



PacStar MDC

Modular Data Center

Key Features

- High density compute, storage and networking infrastructure capable of handling large loads with industry-leading SWaP reduction
- Modular system can be optimized for program needs, maximizing number of CPU cores, GPU cores or size of solid-state storage, depending on program needs
- Based on Intel® Xeon D-1700 Series processors and NVIDIA RTX GPUs compatible with a wide variety of applications, can meet the needs of a vast array of C5ISR use cases including data gathering, analytics/AI, and situational awareness
- Supports popular storage/replication and hyper-convergence infrastructure software including VMware vSAN, NetApp ONTAP edge, Riverbed SteelFusion, Cisco NFVIS, TrueNAS, Microsoft Azure Stack
- Expandable/modular system may be customized with added networking or alternative component technologies
- Based on rugged PacStar 400-Series modules and packaging ideal for fly-away, command post, ground vehicle and aircraft deployment
- Managed by IQ-Core® Network Communications Manager (NCM), providing network and server management capabilities for the tactical communicator

PacStar® Modular Data Center (MDC) is a COTS-based, modular, tactical and expeditionary, rugged data center capable of hosting cloud/storage, AI, and analytics applications.

PacStar MDC provides converged compute/storage/networking at the edge of the network, supporting a diverse array of use cases in disconnected, intermittent and limited (DIL) environments including:

- Hosting situational awareness, mission command and C2 applications
- Supporting SIGINT, HUMINT and IMINT data gathering and analytics workloads
- Supporting emerging IoT and sensor fusion-based applications
- Unifying access to data and applications from enterprise to the tactical edge
- Hosting compute and storage-intensive networking, cybersecurity and VDI solutions
- Accelerating artificial intelligence/machine learning-based and other applications that benefit from GPU support

PacStar MDC uses the PacStar 400-Series modular platform designed to maximize capabilities with the smallest SWaP possible. This allows for high amounts of storage at the edge without sacrificing mobility. The modular nature of PacStar MDC enables programs to optimize the CPU, RAM, storage, and GPU capabilities, depending on the specific use case. PacStar MDC configurations can include a mix of small servers, hyper-convergence modules, and GPU-accelerated servers, along with PacStar 400-Series switching/routing modules, including PacStar 448 10 GigE switch.

PacStar MDC core components have been tested with a wide variety of applications and virtualized network functions and are ideally suited to provide a platform for any cloud infrastructure, management, or storage software compatible with Intel and NVIDIA®-based processors.

PacStar ensures compatibility with major software infrastructure providers, working with and testing solutions to provide extensive options for our customers. PacStar MDC 2-Node vSAN™ Cluster is VMware® Ready - Storage certified.

Features heading

PacStar MDC core components include: PacStar 451 Xeon D-1700 based small servers with a single SSD; PacStar 455 Hyper Convergence Modules with up to 8 RAID-protected SSDs, providing up to 122.88 TB of storage; PacStar NVIDIA 453 and PacStar 454 GPU Accelerated Servers, and PacStar 448 10 GigE switches. These components are typically mounted in the user's choice of PacStar [Packaging Solutions](#).

Components of PacStar MDC can be mixed and matched with the entire family of PacStar 400-Series modules, in thousands of combinations. For ease-of-configuration, PacStar has assembled five popular variants for reference, as shown below.

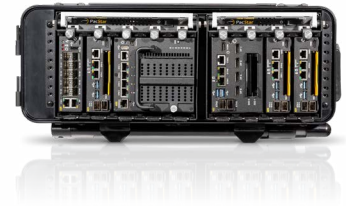
Variant 1

- Compute Components - (8) PacStar 451 Xeon D servers
- CPU Cores (Physical / Logical):
80 / 160
- RAM (GB) - 1024
(128GB per server node)
- NVIDIA GPU CUDA Cores - 0
- SSD Storage (TB) - ~64



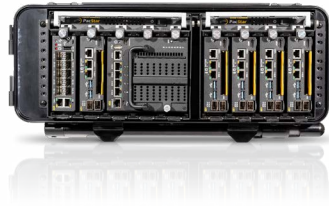
Variant 4

- Compute Components - (3) PacStar 451 Xeon D Servers, (1) PacStar 455 Hyperconvergence Server, (1) PacStar 453 GPU Accelerated Server (1) PacStar 448 10G switch
- CPU Cores (Physical / Logical): 40 / 80
- RAM (GB) - 640 (128GB per server node)
- NVIDIA GPU CUDA Cores - 2048 (A1000)
- SSD Storage (TB) - 272



