



Adaptive Infrastructure: Delivering on the Next Generation Data Center

Ramesh Bodapati

Director, Adaptive Infrastructure
Technology Solutions Group

Seoul – July 11 2006



The CxO's balancing act

Maximize return:

- Improve business results; grow revenue and earnings, cash flow, reduced cost-of-operation

Increase agility:

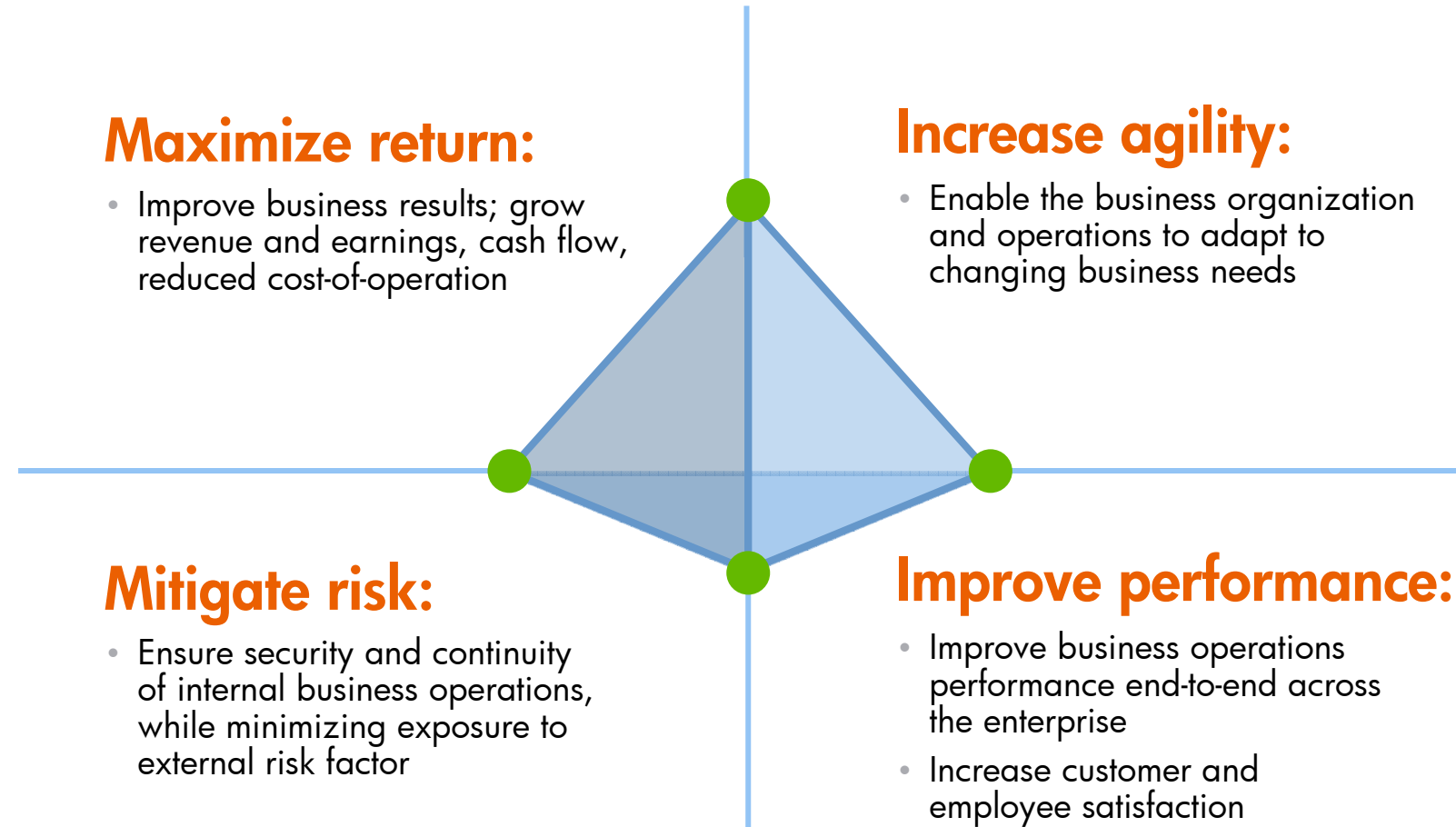
- Enable the business organization and operations to adapt to changing business needs

Mitigate risk:

- Ensure security and continuity of internal business operations, while minimizing exposure to external risk factor

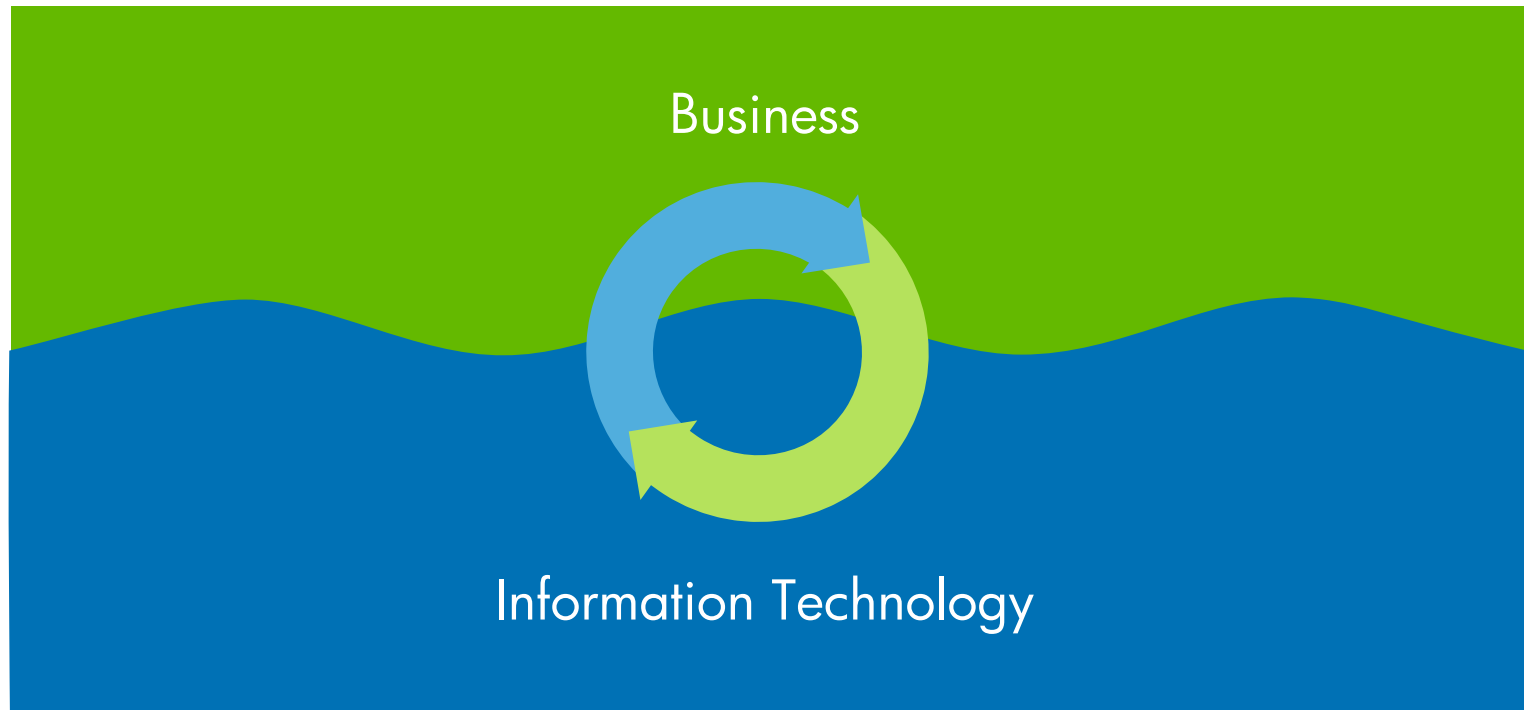
Improve performance:

- Improve business operations performance end-to-end across the enterprise
- Increase customer and employee satisfaction



The Adaptive Enterprise

Business and IT synchronized to capitalize on change



Business benefits: simplicity, agility, value

Adaptive Enterprise Solutions

Financial Services Industry
Communications, Media and Entertainment

Manufacturing and Distribution
Public Sector

Business

Information

Applications

Infrastructure

Adaptive Enterprise Solutions

Collaboration



Continuity



Compliance



Consolidation



Control



Adaptive Infrastructure

Delivering on the next generation data center trend

“24x7 lights-out computing environment, based on standard building blocks, automated using modular software, delivered through comprehensive services.”

