

SUSE® OpenStack Cloud

Become Your Company's Cloud Service Provider

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Over Two Decades of Open Source

SETTING THE BAR

**LEADING
PROVIDER**

of enterprise linux
solutions



GLOBAL MARKET

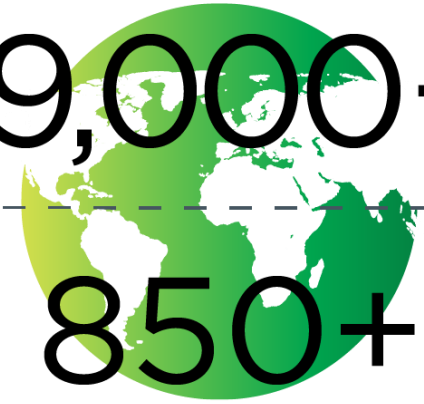
**CUSTOMERS
WORLDWIDE**

▶ 19,000+

GLOBAL ORGANIZATION

**EMPLOYEES IN
43 COUNTRIES**

▶ 850+

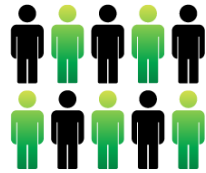


KNOW HOW

22+

years of linux engineering
experience

PARTNERS



5,000+ member
partner ecosystem



THE GOLD STANDARD

**AWARD
WINNING**



technical support and
customer service

SUSE OpenStack Cloud

PROVEN OPEN SOURCE LEADERSHIP

20^{year}

History of commercializing and supporting open source projects in the enterprise



Backed by the excellence of SUSE engineering and award-winning support organization

SIMPLIFIED INSTALLATION AND OPERATIONS



Packaged for enterprise deployments and integrated with SUSE maintenance and lifecycle management



Integrated installation and automated operations provided by Crowbar



Automated configuration and deployment of highly available cloud services

LEVERAGES YOUR EXISTING ECOSYSTEM



SUSE application and hardware certifications



Supports mixed hypervisor private clouds



Open APIs for integration with third-party software

COMPLEMENTED BY POWERFUL SOLUTIONS



SUSE Studio and SUSE Manager builds and manages applications for private and public cloud environments.

SUSE + OpenStack

Founding &
Platinum Member

Foundation
Chairman
Alan Clark

Technical
Contributions

OpenStack
Distribution

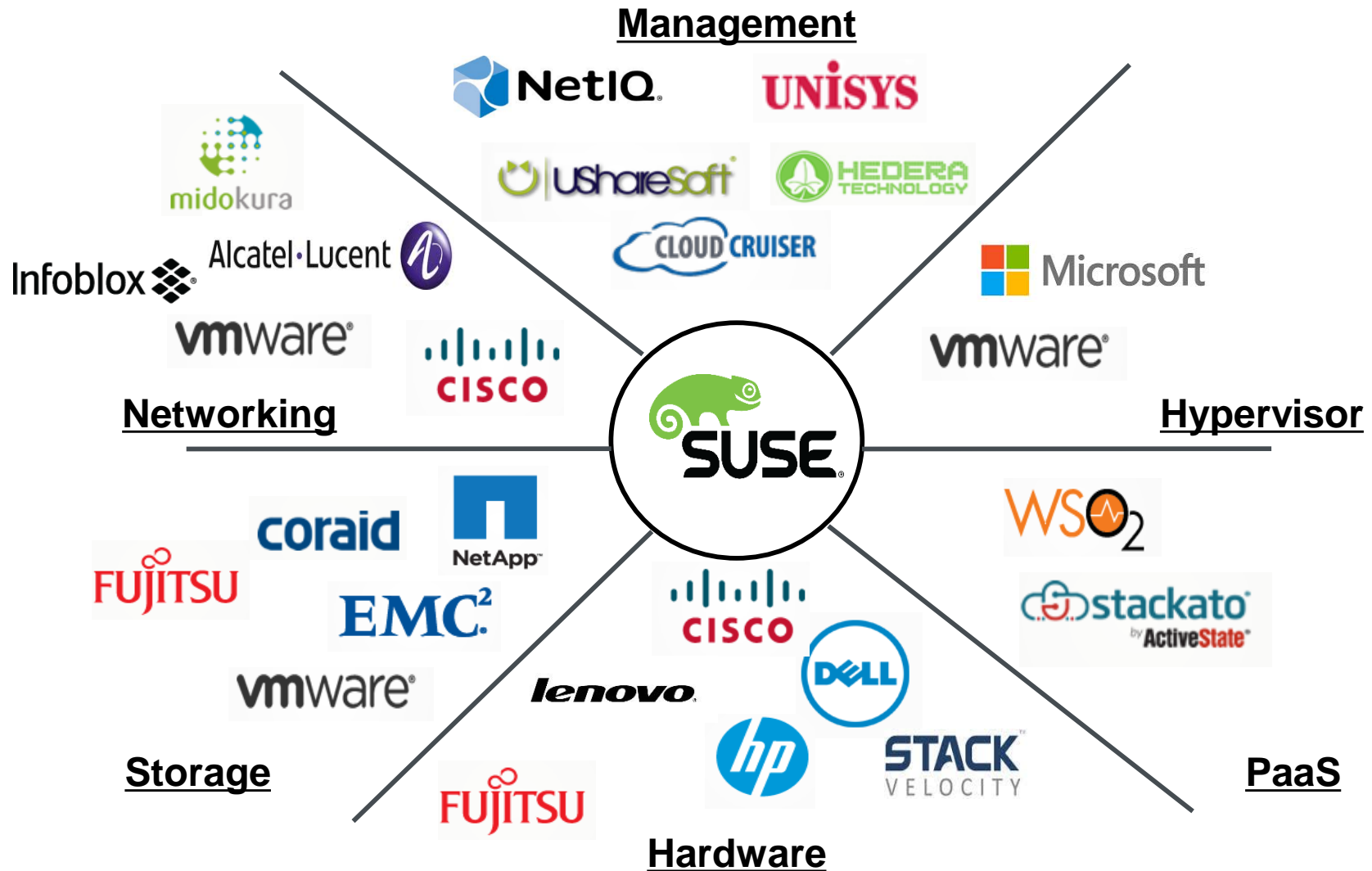
Promotion in
openSUSE Community

Enterprise
Ecosystem



SUSE Cloud Partner Ecosystem

Maximize Current Investments, while Expanding Capabilities



Take Advantage of Ecosystem and Skills

- **Supports Mixed KVM, Xen, Microsoft Hyper-V, and VMware Clouds**

- Increase flexibility in cloud design while maximizing performance and optimizing licensing costs for workloads

SUSE Hardware and Application Certifications

- Confidently run SUSE Cloud on industry standard hardware and deploy the applications you want in the cloud

Open APIs for Integration with Third-Party Solutions

- Maintain current IT investments or expand capabilities to build cloud to unique requirements



SUSE OpenStack Cloud 5 Overview



SUSE OpenStack Cloud 5

- Private cloud infrastructure software
- Based on OpenStack “Juno”
- Full support for vSphere, HyperV, Xen and KVM
- Highly Available control plane
- Industry-leading Enterprise-class installation & management tools



SUSE OpenStack Cloud 5 Highlights

- Based on latest release of OpenStack (Juno)
- Support for SUSE Linux Enterprise 12 Compute Nodes
- Integration with SUSE Enterprise Storage
- 342 new features and enhancements
 - Incorporates fixes and enhancements from POC feedback
 - More networking options → Flexibility
 - HA improvements → Stability
 - Database as a Service → Simplifies application development
 - Analytics as a Service → Enables “big data” cloud
 - Improved log handling → Operational efficiency



Deploy with SUSE OpenStack Cloud

- OpenStack with 24x7 support
 - Multi-hypervisor, multi-storage, multi-network
 - Integrates with other software-defined stacks
- Fast install & management
 - Easily add infrastructure nodes
- Smooth upgrade path
- Resource & lifecycle management
 - Integrated with management tools



Fast Installation and Simplified Management

SUSE OpenStack Cloud Administration Server

- Faster ROI through faster installation and easier management of OpenStack Cloud

