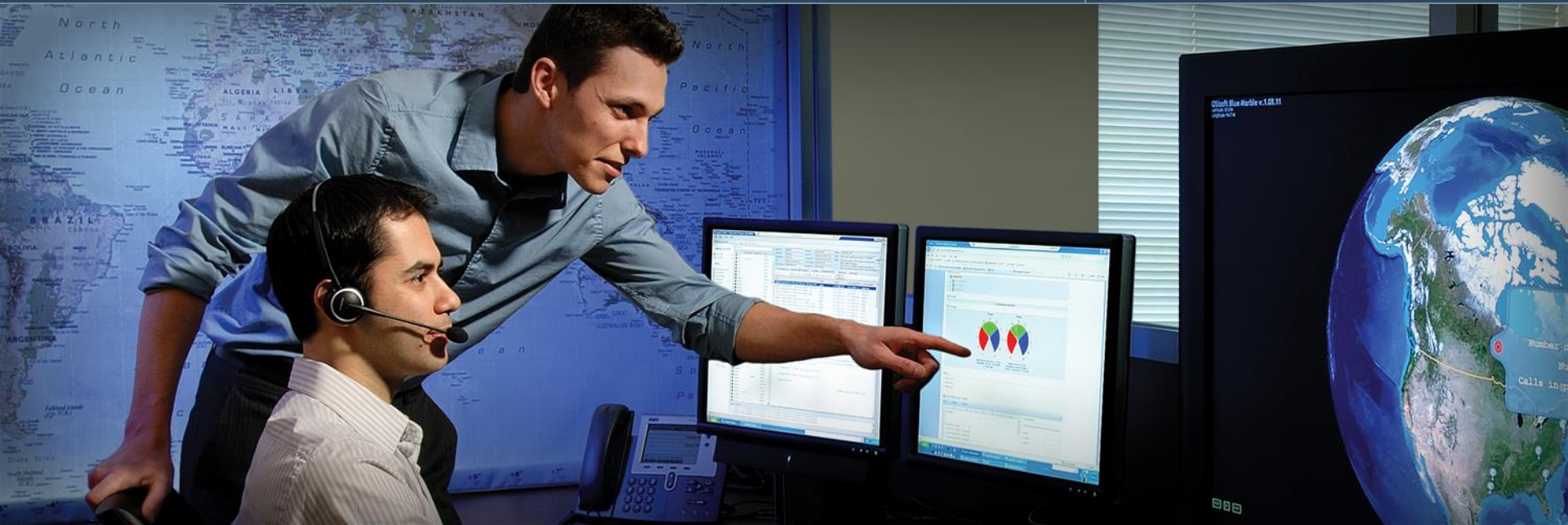




Regional Seminar Series Houston



Using PI for Energy Monitoring and Facilities Management in World Class Data Centers

Enrique Herrera
Industry Market Development Manager
Microsoft Corporation

October 28, 2009

Empowering Business in Real Time.

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What We Bring to the Table



Provides operational visibility through real time data and event infrastructure.



Connects you with information to make informed business decisions via familiar tools.

Our Vision

Empowers process improvement to reduce costs and increase efficiencies

Streamlined Processes

Empowers process improvement to reduce costs and increase efficiencies

Increased Visibility

Creates visibility across the enterprise using real-time, role-based data

Trusted Scalability

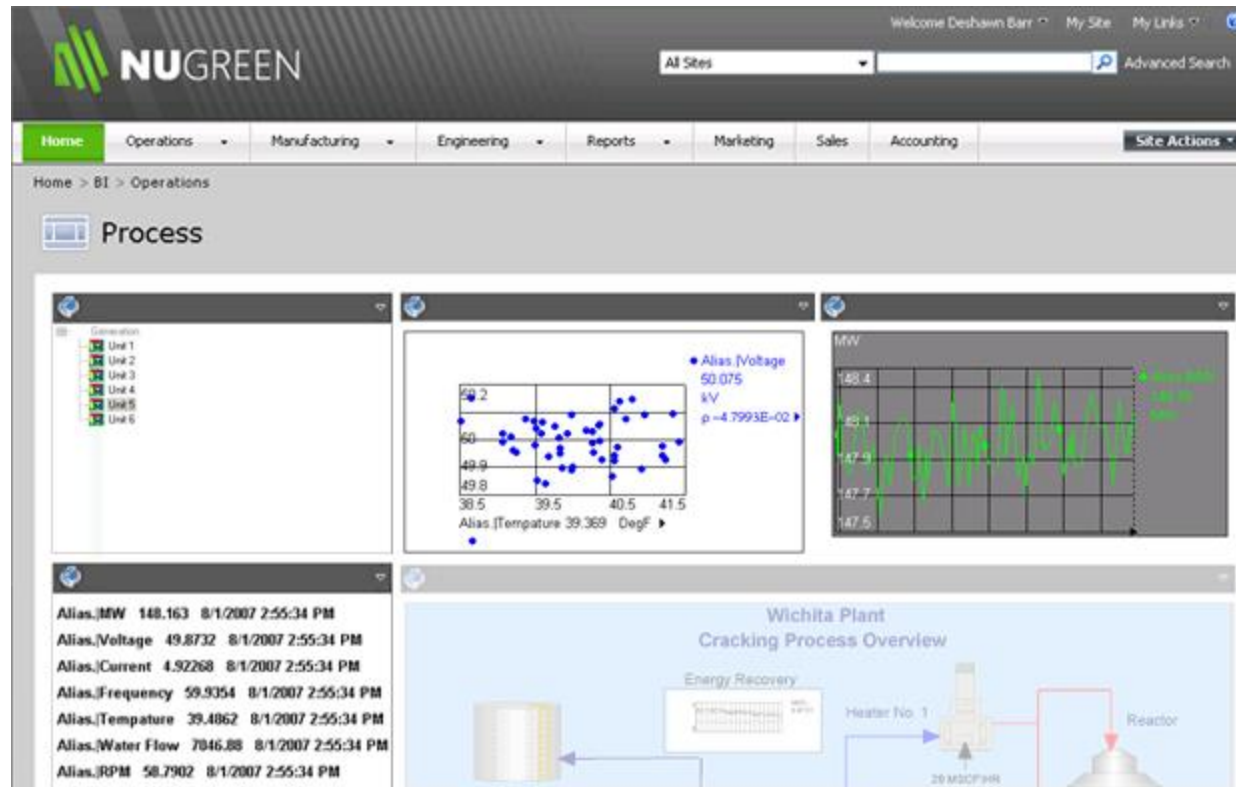
Provides a real-time infrastructure to support mission-critical needs