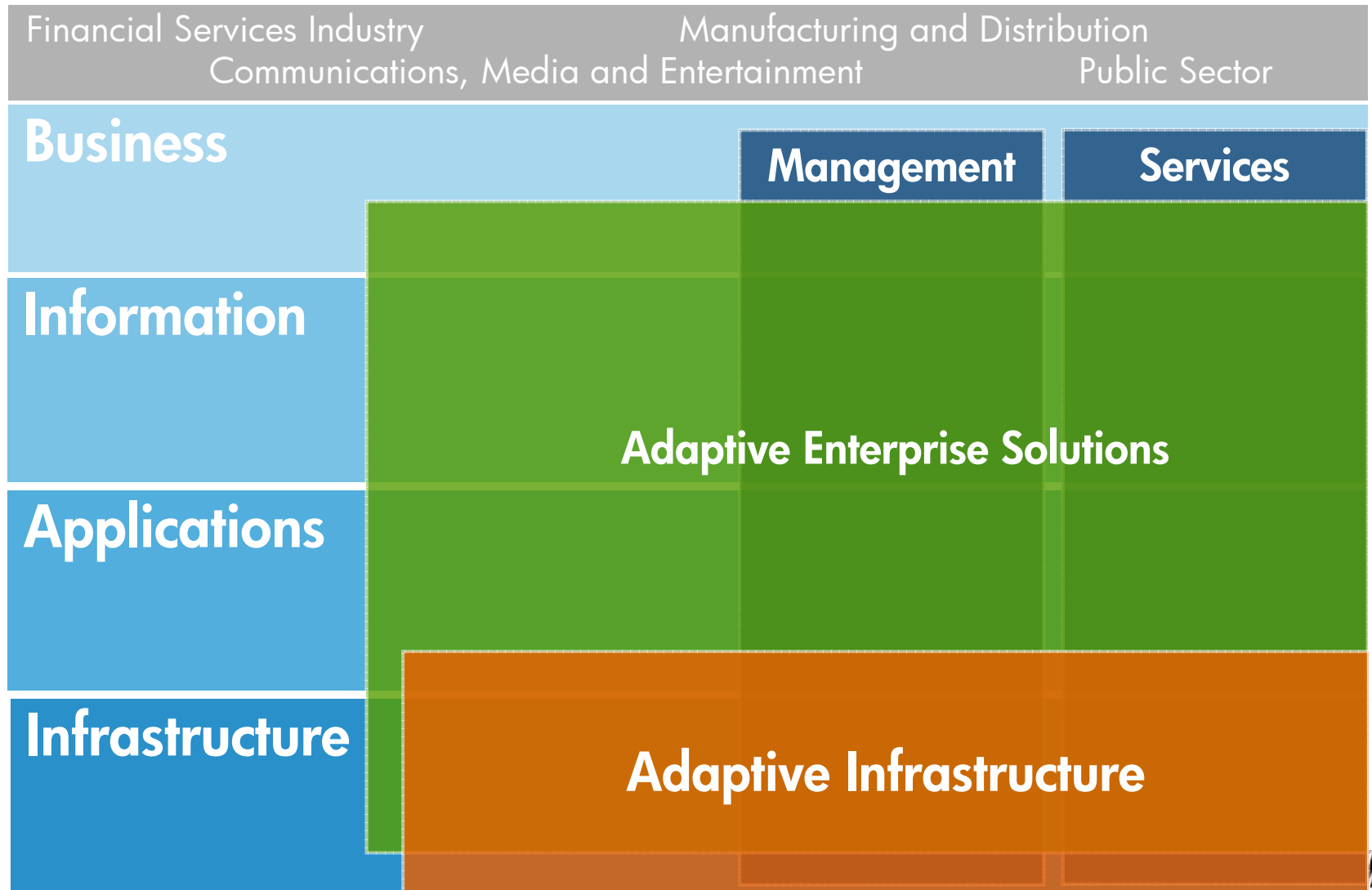
- Lower **cost** of IT operations
- **Speed** in introducing IT change
- Higher **quality** of service



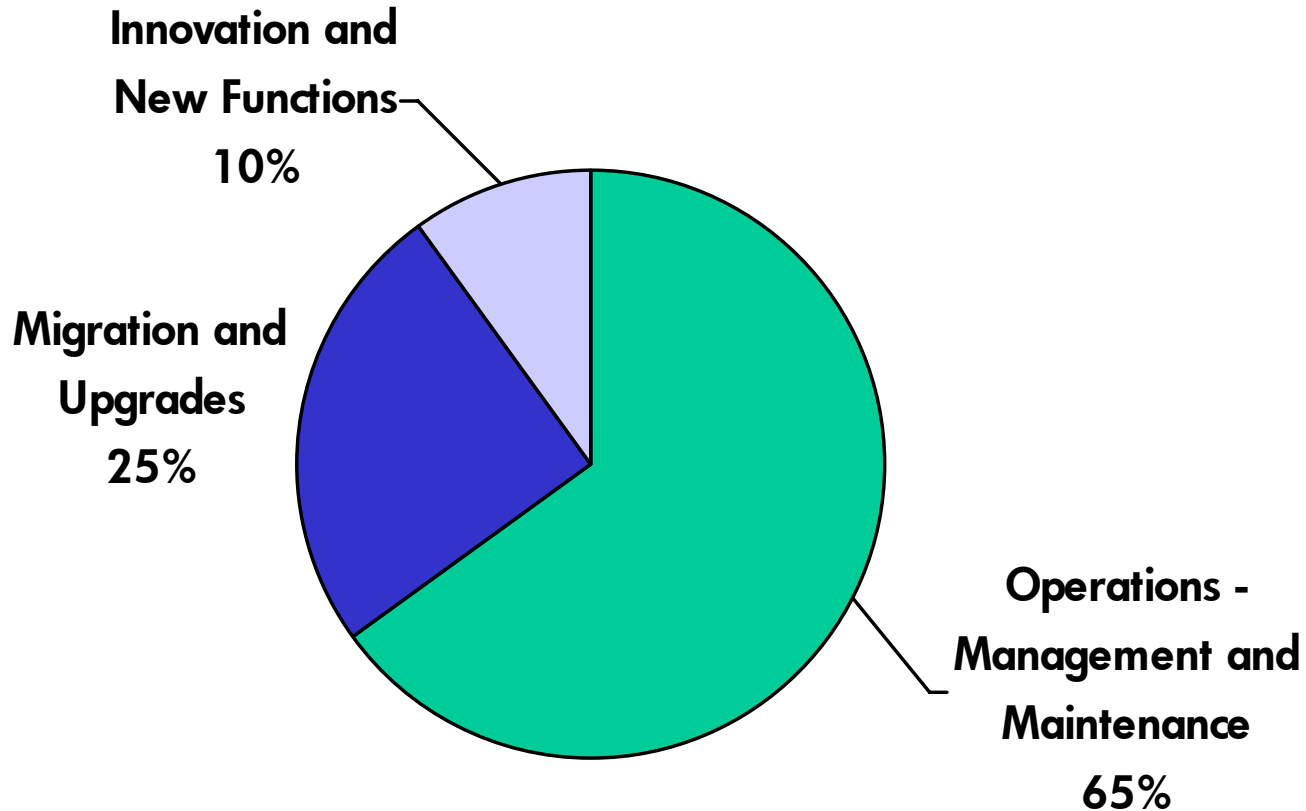
Delivered today as modular systems, products, software and services, and tomorrow through an integrated common architecture

