





Save Energy, Save Money, Save the Environment



Enterprise Energy Management

-  Quickly identify energy waste
-  Reduce energy usage and costs
-  Lower carbon emissions
-  Agentless, network-based architecture means no costly agents



JouleX Background

- Founded in March 2009, launched company April 2010
 - Headquarters in Atlanta, GA
 - Development lab in Kassel, Germany
 - Offices in Munich, Paris, Tokyo, Shanghai, New York, Cincinnati, Atlanta, Wash DC...
- Founders have deep networking and security background – founders of Internet Security Systems (ISS)
- Privately held, venture backed.

... TechOperators ...

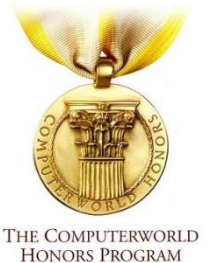


SIGMA+PARTNERS



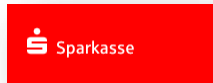
- Flagship product: JouleX Energy Manager (JEM) v3.0, patent-pending technology

- Industry awards and recognition:



JouleX Customers

- Growing global 2000 customer base



DAIMLER



EQUIFAX



Coca-Cola

NHS



- Serving ~30% of the global 500
- 700 joint Cisco customers
- Available on Cisco GPL (Campus Networks)
- OEMed by Cisco Connected Energy Services (Data Center)

Accolades from Market Analysts



- **Verdantix:** Best in Class scores in its *Green Quadrant® Energy Management Software* report, December 2011.
- “JouleX, with its Modbus interface, IP connected device integration, and IT energy domain provides customers such as Deutsche Telekom, Orange and Sparkasse with asset level control to manage their energy consumption.” Verdantix



- **Gartner:** *Cool Vendors in Green IT and Sustainability* report, April 2011.
- “With such an ambitious range of functionality and equipment, JouleX is agentless. But by rather cleverly developing interfaces it calls ‘asset connectors,’ the vendor is able to make use of existing management platforms to leverage additional functionality that the enterprise may have.” Gartner

Several Drivers for Explosive Growth in the Energy Management Market



Environment



Data Center



Regulatory Requirements



Escalating Energy Prices



Competitive Pressures



Corporate Citizenship

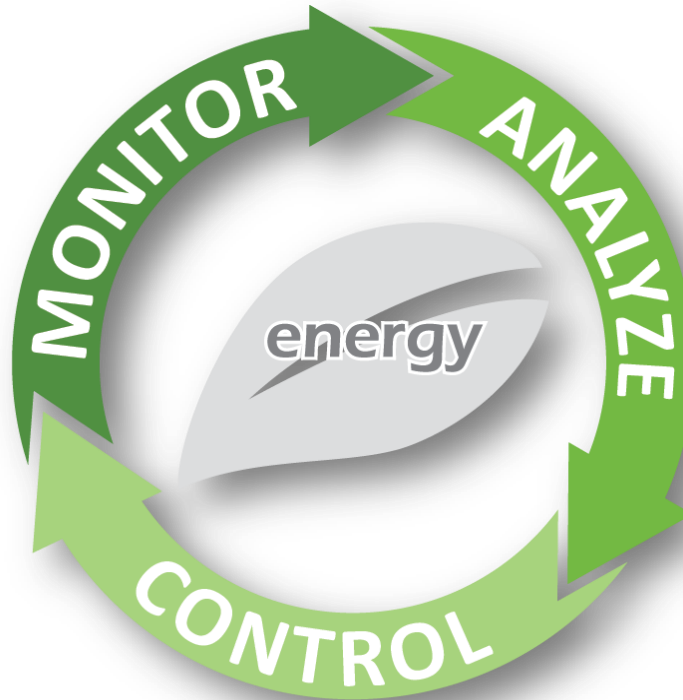
Identifying Energy Waste



What Do We Do?

Measure Energy Consumption and Utilization of ALL network-connected devices and systems:

- Distributed Office Networks – switches, PCs, Macs, VoIP phones, access points, copiers, printers, etc.
- Data Centers – Physical and Virtual Servers, routers, switches, storage, etc.
- Facilities – HVAC, lighting, PDU, CRACs, etc.



