行政院及所屬各機關因公出國人員報告書

（出國類別：會議）

出席「雲端運算(Leveraging the Cloud to Promote Sustainable Development in North Asia)」研討會

服務機關：　環境保護署

出國人　職　　稱：　專門委員

姓　　名：　詹志銘

出國地點;　香港

出國日期;　100 年 4 月 13 日至 4 月 16 日

報告日期;　100 年 6 月 14 日

出席「雲端運算(Leveraging the Cloud to Promote Sustainable Development in North Asia)」研討會報告

壹、 會議背景說明

本研討會由商業軟體聯盟(Business Software Aliance)主辦，針對當前熱門的雲端運算資訊主題，邀集中、港、台、韓及資訊大廠的專家學者共同研討，內容包括基礎設施、資訊安全、創新應用及政府推動角色等。

會議在香港數碼港會展中心三期(F區)會議室(Function Room)舉行，有中港台韓的學者、官員及主辦單位國際商業軟體聯盟(BSA)、微軟、英特爾、塞門鐵克、思科等資訊大廠的專家，共約70人出席。我國除本署外還有研考會簡宏偉副處長等3人、警政署資訊室李相臣主任、台北地方法院張紹斌主任檢察官、台大資管所曹承礎教授、政大法律系李治安教授、科技法務經理人協會葉奇鑫監事等人出席。

貳、 會議經過

一、4月14日研討

上午由BSA亞太區主管Tarun Sawney先生主持開幕，主題是雲端運算與永續發展的概述：

- 中國科學院軟件研究所卿斯漢教授指出，雲端運算的雲是模糊而多變的，目前仍有許多可能的發展，安全問題不容忽視。
- 台大資管所曹承礎教授舉台積電運用雲端運算的例子，說明資訊整合的利益，雲端運算可說是一種有組織的網際網路(Internet)，而其集中式的管理又類似以前大型主機的管理模式。
- 香港特區政府資訊科技總監麥鴻崧先生報告香港政府如何引導民間力量，策略性的推動數位經濟產業基礎建設。

- 韓國國民大會資訊主管 Younghun Seo 先生表示，韓國目前在雲端運算產業雖然落後，但該國在資訊基礎建設與政府電子化均極佳，該國五個部會已經合作擬訂發展計畫，目標是 5 年後成為最佳的雲端運算國家。
- BSA 委託 Galexia 公司進行了一項亞太 14 國雲端運算與數位經濟的調查，包括了與雲端運算推動最重要的 8 個項目：安全、虛擬犯罪、互通性、隱私權、智財權、國際調和、自由貿易、基礎設施等。研究發現已開發國家在法規上較進步，而開發中國家仍需改善法規以促成跨國界的雲端運算。有關智財權、隱私權、系統互通標準等仍需建立各國間共通的原則。
- 香港大學的 John Ure 教授認為，雲端運算是一種公共財，因為它無獨佔性、無排他性、可增進社會福祉。部分公共財也可私有經營(如鐵公路、電信)，他主張網路骨幹公有，地區性開放私有競爭。

下午的主題是雲端運算的基礎建設：

- 思科(Cisco)公司的 Seow Hiong Goh 先生預測，2015 年移動式網路的流量將為固網的 3.3 倍，速率為 2010 的 10 倍，而流量中的 2/3 是影音的下載。目前 Terabytes(=1000GB)的計量單位已不夠使用，Perabytes(=1000Terabytes)、Exabytes(=1000 Perabytes)、Zettabytes(=1000 Exabytes) Yottabytes(=1000 Zettabytes)都出現了。2015 全年移動式網路的總流量預估為 75 Exabytes。各國為提升寬頻網路的品質與普及率都在努力建設。
- 研考會簡宏偉副處長報告我國電子化政府的推動歷程，第四階段電子化政府計畫 101 年起實施，六項旗艦計畫分別是「雲端服務基礎建設」、「基礎資料庫擴增」、「主動全程服務」、「行動電子化政府」、「結合社會網絡」、「最後一鄰服務遞送」。
- 英特爾公司行銷經理 Allyson Klein 指出，為因應 2015 年

第一天會議結束前，由數碼港園區的管理人員帶領大家參觀一些園區的軟體公共設施，有立體電影、身控軟體..等。

二、4 月 15 日研討

上午的主題是資料保護、安全與虛擬犯罪：

- 塞門鐵克防毒軟體公司 Thennavan Subbiah 經理指出，未來的資訊架構將由系統為中心改為資訊為中心，例如 YouTube、Facebook 等都是非結構性的資料，分散、互動、虛擬的雲端架構。該公司正逐步由電子郵件的服務跨入雲端服務的領域。
- 台北地方法院張紹斌主任檢察官報告我國個人資料保護法，本法雖已通過但實施日期遲未能訂定，主因是隱私權的範圍界定不一，且法律授權各級政府均可隨時搜索企業，造成企業經營的不確定性太高。
- 香港資訊科技顧問 Henry Chang 報告香港雖無個人資料保護的立法，但訂有個人資料保護的 6 個原則。比較港台對個人隱私的保護，有人提及香港壹週刊蘋果日報集團登台，引進了刊登名人隱私的風氣。
- 防毒軟體公司 AVG 的 Christophe Francois 先生舉出許多人對雲端運算的看法，有支持有反對，但資訊服務未來是有可能像是自來水或電力服務一樣，一般人只要會使用並依使用量付費就可以了，資訊技術部分不需自己操心。他對於正打算移轉至雲端公司的它忠告是，移轉前要先了解雲端、移轉時要時時保持警覺。
- 韓國國民大會資訊官員 Kwang Shik Yoon 先生表示，該國經由政府

- 政大法律系李治安助理教授表示：隱私權保護對第三者的訴訟困難，每個人對保護的合理期待並不相同，年輕人 85%喜歡公開自己的資料與照片，但老一輩的人則不喜歡，他建議政府對個人上傳照片行為應少干涉。

下午的主題是政府在雲端運算發展所扮演的角色：

- 微軟公司亞太地區經理 John Galligan 報告數位世界的變動，他認為知識經濟可以支持亞洲的成長，而雲端運算有促進作用，因為其有彈性、降低成本、使用門檻小，適合亞洲的中小型企業使用。預估 2013 年 30-40%的資訊預算將是花費在雲端運算。亞洲的政府應與民間合作來促成雲端的使用。
- 中國 CCID 顧問公司的副總裁文芳女士報告中國政府在雲端運算產業的政策與應用，說明許多的計畫正逐步在推動中。
- 職報告我國環境保護署二年來實際推動電腦機房共構的成果，電腦中心共構並且移出辦公室可說是雲端運算的第一步。過程中要先整併系統，主機虛擬化，統一的備援與資安管理，98 年減少了 25 台主機，99 年減少了 86 台主機，不僅減少大量電力、冷氣的消耗，有系統的管理與異地備援也大幅提高了資訊服務的可靠度。也為未來環境資源部成立後的電腦機房提供了很好的擴充基礎。
- 香港政府副資訊長 Victor Lam 說明香港如何善用民間力量，在策略上引導雲端運算能漸漸發展。
- 在綜合討論中，許多的建議被提出：自己評估是否適合移植至雲端，要考慮利基為何，以國際合作來消除隱私的疑慮，創新與標準化，運用民間力量，要起而行。

