Data Center Infrastructure Management (DCIM)

Fergus Wong
Business Development Manager, IT Business
Cloud Computing (Virtualization) **Myths**

**Myth**
- Always increases **efficiency**

**Myth**
- Requires high **density** data centers

**Myth**
- High **density** and high **efficiency** cannot coexist

**Myth**
- No need to worry about **power** and **cooling**

*Ambiguous terminology!*
Impacts and Challenges of Virtualization

Virtual Applications Capabilities

- **Power** off/on as needed
- **Move** to larger compute resources
- **Consolidate** to select servers
  - Save Energy
  - Disaster Recovery
Impacts and Challenges of Cloud Computing

- Power Density Increases
- Dynamic Power
- Rapid Scalability is Critical
- Availability Architecture Changes
- Virtualization Impacts Operations
Challenge 1

- Virtualization drives up **power densities** at a rack level
- Cooling challenge
  - Per tile **airflow** of 300 cfm hard to maintain
  - Raised flooring and perimeter cooling not the right choice
- Power distribution Challenge
  - Need **new** breakers
  - New **voltage supply** levels
- Weight-bearing capacities should be reviewed
Challenge 2: Dynamic Cooling / Power

BEFORE virtualization
- Constant loads
  - Stable cooling

AFTER virtualization
- High-density loads
  - Burst-high heat
  - Unpredictable cooling
Challenge 3

Rapid Scalability

- Speed of provisioning new "servers" is super fast
  - Need agile infrastructure to cope
- Need to take location of Cloud into consideration
  - Pick an area that's easier/cheaper to expand
• Data center physical infrastructure should be designed based on the **fault-tolerant** nature of cloud-based IT model
  
  • redundancy is less important on the physical infrastructure side if the IT is highly fault tolerant.
  
  • Instead of 2N that would be used in a traditional, non-virtualized data center, an N+1 architecture may make more sense
Challenge 5

Virtualization ↔ Operations

Virtualization Management

Physical Infrastructure Management
Solutions
# What’s the Solutions?

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
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</thead>
<tbody>
<tr>
<td>Power Density Increases</td>
<td>Containment and High Voltage Distribution</td>
</tr>
<tr>
<td>Dynamic Power and Cooling</td>
<td>Planning and Implementation Software</td>
</tr>
<tr>
<td>Rapid Scalability</td>
<td>Scalable Power and Cooling</td>
</tr>
<tr>
<td>Availability Architecture</td>
<td>Design to Pods to Need (2N, N+1, etc.)</td>
</tr>
<tr>
<td>Virtualization Impacts Operations</td>
<td>Simulation and Capacity Management Tools</td>
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</table>
And now we are adding …

Integrated management software systems that add a layer of Energy Intelligence to EcoStruxure solution architectures.
Managing the layers

- **People**
- **Business logic**
  - Processes
- **Software platforms**
  - OS | Apps | Virtualization
- **IT hardware platforms**
  - Servers | Storage | Networking
- **Data Center Infrastructure**
  - Power | Cooling | Physical space | Security | Environment
- **Building automation**
  - HVAC | Lighting | Transport | Security | Fire

**Layers**
- **Business Management Layer**
- **Application Management Layer**
- **Network Management Layer**
- **DCIM Layer**
- **Building Management**
Risk!!
IT servers ➔
Out of power supply
less than an hour!!
Question!!
Where to be migrated

Operations sends the command to vSphere to start the migration
The vSphere Client starts the migration to a known SAFE host within the cluster.
DC management business globally since 2003 ...
When IT meets FM ...
Combining Schneider and IT vendors

IT-aware Facilities + Facility-aware IT
Alliance Partners and Integrations

IT Integrations – Virtualization
- Microsoft
  - System Center Virtual Machine Manager 2008
- VMware
  - Vcenter, Vsphere™

IT Integrations – System & Energy Management
- Microsoft
  - System Center Operations Manager 2007 (and Lite)
- IBM
  - Tivoli
  - Active Energy Manager
- HP
  - Operations Manager for Windows
Alliance Partners and Integrations

Networking Integration – Energy Management

• Cisco
  ◦ EnergyWise

Schneider Electric EcoStructure alliances

• SquareD
  ◦ PowerLogic Meters, PowerLogic ION Enterprise

coming 2012

...... more
Microsoft (MTC) Taiwan
Microsoft (MTC) Taipei, Dallas, Chicago, Paris, Beijing, …
co-partner events

...... coming 2012
DCIM business in Hong Kong

... nowadays ...
### DCIM Maturity Model

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Market Room to Grow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Basic</td>
<td>No integration; basic monitoring supplied with equipment. Health and safety.</td>
<td>95%</td>
</tr>
<tr>
<td>Level 2: Reactive</td>
<td>Software installed to monitor environment and equipment power use. Ability to adjust cooling to demand.</td>
<td>80%</td>
</tr>
<tr>
<td>Level 3: Proactive</td>
<td>Datacenter equipment characteristics, location, and operational status tracked. Energy data used to reduce risks, waste.</td>
<td>5%</td>
</tr>
<tr>
<td>Level 4: Optimizing</td>
<td>Multiple IT and infrastructure subsystems integrated; data models used for prediction, service management, multiple views, optimizing in near real time.</td>
<td>0%</td>
</tr>
<tr>
<td>Level 5: Self-optimizing, autonomic</td>
<td>Integrated software adjusts datacenter behavior and resource use according to rules and data and service requirements.</td>
<td></td>
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**Hong Kong**