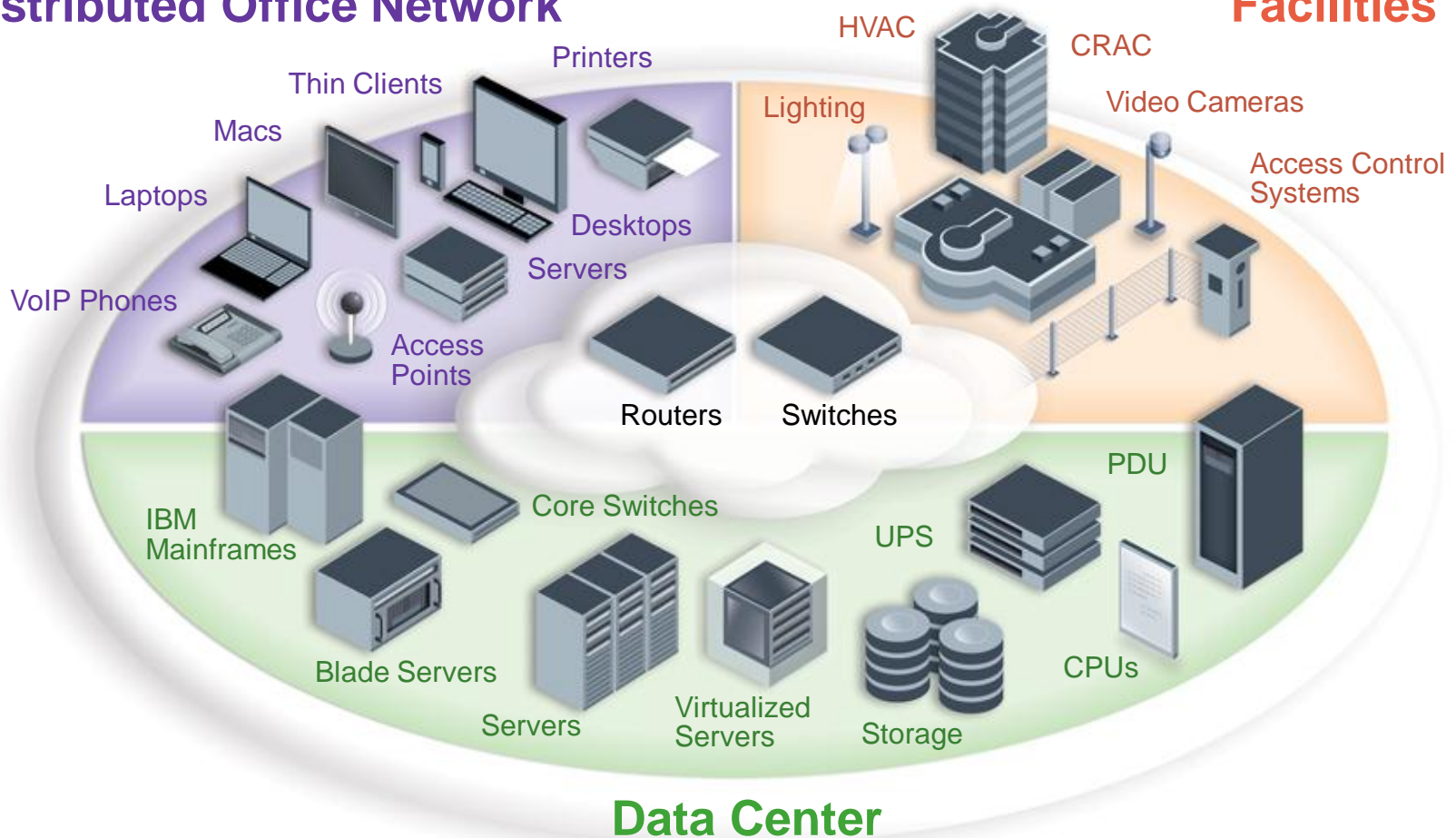
Energy Intelligence:

- Energy Cost
 - Energy Usage
 - Energy Reduction
 - Carbon Emissions
 - Date/Time
 - Location
 - Cost Center
 - Energy Use Simulation
 - ROI Modeling
-
- Event Based Policy
 - Rule Based Policy
 - Time Based Policy
 - Device Utilization
 - Load Adaptive™ Computing

