Regional Seminar Series
Rome, Italy

Critical Facilities Update

Martin Otterson, Managing Director & Vice President of Europe, Middle East, & Africa
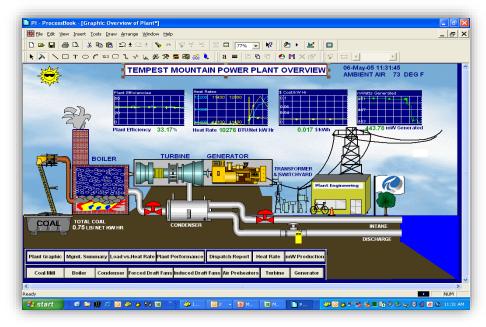
OSIsoft LLC

February 3, 2010

- Requires "holistic" monitoring for continuous improvement
- Efficient energy consumption with most profitable outcome
- Identify the bottlenecks
- Treat all individual systems as ONE
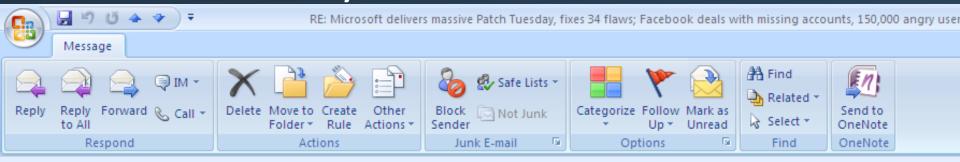- Mechanical, Power, IT and Security as a complete system

Empowering Business in Real Time.

Ideas become real at Cisco Systems

Ideas are reality at Microsoft

RE: Microsoft delivers massive Patch Tuesday, fixes 34 flaws; Facebook deals with missing accounts, 150,000 angry user

Message

Reply | Reply to All | Forward | IM ▾ | Call ▾ | Delete | Move to Folder ▾ | Create Rule | Other Actions ▾ | Block Sender | Not Junk | Safe Lists ▾ | Categorize ▾ | Follow Up ▾ | Mark as Unread | Find | Related ▾ | Select ▾ | Send to OneNote

Respond | Actions | Junk E-mail | Options | Find | OneNote

You replied on 10/14/2009 5:26 AM.

From: Quang Sun [quangsun@microsoft.com]
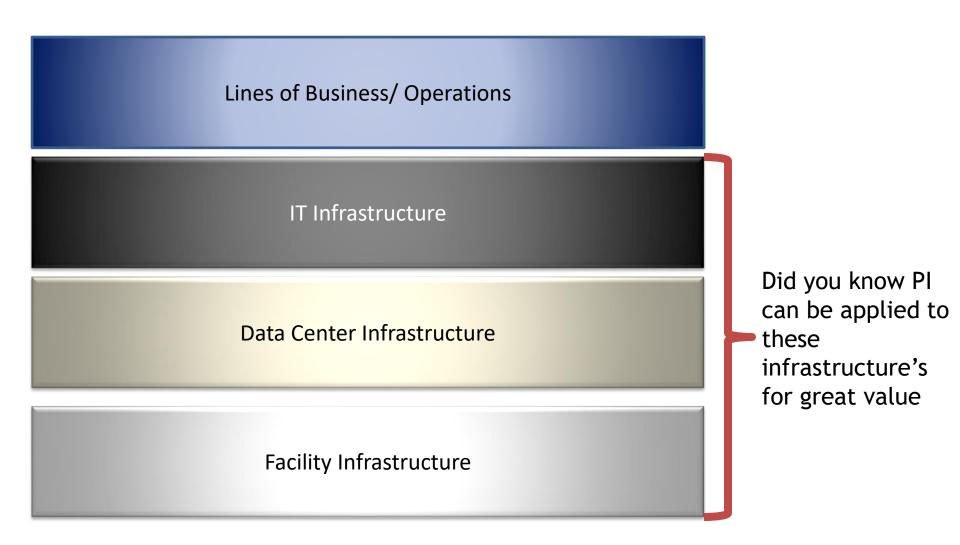To: Martin Otterson
Cc: Glenn Moffett
Subject: RE: Microsoft delivers massive Patch Tuesday, fixes 34 flaws; Facebook deals with missing accounts, 150,000 angry users

