cloudscaling
The Elastic Cloud Company

Open Cloud System 2.6
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Introduction

Open Cloud System (OCS) 2.6

The world's most advanced OpenStack cloud infrastructure

Cloudscaling's core product, OCS 2.6, is a complete Infrastructure as a Service (IaaS) solution powered by OpenStack technology. OCS is designed to meet the requirements of next-generation dynamic applications such as web/mobile apps, SaaS/PaaS deployments and big data implementations. OCS delivers the agility, performance and economic benefits of leading public cloud providers, but deployable on your infrastructure and under your control.

To create OCS, Cloudscaling has leveraged the innovations pioneered by cloud infrastructure teams at Amazon Web Services and Google. With a systems approach that implements both architectural and behavioral compatibility with leading public cloud services, OCS delivers cost-effective elastic infrastructure, modular scalability and production ready features. With OCS, customers get the benefit of full OpenStack project compatibility, delivered in a proven solution and supported by cloud experts.

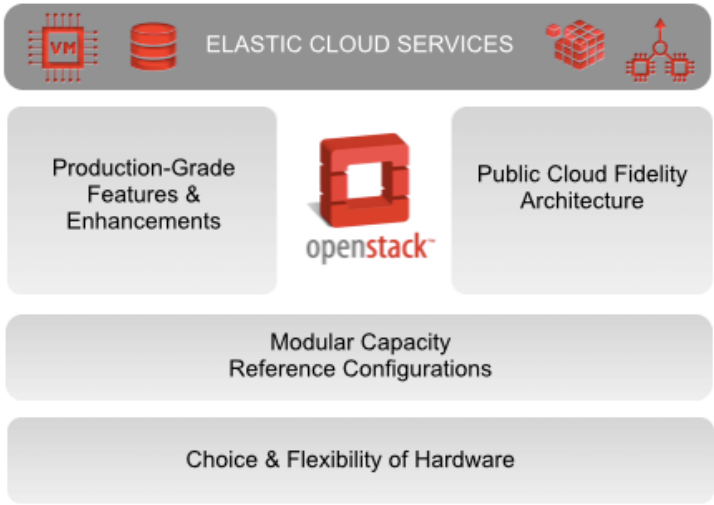
OCS Features

The Open Cloud System combines the power and cost-effectiveness of OpenStack with a number of production-grade Cloudscaling features to streamline cloud infrastructure deployment and management in scaled-out, cloud computing environments.

Feature	Benefit
100% OpenStack Community Release	Managed, high velocity OpenStack innovation
Elastic Cloud Services	On-demand, flexible infrastructure for cloud ready applications
Production-Grade Features	Out-of-the-box, enterprise grade, elastic private cloud
- Manageability - Availability - Performance - Security	Upgrades, transparency & lifecycle management Redundancy, resiliency & fault isolation Guarantee QoS, responsiveness, scalability & cost Default-deny, least privilege & encryption/data privacy
Public Cloud Fidelity Architecture	Deploy and manage applications across hybrid cloud infrastructure including AWS and GCE
Modular Capacity Reference Configurations	Simplify capacity management & optimize app performance
Choice of Hardware	Flexible choices to reduce cost, speed deployment and mitigate risks at scale.

Cloudscaling Open Cloud System

OCS extends the OpenStack platform with key additions to deliver a turn-key, production-grade cloud infrastructure system

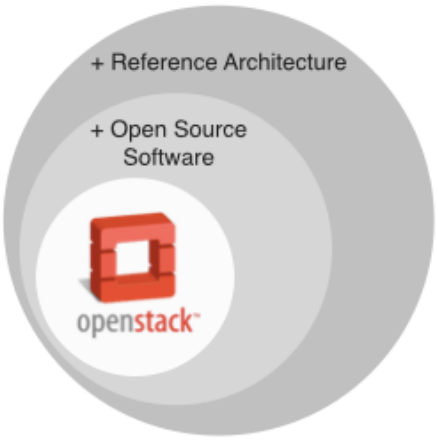


1) 100% OpenStack Technology

Cloudscaling chose the OpenStack open source project as the foundation of OCS. As with leading public elastic clouds, leveraging open source software prevents vendor lock-in and drives disruptive price/performance compared to proprietary enterprise virtualization clouds.

Having been active in the OpenStack project since its launch in 2010, Cloudscaling is an integral part of the community. A significant part of our development resources are focused on contributing back to the OpenStack project, and we have been one of the top 10 contributors behind the Essex, Folsom and Grizzly releases. In turn, we leverage the feature velocity of the OpenStack project and OCS 2.6 is based on the latest stable release of OpenStack Grizzly.

We don't fork OpenStack. Our production-ready system is built around 100% stock OpenStack components. Cloudscaling takes the base OpenStack distribution, adds open source drivers, plugins, and system software to enable OpenStack to be easily deployable and public cloud compatible plus tunes the system configuration to production-ready defaults. OCS leverages all the core OpenStack projects and selectively uses the integrated OpenStack projects depending on customer use case.