Enterprise Technology Tools

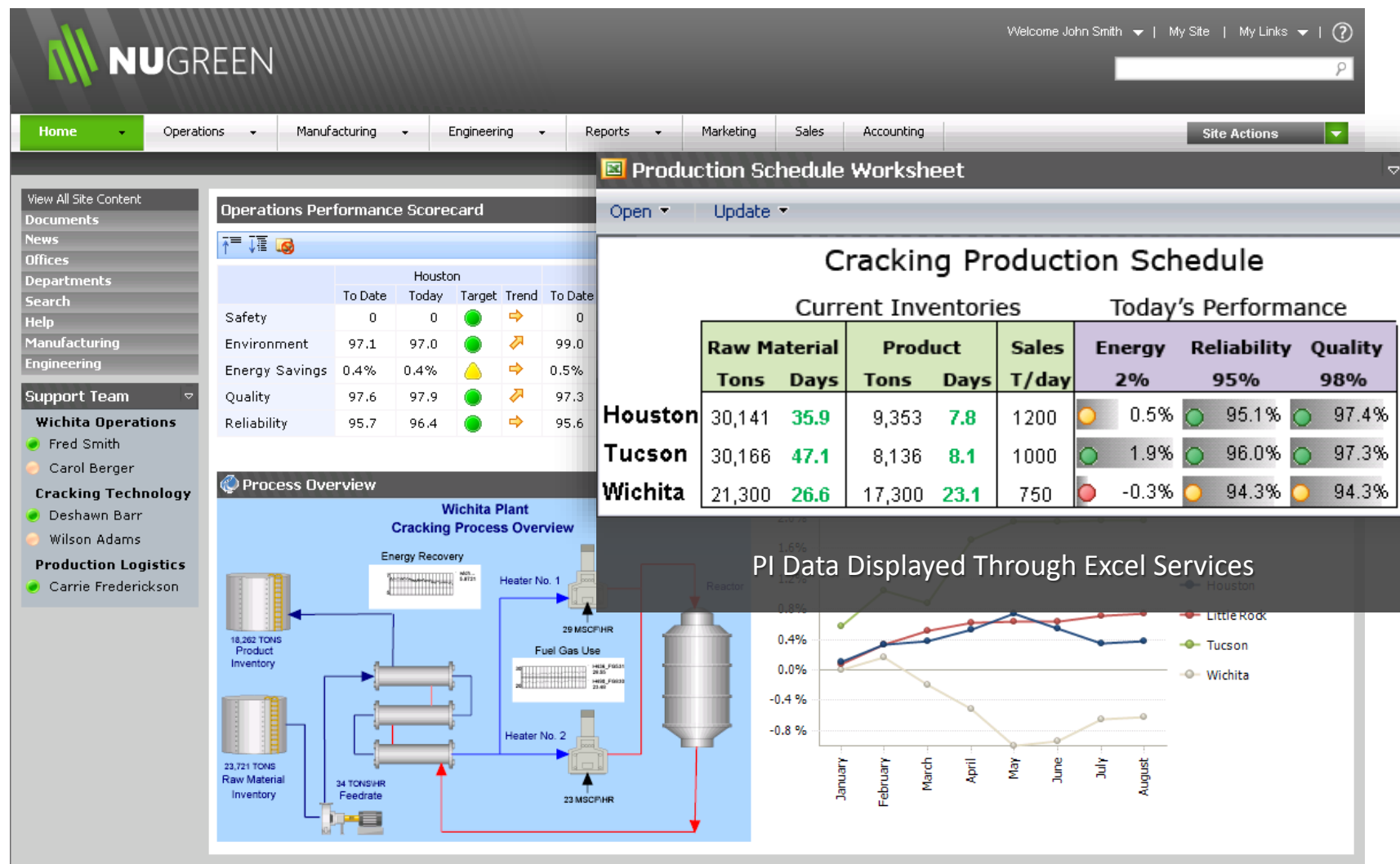
- Platform for Integration and Collaboration
 - Microsoft Office SharePoint 2007
 - RtWeb Parts (PI Infrastructure)
- Business Intelligence
 - Microsoft SQL Reporting Services, PerformancePoint
 - DataLink for Excel Services
- Real-Time Notifications
 - Microsoft Unified Communications
 - PI Notifications