Adaptive Enterprise

Business and IT synchronized to capitalize on change

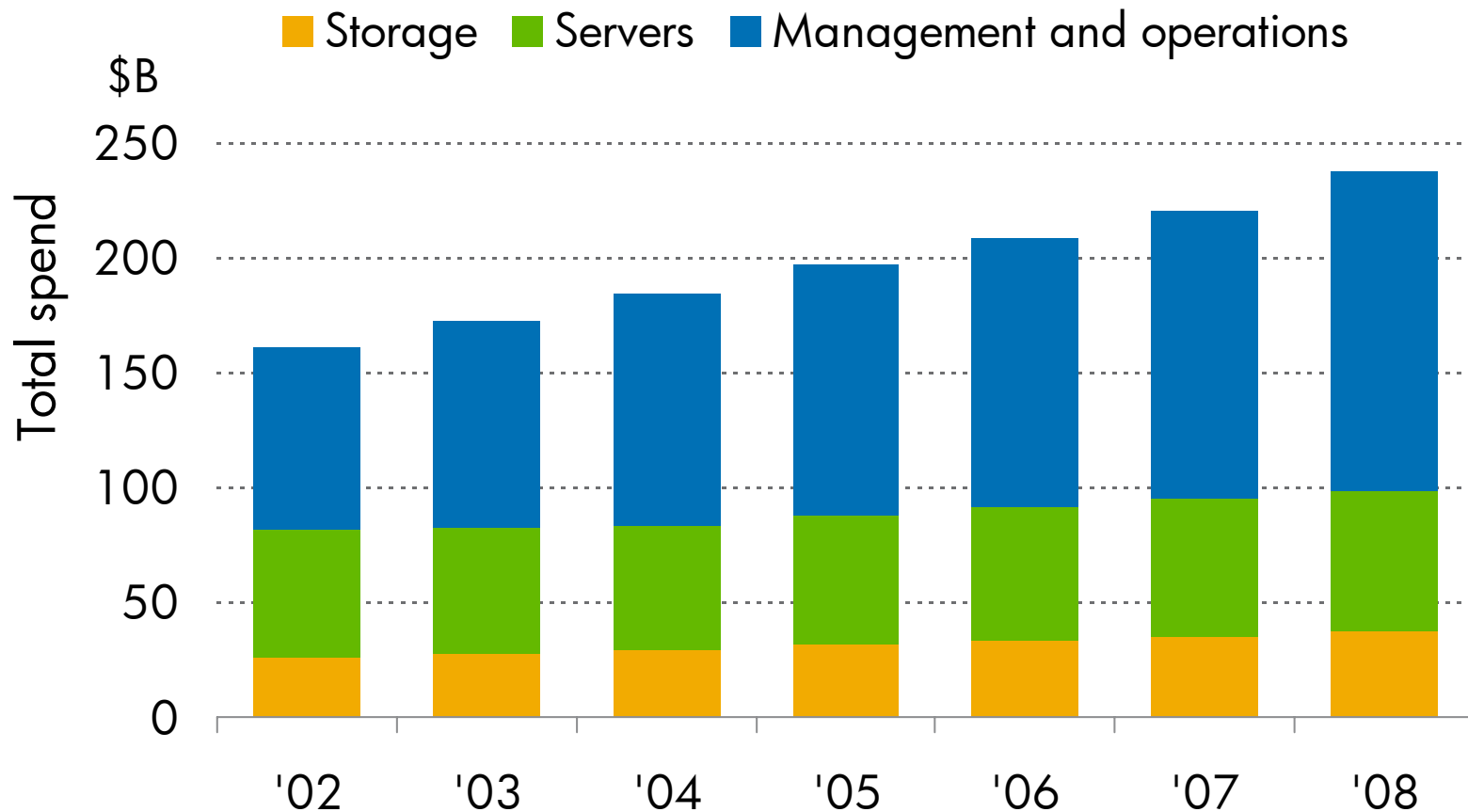


IT budgets have little left for innovation



➤ *Only 10% or less of budget is left for innovation*

Operational spending growing at 3x other systems costs



Sources: IDC, "On-Demand Enterprises and Utility Computing: A Current Market Assessment and Outlook," July 2004; HP analysis.
Storage spend includes storage management SW.

Adaptive Infrastructure

Customer pain points

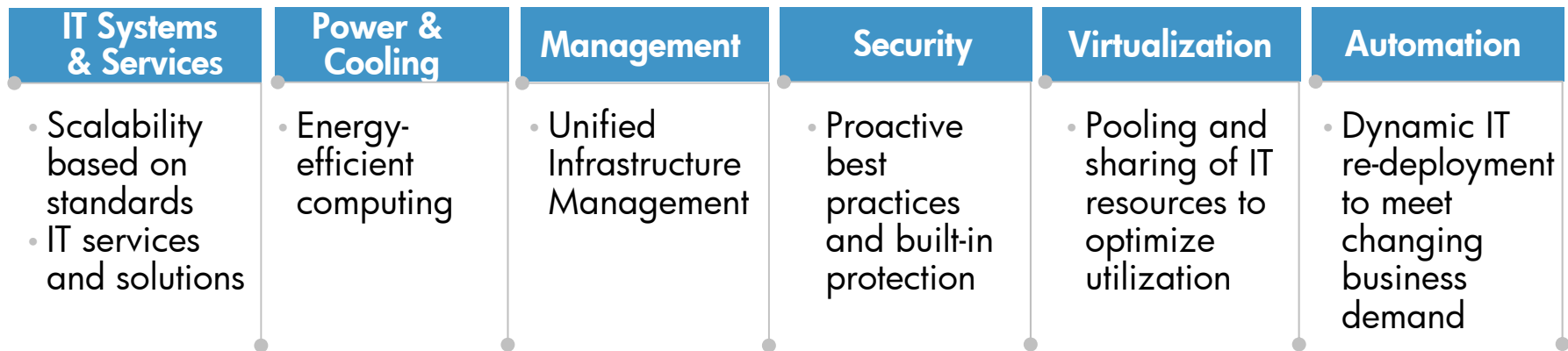
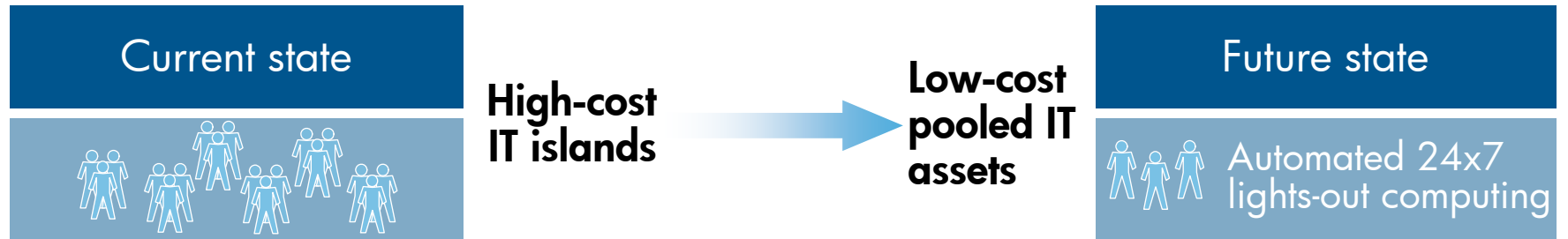
- “We’ve got too many applications, too much customization and too many underutilized servers.”
- “We struggle to meet service level agreements and fast response times for critical workloads.”
- “We can’t implement new projects fast enough.”
- “We’re asked to reduce headcount every year but the work never seems to go away.”
- “Compliance demands are coming and we’re are not sure how to react.”
- “How do we know if our infrastructure is at risk to viruses and security breaches?”