參、 心得與建議

心得

一、 使用雲端服務也可說是執行了資訊委外的作業。雲端運算業者多提供了基礎設施(IAAS, Infrastructure As A Service)、開發平台(PAAS, Platform As A Service)及軟體服務 (SAAS, Software As A Service)三種不同等級的共用服務，由於服務需求大幅成長，資訊技術進步快，將資訊作業委外已是大環境的趨勢。

二、 跨國的服務有著不同國家的法律適用問題，但是許多公開性的資料可先透過雲端分享資料，透過移轉雲端的系統整併過程，可減少系統重複建置與提高可靠度。不同的系統要尋找自己適合的雲端服務，未來初期公有雲與私有雲的混合模式將是常態。

三、 安全是回家唯一的路，雲端運算也可能讓駭客在雲端提供DIY的服務。要如何相信提供雲端服務業者的能力，正如我們要如何相信電力公司的供電是穩定的，需要一段彼此的適應期。當服務業者的規模經濟建立了，使用者增多了，使用成本也會巨幅下降。

四、 資訊系統的使用介面由早期的終端機鍵盤、dos的文字作業系統、windows的圖形介面、網際網路的連結、平板電腦的觸控螢幕、Wii遊樂器的動態感應控制、Kinect技術的手勢或聲音操控。驗證了科技始終來自於人性這句話。

五、 微軟公司創立時的願景是；A PC on every desk and every home.目對未來的雲端運算，其願景變成：Continuous cloud services for every person and every business. 隨著技術的演進與地球村的發展，未來我們的資訊服務可能都來至雲端，而雲在那裏呢？「只在此山中，雲深不知處」，我們並不需要去知道啊！

建議

一、 隨處可得的資訊是民眾日增的需求，行動通訊普及與行動資訊的充實是努力的目標，網路的服務目標不應限於個人電腦的使用者，智慧型手機、平板電腦都應該要在服務設計階段納入考慮。

二、 資料庫是雲端服務的基礎，如何持續整合充實資料庫內容，將不同的資料以倉儲的架構系統性的分類儲存，可以讓資訊分享與加值應用得到最大的效果。

出席雲端運算研討會人員合影

報告環保署電腦機房共構成果

Environmental Protection Administration

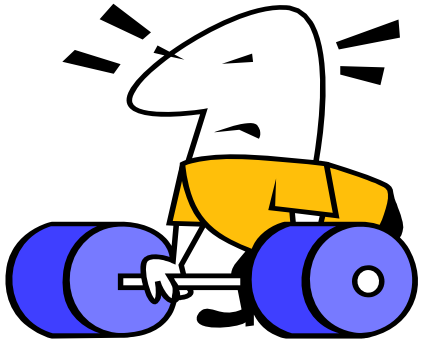
Infrastructure Consolidation at EPA: Experience Sharing

Chih-ming Chan
Environmental Protection Administration
Department of Environmental Monitoring and Information Management

April 15, 2011

Agenda

- Introduction
- Information Transformation and Migration
  - Principles and Architecture
  - Infrastructure Facility and Hardware Equipment
- New Landscape: Opportunities and Challenges
- Conclusions and Thoughts



Introduction

- Ministry of Environment and Natural Resources is established with the goal to consolidate efforts of water, land, forest, and air protection to improve the preservation of environment and resources, as well as the balance of ecosystems, to support sustainable development.

Environmental Protection Administration. Ministry of the Interior, Ministry of Economic Affairs, Ministry of Transportation and Communications, Council of Agriculture, Veterans Affairs Commission

→

Environmental protection, environmental monitoring, national parks, sewage systems, water supply facilities, mining, geology, weather, forest conservation, soil and water conservation, ecological conservation

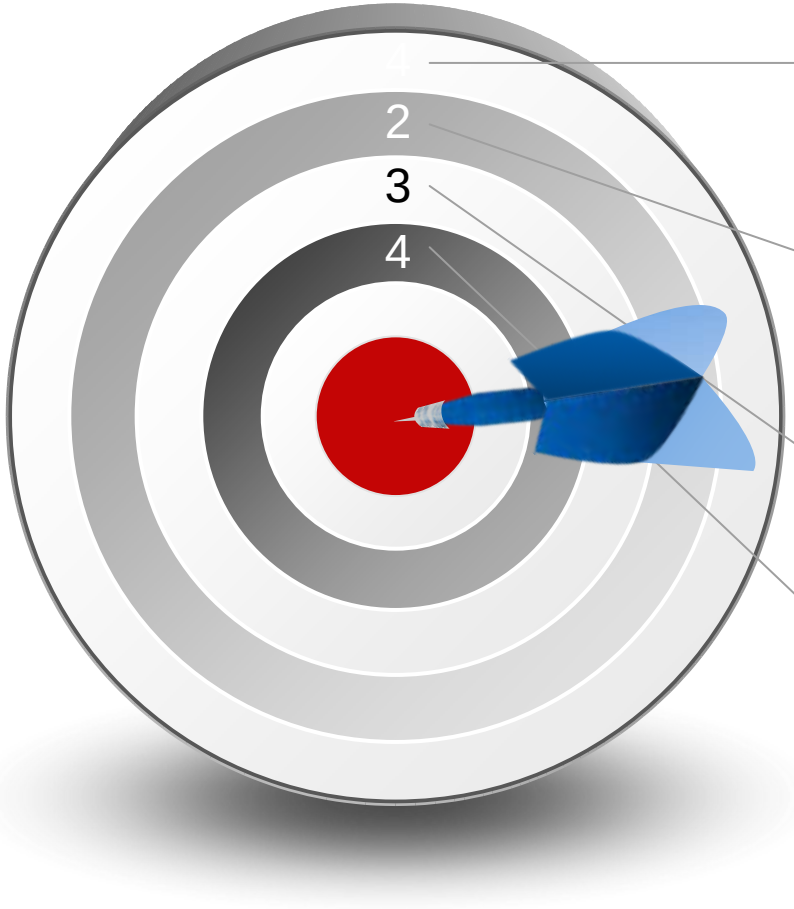
→

Ministry of Environment and Natural Resources

IT Operations Migration Guidelines For Re-organization

- Non-stop services to the public
- Centralized information store
- A “ministry”-centric information infrastructure
  - Shared IT Services
  - Shared datacenter for centralized administration
  - Consolidated common systems for unified development and maintenance

Technology Integration Enhances Overall IT Services Value



More Energy Saving – Green IT, Shared datacenter

More Proactiveness – Community network, Web 2.0, Mobile communication technologies

More Convenience – Data consolidation (Data mining), Centralized information exchange and sharing

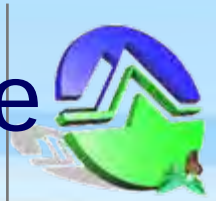
More Security – Unified communication, Information technology management

