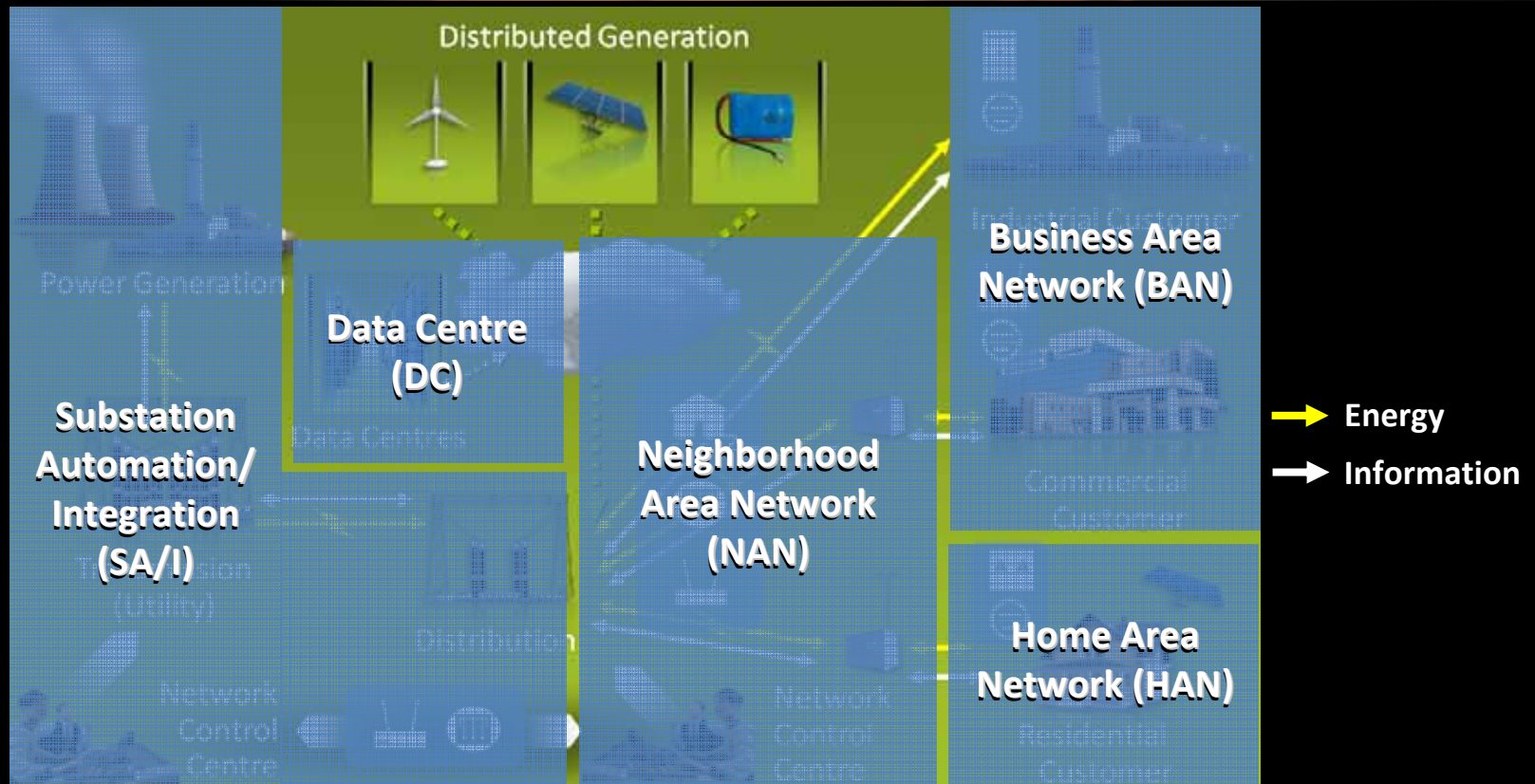


Intelligent Communications Enabling End-to-End Energy Management

John Nachev
BDM Utilities - Cisco





Business Communications Solutions

Cisco & Partner Services

Plan

Build

Operate

T&D
Automation

Optimise Asset
Utilisation and
Improve Efficiency
and Reliability

SmartGrid
Security

Provide Threat
Defense and Cyber
and Physical Security

Smart Meter
Communications

Increase
Transparency and
Improve Billing
Service

Business
Energy
Management

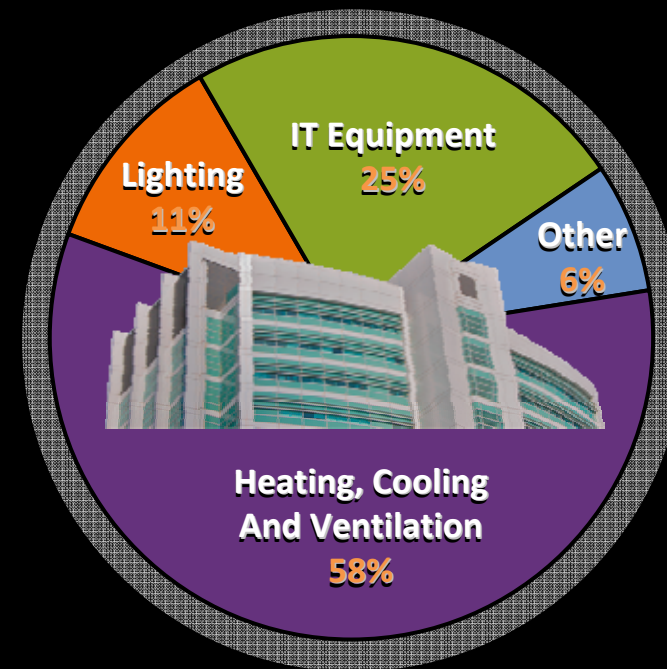
Optimise Energy Use
and Reduce Costs
and Carbon
Footprint

Home
Energy
Management

Optimise Energy Use
and Reduce Costs
and Carbon
Footprint

Cisco + Partners Integrated End-to-End Smart Grid Solutions

- The IT industry generates 2% of the world's greenhouse gas (GhG) emissions, 25% in commercial buildings
- Within commercial buildings, breakdown of GhG emissions is as follows*
 - Lighting - 11%
 - IT Equipment - 25%
 - HVAC - 58%
 - Other - 6%
- Cisco EnergyWise affects the world carbon footprint beyond the 2%



* Source: UK Energy Efficiency Best Practice Program; Energy Consumption Guide 19: Energy Use in Offices

Cisco EnergyWise Technology

- Innovative software added to Cisco Catalyst® switching portfolio
- Available to customers for download now or with technology refresh
- Enables reduction of greenhouse gas emissions, affecting other 98% (beyond IT)
- Enables significant cost savings
- Network intelligence monitors, reports, and reduces energy use across entire infrastructure
- Open technology for greater partnering



Collaborative Cross-Industry Effort

Cisco Business Energy Management Strategy

Any-to-Any Connectivity



Building and IT systems
Energy supply
and demand
Cisco® EnergyWise

End-to-End Management



Efficiency and conservation
Sustainable growth
Smart and connected energy
management