Highly Available Cloud Services

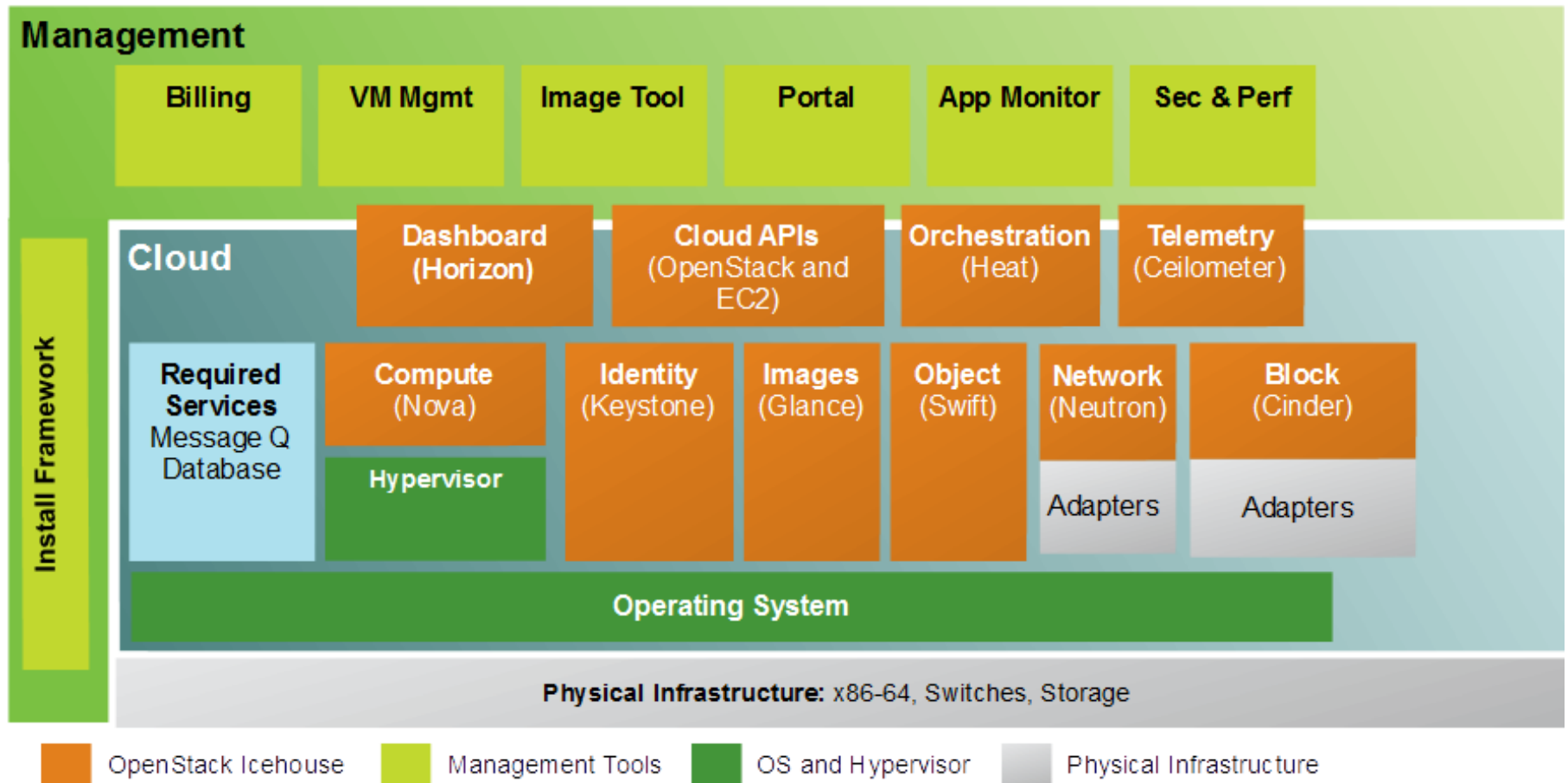
- Maintain business agility and deliver enterprise-grade SLAs through continuous availability of cloud services

Standardized Product Life Cycle

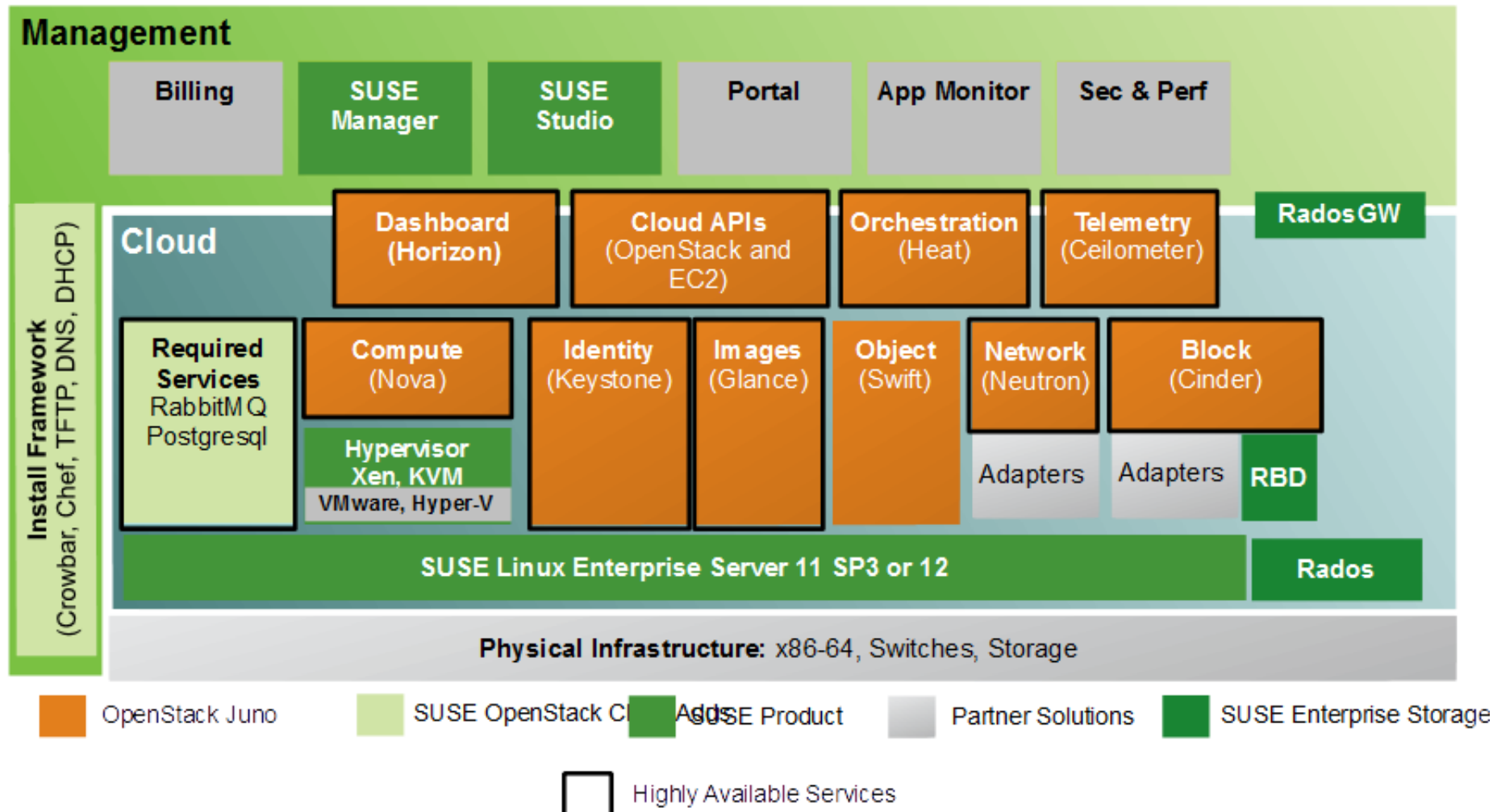
- Packaged product integrated with SUSE update and maintenance processes to ensure simplified enterprise maintenance