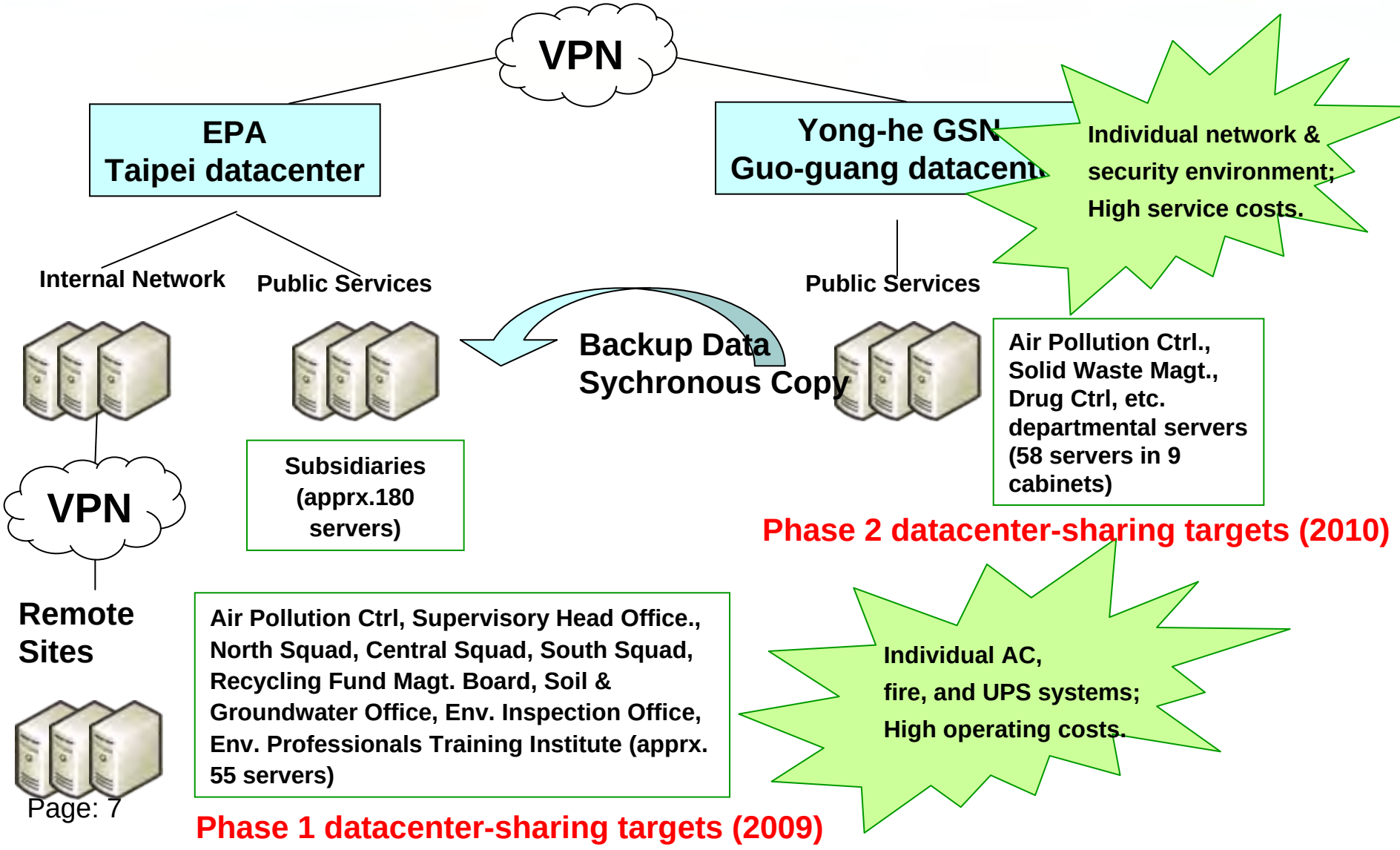
Environmental Protection Administration

Infrastructure Facility and Hardware Equipment

Operations Change and Migration
Shared Datacenter
Server Virtualization

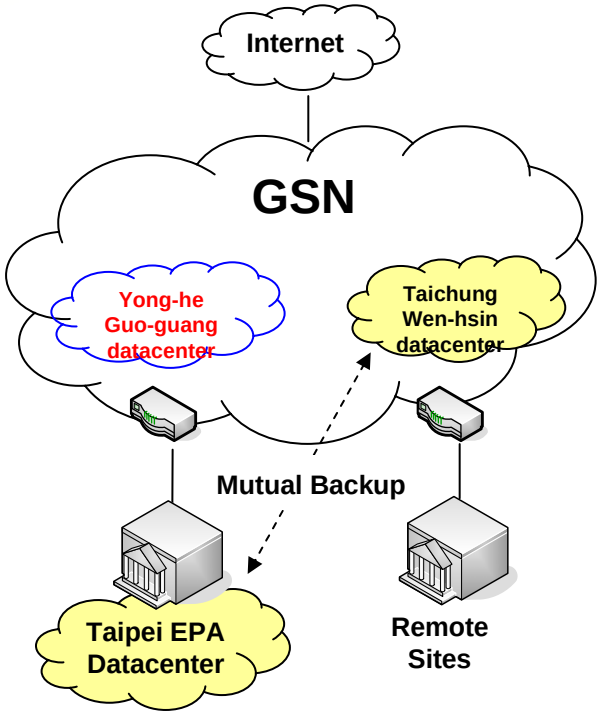
EPA's Original Datacenter Architecture





EPA Shared Datacenter Architecture Implementation Phases

End of 2009
(When phase 1 completes)

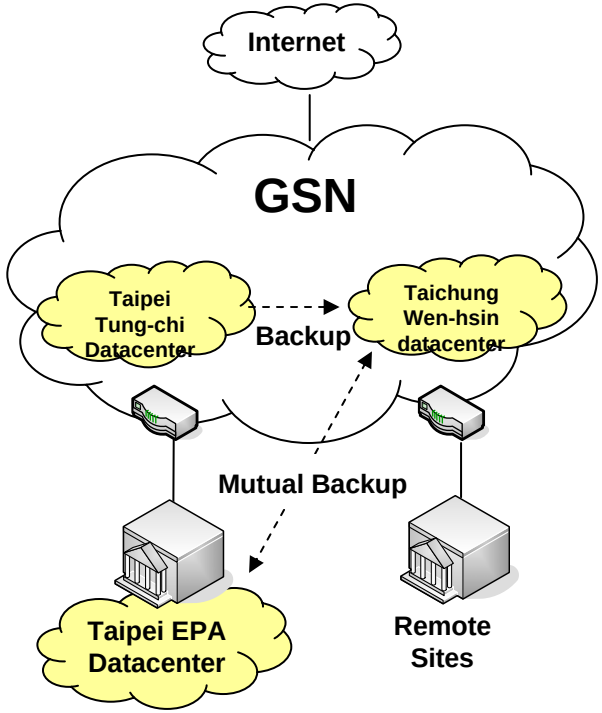


Phase 1:

Consolidate servers on remote sites into Taichung Wen-hsin datacenter

Consolidating 42 systems (55 hosts)
Consolidating 32 hosts into 7 VMware virtualization platforms
reducing 25 hosts

End of 2010
(When phase 2 completes)

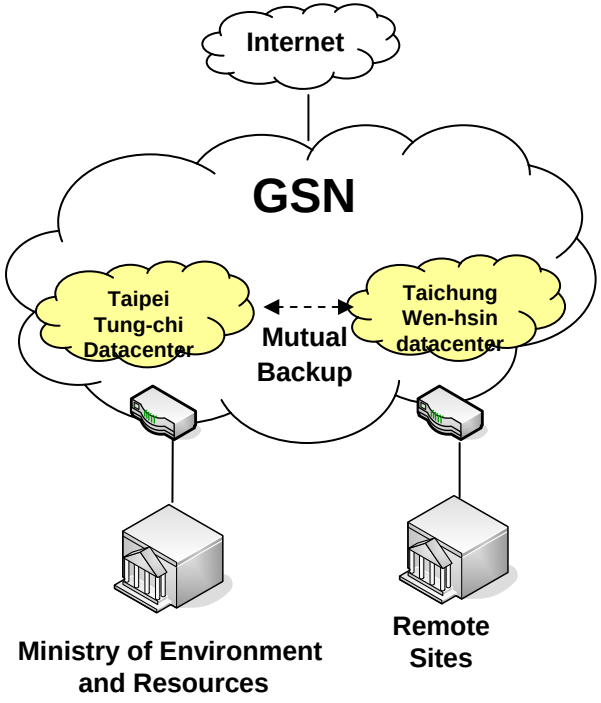


Phase 2:

Consolidate servers in Yong-he Guo-guang datacenter to Taipei Tung-chi datacenter

Consolidating 104 servers into 18 hosts, reducing 86 servers

Future

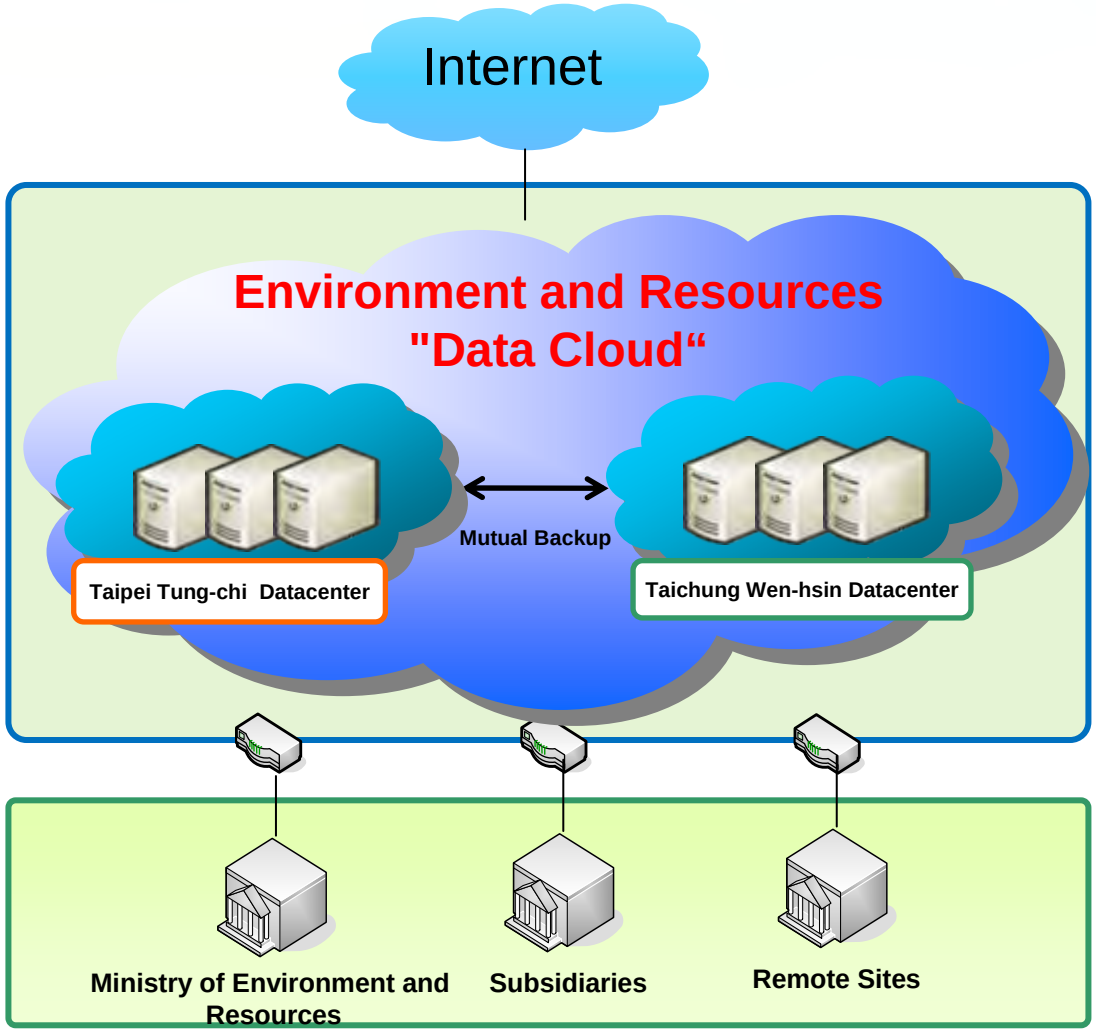


Future:

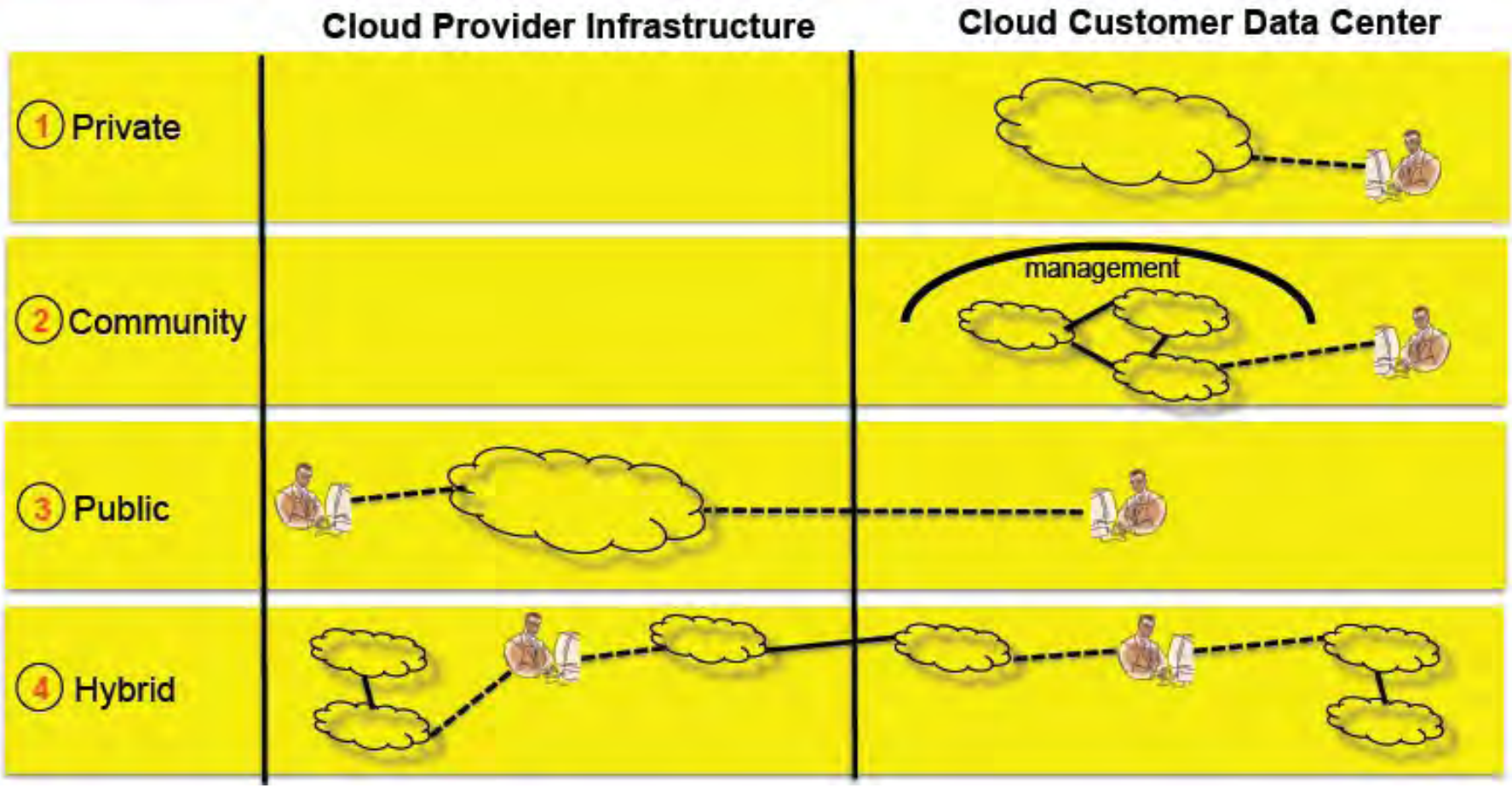
Set up Taipei Tung-chi and Taichung Wen-hsin as shared datacenters