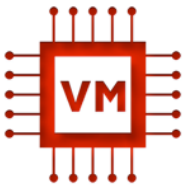


Cloudscaling OCS deploys OpenStack as a system that is production ready and public cloud compatible day one. Unlike other vendor offerings that offer either a forked OpenStack distribution that creates "cloud islands" or non-scalable OpenStack deployments only suitable for small pilots, Cloudscaling OCS is engineered for a production-ready deployment of an OpenStack based cloud.

2) Elastic Cloud Services

Open Cloud System (OCS) provides simple, reliable and on-demand access to elastic cloud infrastructure. You can spin up virtual machines, store and retrieve objects, and attach and detach virtual disks to achieve the performance and automation of public clouds with the flexibility and control of your own private cloud.

OCS Compute allows users to flexibly deploy virtual machine (VM) instances on-demand to support workloads and development projects in a secure, multi-tenant environment. VM instance types are compatible with Amazon Web Services (AWS) or Google Compute Engine (GCE), or custom-sized for particular workloads or tenants. For example, you may want a different CPU to RAM ratio than offered in a standard size AWS or GCE instance type. All elastic cloud resources (compute, storage, network, etc) can be accessed through a command line interface (CLI) or graphical user interface (GUI) that leverages the underlying API calls. This simple, web services based programmability allows tenants to easily deploy 10s to 1000s of instances, and the elastic cloud is able to cope with high demand due to its use of intelligent schedulers and compute resource pools.



OCS Block Storage provides persistent data volumes that are dynamically attached to instances over the network to deliver high-performance, scalable and cost-effective virtual disk drives. Persistent block storage volumes supplement the ephemeral volumes provisioned from local storage on the compute node. Multiple volumes can be striped across storage nodes for increased capacity, performance and throughput. OCS Block Storage supports booting instances from block storage volumes as well as snapshots to object storage for backup. As it doesn't require expensive and proprietary hardware SANs, it costs significantly less than equivalent storage in enterprise virtualization environments.

OCS Object Storage provides a triple-replicated, scale-engineered, and durable repository for arbitrary files. It is ideal for storing media files, logs, virtual machine images and backups. Object Storage is highly resilient against server and disk drive failures as the data is replicated and distributed. Designed for long term, durable storage, OCS Object Storage can be scaled nearly infinitely. It uses a Consistent Hash Ring (CHR) algorithm to maintain three copies of each file across disk drives on the cluster. Each ring can reference millions of files and you can create many rings – supporting object storage growth to many tens of petabytes. OCS Object Storage also checks file integrity to determine if files have inadvertently changed or succumbed to bit rot and then repairs damaged files from known good copies.

OCS Elastic Networking (VPC & Classic) - OCS delivers both Virtual Private Cloud (VPC) and Classic networking models to support a broad range of deployment options. Both leverage the same elastic networking architecture as modern public clouds such as AWS and GCE, employing high-speed L3 (layer 3) switch fabrics with 100% IP routing end-to-end to achieve maximum throughput at the lowest cost.

OCS Virtual Private Cloud (VPC) networking supports provisioning of logically isolated virtual networks with complete control and customization of the IP address range, subnet creation and specification of network gateways. Virtual Private Clouds provide a familiar network construct for typical enterprise networks, without sacrificing functionality such as tenant Security Groups and Elastic IPs.

OCS Classic Networking delivers scalable, public cloud compatible networking and security functionality with support for Elastic IPs, Security Groups, Elastic NetBlocks (contiguous tenant IP pools) and a scale-out, stateless NAT service for deployments that don't require Virtual Private Clouds,

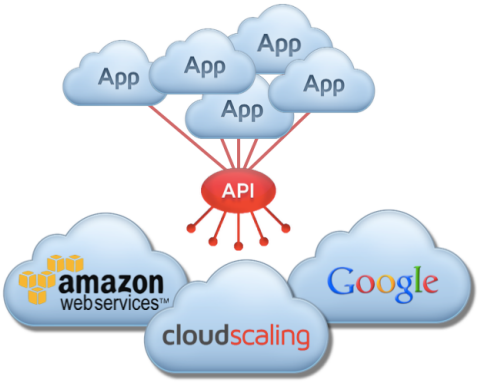
3) Public Cloud Fidelity Architecture

Enable Hybrid Cloud Deployments Spanning Private & Public Cloud Services

Elastic clouds represent a completely new IT infrastructure model. Pioneered by large Internet business like Amazon and Google, the elastic cloud approach rethinks the entire IT stack from the concrete up through the applications. Data center design, industry standard hardware, network engineering and software architecture have all been reconsidered. Cloudscaling OCS delivers a true elastic cloud model following in the footsteps of these giants. OCS faithfully recreates operational and architectural compatibility with both Amazon Web Services (AWS), and Google Compute Engine (GCE) to support hybrid cloud deployments. OCS provides the only elastic cloud system specifically designed to enable the integration and management of public and private cloud infrastructure as a single hybrid environment in support of use cases such as:

- Hybrid deployment of applications (for example, to run the sensitive database on the private cloud with the stateless web instances in the public cloud)
- Bursting during peak usage to the public cloud to "own the base and rent the spike"
- Repatriation of apps from the public cloud (either dev/test or production) for control or economics

PUBLIC CLOUD FEDERATION



Common APIs, architecture & behavior across public and private clouds

Behavioral Fidelity Beyond APIs

OCS provides full API compatibility to both AWS and GCE and can easily leverage common tools and libraries. As a result, there's no need to refactor applications for private cloud or to retrain personnel that are already using public clouds. API compatibility, however, is not enough to realize common private/public cloud use cases. Behavioral fidelity is also required. This means the infrastructure underneath the API also needs to match. OCS includes a number of additional capabilities that provide a 1:1 mapping to key elastic cloud resources and recreate the architecture, cost model and scalability of supported public clouds, including:

- AWS-style resource scheduling
- Classic networking in the EC2 model
- VPC networking in the EC2 model
- Elastic Block Storage in the EC2 model
- Block-based reference architecture

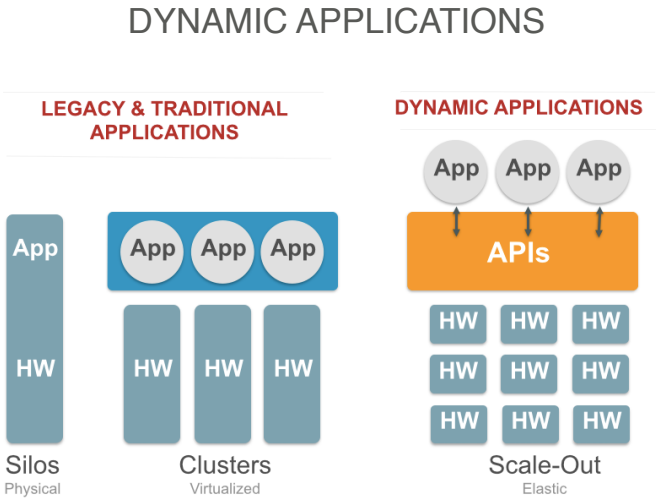
BEHAVIORAL FIDELITY

	cloudscaling	amazon web services™	Google
VM	Compute	EC2	GCE
	Block Storage	EBS	GCE
	Object Storage	S3	GCS
	Classic & VPC Networking	Subset of EC2 & VPC	Subset of GCE

By minimizing differences in compute, storage, networking and APIs, OCS facilitates deploying and managing cloud applications in the environment that best fits your business needs. This behavioral fidelity can only be achieved when an integrated systems architecture is applied to building elastic clouds. With low cost hardware and fast provisioning times, OCS does support highly resilient applications at less than half the cost of using public cloud infrastructure.

Simplified Application Management for Elastic Clouds

Dynamic apps are distributed, multi-tier web applications that are built to scale out under load and self-heal in the event of component or infrastructure failure. They focus on distributing both data and processing across many stateless nodes to drive scalability, performance and fault tolerance. Depending on the number of nodes deployed and the load, a percentage of nodes can be taken offline without affecting application service delivery, the remaining nodes will handle inbound requests.



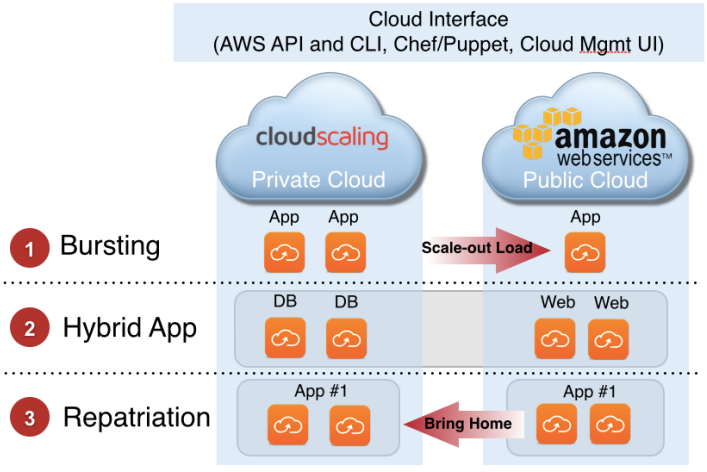
They can scale out and in by adding or removing instances within each service tier, and they can readily self-heal by replacing failed instances as needed. Dynamic apps are able to take full advantage of the elastic cloud resources, and public cloud federation that OCS provides.

Dynamic applications are typically enabled by cloud infrastructure, cloud automation and application management working in harmony. Cloudscaling has partnered with the best of breed companies in the automation and cloud infrastructure management space to facilitate deployment automation of these next generation cloud applications on OCS.

OCS maintains integrations with leading cloud application management solutions like Dell Cloud Manager and Rightscale to provide configuration, deployment and management of dynamic applications. Cloud application management solutions typically leverage Chef or Puppet for configuration management automation allowing you to define a template (or blueprint/recipe) for server instances and then deploy perfect clones on demand.