ProcessBook Graphics

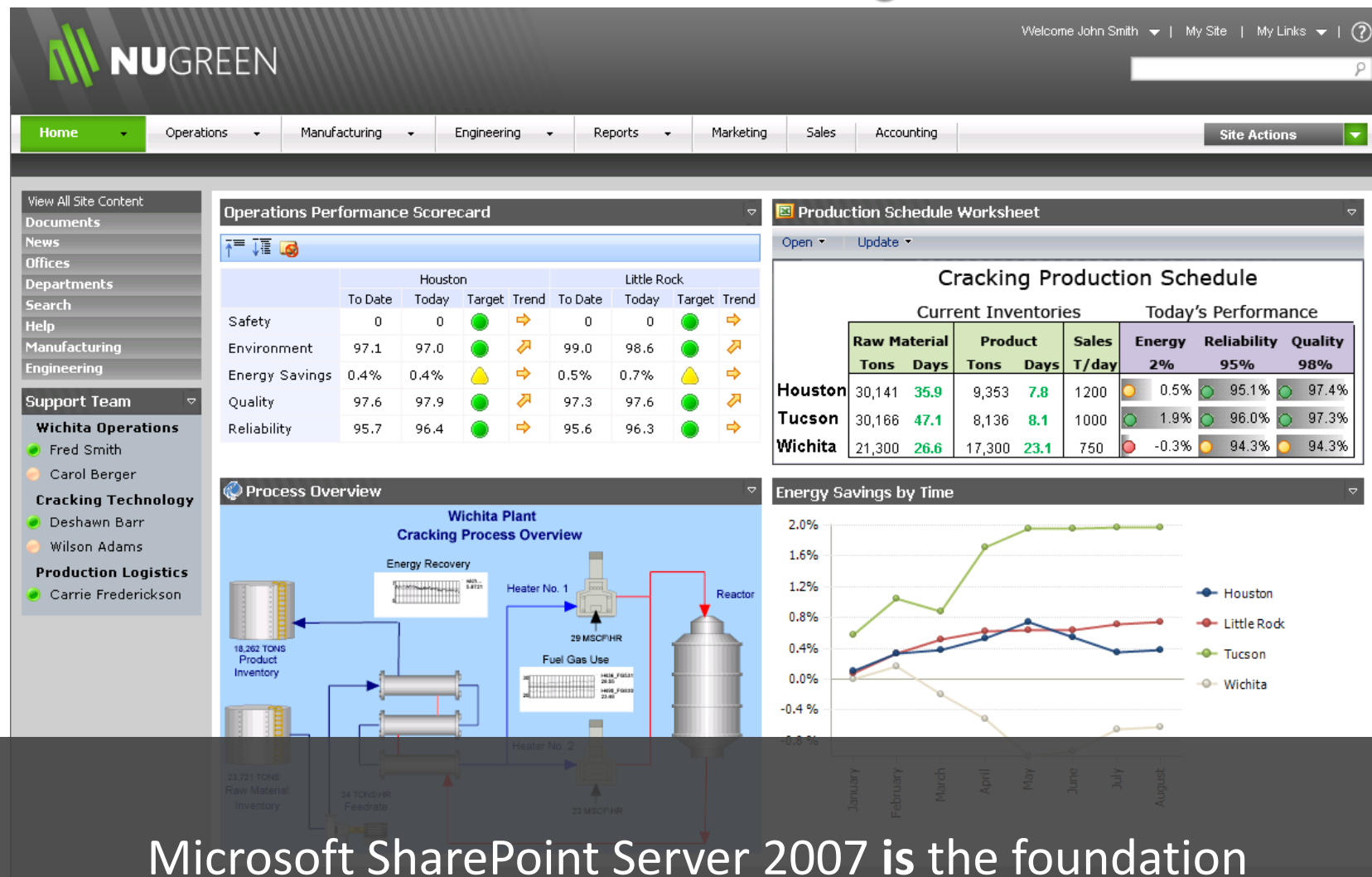
=> Real-time SharePoint 2007 Web Parts



Technology Integration - MOSS 2007 Enterprise

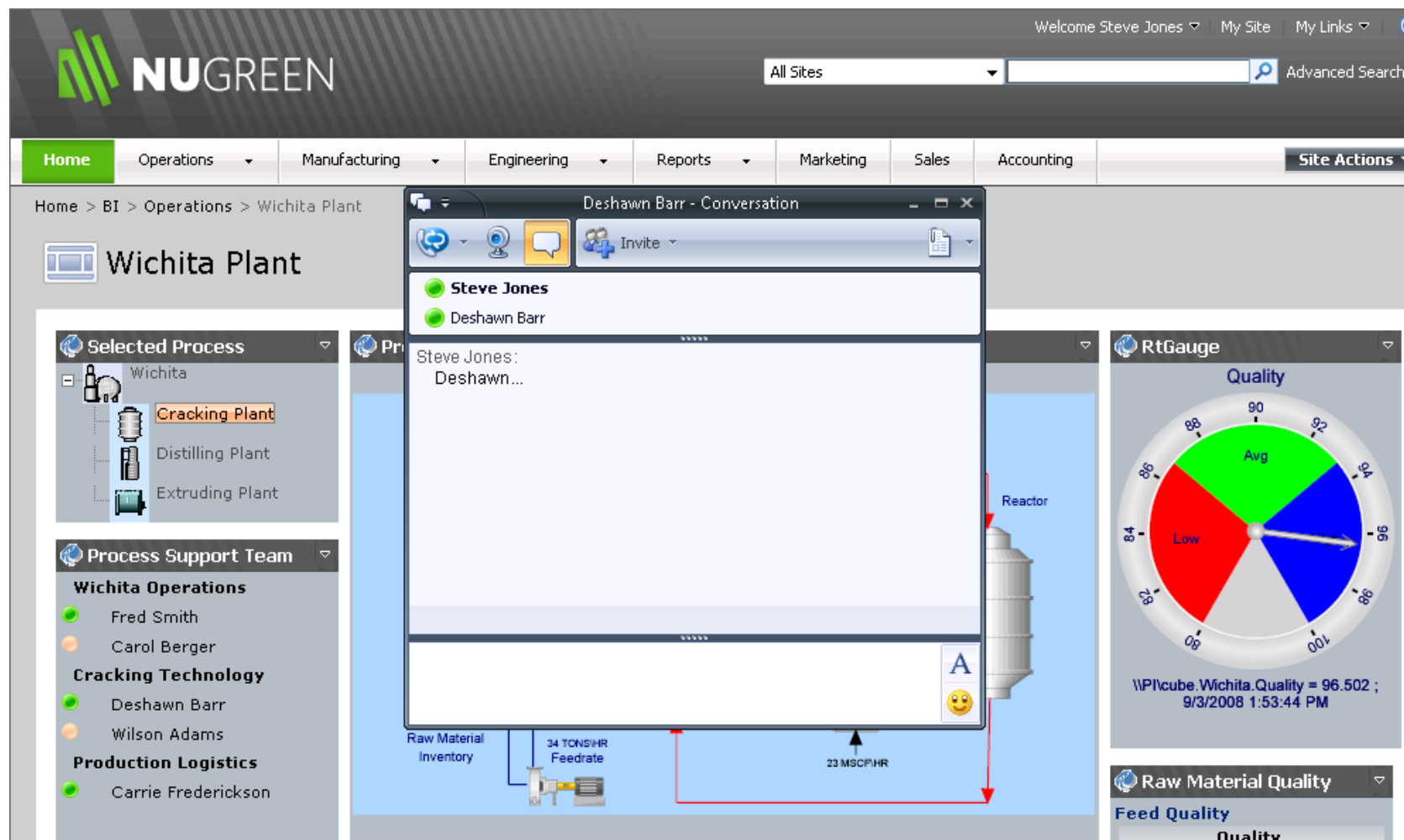


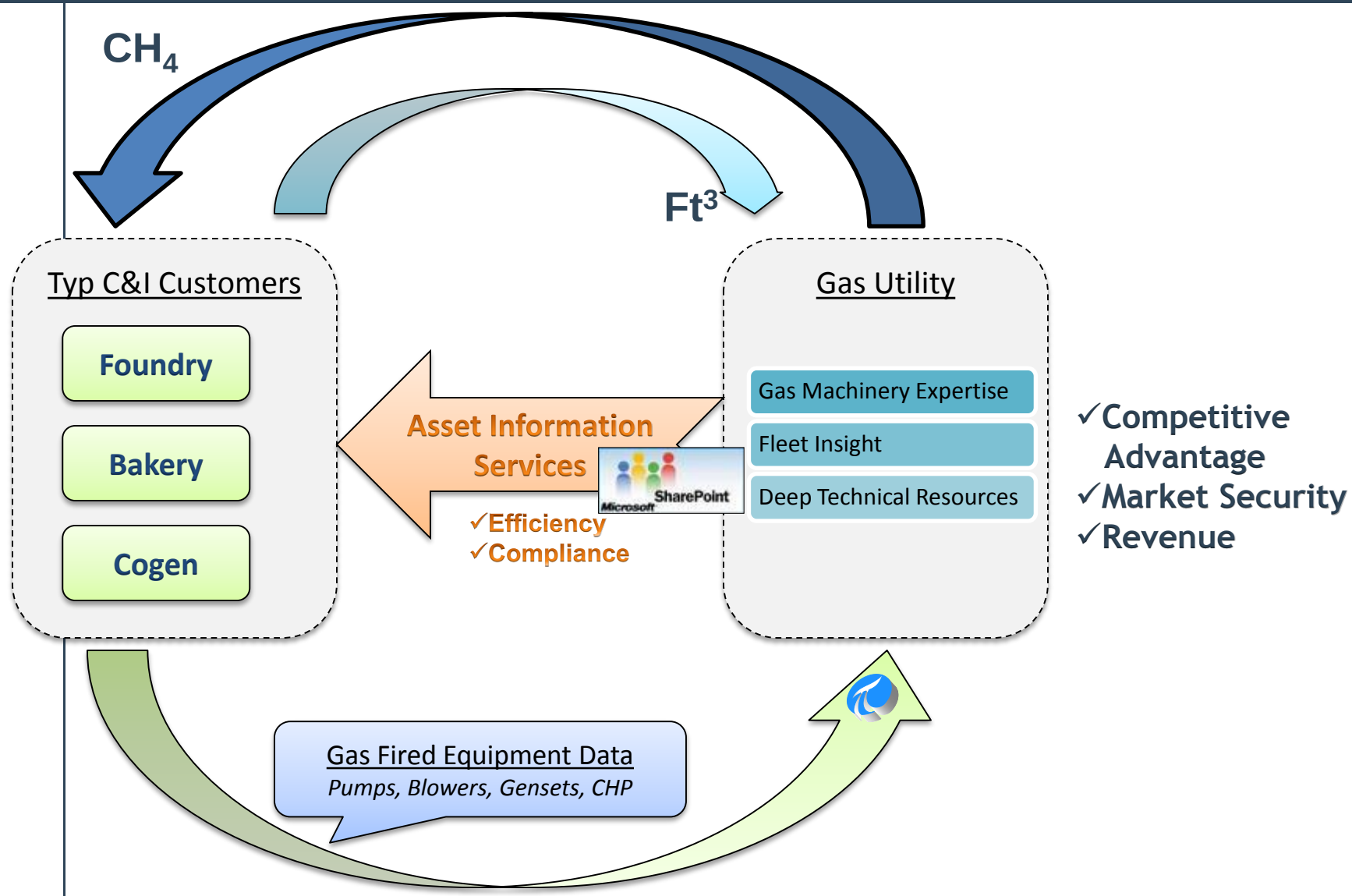
Technology Integration - Business Intelligence



Microsoft SharePoint Server 2007 is the foundation

Technology Integration - Communications Server







"We expect to see the solution support a 5 percent increase in our revenues. Given the more than billion-dollar size of our market, that could be a substantial revenue increase."

Terry Burleson, Vice President,
Downstream Energy Services, Nalco

Microsoft®



Process services firm aims to significantly boost profits for its customers

Customer Business Challenge

- Nalco used a manual and time-consuming data collection process at customer sites
- It wanted a real-time, automated solution
- Its goal: better customer support, satisfaction, and loyalty

Solution

- To integrate the OSIsoft PI enterprise infrastructure with the Microsoft® application platform and its own systems
- Solution can securely upload customer data over the Internet for detailed analysis and reporting.

Customer Results/Benefits

- Cuts time-to-market in half, provides new capabilities
- Contributes to double-digit revenue growth
- Meets customer needs better, faster

Cloud Computing: A History

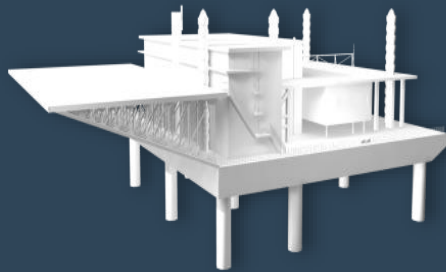
- The Internet
- On premise hardware and software no longer needed
- On demand, subscription based



"The future is about having a platform in the cloud and delivering applications across PCs, phones, TVs, and other devices at work and in the home."