Shared Datacenter Architecture for Ministry of Environment and Resources

- No need to move datacenters for re-organization and office relocation
- Shared datacenters have higher bandwidth, offering immediate increase in servicing speed to the public
- Common information systems placed at shared datacenter can improve performance by reducing networking routes and bottlenecks

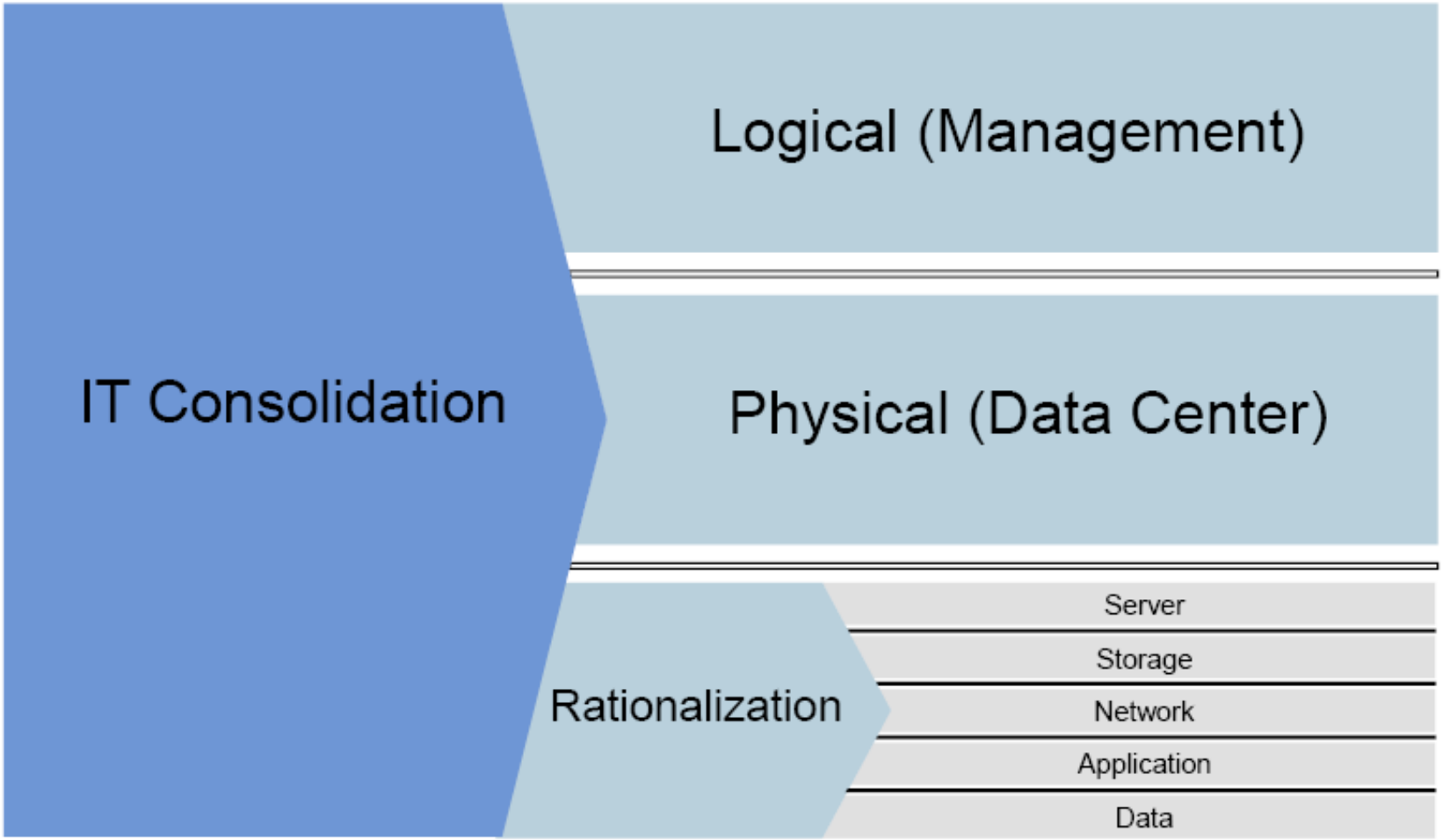


From Datacenter Sharing to Cloud Computing?



Source: National Institute of Standards and Technology (NIST)

Consolidation is More Than Just Virtualization



Source: Gartner

Energy and Green ICT

- CIOs should improve Departmental carbon reductions best practice

11e. Review the information/data you hold and when you require to access it, and on this basis implement a multi tiered storage solution, much of the data spinning on disks today is seldom accessed

14. Identify servers and data disks in the data centre that are running but not providing any services and decommission

19. Undertake an application audit to identify duplicate, and unused applications currently running

Source: UK-CIO-Workbook

New Landscape: Opportunities and Challenges (1/2)

- IT Consolidation-Related Issues
  - Virtualization -> Consolidation -> Private Cloud
  - How to manage effectively (software tools, technical professionals, 3rd-party vendors...）
  - Operation capabilities of IDC vendors
  - Required Changes to Organization and Regulations

New Landscape: Opportunities and Challenges (2/2)

- Challenges for introducing cloud computing to the government
  - Consolidation -> Cloud Computing
    - Hybrid
    - Public
  - Reliable, Secure, Scalable
- Open standards and interoperability
  - Service Level Agreement and Procurement Process
  - Any other regulatory issues? Benefits assessment?
  - Re-defining IT workforce

Conclusions and Thoughts

- If IT services become a kind of utility, what businesses should do about their datacenters?
- Data deluge -- data is growing at a rate beyond our imagination (Do we really need so much data?)
- Cloud computing for the government (hybrid, public)
  - What kind of services can be moved to the cloud
  - Delivery model should be carefully evaluated
  - SLAs and risks should be categorized before proceeding

Environmental Protection Administration

Thank you.

http://www.epa.gov.tw
cmchan@epa.gov.tw

“Leveraging the Cloud to Promote Sustainable Development in North Asia”