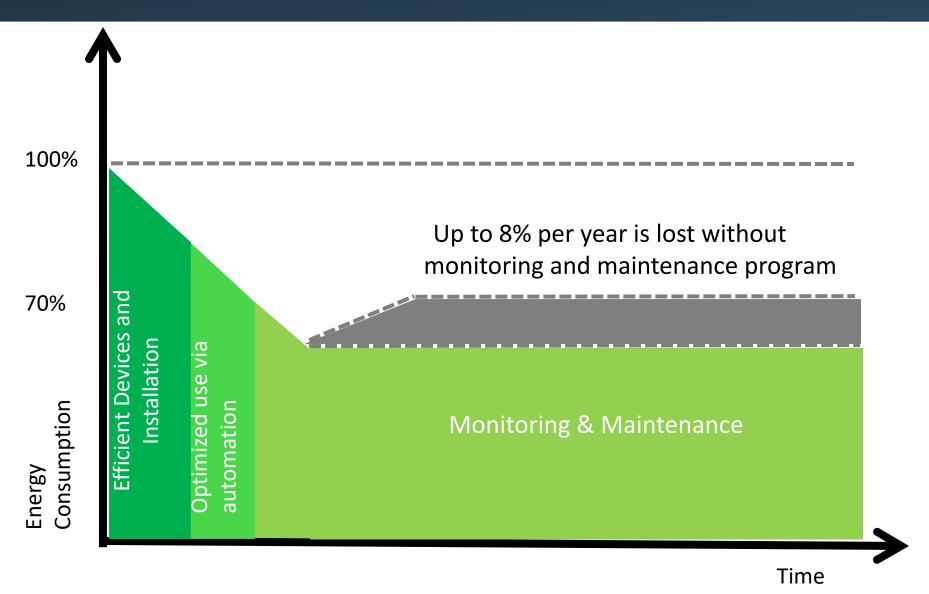Biggest ever, as in history of Windows Update.

1. Microsoft delivers massive Patch Tuesday, fixes 34 flaws
http://cwflyris.computerworld.com/t/5793842/413647/228133/0/

Expand your PI for the infrastructure
Ideas become reality

Lines of Business/ Operations

IT Infrastructure

Data Center Infrastructure

Facility Infrastructure

Did you know PI can be applied to these infrastructure's for great value

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Why PI FOR Energy Management

Up to 8% per year is lost without monitoring and maintenance program

Efficient Devices and Installation

Optimized use via automation

Monitoring & Maintenance

Energy Consumption

100%

70%

Time

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Not Just Servers

UPS	Switch Gear	Chillers	Cooling Towers

Air Conditioners	Pumps	Generators	PDU's

Batteries	Lighting	Servers	Storage
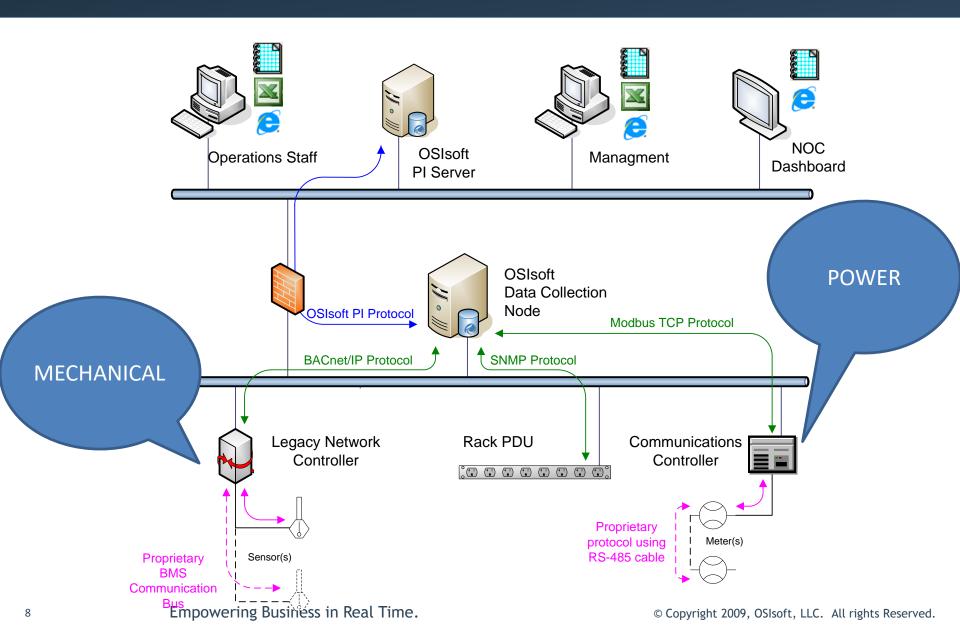
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Critical Facilities PI System Data Flow

