Deploying Piston OpenStack Cloud POC on IronPOD Hardware Platforms

Piston and Iron Networks 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 Iron Networks 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.

Integrated Piston OpenStack Cloud Solution Benefits

The solution features the latest release of Piston OpenStack 3.0 running on certified Iron Networks 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.

Better Together: Piston OpenStack Cloud 3.0, IronPOD Integrated System Hardware and IRONClad Support Services helps accelerate the journey to cloud using simple, efficient, flexible and open architecture

Iron Networks offers enterprise and service provider system designs that are reliable and energy-efficient, coupled with simplified serviceability and deployment services. Together the solutions with power efficient design, high density configurations and leading-edge cloud management software help organizations manage the modern data center and benefit from cloud and big data computing-faster and easier. IronPOD is pre-configured and pre-integrated to achieve better results:

- ► OpenStack Standardized Architecture: Total Software Defined Datacenter and Software Defined Storage architecture. Software defined networking options from Juniper Contrail, PLUMgrid, and VMWare® NSX
- ► Deep Integration: Converges computing and storage into single system. Single pane of glass management with Piston OpenStack Cloud Dashboard offers rapid provisioning of compute and storage resources. Zero-downtime orchestrated updates and upgrades of the entire cluster
- ► Simplicity: Automated management and provisioning, shorter POC deployment cycles and faster time to value for cloud initiatives, allows your experts to focus on innovation.
- ► Highly Scalable: Scale-Out and Scale-in by adding or removing servers without reconfiguration
- ► Simplified Experience: Optimized Single SKU configurations to accelerate purchase, deployment and support


IronPOD 200 POC systems are Piston OpenStack Cloud FastTrack certified and available via qualified partners to help you standardize, optimize and accelerate your time to value without extensive design and configuration cycles that require specialized IT skills.

Single SKU OpenStack Infrastructure

- ► Fully Integrated Solution: Turnkey, Single vendor hardware and software solution for easy deployment
- ► Low Cost POC Deployment: Out-of-the-Box integration cuts down setup time, deploy cloud infrastructure as Plug-n-Play POD, helps kicks start Cloud experience in less than a day
- ► Commodity Hardware, Reduced TCO: Up to 50% or more saving over traditional tier-1 public clouds
- ► High Performance Design: Scalable to multiple racks for large scale compute and multi-petabytes of storage expansion
- ► 24x7 Support Service Options: Expedited deployment, helpdesk support plan options & on-site hardware replacement services

Piston OpenStack 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.
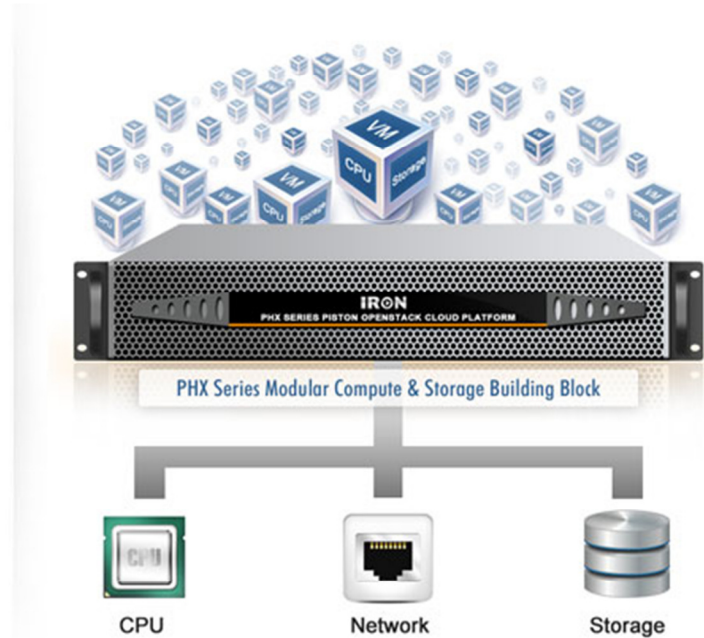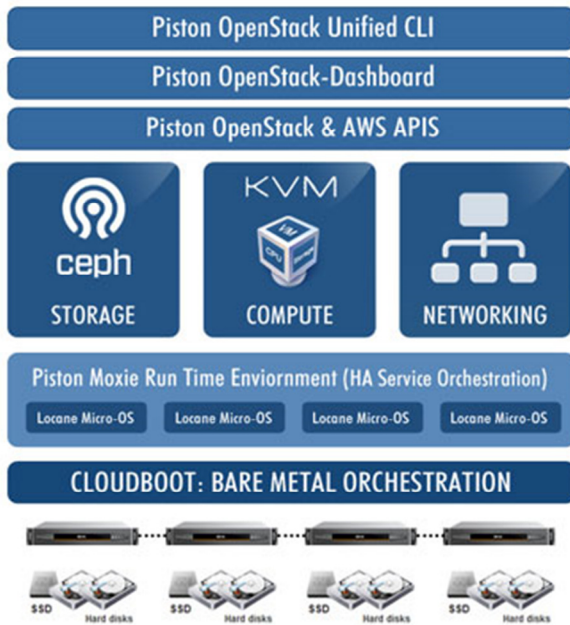
Piston's Moxie RTE is the world's first complete runtime environment purpose-built for global-scale distributed systems.

