

IronPOD System 400 Series System Overview

IRON Networks converged system products simplify Microsoft infrastructure deployments by integrating hardware, software and services into turnkey solutions. The IronPOD System 400 combines optimized network, server and storage hardware, and the comprehensive Microsoft software defined datacenter (SDDC) software suite integrated into an optimized turnkey configuration. This creates a complete solution that is simple to acquire and deploy.

IronPOD™ System 400 platforms is available as single or modular rack configurations, optimized for scalable cloud deployments. Built-in redundancy provides highly available and resilient operations that support enterprise workloads running thousands of virtual machines that are highly optimized for workhorse applications like Microsoft SQL, SharePoint and Exchange.

Core Microsoft technology powered by Microsoft Windows Server 2012 and System Center 2012 for best results

Microsoft NVGRE Network Virtualization, Microsoft Hyper-V Server Virtualization, Microsoft Windows Storage Server Virtualization and System Center 2012 SP1 technologies are optimized for application delivery in virtualized, cloud and dedicated environments to:

- Accelerate IT, enhance time to application value.
- Optimize IT, for faster application delivery and better business results.
- Standardize IT, Eliminate islands of incompatible infrastructures.

Better Together: IRON hardware, Microsoft Windows Server platforms & Microsoft workloads

IRON offers enterprise and service provider class system designs that are reliable and energy-efficient, coupled with simplified serviceability and deployment services. Our solution with power efficient design, high density configurations and leading-edge software to manage the modern data center, help organizations manage the modern data center and benefit from virtualization and cloud computing-faster and easier.

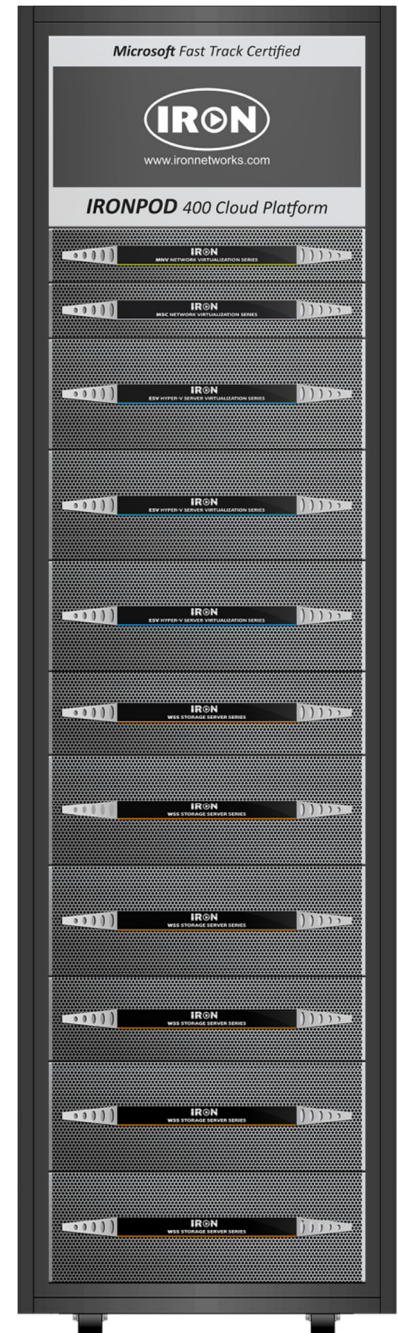
IRON platforms integrate Microsoft core windows technologies to deliver a systematic approach to optimize application performance and standardize IT operations across the data center with a common architecture and management model. Key benefits include:

- Optimized and lower cost of hardware design, and
- Reduced dependence on redundant infrastructure investment.
- Reduced CAPEX and timelines to implement new capacity.
- Reduced OPEX through improved PUE and higher utilization.

Single SKU infrastructure delivery model

Pre-Configured, pre-integrated infrastructure to achieve better business results:

- Integration by design: deeply integrated compute, storage, and networking resources so you can deploy in hours instead of days.
- Built-in expertise: automated management and deployment expertise for physical and virtual resources so your experts can focus on innovation.
- Simplified experience: optimized configurations to accelerate purchase deployment and time to value for your solution.



Microsoft powered and FastTrack certified converged system platforms and workloads offer

- Better performance for workhorse applications like Microsoft SQL, SharePoint and Exchange.
- Best option for customers looking to virtualize their mission critical, tier-1 applications and workloads at the lowest cost possible. Up to 50% cost savings.