OpenStack Distribution



SUSE® OpenStack Cloud 5

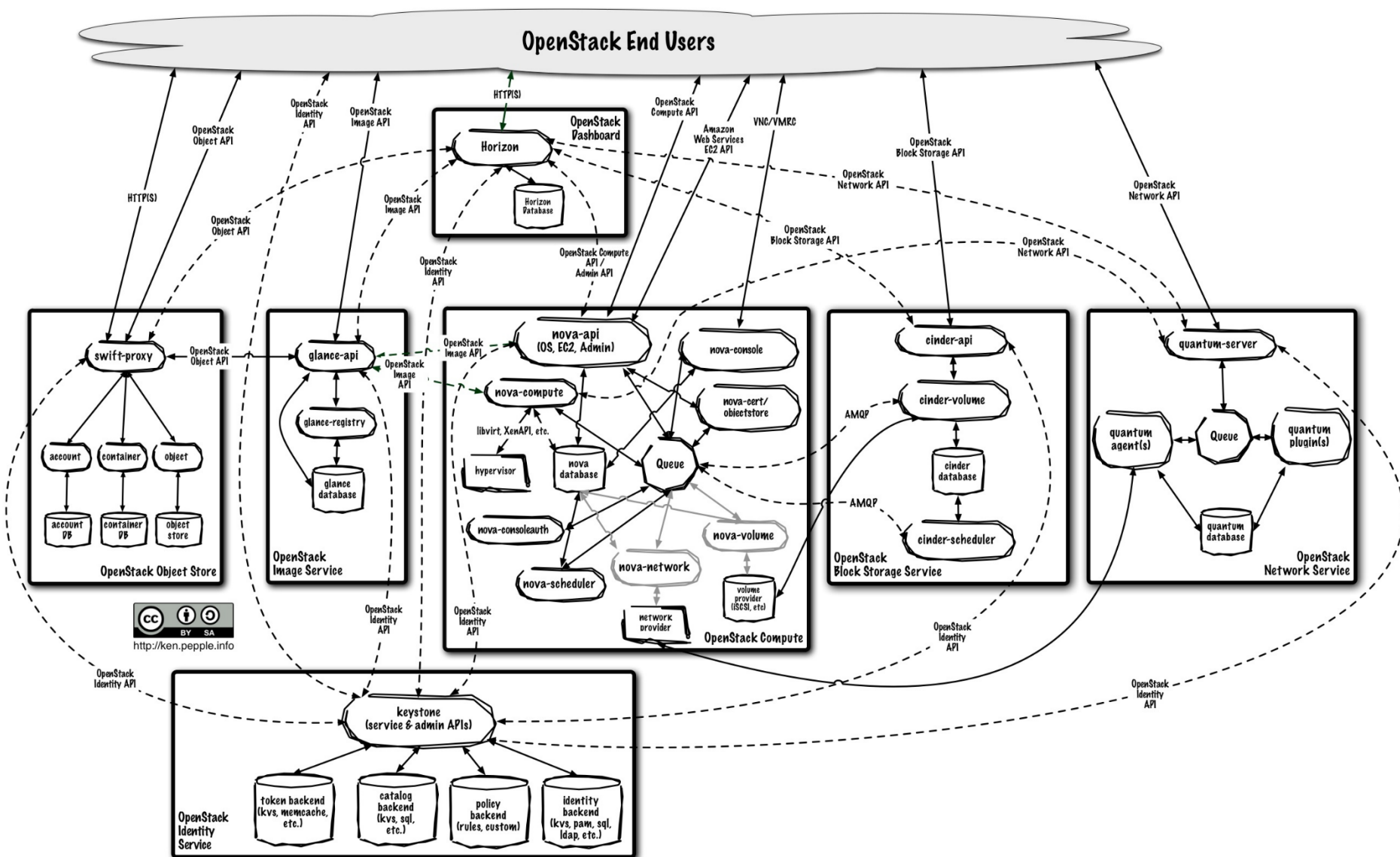


1229
Parameters

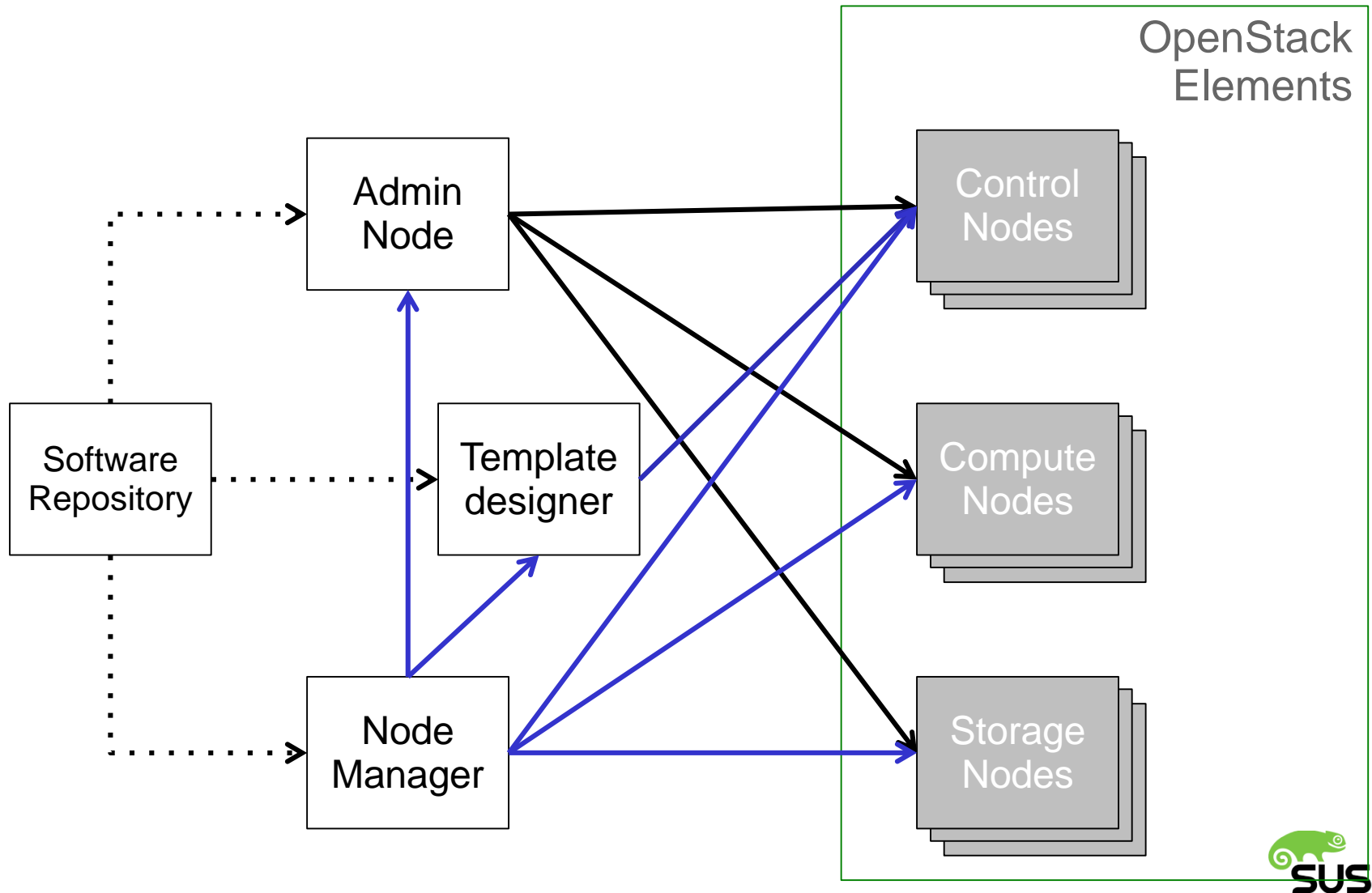
11
Components

2
Hours

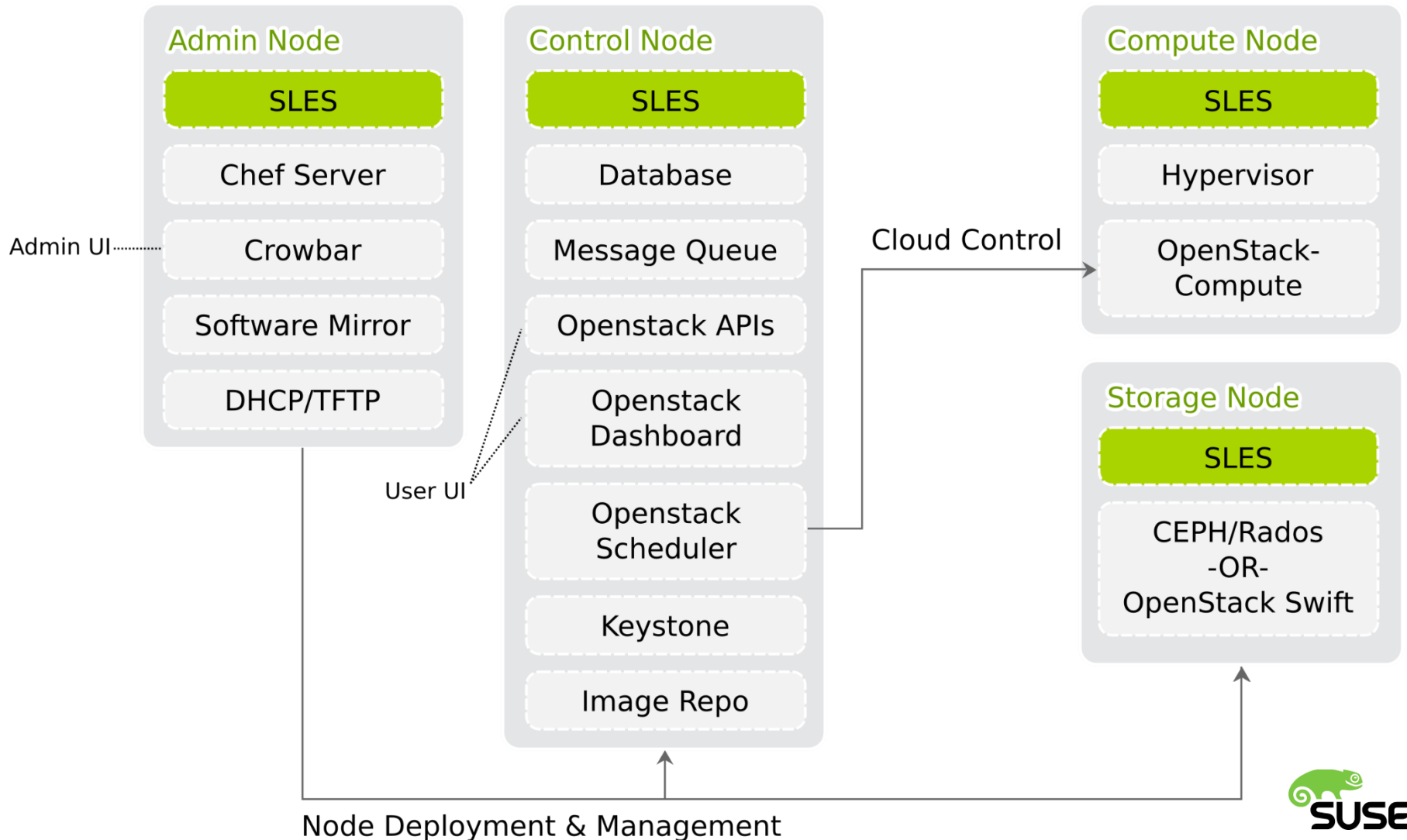
The Need for an Admin Node?



