

Effacité énergétique et Optimisation des ressources informatiques



TENDANCES IBM 2009

DONNEZ DU SOUFFLE
À VOS AFFAIRES ET À LA PLANÈTE

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3 FÉVRIER 2009

MOINS DE COÛTS POUR VOTRE BUSINESS,
PLUS DE RESPECT POUR L'ENVIRONNEMENT.

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Agenda

- Data Center introduction
- Green Concepts
- Energy Efficiency Showcase



Newsweek

Demand for Computing – Data Centers are in Crisis !

«Most data centers will struggle to accommodate the growth, as well as the power and cooling requirements, of the new high-density servers, which will result in an inability to meet growing business needs.» Gartner 2006 *

Increased demand for Computing

- Low cost, scalable technologies drive opportunity for new applications
- Regulatory actions driving resiliency needs (SOX, Bâle II, HIPAA etc..)

Constant technology change

- Improved price
- Reduced power and cooling requirements
- Increased density.

Data center investments Lagged

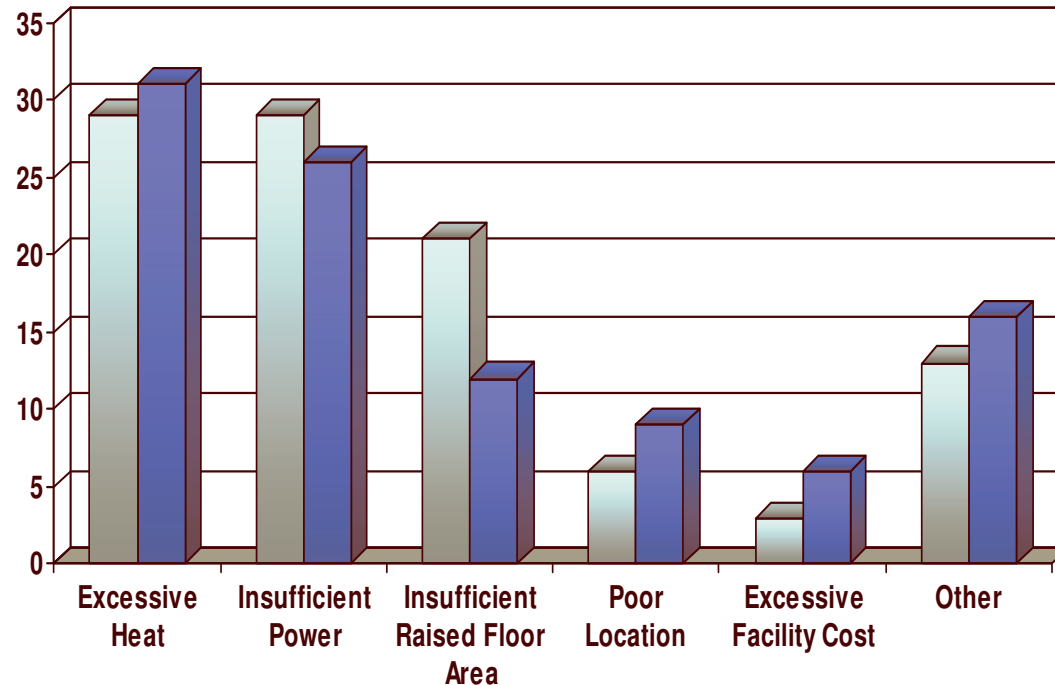
- +24 months for new data center to move from requirements to deployment.
- Majority of data centers 10-15 years old.
- Past design rules does not work.

Changing total costs Dynamics

- Technology continues to deliver significant price performance improvement.
- Power costs are expected to continue increasing.

Gartner : A message from Data Center Mgrs to CIOs: floor space, Power and cooling will limit our growth : Rakesh Kumar August 2006

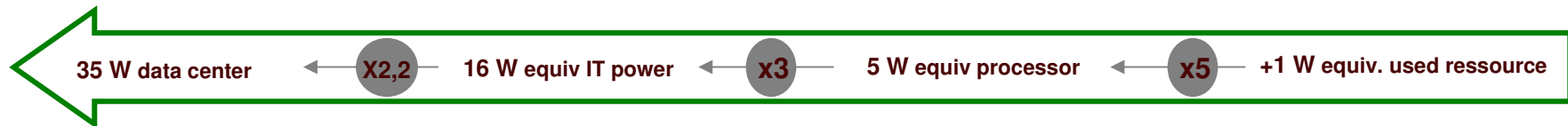
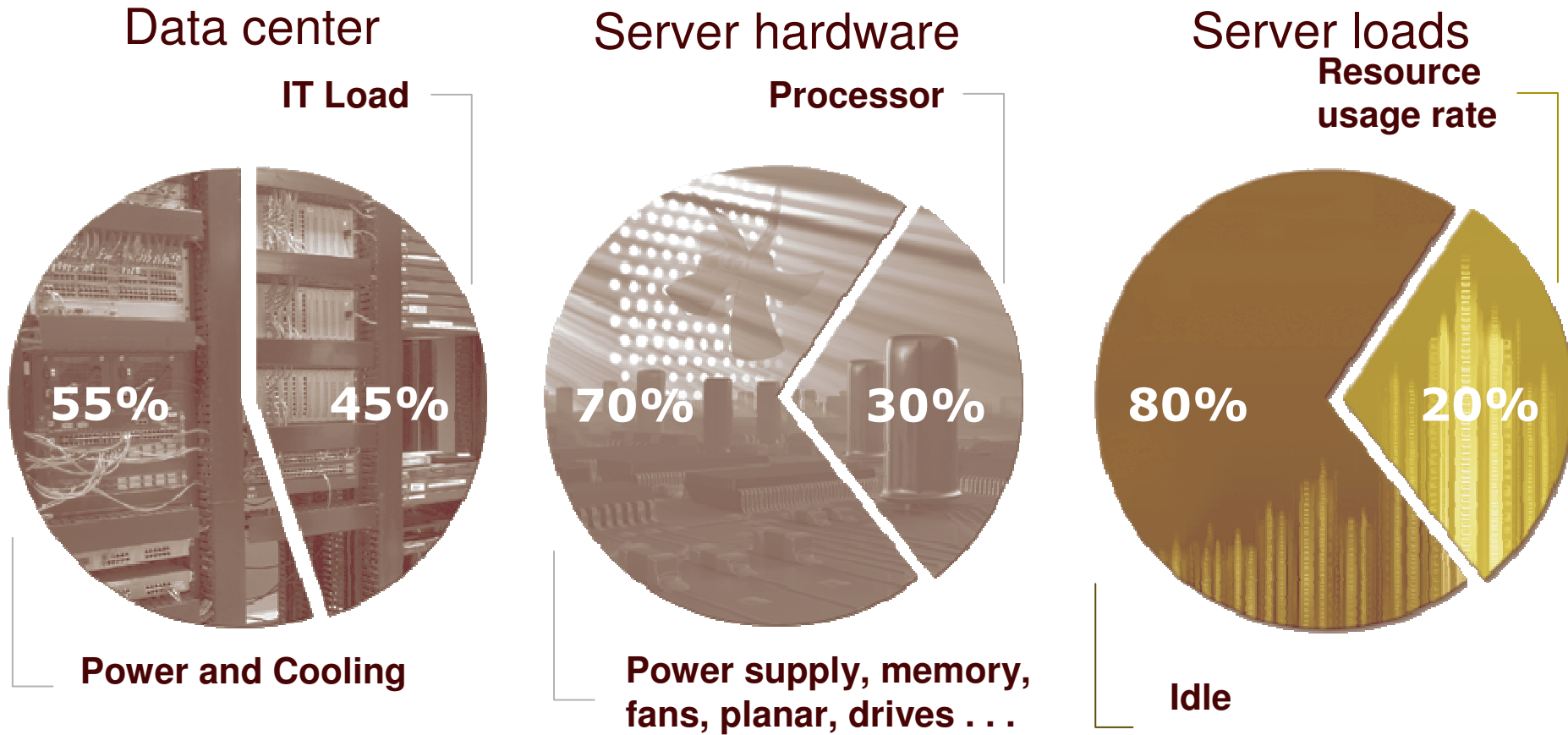
The Data Center: an increasing top CIO pain point