“Our IT environment is too expensive to manage and maintain.”

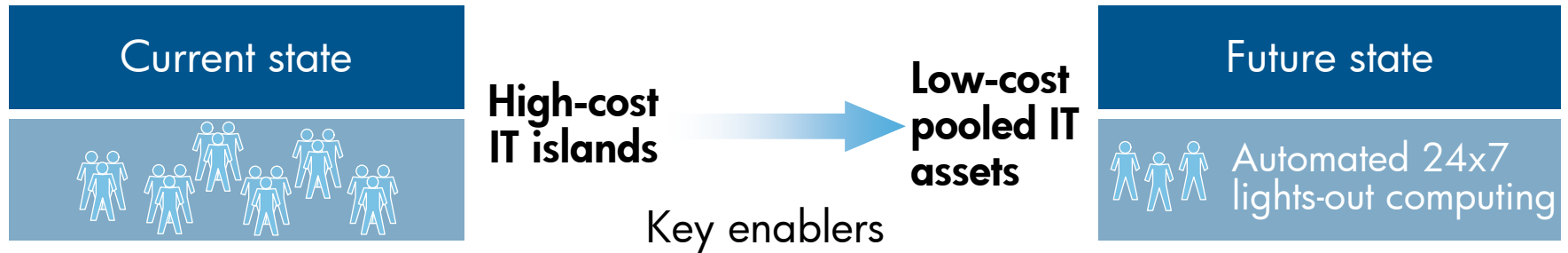


Adaptive Infrastructure

Key enablers



Adaptive Infrastructure Products & Services Today



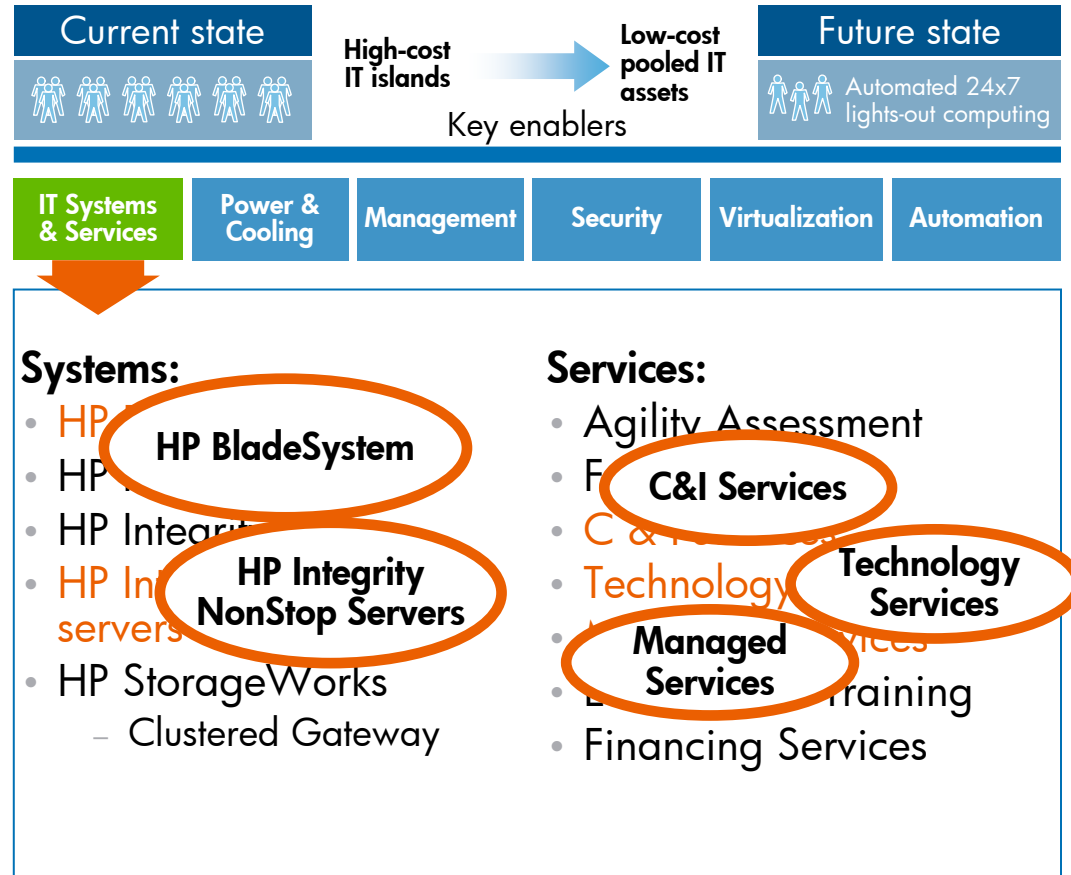
IT Systems & Services	Power & Cooling	Management	Security	Virtualization	Automation
<p>Systems:</p> <ul style="list-style-type: none"> HP BladeSystem HP ProLiant servers HP Integrity servers <ul style="list-style-type: none"> - NonStop servers HP StorageWorks <ul style="list-style-type: none"> - Clustered Gateway <p>Services:</p> <ul style="list-style-type: none"> Agility Assessment Factory Express C & I services Technology Services Managed Services Education & Training Financing services 	<p>Systems:</p> <ul style="list-style-type: none"> Modular Cooling System Power Management <ul style="list-style-type: none"> - BladeSystem - ProLiant servers - Integrity servers Thermal Logic Universal Rack infrastructure <p>Services:</p> <ul style="list-style-type: none"> Data Center Services - power & cooling Thermal Modeling 	<p>Software:</p> <ul style="list-style-type: none"> Systems Insight Manager HP Essentials <ul style="list-style-type: none"> - ProLiant - Integrity - Storage - Insight Control HP OpenView <ul style="list-style-type: none"> - Infrastructure Mgmt - Service Desk - Asset Mgmt <p>Services:</p> <ul style="list-style-type: none"> IT Service Mgmt Infrastructure Mgmt Data Center Mgmt OpenView services 	<p>Systems:</p> <ul style="list-style-type: none"> Virus Throttling Vulnerability & Patch Mgmt HP-UX 11i security <ul style="list-style-type: none"> - Secure partitions - Intrusion Detection ProCurve Identity Mgr <p>Software:</p> <ul style="list-style-type: none"> HP OpenView <ul style="list-style-type: none"> - Identity mgmt - Access control - Federated access <p>Services:</p> <ul style="list-style-type: none"> Security Gov & Mgmt IT Security Assessment Security Ed & Training 	<p>Systems:</p> <ul style="list-style-type: none"> Integrity Virt. Machine Virtual Machine Mgmt Virtual Server Env't <ul style="list-style-type: none"> - Capacity Advisor Serviceguard NonStop Real Time Ent. Virtual Connect StorageWorks <ul style="list-style-type: none"> - Ent. Virtual Array - External storage XP - Reference Info Storage System Utility Pricing <p>Services:</p> <ul style="list-style-type: none"> IT Shared Services Virtualization services Adaptive Net. Arch. Flexible Computing provisioning services 	<p>Systems:</p> <ul style="list-style-type: none"> HP Essentials automation Virtual Server Env't automation HP OpenView <ul style="list-style-type: none"> - Configuration Mgmt - Service Activator <p>Services:</p> <ul style="list-style-type: none"> Automation services Instant Support Enterprise Edition Integrated Support Mission critical support