A few common hybrid cloud application deployment examples:

1) **Bursting** - A dynamic app residing on an OCS private cloud that bursts to AWS as usage of the app increases.
2) **Hybrid Application** - A dynamic app deployed across private and public clouds with a stateless web tier in the public cloud while sensitive data is securely stored in the private cloud.
3) **Repatriation** - Binging home to the private cloud an enterprise application that was developed in the public cloud.



4) Production-Grade Features

4.1) Production-Grade Manageability

Putting OpenStack on a handful of servers may work for a simple dev/test virtual machine environment, but what happens when you need to transition to a full production data center that can scale to hundreds of racks and thousands of machines? Managing a full-production cloud environment requires a deep yet hierarchical understanding of system topology.

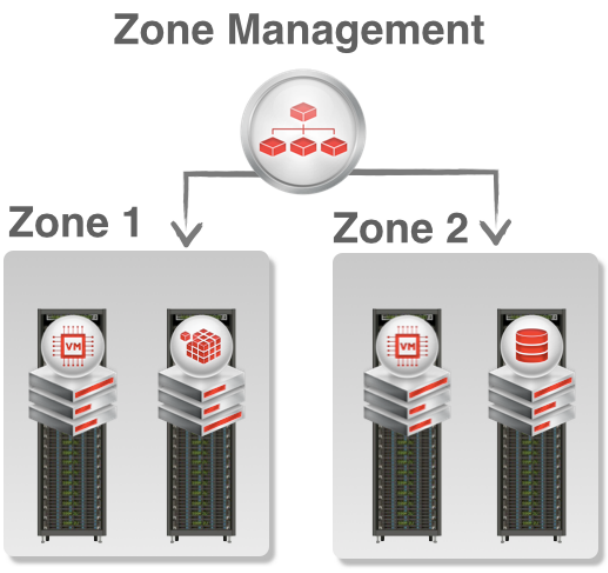
Manage your Cloud, Not Individual Servers

OCS Cloud Topology Management delivers the tools to manage configuration and deployment across a cloud topology designed to address your needs. Define, organize and manage blocks of cloud capacity through the intelligent integration of OCS software with supported hardware reference configurations.

OCS also employs a Cloud-Wide Data Model of all physical cloud resources to aggregate key operational metrics. This cloud-wide data model enables automation. For example, abstractions like resource pools for managing capacity and improves manageability.

Scale Engineered to Manage Zones of Resource Blocks

Leading public cloud providers achieve significant operational efficiency by eliminating time-consuming troubleshooting of individual servers. Similarly, Cloudscaling OCS enables cloud operators to manage racks of servers as a single resource to deliver unparalleled cloud management efficiency.



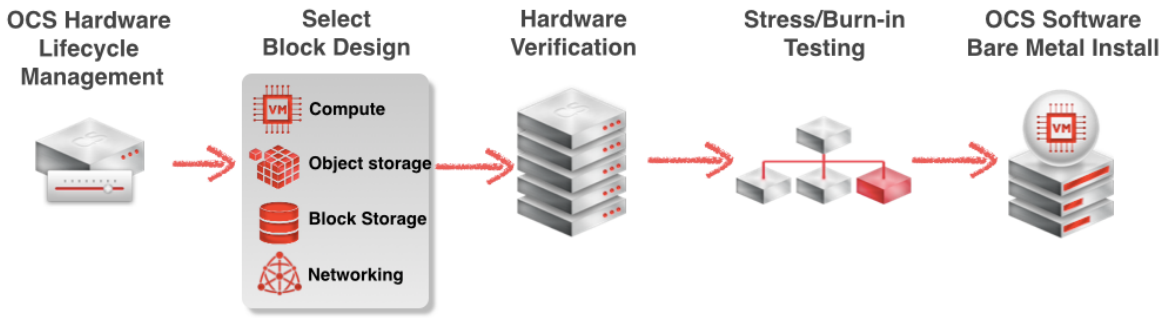
OCS manages elastic cloud infrastructure using blocks of compute, storage, networking, and controllers organized into zones. The OCS Zone Management provides a secure control point to coordinate all block level hardware and software lifecycle automation tasks such as initial verification, hardware burn-in, OCS software provisioning, reprovisioning and decommissioning operations.

OCS Zone Management aggregates blocks of cloud capacity to simplify cloud management and streamline operations. It can assign resources to each block, manage zone lifecycles, provide DNS for system-wide backend elements and take system-wide actions.