OSIsoft

Operations Staff

OSIsoft
PI Server

Managment

NOC
Dashboard

POWER

MECHANICAL

OSIsoft
Data Collection
Node

OSIsoft PI Protocol

Modbus TCP Protocol

BACnet/IP Protocol

SNMP Protocol

Legacy Network
Controller

Rack PDU

Communications
Controller

Sensor(s)

Meter(s)

Proprietary
BMS
Communication
Bus

Proprietary
protocol using
RS-485 cable

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Facilities, Data Center and IT Interfaces

- OPC, RDBMS

- Modbus, Perfmon

- SNMP, Windows Event Log, Ping

- SNMP Traps, TCP Response, Syslog

- IP Flow (NetFlow)

- IPMI (in development)

- BACnet * NEW

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BACnet Overview

- BACnet stands for building automation and control network

- BACnet provides a common protocol to interface with building automation and control systems. Typical building devices that can provide data are HVAC, lighting, and fire/safety systems

- BACnet is supported by many leading building control systems vendors:
  - Automated Logic Corporation
  - Johnson Controls Incorporated
  - Siemens Building Technologies
  - Tridium

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BACnet Overview continued

- The BACnet protocol defines a number of services that are used to communicate between building devices

- The PI BACnet interface supports **BACnet/IP** over Ethernet

- The interface supports a BACnet Query Tool
  - Allows "Who-Is" query which returns a list of any listening BACnet devices
  - The returned list can be used to directly configure PI tags

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Example Customers

Facility Customers

Data Center Customers

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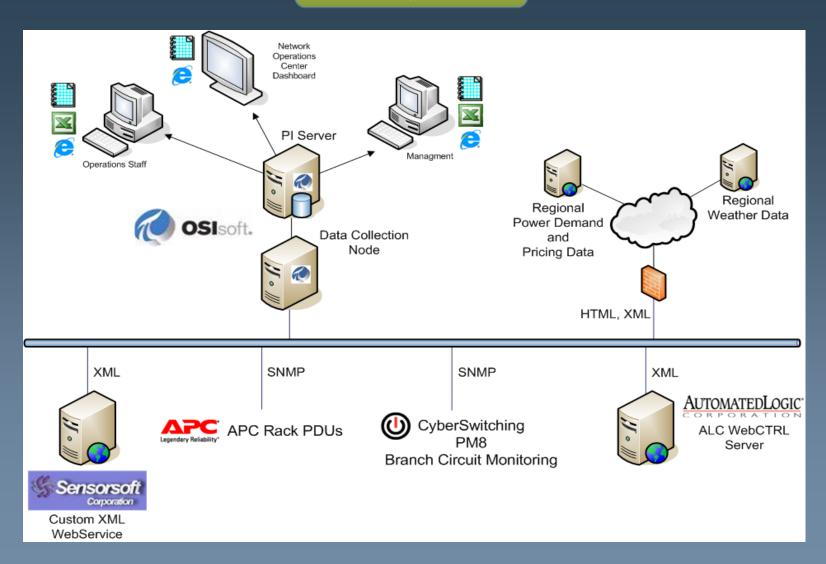
How PI is deployed at Cisco