IT Systems & Services

Modular, standards-based

“Reduce costs while simplifying change”

- Scalability based on standards
- Full range of services and pre-integrated solutions
- Scalable and flexible multi-vendor support



HP sets the new blade agenda

Adaptive Infrastructure in a 17 inch box

- **Adaptive Infrastructure**
 - Automated, 24 x 7 lights-out computing
 - Low cost pooled IT assets
- **HP Blade strategy**
 - Blade everything desktop to datacenter
- **New HP BladeSystem: Innovations leapfrog competition**
 - Management – **Insight Control**
 - Power and cooling – **Thermal Logic**
 - Virtualization – **Virtual Connect**
- **Managing customers' Blade transitions**
 - Investment protection and comprehensive HP and Partner solutions portfolio

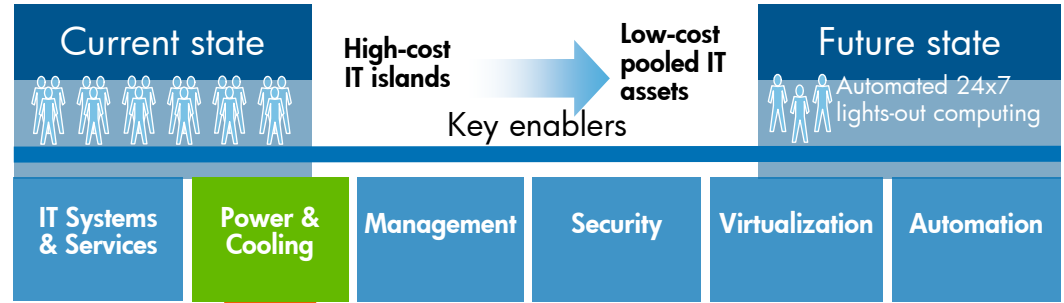


Power & Cooling

Energy-efficient computing

“Maximize power density while achieving optimal power utilization”

- Efficient systems –processor, servers and storage
- Energy-aware provisioning
- Flexible designs and modelling tools



Systems:

- Modular Cooling System
- Power Management
- HP C Class Blade – Thermal Logic
- HP Int...
- Univer
- infras

HP C Class Blade – Thermal Logic

ProLiant Power regulator

Services:

- Data Center power & cooling
- Thermal...

Management

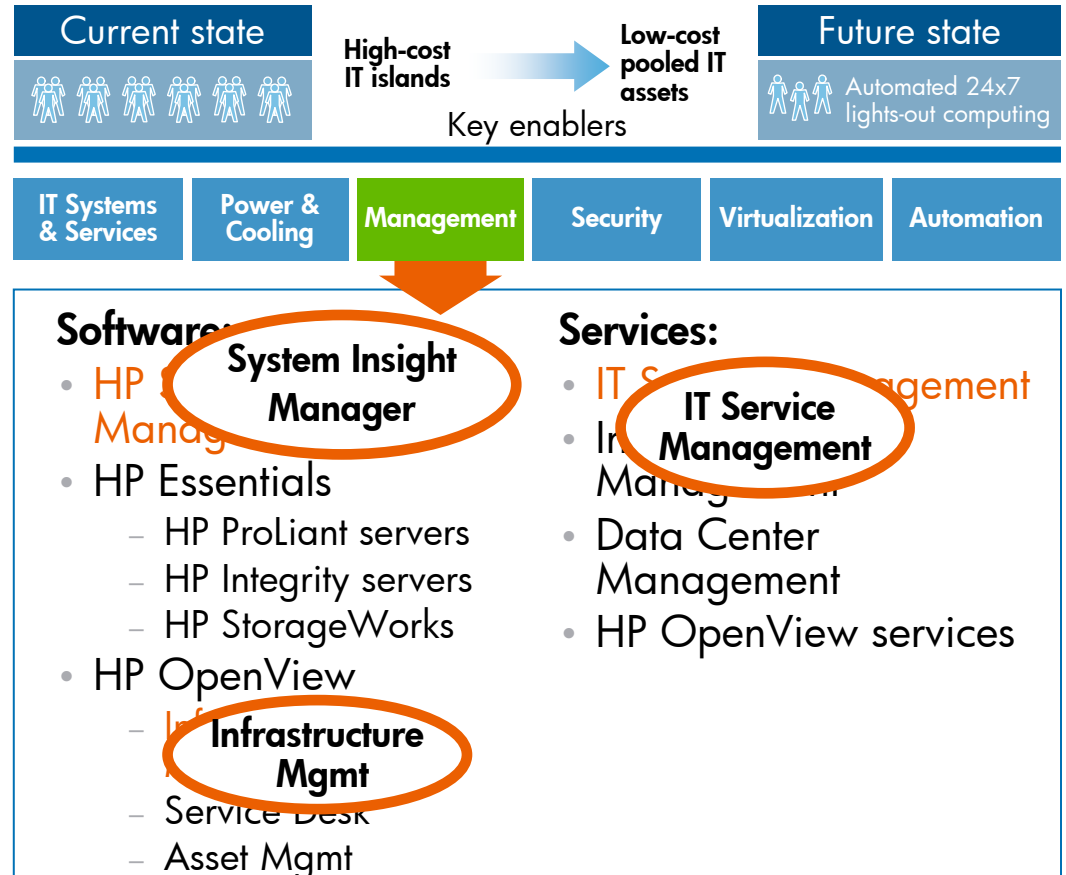
Unified infrastructure management

“Streamline processes, reduce complexity, and improve operational efficiencies”

- End-to-end monitoring
- Management of heterogeneous environments
- Industry-leading products and services