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 process

Piston OpenStack Cloud Software Key Components

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

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

Piston Open Stack Cloud 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.

IronPOD POC System 200 Solution Design Architecture Overview

IRON IronPOD is designed to be a complete Piston OpenStack Turnkey POC POD for DevOps or Infrastructure-as-a-Service (Iaas) private cloud platform. It abstracts, all the complexity and brings together networking, server, storage virtualization, automation, flexibility and scalability into a single converged cloud platform. The design offers:

▶ **Out-of-Box, Turnkey Key Solution:** OpenStack infrastructure, self-contained within a 24U high rack. Entire Piston OpenStack cloud implementation pre-installed, custom-configured, QA'd and performance tested as complete environment at the factory

▶ **Rack-Level Resiliency:** Resiliency is built into the design at multiple levels to deal with hardware and software failures; all components support N+1. The degree of resiliency is adaptable for mitigating power, network, storage and compute outages.

▶ **Modular, Scalable Compute and Storage Architecture:** Balanced compute CPU, memory, network throughput and storage IOPS and capacity per rack. Multiple racks can be networked together to build scale-out modular compute and storage infrastructure

▶ **Flexible PHX Cloud System Node Configurations:** For various application workloads, the storage to compute ratios vary from application to application; IronPOD, offers multiple PHX building block choices in 2U, 1U and half-U form factors, as well as Low Power consumption CPU options.

▶ **High Return-on-Investment (ROI):** Best-in-class standardized components to provide maximum performance leveraging synergies between components that are based on open standards, reliable and scalable, allowing organizations to save on cost and help grow with business needs.

IRONPOD SYSTEM P200A: 24U Integrated System Platform for POC Deployment

Network Fabric (x1 TOR Switch & x1 Management Switch)
Single, or Dual** Network Switch, Dual Path options (rear access)
▶ Management Switch : 48x 1GbE RJ45 & 410GbE SFP+
▶ Data Switch Option-1: 56x 10GbE SFP+ (via QSFP to 4x SFP+ breakout cable)+ and 4x QSFP
▶ Data Switch Option-2: 48x 10GbE SFP+ and 4x 40GbE QSFP

Piston Cloud Infrastructure Boot Node (x1 Boot Node)
Automated, Large Scale Infrastructure Provisioning & Staging
▶ Infrastructure Node Configuration: Dual, Intel 8-Core Ivy Bridge Xeon Processors E5-2650v2 @ 2.6Ghz, 64GB RAM, 2x 480GB SSDs SATA2, Quad Intel10GbE SFP+ LAN ports.
▶ Simplified Storage and Compute Node Cluster Setup, provides automated bare metal cluster provisioning of new hardware, and supports Scale Up and Scale Out node management.
▶ SDN Support upgrade option for flexible private and hybrid cloud integration

Converged Storage & Compute Nodes Cluster (x5 HPX Server Nodes)
Optimized for compute, storage and networking
▶ Functional Node Configuration: Dual, Intel 8-Core Ivy Bridge Xeon Processors E5-2650v2 @ 2.6Ghz, 128GB RAM, 2x 480GB SSD SATA2 and 2x 4TB NL HDD SATA2, LSI SAS2308 Controller, Dual Intel 10GbE SFP+ LAN ports.

