

IronPOD System 400 Series System Overview

IRON Networks converged IronPOD 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) virtualization software suite into an optimized turnkey configuration. This creates a complete single SKU solution that is simple to acquire and deploy.

IronPOD™ System 400 platforms is available as single or modular multi-rack POD 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, Lync, VDI, SharePoint and Exchange.

Microsoft Windows powered enterprise-class virtualization for your datacenter and hybrid cloud

Microsoft Hyper-V Network Virtualization (NVGRE), Microsoft Hyper-V Server Virtualization, Microsoft System Center 2012R2, Windows Server 2012 R2 and Windows Storage Server 2012 R2 technologies bolster IT efficiency and offers faster application delivery in virtualized, cloud and dedicated environments.

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

Better Together: IRON hardware, Microsoft Windows Server platform & Microsoft enterprise 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 offers

- Better performance for IaaS and tier-1 workhorse applications like Microsoft SQL, Lync, VDI, SharePoint and Exchange.
- Helps accelerate the journey to fully virtualized hybrid cloud using simple, efficient and flexible architecture.
- Lowest hardware cost; Up to 50% cost saving over traditional tier-1 IT Infrastructure.

IronPOD System 400 Building Blocks for Microsoft Windows Powered 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 provides 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 Block: Microsoft Network Virtualization Gateway Appliance (HNV 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 HNV Series SDN gateway is a 2U custom-built, turnkey appliance with dual node Cluster-in-Box (CiB/HA) configuration for maximum performance and reliability.



Management Block: Cloud Management Head Appliance (MSC Series)

Microsoft System Center 2012 R2 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 2U custom-built turnkey appliance with dual node Cluster-in-Box (CiB/HA) configuration for maximum performance & reliability.



Compute Block: Hyper-V Server Virtualization (HVCB Series)

IRON HVCB Series modular servers powered by Windows Server 2012 R2, are designed for mission-critical workloads and offer built-in resiliency, scalability, and performance. Key options include:

- High density design, 2U chassis offers 4 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 Block: Windows Server Storage System (WSSB Series)

WSSB Series "Flash-Optimized " Hybrid NAS turnkey appliances are powered by Microsoft Storage Server 2012 R2. It supports storage spaces optimized automated tiering across high performance flash SSDs and low cost, large capacity HDDs over multi-channel 40Gb Ethernet.

- **WMX Storage Head System:** A WMX-5200 configuration is a dual NAS storage-controller head (SCH) appliance. WSSB storage block includes a single (dual SCH) or dual WMX (four SCH) appliances which act as a single uniform Scale-Out File Server (SoFS) cluster head. WMX-5200 provides enterprise-level five-nines availability with scale-out SMB with its N+N scalability; best suited for enterprise-class uptime, a single SCH failure only affects application performance.
- **DAE Disk Array Filers:** Disk-Array Enclosure (DAE) are 4U/60 bay, 4U/24bay and 2U/24bay JBOD configuration; they comes pre-populated with various HDD and SSD drive options. Pre-configured storage block include WMX storage controller head appliance and up to four DAE JBOD arrays, connected directly via multi-path SAS2 controllers.



Scale-Out File Server (SoFS) system is specially designed to address the demands of private clouds, scale-out NAS workloads and enterprise application. It provide scale-out file shares that are continuously available for file based server application storage. It is an efficient, cost-effective multi-potable platform based on a single file system, serving I/O intensive applications, storage and near line archives.

Network Fabric: Converged Data Center Networking

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 and east-west switches.