2006년 7월 19일



HP Software

Management for the Adaptive Enterprise

Align

Business Alignment

IT Governance
Analysis & Reporting

Business Service Health

Automate

IT Process Automation

Asset Management

Configuration Management

Consolidated Service Desk

Identity Management

Optimize

Infrastructure Optimization

Network/Server/Storage
Management

Consolidated
Event &
Performance
Management

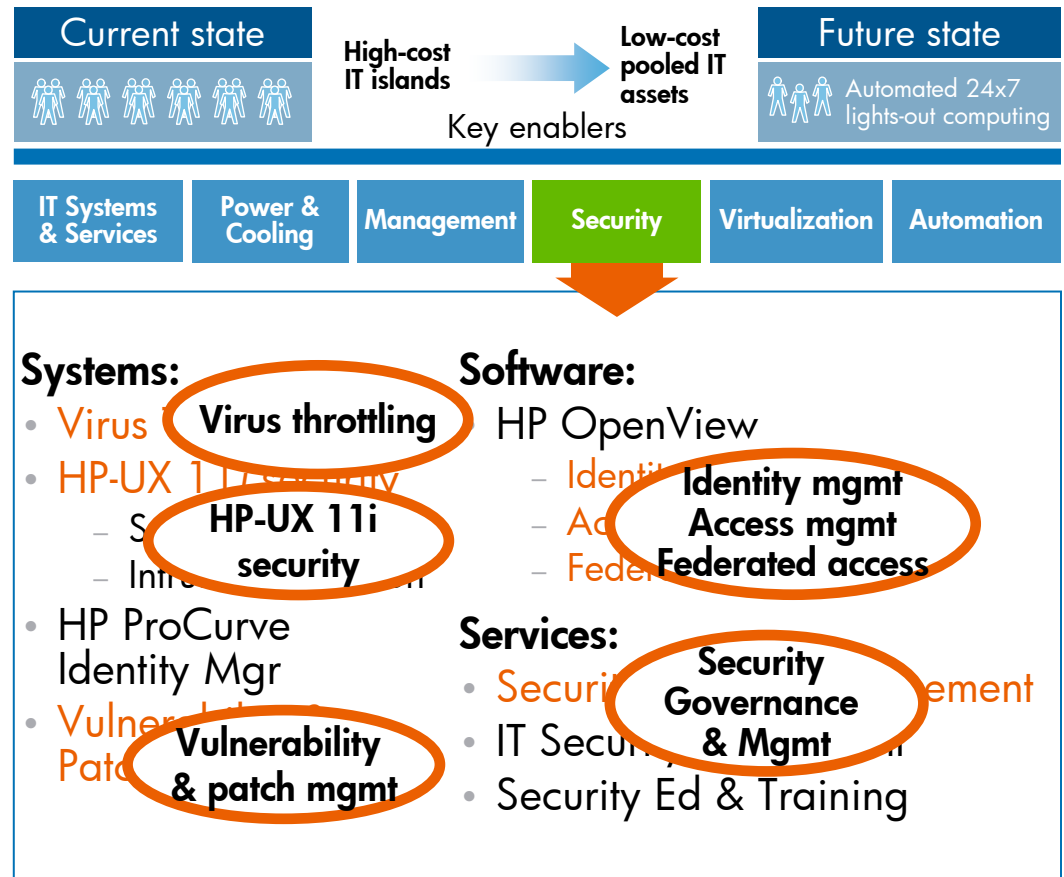
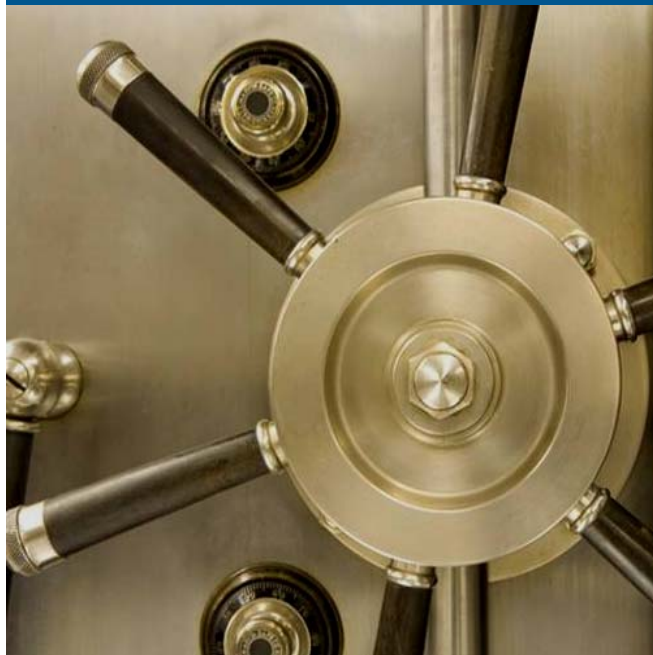
End To End
Application
Management

Security

Proactive, built-in protection

“Maintain business reliability and availability, and meet regulatory compliance.”

- Innovative security built into HP products and solutions
- Proactive best practices with full lifecycle services

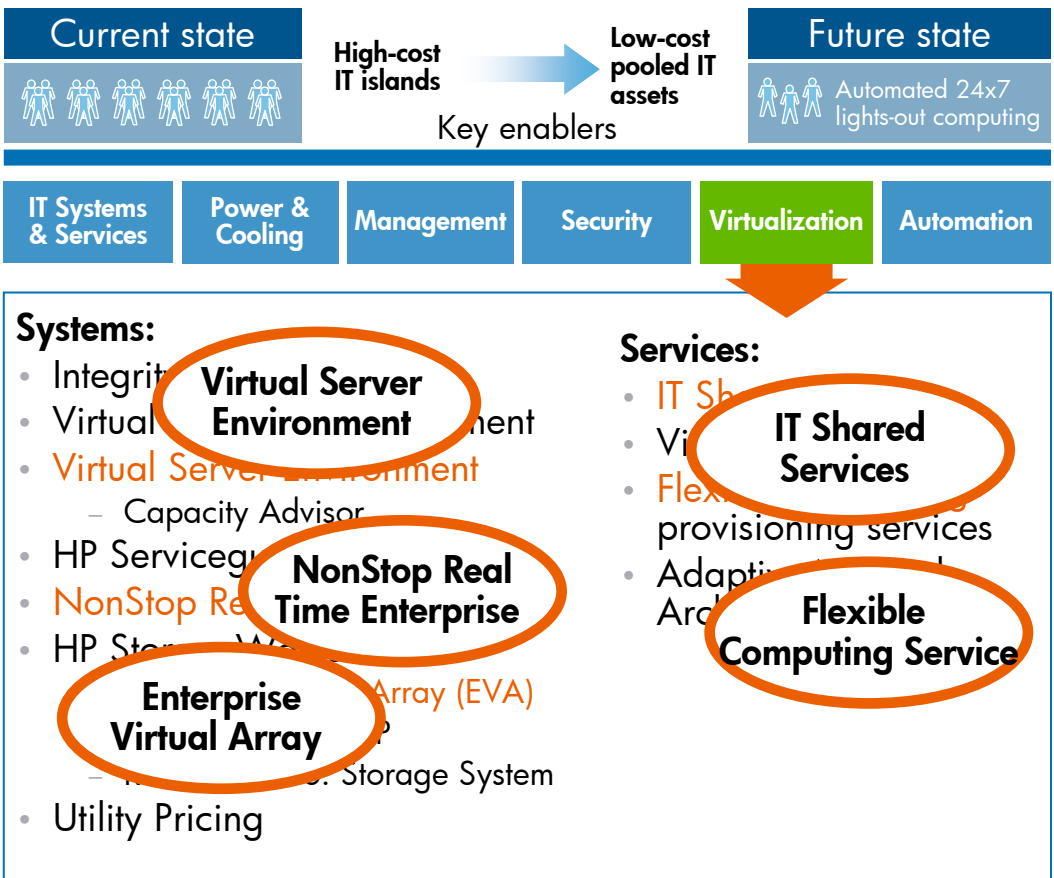


Virtualization

Pooling & sharing resources

“Increase agility so supply automatically meets demand”

- Virtualization across the entire infrastructure
- Optimal utilization in real-time
- Flexible computing services