Attendee List

No.	From	Name	Title	Organization	Non-official title
1	China	Professor Qing Sihan 卿斯汉	Researcher 教授	Institute of Software Chinese Academy of Science/School of Software and Microelectronics, Peking University 中国科学院软件研究所/北京大学软件与微电子学院	
2	China	Mr. Yang Dongri 杨东日	Director 主任	CSIP of Cloud computing research center 云计算研究中心	
3	China (visa to be confirmed)	Mr. Liang Chuan 梁川	Deputy Director 处长	Section of Entertainment, Performing Arts and Arts and Crafts Market Supervision, Department of Cultural Market, Ministry of Culture 文化部市场司娱乐演出艺术品市场管理处	
4	China	Ms. Wen Fang 文芳	Vice President 副总裁	CCID Consulting 赛迪顾问	
5	Chinese Taipei	Dr. Tim Chou	Professor	Professor of Information Management,	

		曹承礎	教授	National Taiwan University 台灣大學資訊管理研究所	
6	Chinese Taipei	Mr. Eric Lee 李相臣	Information System Department Director 資訊室主任	National Police Agency, Ministry of the Interior 內政部警政署	Lecturer, Central Police University 中央警察大學講師
7	Chinese Taipei	Mr. Chang Shao-Bin 張紹斌	Director 主任檢察官	Taipei District Public Prosecutors Office 台北市地方法院	Assistant Professor, Department of Law, Soochow University 東吳大學法學院副教授
8	Chinese Taipei	Dr. Lee Jyh-An 李治安	Assistant Professor 助理教授	The Institute of Law and Inter-discipline, National Chengchi University 政治大學法律系	
9	Chinese Taipei	Mr. Jyan Hong-Wei 簡宏偉	Deputy Director 副處長	Department of Information Management, Research, Development and Evaluation Commission, Executive Yuan 行政院研考會資訊管理處	Assessor ,Taiwan Accreditation Foundation 財團法人全國認證基金會，評審員
10	Chinese Taipei	Ms. Lo Chien- Wei 羅倩薇	System Analyst 系統分析師	Department of Information Management, Research, Development and Evaluation Commission, Executive Yuan 行政院研考會資訊管理處	

11	Chinese Taipei	Mr. Yang Yi-Chang 楊益昌	Assistant Programmer 助理設計師	Department of Information Management, Research, Development and Evaluation Commission, Executive Yuan 行政院研考會資訊管理處	
12	Chinese Taipei	Mr. Simon Yeh 葉奇鑫	Supervisor 監事	Taiwan Technology Industry Legal Officers Association 台灣科技產業法務經理人協會	
13	Chinese Taipei	Mr. Chan Chih-Ming 詹志銘	Senior Specialist 專門委員	Department of Environmental monitoring and Information Management, Environmental Protection Administration Executive Yuan 行政院環保署環境監測及資訊處	Senior Specialist of Computer Society 電腦學會專門委員
14	Hong Kong	Dr. John Fung 馮一柱博士	Director of Information Technology Resource Centre	The Hong Kong Council of Social Service	
15	Hong Kong	Mr.Emil Chan 陳家豪	Chairman - Cloud Computing Special Interest Group	Internet Professional Association	
16	Hong Kong	Mr. Herman Lam 林向陽	CEO	Hong Kong Cyberport Management Company Limited	

17	Hong Kong	Mr. David Chung 鍾偉強	Chief Technology Officer	Hong Kong Cyberport Management Co. Ltd	
18	Hong Kong	Mr. Charles Mok 莫乃光	Chairman	Internet Society Hong Kong	
19	Hong Kong	Mr. Allan Chiang 蔣任宏	Privacy Commissioner for Personal Data	The Office of the Privacy Commissioner for Personal Data	
20	Hong Kong	Dr. NT Cheung 張毅翔醫生	Consultant (eHealth)	Food and Health Bureau	
21	Hong Kong	Ms. Kim Liao	Vice Consul (Political Affairs)	U.S. Consulate	
22	Hong Kong	Mr. SC Leung 梁兆昌	Senior Consultant	Hong Kong Computer Emergency Response Team Coordination Centre	
23	Hong Kong	Mrs. Philomena Leung 梁何綺文	Principal Assistant Secretary	Constitutional and Mainland Affairs Bureau	
24	Hong Kong	Mr. Henry Chang	Information Technology Advisor	The Office of the Privacy Commissioner for Personal Data	

		張宗頤			
25		Mr. Stephen Mak 麥鴻崧	Government Chief Information Officer	Office of the Government Chief Information Officer	
26		Mr. Victor Lam 林偉喬	Deputy Government Chief Information Officer (Consulting and Operations)	Office of the Government Chief Information Officer	
27		Mr. Alex Lee 李志賢	Assistant GCIO	Office of the Government Chief Information Officer	
28		Mr. Stanley Chan 陳志賢	Senior Systems Manager	Office of the Government Chief Information Officer	
29		Mr. TS Yu 余德深	Senior Systems Manager	Office of the Government Chief Information Officer	
30		Mr. LM Kwok 郭聯明	Senior Systems Manager	Office of the Government Chief Information Officer	
31		Mr. Keith Leung 梁景輝	Senior Systems Manager	Office of the Government Chief Information Officer	
32	Korea	Mr. Younghun	Chief Secretary	National Assembly of Korea	

		Seo			
33	Korea	Mr. Kwang Shik Yoon	Chief Secretary	National Assembly of Korea	

Total: 33delegates

(China: 4 attendees, Chinese Taipei: 9 attendees, Hong Kong: 18 attendees, Korea: 2 attendees)

Invited Speakers and Member Company Representatives

1	Hong Kong	Mr. John Ure	Associate Professor and Director	TRP, University of Hong Kong
2	Australia	Mr. Peter Van Dijk	Managing Director	Galexia
3		Ms. Yee Fen Lim	Professor	Galexia
4		Mr. Goh Seow Hiong	Executive Director, Global Policy & Government Affairs, Asia Pacific	Cisco Systems
5		Ms. Allyson Kein	Director of Leadership Marketing	Intel
6		Mr. Thennavan Subbiah	Director, Symantec.Cloud	Symantec Corporation
7		Mr. Christophe Francois	General Counsel	AVG Technologies
8		Mr. John Galligan	Regional Director, Internet Policy	Microsoft Asia Pacific

Committee members

1	China	Mr. Yao Xin	BSA	11	Korea	Mr. Jay Lee	Microsoft
2	China	Ms. Rachel Yu	Microsoft	12	Singapore	Mr. Hiroshi	Adobe Systems

						Imaizumi	
3	China	Mr. Lang Sheng Yun	Autodesk	13	Singapore	Mr. Tarun Sawney	BSA
4	Chinese Taipei	Ms. Stella Lai	BSA	14	Singapore	Mr. Claro Parlade	BSA
5	Chinese Taipei	Ms. Gina Tsai	Microsoft	15	Singapore	Mr. Roland Chan	BSA
6	Chinese Taipei	Ms. Shirley Wang	Microsoft	16	Singapore	Mrs. Dolly Lim	BSA
7	Hong Kong	Ms. Winnie Yeung	Microsoft				
8	Hong Kong	Ms. Sheila Tang	Microsoft				
9	Hong Kong	Ms. Amy Lee	Microsoft				
10	Hong Kong	Ms. Hedy Ho	Microsoft				

Leading the Transformation to Open Data Centers and Cloud Computing

Allyson Klein
Director
Leadership Marketing
Data Center Group
April 14, 2011

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Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Intel does not control or audit the design or implementation of third party benchmarks or Web sites referenced in this document. Intel encourages all of its customers to visit the referenced Web sites or others where similar performance benchmarks are reported and confirm whether the referenced benchmarks are accurate and reflect performance of systems available for purchase.