All Networked Devices and Systems

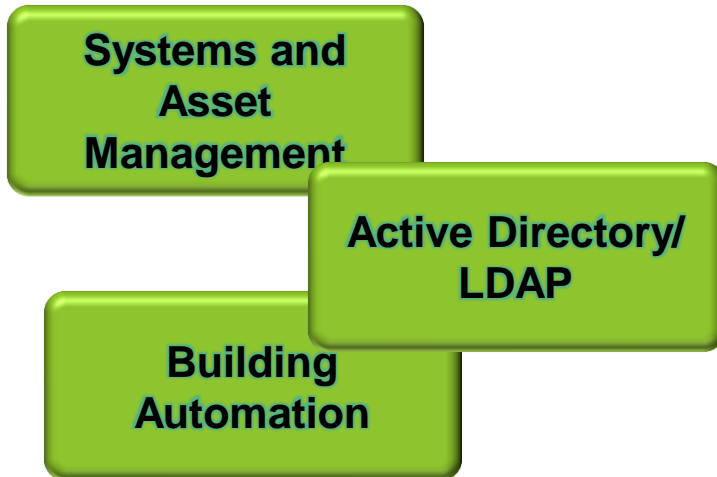
Distributed Office Network

Facilities



Quick Time To Value

Asset Connectors

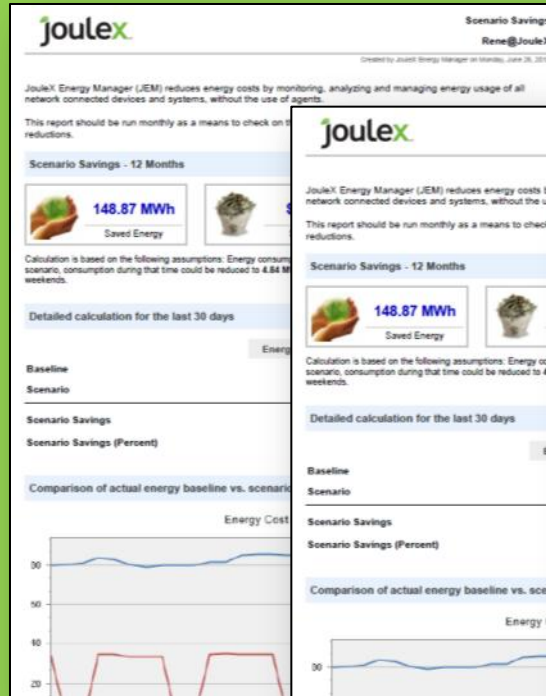


How Much Could I Possibly Save

“What-If” Scenarios

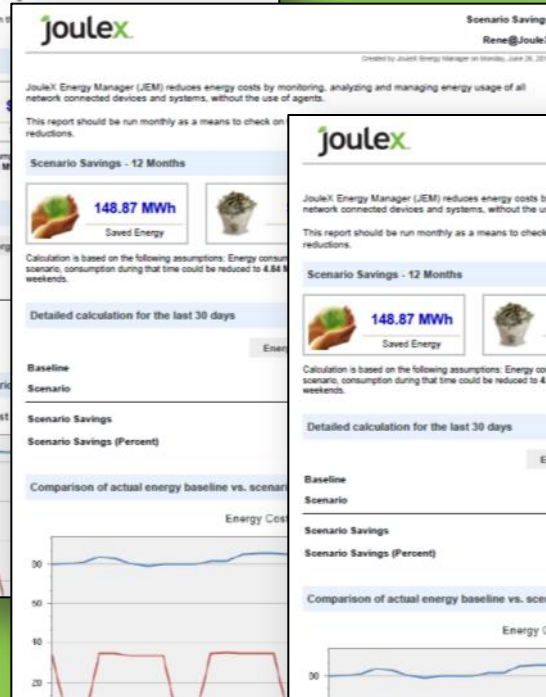


Scenario #1



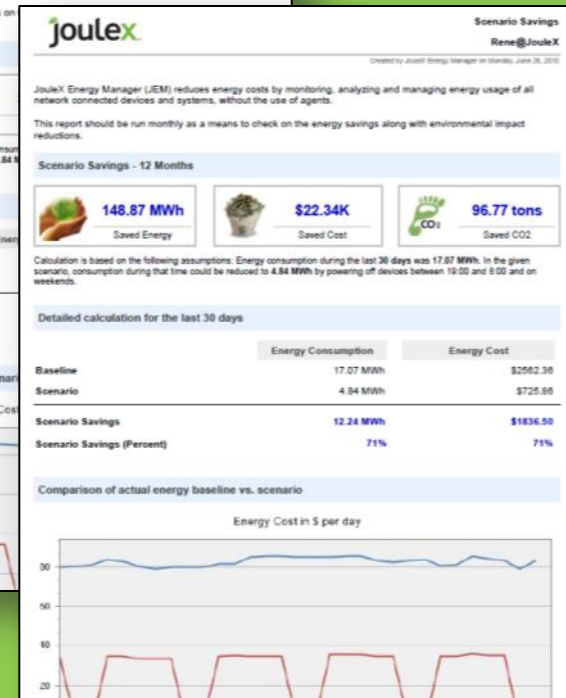
Save \$X

Scenario #2



Save \$Y

Scenario #3



Save \$Z

SANDBOX

Policies

Time-Based



Facilities:
Set Points

Distributed Office:
PC Power Mgmt
Wireless Access Point
VoIP Handset

Event-Based



Demand Response:
Respond to Energy
events with policies

Systems
Management:
Integration with
Systems
Management tools
and user
authentication events

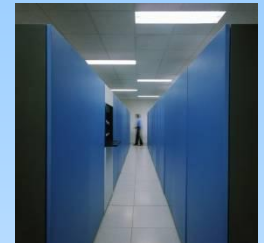
Location-Based



Using GPS Smart
Phone and Badge
Management

Integrates with:
Facilities
PC Power Mgmt
VoIP Handsets

Data Center



Load Adaptive Networking
Scale switch performance
based upon network load

Enable EEE in the DC





Load Adaptive Computing
Scale server performance
based upon utilization

Maximize VM Energy
Efficiency



JouleX Operating Savings: Data Center

Per 1000 Data Center Servers

Direct Costs

	Annual Energy Cost by Server	JEM Annual Savings	JEM Annual Savings per Server	Total Annual Savings
10%  Retire Dead Servers	\$400	100%	\$400	\$40,000
5%  Upgrade Servers	\$400	25%	\$100	\$5,000
20%  Virtualize Servers 10:1	\$400	85%	\$400	\$68,000
30%  Power Cap Servers	\$400	16%	\$64	\$19,200

Indirect Costs

