

# GreenBlade

## Appro gB222X



Appro GreenBlade™ System is a modular, affordable, energy-efficient cluster building block solution for small to mid-size HPC deployments. The GreenBlade system is a great alternative to 1U servers for customers looking to consolidate server, storage, network, power and simplified management capabilities while providing performance, reliability, density and upgradeability. It offers modular value-add features with flexible configuration options allowing companies to grow at their own pace and with a much lower TCO.

Configurations are complemented with storage blade expansion options delivering up to 2TB of additional storage per node or GPU expansion blades offering customers affordable mix and match compute and storage blade options in a single solution building block.

The GreenBlade System offers two subrack configuration options:

5000 Series - up to 10 blade servers, a total of 20 processors and 120 processing cores in a 5U form factor  
8000 Series - up to 16 blade servers, a total of 32 processors and 192 processing cores in an 8U form factor

GreenBlade features hot-swappable and redundant cooling fans, power supplies and blade nodes. Its unique blade system design boasts 20% power consumption reduction per node compared to 1U servers, significantly reducing energy bills in the datacenter.

With the new Intel® Xeon® processor 5600 series and certified Intel Cluster Ready, GreenBlade boosts performance optimization by increasing system bandwidth and improving network traffic processing with 8MB shared L3 cache while reducing I/O latency with outstanding power management features. It features two processors with 4 to 6 cores per GreenBlade server delivering choices in energy footprints to match memory and compute intensive workloads and power requirements.

GreenBlade System offers intelligent power control and integrated IPMI 2.0 or Appro BladeDome remote server management. For customers that require a more complete management solution, Appro offers a choice of open source software such as ROCKS+ and MOAB Cluster Management Suite from ClusterCorp. In addition, Appro offers high-speed interconnect options and a choice of Linux or Windows® operating systems.

### Ideal Environment

Appro GreenBlade is suited for small to mid-size deployments in high performance computing datacenters looking for server configuration flexibility, high speed connection options, system reliability, density, power & cooling efficiency, remote management, storage and GPU expansion options – all at an affordable price. Target markets are Government Research, Universities in the public sector as well as Geosciences, Finance and Bioinformatics industries in HPC market segment ready to deploy blade clustering solution.

The Appro GreenBlade subrack system offers two configuration options, a 5000 and 8000 Series.

**5000 Series Subrack**



Front View



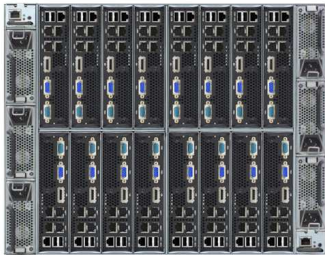
Back View

5000 Series Subrack	
<b>Device Bays/Form Factor</b>	Up to 10 blade nodes in a 5U form factor
<b>Power Supply</b>	Up to four 1625W high-efficiency PSUs in redundant N+1 configuration Maximum power delivery is 4.707kW
<b>Cooling</b>	Up to three cooling fan units (CFU), each CFU has redundant cooling fans
<b>Ethernet I/O</b>	Optional: Up to 2 GbE LAN ports for iSCB management communications
<b>Dimensions</b>	8.75" x 19" x 26" (H x W x D)
<b>Weight</b>	173.6lbs (78.74kg) max
<b>Management</b>	Support for high-speed interconnects Appro Cluster Engine (ACE) management software Windows or Linux OS

**8000 Series Subrack**



Front View

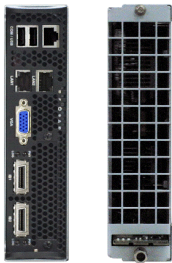


Back View

8000 Series Subrack	
<b>Device Bays/Form Factor</b>	Up to 16 blade nodes in an 8U form factor
<b>Power Supply</b>	Up to six 1625W high-efficiency PSUs in redundant N+1 configuration Maximum power delivery is TBD
<b>Cooling</b>	Up to six cooling fan units (CFU), each CFU has redundant cooling fans
<b>Ethernet I/O</b>	Optional: Up to 2 GbE LAN ports for iSCB management communications
<b>Dimensions</b>	14" x 19" x 26" (H x W x D)
<b>Weight</b>	304.9lbs (138.6kg)
<b>Management</b>	Support for high-speed interconnects Appro Cluster Engine (ACE) management software Windows or Linux OS

### Compute Node Features and Benefits

- ✦ Delivers 2 Intel Xeon CPUs with 12 processing cores in one single compute node
- ✦ Up to 96GB in 12 DIMM sockets across six memory channels
- ✦ Supports a variety of configuration options
- ✦ IPMI 2.0 compliant and a choice for open source cluster management options
- ✦ Choice of Linux or Windows operating systems
- ✦ A variety of Support and Service options
- ✦ Offers a cost-effective, flexible and scalable computational capacity
- ✦ Improved reliability, availability and serviceability with hot-swappable and redundant fans, power supplies