“Power and cooling will be a top 3 issue with all CIOs in the next 6-12 months” Michael Bell – Gartner Group

- “Through 2009, 70 percent of data center facilities will fail to meet operational and capacity requirements without some level of renovation, expansion or relocation” - Gartner Group 2005
- “77% of AFCOM members expect to relocate or make major physical improvements to their data center” – AFCOM 2006
- Although you would expect technology density to reduce the need for data centers ... increased demand is having the opposite effect
- 2006 customer spending in data center renovation, expansion or relocations is estimated to be \$25B in 2007

How is energy typically used in the data center?



Project 'Big Green'

- **IBM to reallocate \$1 billion each year:**
 - To accelerate “green” technologies and services
 - To offer a roadmap for clients to address the IT energy crisis while leveraging IBM hardware, software, services, research, and financing teams
 - To create a global “green” team of almost 1,000 energy efficiency specialists from across IBM
- **Re-affirming a long standing commitment at IBM:**
 - Energy conservation efforts from 1990 – 2005 have resulted in a 40% reduction in CO₂ emissions and a quarter billion dollars of energy savings
 - Annually invest \$100M in infrastructure to support remanufacturing and recycling best practices
 - *Will double compute capacity by 2010 without increasing power consumption or carbon footprint saving 5 billion kilowatt hours per year . . . equals energy consumed by Paris - “the City of Lights”*
- **What “green” solutions can mean for clients:**
 - For the typical 25,000 square foot data center that spends \$2.6 million in power annually, energy costs can be cut in half
 - Equals the reduction of emissions from taking 1,300 automobiles off of the road

Environmental Friendly

New Goal Announced!

Further extend IBM's early accomplishments by reducing CO₂ emissions associated with IBM's energy use 12% from 2005 to 2012 via energy conservation, use of renewable energy, and/or funding CO₂ emissions reductions with Renewable Energy Certificates or comparable instruments.

Early Results

40% Between 1990 and 2005, IBM's global energy conservation actions reduced or avoided CO₂ emissions by an amount equal to 40% of its 1990 emissions.

Awards & Recognition



FORTUNE 500 Top 20 2004, 2005, 2006



1998, 1999, 2001



2005



2005



USEPA Climate Protection Award 1998 and 2006



The Climate Group 2005



Green Power Purchaser Award 2006

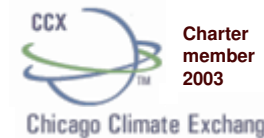
Environmental Efforts at Big Blue



Computer Program Charter Member 1992



Charter Member 2000



Charter member 2003



Business Environmental Leadership Council



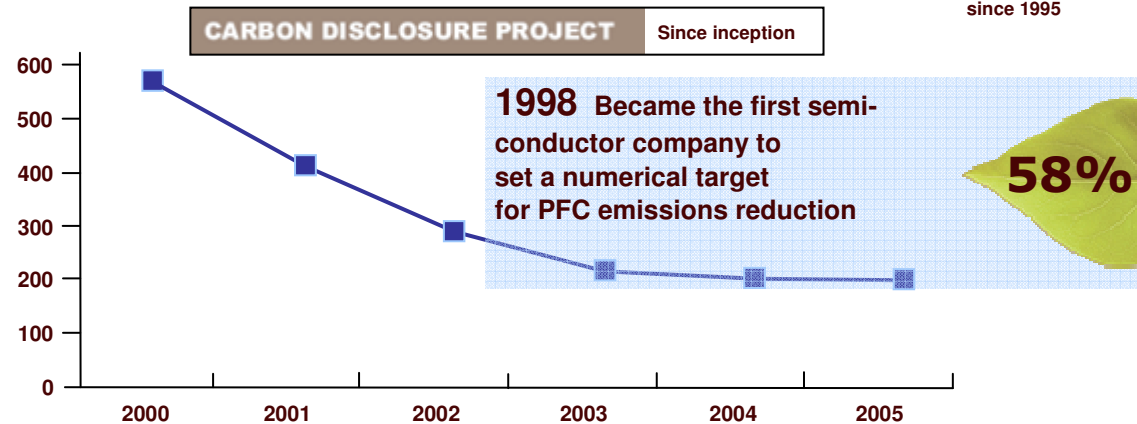
Charter Member 2002



WRI Green Power Market Development Group Charter member 2000



1605(b) voluntary emissions reporting since 1995



Chaque partie d'une organisation aura différents challenges et cherchera des solutions qui seront gérées et intégrées au sein d'une stratégie et une planification.