Variant 2

- Compute Components - 5x PacStar 451 Xeon D servers, (1) PacStar 455 Hyperconvergence Server, and (1) PacStar 448 10G switch
- CPU Cores (Physical / Logical):
50 / 100
- RAM (GB) - 768
- NVIDIA CUDA Cores - 0
- SSD Storage (TB) - ~280



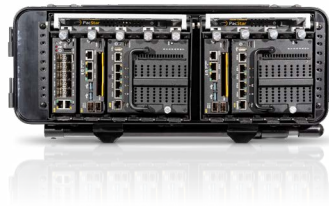
Variant 5

- Compute Components - (1) PacStar 451 Xeon D servers, (1) PacStar 455 Hyperconvergence Server, (1) PacStar 454 GPU Accelerated Server (1) PacStar 448 10G switch
- CPU Cores (Physical / Logical): 30 / 60
- RAM (GB) - 384 (128GB per server node)
- NVIDIA GPU CUDA Cores - 5888 (RTX A4500)
- SSD Storage (TB) - 286



Variant 3

- Compute Components - (5) PacStar 451 Xeon D servers, (1) PacStar 455 Hyperconvergence Server, and (1) PacStar 448 10G switch
- CPU Cores (Physical / Logical): 50 / 100
- RAM (GB) - 768 (128GB per server node)
- NVIDIA GPU CUDA Cores - 0
- SSD Storage (TB) - ~496



PacStar MDC

System Packaging

Key Features

PacStar MDC solutions can integrate into a PacStar Mini-Transit Case, with a payload of up to (9) modules, to provide a transportable infrastructure for housing and operating PacStar 400-Series Smart Chassis and modules.

- Custom designed carbon fiber transit case with wheels and handle (9" x 21" x 14")
- Meets FAA carry-on size restrictions
- Holds multiple Smart Chassis with a maximum (9) module payload - e.g. (1) 4-slot and (1) 5-slot Smart Chassis
- Removable lids for operation of equipment in the transit case
- Smart Chassis are user removable and capable of operating outside the transit case; enabling physical separation as required for classified enclaves
- Overall system weight ~65 lbs.

PacStar MDC is also available in PacStar Rack Mount Frame and other configurations ideal for ground vehicle and airframe mounted use cases including networking-on-the-move.

System Power Specifications

- Total power draw up to 700W max (depending on variant)
- Worldwide AC input, 47 - 63 Hz, 85 V - 264 V
- Wide-range DC input, 10 - 35 V DC
- Includes in integrated UPS with two battery options
- DoD standard 2590 Li-Ion rechargeable battery, 294 watt-hours rated
- NiMH BB-390B/U rechargeable battery, 117 watt-hours rated
- Automatically switches to battery if prime power is interrupted
- User accessible battery compartment
- LED indicators for battery status



Pacstar 400-Series Modules

Physical Key Features

PacStar MDC leverages the PacStar 400-Series modules to architect maximum compute and networking capabilities in smallest rugged form factor. Network switch and router module options support Cisco IOS XE network management, while server modules deliver x86 compatibility with removable high-speed storage.

- Dimensions: 5.3" x 7.1" x 1.6" (PacStar 451, PacStar 448), 5.3" x 7.1" x 3.4" (PacStar 452), 5.3" x 7.1" x 3.5" (PacStar 453), 5.3" x 7.1" x 5.4" (454, 455)
- Weight: ~2.5 lbs. to ~6 lbs. each, depending on model
- Snap-together connectors provide DC pass-through for powering additional PacStar 400-Series products
- Operational temperature -20C to 50C / 60C / 70C, depending on module
- Extensively tested to MIL-STD-810/461 by independent labs. Reports available on request.
- Battery snap-together connectors for 1 or 2 AN/PRC-148 radio batteries; hot swappable with 5+ hours runtime per battery
- Wide-range DC input, 10-35 V DC
- Worldwide AC power input (with adapter cable)
- Power draw: Nominal 20 to 240 watts per module, depending on module.



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