Operator Focused Automation - Manage your Cloud, Not Individual Servers

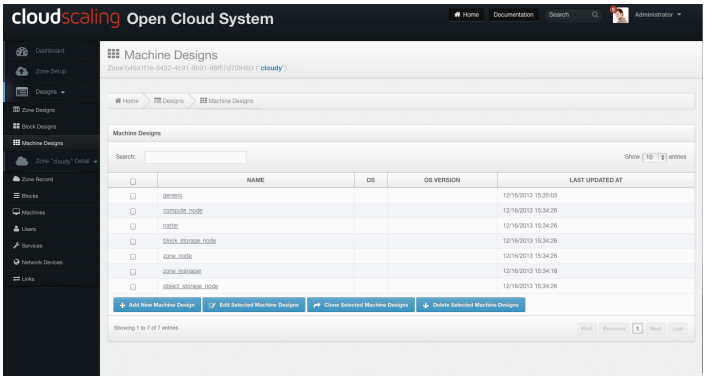
Cloudscaling OCS automates deployment and provisioning of cloud capacity to let cloud operators build their infrastructure predictably and reliably. OCS provides a Cloud Operations Interface - via graphical user interface, command line interface (CLI) and application programming interface (API) - to simplify systems management and facilitate integration with external management systems.

Managing your cloud at scale means managing the entire system lifecycle across both hardware and software. Using OCS you can readily stand up, burn-in and provision hardware, deploy and organize software across multiple racks, make automation and capacity management decisions using cross-rack metadata, and perform rolling upgrades a rack at a time.



How many compute instances of which types do you have left? How much object storage capacity remains unused? When do you need more and of what kind? OCS can easily answer these questions, and more, by providing the topology and cloud system management features required by cloud operators. What used to take days can now be accomplished in minutes.

Single Pane of Glass Management for the Cloud Operator



All of this power is harnessed in a simple to use interface. By leveraging the OCS Dashboard, cloud operators can now realize the promise of lifecycle managing hundreds of cloud nodes per administrator. From initial OCS setup to moves/add/changes of users and resources, OCS Dashboard allows cloud operators to hit the ground running today. In addition, via future capabilities such as system upgrades, resource management and capacity planning, OCS Dashboard becomes the cloud operator administration portal they can depend on day in and day out to effectively run production elastic clouds.

4.2) Production-Grade Availability

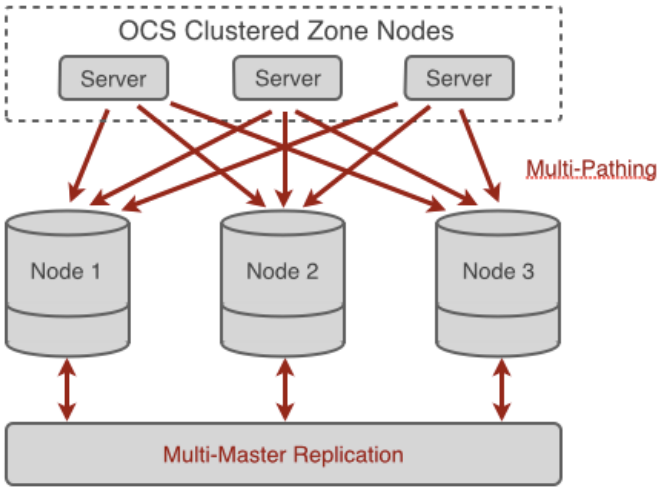
When the cloud is down, so is your business.

Real clouds are designed for failure and assume that something will break at any time. OCS incorporates unique scale-out availability features as a primary design goal. Our engineers are continuously refining and hardening OCS with each new release.. OCS is designed using a “small failure domain” model for this reason. Components are loosely-coupled, as small as possible, and designed to fail in isolation.

OCS Multi-pathing is a unique load balancing pattern for all of OpenStack’s stateless components such as API endpoints and scheduler processes. This approach allows running as many API servers and schedulers as needed. OCS scales horizontally, just like the applications that run on it, with every load-balanced service designed to fail in isolation.

In combination with OCS Multi-pathing and OCS Intelligent Scheduling, work is distributed to API endpoints, worker processes and cloud controllers of various types. Any system component can fail at any time without impacting its neighbors.

All of these availability capabilities are syntesized in the OCS Clustered Zone Nodes. All services - including zone management, OpenStack and EC2 API endpoints, resource schedulers, logging, monitoring and secure operator access - are distributed and load balanced across the OCS Clustered Zone Nodes. Starting with a minimum of three Zone Nodes, the OCS based cloud can sustain multiple Zone Node failures and still continue operating so your business is not impacted.



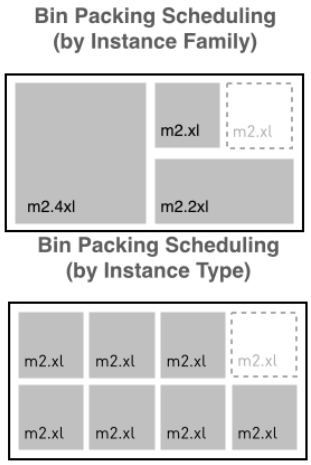
Adding additional cloud capacity and redundancy is as simple as additional pair of Zone Nodes into the clustered pool. The architecture is flexible enough for small pilot deployments since a single Zone Node can run in a non-HA configuration.