Stratégie :

- Où devrions-nous porter nos efforts de réduction de l'empreinte carbone ?
- Quel-est l'alignement de notre stratégie carbone avec la stratégie métier ?
- Avons-nous un programme intégré ?
- Comment finançons-nous le programme carbone?

Client et produits

- Comment communiquons nous nos évidences de progrès sur le sujet Carbone à nos clients ?
- Quelles sont les nouvelles opportunités "green" et comment les exploiter ?
- Comment concevoir nos produits pour qu'ils soient plus "carbonfriendly" ?
- Comment optimiser ces bénéfices à travers le cycle de vie des produits ?

Chaîne d'approvisionnement

- Comment pouvons faire en sorte que toutes nos opérations soient plus "carbon-friendly"
 - Manufacture ?
 - Logistique ?
 - Achats ?

Personnel

- Comment définissons nous et mettons nous en place des politiques RH liées au développement durable :
 - Stratégie ?
 - Déplacement ?
 - Travail à distance ?
- Comment engageons nous nos employés dans un agenda développement durable ?
- Comment favorisons nous et soutenons nous les changements de comportement dans notre organisation ?

IT

- Comment intégrer la mesure du Carbone dans la stratégie IT ?
- Comment identifier les meilleures opportunités IT de réduction du Carbone ?
- Comment réduire et minimiser le Carbone dans chaque domaine de l'IT maintenant et dans le futur ?
- Comment réaliser l'optimisation des capacités IT tout en réduisant le carbone ?
- Comment traiter rapidement la problématique capacité et énergie ?

Propriété

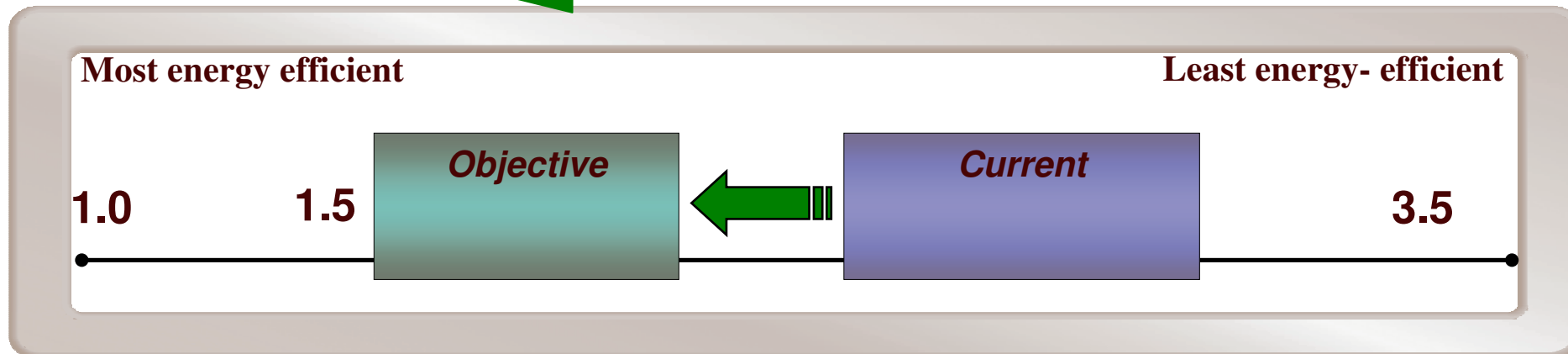
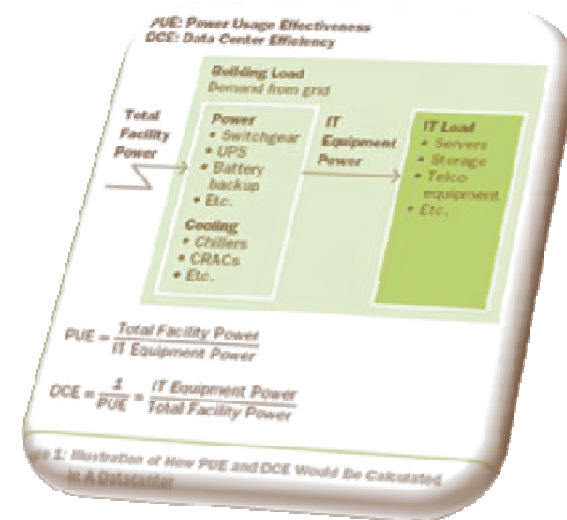
- Comment réduire notre empreinte carbone dans :
 - Bâtiments et bureaux ?
 - Les usines ?
 - Les centres de distribution ?
- Comment travaillons nous pour avoir un portefeuille de propriété conforme au développement durable ?

Information

- Comment mesurons nous et surveillons nous constamment les informations sur l'empreinte carbone de manière efficace ?
- Comment démontrons nous notre conformité aux normes et réglementations ?
- Avons nous un tableau de bord lié au carbone et des indicateurs de mesure de cette performance ?

First, To assess Energy Efficiency of its Data center

- Compares total power used by the data center to the power used by the technology
- Provides a marketplace comparison
- Demonstrates range for opportunity improvement