**Solid foundation**

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Your

[Schneider Electric logo]
Spending doubled in 6 years

WW Spending on Servers, Power and Cooling, and Management/Administration

Source: IDC, 2009
Data Center Infrastructure Management (DCIM)

Our market is defined as Products (hardware & software) and Services focused on data center management, including:

**Monitoring, Measuring and Alerting Software**
- Centralized monitoring
- Alerting

**Hardware (pull-through)**
- Monitoring appliance
- Power distribution units, environmental & security sensors
- Advanced power and cooling equipment

**Decision support and information management Software**
- Asset management
- Inventory
- Planning
  - Scenario Analysis, Master plans
- Change and Configuration management
  - Execution of plans
- Capacity and Energy management
  - Maximizing capacity and energy optimization

**Software Services**
- Installation, Commissioning, Educational, Entitlement etc.
- Project management and Customization

**Management and Control**
- Automated management and control
- Fault-tolerant (fail-over)
Another vendor to watch out for is Schneider Electric. Schneider Electric recently updated its DCIM software called StruxureWare for Data Centers, consisting of StruxureWare Central, Mobile, Capacity, Operations, Efficiency, Change, Energy Cost, and Mobile

IDC believes that SE's DCIM solution is definitely one of the most advanced products on the market today.


Schneider has the scale, brand, vision and penetration to take a leadership position in datacenter energy management software; its size is also helping it make important alliances.

StruxureWare for Data Centers is currently just one of several offerings in this market, but it has the potential to be a clear leader.

Potential Available Market for StruxureWare for Data Centers: Operations Suite till 2013

Source: DCIM market size and growth based third party research (451 Group and others) and internal estimates.
Potential Available Market for StruxureWare for Data Centers: Operations Suite till 2020

How big is the DCIM market?*

<table>
<thead>
<tr>
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<th>Medium growth US Millions</th>
<th>High growth US Millions</th>
<th>Very high growth US Millions</th>
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<tbody>
<tr>
<td>2016</td>
<td>$820–890</td>
<td>$1,200–1,300</td>
<td>$1,700–1,800</td>
</tr>
<tr>
<td>2020</td>
<td>$2,330–2,550</td>
<td>$4,550–4,950</td>
<td>$8,460–9,230</td>
</tr>
</tbody>
</table>

*451 Group preliminary estimates. Please contact 451 Group before citing.

Source: the451group Presentation, "DCIM Software“, Andy Lawrence, 2011
APC Software Support Ecosystem

Support Structure

End-to-end Solutions
- Quoting / Proposals
- Barrier removal concerns
- Addressing customer concerns

Continuous Improvements
- Field feedback routing
- Feature request handling
- Custom development / integration

Ready-Set-GO!
- Training & Certification
- Standardized procedures
- Best practice approaches
- Tools and methodologies
- Service incubation

Mission-Critical Support
- Issue tracking and handling
- Root cause analysis
- Phone / email support
- Service Task Force
- Service Bulletins

Community
- FAQ
- Kbase
- Forum
- Blogs
- Events
:: Enablement Tools

:: Whiteboard Selling
Why StruxureWare for Data Center

:: DCIM Blogs
http://blog.schneider-electric.com/datacenter/category/dcim/

:: Technical Videos
Getting Started and Configuration tutorial videos

:: Whitepapers
Reports and Solution Write-up

:: DCIM Forum
http://www.apc-forums.com/forum.jspa?forumID=38

:: Trainings + Certification
Read on...

- WP 107: How Data Center Infrastructure Management Software Improves Planning and Cuts Operational Costs:
  http://www.apcmedia.com/salestools/DBOY-8B8KKJ_R0_EN.pdf

- WP 150: Power and Cooling Capacity Management for Data Centers:

- Datacenter Infrastructure Management Software by the451group:
  http://www.the451group.com/dct/dct_detail.php?id=1690
Sales Tools Supporting Launch

Training
- StruxureWare for Data Centers: What’s New in 7.0?
- StruxureWare for Data Centers: How to Sell

Presentations
- StruxureWare for Data Centers 7.0 Customer Facing
- One consolidated suite presentation – replacing the family presentations StruxureWare Operations, Capacity, Change, Energy Efficiency, Energy Cost, Insight & VIZOR

Service
- StruxureWare for Data Centers Software Configuration Suite Statements of Work for each service activity
- Quick Sales Reference Sheet title StruxureWare for Data Centers Software Configuration Suite At A Glance
Graphical overview
Graphical overview of **power**, **cooling**, **space**, and **network** on a weekly, monthly, or yearly basis.

**Capacity Overview**
Full capacity utilization overview on power, cooling, space, and network at a glance.

**Barcode scan functionality**
Built-in barcode scanner for easy identification of **assets**

**Remaining capacity**
Drill down view into any location or room and predictions of remaining capacity based on growth rate.
Make the most of your energy™