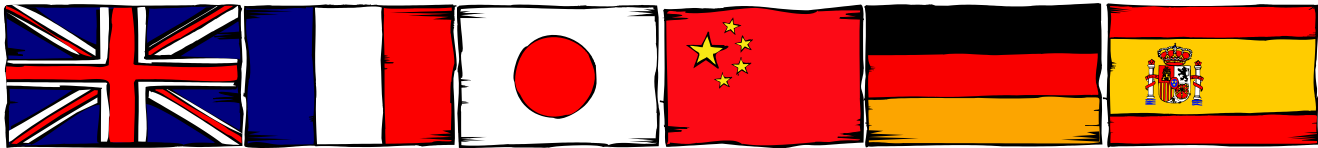
	Annual Indirect Costs by Server	Annual Savings	Annual Savings per Server	Total Annual Savings
10%  Retire Dead Servers (Licenses, Support & Maint)	\$500	100%	\$500	\$50,000
1.5 PUE  Cooling Savings	\$400	100%	\$400	\$198,300

Results in up to \$380K in Savings Annually per 1000 servers

*Estimates assume \$.12/kWh. 10% or 100 retired servers save \$400 each. 5% or 50 servers are upgraded and save \$100 each per year because new servers are more energy efficient. 20% or 200 servers are virtualized at a ratio of 10:1. Therefore, 200 servers are replaced with 20 servers costing \$600 in energy/server. 30% of servers or 300 can be power capped 8 hrs/day consuming 50% less power/cost for those hours, saving 16%. Indirect savings costs/server are from software licenses, support and maintenance. Cooling savings is based on 1.5 PUE.

Reporting

Multilingual Reports



joulex Welcome admin Administrator LOGOUT

2012/01/11 15:52:07 Auto-Refresh ON

Home Policies Devices Local Reports Centralized Reports Apps Settings Help

Settings

- Import Devices
- Protected Devices
- Location Mappings
- Energy Prices
- Timezones
- TruJoule
- Software Updates
- Internet Connection/Proxy
- Software License
- System/Networking
- File Management
- E-Mail Notifications
- Centralized Reporting
- Export Devices
- User Management and Roles
- My Settings/Password**

Change your login password for JEM Management Console and customize your desktop.