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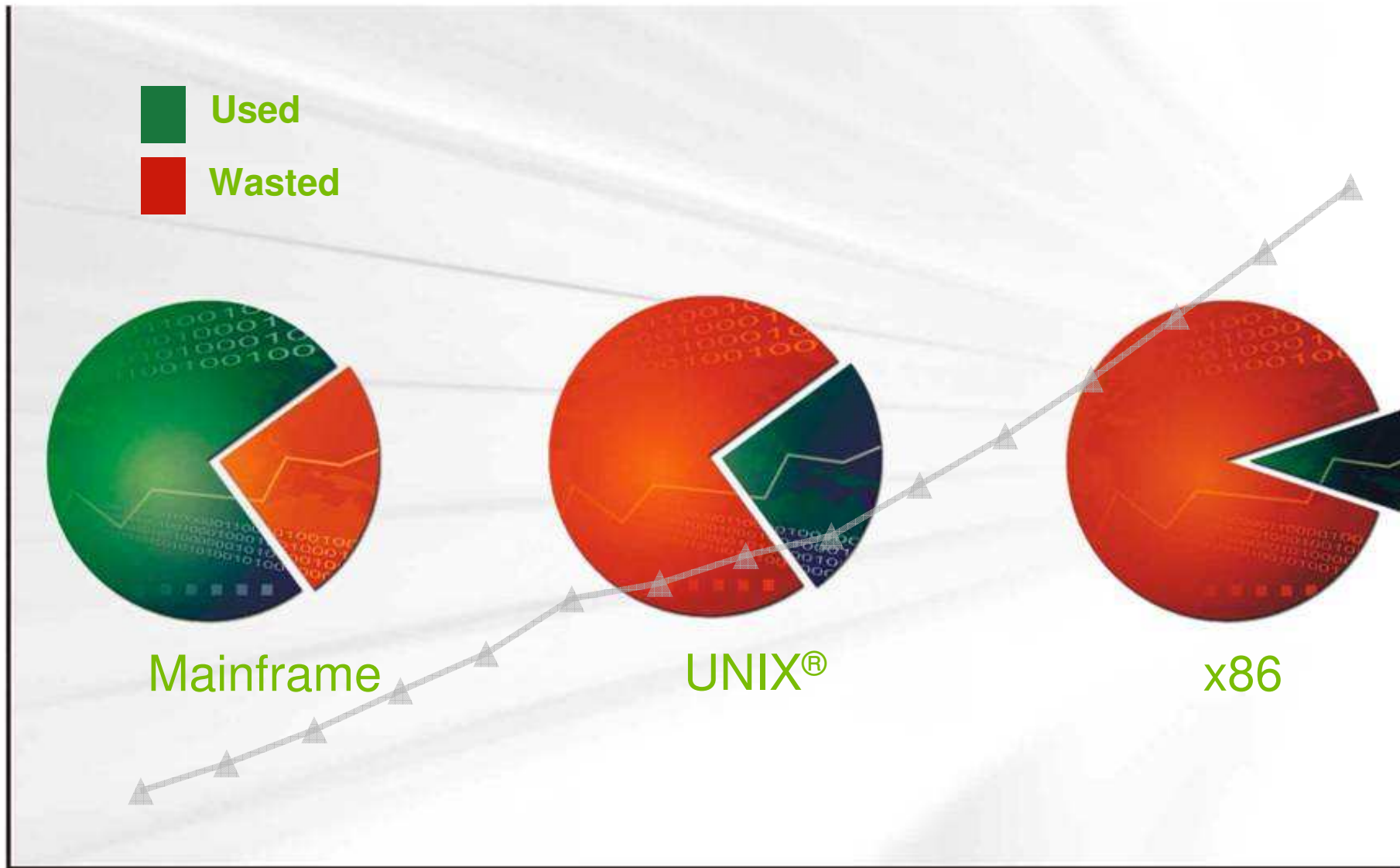
IT Optimization

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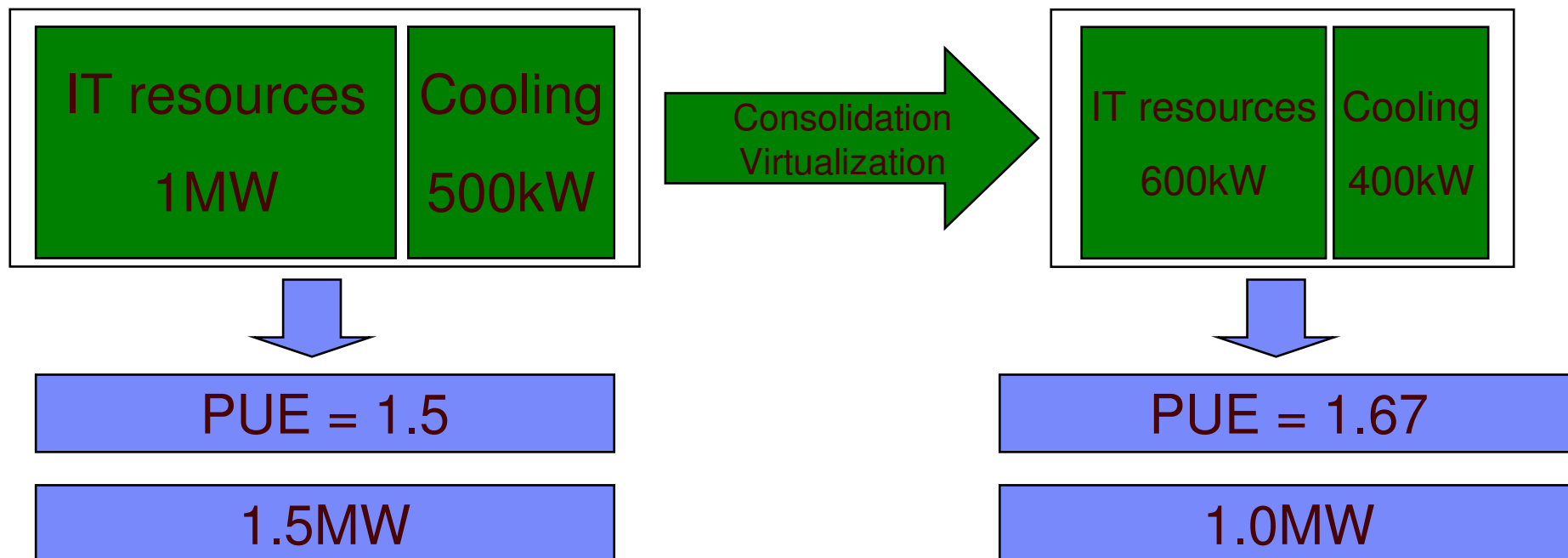
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Comparison of typical server utilization rates

