



| GUIDE

Managed Cloud Services

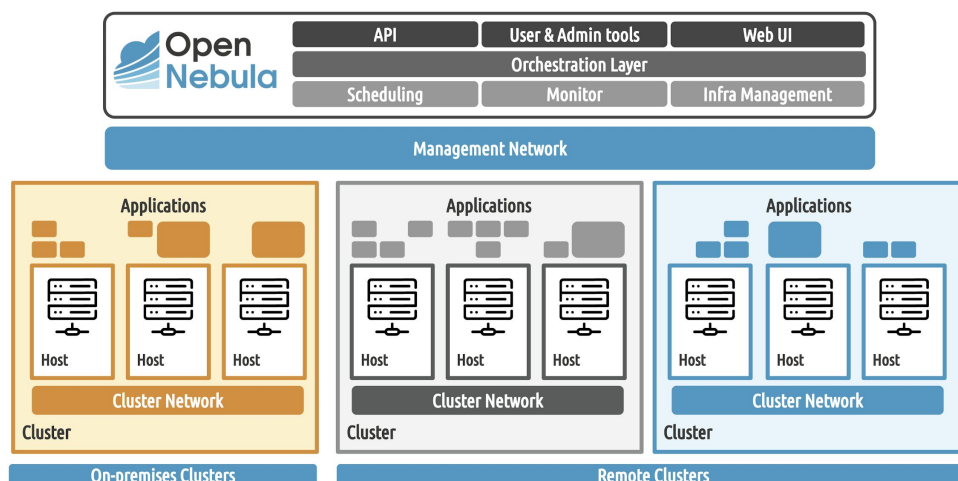
At OpenNebula Systems we operate many private OpenNebula clouds on behalf of customers, enabling them to reap the benefits of OpenNebula while their team focuses on business workloads rather than infrastructure. We ensure that your private cloud is ready for production demands, providing reliability and stability, and all the features you need to support your organization now and into the future. You don't need new staff, skills, or even hardware; just engage with OpenNebula Systems to provision and manage your OpenNebula cloud.

Our Managed Services allow you to retain complete control of your unique and differentiated workloads while at the same time eliminating any need to deal with management, maintenance, or future upgrade costs for the associated infrastructure and services. The Managed Services add-on converts your OpenNebula Software Subscription into a Managed Cloud Subscription that:

- Extends the coverage of the support portal to any incidents with the managed infrastructure and not only the software stack.
- Includes periodic capacity planning, tuning, maintenance, updates and upgrades of OpenNebula and all software components needed for the cloud infrastructure.
- Implements continuous monitoring for availability of cloud service and commits to an uptime service level.

A Proven Cloud Architecture to Run Any Workload, Anywhere

From the experience of working with hundreds of users and client engagements, we have defined an Edge Cloud Architecture¹ that builds a single distributed cloud platform to run any workload—both virtualized and container workflows—on any resource—physical or virtual—anywhere—on-premises and on the cloud—with unparalleled availability, performance, and simplicity. The edge cloud implements enterprise-grade cloud features for performance, availability, and scalability with a streamlined design that avoids vendor lock-in and reduces complexity, resource consumption, and operational costs.



We offer managed cloud services only for this recommended Edge Cloud Architecture. However, we have business partners that offer managed cloud services with official OpenNebula support on other architectures².

¹ <https://support.opennebula.pro/hc/en-us/articles/360050302811>

² <https://opennebula.io/use/#managed-cloud>

Benefits

Our OpenNebula Managed Services offer the following benefits:



Fully-managed

Front-end and compute nodes fully managed by OpenNebula Systems and backed by enterprise support.



Proven Architecture

Use our recommended certified combination of open source compute, network and storage platform components.



Optimized Configuration

Customize your configuration and choose from memory-optimized, compute-optimized, or general purpose instance types, with clusters sized to meet your needs.



Dedicated Infrastructure Choice

Choose to manage the cloud on your servers, at your location, or on physical resources from our bare-metal cloud partners, like Equinix Metal or AWS.



Distributed Infrastructure

Leverage multi-cloud and Edge Computing by growing your managed cloud with resources locally and across multiple locations to maximize availability and response time.



Cost-effective

Pay-per-resource for unlimited guest instances and choose from monthly, quarterly, and annual plans³.

³ Minimum initial term and cloud size may apply

A Complete Offer to Build, Manage, and Entrust Your Cloud Infrastructure

Our Subscription and Services include all you need so your team can forget about infrastructure and focus on business workloads. We will help you maximize the uptime and the value of your solution. OpenNebula Systems takes care of the entire OpenNebula lifecycle—design, deployment, 24/7 health monitoring, alerting, troubleshooting, maintenance, and upgrades—so you don't have to. And if you do want to take control, we will hand over the keys and help you manage your cloud.