Change Password

New Password:

Repeat Password:

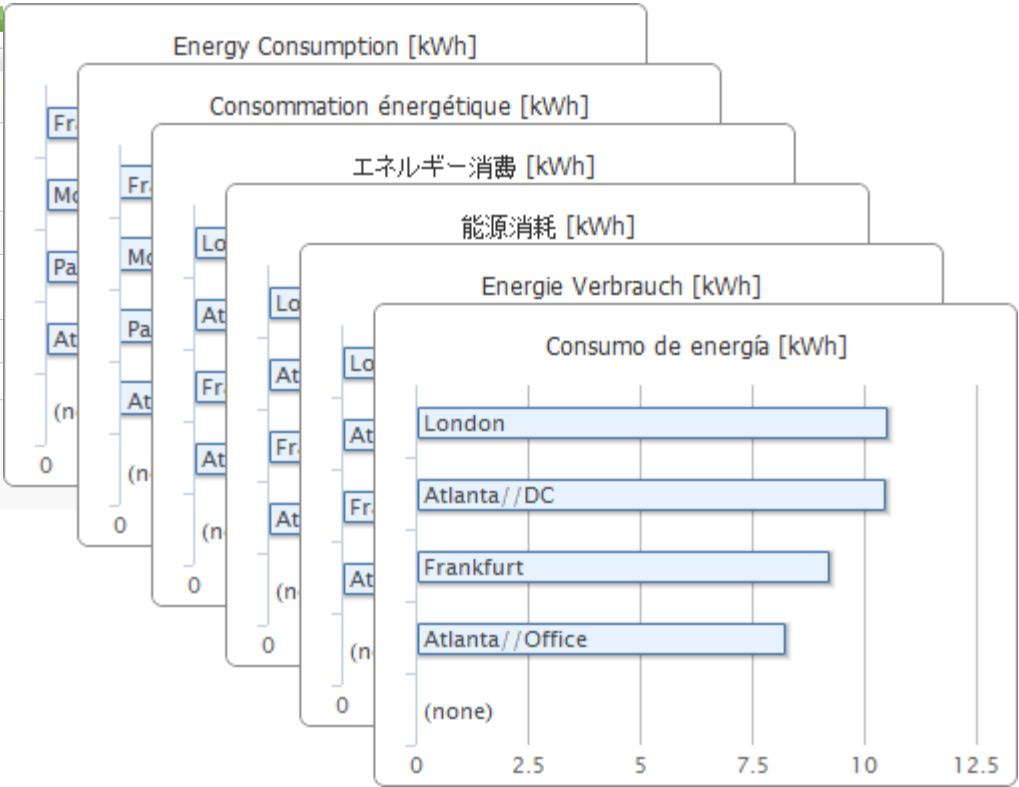
Display Settings

Display Theme:

Use Wide Screen:

Language Settings

Reports: **English**




Reporting

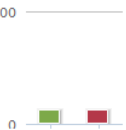
New Device Model Reports

Model Analysis

On / Off

	In Status On	In Status Off
	from 2011/12/02 until 2012/01/05 49.79 %	from 2011/12/02 until 2012/01/05 50.21 %

Utilization

	Average	Max
	from 2011/12/02 until 2012/01/05 12.04 %	from 2011/12/02 until 2012/01/05 13.0 %

Energy Consumption

Average	Max	Min	Off
from 2011/12/02 until 2012/01/05 38.2 W	from 2011/12/02 until 2012/01/05 50.1 W	from 2011/12/02 until 2012/01/05 27.6 W	from 2011/12/02 until 2012/01/05 0.1 W

Forecast

	Month	Year	3 Years
Energy Consumption	19.56 kWh	237.99 kWh	713.97 kWh
Energy Cost	1.96 USD	23.8 USD	71.4 USD
CO2 Emissions	10.96 kg	133.34 kg	400.02 kg

Model Replacement

Detailed Result

Energy Cost

Name	Month	Year	3 Years
Reference: Asus//U80A	1.96 USD	23.80 USD	71.40 USD
Replacement: Asus//Z99A	1.37 USD	16.62 USD	49.85 USD
Result	0.59 USD reduced Energy Cost	7.18 USD reduced Energy Cost	21.55 USD reduced Energy Cost

Energy Consumption

Name	Month	Year	3 Years
Reference: Asus//U80A	19.56 kWh	237.99 kWh	713.97 kWh
Replacement: Asus//Z99A	13.66 kWh	166.16 kWh	498.49 kWh
Result	5.9 kWh less Energy will be consumed.	71.83 kWh less Energy will be consumed.	215.48 kWh less Energy will be consumed.