SUSE OpenStack Cloud 5 Architecture



SUSE OpenStack Cloud Architecture



System requirement

Role	Memory	Disk	NIC
Admin Node	2GB Min 4GB Recommended	50GB	1 for single/dual mode >2 for team model
Control Node	2GB min 12GB Recommended	Depending on the service setup	1 for single mode 2 for dual mode >2 for team mode
Compute Node	Depended on the size of your instance	Depended on the size of your instance, but enough to store both root image and ephemeral disk	1 for single mode 2 for dual mode >2 for team mode
Storage Node	Depend on the object or block storage	Start with at least 2 HDD, more preferred	

SUSE OpenStack Cloud Install

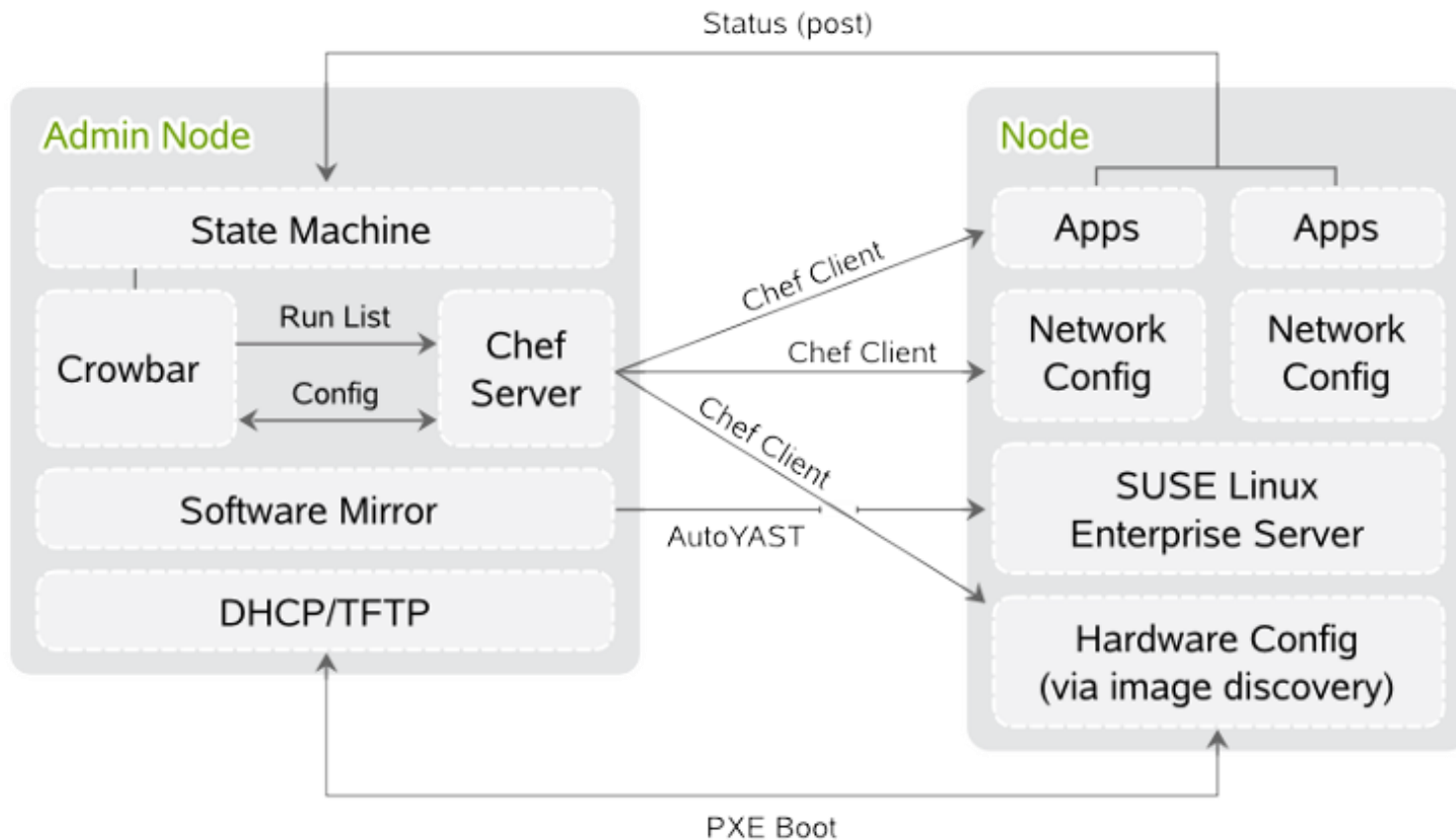
Admin Node



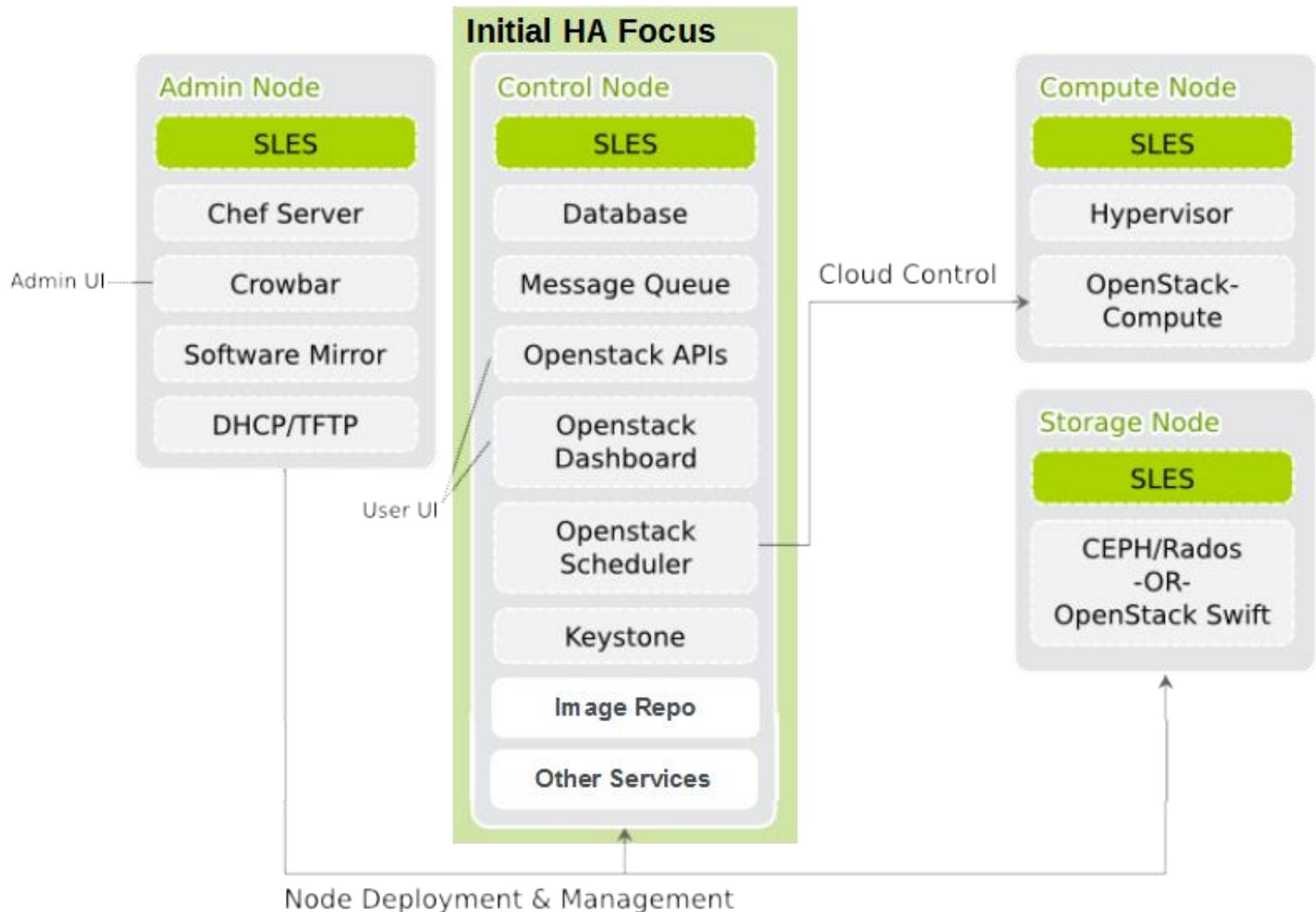
- Crowbar
 - Open source project started by Dell
 - Server discovery
 - Firmware upgrades
 - OS installation via PXE Boot
 - Application deployment via Chef
- DHCP, DNS, TFTP, NTP, PXE
- SMT