IronPOD System 400 Building Blocks for Converged Infrastructure Technology

IRON converged systems enables agile and rapid application and service delivery while driving down costs. It offers best-in-class technologies to power, store, connect, and manage IT resources. Our building blocks are designed for convergence, leveraging common modular components and provide platforms that are easy to integrate into a shared services environment to quickly deliver IT services required by the business. The following foundational technologies reflect industry standards, leadership, openness, and customer choice:

Networking: Network Virtualization Gateway Appliance (MNV Series)

Microsoft Hyper-V Network Virtualization provides "Virtual Networks" to virtual machines similar to how server virtualization (hypervisor) provides "virtual machines" to the operating system. It offers multi-tenancy, scalable network architecture with L3 network virtualization for private and hybrid clouds. IRON MNV Series SDN gateway is a custom-built, turnkey appliance with dual node Cluster-in-Box (CiB/HA) configuration for maximum performance and reliability.



Management: Cloud Management Head Appliance (MSC Series)

Microsoft System Center 2012 Suite offers an integrated management platform for easy and efficient management of datacenters and hybrid cloud IT environment. It serves as a single platform for comprehensive management of applications, services, physical resources, hypervisors, software defined networks, configuration, and automation. IRON MSC Series management head is a custom-built turnkey appliance with dual node Cluster-in-Box (CiB/HA) configuration for maximum performance & reliability.



Compute: Hyper-V Server Virtualization (ESV Series)

IRON ESV Series modular servers are designed for mission-critical workloads and offer built-in resiliency, scalability, and performance to handle vital workloads such as private cloud, OLTP and BI. They offer,

- High density design, 4U chassis offers 8 modular blade nodes.
- Memory support for 128GB, 192GB, 256GB, 384GB and 512GB per node.
- Low powered chips option, reduce cost by 50% and cut power by 90%



Storage: Windows Server Storage System Head (WSS Series)

IRON offers specialized storage appliance solutions powered by Microsoft Storage Server 2012. A storage system array includes one WSS storage head and two DAE series shelves, for a total of 144 disk drive support. Each standard IronPOD rack includes two storage systems for a total of 288 disks and up to 460TB of raw capacity.

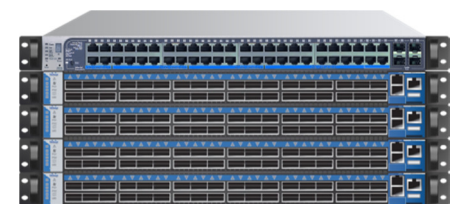
- IRON WSS Series storage head is a custom-built, self-contained hardware appliance with dual node Cluster-in-Box (CiB/HA) configuration for maximum performance and reliability. Supports Storage Spaces and SMB Direct RoCE (and iWarp) w/ 40GbE multi-channel Ethernet, and offers the fastest storage solution in the market.
- IRON DAE Series DAS Storage Expansion shelves support up to 60 SAS disks. Both the shelves can be mirrored to provide redundant enclosure high availability.
- Comprehensive storage management tools to manage storage systems with SMI-S and new storage management protocols from Microsoft.



Network Fabric: Converged Data Center Networking

Mellanox network switch systems provide the highest-performing fabric solution by delivering up to 2.88Tb/s of non-blocking throughput to Enterprise data centers, with ultra-low-latency. It offers converged networking architecture that helps reduce data center costs by using a common low latency infrastructure for compute, storage and top of rack switches.

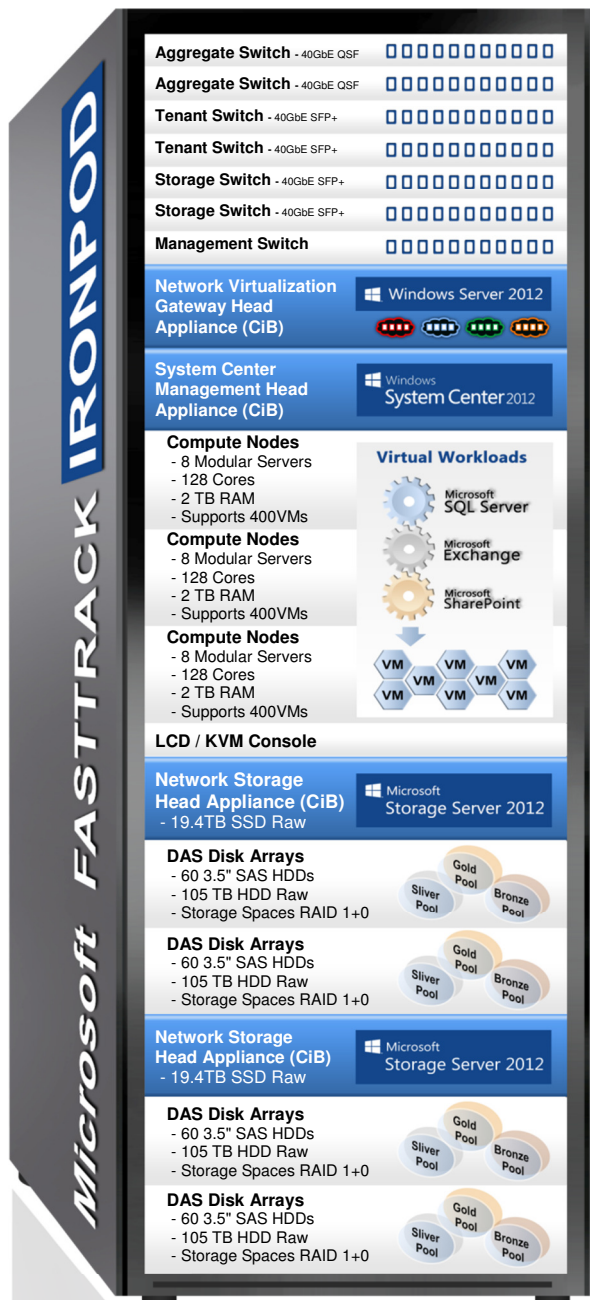
- 40/56GbE uplink for top-of-rack access networking, dual switches for HA.
- 40/56GbE for tenant network and storage network switches, dual switch for HA.
- 40/56GbE for storage networking, dual switches for HA.
- 40/56GbE dual channel (failover) for network adapters.