CO2 Emissions

Name	Month	Year	3 Years
Reference: Asus//U80A	10.96 kg	133.34 kg	400.02 kg
Replacement: Asus//Z99A	7.65 kg	93.1 kg	279.29 kg
Result	3.31 kg less CO2 will be produced.	40.24 kg less CO2 will be produced.	120.73 kg less CO2 will be produced.

Map Server Energy Consumption with Utilization

joulex
Welcome joulex Administrator
LOGOUT
Server: 2011/04/19 09:10:46
Auto-Refresh ON

Home
Policies

Devices

- Select Devices
 - All Devices
 - operatingSystem
 - Keywords
 - System Type
 - Model
 - Location
 - Business Unit
 - Device Type
- Status
 - OFF
 - ON
 - UNKNOWN
- Rule

Device Information

View and edit information for a selected device. HELP

JOULEX (192.168.3.24) Summary Properties Energy Profile Audit

Status:	● ON
Power:	64.6 W ★ ★ ★ (5) (21.0 % Load)
URI/IP:	192.168.3.24
Hostname:	JOULEX
Device Type:	pc.windows
Model:	Dell//PowerEdge 2650
Location:	ATL LAB
Last Check:	2011/04/19 09:18:59
Last Check Duration:	171.88 ms
Last Measurement:	2011/04/19 09:18:59

Power [Watt] / Utilization [%]

Save Changes & Close
Cancel

	● ▲ 1.0 W	192.168.3.23	MINGONAN	pc.windows	ATL OFFICE	Sales
	● 0 W	116.197.178.8	PE1	router	Junos LAB	

Set Energy Policies for Optimization



welcome admin Administrator LOGOUT

Server: 2011/08/17 06:57:52 Auto-Refresh OFF

Home Policies **Devices** Reports Apps Settings Help

Devices

Explore, check status and manage individual and groups of devices here. HELP

Select Devices

- All Devices 286
- Datacenter
- Costcenter
- model
- vmware.structure
- Keywords
- UCS Structure
 - 10.0.1.31
- EnergyWise Struc
 - test
- VMware Structur
- System Type
- Model**
 - BenQ
 - Cisco
 - Dell
- Segments
- Saved Searches

Overview **List** Audit

Search

Showing 1..250 of 286

+ Add Device
 View/Edit
X Delete
 ▶ Execute

Device Information

View and edit information for a selected device. HELP

Summary
Properties
Energy Profile
Audit

Status: ● ON

Power: 112.4 W ★ ★ ★ ★ (9)
(24.0 % Load)

Virtual: vmware

Parent: [Show Parent Device >](#)

URI/IP: [qnap-nfs] cisco_UCS1.4_1...

Hostname:

Device Type: pc.linux

Model:

Location:

Last Check: 2011/08/17 06:46:10

Last Check Duration: 5389.28 ms

Last Measurement: 2011/08/17 06:46:10

Power [Watt] / Utilization [%]

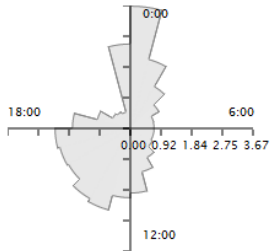
Save Changes & Close Cancel

Reporting Datacenter Report

Utilization Analysis

Average hourly Utilization Last Week

Date Range	Max Increase	Max Decrease
Based on Last Week an	Increase	Decrease
Average Day	+ 2.02 % at 23:00	- 1.52 % at 1:00
All devices in Segment All Devices		