SUSE OpenStack Cloud Install

Topology Workflow



SUSE OpenStack cloud Control node



SUSE OpenStack Cloud Controller



- Cloud controller hosts the OpenStack Services
 - PostgreSQL **database** is used to track resources
 - **Message broker** (RabbitMQ)
 - **Image Service** (Glance) provides a VM image repository
 - **Identity** (Keystone) provides authentication and authorization for all SUSE OpenStack Cloud services
 - **Dashboard** (Horizon) provides Web interface for users and administrators
 - **Networking** (Neutron) provides virtual network interfaces to connect virtual machines to internal and external networks
 - **Disk** (Cinder) provides an interface to define and connect virtual machines to block devices
 - **Orchestration** (Heat) enables the coordination of multiple virtual machines to deliver a single business service
 - **Telemetry** (Cielometer) monitors and reports on cloud resource utilization
 - **Scheduler** (Nova) resource management and API to create and manager virtual machines

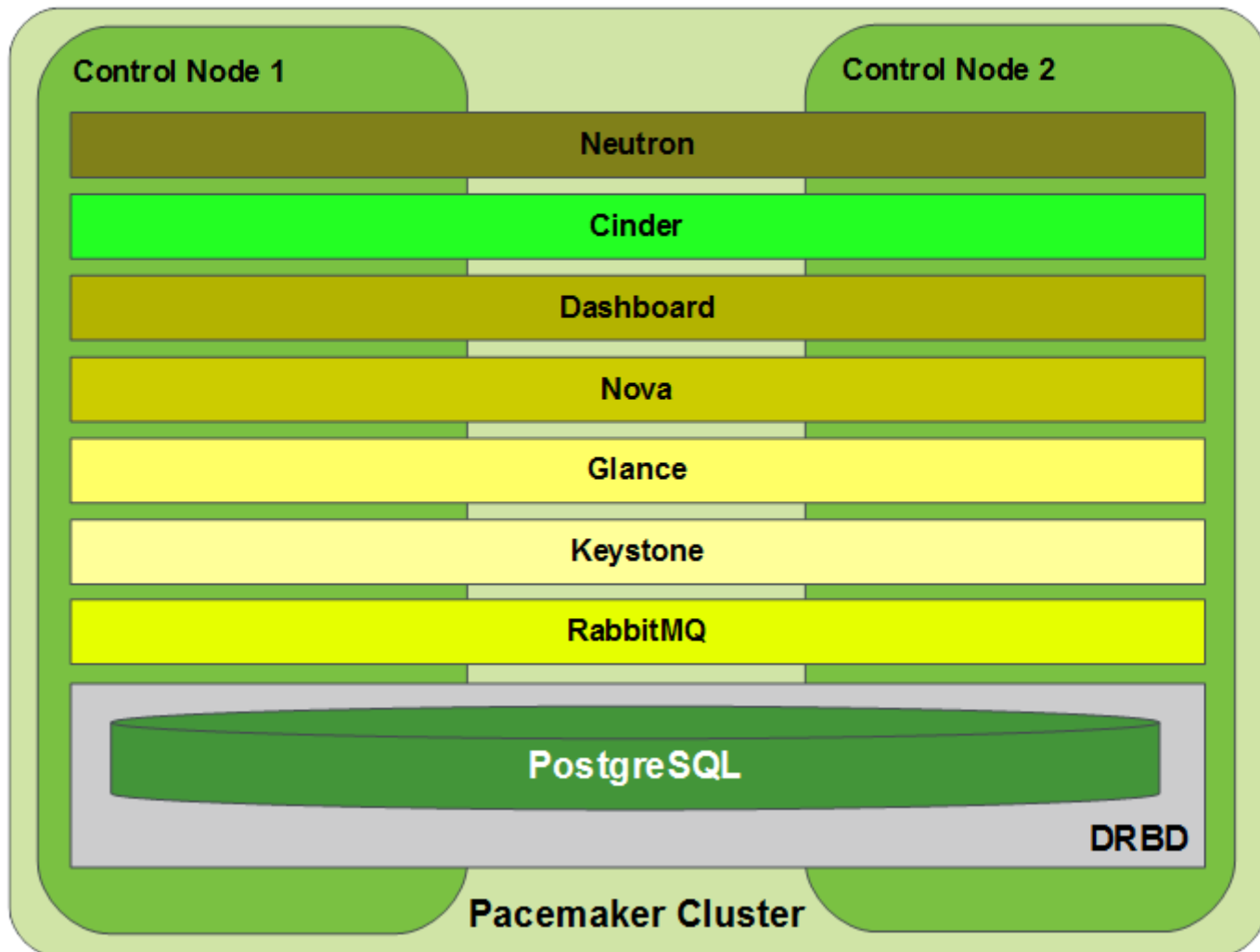
High Availability OpenStack Cloud

- First question: what are we trying to protect?
 - Administration Server
 - Control Plane
 - Guests

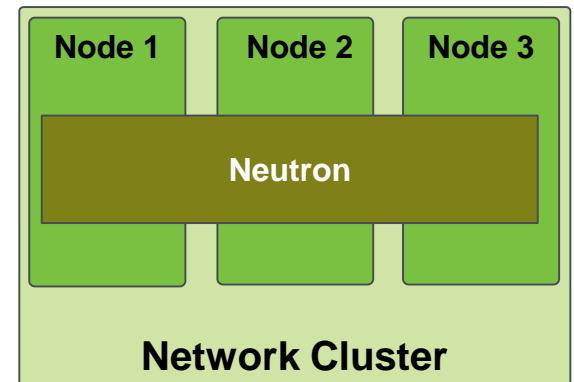
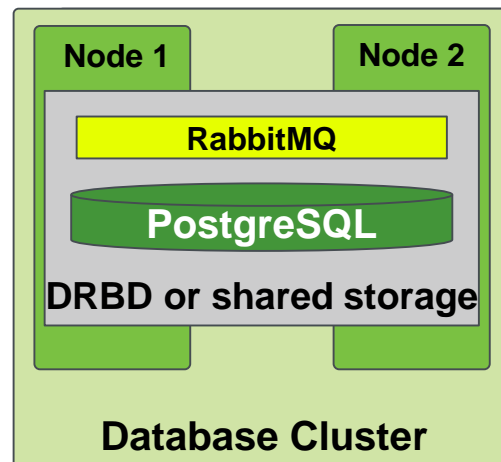
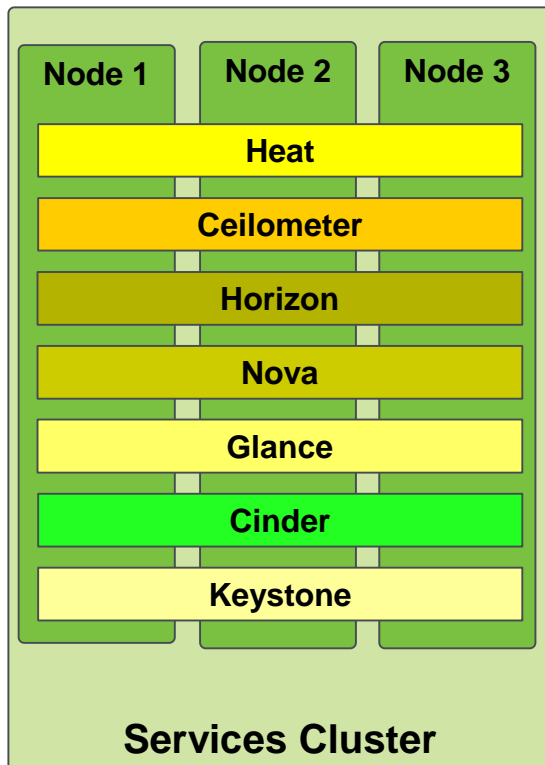
SUSE Approach

- Fully automated HA configuration through the Admin node
- Use SLE HA Components
 - Cluster setup through Pacemaker barclamp
 - Modify existing scripts to enable HA deployments
- Postgres
 - Use DRBD + Pacemaker