**Microsoft CEO
Steve Ballmer**

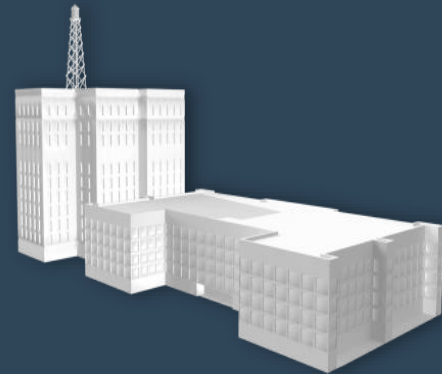
The Data Center is a 21st Century Plant



Plants & Operational Facilities

Complex Processes

- Pulp & Paper
- Oil & Gas
- Pharmaceuticals
- Power

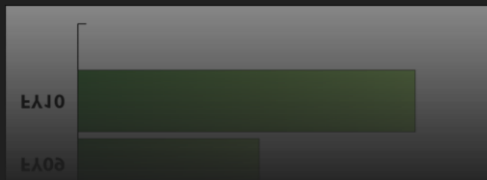
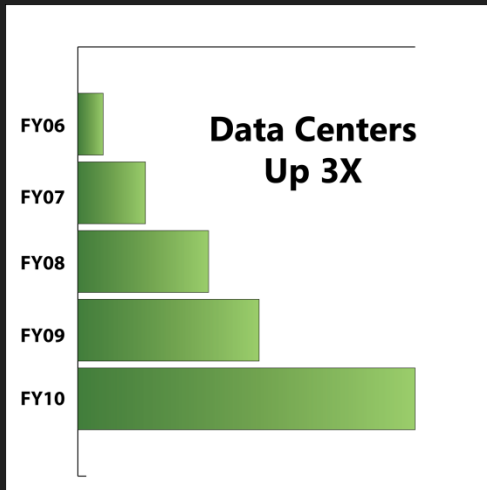


Data Center

Complex Processes

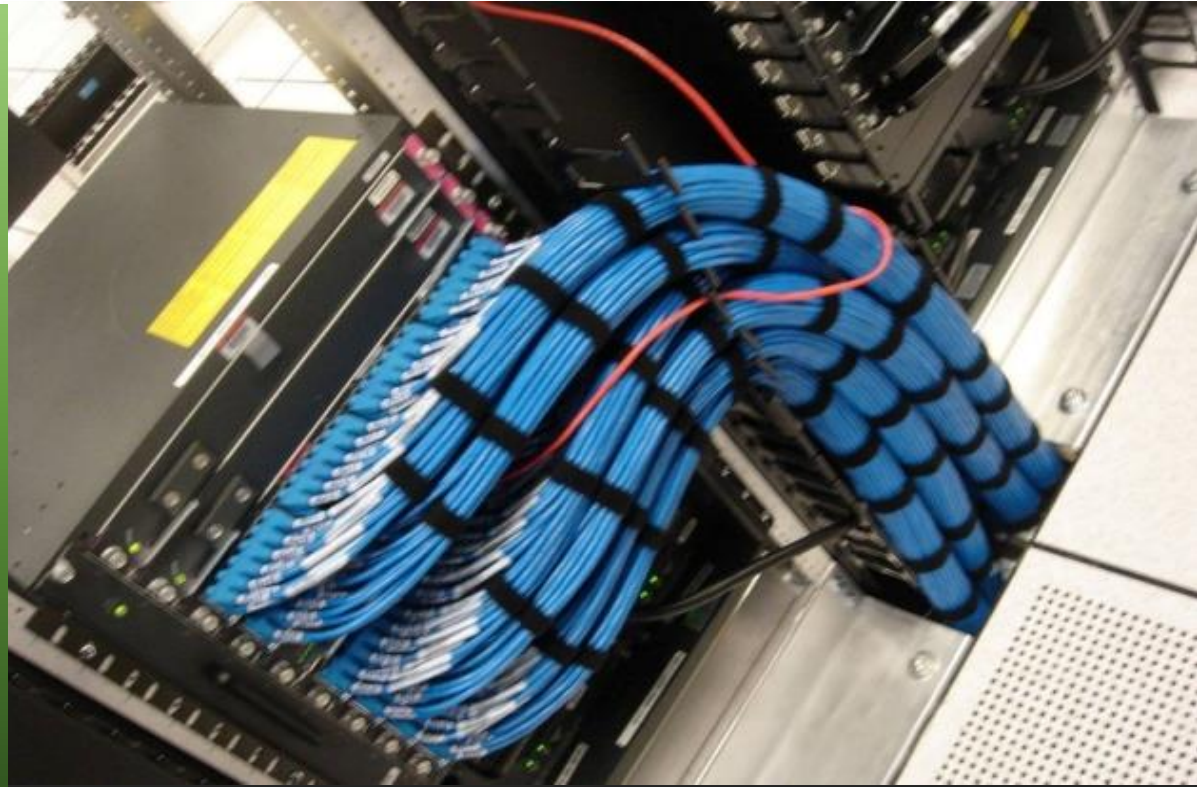
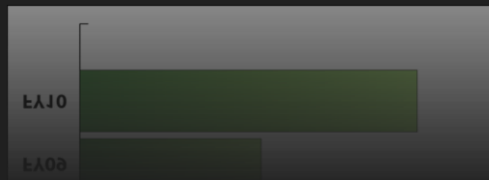
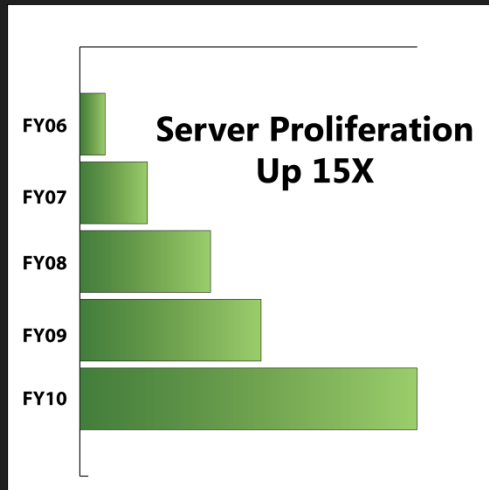
- Bits and Bytes
- Data
- Information
- Power

Keeping up with Demand



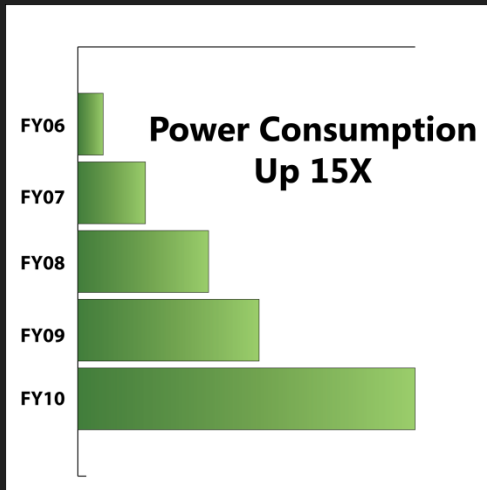
*New Microsoft Data Centers will consume **50% less energy** for the same level of output as ones built **just 3 years ago**.*

