
lpoco
low power systems

Company Introduction

- Started in 2010
  - We were looking for servers that get the job done, but:
    - operate at a fraction of the cost of conventional servers
    - are silent, or close to it
    - generate a fraction of the heat
    - have performance and capacity at a decent price
  - We couldn't find any, so we started building our own
- In 2011, we released
  - LP-2180 microserver family, LP-2230/LP-4240 medium duty and LP-6200 heavy duty server families

80% less power consumption, half the size, silent, competitive price

Customers


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How & Why

By utilizing two lower cost, lower power, smaller physical footprint servers in the place of one large, expensive, “fire-spewing” conventional server, we:

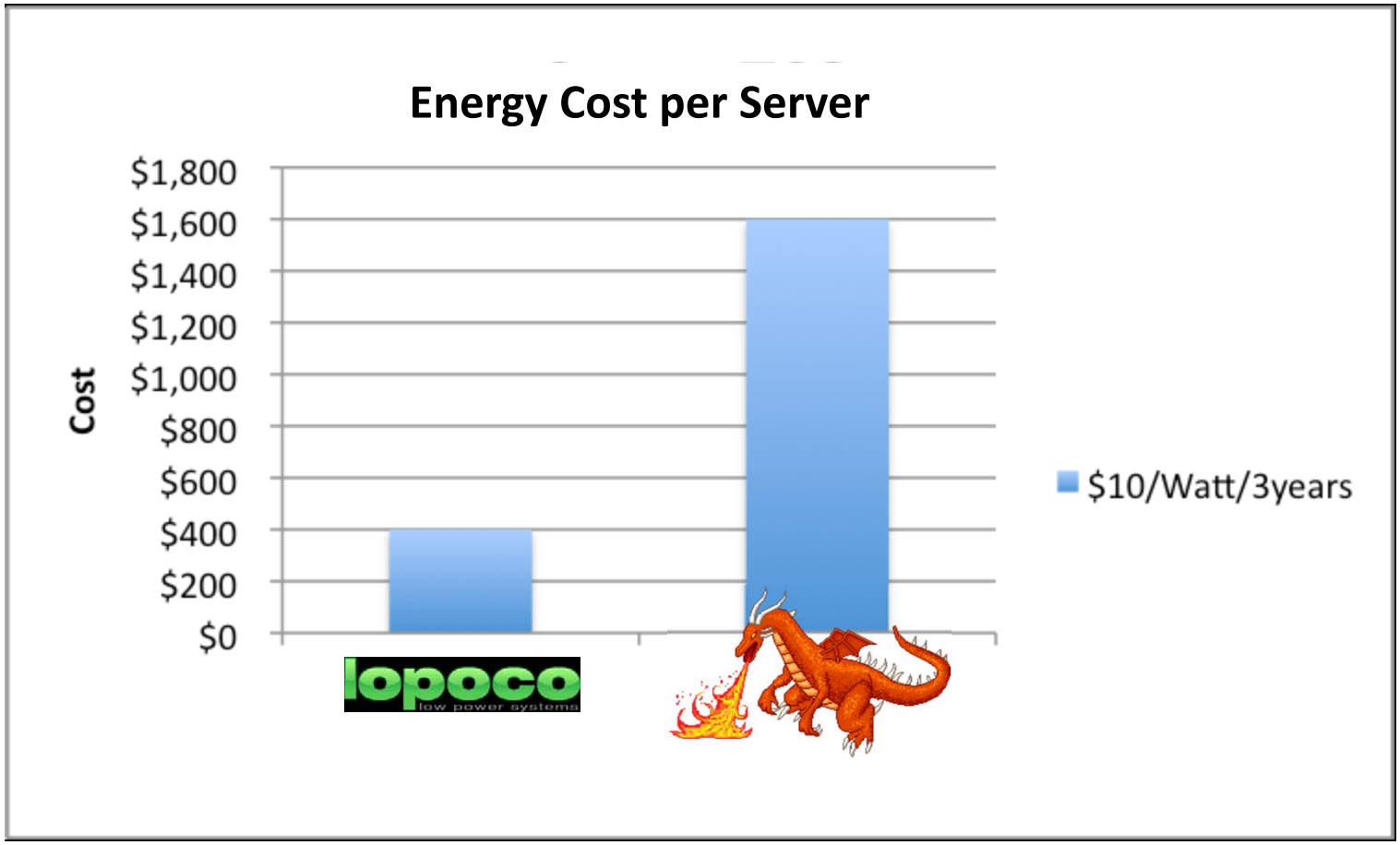
- **Save Energy**
  - Green computing is still largely talk. Lopoco brings real green computing solutions in the form of right-sized server platforms that conserve power usage, especially when idle (over 90% of the time). 80% less power consumption.
- **Save Space**
  - Server farms of the same throughput can be built in less physical space, leaving room to grow without replacing or expanding, substantially increasing ROI
- **Save Money**
  - Reducing the power consumption of your servers means you can also reduce your HVAC costs an equal or greater amount, DRAMATICALLY reducing your electric bill
- **Improve Efficiency**
  - Lower energy means lower temperatures which results in longer lifetimes for fans & disk drives. Higher uptimes are achieved. More granularity means ??

