

With Piston OpenStack, customers will enjoy:

- ▶ Fine-grained configuration of multi-tier storage pools for improved performance and cost-efficiency
- ▶ A wide range of options for software-defined networking: Juniper Contrail, PLUMgrid, and VMware® NSX
- ▶ Zero-downtime orchestrated updates and upgrades of the entire cluster
- ▶ Scale-out and scale-in by adding or removing servers without reconfiguration

Deploying Piston OpenStack on Bare-Metal Hardware

Piston and Quanta QCT have partnered to offer customers a high performance and cost effective bare-metal software on bare-metal hardware OpenStack® solution. The solution makes deploying and managing Piston OpenStack, running on a certified Quanta QCT platform, ridiculously easy, and delivers 100% of the core OpenStack services and APIs without modification.

Piston OpenStack is a software product that uses advanced systems intelligence to orchestrate an entire private cloud environment using commodity hardware. It delivers software-defined storage, compute, networking and management via APIs and a self-service web portal. You connect three or more servers (referred to as cloud nodes) with switches for data and management traffic, and Piston OpenStack manages them - presenting them transparently to your enterprise as a single resource. If demand increases you can connect new servers and Piston OpenStack automatically scales to manage tens of thousands of nodes.

Solution Benefits

The solution features the latest release of Piston OpenStack 3.0 running on certified Quanta QCT Xeon-based hardware and low latency L2/L3 network switches, providing a complete private cloud environment with high performance and comprehensive management, and CAPEX and OPEX savings that are hard to match.

The bottom line: Achieve the business agility of cloud computing, at less than a third of the cost of public cloud.

Solution Overview

Piston OpenStack is a software product that uses advanced systems intelligence to orchestrate an entire private cloud environment using commodity hardware. It delivers software-defined storage, compute, networking and management via APIs and a self-service web portal. It allows users to increase their data center efficiency through automation, reduce capital and operating costs, and increase agility while maintaining flexibility and freedom of choice. Piston's Null-Tier™ Architecture is a unique hyper-converged model that distributes compute, storage, networking, and administrative services across every node in a massively scalable “any node” to “any node” high availability framework.

Piston's Moxie RTE is the world's first complete runtime environment purpose-built for global-scale distributed systems. While typical configuration management approaches address this using a single “master” server configuration profile for the database, with “slave” profiles for one or more HA failover servers, Moxie RTE™ uses a master election approach: at runtime, any one of the nodes in your cluster is elected to operate each service. If the process, the network connection, or the hardware in that node fails, the service is seamlessly re-elected to run somewhere else.

The Dashboard includes a few extra panels within this dashboard, exposing live migration as well as storage and networking management features unique to Piston. Users can get a complete real-time picture of what is happening in their cloud. For administrators, the dashboard also exposes control of the easy one-click install, scale-out, and update processes.

