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low power systems

andy@lopoco.com

Team

- **Andrew Sharp**, **CEO and co-founder.**
Engineer and Manager in the server business
since the mid-1980s

- **Peter Theunis**, **Co-founder and CTO.**
> 10 years of experience in large scale systems deployments

- **Jack Mills**, **VP of Engineering.** (Advisor)
Architect of the Pentium and Itanium processors at Intel;
former Director of advanced processor research at Intel

- **Mark Brine**, **CFO.** (Advisor, Board member)
Director of Finance at Cloudera.

- **Kripa Nithya**, **VP Marketing.**
Seasoned marketer specializing in bringing
innovative technologies to market.

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Problem

WASTEFUL!

Conventional servers waste **more than 1/2** the power they consume

- 100s of millions of $$ for large data centers

- Not good for SMBs either

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Solution

Lopoco Ultra-efficient servers

1/4 the power

- \>50% Reduction in Data center OpEx

- **Lopoco** servers

  Cool and quiet => more reliable

  Less power => greater density

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Irresistible Value Proposition

Savings per year on just electricity costs 12c/kWH

Servers/yr	100	1,000	50,000
Conventional	$42,500	$425,000	$21,250,000
Lopoco	$10,500	$105,000	$5,250,000
Savings	**$32,000**	**$320,000**	**$16,000,000**

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Irresistible Value Proposition

Total Savings - Large Data Center 3 year estimated

40k Servers	$50/watt	$75/watt
Conventional	$350,000,000	$525,000,000
Lopoco	$100,000,000	$150,000,000
Savings	**$250,000,000**	**$375,000,000**

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Traction

- Revenue to date: >$110k

- over 70 systems shipped

- 75% repeat customer rate

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PAR⁴® - Energy Efficiency Certification

Sample Card Number: PA20130905220238001
Date: 2013-09-05

Machine Specification:

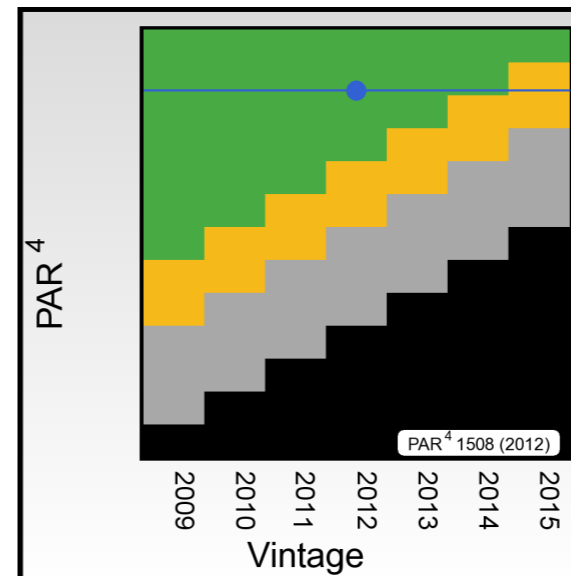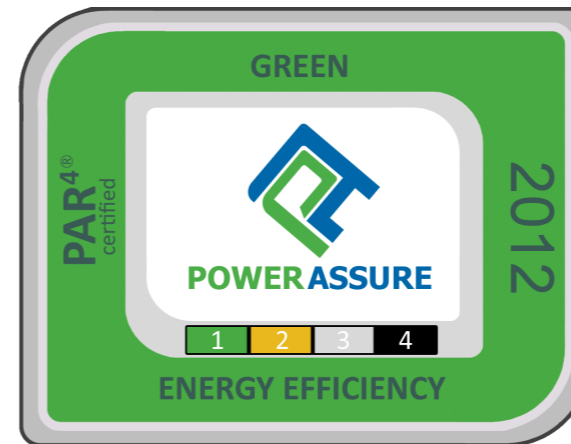**Lopoco LP-4250 LP-4250-6H**
1 intel Xeon E3-1265L V2 @2.5GHz, 4 cores
2 Kingston 9965525-018.A00LF 4GB @1333MHz
6 WDC WD10JPVT-00A SATA 1000GB @5400RPM
1 generic low-power @200W

