Cloud Computing of Taiwan

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Background and Application

- Trend of resource sharing in internet
  - Problem: application servers require high SW/HW costs, but the utilization was less than 30%
  - Problem: the peak / off-peak loading changes dramatically, and can’t relocate resources
- Service coherence and economies of scale
  - gmail, facebook, Amazon, salesforce.com, …
- Real case
  - New York Times: scanning 11 millions news during 1851~1922 to 1.5TB data, storing them on Amazon EC2 just cost US$1,000
- Why Cloud? Sharing data through internet for value-added service
MOEA held “Cloud Computing Strategic Forum” and made “Cloud Computing Industry Development Program”

Executive Yuan approved the plan

Steering Committee for Development of the Cloud Computing Industry was founded

Technology Department founded “Cloud SIGs”

Encourage CC industry development

Evaluation process

Government Cloud procurement

Applications such as Lower Carbon Cloud, Education Cloud, Health Cloud

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2009.9 MOEA held “Cloud Computing Strategic Forum” and made “Cloud Computing Industry Development Program”

2010.4 Taiwan's Cloud Computing Consortium (TCCC)

2010.7 ITRI’s cloud datacenter

All-in-One OS

Cloud Computing Association in Taiwan (CCAT)

IIS enterprise cloud server(CAFÉ) system

2010.9 CCAT “Outstanding cloud service innovation award”

2010.10 IIS Cloud Service Technology Center

2011.1 Taiwan Cloud Valley demonstration center

2011.7 CCAT “Outstanding cloud service innovation award”

2011.10 Government Cloud procurement

2011.11 Technology Department founded “Cloud SIGs”

2012.3 Government Could interface and schedule

2012.8 Evaluation process

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2012.8 Evaluation process
The Goals and Strategy

Value to citizens

- Economic and energy saving SW/HW solutions
- Big data, distributed processing tool
- Scaling, data sharing, flow integration

Value to business

- Innovation
- Integration
- Technology
- Marketing

Platform
- Data mining service

Application

Infrastructure
CC Development Strategy

“Application value” together with “Business economic value”

Frequentl y used APs

Innovation power

CC APs and development s

Software foundation

CC infrastructure

Energy efficiency
Ministry Cooperation

- **BOST**
  - Coordination
  - Flow integration

- **MOEA**
  - Industry and technology development
  - Technology guiding

- **RDEC**
  - Innovation planning
  - Transfer selected targets to cloud service

- **Cloud Computing Application and Industry Development Office**
  - Industry Development
    - Technology development and promotion
    - Construct Cloud Open Lab
  - Application Dev.
    - AP’s PMO
    - Shared cloud infrastructure planning
## Evaluation Principal

<table>
<thead>
<tr>
<th></th>
<th>For application</th>
<th>For industries</th>
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<tbody>
<tr>
<td><strong>1.AP</strong></td>
<td>A. Application with innovation</td>
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<tr>
<td></td>
<td>B. Large scaled application</td>
<td></td>
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<td></td>
<td>C. Flow re-intergration</td>
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<tr>
<td><strong>2.Middleware and platform</strong></td>
<td>A. Construct big data platform</td>
<td>A. Middleware for value-added application</td>
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<tr>
<td></td>
<td>B. Massively Distributed Processing</td>
<td>B. Big data processing toolkit</td>
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<tr>
<td></td>
<td>C. Open Data</td>
<td>C. Massively Distributed Processing</td>
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<tr>
<td><strong>3.Infrastructure</strong></td>
<td>A. Using cloud infrastructure</td>
<td>A. R&amp;D cost effective products / solutions</td>
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<tr>
<td></td>
<td>B. Maintain QoS while lower cost</td>
<td>B. R&amp;D energy saving products / solutions</td>
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<td>C. Energy saving</td>
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Using Research Results

- Eat your own dogfood!
- G-Cloud driving local ICT upgrades
- G-Cloud should use local technology
  - Bring the local technology to real world
  - Reduce the cost of G-Cloud
  - Guiding research direction by G-Cloud application

From user’s point of view
AP group (RDEC)

From service provider’s point of view
Industry Group (MOEA)

Interacting with technology, platform and support
Cloud Open Lab.
Applications of Government Cloud
Sensible Government Application

Value-added government cloud application

M-Police service for better user experience
Immediate food information tracking.
Medical / care / public health / disease information integration
Integrate disaster information to GIS platform
Energy saving cloud data center and lifetime learning profile

Cloud service innovation

Police affairs
Food tracking
Health care
Disaster relief
Preservation

Issues from users or industries
Development of G-Cloud
Cloud Service Architecture
G-Cloud Infrastructure

- G-Cloud focused on AP development, not on the infrastructure
  - Reduce information budget by CC technology
  - Flow re-integration for better efficiency
- Higher system availability
  - Design “Cloud Data Center Operation Guidelines” to achieve better QoS
- Energy saving program
  - Government procurement and renting should comply to energy saving standard
  - Saving more than NT$400 millions (US$13 million) for academic’s data centers
G-Cloud Infrastructure
Energy Saving Program

- “Data center energy consumption measurement and energy efficiency management” program
  - Bureau of Energy, MOEA in charge, cooperate with RDEC, Ministry of Education and Architecture and Building Research Institute
  - Measuring the data centers’ energy efficiency of sampled government agencies and schools
  - Create energy efficiency measurement SOP
Following Plan: Open Data

- Legislation in several countries like US, UK, etc.
- Opening government collected data for other AP
  ✓ Trigger higher economic value than invested
  ✓ Encouraging innovation of AP in private sector
- Open data should be used without charging
  ✓ Data collected according to legislated process should not be charged while using
  ✓ Charging on open data is an obstacle for application innovation
- NICI announced “Providing Public Data for Value-added Development of the Private Sector Development Guidelines”
- With open data, cloud application spread faster and experienced
Government Open Data

Vision of open data AP

Gov. efficiency
economic sensible

Open data value added AP

Obstacle of gov open data
- Machine to machine interface standardize
- Lack of legitimate regulation on the open data
  ✓ Current regulation on data reusing
    → Taiwan Geospatial One Stop platform
    → Operation Guidelines for the Research Data Supply of IOT, MOTC

Authorization and charging
- Authorization mechanism of open data
  ✓ Only few gov agencies have regulation
- Charging on open data reusing
  ✓ According to the law, authority may exempt the fee
  ✓ Royalties
# E-Government to G-Cloud

<table>
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<tr>
<th>Service type</th>
<th>Current APs</th>
<th>Cloud APs</th>
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| Exchange     | • E-doc. exchange  
               • Email exchange | • Cloud storage and exchange  
               • Cloud email service |
| Integration  | • HR manage sys.  
               • Property sys.  
               • Budget sys.  
               • Data exchange sys. | • Cloud HR manage sys.  
               • Cloud property manage sys  
               • Cloud budget manage sys  
               • Cloud service platform |
| Security     | • Single sign on  
               • IDS, email scan  
               • Web privacy check | • Cloud authentication (certificate + open id)  
               • Cloud IDS/IPS  
               • Cloud web privacy check |
Thank You!