Extensible Platform



Open API and standards
Ecosystem partners and
applications
Green technologies

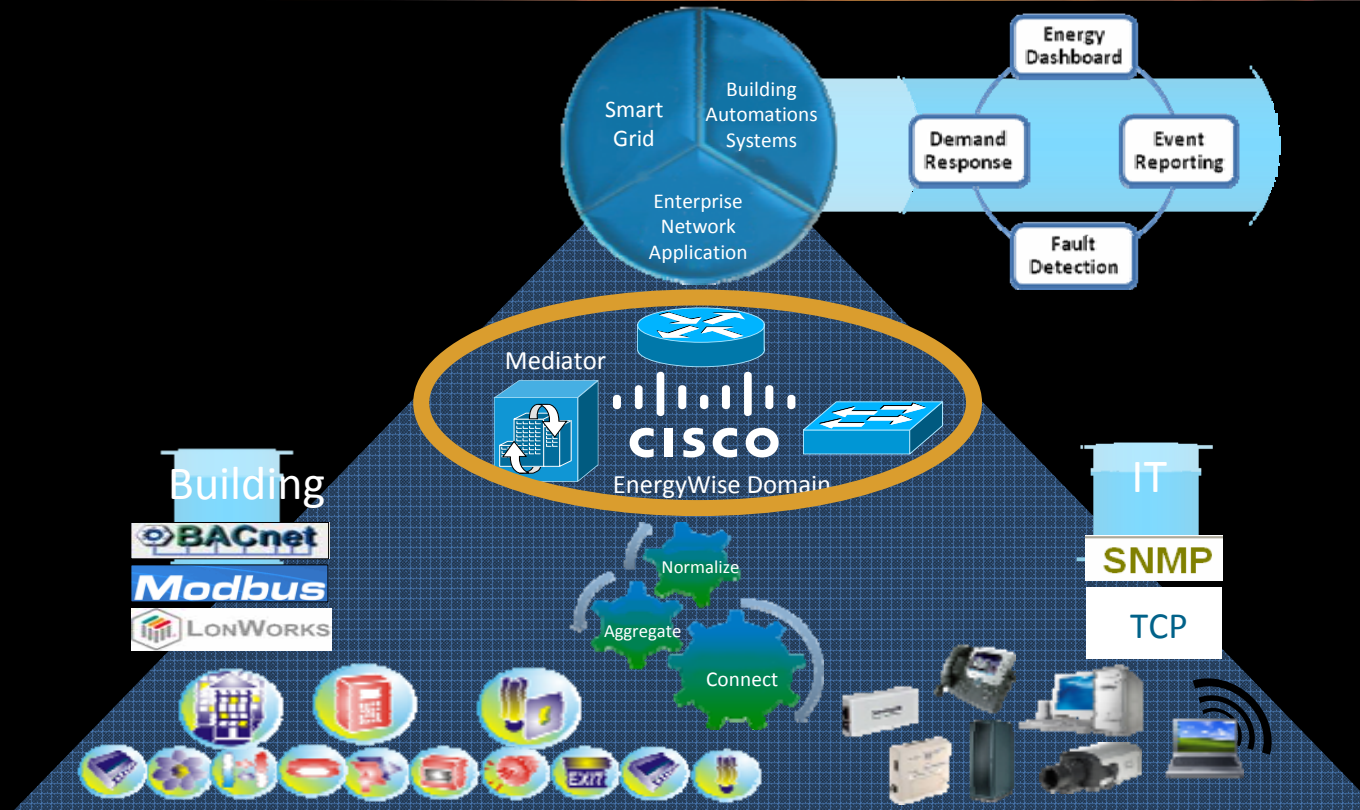
Cisco Smart Connected Buildings

Business Energy Management Solution

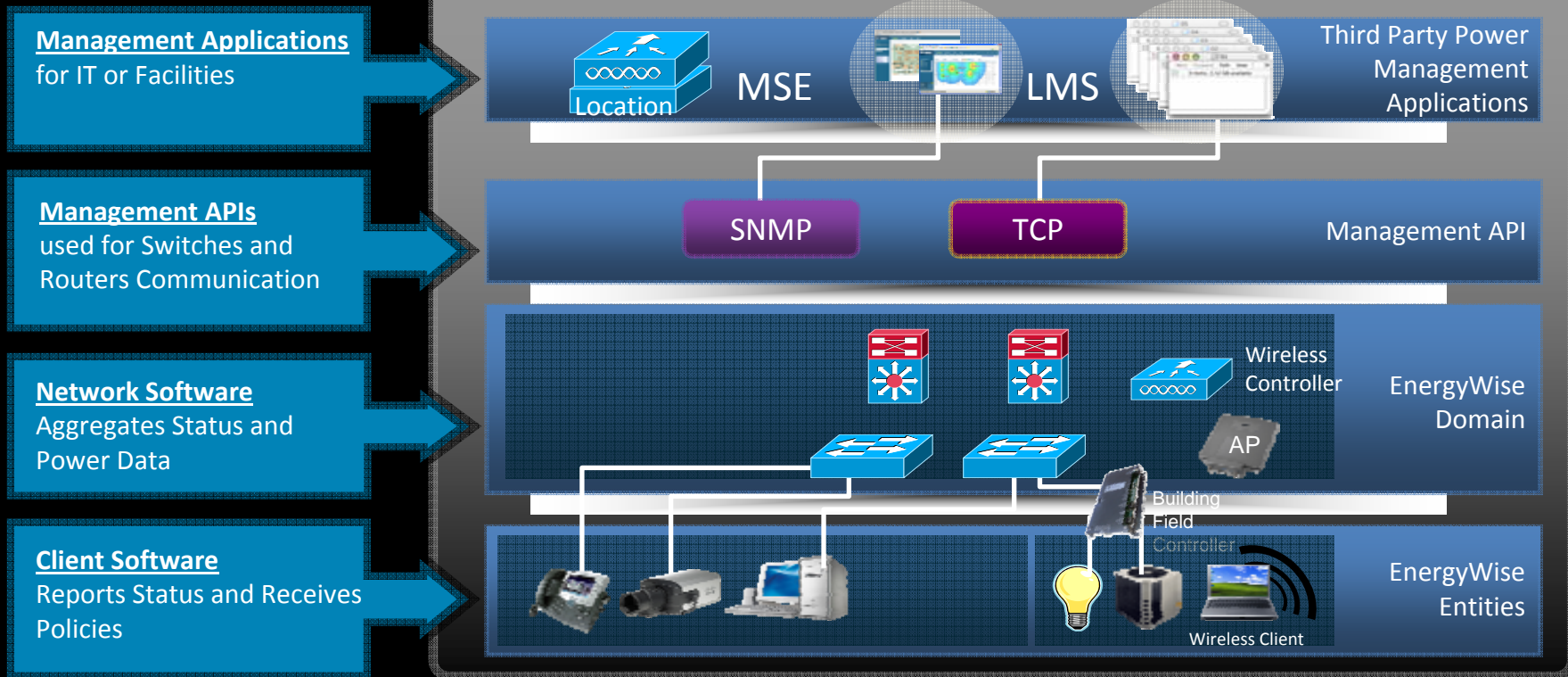
Transform the Power Management Experience



Cisco EnergyWise Integrates with Cisco Network Building Mediator



Cisco EnergyWise Event Flow



Cisco EnergyWise and Building Mediator Case Study: NetApp

- NetApp creates storage and data management solutions.
- HQ (in California) comprises 10 buildings, with 54 million KWhs annual power consumption, and peak demand of 7.6MW. In 2008, electricity bill was US\$6.9M.
- Business Challenge: Reduce Energy Consumption and take advantage of PG&E Demand Response Program.
- Energy-efficient equipment was only part of the solution. NetApp wanted a platform that would tie together all building systems over IP. The solution had to be Open, Proven and Easy to Maintain.





Cisco EnergyWise and Building Mediator Case Study: NetApp

- Cisco Network Building Mediator aggregates information from all NetApp's building systems, including lighting, HVAC, etc... from multiple vendors; and can automatically adjust building systems in response to collected data.
- To date, NetApp has deployed 19 Cisco Network Building Mediators across the US, Europe and India to implement automated demand response and reduce energy consumption.
- During peak demand, PG&E offers financial incentives to companies to reduce their load in response to a request. After receiving the signal from PG&E, the Cisco Network Building Mediator
 - Sends a notification email
 - Adjusts the loads according to predefined rules – eg. Reducing lighting by 50% and raising the temperature set point by 4 degrees sheds 1.1MW.
 - Records energy usage before and after for verification
 - Transmits the information to PG&E for settlement.



Cisco EnergyWise and Building Mediator Case Study: NetApp

- In conjunction with other systems, Cisco Building Mediator has helped reduce energy consumption in the Sunnyvale, California location by 18 million KWhs in 18 months, saving NetApp some US\$2M in energy costs.
- NetApp's engineering, facilities and IT staff can share information, enabling them to collaborate in a responsible energy policy.
- The US Department of Energy plans to require companies to report their PUE values (Power Usage Effectiveness) values = Total Facility Power/IT Equipment Power. NetApp has seen PUEs average 1.36 for their Data Centres cf. industry averages of 1.5 to 2.

Thank You!