Server Proliferation



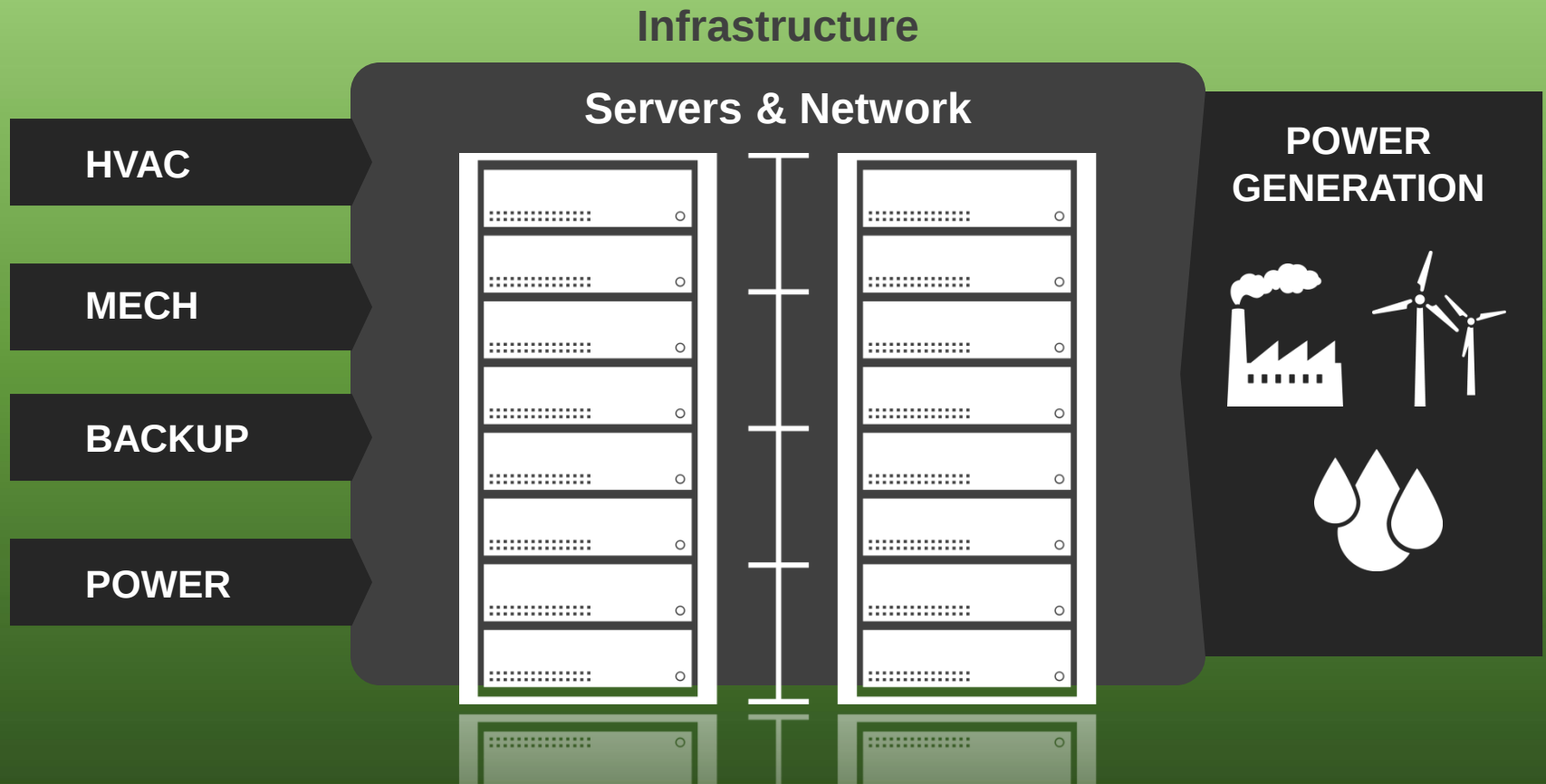
*Microsoft has over **150,000 servers** running in our Data Centers.*

Power Consumption



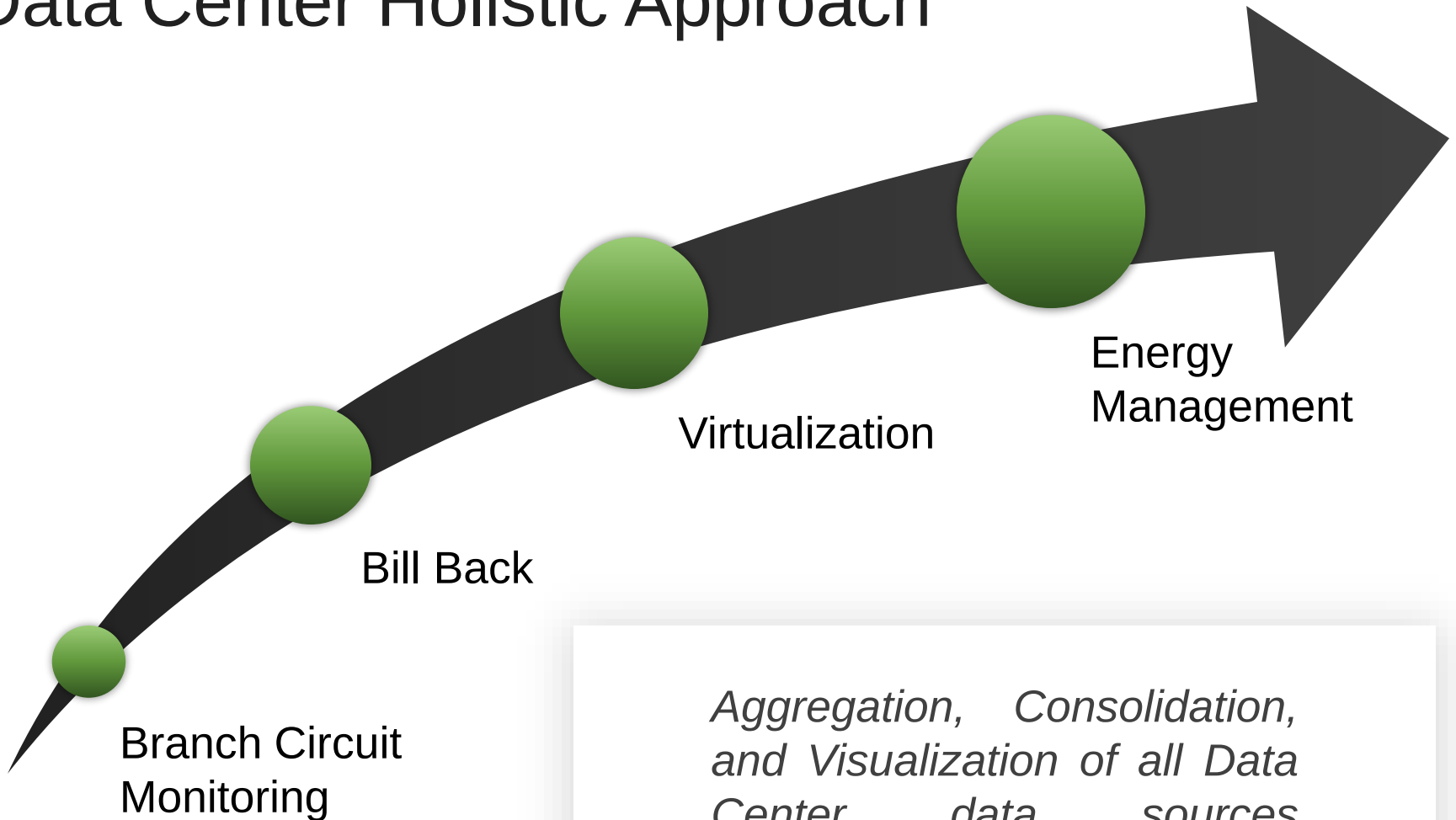
*If the status quo continues, by 2011, data centers will consume **100 billion kWh** of energy, at a total annual cost of **\$7.4 billion**.*