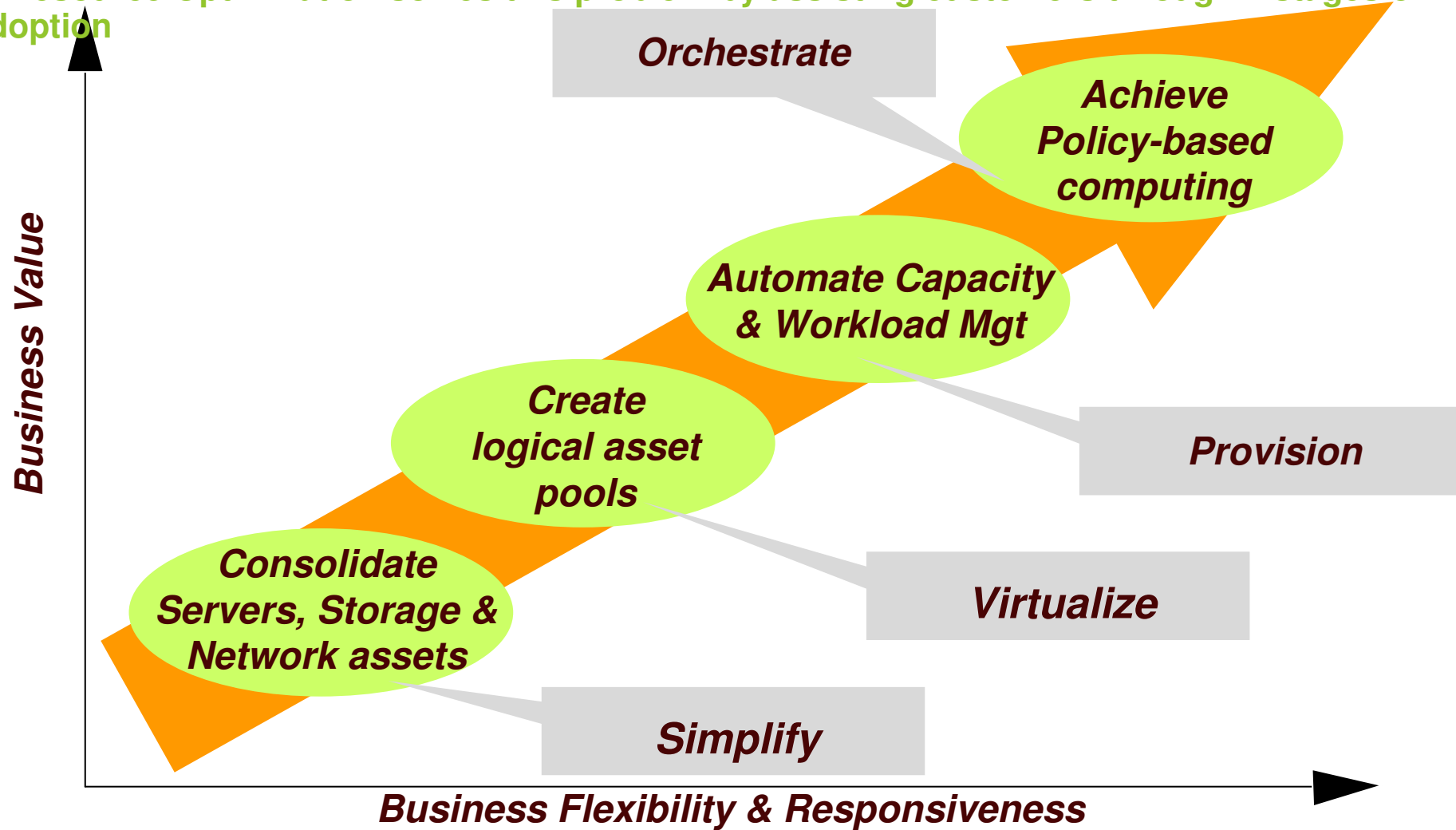


Energy Efficiency and Virtualization

- You can be energy efficient with no virtualization.
- You're loosing money.



IT Resource Optimization solves this problem by assisting customers through 4 stages of adoption



How you benefit: *Integrated technology, services, and industry expertise to help you manage and use energy in a more cost-effective, efficient, and environmentally-sustainable way.*

Energy Solutions

- Optimized Airflow Assessment for Cabling
- Scalable Modular Data Center
- Integrated Rack Solution
- Data Center Global Consolidation and Relocation Enablement

Energy Assessments

- Energy Efficiency self-assessment and Incentive Finder
- Server and Storage Power/Cooling Trends and Data Center Best Practices
- Data Center Thermal Analysis and Optimization Facilities Integration

Energy Management

- IBM Director with Active Energy Manager
- Power Configurator to plan your power usage

PowerExecutive



Power Configurator

Tivoli

- Leadership virtualization capabilities extend beyond simple partitioning
- Tivoli® Enterprise Management