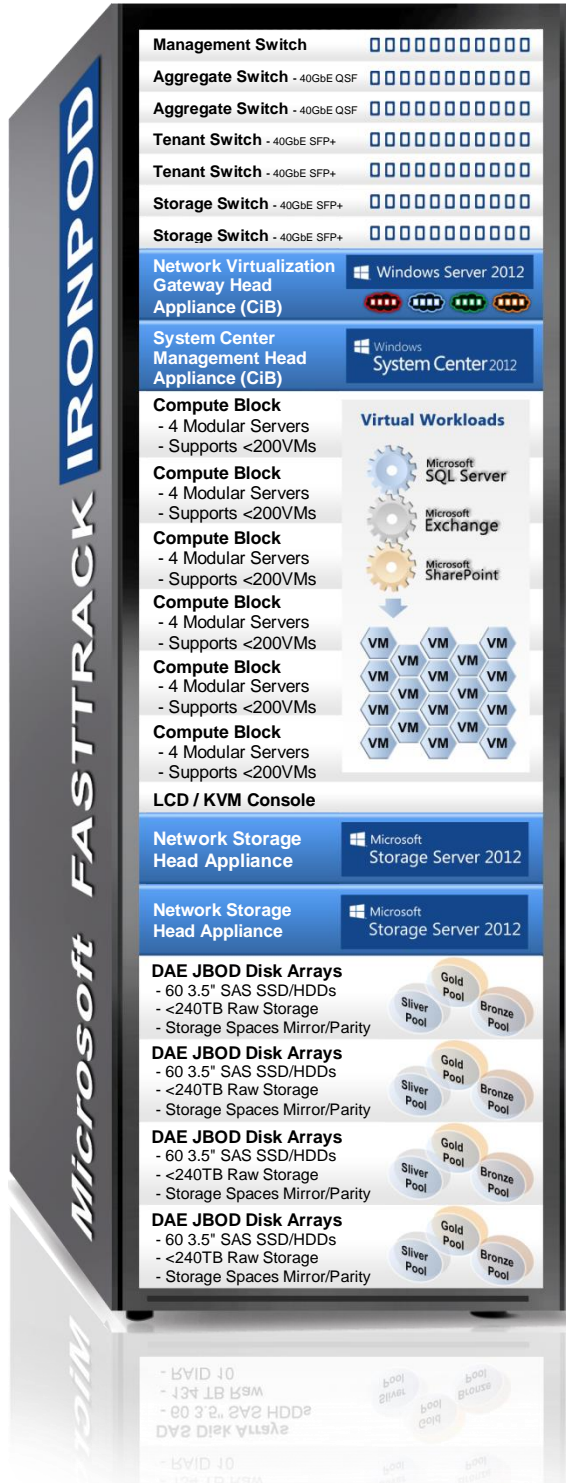
- 40/56GbE uplink for top-of-rack access networking, dual switches for HA.
- 40/56GbE for tenant network and storage network switches, dual switch for HA.
- 40/56GbE for storage networking, dual switches for HA.
- 40/56GbE dual channel (failover) for network adapters paths.



IronPOD System 400 Solution Design Architecture Overview

IronPOD is designed to be a Microsoft Windows Server 2012 R2 and System Center 2012 powered general purpose Infrastructure-as-a-Service (IaaS) platform for running mixed enterprise workloads in virtualized environments, the design offers:

- **Rack-Level 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.
- **Modular Scalability:** Balanced compute CPU & memory, network throughput and storage IOPS and capacity per rack. Multiple racks can be networked together to build scale-out modular infrastructure
- **Network 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.
- **Highest ROI:** The right selection 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 Block: Network Fabric & Management 2 or 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.
- Microsoft Network Virtualization (HNV), Multi-Tenancy SDN Gateway - Dual Node HA Cluster-in-Box network virtualization gateway configuration with built-in resiliency.

Microsoft System Center Head (MSC) Management appliance with high availability

- Dedicated MSC Head - Dual Node HA 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 SSD/HDD storage space subsystem.

Hyper-V Compute Block (HVCB) Windows Hyper-V Server powered high availability

- Hyper-V Live Migration (intern and intra-cluster).
- Hyper-V Replica support
- Dual 40/56 GbE Network paths w/ multi-channel support

Windows Server Storage Block (WSSB) Storage Space for high availability and performance

- WMX Storage Head - Dual Node (max 4) storage controller heads (SCH) configuration with built-in resiliency.
- DAE Disk Array: Dual (Upto 4) HDD/SSD Disk Array Enclosures mirrored cluster configuration with built-in resiliency.
- Dual 40/56 GbE Network paths w/ multi-channel support.