Complexities in our Data Centers



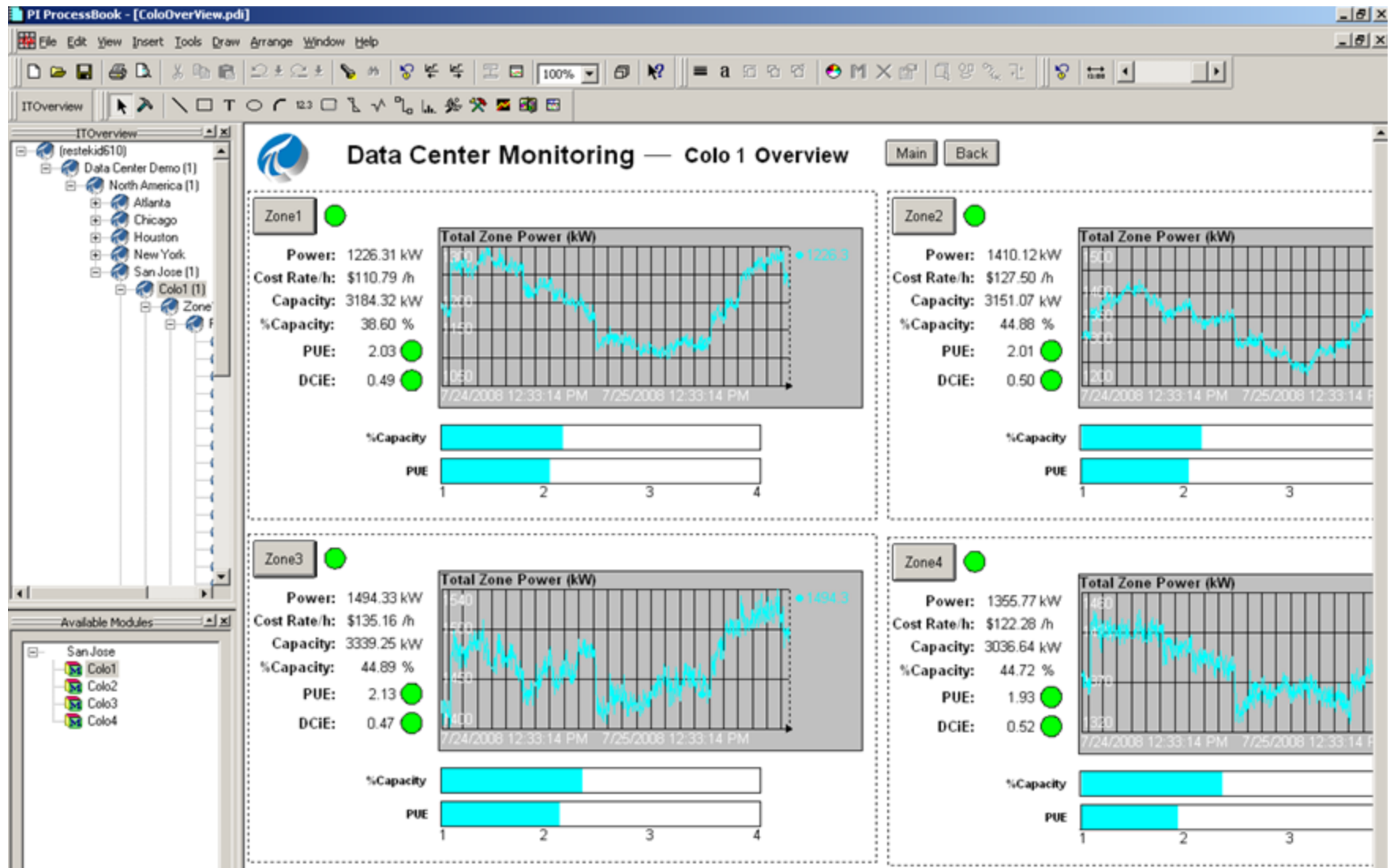
- Quincy– 100% renewable hydropower from Columbia River Basin
- San Antonio – city's recycled water program, wind power as primary source
- Dublin – leverages outside air as primary cooling

Data Center Holistic Approach

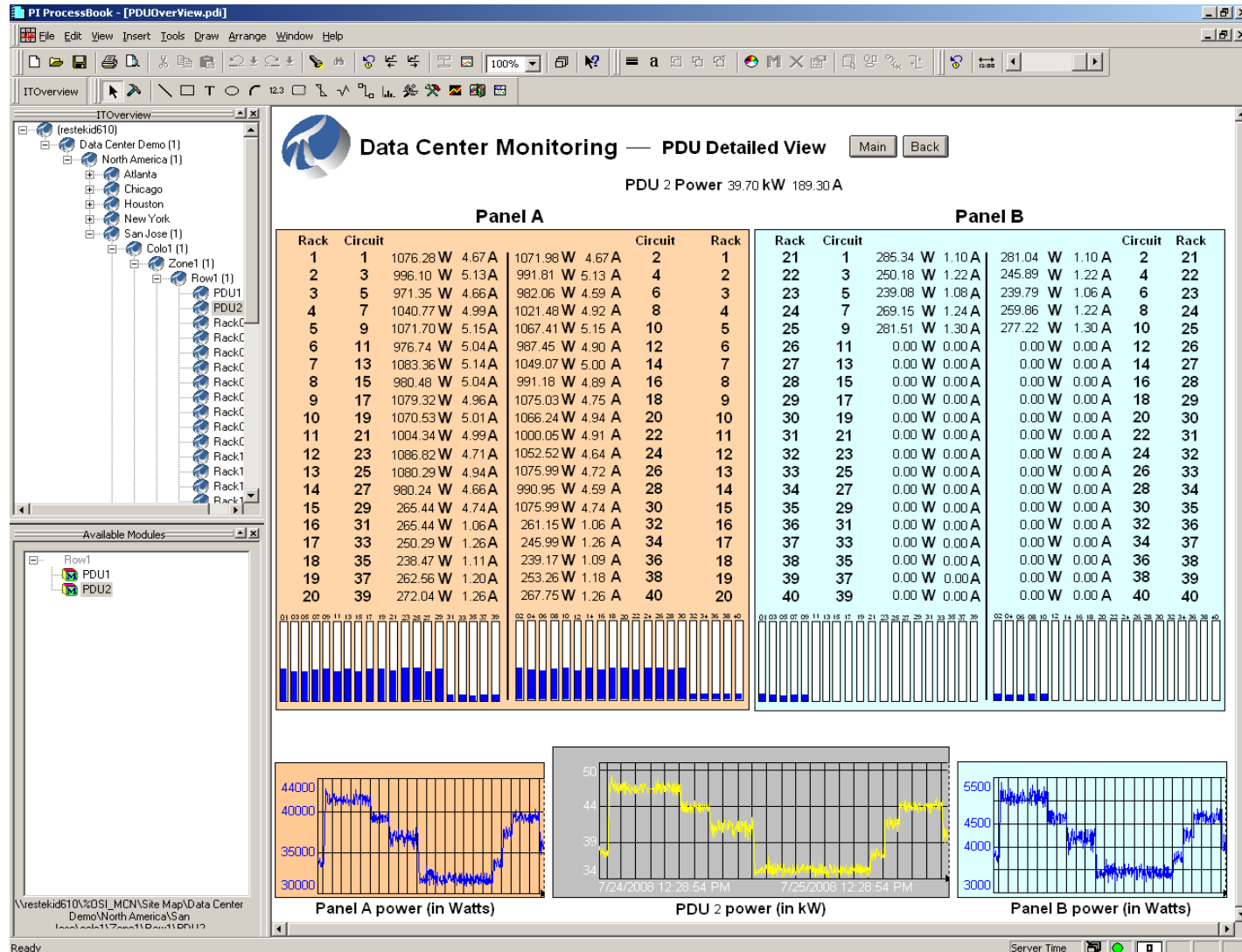


*Aggregation, Consolidation,
and Visualization of all Data
Center data sources
**represents path
to success.***