Relative performance is calculated by assigning a baseline value of 1.0 to one benchmark result, and then dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms, and assigning them a relative performance number that correlates with the performance improvements reported.

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Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. For more information including details on which processors support HT Technology, see here

Intel® Turbo Boost Technology requires a Platform with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software and overall system configuration. Check with your platform manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see http://www.intel.com/technology/turboboost

No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer system with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit http://www.intel.com/technology/security. In addition, Intel TXT requires that the original equipment manufacturer provides TPM functionality, which requires a TPM-supported BIOS. TPM functionality must be initialized and may not be available in all countries.

Intel ® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on Intel® Core™ i5-600 Desktop Processor Series, Intel® Core™ i7-600 Mobile Processor Series, and Intel® Core™ i5-500 Mobile Processor Series. For availability, consult your reseller or system manufacturer. For more information, see http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor series, not across different processor sequences. See http://www.intel.com/products/processor_number for details. Intel products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications. All dates and products specified are for planning purposes only and are subject to change without notice

Today's Agenda

- Latest Update on Intel's Cloud Strategy – Jason Waxman
- Under the Hood: Intel® Cloud Builders program - Billy Cox
- Intel Cloud Builders reference architecture demo showcase: 8 demos from leading solution providers
  - Enomaly, Dell, Fujitsu, Huawei, Inspur, Lenovo, Microsoft, Neusoft, Powerleader, and VMware
- Open networking with Intel and ecosystem

By 2015…

More Users

>1 Billion More Netizen's[1]

More Devices

>15 Billion Connected Devices[2]

More Data

>1 Zetabyte Internet Traffic[3]

Internet and device expansion drives new requirements for Data Centers

>20% CAGR[4] in cloud service revenues

1. IDC "Server Workloads Forecast" 2009. 2.IDC "The Internet Reaches Late Adolescence" Dec 2009, extrapolation by Intel for 2015 2.ECG "Worldwide Device Estimates Year 2020 - Intel One Smart Network Work" forecast 3. Source: http://www.cisco.com/en/us/solutions/collateral/ns341/ns525/ns537/ns705/ns827/service_provider/visual_networking_ip_traffic_chart.html extrapolated to 2015
2. 4 source: Gartner June 2010, CAGR from 2009→2014

Today's Key IT Challenges

Security

IDC
Analyze the Future

70% of Respondents Saying Security is Top Concern In Moving to Public Cloud[1]

Efficiency

Today's Technology Would Require Building 45 New Coal Power Plants to Support 2015 IT Infrastructure[2]

Manageability

BAIN & COMPANY

IT will spend ~$2T on deployment & operations thru 2015 unless smarter infrastructure radically simplifies management of virtualized environments.

Lock-In

the 451 group

August 2010

"We have seen lock-in return as a top concern….routinely seeking alternatives to proprietary virtualization and cloud computing technology "

Opportunity to save $25B in annual "excess" IT spend by 2015[3]

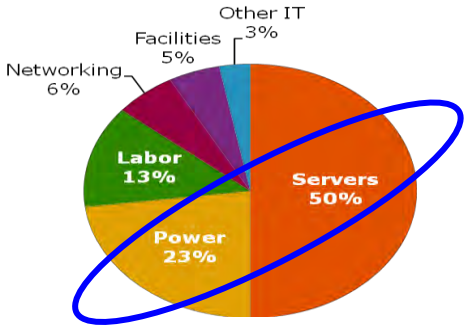
1. IDC Market Analysis, January 2010.
2. Source information in speaker notes
3. Source information in speaker notes

intel

Intel: History of Driving Cloud Innovation & Optimization

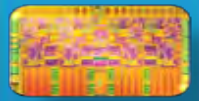
Intel can address ~75% of TCO…

Cost of Typical Major Internet Datacenter[1]



…via optimized platforms & technologies

Optimized Silicon



Xeon 5600
Intel SSDs
Intel 10GbE

Optimized Technologies

Intel Virt Tech's
Intel Node Mgr &
Data Center Mgr

Scalable Software

Intel S/W enabling & tools
DCMI
Open Cirrus Research

Optimized Systems & Datacenters

Broadest range of dense OEM systems
Facility optimization

Driving Standards

DMTF
SNIA
IEEE Advancing Technology for Humanity
PCI SIG

Baidu 百度

Up to 40W/node power savings using Intel® Node Manager[2]

Facebook

Up to 62% performance improvement and 44% perf/watt using Intel Xeon processor 5500 series[3]

China Telecom

Up to 50% perf increase using Intel Xeon processor 5600 series & up to 10% power savings using Intel Node Manager[4]

terremark

Higher density and up to 30% performance increase[4]

1 Source: Intel internal analysis, 2008 of 3 yr TCO

2 Source: http://software.intel.com/en-us/articles/intel-cloud-builders-success-stories

3Source: For more details on the benchmark results:http://qgears.com/2009/12/16/facebook-dyno

4 source: http://www.intel.com/references/Cloud/cloudtbm

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit Intel Performance

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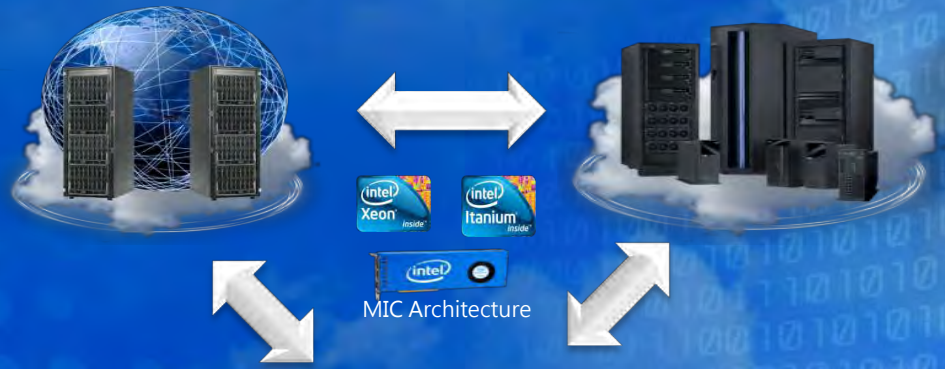
Cloud 2015 Vision

FEDERATED
Share data securely across public and private clouds



AUTOMATED
IT can focus more on innovation and less on management

CLIENT AWARE
Optimizing services based on device capability

Desktops | Laptops | Netbooks | Personal Devices | Smartphones | Smart TVs | Embedded

Intel Architecture Compute Continuum

Strong Momentum for the Open Data Center Alliance

BBC 28 Oct 2010

"The businesses involved account for more than $50bn (£32bn) in IT spending "

Organization has grown >30% to over 100 members since launch

Added Capgemini & China Unicom to Steering Committee

Plus >30 Contributing Members

Working groups engaged on usage roadmap delivery

Source: Open Data Center Alliance

China Companies – members of ODCA:

- Baidu
- Beijing China Power IT
- China Life Insurance Co.*
- China Petroleum & Chemical Corporation (SINOPEC)
- China Unicom Group*
- China CITIC Bank
- CloudEx (21ViaNet)
- Guotai Junan Securities Co., Ltd.
- MEEZA, Qatar Foundation
- Netease
- Shanda Online Intl.
- Shenzhen Institutes of Advanced Tech., CAS
- Tencent
- Travelsky

*Steering Comm.

