	Name (or path)	CLI	Labels
17 Aug 2021 12:15:02 +0000	00:00:18.31	4	3	12	2.10.13	manager_osism-ansible_1_manager_default	/ansible/generic-facts.yml	 	check=False
17 Aug 2021 11:28:41 +0000	00:01:38.74	4	27	86	2.10.12	manager_kolla-ansible_1_manager_default	/ansible/kolla-prometheus.yml	 	check=False
17 Aug 2021 11:27:34 +0000	00:01:06.06	4	18	69	2.10.13	manager_osism-ansible_1_manager_default	/ansible/monitoring-netdata.yml	 	check=False
17 Aug 2021 11:27:04 +0000	00:00:28.34	1	11	11	2.10.13	manager_osism-ansible_1_manager_default	/ansible/monitoring-openstack-health-monitor.yml	 	check=False
17 Aug 2021 11:26:50 +0000	00:00:12.83	1	4	4	2.10.13	manager_osism-ansible_1_manager_default	...openstack/playbook-bootstrap-ceph-rgw.yml	 	check=False
17 Aug 2021 11:26:36 +0000	00:00:11.76	2	5	5	2.10.13	manager_osism-ansible_1_manager_default	...openstack/playbook-bootstrap-basic.yml	 	check=False
17 Aug 2021 11:24:03 +0000	00:02:31.58	4	34	82	2.10.12	manager_kolla-ansible_1_manager_default	/ansible/kolla-designate.yml	 	check=False

Dashboard - Nextcloud SCS Usage — OSISM Testbed docu Device Roles - netbox Problem loading page Welcome to Keycloak Create index pattern - kibana/... ara | Playbook reports: 1... +

192.168.16.5:8120/app/management/kibana/indexPatterns/create

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Elastic

Stack Management / Index patterns Create index pattern

Help us improve the Elastic Stack To learn about how usage data helps us manage and improve our products and services, see our Privacy Statement. To stop collection, disable usage data here. Dismiss

Kibana

Create index pattern An index pattern can match a single source, for example, filebeat-4-3-22 , or multiple data sources, filebeat-* . Read documentation

Step 1 of 2: Define an index pattern

Index pattern name Next step >

Use an asterisk (*) to match multiple indices. Spaces and the characters \, /, ?, *, <, >,] are not allowed.

Include system and hidden indices

Your index pattern can match your 1 source. flog-2021.08.17 Index

Rows per page: 10

File Edit View History Bookmarks Tools Help

Dashboard - Nextcloud SCS Usage — OSISM Testbed docu Problem loading page Welcome to Keycloak 192.168.16.5:8120/auth/ ara | Playbook reports: 1... +

192.168.16.5:8120/auth/

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 KEYCLOAK

Welcome to Keycloak

Administration Console > Centrally manage all aspects of the Keycloak server

Documentation > User Guide, Admin REST API and Javadocs

Keycloak Project >

Mailing List >

Report an issue >

Netbox Organization Devices IPAM Virtualization Circuits Power Secrets Other

Device Roles

Name	Devices	VMs	Color	VM Role	Description
Ceph control node	0	0			—
Ceph resource node	0	0			—
Compute node	0	0			—
Control node	0	0			—
Generic node	0	0			—
Manager node	0	0			—
Monitoring node	0	0			—
Network node	0	0			—

Configure Add Import Export

50 per page Showing 1-8 of 8

Keycloak

Netbox

Kaia-x



Operations:

Measure what you want to manage ...



openstack-health-monitor: Black-box monitoring



Addressing the Operations challenge: Towards fully Open Operations



More tooling (well documented and configured)

- Monitoring, Alerting, Trending
- Patching (LCM) & CI/CD

Documenting and sharing best practices

Transparent Issue resolution

- Public RCAs

Public dashboard / status page

- e.g. OpenStack Health Monitor (or successor from TSI)



Join the growing SCS community!

As CSP or industry IT department

- Join discussions / community
- Adopt standards
- Adopt technology (code)

As OSS infrastructure software developer

- Contribute / Participate in community
- Apply for a job in our OSB Alliance team

As interested company

- Build SCS expertise
- Respond to tenders
- Build business model around SCS expertise

As PaaS/SaaS developer

- Develop / Test against SCS standards

As IT consumer

- Request true sovereignty from your platform

More information:

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

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

Booth E155 (3.1) at CEE
(Other Confs: OIF summit, CloudLand, ...)

Gaia-X: MVG OWP, Hackathons,
WGs FS/OSS, Svc. Char.

Email: project@scs.sovereignit.de
Matrix: SCS rooms