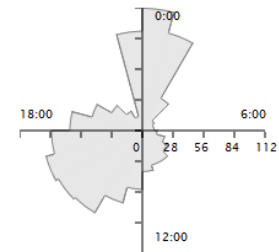
Idle Analysis

Idle Analysis

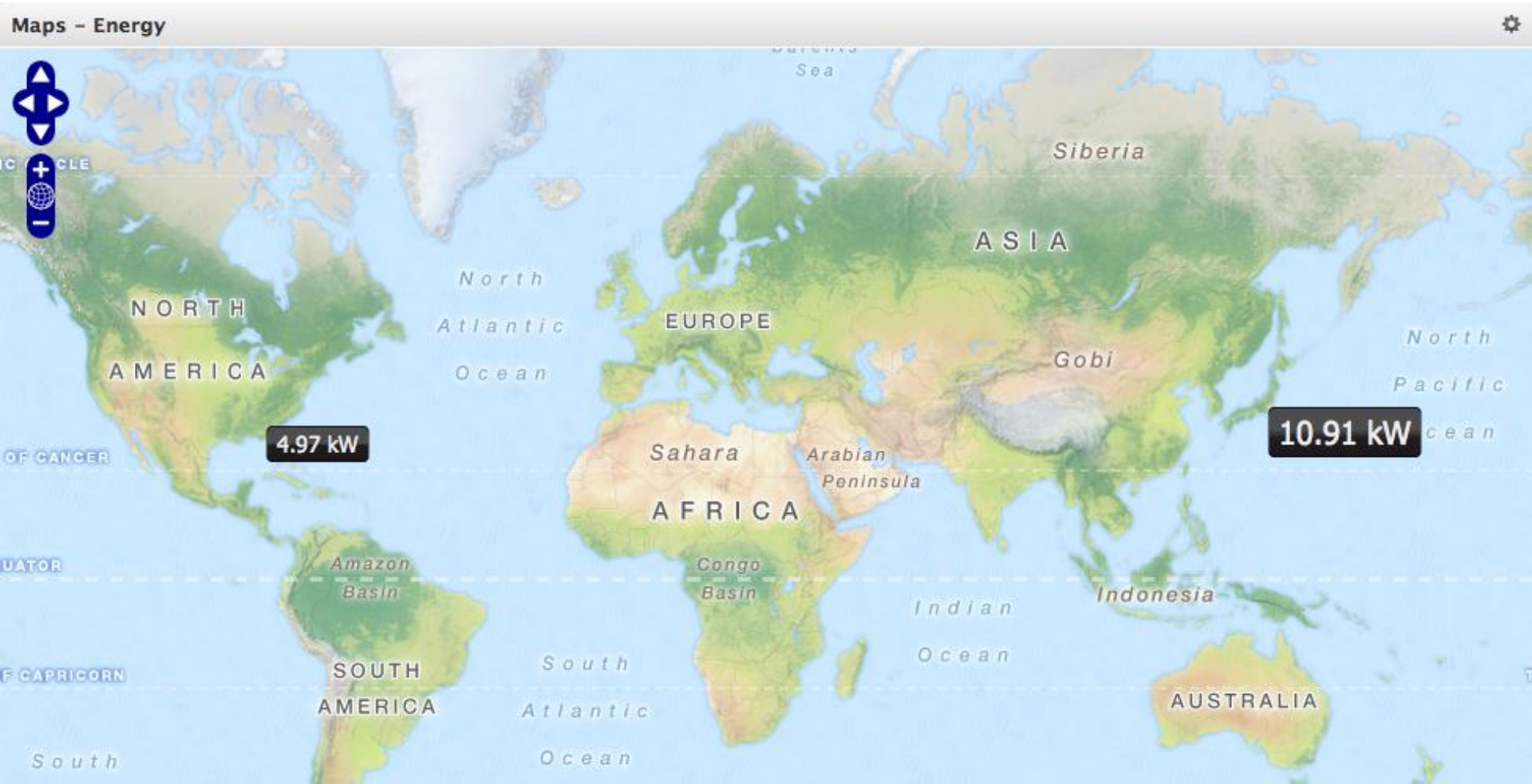
Date Range	Average Idle	Max Idle	Min Idle	Total Idle Hours
Date Range	Idle Last Week	Max Idle	Min Idle	Idle Last Week
Last Week	49.31 dev/h	111.57 dev/h	11 dev/h	8193 hrs
All devices in Segment All Devices				

Average hourly Idle Last Week

Date Range	Max Increase	Max Decrease
Based on Last Week an	Increase	Decrease
Average Day	+ 76.96 dev at 23:00	- 57.85 dev at 2:00
All devices in Segment All Devices		