IronPOD System 400 Hardware and Software Configurations Options



Model: M420S

(Supports 700 - 1,250 VMs)



Model: M420S-P2

(Supports 1,400 - 2,500 VMs)



Model: M420S-P4

(Supports 2,500 - 5,000 VMs)

Hardware Components & Specifications

		M410S	M420S	M420S-P2	M420S-P4
Network Fabric					
• Aggregate/Tenant/Storage Switch:	1U, 36x 40/56GbE QSFP Ports Ethernet Switch	4	4	8	16
• Management Switch:	1U, 44x 1GbE RJ45, 4x SFP Ports Ethernet Switch	1	1	2	4
Network Virtualization: Microsoft Hyper-V Network Virtualization (HNV) Gateway Appliance					
• Network Virtualization Gateway:	2U, IRON HNV-5500H Dual Node HA, 8x 40GbE Ports	1	1	2	4
Management Block: Microsoft System Center (MSC) Appliance					
• System Center Server Head:	2U, IRON MSC-6560HE Dual Node HA, 12/12 SSD/HDD	1	1	2	2
Compute System Block: Microsoft Hyper-V Compute Block (HVCB) Server Nodes					
• Enclosures:	2U, IRON iServer HVCB-S4C3-4 Blade Chassis (4 blades)	3	6	12	24
• Blades:	4 Server Nodes/Chassis, 2x 56GbE LAN, Flash OS boot	12	24	48	96
• Processors (Cores):	Dual Socket, 10 Core CPU (Total 20 Cores/Blade)	240	480	960	1920
• Memory (GB):	128, 192, 256, 384 & 512 Options (192 default)	2,304	4,608	9,216	18,432
Storage System Block: Microsoft Windows Storage Server Block (WSSB) Array					
• Storage Head Appliance:	2U, IRON WMX-5200H2 Dual Storage Controller Heads (SCH)	1	2	4	8
	Supports 4x Mini-SAS2 Ports & 2x 40GbE QSF (per SCH)	(2x SCH)	(4x SCH)	(8x SCH)	(16x SCH)
• Disk Array Enclosure (DAE) Shelf:	4U, IRON DAE-J460 60 3.5" Drives, N+1 Controller & PS	2	4	8	16
• SDD (TB) - Raw:	Flash Pool: 12x 200/400/800GB SSD (200GB default)	4.8	9.6	19.2	38.4
• HDD (TB) - Raw:	HDD Pool: 48 x 2/4TB NL SAS2 3.5" HDDs (4TB default)	384	768	1536	3072
• Total Storage - Raw (max):	HDD Pool: 60 x 4TB NL SAS2 3.5" HDDs (all HDD)	480	960	1920	3840
	<i>Number of Disks - Raw (max)</i>	120	240	480	960
Additional Hardware and Software					
• Rack	IRON 45U Rack, Redundant PDUs	1	1	2	4
• KVM	IRON Keyboard/Mouse/Video Display Console, Optional	1	1	2	2
• Software (System)	Microsoft Windows Sever 2012 Datacenter License Option	12	24	48	96
	Microsoft System Center 2012 Enterprise Suite License Option	2	2	4	4
• Software (Backup/Recovery)	Local and remote data protection & DR option				

*WSS-410A Storage System: 1x WMX-5200H2 Dual Storage Head (total 2x SCH) + 2x DAE-J460 Shelves

**WSS-420A Storage System: 2x WMX-5200H2 Dual Storage Head (total 4x SCH) + 4x DAE-J460 Shelves

† M410S: Field-Upgradable to M420S; Option to add 3x HVCB Blocks & 1x WSS (WSS-410A) Block.

IronPOD Turnkey IaaS Systems, Cost-effective Microsoft FastTrack Certified Platforms.



