Experience the Transformation of Data Center through “Green” approach

- Next Generation Data Center

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Agenda

- Impact of power and heat in Data Center
- Enterprise challenges in Hong Kong
- How IT goes green?
- Next Generation Data Center transformation
  - Vision
  - Framework
- Energy Efficiency
- Operation Efficiency
  - Network service
  - Professional service
- A competent NGDC solution partner
- GOAL
- Case study
Impact of power and heat on the data center

• Today, 50 cents are spent on energy for every dollar of hardware

• This is expected to increase by 54% over the next four years

• By 2010, Energy = 71% of annum IT spend

Green Data Centers focus to deliver a perfect blend of **green and efficiency** in response for Data Center and information service needs.

Green = less power & cooling  
Efficiency = less input & more output
Industry standard: Green Grid

A non-profit trade organization of IT professionals formed to address the issues of **power and cooling** in data centers

Responsibilities
- Framework for improving the energy efficiency
- Power consumption, productivity metric
Green Grid member list

Over 150 members in total
Market overview
• Over 80% of data centers in HK were built before 2001

Market trend
• In the next 12 months, Grade A office rental likely stabilizes, and relatively lower rentals in HK east and Kowloon east attract tenants to relocate.

Comments Mr Kenneth Tsang, Head of Research, Greater China(South) at Jones Lang LaSalle.

Space is limited
• Hong Kong now has 300,000 – 400,000 square feet net of data center space

Response time
• Urban areas - 2-hr onsite service commitment

Source: www.cw.com.hk, March 10, 2008 vol XXV No2
Customer needs – Looking for standard?

The Bad News

- There is **No** world–wide recognized standard

The good news

- **Best practices / semi standards**

  TIA Data Center standard
  
  Tier 1 (Basic: 99.671 availability)
  Tier 2 (99.741% availability)
  Tier 3 (99.982% availability)
  Tier 4 (Fault tolerant: 99.995% availability)

- **IT service management:**ISO-20000
Size based on business outcomes

**Enterprise Data Center**
- Tier 3, 7x24 monitoring, remote monitoring
- Full redundant components
- Over 15 mths to implement

**Regional Data Center**
- Tier 2, 7x24 support
- Application oriented
- 3-6 mths to implement

**Site Data Center**
- Tier 1, May not have raised floor
- Login service, File Server
- Under 3 mths to implement

**Infrastructure Provision**
- Wireline LAN
- Wireless LAN
- Optimization
- Security
- Facilities
- Server
- Storage
- Voice
- Video
- Cabling
How IT goes GREEN?

- Consolidation: Fewer is better, Lower Operational Expenses
- Automation: Align Resources to Business Objectives, Simplified, Policy Based Provisioning
- Virtualization: Green Initiatives
- Capital Asset Utilization Improvement
- Eliminate geographical issue

PCCW
All you want for Data Center is what you got?

Think

Next Generation Data Center (NGDC)
NGDC Transformation

Before

No Green
IT as a cost center
Focus on internal communication
Availability

From now

Green
IT as a service center
Increasing complexity & external communication
Performance + Assurance

Infrastructure Provision

<table>
<thead>
<tr>
<th>Wireline LAN Facilities</th>
<th>Wireless LAN Server Video</th>
<th>Optimization Storage Cabling</th>
<th>Security Voice</th>
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Objectives of NGDC

1. Deployment of **GREEN IT portfolio** of CPE

2. **Optimization** of Data Center resource and best practices to meet business needs

3. Provision of **complete flexibility & choices of connectivity** to users, optimized for price & performance

4. **Performance** is not limited to availability but assurance
Next Generation Data Center Framework

Green IT
Energy Efficiency
Consolidation
Virtualization
Automation

Performance
Operation Efficiency
Flexibility
Manageability
Security
Availability
Accessibility
Who will be the king of future?

Consolidation → Automation → Green Initiatives

Virtualization

Data Center 3.0
Service Oriented and Web 2.0 Based

Energy Efficiency
Virtualized Data Center

Network

Storage

Server

Think
Virtualization......

Security

Energy Efficiency
Scenario

(Network Virtualization)
Virtualization Topology in Enterprises

Highlights

- Increased network utilization

- Logically Partitions physical network into multiple Virtual Networks

- Virtual Networks can be dynamically created as required to meet Business objectives
Infrastructure Provisioning & Virtualization
Solution for NGDC

Infrastructure Provisioning

Network | Storage | Server | Security

Network service

Professional service

Performance Assurance Service

Energy Efficiency
Operation Efficiency

Network service

Professional service
Components of Operation Efficiency

- Flexibility
- Manageability
- Security
- Availability
- Accessibility

Go NGDC
Network Service in Next Generation Data Center Environment
Tele-workers/Remote Access

WiFi & 3G Network

Site /Enterprise Data Center

Operation Efficiency
Performance Assurance Service (PAS)

powered by PCCW
Infrastructure Performance Assurance

- Traffic Distribution
- Users Behavior
- Proactive Handling
- Historical Record

Operation Efficiency

Energy Efficiency
Service based Performance Assurance

Operation Efficiency
| Network Forensics | Network Policing | Real time Infrastructure Management |

**Performance Assurance**

**PCCW Integrated Service Platform**

Performance

Operation Efficiency
A competent Next Generation Data Center solution partner
Being ensured that:

- The Next Generation Data center is planned and run at highest efficiency & effectiveness
- PCCW provide almost any kind of network connectivity needs
- Experienced expertise will proactively give you advise when appropriate
- Professional service and performance assurance
- ............. You can be offloaded from operation and think ahead
The Goal of Next Generation Data Center

- Green IT
- Energy Efficiency
- Consolidation
- Virtualization
- Automation

- Performance assurance

- Performance
- Operation Efficiency
- Flexibility
- Manageability
- Security
- Availability
- Accessibility
Case Study
Success Case – Data Center Relocation

Background
• Relocate existing data center to class 5 super data center

PCCW Solution
• Comprehensive relocation plan with contingency arrangement
• Deploy ring architecture with zero downtime
• 100% redundant equipment on site for smooth relocation

Critical Success Factors
• **Reliability**: risk free & shortened implementation
• Excellent Exchange and path diversity
Thank you