Value now. Value over time.
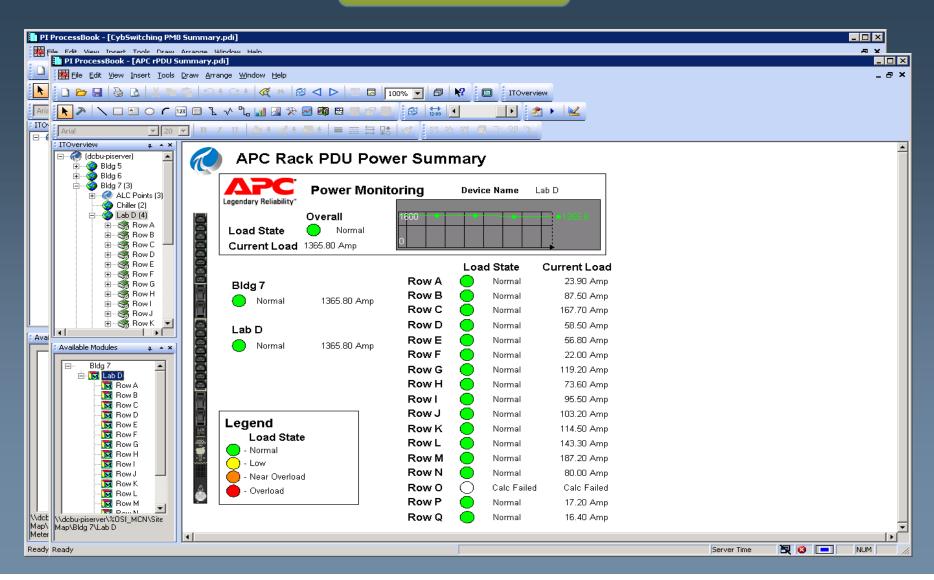
Collaboration Real-Time Dashboard

CRITICAL FACILITIES, DATA CENTERS & IT

PUE over 60 Days

Value now. Value over time.
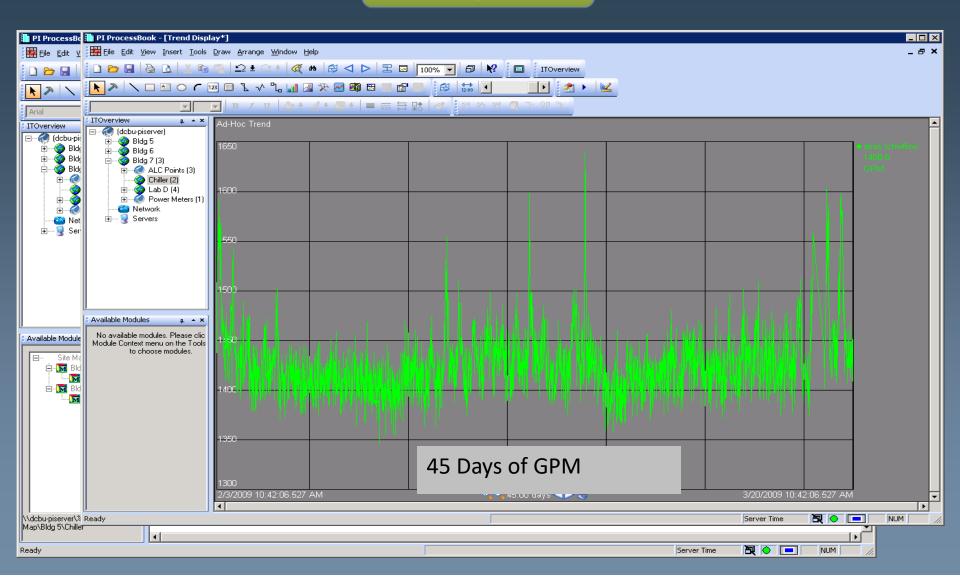
Drill Down to a Specific Device

