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# ECO-Sys™

\* High-Performance \* Low-Energy \*  
**Modular Scalable Server Arrays**



## LEAD DOG TECHNOLOGIES

Lead Dog Technologies, LLC, provides very high density supercomputers and storage subsystems. We now offer ultra low-energy modular Building Blocks™ for servers, storage, power and cooling systems combined with information technology services to commercial and government agencies. The **ECO-Sys™** modular Building Block™ design allows you to scale server blocks from a “One-half U” 80 GigaFLOP server up to a 6,720 GigaFLOP single-rack super computer server. **ECO-Sys™** independent Building Block™ modules come in **processor blocks (ECO-Serv™)**, **storage blocks (ECO-Stor™)**, **power blocks (ECO-Watt™)**, **cooling blocks (ECO-Therm™)** and **networking modules (ECO-Net™)**. Most versions operate in either a rack-mounted data-center configuration or in a space-constrained, ruggedized mobile configuration. HDD **Storage Blocks™** range from 6 TB to 16 TB, are available also in Solid State Disk (SSD) versions. **ECO-Serv™**, **ECO-Stor™** and **ECO-Watt™** modules combine with **ECO-Therm™** cooling blocks for ultimate energy savings, performance, reliability, availability, serviceability and life-cycle extension.

Combined, Lead Dog’s **ECO-Sys™** server systems provide:

- 90% less electricity consumption than conventional systems
- 80% less facility cooling energy required
- 8-16 times smaller footprint than other servers
- Purchase price payback in 4 to 6 months
- Dynamic Power Management to optimize energy efficiency
- Small, lightweight (8 lbs), mobile

## ECO-Sys™ – HIGH-PERFORMANCE, LOW-ENERGY COMPUTING SYSTEMS

Controlling data center costs and complexity is a major focus of any large IT organization. The Gartner Group estimates that the average data center has a \$5 million power bill and in 2008 only 50 percent of current data centers have sufficient power and cooling capacity to meet the demands of high-density equipment. The Green Machines may reduce data center power requirements by 75 to 90 percent and considerably cut cooling and complexity costs paying for themselves within 2 to 3 months of operation.

Energy costs are skyrocketing, power companies can’t keep up with demand and greenhouse gas emissions are becoming more politically visible. The “Green” data center is the hot-buzz of the Government and IT community. Presidential Executive Order 13423 mandates energy reductions for agencies to reduce greenhouse gas emissions 3 percent annually or 30 percent by the end of fiscal 2015. Green Machines provide immediate compliance to PEO 13423.

## AN ENTIRE DATA CENTER IN A BOX

**ECO-Sys™** machines pack integrated Building Block™ processors, storage, cooling and networking providing extreme scalability with rapid, easy deployment and flexibility. Either as an extension of your data center or a full replacement of multiple servers, Green Machines Building Block™ modular design allows for independent upgrades, growth and expandability for increased computing capabilities while providing reduced energy, hardware and operational costs. **ECO-Serv™** machines may be cascaded in standard 19 inch racks, providing an unlimited scalable computing capability.

The **ECO-Serv™** models range from the stand-alone entry-level ESV-1 providing 80 GFLOPs of computational horsepower, up to the ESV-84 with 6,720 GFLOPs of muscle. **ECO-Serv™** servers combined with **ECO-Stor™** systems provide from 10 TB to more than 1,000 TB of high-speed disk storage and 40 Gbps of network bandwidth, within a single chassis.

## ECO-Sys™ OVERVIEW

- **Scalable Building Blocks™** from the 80 GigaFLOP “One-half U” Block™ to 6,720 GigaFLOPs in a standard 19 inch rack. – Racks may be clustered incrementally for an unlimited amount of computing capability. For example, 3 **ECO-Serv™** model EVS-84 systems racks provide 19.65 TeraFLOPs of compute power. Expandable to 2,688 GB RAM.

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- **Dynamic Power Management™ – ECO-Watt™** power block modules provide energy monitoring with rules-driven Dynamic Power On/Off for various server loads, times of the day or energy cost changes—for tremendous energy savings!
- **Eliminates or reduces need for computer room air conditioning (HVAC) – ECO-Therm™** modules move heat outside of your data center, thereby reducing or eliminating air conditioning requirements—for ultimate energy savings!
- **Low initial cost, low operational cost** – Reduced hardware cost, space, power, cooling, software licenses and administration. Purchase price is typically recovered in less than 6 months of operation.
- **Minimal System Administration – ECO-Sys™** independent Building Block™ modules (processors, storage, power, cooling and networking) are low maintenance and may be independently upgraded to maximize your investment.
- **FPGA Support** – For the ultimate in high-speed scientific computing, the EVS series servers provide Xilinx Field Programmable Gate Array (FPGA) options.
- **Integrated Storage Capability from 8 TB to 768 TB** – Up to 768 TB within a chassis, unlimited expandability with **ECO-Stor™** NAS or SAN systems. Storage Blocks™ available as HDD, Solid State Drive (SSD) or Hybrid options.

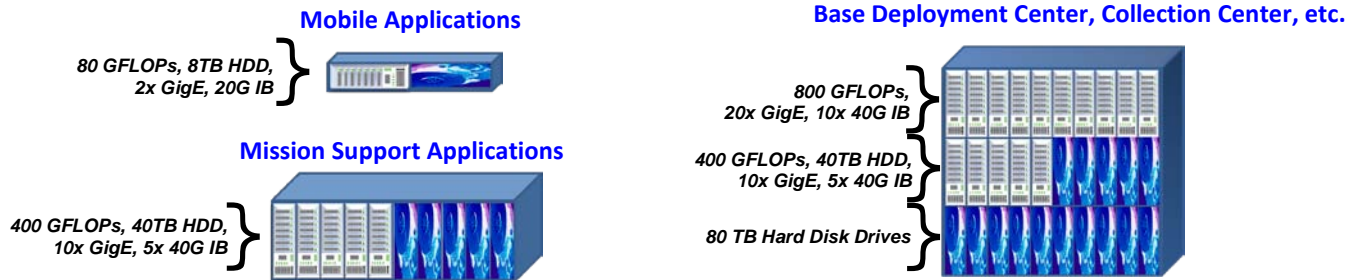
**COLOR BY SYSTEM CLASSIFICATION, AVOID SECURITY VIOLATIONS**

Choose colors or custom graphics to organize systems by security classification to prevent accidental security compromises and security violations, e.g. Green for Unclassified, etc.



**OTHER EXAMPLE CONFIGURATIONS**

Example configurations of ECO-Sys machines are shown below:



**Data Center, Ground Station, Analysis Center, HPC Center**