Energy Technology

System designs

*More performance
Less kilowatts*

Virtualization

*Standard feature in
most systems*

Power Architecture™

*Processor efficiency
management*

Rear Door Heat Exchanger

Thermal management innovation

X-Architecture™

*Processor efficiency
management*

IBM power supplies

Measurement built in



Calibrated Vector cooling

Reduces wasteful air movement

BladeCenter

*Energy Efficiency
from the ground up*





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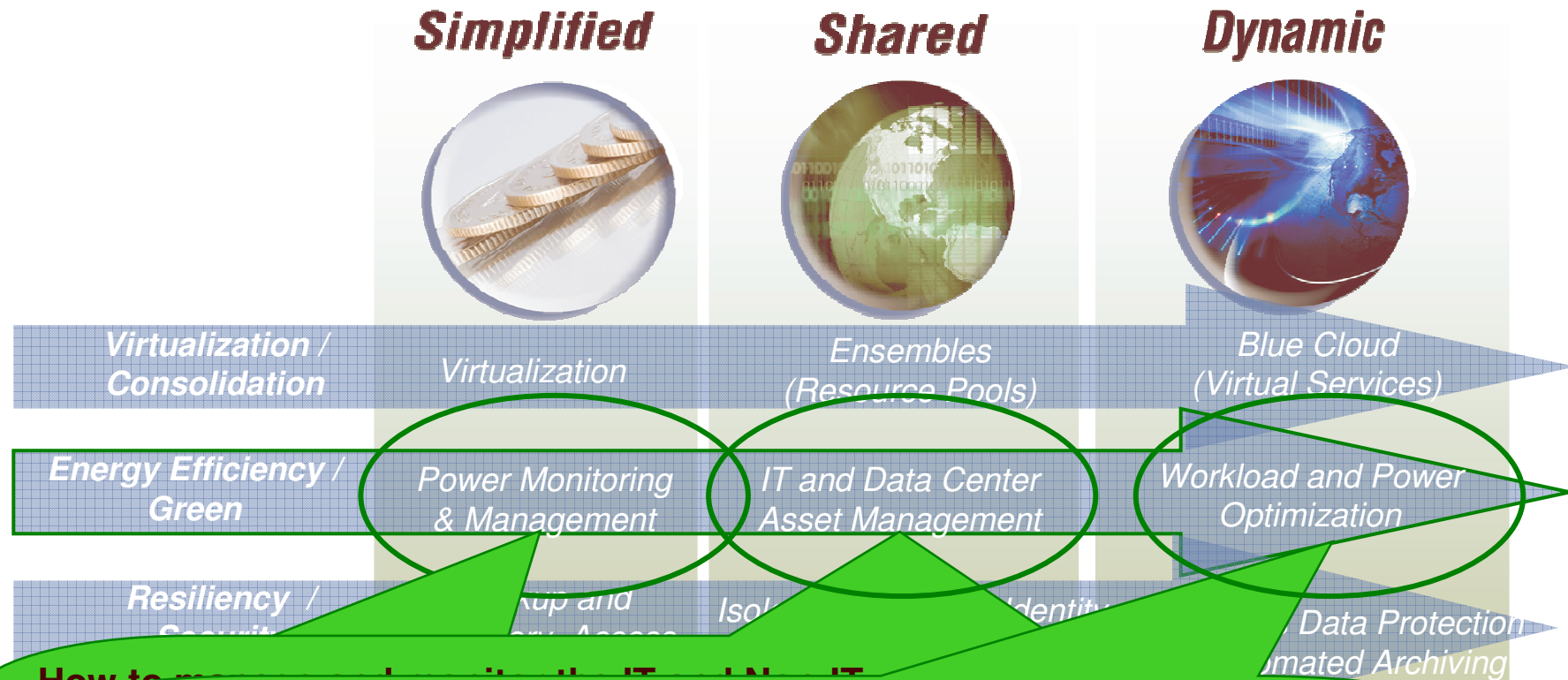
Energy Efficiency Showcase

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Energy Efficiency



How to... Implement solutions that help to optimize workload and power:

- Scalable and Modular Data Center for the High Density Zone.
- Hot and Cold corridors in the Low Density Zone.
- Dynamic regulation of the air flow with SMDC.
- Visualization of the air flow in the Data Center with sensors and probes.

Leadership Center - Energy Efficiency : The Overall Concept

Vision

- Build the most innovative global Energy Efficiency Customer showcase leveraging the biggest European ITD Strategic & PSSC Data Centers



Objectives

STG Focus

- Design and build the “Energy Efficiency Showcase” with the latest STG technology
 - Show enhancements and strengths of each component of the latest technology
- Be utilized by the Leadership Centers.
- Focus on STG plays: Virtualization, Consolidation, Energy Efficiency, Serviceability, Resiliency & Security
- Create STG assets
- Detect & validate for Customers opportunities

The full Green DC Story

- Run a real production Data Center showcase for customers, partners and IBMers
- Demonstrate the global Green Data Center solutions :
 - IBM credibility on Data Center « sell what we use & use what we sell »
 - Leading edge solutions and directions to the energy & cooling challenges
 - Best practices in Data Center Management
- Be a Customer reference
- Develop STG partnership with SWG, GTS, ITD/SO and Industries



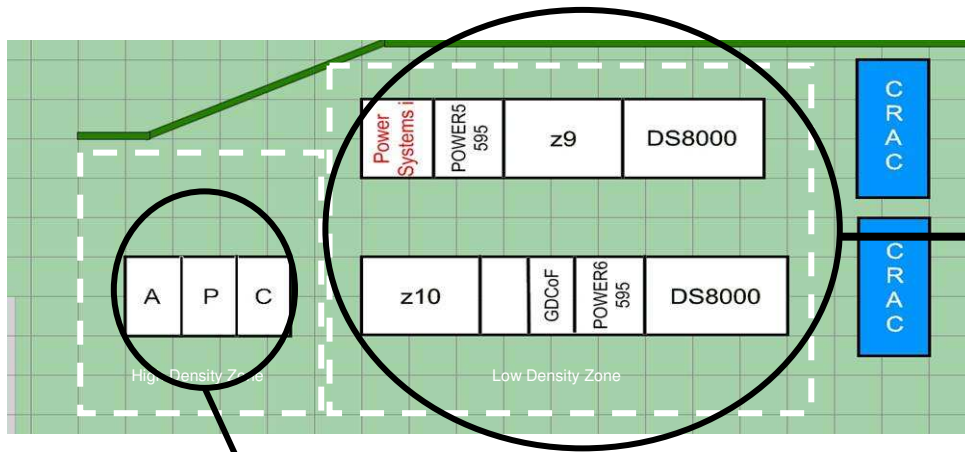
WW project

- Share PSSC MOP as part of the WW project including POK and B/JG
- Provide WW sales forces a tremendous tool to start engaging with their customers on DC pain points
- Be the innovative WW leader on the market place

Energy Efficiency Leadership Center Products and Solutions Support Center (PSSC) IBM Montpellier, France



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Live Camera



Synapsense probes & sensors

The PUE is affected by any physical access into the room. Having a live sophisticated camera can reduce the physical accesses.

For demo purpose, it helps to remotely present the technologies to our customers.