Value now. Value over time.
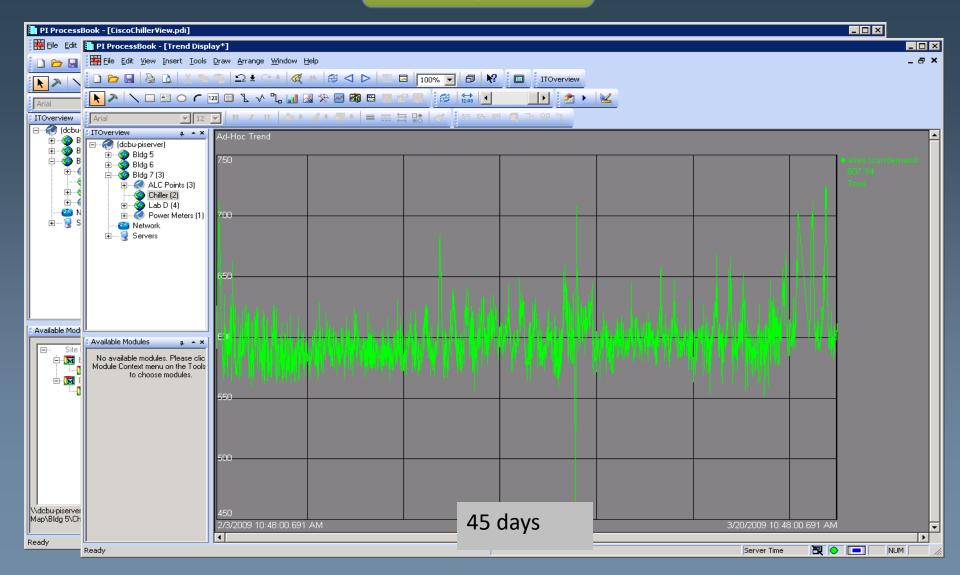
Building Management System Chiller Water Flow

OSIsoft

CRITICAL FACILITIES, DATA CENTERS & IT

45 Days of GPM

Value now. Value over time.
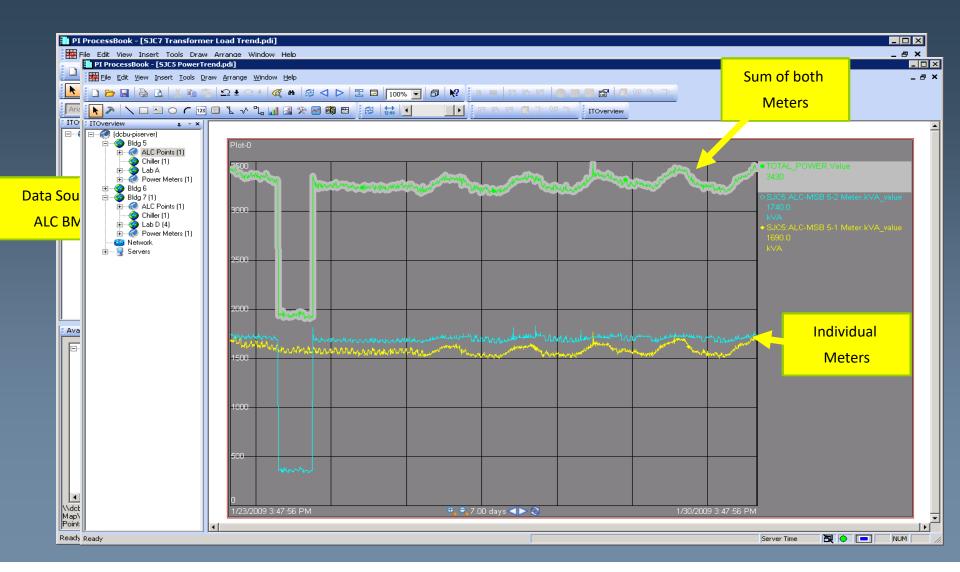
Building Management System Chiller- Demand

45 days

Value now. Value over time.