IRONPOD SYSTEM P200B: 24U Integrated System Platform for POC Deployment

Network Fabric (x1 TOR Switch & x1 Management Switch)
Single, or Dual Network Switch, Dual Path options (rear access)
▶ Management Switch : 48x 1GbE RJ45 & 4x 10GbE SFP+
▶ Data Switch: 24x 10GbE SFP+ and 4x 40GbE QSF, field upgradable to 32 or 40 ports
▶ Data Switch (HA): Option to add second switch (dual path) and cabling to POD

Piston Cloud Infrastructure Controller Nodes (x5 Controller Nodes)
Automated, Large Scale Infrastructure Provisioning & Staging
▶ Infrastructure Node Configuration: Dual, Intel 8-Core Ivy Bridge Xeon Processors E5-2650v2 @ 2.6Ghz, 64GB RAM, 2x 480GB SSDs SATA2, Quad Intel10GbE SFP+ LAN ports.
▶ SDN Support for flexible private and hybrid cloud integration

Converged Storage & Compute Nodes Cluster (x5 PHX Server Nodes)
Optimized for compute, storage and networking
▶ Performance Node Configuration: Dual, Intel 10-Core Ivy Bridge Xeon Processors E5-2680v2 @ 2.8Ghz, 256GB RAM, 4x 480GB SSD SATA2 and 8x 4TB NL HDD SATA2, LSI SAS 2308 Controller, Quad Intel 10GbE SFP+ LAN ports.

IRONClad Single-Call Support Services

Installation and Support Services are included to help accelerate your cloud solutions
Our highly experienced and expertly trained sales professionals and partners deliver a converged infrastructure precisely the way you need it. IRON also offers a variety of services and tools to help our customers get started with confidence at their own pace.

Piston OpenStack Powered converged infrastructure reference architecture guide offers reference configurations, best practice and lessons learned. These offering includes solution planning for data management, data access, integration, security and operations for automated provisioning and management.

IRON Converged Infrastructure Services can help you design, finance, implement, and support a converged infrastructure. These services include a visioning workshop, planning services, design and implementation service and proof of concepts.

Efficient Architecture Cloud Workshop allows you to spend a day with an experienced converged infrastructure expert from Piston Cloud computing and IRON to help learn fundamental modern data infrastructure architecture and integration topics with best practices using Piston OpenStack Platform.

Open Standards and Open Integration building blocks allows IRON to provide the most complete, simplest, and fastest way to deploy the right solution or solutions to meet your varying requirements-all built to industry standards. This gives you the ability to change components in and out as you like. You're not locked in. This is a very important part of our architecture. It's not about lock-in. It's about building to industry standards and giving our customers choice so they can accelerate IT to deliver better business value.

Onsite installation and implementation is included with every IronPOD deployment, complete with an orientation training session and configuration support. Iron support provides the foundation for secure and reliable high-availability infrastructures with enhanced hardware support and first-level software technical support for problem resolution.

The IronPOD Infrastructure family of solutions demonstrates how open and flexible architectures powered by core Piston OpenStack technologies combined with IRON Services create practical, innovative solutions designed to reduce complexity and costs while improving productivity. IRON Services can help deliver elastic IT, whether you are building a platform for private cloud computing or for better availability and management of applications.

About Iron Networks, Inc.

Based in Fremont, CA, Iron Networks is an ISO 9001:2008 certified OEM provider of software-defined converged network, compute & storage virtualization infrastructure platforms for cloud-optimized modern data centers. The IronPOD solutions are OpenStack, VMWare and Microsoft Fast-Track validated turnkey cloud and storage building blocks, built on industry standard commodity hardware, quick to deploy at large-scale and easy to distribute as a single low-cost rack level SKU. IronPOD enterprise level support services and systems are available via qualified partners globally to help enterprises efficiently build private cloud environments, and service providers build public cloud offerings.

With over 1000 successful infrastructure appliance implementations around the globe, Iron Networks has a depth of experience building, deploying and supporting POD-level complex IaaS solutions. Utilizing the product and market experience with Cloud-infrastructure-technologies and the core competencies as a leader in turnkey rack level hardware manufacturing, OEM appliance design, integration and supply chain management solutions, Iron Networks is positioned to rapidly deploy and support enterprise grade cloud and datacenter solutions.

For more information, visit **www.ironnetworks.com/pistoncloud** or contact an authorized IronPOD reseller.

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