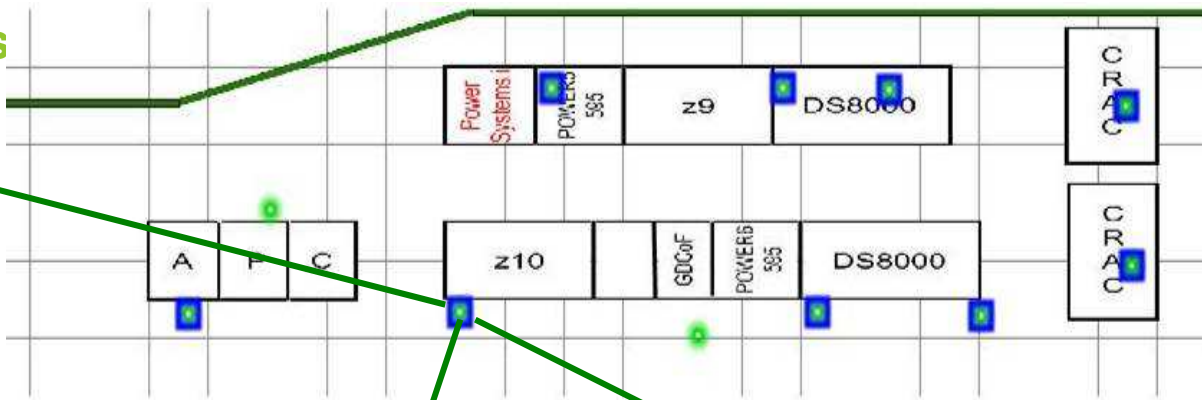
Raised floor tile for behind z10



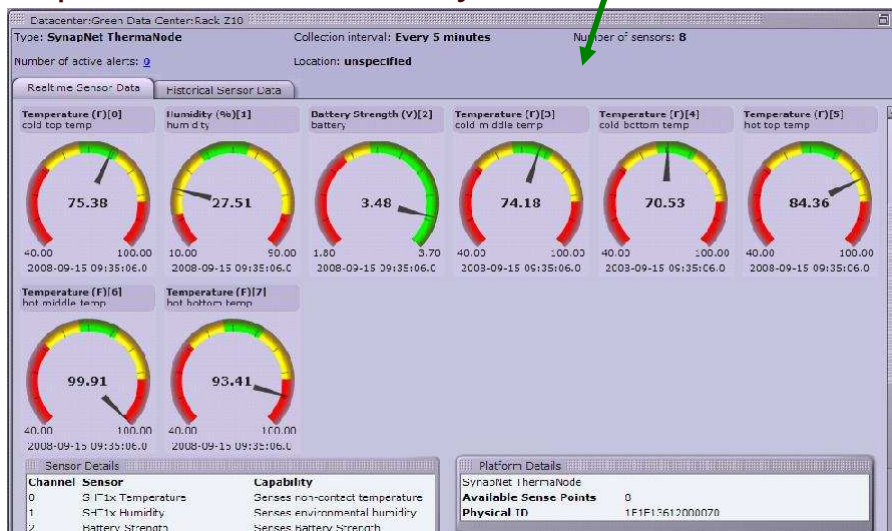
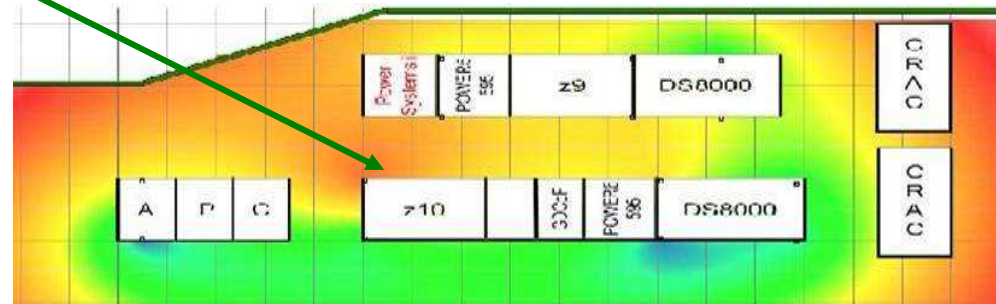
The technical zone: the CRACs



The High Density Zone



100 probes and sensors allowing to monitor real time: the temperature, pressure and humidity in the DC.

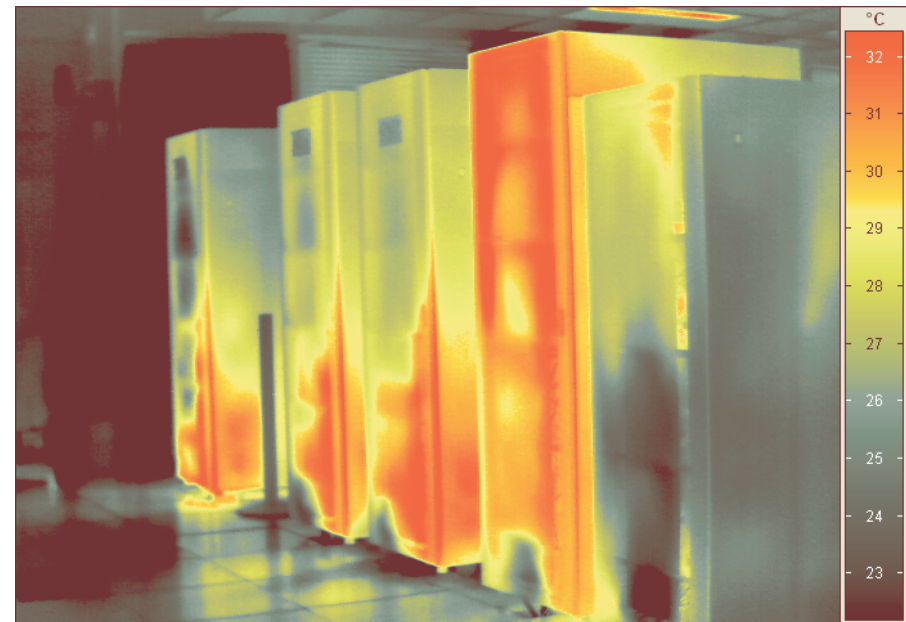


For demo purpose all the measurement can be graphically shown. Helping to efficiently track hot spots and DC behavior.