We provide several **professional services available** to customers that will help get your solution running in top gear. It is important to note that Managed Cloud Subscription must always be preceded by an **OpenNebula Cloud Deployment Service** (subject to separate service engagement). We do not provide Managed Services to clouds designed and deployed by the customer or any third party.

Design, Deploy and Connect (**CLOUD DEPLOYMENT SERVICE**)

- Design the best cloud configuration for your needs.
- Deploy the private cloud on-premises or hosted on one of our infrastructure partners.
- Integrate the cloud with your corporate Active Directory or LDAP infrastructure.
- Connect your cloud to widely used appliance and container marketplaces.

Managed Infrastructure Operations (**MANAGED CLOUD SUBSCRIPTION**)

- Periodic capacity planning to match demand to available resources.
- Periodic tuning and maintenance of OpenNebula and other software components.
- Periodic updates and security patches for OpenNebula and other software components.
- Continuous checking and monitoring for uptime and availability of the cloud components.
- Financially-backed uptime service level.
- SLA-based enterprise support of the cloud infrastructure.

If you are looking to take back control of your Managed Cloud, we offer options that are easily available to you:

Control Transfer (**TRAINING AND PROFESSIONAL SERVICES**)

- Training and consulting to ensure a smooth handover.

Self-Managed Infrastructure Operations (**ENTERPRISE SOFTWARE SUBSCRIPTION**)

- Once you have control of the cloud, OpenNebula Systems provides 24/7 enterprise support through the OpenNebula Subscription.
- Since we know the architecture of your cloud, problems are faster to debug and easier to resolve.

An Elastic Approach - Also for Pricing

Our **Cloud Managed Services** are offered as an extension to the **OpenNebula Subscription**. As a customer and subscription holder, the Managed Services incur an additional Front-end fee (charged annually) and a per-node fee, which can be charged annually, quarterly or monthly, both of which would be added to the subscription price.

| | | Annually | Quarterly | Monthly |
|---------------------------|--|---------------------------|-------------------------|-------------------------|
| CLOUD FRONT-END (*) | Single Master Node | €12.000 (\$15,000) | €3.000 (\$3,750) | €1.000 (\$1,250) |
| | Extension: High Availability | €6.000 (\$7,500) | €1.500 (\$1,875) | €500 (\$625) |
| CLOUD INFRASTRUCTURE (**) | Managed Node (KVM ESX) | €1.200 (\$1,500) | €375 (\$469) | €150 (\$188) |
| | Pack 10 Managed Nodes (KVM ESX) | €9.600 (\$12,000) | €3.120 (\$3,900) | €1.200 (\$1,500) |

(*) Monthly and quarterly Front-end pricing for illustration purposes only. Customers are billed annually.

(**) Monthly and quarterly server pricing is available as an option for additional clusters for existing customers with annual contracts.

- A minimum initial term may apply.
- A minimum cloud infrastructure configuration of 10 nodes is required.
- When using resources from bare-metal cloud providers, we can use your account to leverage discounts, or include the cloud infrastructure costs in our subscription price.

For example, a complete Managed Cloud Subscription with Standard SLA for a minimum cloud configuration with a single Front-end and 10 servers would cost €3.420 (\$4,275) per server.

| | Managed Services Extension | Standard SLA Subscription | Total |
|------------------------------|----------------------------|---------------------------|--------------------|
| Single Master Node | €12.000 (\$15,000) | €7.000 (\$8,750) | €19.000 (\$23,750) |
| Pack 10 Managed Nodes | €9.600 (\$12,000) | €5.600 (\$7,000) | €15.200 (\$19,000) |

Scope of Service

Managed Services are an add-on to the Standard and Premium Software Subscriptions and so all of the subscription benefits, terms and conditions apply.

1. SLA-based Enterprise Support and Customer Portal

Managed Services extend the coverage of the SLA-based enterprise support available from the Customer Portal to any incidents with the managed cloud infrastructure, rather than merely product errors or general usage, installation or configuration questions about the software stack.

2. Cloud Infrastructure Architecture and Maintenance

Managed Services include support, maintenance, updates, and upgrades of OpenNebula and all packages required to run OpenNebula as deployed according to the Edge Cloud Architecture. Managed Services will install applicable (e.g. security) patches, updates, and upgrades of the operating system, OpenNebula and its dependencies, and other software deployed as part of the cloud. The Managed Services will ensure the customer's cloud remains on a supported version of OpenNebula. In most cases, OpenNebula will upgrade only to LTS releases where applicable, or to a specific release as agreed with the customer.