Example savings – 12 Rack Colo

Specifications	Typical 12 rack colo customer with strong traffic	Lopoco	Savings
Racks	**12** 12.5kW racks (2 x 30A, 208V)	**8** 4.4kW racks (1 x 40A, 110V)	**Save Space**
Number of servers per rack	**20** (2U doubles)	**42** (1U doubles)	
Total number of servers	**240**	**336**	**More Granularity**
Storage per server	**12 TB**	**12 TB**	
Total energy kW per month	**237,600**	**55,757**	**Save Energy** & reduce equip temperature
Total energy cost per month	**$24,000**	**$8,000**	
Total energy cost per year	**$288,000**	**$96,000**	**Save Money** $192,000 per year

Save $192,000 annually with Lopoco servers

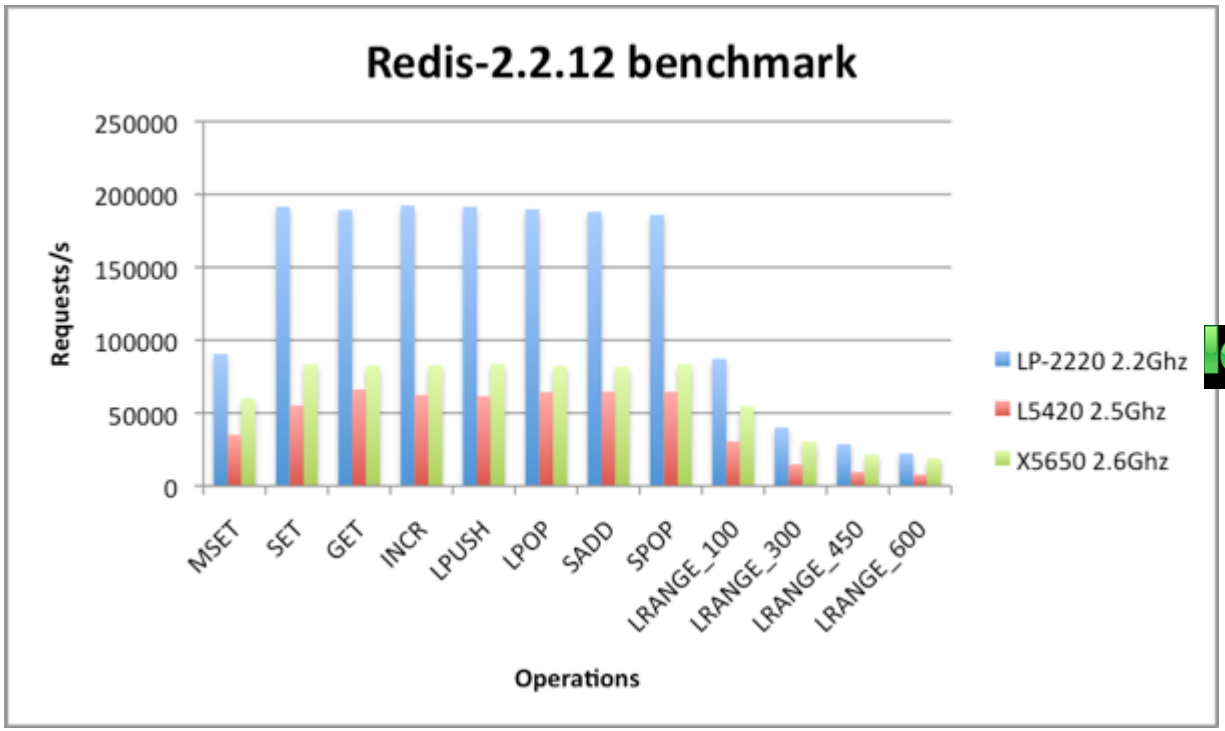
Per Server Savings



Save $1200 per server with Lopoco

Benchmarking

- Lopoco LP-2220 vs. servers with common Intel processors



Similar or higher throughput over all operations

Server Solutions – 1U

LP-2180 Microservers	LP-2230/LP-4240 Medium Weight	LP-6200 Heavy Weight
Completely fanless; short case depths; very low TDP; excellent appliance: firewall; router; load balancer; email; file server; cluster-in-a-closet	2 or 4 core journyman with excellent idle power usage as well as constrained TDP	Six core workhorse for heavy web framework applications (Tomcat, Ruby), high concurrency, expandability
• 1.8 GHz, dual core, quad thread • 4 GiB DDR3 • 2 Intel GB LAN • cases range from 2 internal to 8 hot plug disks • 11.5" deep	• 2/4 or 4/8 core/thread • up to 32 GiB DDR3 ECC • 2 - 6 Intel LAN • up to 10 hot plug disks • 11.5" deep	• 12 logical cores, 2.0 GHz • up to 256 GiB DDR3 ECC • 2 - 8 Intel LAN • up to 10 hot plug disks • 20" deep
• 20 watts idle / 30 watts TDP	• 21 watts idle / 55 watts TDP	• 35 watts idle / 110 watts TDP