The availability features built into OCS reduce the chance of catastrophic cascading failures, enable effortless horizontal scaling of the cloud’s internal services, and support building a cloud that can deliver 99.9% to 99.99% uptime for core cloud services. OCS is the only cloud system designed for high uptime to support 24x7x365 workloads.

4.3) Production-Grade Performance Optimization

Let's talk cloud performance. How do you maintain quality of service during critical elastic spikes in system usage? How do you avoid performance bottlenecks when you grow your overall cloud footprint, while avoiding a painful re-engineering of the core cloud deployment architecture?

Under the hood, OCS delivers high performance features optimized to work together across the system, as well as an overall architecture scale-engineered from top to bottom.



OCS Intelligent Resource Schedulers ensure that compute and block storage resources maximize utilization while ensuring minimum Quality of Service (QoS) levels. They also distribute resources across failure domains, reducing the impact of failed servers, disk drives and storage clusters.

Additionally, OCS can manage network QoS levels in combination with virtual machine instance sizes. For example, OCS can accommodate a use case that requires HPC (High Performance Computing) and big data instances use high-throughput, 10 Gigabit Ethernet non-blocking networks while smaller instances within the same cloud infrastructure can have a much lower resource guarantee.

The OCS Elastic Network Architecture leverages open, proven and performant technologies to enable a high performance network architecture. The network architecture is broken up into three layers: block, core and edge. At the data layer, the OCS network architecture leverages 10GE switches and connections to provide a high bandwidth fabric for data (VM and storage) traffic. In concert with Block Designs, the network capacity is scalable by increasing the number of uplinks per block.

	Single-Host OpenStack Networking	Multi-Host OpenStack Networking	Flat OpenStack Networking	OCS Classic Networking	OCS VPC Networking
Scalability & Control	○	◔	◑	●	●
Architecture	Central network stack; All traffic through a single x86 server	Decentralized network model; NAT at Hypervisor	Decentralized routing model; centralized DHCP, IP allocation, etc.	Distributed; Spine & Leaf; scale-out NAT	Distributed; Spine & Leaf; Virtual Network Support

Because the OCS Network architecture is layer 3 (IP) based, all 10GE links can be utilized (unlike enterprise virtualization VLAN based architectures that are limited by VLAN and STP). The layer 3 based architecture allows for full bandwidth using ECMP. Finally, by limiting the Nova Network Controller (NNC) to only be responsible for security group and VM metadata management while distributing core networking services such as IP routing, Elastic IPs, DHCP and NAT services to dedicated scale-out OCS nodes, OCS is able to completely eliminate all network performance bottlenecks in Nova.

OCS delivers High IOPS, Multi-Tenant Block Storage on industry standard x86 hardware using a variety of storage technologies including SSD acceleration in Block Storage to prevent performance problems. This feature bundles random writes into large block sequential writes – reducing head contention on block storage clusters and smoothing multi-tenancy latency effects. On the read side, SSDs also provide low cost high-speed read caches. This further reduces head contention, decreases latency and delivers SSD-grade I/O performance at the cost of standard magnetic disk drives. A single volume can provide in excess of 40,000 IOPS with 4K block sizes using mixed read/write and mixed sequential/random workloads. The OCS Block Storage performance is an order of magnitude higher than what is typically seen in the public cloud. This allows customers to also use performance as a selection criteria for repatriating apps from the public cloud.

4.4) Production-Grade Security

The Cloudscaling OCS Security philosophy is focused on protection of both the entry points into OCS (namely the API endpoints that power the cloud control plane) and the cloud resources themselves. Our goal is to minimize or eliminate the effects of denial of service attacks, unauthorized remote access, transmission of malformed data and destruction of data.

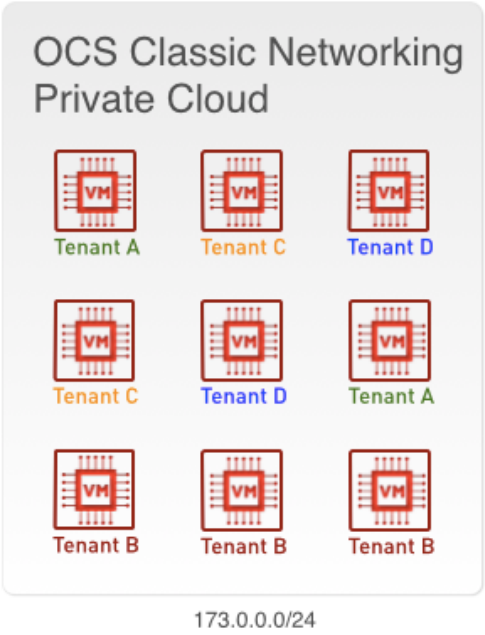
Cloudscaling employs a defense-in-depth strategy that embeds security controls at every layer of OCS. These controls include:

- OS Hardening such as removal of non-essential packages and services
- Logging for a secure network audit trail
- Network Access Control Lists for resource network partitioning
- Encryption via SSL/TLS-enabled API endpoints
- Restricted Operator Access via OCS Secure Administration Gateway