Managed Services does not include any architectural changes to the cloud, the installation of packages or software other than those needed to maintain the Edge Cloud Reference Architecture, or the installation of additional components (e.g. LBaaS, VPNaaS, SDN or SDS) beyond the software installed as part of the building of the cloud performed under a Cloud Deployment Service.

The Managed Service will add or remove nodes from the cloud as requested by the customer through a support ticket, provided that the cloud does not go under the minimum size requirement. All cloud nodes must be covered under the service, so additional fees may apply.

3. Cloud Infrastructure Access

The Managed Services will provide the customer with access to the OpenNebula dashboard, API and CLI, and the monitoring and logging system (restricted to read-only access). Only OpenNebula Systems will have login access to cloud Front-end and nodes. We retain exclusive administrative access to the hardware and virtualization infrastructure of the Managed Private Cloud for the duration of the agreement.

The Managed Services require:

- Continuous SSH access for OpenNebula support personnel to the cloud.
- Utilization parameters per node to be kept below the maximum specified in the design document provided by OpenNebula when the cloud is delivered to the customer.
- The facility where the cloud is hosted to comply with the minimum required measures to function, including but not limited to, connectivity, sufficient power supply, sufficient cooling system, and physical access control to the environment.
- The minimum size requirement for the cloud or cluster is maintained at all times.
- Contact information of your hardware team (on-premises) or the provider support team (on-cloud) so we can contact them in the event of hardware failure to restore the service to normal operations.

4. Scheduled Maintenance

Based on the Managed Private Cloud configuration, we will perform scheduled maintenance activities on the software stack supporting the service. You will be notified in advance for all scheduled maintenance. The Managed Services will provide planned updates, upgrades, and maintenance Monday to Friday during business days.

Emergency maintenance may be required and performed without advance notice. Should a service-impacting emergency maintenance be required, we will use commercially reasonable efforts to notify you upon execution of the maintenance.

Uptime Service Level

The Hosted Service includes the following uptime **service levels**:

| | Service Level |
|---|---------------|
| DATA PLANE: Virtualization, network and storage for instances. | 99.9% |
| CONTROL PLANE: Submission and management of running instances. | 99.9% |

Our services team manages a private cloud on behalf of the customer on third party infrastructure owned by the customer or leased to a third party. We are not responsible for any network switches, general Internet connectivity, servers, storage devices, or any other equipment necessary to run and provide the Managed Private Cloud service. We commit to the above uptime service level for any troubleshooting issue, product error or configuration aspect in the software stack, and resolve to use commercially reasonable efforts to keep the managed private cloud operational and available, and to help your team or the cloud provider team fix any issue with the hardware or the general Internet connectivity.

Service Credits

Downtime must be directly attributable to OpenNebula in order for it to count against the service level (please refer to the SLA for Managed Services Annex in the Subscription Agreement). Planned maintenance windows and any requests by the customer are not taken into account when calculating uptime.

In the event OpenNebula does not meet the uptime service level, you will be eligible to receive a Service Credit as described below:

| Service Availability Percentage | Service Credit |
|---------------------------------|------------------------|
| 99% - 99.9% | 10% of Monthly Charges |
| 90%- 99% | 25% of Monthly Charges |
| < 90% | 50% of Monthly Charges |

Cloud Service Operation and Application Management

While we are fully responsible for cloud infrastructure operation, your Operations Team is responsible for:

- **Cloud Service Operation:** Creating, maintaining, and managing any user accounts, VDCs, Virtual Machines, Virtual Machine templates, ISO or image catalogs, and IP address tracking of assigned IP pools.
- **Application Management:** Installing, monitoring, managing, and securing the guest operating systems or container instances including any script, application, or operating system updates in the Virtual Machines. OpenNebula does not troubleshoot or provide any support relating to malfunctioning custom scripts or applications, and does not provide security auditing or disinfection of exploited software or servers.
- **Integration Services:** Installing, integrating, configuring, and maintaining all customer-operated infrastructure and applications connected to the cloud.
- **Customer Backups:** Backup or recovery of customer-generated data (e.g. any applications or databases running) within guest instances or container instances.
- **End User Support:** Generating and maintaining any guides for end users or operators, and providing support for end user operation problems.

Service Conclusion

In cases where the customer decides to assume management responsibilities of their cloud, at the end of the subscription term the Hosted Service will initiate an operational transfer that includes:

- Handover of all credentials of the hosts and management software to the customer.
- Handover of the administrative credentials of Customer Portal and Enterprise Repository (subject to purchase and agreement of appropriate subscription).
- Coordination of any applicable training (subject to purchase and agreement of appropriate services).



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Reference: Managed Services - Rev20230112