Building Management System Transformer load

CRITICAL FACILITIES, DATA CENTERS & IT

Value now. Value over time.

Benefits and Outcomes

- Collaboration securely across Facilities and IT – enabling access to data that was previously silo'd
- Enabling operational trending and corporate real-time reporting
- Establishing a benchmark of mechanical and power usage to better understand performance over time and the effectiveness of projects and changes made to the environment
- One version of the truth" of power, mechanical, and environmental data.
  - How is an asset operating and what is its power consumption based on the environment
- Drill down capability to continually improve efficiency
  - i.e. "I see there is an issue, I need to look at the data, the value is in having the data."

Value now. Value over time.

BUSINESS SITUATION

Campus purchasing over $30M in utilities. Decision making is based on dated information that's hard to access.

SOLUTION

PI System with interfaces to plant control system and meters, building submeters, and building automation systems.

Measurements include hot water meters, electric meters including substations, assorted gas and oil meters, chilled water meters, and steam meters.

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BENEFITS

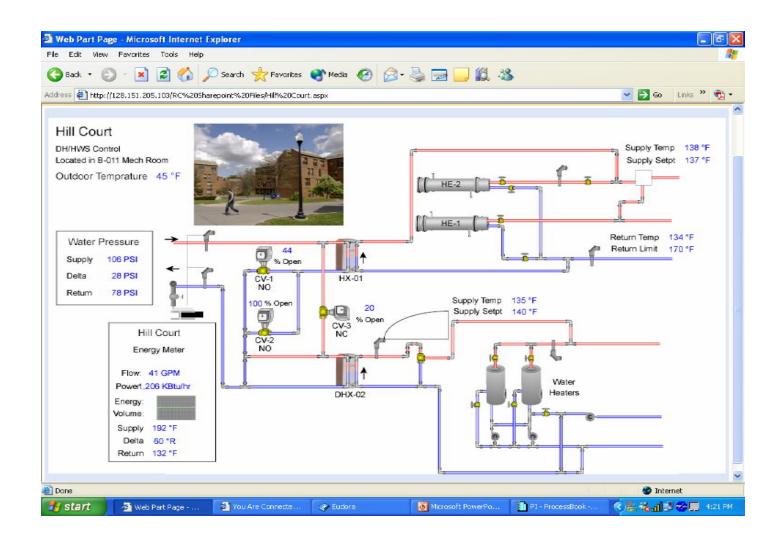**Faster Decision Making** – Data that took a month to access now available in real time. Information manually distributed to 80 cost centers now available electronically

Continuous Process Improvement – Facilities and financial analysts collaborating to make profitable decisions

Reduced Costs – Manual data management automated. Invaluable in commissioning 120 new heat exchangers