Results:

Vintage PAR⁴:	1,508
Vintage Year:	2012
PAR⁴ Rating:	GREEN
Absolute PAR⁴	2,108
3 Year Cost (Est):	$91.46

Power Consumption Details				
OFF	**IDLE**	**LOADED**	**PEAK**	**BOOT TIME**
7.489W	26.61W	67.57W	67.57W	84s
121.7V	121.8V	121.9V	121.9V	
0.184A	0.286A	0.583A	0.583A	
0.3PF	0.8PF	0.9PF	0.9PF	

PAR[4]® - Energy Efficiency Certification

Sample Card Number: PA20130905220238001
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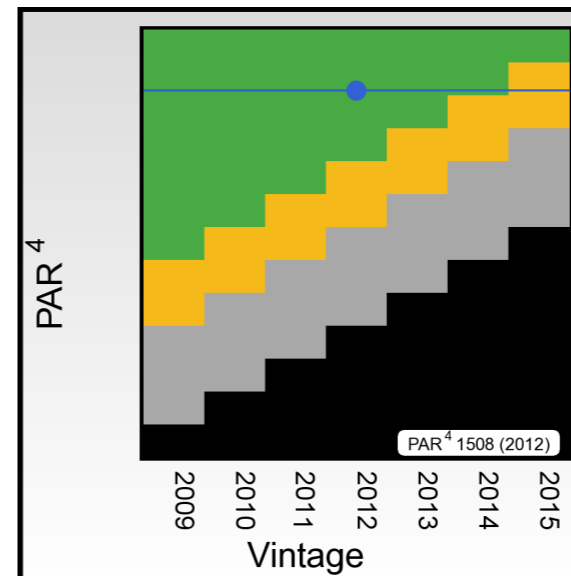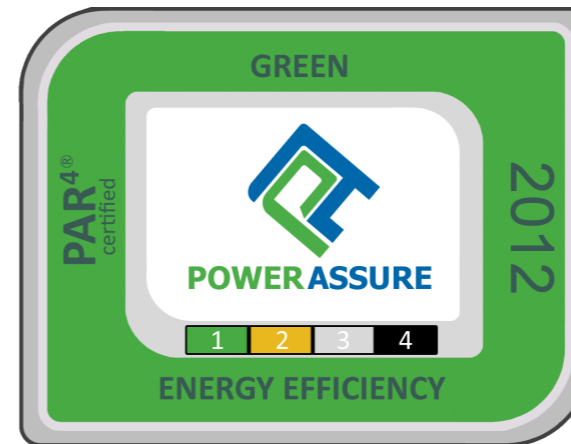
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PAR[4] 1508 (2012)

Customers

Customer Tweets

Competition

SeaMicro (nee AMD), Moonshot, Calxeda, Servergy

Products customers don't want:

- Proprietary hardware

- Custom silicon

- Not efficient OR low power!

- Weird processors, weird form factors, just weird

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	~~SeaMicro~~	OCP	~~Calxeda~~	Servergy	Moon	**Lopoco**
Low Power						✓
Efficiency Gain	20%	10%	?	?	?	**75%**
X86	✓	✓			✓	✓
No Custom Silicon		✓				✓
No Custom electronics						✓
64-bit	✓	✓		✓	✓	✓
VM acceleration	✓	✓				✓
Standard Form Factors						✓
ASP	$1m	$20k	$50k	?	$25k	**$2.5k**
Customers	✓	✓	?		?	✓
Shipping	✓	✓	✓	✓	✓	✓
Ultra-high density			✓		✓	

Moon = HP Moonshot
OCP = Open Compute Project

Exit

- Highly disruptive product: acquisition most likely

- $300mm revenue/yr in 3 years = $3bb acquisition valuation
  1000 servers ~= $2.5m
  Over 100 NA customers buy in quantities of 1000/month

- Similars:

  - $3bb Arista Networks, purchased 2015 by HP

  - $2bb Cobalt Systems, purchased by Sun in 2000

  - $335mm Seamicro, purchased by AMD in March

  - $1bb Wyse Technology (low power desktops) purchased by Dell in August 2012

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