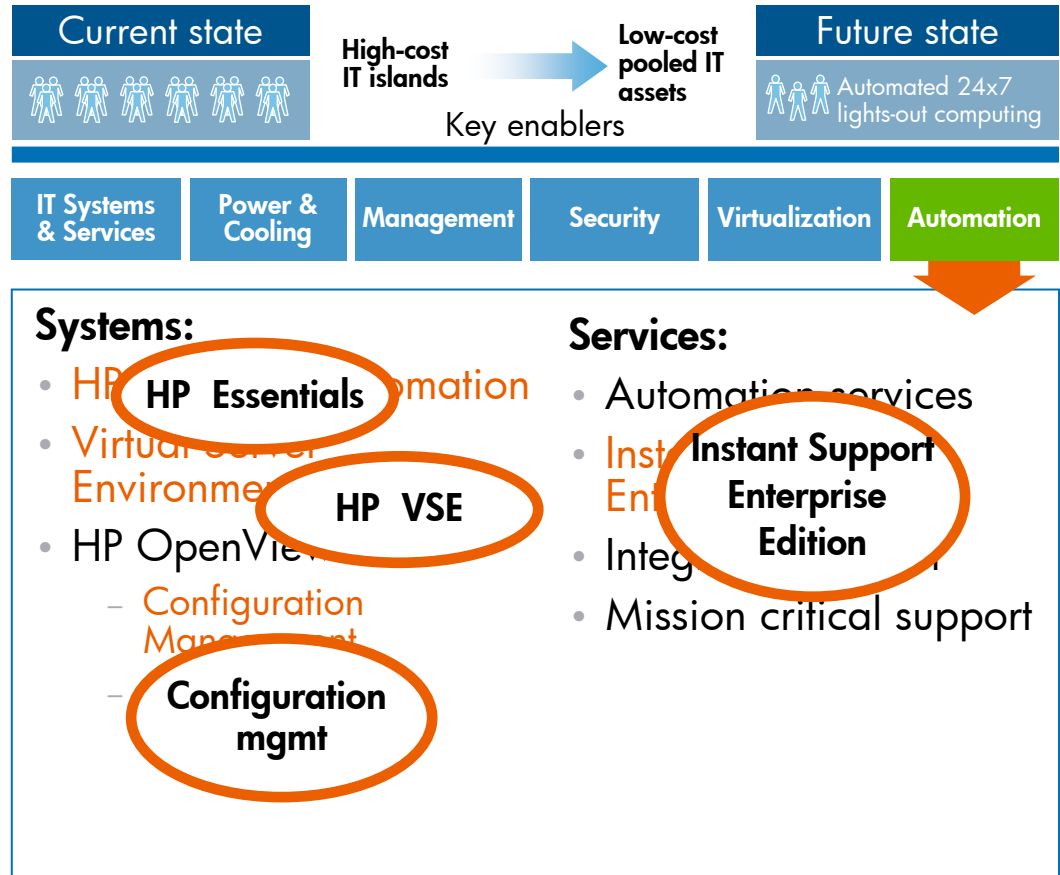


Automation

Unified infrastructure management

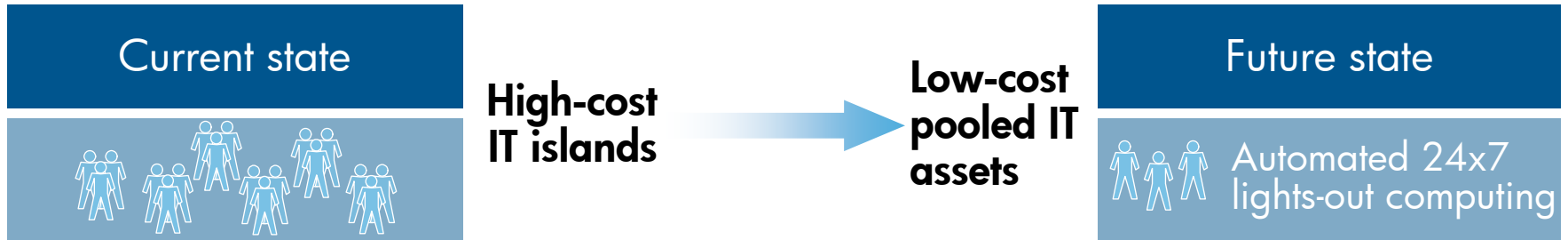
“Reduce costs and risk by shifting IT investment from maintenance to innovation”

- Repeatable model-based automation
- Advanced automation and management tools
- Proactive remote management



Adaptive Infrastructure

New product announcements



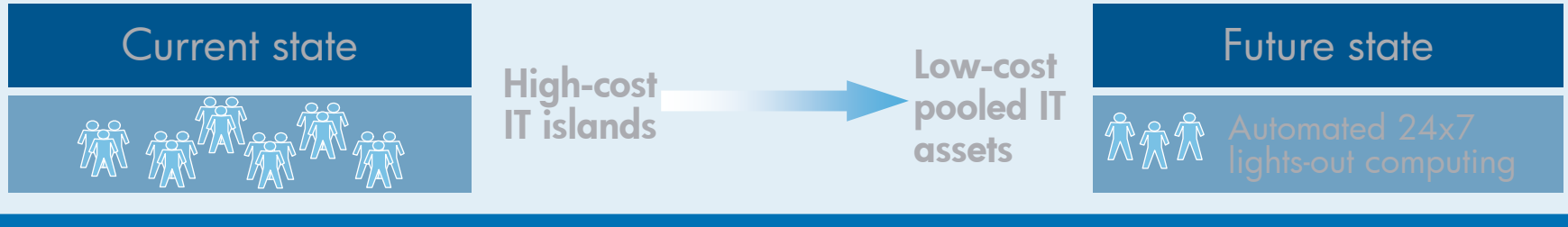
Key enablers

IT Systems & Services	Power & Cooling	Management	Security	Virtualization	Automation
<p>Systems:</p> <ul style="list-style-type: none"> HP BladeSystem HP ProLiant servers HP Integrity servers <p>HP BladeSystem c-Class</p> <p>Services:</p> <ul style="list-style-type: none"> Agility Assessment Factory Express C & I services Technology Services Managed Services Education & Training Financing services 	<p>Systems:</p> <ul style="list-style-type: none"> HP Thermal Logic Integrity servers Universal Rack infrastructure <p>Services:</p> <ul style="list-style-type: none"> Data center power and cooling 	<p>Software:</p> <ul style="list-style-type: none"> Insight Control HP OV Ent Starter Pack <p>Services:</p> <ul style="list-style-type: none"> IT Service Mgmt Infrastructure Mgmt Data Center Mgmt OpenView services 	<p>Systems:</p> <ul style="list-style-type: none"> Virus Throttling HP OV Select Audit HP UX Encrypted File system <p>Services:</p> <ul style="list-style-type: none"> Security Gov & Mgmt IT Security Assessment Security Ed & Training 	<p>Systems:</p> <ul style="list-style-type: none"> Integrity Virt. Machine Virtual Machine Mgmt Virtual Server Env't Capacity Advisor Serviceguard NonStop Real Time Ent. StorageWorks HP Virtual Connect IT Shared Services <p>Services:</p> <ul style="list-style-type: none"> Utility Pricing Adaptive Net. Arch. Flexible Computing provisioning services 	<p>Systems:</p> <ul style="list-style-type: none"> HP Essentials automation Virtual Server Environment Reference architectures <p>Services:</p> <ul style="list-style-type: none"> Automation services Instant Support Enterprise Edition Integrated Support Mission critical support

Adaptive Infrastructure

Initial Offerings

Longer-term objective:



Align IT Infrastructure Management

- Unify infrastructure mgt tools and processes
- Secure IT infrastructure
- Align IT mgt processes and align IT with the business

Automate IT Service Delivery

- Infrastructure, application, and information services
- Automate IT shared service utility
- IT shared service transformation

Optimize IT Infrastructure

- Standardize server and storage environment
- Consolidate systems and data centers
- Business continuity and availability

IT Systems & Services

Power & Cooling

Management

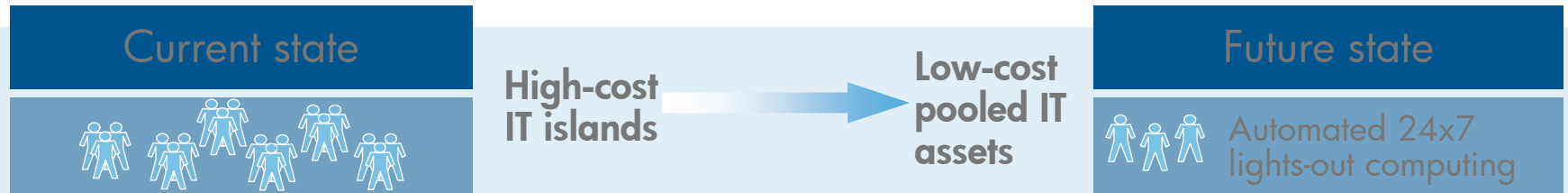
Security

Virtualization

Automation

Adaptive Infrastructure

Initial Offerings



Align IT Infrastructure Management

- HP OpenView Enterprise Management Starter Pack

Automate IT Service Delivery

- HP BladeSystem for Exchange
- HP VSE for Oracle RAC
- HP Shared Service Utility for Test and Development