Classic and Virtual Private Cloud Networking for Security and Control

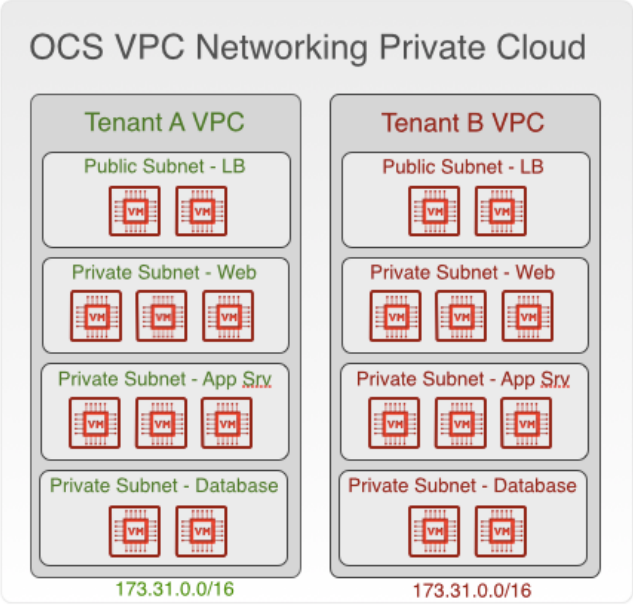
Modern public clouds such as AWS and GCE use high-speed switch fabrics with 100% IP routing end-to-end to achieve maximum throughput at the lowest cost. OCS delivers the same elastic networking architecture built on a scalable layer 3 fabric with a choice of both Classic & Virtual Private Cloud (VPC) network models.

In terms of security, OCS Classic Networking supports ingress security groups and the creation and assignment of elastic IPs. As all instances are visible by default with public and private IP addresses assigned, inbound security groups are the primary mechanism for network security.



For additional security and flexibility, OCS VPC Networking delivers full control of the network fabric. Virtual Private Clouds (VPCs) are virtual networks created as an overlay above cloud infrastructure to improve network agility, to increase network isolation for application services and to emulate existing physical network configurations for interoperability.

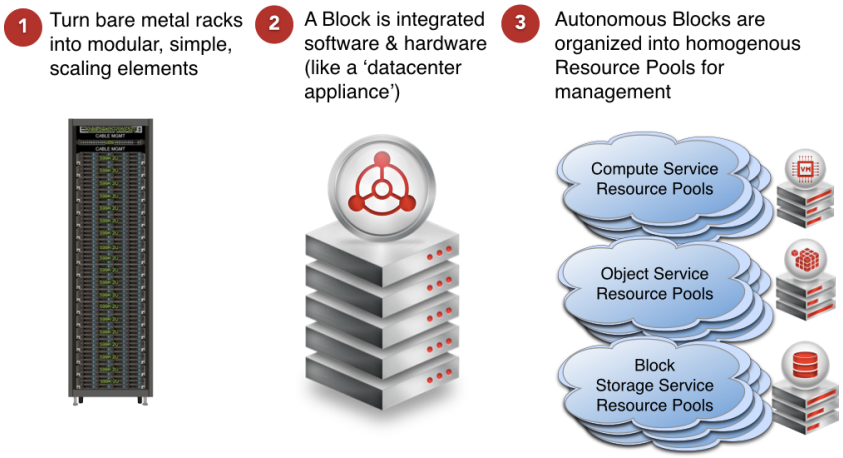
Cloudscaling OCS VPC employs Software Defined Networking (SDN) to create the virtual network overlay above the shared layer 3 physical networking. Each tenant in the cloud can create multiple VPCs, and then within each VPC, multiple subnets that logically isolate network traffic. Users can manage the IP address pools for each VPC and subnet, and create and manage Elastic Network Interfaces to dynamically bind network profiles to instances. Beyond the security groups controlling inbound traffic at the instance level, VPC networking also supports Network ACLs to control network traffic on the subnets. Deploying application tiers into isolated subnets ensures they are not directly accessible from the Internet and further isolates these servers from external attacks over the network to increase security.



5) Modular Capacity Reference Configurations

So how do you quickly deploy a scalable, elastic cloud that can handle multiple tenants with a wide range of different workloads and performance requirements? Enter Open Cloud System's CloudBlocks™ Architecture.

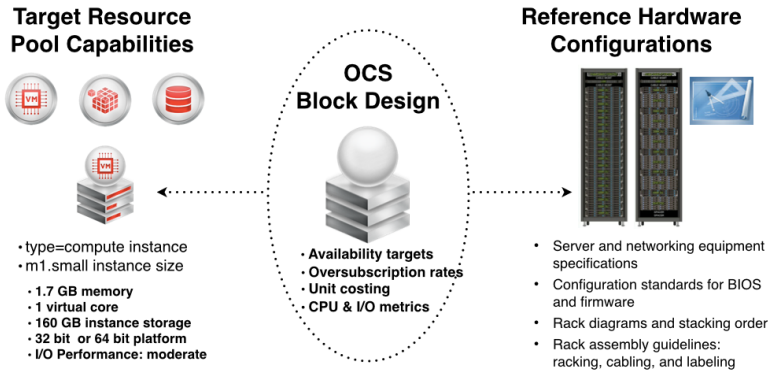
Leading public cloud pioneers use modular, industry standard hardware rack configurations that leverage standard interfaces (Ethernet, TCP/IP, x86, open source hypervisors). Repeatable, homogeneous blocks of compute, storage and networking capacity support faster scale-out and a lower total cost-of-ownership than traditional, server-centric design approaches. Cloudscaling OCS implements the same modular design approach, but extends it for flexible configurability.