Power Usage



PDU Detail



UPS Detail

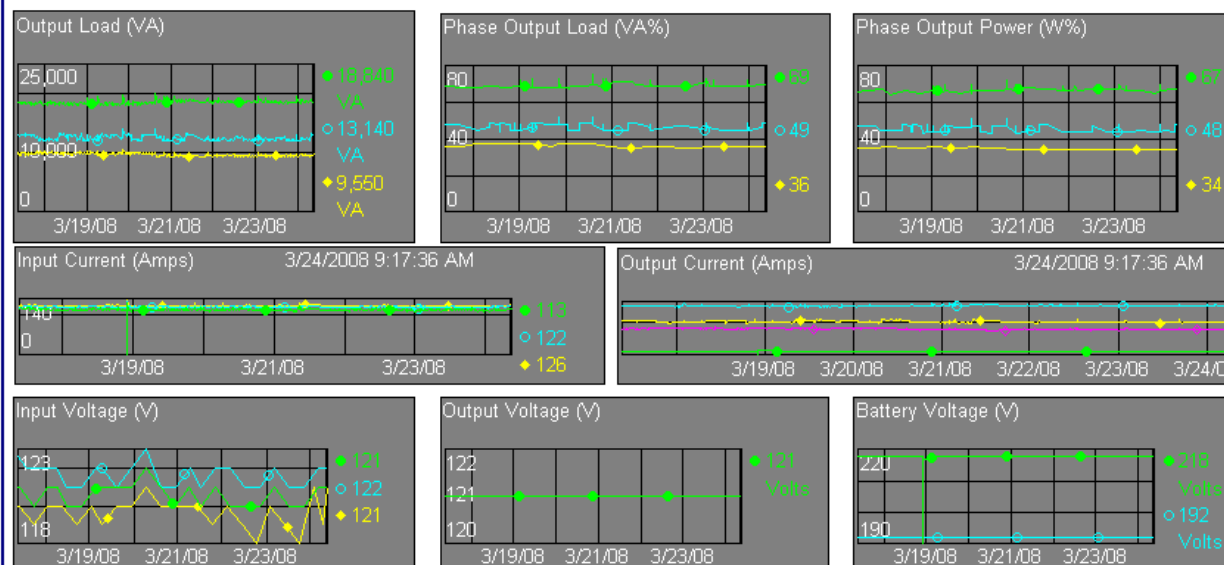
APC UPS: Symmetra Bldg1

[Main](#) [Back](#)


APC UPS

Model: Symmetra 80K	Phase 1 Output Load%: 69	Basic Battery Status: Normal
● Basic Output Status: online	Phase 2 Output Load%: 49	Battery Run Time Remaining: Over Range
Reason for Last Transfer to UPS:	Phase 3 Output Load%: 36	Battery Replace Indicator: noBatteryNeedsReplacing
selfTest	Output Current: 12 Amps	Battery Last Replace Date: 05/11/07
Total Output Load %: 70	Output Voltage: 121 Volts	Battery Voltage: 218 Volts
SwitchGearStatus: OK	Output Frequency: 60 Hz	Battery Temperature: 31 F

Trends



Switchgear Status

SwitchGear Input Switch Status: **closed** SwitchGear Output Switch Status: **closed** SwitchGearBypassSwitchStatus: **opened**

