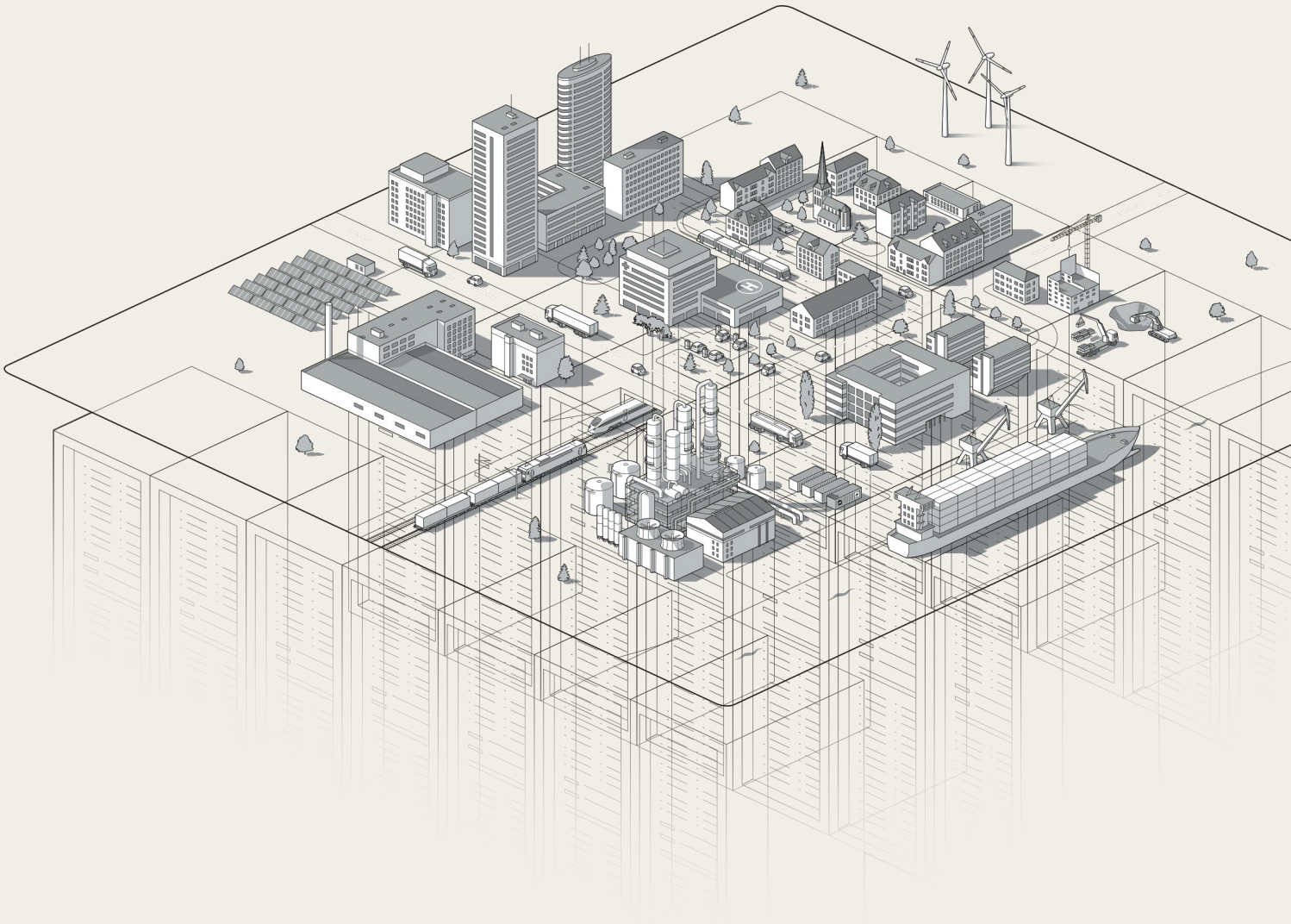
# OSISM

Technical details

# How it works.



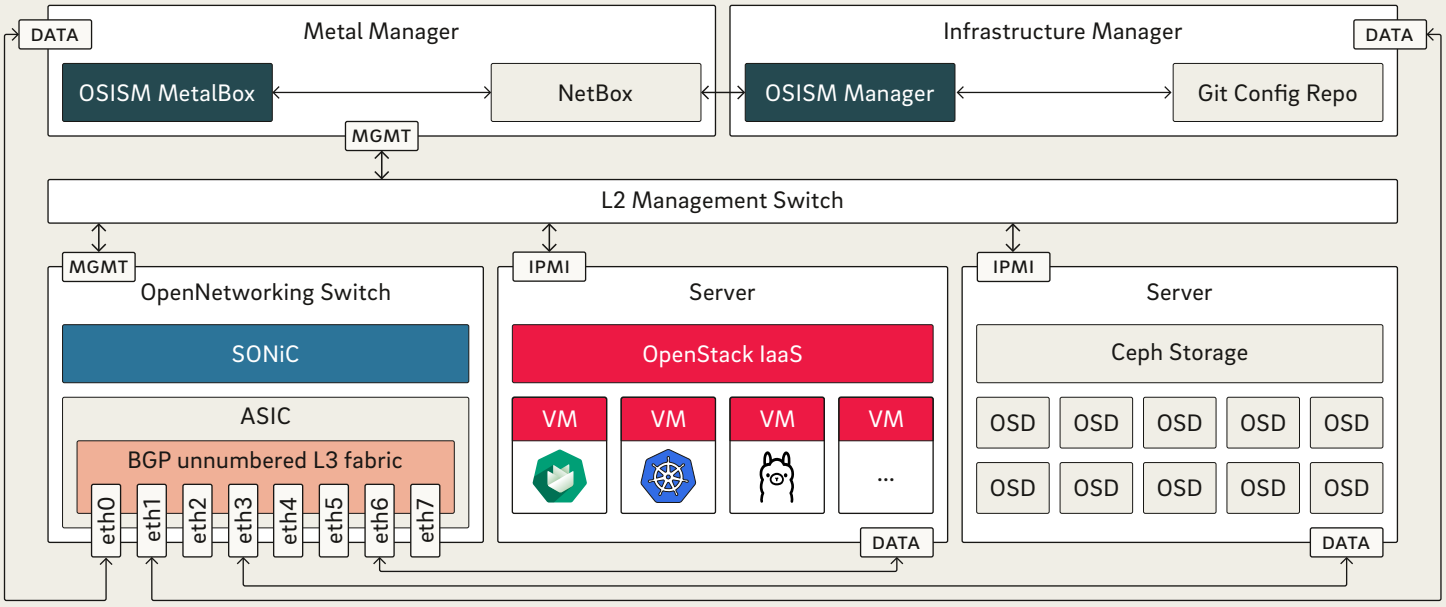
OSISM orchestrates physical servers, storage and networking hardware into a software-defined, SCS-compliant cloud platform based on OpenStack, Ceph and Kubernetes.

**OSISM MetalBox**
Bare-metal provisioning of servers and switches is handled by the MetalBox. The SONiC configuration is generated from the cabling and IP address management (IPAM) data in NetBox and deployed to the switches automatically via zero-touch provisioning (ZTP). Server installation is orchestrated by the integrated Ironic using Redfish and virtual media images, so no PXE boot is required.

**OSISM Manager**
The entire environment is orchestrated via the OSISM command-line interface (CLI). All tasks are passed to the Manager, which reads the configuration options from the local Git configuration repository and applies them with Ansible against the inventory generated from the data in NetBox.

**Configuration repository**
The Git configuration repository serves as the single source of truth for the entire environment. It contains all configuration options for Kolla, as well as the IPAM and cabling information that forms the basis for NetBox. Following the GitOps principle, all changes are first committed here and then rolled out via the OSISM Manager or the MetalBox.

**NetBox**
NetBox provides the cabling data, the roles of the individual components and the IPAM data. The local instance is populated from the configuration repository and serves as the source of information for both the OSISM Manager and the MetalBox. As NetBox provides both documentation and configuration, any configuration drift is prevented.




**SONiC**
The network is based on BGP unnumbered host-based routing. The entire configuration is generated by the MetalBox and rolled out to the switches via ZTP and to the servers via Ironic. Classic Layer 2 concepts such as MLAG, spanning tree and bonding are no longer required, as BFD, BGP and ECMP replace them entirely.

**OpenStack**
The IaaS layer is provided by OpenStack, which the OSISM Manager deploys using Kolla Ansible. OpenStack services are selected and configured in the Git configuration repository. The assignment of control, compute, network and monitoring roles to the individual servers is managed in NetBox.

**Storage**
Ceph, the open-source storage backend, is installed and initially configured via the OSISM Manager. Ongoing management, as well as upgrades and performance optimisations, are handled via cephadm. Integration with OpenStack is enabled by importing the Ceph keyrings into the Git configuration repository.

Documentation: Concept

Documentation: Installation