CloudBlocks is a unified software and hardware reference architecture for enabling managed blocks of cloud capacity to match application workload demands with the appropriate virtual infrastructure resources. CloudBlocks let you design, deploy and manage one rack or block at a time. By providing a proven and scale-engineered reference architecture, OCS CloudBlocks speed time-to-deployment, simplifies overall capacity management and optimizes application performance.

CloudBlocks allow commodity racks of hardware to be transformed into elastic cloud resources pools. This is performed by applying an OCS Block Design that mates specific hardware and software primitives to deliver ready to deploy and use elastic cloud resource pools.

On the right is an example of an OCS Block Design for a compute resource pool that supports an m1.small instance size. By matching scale (# of instances to support), availability targets, oversubscription rates (for example, network bandwidth per block) and unit cost/hardware budget (commodity or brand servers and networking), Cloudscaling Block Designs enable cloud operators to easily and repeatably generate the bill of materials required for elastic cloud creation and expansion.



CloudBlocks offer preconfigured, scale-engineered reference block types from our Block Design Library tailored for the needs of infrastructure workloads – such as compute, network, storage or HPC computing.

Standard Block Designs include common VM instance types such as AWS EC2 Standard, High Memory, High CPU and Cluster instances, as well as Google Compute Engine Standard instances.

Size	Footprint	Use Cases
Small Pilot	1/4 Rack 	Agile Dev / Test Staging / Pre-production Evaluation
Medium Pilot	1/2 Rack 	Agile Dev / Test Staging / Pre-production Evaluation
Large Pilot	Full Rack 	Agile Dev / Test Staging / Pre-production Evaluation
Production	2+ Racks 	AWS Repatriation Hybrid Cloud Open Cloud IaaS PaaS, SaaS & Big Data

With OCS CloudBlocks, you don't have to change core parts of the cloud architecture to handle new workload patterns. Custom Block Designs can be easily created for workloads requiring non-standard VM instances, high performance computing, graphic processing, or high throughput data I/O.

For example, if you need ultra high I/O database instances, the Cloudscaling Professional Services team can design a block for database instances on SSDs. Alternately, they can create blocks with massive core counts and low memory footprints. Or a high density block design optimized for Bg Data with high CPU core count and fast SSD based ephemeral storage.

Unlike enterprise virtualization clouds that require designing to maximum usage, Block Designs allow OCS elastic clouds to predictably scale out capacity. Clouds grow within a capacity range and can be expanded as needed. For example, the Block Design for medium sized deployments supports 50+ racks of various block types.

6) Choice of Hardware

With years of production-grade IaaS experience, we know that testing and retesting of infrastructure hardware with each major OpenStack release is critical to enable support for the entire running system (including the hypervisor, hardware infrastructure and network elements). There is sufficient variability across even industry standard hardware to introduce instability in large-scale, distributed systems.

Cloudscaling's OCS CloudBlocks support a wide range of configurations using proven, standards-based hardware components from Arista, Cisco, Dell, Juniper and Quanta. OCS system software integrates reference hardware configurations for every OCS Block Design. Cloudscaling maintains an expanding Hardware Certification List of tested hardware components and vendors to reduce integration risk, and Cloudscaling continues to certify new hardware configurations for custom block designs.

You don't see your vendor of choice on this list? Need to leverage existing hardware for your OCS pilot? No problem. By leveraging our partnerships in the cloud hardware ecosystem, the Cloudscaling team can fast track certification of customer specific hardware for pilot and production deployments. We know that not all customers can build a greenfield cloud and we provides various avenues for customers to deploy OCS on their hardware.

Contact Us

To learn more about how Cloudscaling's products and services can help you deploy and manage private elastic cloud capabilities, just give us a call at +1-415-508-3270, email us at sales@cloudscaling.com or visit our website at www.cloudscaling.com.

ABOUT CLOUDSCALING *Cloudscaling is the leader in elastic cloud infrastructure. The company's core product, Open Cloud System (OCS), is the world's most advanced OpenStack cloud infrastructure system. OCS is designed to meet the requirements of next-generation dynamic applications, delivering the agility, performance and economic benefits of leading cloud providers, but deployable in the customer's data center and under the IT team's control. Cloudscaling is backed by Trinity Ventures and headquartered in San Francisco. For more information, please visit www.cloudscaling.com.*

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