Simplified Structure



Recommended Control Plane Layout



SUSE OpenStack Cloud Compute Nodes



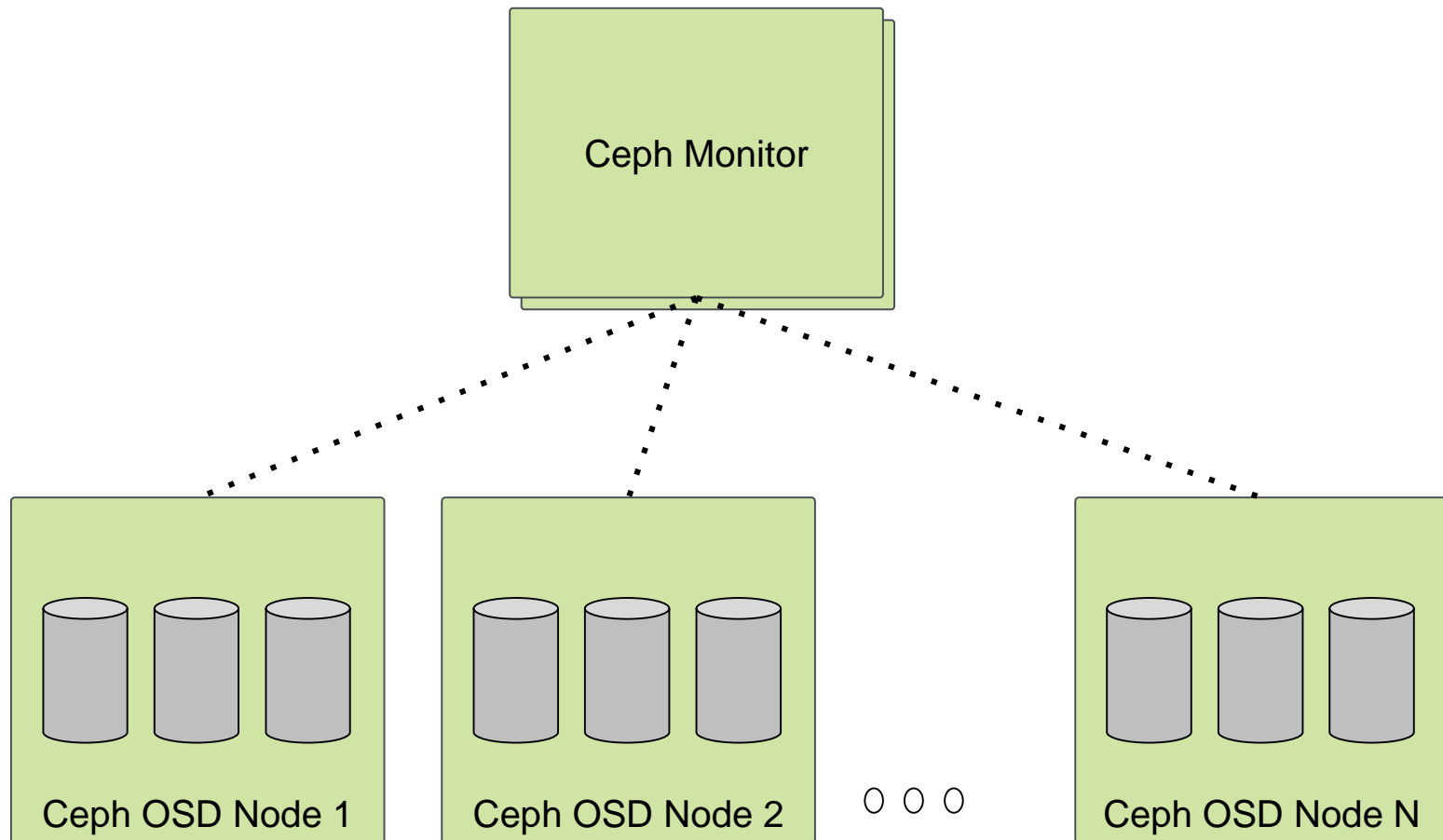
- Pool of machines where instances run
- Equipped with RAM and CPU
- SUSE OpenStack Cloud Compute (nova) service
 - Setting up, starting, stopping, migration of VM's
- Mixed Hypervisor Support
 - KVM
 - Xen
 - VMware (via vCenter)
 - Hyper-V

SUSE OpenStack Cloud Storage Nodes

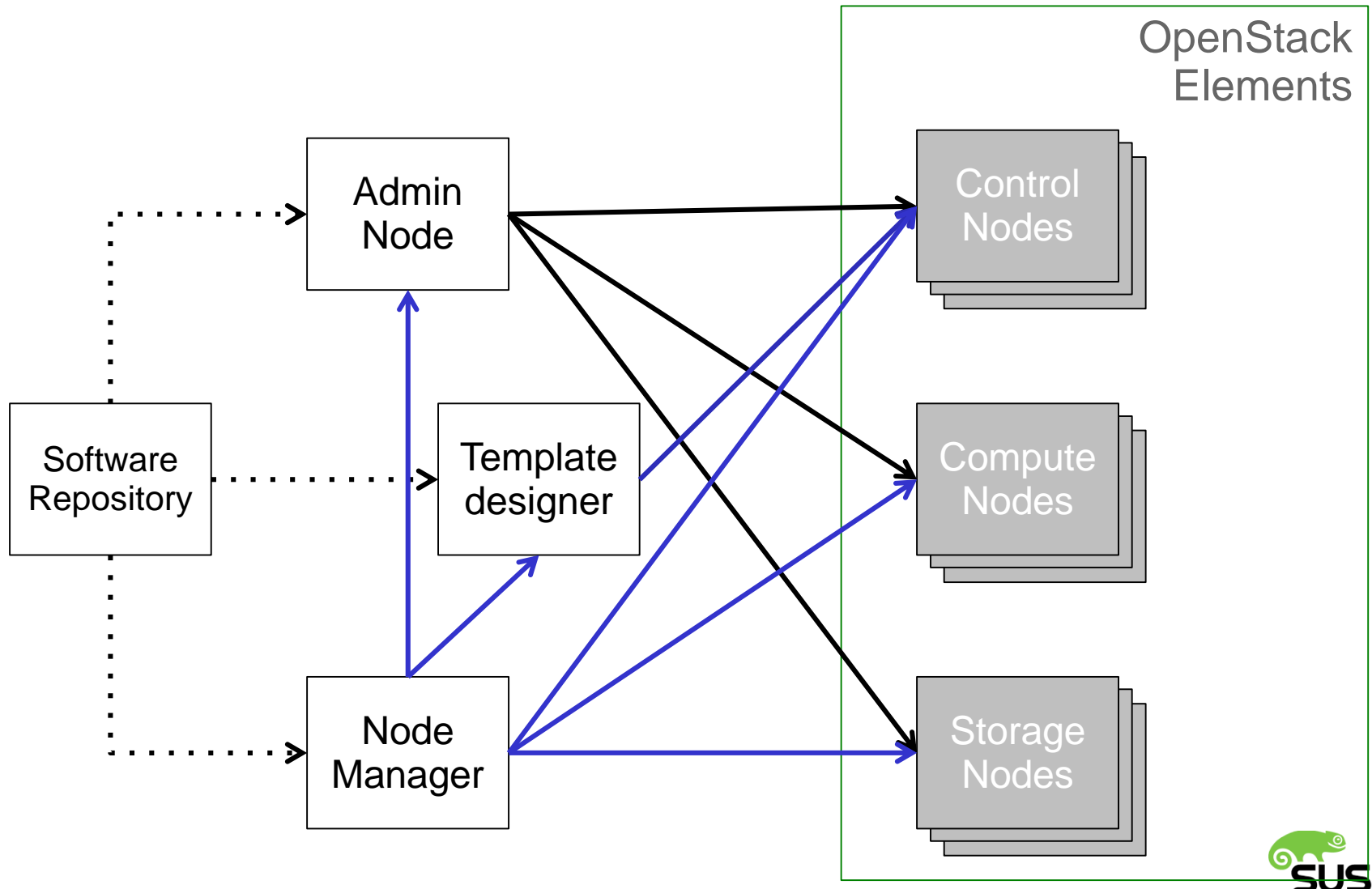


- Pool of machines providing storage
- Object storage provided by:
 - Swift, or
 - Ceph (Rados)
- Block storage provided by OpenStack Storage
 - Ceph (RBD)
 - External arrays (EMC, NetApp, ...)