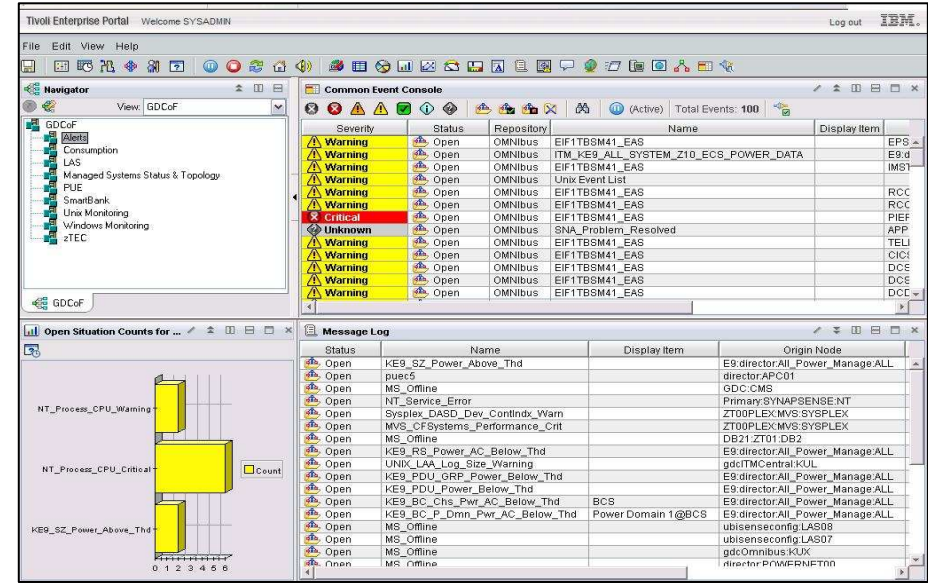
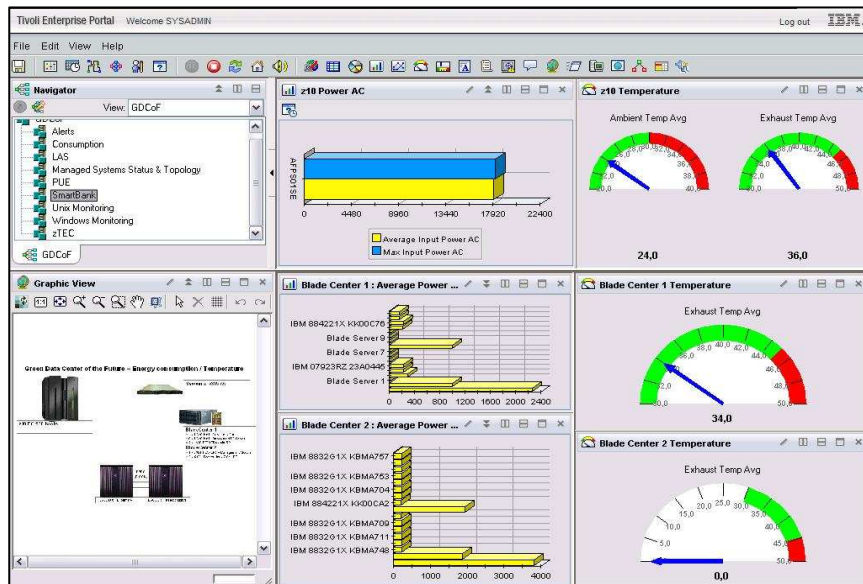
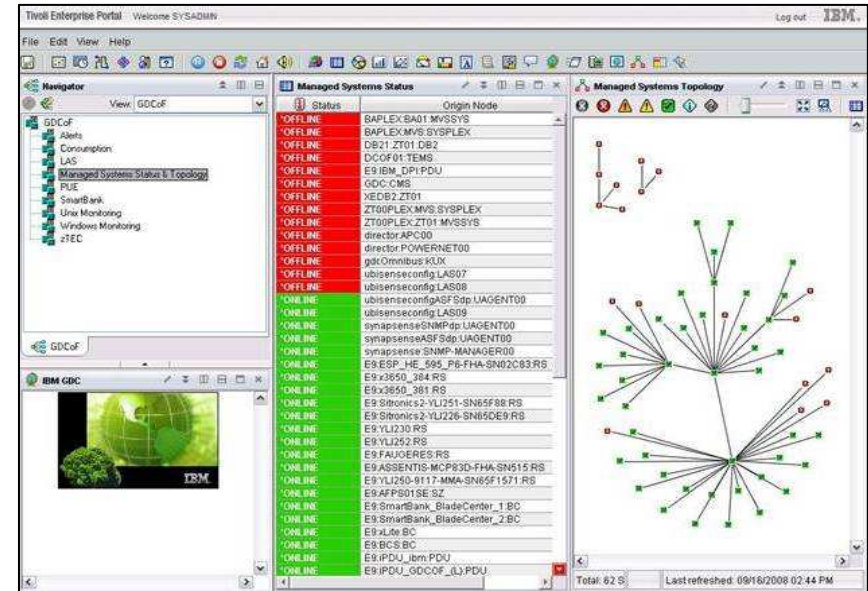
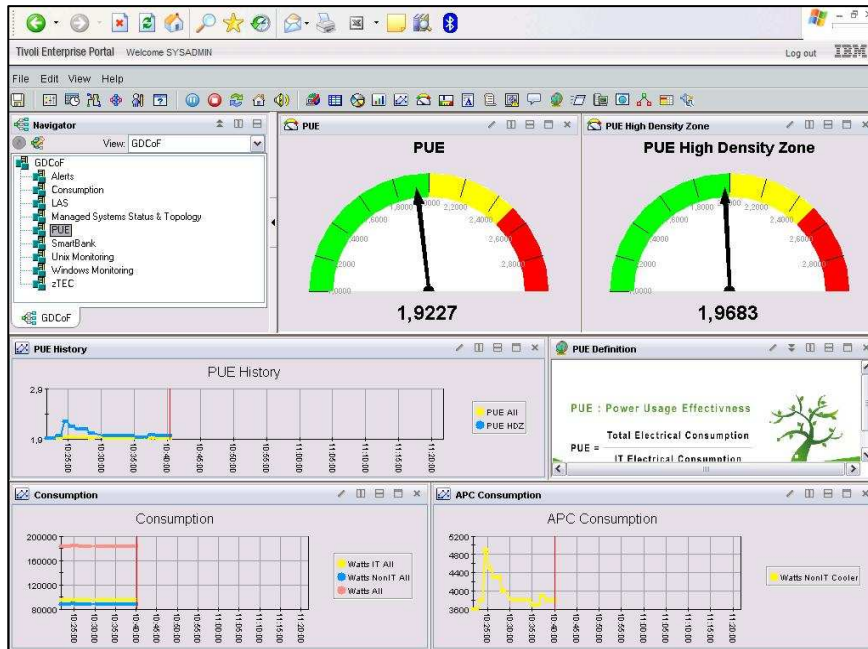


This very technological advanced camera can show hot spots in a Data Center.

For demo purpose you point the camera to any DC components and graphically visualize the temperature of it.



TIVOLI TEP Workplaces





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Questions & Answers

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