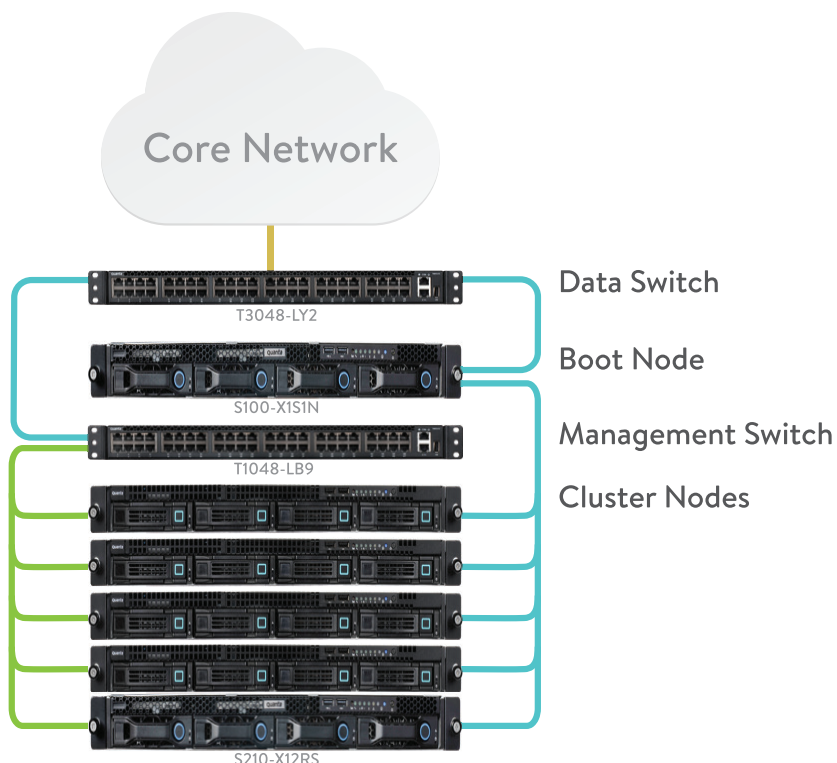
Key Components

The following components are supported and shipped in the Piston OpenStack 3.0 release:

Component	Version*	Driver
OpenStack® Identity	Keystone 2013.1.5 (Grizzly)	(n/a)
OpenStack Compute	Nova 2013.1.5 (Grizzly)	KVM + QEMU 1.6.1 + VMS
OpenStack Block Storage	Cinder 2013.1.5 (Grizzly)	Ceph 0.67.5
OpenStack Object Storage	Ceph 0.67.5 (Dumpling)	Swift and S3 APIs supported
OpenStack Image	Glance 2013.1.5 (Grizzly)	(n/a)
OpenStack Network	Neutron 2013.1.5 (Grizzly)	Juniper OpenContrail, PLUMgrid, VMware NSX
Monitoring	SNMP v2	Optional Ganglia agent
Linux Kernel	3.10.17	(n/a)

Recommended Server Configuration

Each Piston OpenStack cluster requires a minimum of three nodes and can scale to support up to 250 nodes. This provides up to 2.4PB of highly durable block or object storage, and 4500 vCPUs. Multiple clusters can be federated together to provide a single API and UI experience across up to 30,000 physical nodes.



Node Type	Hardware Type	Specification	Comment
Cluster Node	CPU	Multi core, multi socket	AMD-V or Intel VT hardware virtualization extensions enabled
	RAM	24GB minimum	96GB or more recommended
	Drives	2 or more 500GB or higher HDD	SSD recommended for distributed block device performance
	Network	1x 10GB data port + 1x 1 GB mgmt port	
Boot Node	CPU	Multi core	
	RAM	4GB	
	Drives	1 or more 256GB HDD	
	Network	1x 10GB data port + 1x 1GB mgmt port	
Networking	Layer 3	10GbE	Data switch
	Layer 2	1GbE	Management

The Quanta QCT products below are recommended for deploying Piston OpenStack 3.0 cluster.

Node Type	Model	Memory	Disk Bays	Networking
Cluster Node	S210-X12RS	6x 16GB DDR3	3x 3.5 Hot-Swap HDD, 1x 2.5 Intel 530 SSD	1x 10GB dual port SFP + mezz
Boot Node	S100-X1S1N	1x 8GB DDR3	2x 3.5 Hot-Swap HDD	1x 10GB dual port SFP + mezz mezz
Data Switch	T3048-LY2			48x 10GbE SFP + ports + 4x 10/40GbE QSFP + uplinks
Management Switch	T1048-LB9			48x 1GbE RJ-45 ports + 4x 10GbE SFP + uplinks

Licensing and Support

Piston OpenStack is licensed on a per-node, annual subscription basis. It includes access to the Piston update service, and a 24x7x365 support agreement.

About Quanta QCT

Quanta QCT, a leader in commodity hardware, provides a comprehensive line of server, storage and networking solutions to datacenter and enterprise customers. Each server and storage system is specifically designed to provide optimal performance with minimal footprint, power, and cooling. Additionally, Quanta QCT offers customers a hard to match CAPEX and OPEX. For more info visit www.quantaqct.com.

Supported Guest VM Operating Systems

- Windows 7, 2008 R2, 2012 R2
- Ubuntu: 10.04, 11.04, 12.04, 12.10 13.04, 13.10
- Red Hat Enterprise Linux 6.x
- CentOS 6.x
- Fedora 20
- OpenSUSE 13.1, 12.3
- SUSE Linux Enterprise 11SP3

Next Steps

- ▶ Get started now at pistoncloud.com/start
- ▶ Follow us on Twitter [@Piston](https://twitter.com/Piston)
- ▶ Email sales@pistoncloud.com for more information