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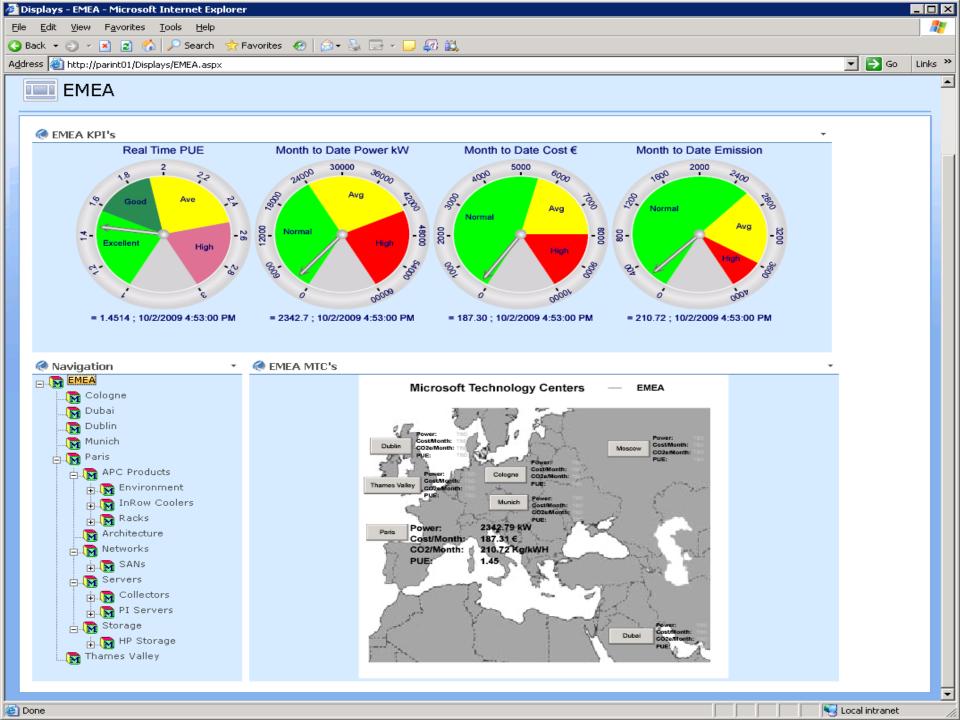
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Microsoft on PI in the Data Center
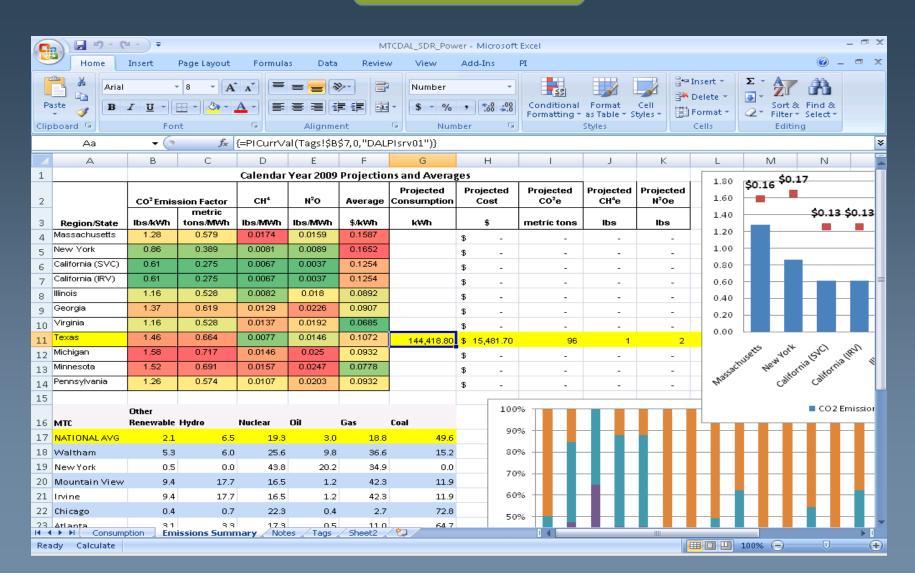
"We are using the **OSIsoft PI System to monitor all the critical points within our data centers**, and in turn are laying the foundation for a **high-availability, global Live infrastructure**,"

"**The return on investment is tremendous.** We are enabling innovation through increased collaboration, social networking and commerce—leading to breakthroughs in software plus services. We are setting industry standards **with increased utilization of facility resources, real time business continuity, and green computing technologies**. As we continue to expand our Live services, the combination of **OSIsoft and Microsoft technologies** are bringing new levels of performance and reliability to our world-class data centers."

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File   Edit   View   Favorites   Tools   Help

Back ▾   Search   Favorites

Address http://parint01/Displays/EMEA.aspx   Go   Links »

EMEA

EMEA KPI's

Real Time PUE
Good, Ave, Excellent, High
= 1.4514 ; 10/2/2009 4:53:00 PM

Month to Date Power kW
Avg, Normal, High
= 2342.7 ; 10/2/2009 4:53:00 PM

Month to Date Cost €
Normal, Avg, High
= 187.30 ; 10/2/2009 4:53:00 PM

Month to Date Emission
Normal, Avg, High
= 210.72 ; 10/2/2009 4:53:00 PM

Navigation

- EMEA
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      - SANs
    - Servers
      - Collectors
      - PI Servers
    - Storage
      - HP Storage
  - Thames Valley