Storage Layout



SUSE OpenStack Cloud 5 Architecture

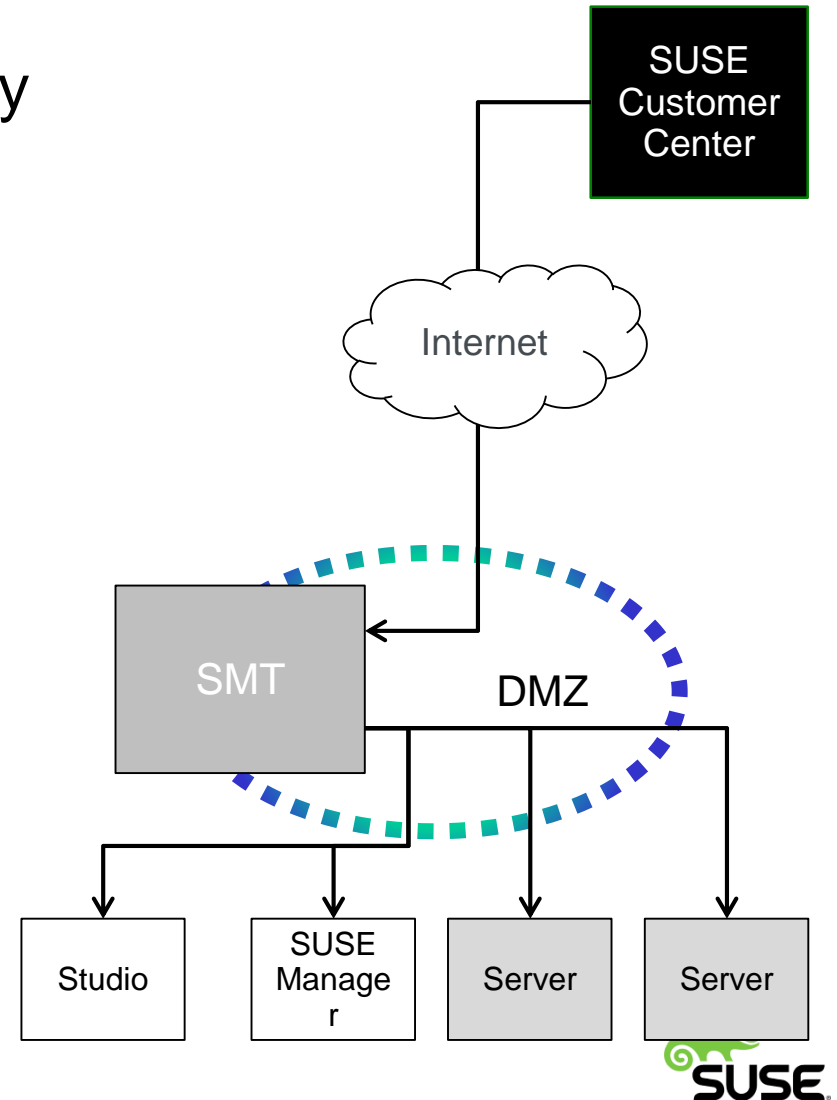


Subscription Management Tool

Centralised software repository

Source for SUSE Manager

Source for SUSE Studio
template builder



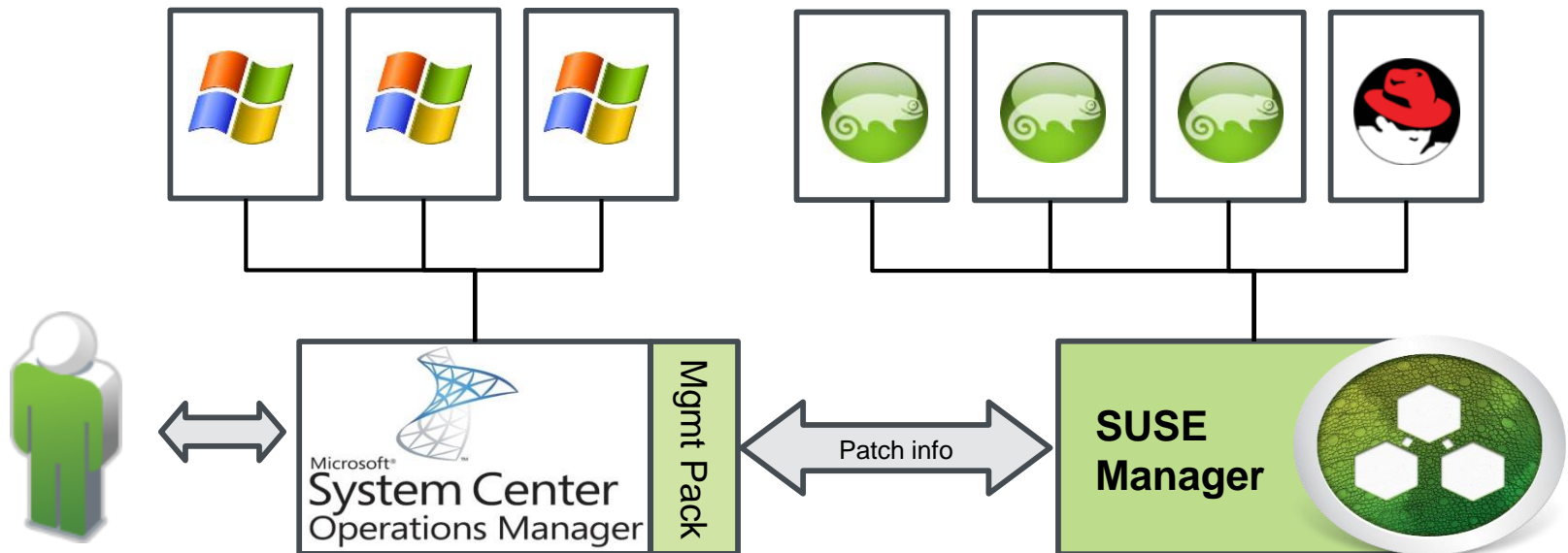
Maintaining with SUSE Manager

- Centralised management point
 - Patch, build, configure, monitor
- Multiple platforms
 - Multiple Hardware, multiple software
- Multiple tenants
 - Scalable to thousands of nodes
- Integration with SUSE Studio & SUSE OpenStack Cloud



SUSE Manager

Management Pack for System Center Operations Manager

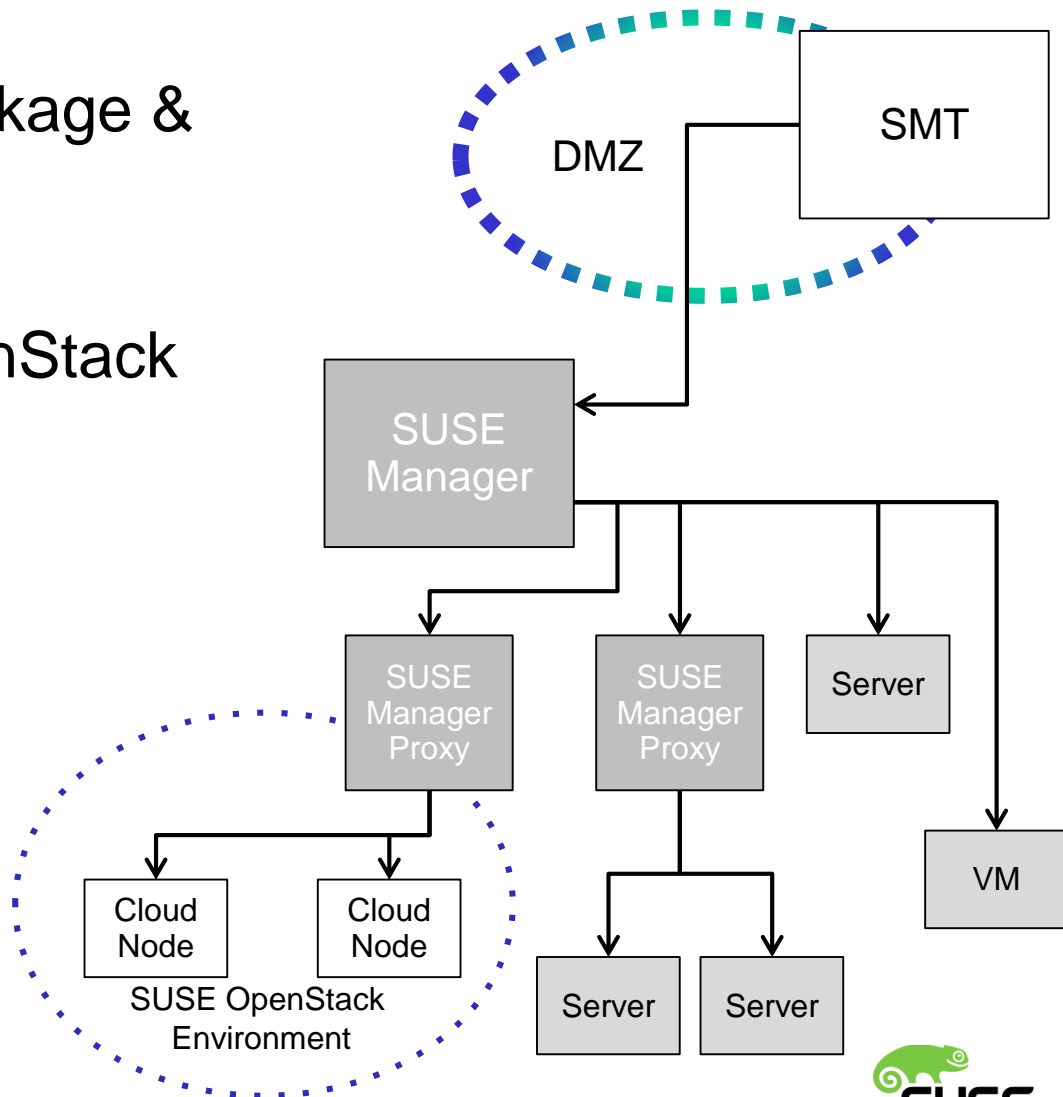


SUSE Manager

Centralised patch, package & config management

Source for SUSE OpenStack cloud

Extensible through proxy servers



Packaging with SUSE Studio

- Package OS & Apps
 - Avoid conflicts & user install hassles
 - Use of approved repositories
- Same recipe for multiple hypervisors
 - Perfect for hybrid environments
- Integrate to Cloud & management tools
 - Automatic connection for security & patching
 - Ensures compliance

