MAAS (Metal as a service)

Transform your physical infrastructure into a cloud

WHAT IS MAAS?

MAAS is a physical infrastructure provider for private clouds. With MAAS, you can transform a static, expensive and opaque set of physical servers into a dynamic, efficient and transparent resource pool that can be automated and consumed like a public cloud.

KEY BENEFITS

MAAS (Metal as a Service) turns your data center into a dynamic, efficient resource pool. It dramatically reduces operational costs, eliminates provisioning delays, and enforces security compliance, all through automation.

Cloud-like infrastructure automation

MAAS functions as a cloud infrastructure provider for your data center, delivering a private cloud-like experience for physical hardware. Replace manual server management with a programmable, API-driven approach. Provision, deploy, and recycle thousands of physical machines as easily as cloud instances, from initial setup to end-of-life.

Enforce governance, security, and compliance by default

Enforce a consistent, secure foundation for every workload. Automate the deployment of standardized, hardened images to eliminate configuration drift and vulnerability.

Maximize hardware ROI and reduce TCO

Transform underutilized capital assets into an efficient, dynamic resource pool. Increase hardware utilization by automatically reclaiming and repurposing servers for new tasks. Reduce operational expenditures OpEx by automating maintenance and eliminating the need for over-provisioning.

Any OS on any Hardware

Operate a truly vendor-agnostic environment. Maintain freedom of choice by deploying any operating system on any supported hardware, preventing vendor lock-in.

KEY FEATURES

Automated hardware lifecycle management

Automatically discovers, inventories, commissions and deploys physical servers. Through server's BMC, it can manage remote power and other out-of-band controls and uses custom scripts to validate hardware health before deployment.

Infrastructure-as-code automation

Cloud-like API to programmatically manage the entire hardware lifecycle as code. Seamlessly integrates with DevOps tools like Terraform, Juju and Ansible to automate, orchestrate, and model entire physical infrastructure deployments from a single workflow.

Integrated Hardware Diagnostics

Execute extensive pre-commissioning tests to establish a performance baseline and verify the integrity of critical components, ensuring only compliant and healthy machines are provisioned.

WHAT ELSE DOES MAAS OFFER?

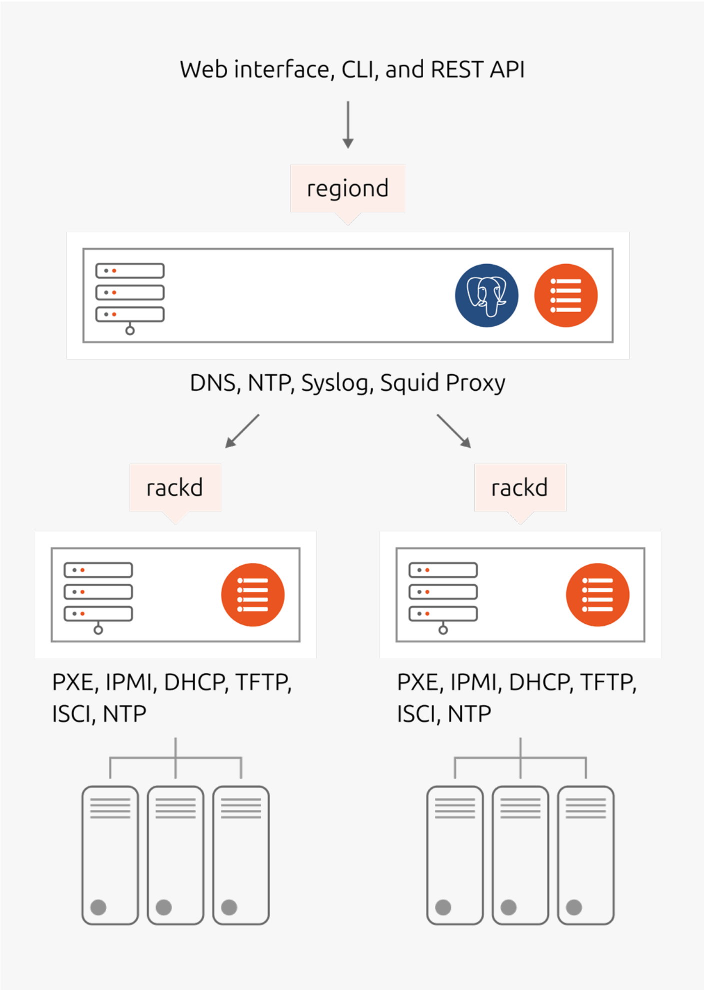
- Interact your preferred way: Web UI, Command Line Interface (CLI) and REST API.
- Zero-touch deployment of Ubuntu, Windows, CentOS and RHEL.
- Ability to create and deploy your custom OS images.
- Create and manage your virtual systems with KVM.
- Automatically discover, add and inventory the hardware, add it to your compute pool and control it using IPMI.
- Support for multiple architectures - x64, x86, ARM A8 and A9 (Highbank), arm64, ppc64le, s390x.
- Remote setup of NIC bonding.
- Create Advanced filesystem layouts with RAID, bcache, LVM, ZFS and more, automated through APIs. Allocate servers based on storage.
- IP Address Management (IPAM) for all your machines and devices on your network.
- Full stack software development using seamless MAAS integration with Juju & Terraform.
- Role-based access control (RBAC) to ensure the right people have the right access.
- Integrate with LDAP, Active Directory or SAML for central identity management and single-sign-on (SSO) across multiple MAAS regions.
- Event logging and auditing.