Optimize IT Infrastructure

- HP BladeSystem for Citrix
- Data center consolidation – HP BladeSystem, Integrity

IT Systems & Services

Power & Cooling

Management

Security

Virtualization

Automation



HP IT Shared Services (ITSS)

Running IT as a Business

- **ITSS Utility Portfolio**
 - Shared Infrastructure for Development and Test
 - Shared Microsoft Exchange Utility
- **ITSS Transformation Portfolio**
 - Visioning Workshop
 - Transformation Planning Service
 - Design & Implementation
 - Governance
- **ITSS Ready Solutions**
 - Service Orientated Architecture (SOA)
 - Application Modernization Services
 - ITSM
 - IT Consolidation



Optimize fluctuating mission-critical database workloads: automatically flex and add capacity

New HP VSE Reference Architecture for Oracle RAC on HP-UX 11i



- Dynamic, automated scaling – up, out and back
 - VSE/Global Workload Manager and Oracle RAC integration
- Assured database response times
 - Mission-critical database uptime and data integrity with HP Service-guard Cluster File System for RAC
- Proven HP VSE Reference Architecture methodology now extended to Oracle RAC
 - Deploy VSE in less than half the time
 - Integrated pre-tested configuration

Tai Fook Securities Group Limited

One of Hong Kong's leading brokerage firms

Challenge	Solution	Result
<ul style="list-style-type: none">• Support increased demands of rapidly growing customer population• Improve agility in the datacenter• Adapt easily and cost-effectively to handle future growth• Improve application response times to ensure fast, effective trade processing	<ul style="list-style-type: none">• HP Integrity Superdome server• HP-UX 11i v2 mission-critical OE• HP Integrity rx8620 server• HP Integrity rx2600 server• HP 9000 rp3440 server• HP instant capacity on demand (iCAP) pay-per-use solution• nPartitions hard partitioning, HP Serviceguard	<p>Simplicity</p> <ul style="list-style-type: none">• Core application users gain double the response speed over previous infrastructure <p>Agility</p> <ul style="list-style-type: none">• HP Integrity servers adapt rapidly to exploit emerging business opportunities <p>Value</p> <ul style="list-style-type: none">• Scalable infrastructure supports up to 300,000 customers• Users experience up to 7 times improvement in response time for online trading

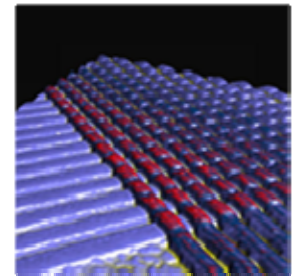
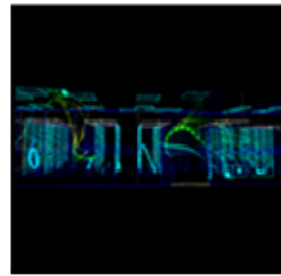
Australian Bureau of Statistics

Australia's official statistical agency

Challenge	Solution	Results
<ul style="list-style-type: none">• Difficulty in managing and maintaining complex software environment of 700 diverse products• High overhead and manpower required to support users and handle major software rollouts• Inefficiencies in supporting and managing numerous software profiles	<ul style="list-style-type: none">• HP OpenView Configuration Management providing automated, policy-based diagnostic checks on mandatory and individual software inventories	<p>Simplicity</p> <ul style="list-style-type: none">• Better control of software deployment processes with better quality software support and service <p>Agility</p> <ul style="list-style-type: none">• Increased automation of many manual processes enhanced user productivity <p>Value</p> <ul style="list-style-type: none">• Improved security and stability• Operational efficiencies and cost savings

HP Labs

Innovation for Adaptive Infrastructure



Next generation data center and grid computing:

- Quartermaster (HP IT Shared Application Server Utility – SASU)
- Flexible Computing (DreamWorks, SE3D)
- Marketing based economics for utility computing (Governments of Singapore and Sweden)
- Smart Data Center (DreamWorks, HP power and cooling products)
- IT Rover – Automated service diagnosis

HP Utility Rendering Service

A secure, scalable compute infrastructure that provides peak capacity for production of CG animated movies

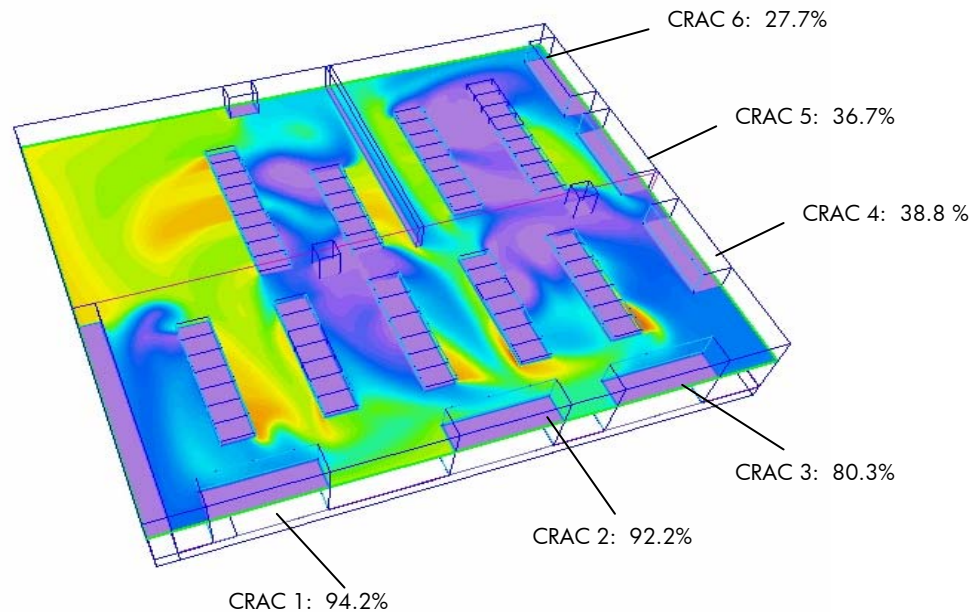
- Utility Service platform: 1000 CPUs Proliant DL360 in HP Labs Smart Data Center
- Seamless extension of DreamWorks Animation IT infrastructure, provided ~2 million cpu-hours additional capacity for peak demand on Shrek 2 and Madagascar
- Remote utility capacity for SE3D animated film competition in Bristol, UK



HP Smart Data Center

Dynamic provisioning of power, compute and cooling resources

- balance of **power** and **cooling**
- flexible system and data center building blocks
- external and system level sensing
- data center controller
- 60% savings in electricity used by cooling resources



Relationships designed around customer choice

- Buy products and build your Adaptive Infrastructure yourself
- Have HP design and implement your Adaptive Infrastructure for you to operate
- Work with value-added partners to design and implement your Adaptive Infrastructure
- Outsource your Adaptive Infrastructure to HP

Choice



HP uniquely positioned to deliver Adaptive Infrastructure

- **Software** enables it
- **Services** deliver it
- **Storage systems** fortify it
- **Scalable servers** power it
- **R&D innovations** drive it
- **HP IT** uses it

Based on standard building blocks, automated using modular software, delivered through comprehensive services



Thank you