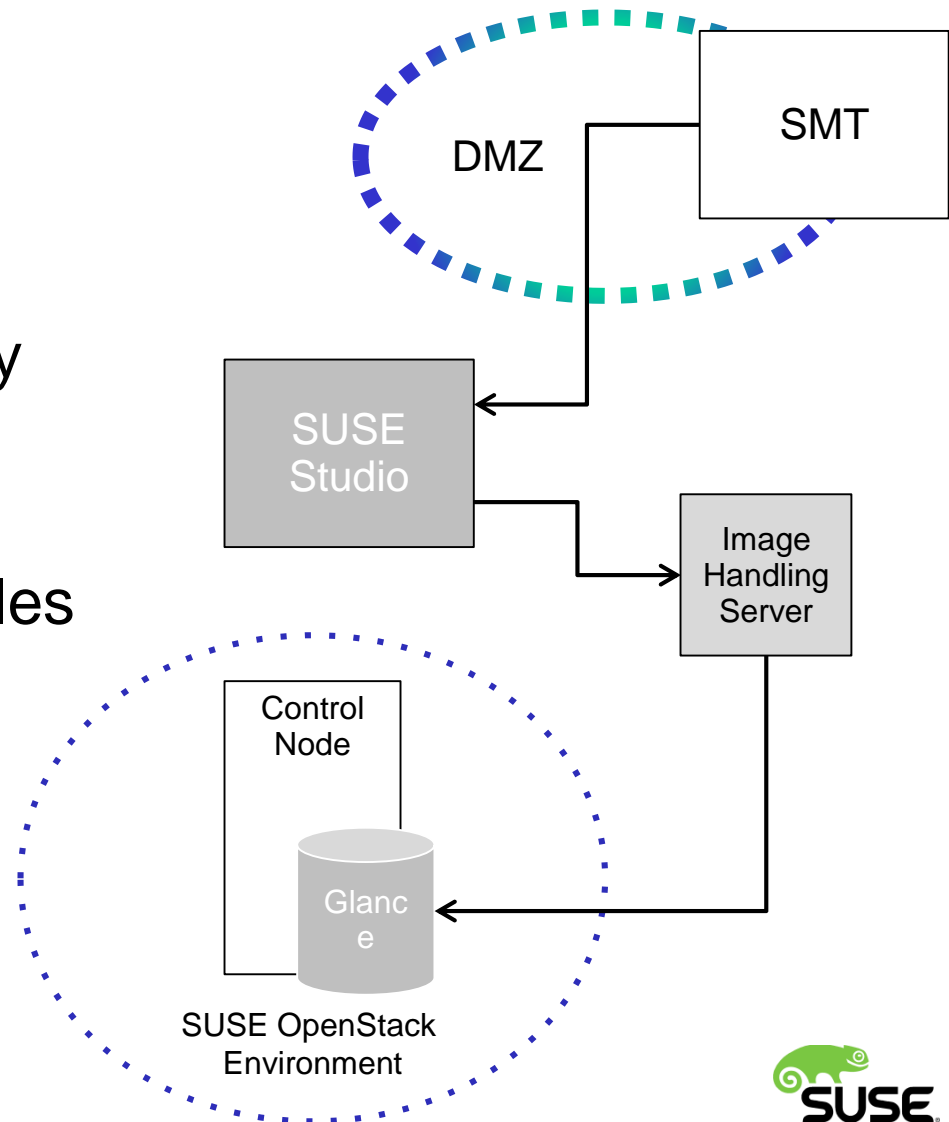


SUSE Studio

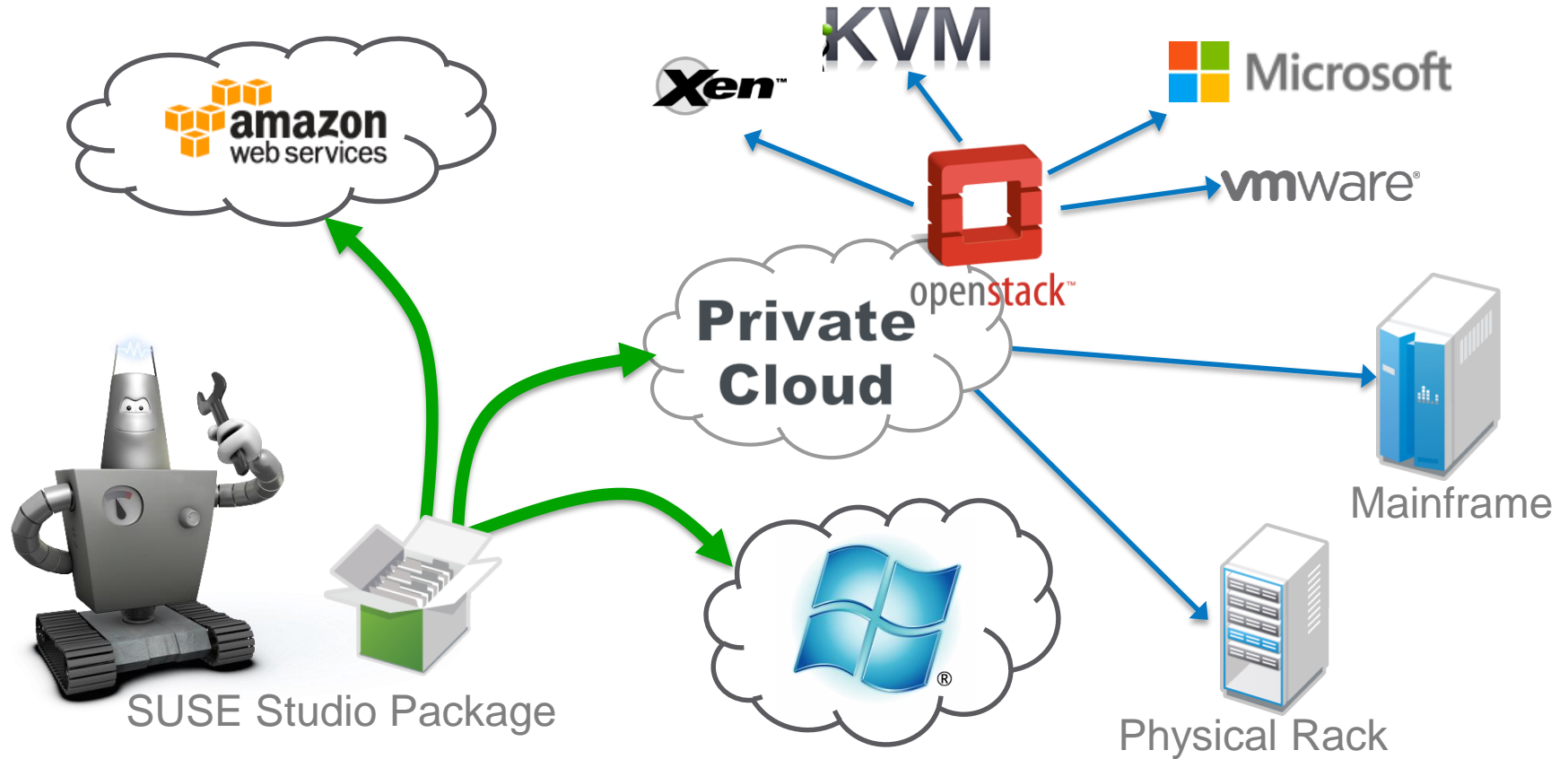
Template creation tool

Can publish templates to
Glance image repository
via handler

Image handling can set rules
for access to
templates



Direct Cloud Deployment



Solution Designed for You to Deliver Business and IT Goals



Platform for Your
Data Center
Evolution



Fast Installation
and Simplified
Management



Take Advantage of
Your Ecosystem
and Skills



Integrated Workload
Control for Hybrid
Clouds

SUSE OpenStack Cloud 5 Summary

- **SUSE OpenStack Cloud 5** is mature and production ready
 - The cornerstone of the mission-critical OpenStack cloud
 - Built on a highly available, clustered architecture
- **SUSE OpenStack Cloud 5** is fast to deploy and easy to use
 - SUSE OpenStack Cloud deploys in hours - not days or weeks



Implement SUSE OpenStack Cloud
in HOURS, rather than DAYS



SUSE OpenStack Cloud 5 Admin Appliance

- Automate the deployment of SUSE OpenStack Cloud 5 with a USB thumb drive
- Pre-Populated with relevant software repositories
- On physical machine, virtual machine or cloud platform
- Documents
 - [Admin Appliance guide](#)
 - [Deployment guides](#)

Questions?





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