WHAT DOES A TYPICAL MAAS SETUP LOOK LIKE?

MAAS can scale from a small set of servers to many racks of hardware in a data center.

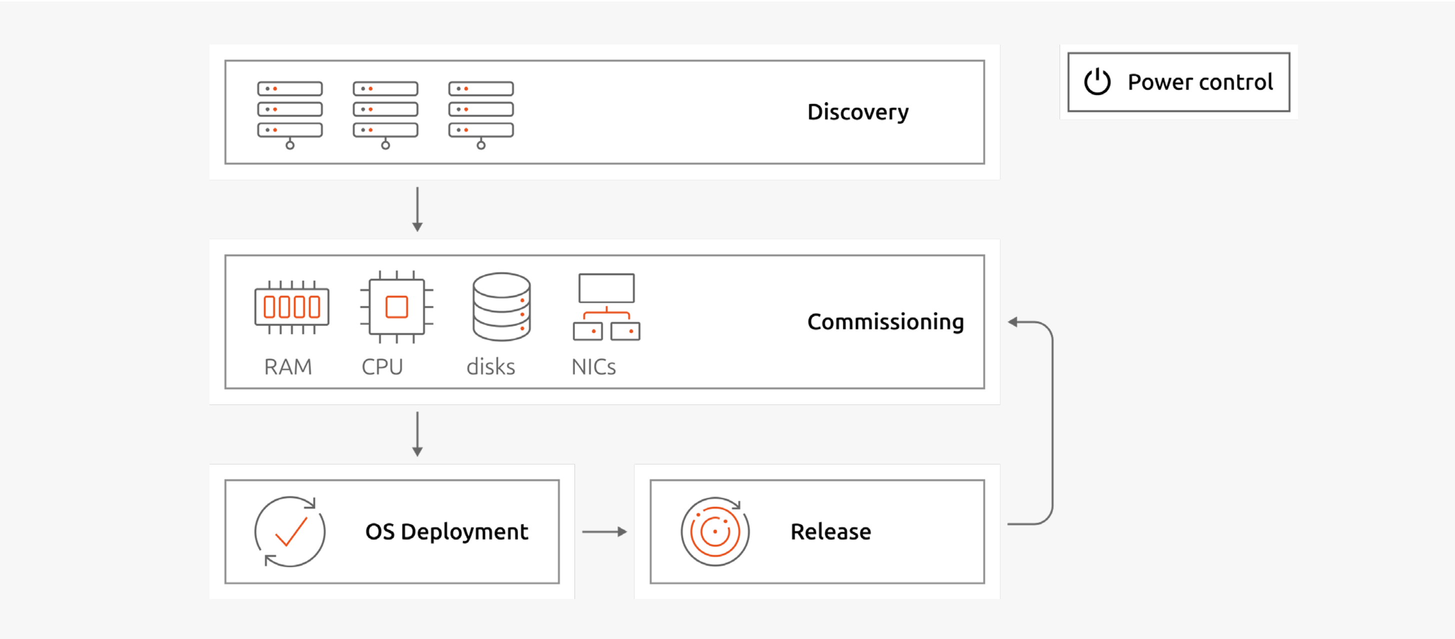
The key components of a MAAS deployment are:

- **Region controller:** Central orchestrator for the entire MAAS environment, managing the database and user interface
- **Rack controller:** Manages rack-level operations, including power cycling, network booting, hardware commissioning and OS deployment
- **Nodes:** The physical or virtual machines managed by MAAS that can be provisioned on-demand.



LIFECYCLE MANAGEMENT OF MAAS NODES

From discovery to deployment, new or repurposed machines managed by MAAS progress through a well defined lifecycle.



MAAS AT SCALE - HIGH AVAILABILITY

MAAS is a mission-critical service, providing infrastructure coordination upon which HPC and cloud infrastructures depend. High availability in the region controller is achieved at the database level. Rack controllers can be deployed in pairs to provide hot standby high availability.

High-bandwidth activities (such as the initial operating system installation) are handled by the distributed rack controllers enabling massively parallel deployments.

COMMON USE CASES

Private cloud

Effortlessly deploy and manage your own private cloud infrastructure. Whether you choose OpenStack for a robust and scalable solution, or MicroCloud for a lightweight and agile alternative, MAAS serves as the foundational infrastructure provider, streamlining the entire process from bare metal to a fully operational cloud environment.

Learn more

Server automation and lifecycle management

Streamline the entire lifecycle management of your server fleet, from initial provisioning to eventual re-purposing. This automation ensures consistency, reduces human error, and significantly speeds up operations.

Learn more

Bare metal Kubernetes

Deploying Kubernetes directly on bare-metal servers (managed by MAAS) offers a significant advantage by eliminating the overhead of an underlying virtualization layer. This approach leads to superior performance and predictability for your applications. This architecture is particularly beneficial for High-Performance Computing (HPC).

Learn more

WHO IS USING MAAS?

HOW CANONICAL CAN HELP YOU WITH MAAS:

Delivery services

Canonical deploys MAAS on your infrastructure, tailored to your needs.

Fully managed services

Canonical takes care of running your MAAS infrastructure, freeing you up to focus on workloads.

Ubuntu Pro

A subscription for open source security and support, offering up to 12 years of patching and maintenance for your whole Ubuntu-based deployment.

Standalone support

For deployments that don't include Ubuntu machines, MAAS support can be purchased as a standalone service. Ubuntu Pro is always required for machines hosting the MAAS controllers.

Try MAAS on your PC in minutes
or Get in touch

Canonical