EMEA MTC's

Microsoft Technology Centers —— EMEA

Dublin — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Moscow — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Thames Valley — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Cologne — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Munich — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Paris — Power: 2342.79 kW, Cost/Month: 187.31 €, CO2/Month: 210.72 Kg/kWH, PUE: 1.45

Dubai — Power: TBD, Cost/Month: TBD, CO2e/Month: TBD, PUE: TBD

Done   Local intranet

MTC Power Report – Datalink for Excel

- First step is understanding and benchmarking your operations

- PI has capabilities to help you in the areas of Critical Facilities and IT

- We would be happy to talk with you further and understand your situation to see how PI could create value

- Stay up to date by visiting our Critical Facilities and IT industry page

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Call To Action

- Leverage PI for your IT / Facilities environment

- Baseline today

- Understand your infrastructure and power usage

- Make improvements and gain efficiencies

- **Apply the PI System (infrastructure) you use to run your business...**

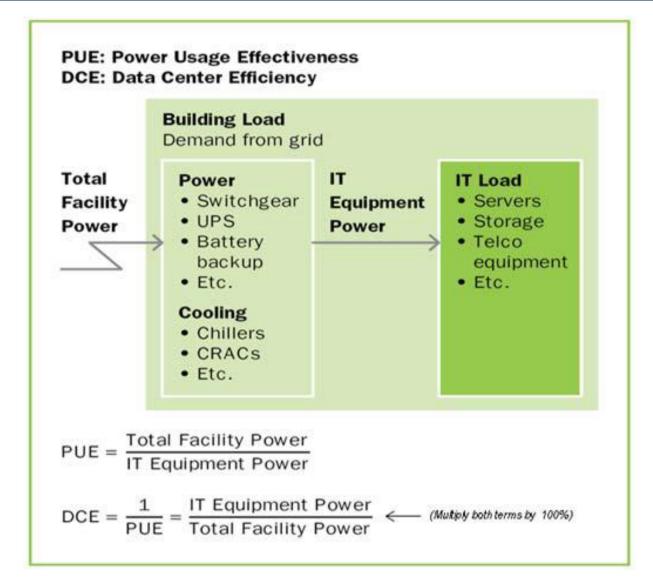   **...to the infrastructure your business relies on to run.**
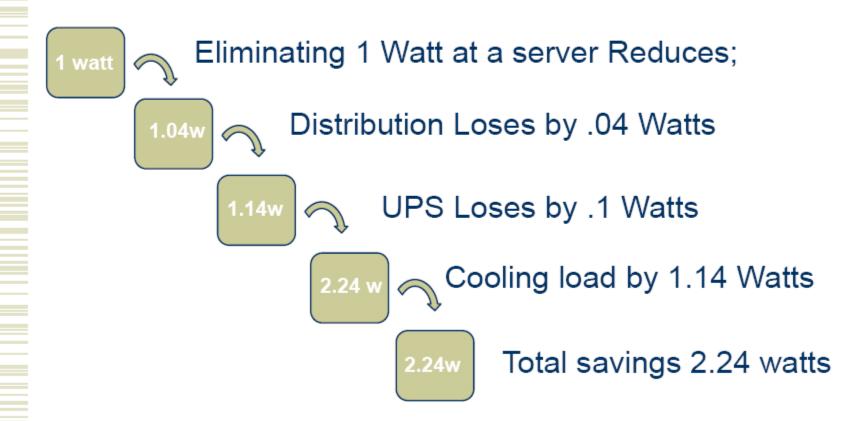
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Thank you

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Reducing Demand First

1 watt → **Eliminating 1 Watt at a server Reduces;**

1.04w → **Distribution Loses by .04 Watts**

1.14w → **UPS Loses by .1 Watts**

2.24 w → **Cooling load by 1.14 Watts**

2.24w → **Total savings 2.24 watts**

ProcessBook – PDU Detail

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ProcessBook – UPS Detail

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DataLink Reporting

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