Battery Status

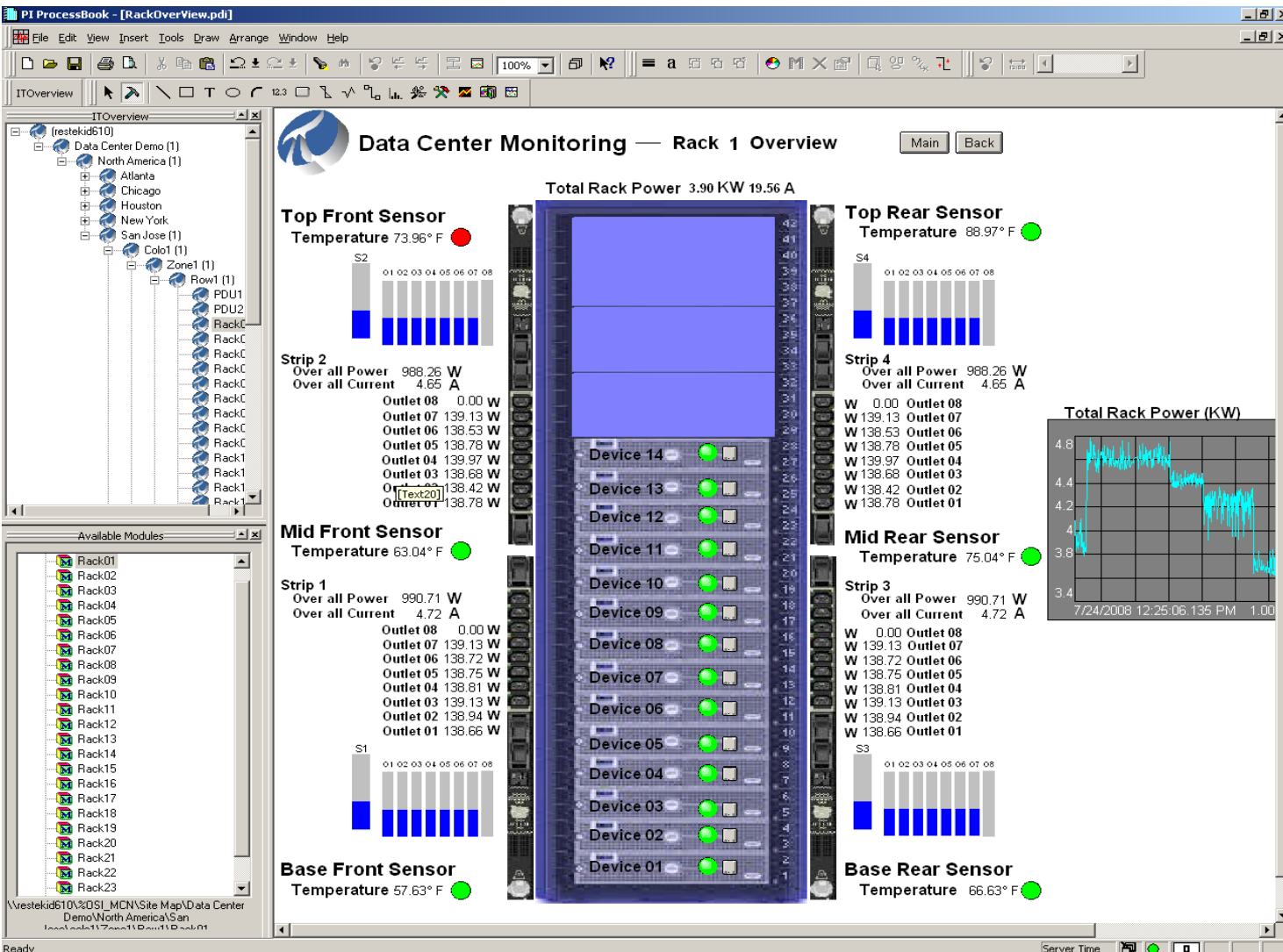
Number of Battery Packs: **32**



Legend

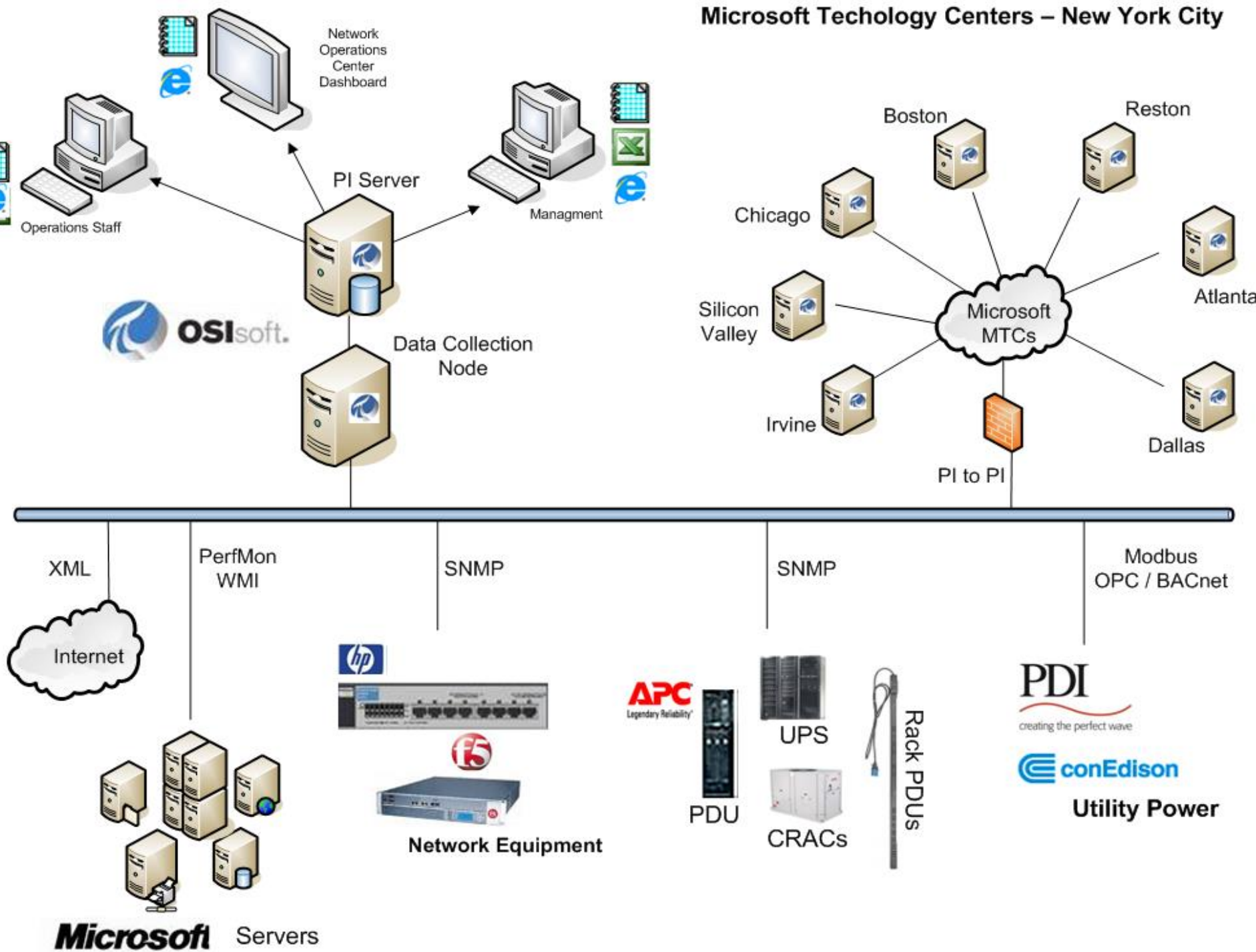
- Not Configured
- Unknown
- Not Installed
- OK
- Failed
- High Temperature
- Replace Immediately
- Low Capacity

Rack Detail

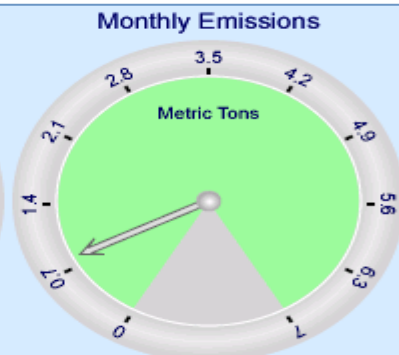
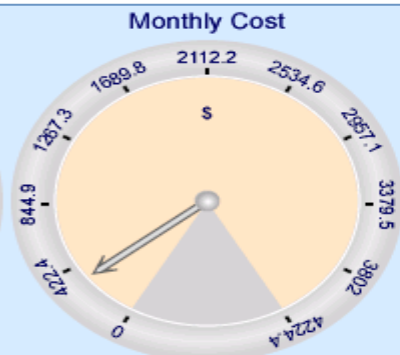
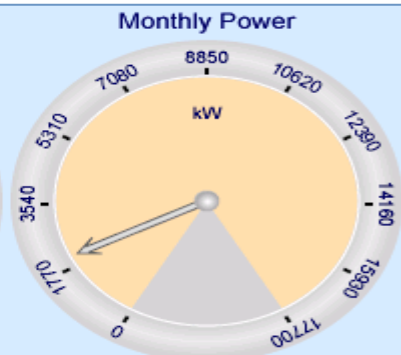
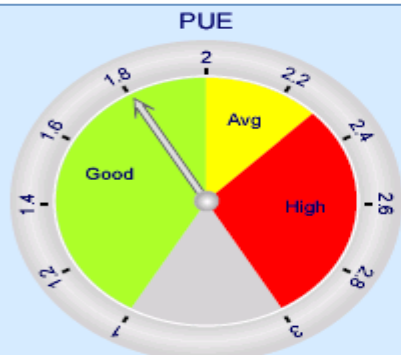


- Power
- Temperature
- Humidity
- Capacity

Microsoft Technology Centers – New York City



North America KPIs



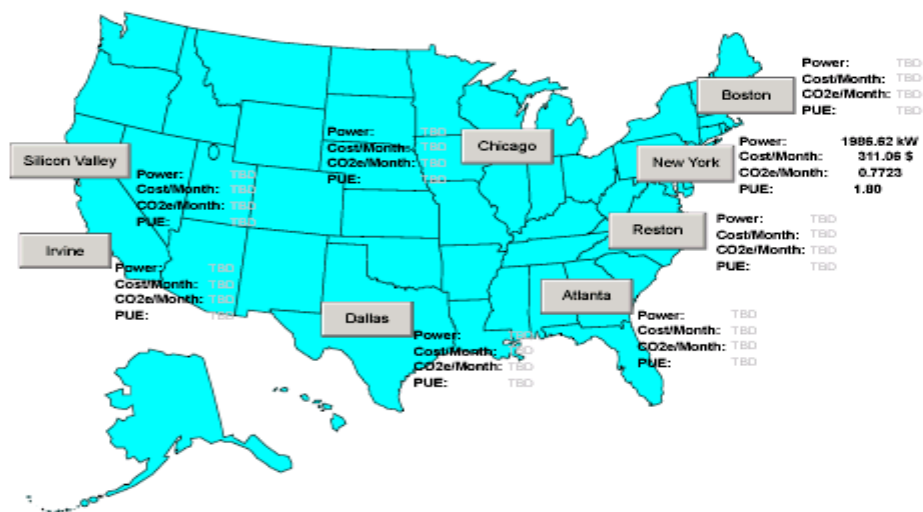
Tree View

- North America
 - Atlanta
 - Boston
 - Chicago
 - Dallas
 - Irvine
 - New York
 - Reston
 - Silicon Valley

MTCs

Microsoft Technology Centers

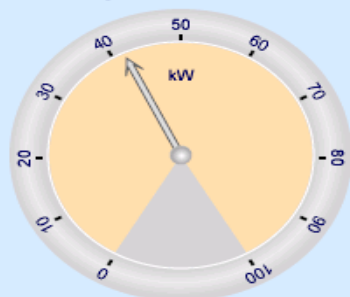
North America



NewYork

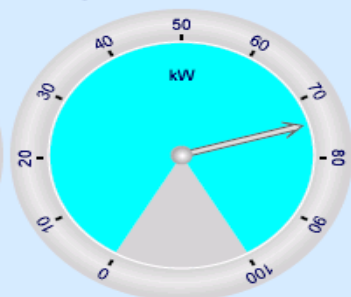
New York PKIs

Current IT Load



= 41.5 ; 3/29/2009 10:39:00 PM

Current Total IT load



= 74.699 ; 3/29/2009 10:39:00 PM

PUE



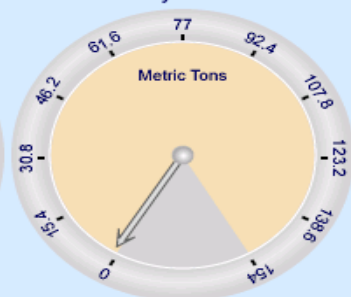
= 1.7999 ; 3/29/2009 10:39:00 PM

Monthly Cost



= 311.45 ; 3/29/2009 10:39:00 PM

Monthly Emission



= 0.7732 ; 3/29/2009 10:39:00 PM

Tree View

- New York
 - APC Products
 - CRACs
 - 192.168.1.15
 - 192.168.1.16
 - PDU's
 - 192.168.1.17
 - Racks
 - Rack 1
 - Rack 10
 - Rack 11
 - Rack 12 Short
 - Rack 12 Tall
 - Rack 13 Short
 - Rack 13 Tall
 - Rack 14
 - Rack 2
 - Rack 3
 - Rack 4
 - Rack 5

New York Data Center

Messages [1]

APC UPS: THORC456



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.”



OSIsoft®

Microsoft®