Storage Server Solutions – 2U

LPS-1624	LPS-2472
Large capacity, low power footprint; multiple databases; backup services; video file storage; medium load file sharing	Extra large capacity, up to 72 TB, large databases; high load file sharing; streaming video; backend photo/video server
• up to 4 int. SSDs for caching • 16 or 24 hot plug drives, 48 TB max • 2 - 6 Intel LAN • up to 32 GB • 2/4 or 4/8 core/thr	• Up to six int. SSDs for caching • 24 to 72 hot plug drives, 144 TB max • up to 6 Intel LAN • 12 logical cores, 2.0 GHz • up to 256 GB memory • up to 4 - 24 drive enclosures can be added
• 30 watts idle / 105 watts TDP	• 45 watts idle / 120 watts TDP

Professional Services

- Full suite of professional services for the datacenter:
  - High level design
  - Installation/construction
  - Software and network configuration
  - Testing & tuning
  - Monitoring services
  - Openstack implementation
  - Hadoop installation & configuration
  - Firewall configuration
  - Remote access
  - Router & networking configuration
  - Configuration maintenance
- Custom software pre-installation and configuration
- Custom programming and debugging, profiling and bottleneck analysis
- Power consumption auditing for State and Federal Tax incentives and PG&E incentives
- Capacity planning

Software

ONE-STOP SHOP

- Pre-installation of favorite Linux or Unix distribution
  - Debian and Ubuntu are our specialties
- Disk partitioning and raid configuration upon request
- Installation of customer owned and licensed software:
  - Redhat, Centos, Custom
  - Windows

Support & Warranty

- One year limited warranty against hardware defects or failures
- Three year additional support contract available

But I use Dell (or HP/IBM/Cisco) …

- Lopoco uses the same components & manufacturing as they do
  - Standard Intel Xeon processors
  - Standard Seagate and Western Digital HDDs
  - Global, well-known Contract Manufacturers
- Lopoco servers are fully compatible operating with Dell, HP, IBM or Cisco servers
- Lopoco servers are reliable
  - In-use at customers since 2011; no field failures
- Lopoco will install the servers to ensure you're running smoothly

and every Data Center needs to be Green & Save Money

No-Risk Trial

- Buy a small number of Lopoco servers
- Lopoco will install the servers & get them running in your system, free of charge
- During the trial, Lopoco will monitor performance & energy usage & compare to your existing servers
- At the end of the trial, we'll come in and show you the results
- Money back guarantee
  - If the servers don't perform at any time during the trial, we'll take them back and refund your money
  - If we don't save you energy, then you can return servers for a full refund of your money

Summary

- Efficient servers
  - 80% less power usage, ½ the size, silent, competitive price

- Take our No-Risk trial …

… and be on your way to:

1) **Saving Energy**
2) **Saving Space**
3) **Saving Money**
4) **Improving Efficiency**

APPENDIX

Example savings

OR USE THIS

Specifications	Typical 12 rack colo customer with strong traffic	Lopoco rack save $192,000 yearly*
Racks	12 12.5kW racks (2 x 30A, 208V)	8 4.4kW racks (1 x 40A, 110V)
Number of servers	20 (2U doubles)	42 (1U singles)
Percentage of rack empty	50%	0%
Total number of servers	240	336
Storage per server	12 TB	12 TB
Total cost per month	$24,000	$8,000 Saving $16,000 per month

Save with Lopoco servers

Why

- Green
  - Green computing, for most of the industry, is still largely talk. Lopoco brings real green computing solutions to the table in the form of right-sized server platforms that conserve power usage, especially when idle (over 90% of the time)
- TCO
  - Reducing the power consumption of your servers means you can not only reduct your electric bill, but also reduce your HVAC costs an equal or greater amount.
- Availability
  - By utilizing two or three lower cost, lower power, smaller physical footprint servers in the place of one large, expensive, fire-spewing conventional server, higher uptimes can be achieved at a lower price point and lower overall TCO.
- ROI
  - Server farms of the same throughput can be built in less physical space, leaving room to grow without replacing, substantially increasing ROI.