Realtime Enterprise-wide Energy Visibility



Flexible Dashboard

Welcome admin **Administrator** LOGOUT
2012/01/11 16:49:11 Auto-Refresh

Home
Policies
Devices
Local Reports
Centralized Reports
Apps
Settings
Help

+ Add a Widget 1 2 3

6.24 MWh
Saved Energy

\$623.82
Saved Cost

3.74 tons
Saved CO2

Real-Time Device Activity

0
0

Events Last Hour Events Last Minute

● device_238	13:32:54	0.0 W	Moscow Rule Executed
● device_686	13:32:54	20.2 W	Kassel/Datacenter Rule Executed
● device_588	13:32:53	0.0 W	Frankfurt Rule Executed
● device_779	13:32:53	0.0 W	Atlanta Rule Executed
● device_281	13:32:53	0.0 W	Atlanta/DC Rule Executed
● device_786	13:32:53	0.0 W	Atlanta Rule Executed
● device_456	13:32:53	0.0 W	Moscow


Scanner Information

Scanner Progress Devices: 18 Time: 3.2 s

Last Scan Finished: 2012/01/11 16:49:07 Duration: 3.2 s

Status OK

Power



Used 42%

7.19 kW

17.05 kW

Power Max. Power

Rule Effectiveness

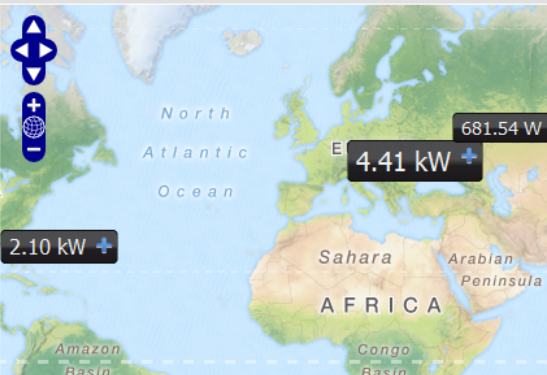
Rule	Saved Cost	Per Month	Per Year
Random	\$550.38	\$0.00	\$0.00
example 1 (Windows manag...	\$3.12	\$0.00	\$0.00
example 2 (all hibernate for ...	\$4.26	\$0.00	\$0.00
Manual	\$0.40	\$0.00	\$0.00

Monthly and yearly forecast based on current data.

System Information

system.resource.memused.service	110312 kB
system.resource.memused.database	508588 kB
system.resource.memused.webserver	4396 kB
policy.started	2012/01/11 13:30:32
policy.ended	2012/01/11 13:29:52
policy.duration	81467
scanner.successfullyScanned	18

Maps - Power



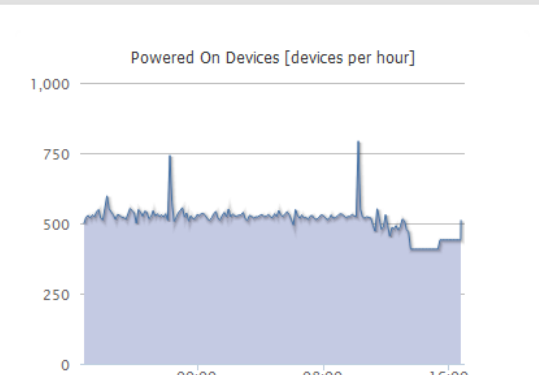
681.54 W

4.41 kW

2.10 kW

Realtime Charts

Powered On Devices [devices per hour]



0 250 500 750 1,000

00:00 08:00 16:00

System Messages

- i 2012/01/11 16:49:11 Changing device state from scanning to idle for device ...
- i 2012/01/11 16:49:11 Changing device state from scanning to idle for device ...
- i 2012/01/11 16:49:11 Changing device state from idle to scanning for device ...
- i 2012/01/11 16:49:11 Changing device state from idle to scanning for device ...
- i 2012/01/11 16:49:11 Changing device state from scanning to idle for device ...
- i 2012/01/11 16:49:11 Changing device state from scanning to idle for device ...
- i 2012/01/11 16:49:11 Scan-Run for 18 device(s) (18 scanned / 0 errors) com...
- i 2012/01/11 16:49:11 Scan-Run for 24 device(s) has been prepared



Thank You!

sales@joulex.net

877-JouleXnet