Appro gB222X - Blade Server	
<b>Processor</b>	Intel Xeon processor 5600 series
<b>Processor Capacity</b>	2; Choice of 4 or 6 cores per processor
<b>Chipset</b>	Intel 5520 chipset
<b>System Bus</b>	Intel QuickPath Interconnect (QP)
<b>Memory Type</b>	800/1066/1333MT/s ECC RDIMM DDR3 memory
<b>Memory Capacity</b>	Up to 96GB in 12 DIMMs across 6 memory channels (3 channels per processor)
<b>Disk Controller</b>	Intel I/O controller hub (ICH10R)
<b>Drive Bays</b>	Two fixed 2.5" SATA HDDs
<b>Storage Capacity</b>	1.0TB SATA (max)
<b>Storage Expansion Option</b>	Storage expansion blade with 4.0TB per compute blade (SXB100 & SXB200)
<b>GPU Expansion Option</b>	GPU expansion blade with up to 896 GPU cores per GPU blade (GXB100)
<b>Graphics</b>	VGA graphics integrated on the BMC
<b>Network Interface</b>	On-board dual-port Ethernet controller (Optional QDR Infiniband with QSFP connector)
<b>Input/Output</b>	Two USB 2.0 compliant and RJ45 LAN ports, VGA, serial, optional QSFP (IB)
<b>Expansion Slots</b>	One PCIe x16 riser slot capable of supporting a low-profile add-in card
<b>Weight</b>	11.5 lbs (5.2kg)
<b>Dimensions (HxWxD)</b>	5" x 1.75" x 25" (127 x 445 x 635 mm)
<b>Temperature</b>	Operating: 10 - 35°C Storage: -40 - 70°C
<b>Remote Server Mgmt</b>	IPMI 2.0 integrated on the BMC

Support: Two years standard warranty. On-site maintenance and installation service options are available.  
Rapid Exchange Service Options: Two years warranty (next day parts replacement exchange).

The Appro GreenBlade system delivers performance, energy and cooling efficiency with a variety of blade server configurations complemented with storage or GPU blade expansions offering customers flexibility and choice to match their HPC needs.

## GPU Expansion Blade Node

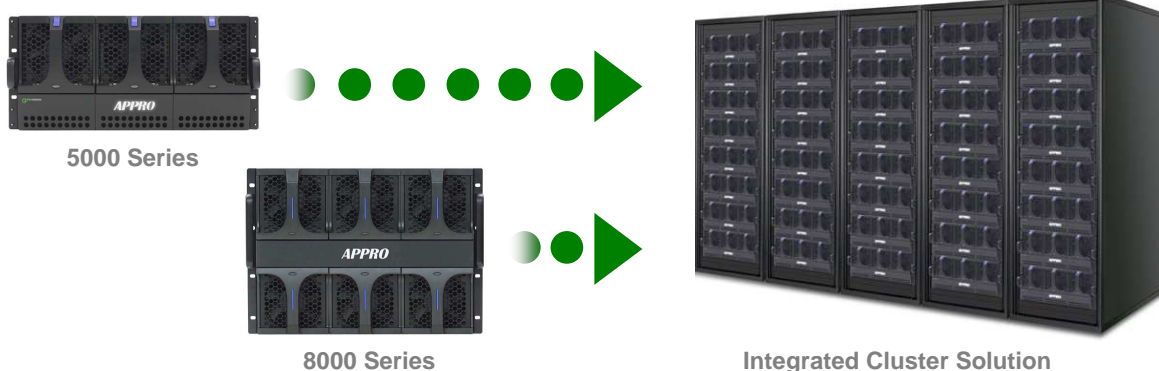
GBX100	
GPU	NVIDIA® Tesla™ M2050
GPU Capacity	Two
GPU Cores	Up to 896 cores per expansion blade
Memory Capacity	Up to 6GB ECC GDDR5 memory
Dimensions	5"H x 1.75"W x 25"D
Weight	~14 lbs (~6.4kg)

## Storage Expansion Blade Node

	SXB100	SXB200
Configuration	HDDs are hot-swappable & connected to compute node via 4-port RAID card	HDDs are hot-swappable & connected to compute node via 8-port RAID card
Storage Capacity	Up to 2.0TB SATA/SAS HDDs	Up to 4.0TB SATA/SAS HDDs
RAID Level	RAID 0,1,5,6 and 10	RAID 0,1,5,6 and 10
Dimensions	5"H x 1.75"W x 25"D	5"H x 3.5"W x 25"D
Weight	~14 lbs (~6.4kg)	~28 lbs (~12kg)

## Integrated Cluster Solutions Based on the Appro GreenBlade System

The Appro GreenBlade System is a building block solution that offers the ability to start small and scale up to mid-sized HPC and high density clusters.



## Appro Cluster Solution based on GreenBlade - US List Price for Standard Configuration



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