IronPOD System 400 Solution Design Architecture

IronPOD is designed to be a Microsoft Windows Server 2012 and System Center 2012 powered general purpose Infrastructure-as-a-Service (IaaS) platform for running mixed enterprise workloads in virtualized environments, the design offers:

- Resiliency: Resiliency is built into the design at multiple levels to deal with hardware and software failures; all components have N+1 or N+N redundancy. The degree of resiliency is adaptable for mitigating power, network, storage and compute outages.
- Capacity: Balanced compute CPU & memory, network throughput and storage IOPS and capacity per rack.
- Isolation: Provides a mechanism for additional measure of security protection and system management boundary to facilitate policy enforcement. As an example, network virtualization is used to isolate communication from each tenant and VLAN subnets to isolate traffic across the racks within the datacenter.
- Performance: The right selections of hardware components provide a balance between performance goals and cost. It provides lower power consumption and storage tiering for best price vs. performance ratio.



Network Fabric

3 tier design with dual path for high availability

- Trunking at TOR and Aggregate switches to flatter network.
- VM/Tenant traffic isolation within the Tenant Network.
- Storage and clustering traffic converged on data center network.
- MNV Multi-Tenancy SDN Gateway - Dual Node Cluster-in-Box network virtualization gateway

Cloud Management System

Dedicated appliance with high availability

- MSC Head - Dual node Cluster-in-Box system center configuration with built-in resiliency.
- Self-contained solution running the full suite of System Center products and databases includes built-in high IOPS storage subsystem.

Compute Systems

Hyper-V powered high availability

- Hyper-V Live Migration (intra and inter-cluster).
- Hyper-V Replica.
- Dual 40/56 GbE Network paths.

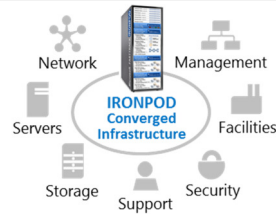
Storage Systems

Storage Space based high availability

- WSS Storage Gateway - Dual Node Cluster-in-Box network storage configuration with built-in resiliency.
- DAE Disk Array: Dual enclosures mirrored cluster configuration with built-in resiliency.
- Dual 40/56 GbE Network paths.

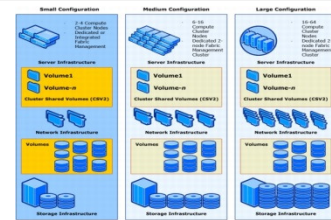
IRON's Microsoft Converged IT Infrastructure Solution Delivery Model

Converged Infrastructure & Management



Microsoft Powered End-to-End Virtualization Simplify Management

Fast Track Hardware Reference Architecture



Commodity Hardware Modular & Redundant HW

Building Blocks: Key Features

Networking	Yes	Yes	Yes
Compute	Yes	Yes	Yes
Storage	Yes	Yes	Yes

Building Blocks: Key Benefits for customers

Software Defined Everything

- Future proof - Microsoft powered, converged windows server and system center management.
- Scale-out failover clusters.
- Lower complexity, increased agility, flexibility & business efficiency.
- End-End datacenter IT automation.
- Green data center computing.

Modular, Cost effective design

- Multiple choices, open architectures.
- Modular building blocks: built-in resiliency, high performance, easy to deploy.
- SLA Design offers network agility, cluster availability & data resiliency.
- Low cost, up to 50% compare to leading tier-1 solutions.