X100 Series

Branch Office / Small Business-Ready
IT Infrastructure Platforms

200 Series

300 Series

SMB Business-Ready
IT Infrastructure Platforms

400 Series

Service Providers / Enterprise-Ready
IaaS Platforms, Modular

500 Series

600 Series

Enterprise Application
Optimized Platforms

IronPOD Systems are built using standardized hardware building blocks and Microsoft Windows powered network, compute and storage virtualization technologies. Everything you need is provided in one single SKU package, including optional Microsoft Windows Server 2012 and Microsoft Windows System Center Manager Software. It is delivered ready-to-run pre-validated, pre-tested, pre-cabled, pre-racked to help you accelerate your custom private cloud or specific business application configurations deployment in as little as 30 days from your order.

IronPOD systems are Microsoft 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.

IronPOD VirtualIron System X100 Small Business Express Series

IP-X100 is a 3U small-form factor standalone "Virtual-IT cluster in a Box" appliance, offers a single box dual node compute and tiered-storage with enterprise grade active-active windows server clustering (Cluster-in-a-Box) for easy to deploy and manage all-inclusive business infrastructure. It is an ideal all-in-one infrastructure solution for small business as well as remote and branch office of large enterprises. IP-X100 supports up to 50 VMs and 50TB of internal storage supporting entire virtualized business infrastructure at lowest possible cost.

IronPOD System 200 Small Business Value Series

IP-200 is an ideal converged solution to run hundreds of virtual machines supporting entire virtualized small and midsize business as well as remote and branch office of large enterprises which requires flexibility, capacity and performance scalability. IP-200 is a 24U single rack system, supports up to 200 VMs and 50TB+ of high performance tiered storage.

IronPOD System 300 Small-Mid Size (SMB) Business Series

IP-300 is an ideal converged solution to run hundreds of virtual machines supporting entire virtualized business infrastructure which requires flexibility, capacity and performance scalability. IP-300 is a single 42U rack system, supports up to 500+ VMs and 100+ TB of storage.

IronPOD System 400 Service Providers Value Series

IP-400 is a low cost converged solution to run thousands of virtual machines supporting business-critical applications such as large virtualization and cloud implementation for mixed workloads which requires flexibility, capacity and performance scalability at lowest cost. IP-400 is a 45U single rack system, supports up to 1200+ VMs and 1PB of storage. IP-400 configurations are modular in design, additional racks can be added to an existing deployment to build scale-out IaaS platform supporting 1000' of VMs with Multi-Petabytes of storage.

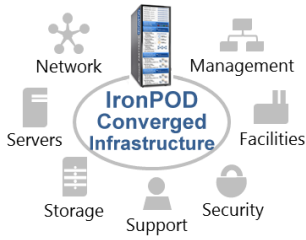
IronPOD System 500 Service Providers Standard Series

IP-500 is an ideal converged solution to run thousands of virtual machines supporting mission-critical applications such as large virtualization and cloud implementation for mixed workloads which requires flexibility, capacity and performance scalability. IP-500 is a 45U single rack system, supports up to 1200+ VMs and 1PB of storage. IP-500 configurations are modular in design, additional racks can be added to an existing deployment to build scale-out IaaS platform supporting 1000' of VMs with Multi-Petabytes of storage.

IronPOD System 600 Enterprise Series

IP-600 is an ideal converged solution to run dedicated mission-critical enterprise applications such as Microsoft Exchange, Lync, SharePoint, VDI requiring single/multiple storage racks. It helps reduce IT operational expense and helps deploy new applications more quickly with a cloud-ready infrastructure platform. IP-600 is a multi-rack system with dedicated data storage rack/s, supports up to 1200+ VMs and 2-10PB+ storage configurations.

IRONClad Single-Call Support Services



Installation and Support Services are included to help accelerate your hybrid 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.

Microsoft Powered converged infrastructure reference design guide offers detailed configurations, best practice and lessons 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 Standards and Open Integration building blocks allows IRON to provides 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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