Certification & Integration Delivery Model



FastTrack Validation Single SKU Purchase Deployment Services

Unified Service Management Model



Failure Alert Support 24x7 Services Next-day

Building Blocks: Key Features

Networking	Yes	Yes	Yes
Compute	Yes	Yes	Yes
Storage	Yes	Yes	Yes

Building Blocks: Key Benefits for customers

Turnkey IaaS IronPOD Delivery

- Pre-integrated - Total solution as an IronPOD.
- IaaS and PaaS deployment within 30 days.
- Pre-validated infrastructure platform, reduces complexity.
- Performance Optimization for all of the Microsoft business applications.
- Out-of-Box experience, Bare-metal provisioning.

End-to-End Support & Services

- Single Vendor Support.
- SLA Design for faster response.
- IronPOD life cycle management.
- Low cost maintenance.
- Improved IT services & quality.

IronPOD System 400 Hardware and Software SKU Configurations



Model: S420A-S
(Supports 700 - 1,250 VMs)



Model: S420A-M2
(Supports 1,400 - 2,500 VMs)



Model: S420A-M4
(Supports 2,500 - 5,000 VMs)

Hardware Components & Specifications

	420A-H	420A-S	420A-M2	420A-M3	420A-M4
Network Switches					
• Aggregate/Tenant/Storage:	Mellanox SX1036 36 port 40GbE	2	4	8	12
• Management Switch:	Dell Force 10 S55 1GbE	1	1	1	2
Network Virtualization Gateway Appliance					
• NVGRE Gateway:	IRON MNV Series xxxx 2-node, 4x 40GbE Ports	1	1	2	3
Management Head Appliance					
• Primary Server:	IRON MSC Series xxxx 2-node, 24TB (24 SAS HDD)	1	1	2	2
Compute Nodes					
• Enclosures:	iServer Compute XXSSS Blade Chassis (8 blades)	2	3	6	9
• Blades:	8 Nodes per Chassis, 2x 56Gbe LAN, Flash boot disk	12	24	48	72
• Processors (Cores):	Dual Socket, 8 Core CPU	192	384	768	1,152
• Memory (GB):	128, 192, 256, 384 & 512 Options (256 Standard)	3,072	6,144	12,288	18,432
Network Storage Array Appliance					
• Storage Head:	IRON WSS Series xxxx CiB Storage Arrays	1	2	4	6
SSD (GB) - Raw:	Gold Pool: 24x 400 or 800 MLC SAS (400 default)	9.6 TB	19.2 TB	38.4 TB	57.6 TB
• Ext. Storage Array:	IRON ESA Series xxxx	2	4	8	12
HDD (TB) - Raw:	Silver Pool: 90 x 1TB 10K SAS 2.5" HDDs	90 TB	180 TB	360 TB	540 TB
HDD (TB) - Raw:	Bronze Pool: 30x 4TB 7200 SAS 3.5" HDDs	120 TB	240 TB	480 TB	720 TB
• Total Storage - Raw (max):	<i>Total Capacity: Gold + Silver + Bronze</i>	<i>230 TB</i>	<i>460 TB</i>	<i>920 TB</i>	<i>1.4 PB</i>
• Number of Disks - Raw (max)	<i>Excluding RAID setup, Software supports 1+0, 5* & 6*</i>	<i>144</i>	<i>288</i>	<i>576</i>	<i>864</i>
	<i>Storage Space Software supports RAID 1+0, 5* & 6*</i>	<i>144</i>	<i>288</i>	<i>576</i>	<i>864</i>
Additional Hardware and Software					
• Rack	IRON 42U Racks with redundant PDUs	1	1	2	3
• KVM	IRON Keyboard/Mouse/Video Display Console	1	1	2	2
• Software (System)	Microsoft Windows Sever 2012 License Option	18	32	60	96
	Microsoft System Center 2012 Suite License Option	1	1	2	2
• Software (Backup/Recovery)	Local and remote data protection & DR option				

IRON Services can accelerate your virtualization solutions

Installation and Support Services are included. 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 and their own pace:

Microsoft Powered converged infrastructure reference design guide offers detailed configurations, best practice and lessor learned. These offering includes solution block for messaging, collaboration, virtualization and cloud computing.

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 to help learn fundamental converged infrastructure and cloud computing topics with best practices using Microsoft System Center with Hyper-V and network virtualization, Microsoft Storage Server and Mellanox network fabric.

Open Integration and Open Standards 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 400 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 software technical support for problem resolution.

The IronPOD Infrastructure family of solutions demonstrates how open and flexible architectures powered by core Microsoft Windows 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

Based in Fremont, CA, Iron Networks is a Microsoft OEM partner that delivers turnkey networking and infrastructure platforms for Microsoft-based Software Defined Data Centers. With over 1000 successful Microsoft infrastructure appliance implementations around the globe, Iron Networks has a depth of experience building, deploying and supporting Windows Server based solutions. Utilizing the product and market experience with Microsoft-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 or contact an authorized IronPOD reseller.

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Windows Server 2012 R2



Windows Storage Server 2012 R2



Microsoft
System Center 2012

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