From Vision to Action

IT & Service Providers

Define and Prioritize IT Requirements

Products & Technologies

Take Advantage of New Capabilities In Intel Platforms

Intel® Cloud Builders

Utilize Proven Reference Solutions to Ease your Deployments

Helping IT on path to Cloud 2015

intel

Intel® Cloud Builders

- Broad ecosystem engagement driving cloud solution delivery
- Technical repository of Reference Architectures, educational tools, and solution information growing
- >25 Reference Architectures & counting
- This week in Beijing - 8 ecosystem demos of reference architectures from industry leaders

Intel® Cloud Builders: Proven Solutions

Proven, open, interoperable solutions optimized for IA capabilities

Coming soon: Lenovo Secure Cloud Access

Build A Cloud:

- Fujitsu Primergy with VMware vCloud
- HP ProLiant SL* & Enomaly Elastic Computing Platform
- Huawei SingleCLOUD*
- IBM* CloudBurst
- Inspur* IaaS
- Joyent *SmartDataCenter
- Microsoft System Center VM Manager Self-Service Portal 2.0*
- Neusoft Aclome* Cloud
- Nimbula* Cloud OS & Nimbula Director*
- Novell* Cloud Manager
- Parallels* Elastic IT Solution Developer Cloud
- Powerleader Power Rack Server* with Microsoft*
- Red Hat* Cloud Foundations
- Ubuntu Enterprise Cloud
- Univa UD*
- VMware vCloud Director

Enhance A Cloud:

- Balanced Compute Model with NetSuite & Gproxy Design
- Cisco* Virtualized Multi-Tenant Data Center
- Cloud Gateway Security on Intel Platforms
- Cloud On-Boarding with Citrix OpenCloud*
- Dell & VMware* Policy Based Power Management
- EMC* Atmos* Scale-out Storage Usage Models
- Enhanced Cloud Security with HyTrust and VMware
- NetApp* Unified Storage and Networking
- Parallels* Trusted Compute Pools for Cloud Computing
- VMware Enhanced Server Platform Security

Solutions to make it easier to build & optimize cloud infrastructure

intel

Summary

- Engage in the Open Data Center Alliance www.opendatacenteralliance.org
- Gain a deeper understanding of Cloud Builders Reference Architectures intended to ease IT deployments www.intelcloudbuilders.com
- Work with Intel and our partners on delivery of open, interoperable cloud solutions


Thank You

Information Protection and Security in the Cloud

The new landscape

System-Centric

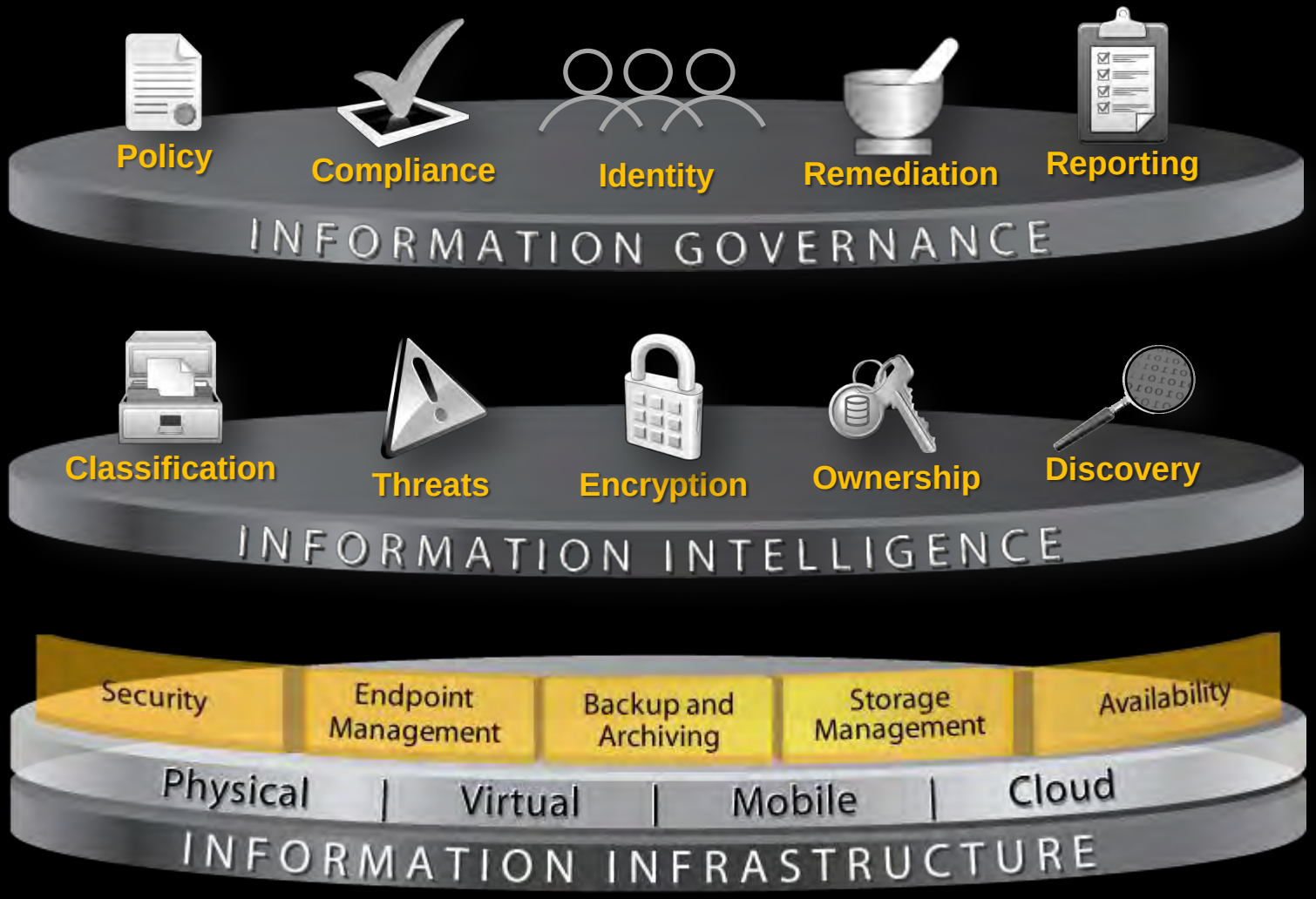
- Transactional Apps
- Structured Data
- Centralized information
- On-premise infrastructure
- Perimeter-based security

Information-Centric

- Collaborative Apps and Social Media
- Unstructured data
- Distributed information
- Virtual Infrastructure and Cloud
- People are the new perimeter

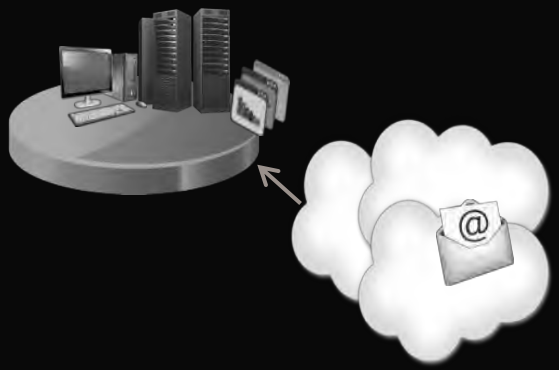
Information-Driven Enterprise

Across Physical, Virtual, and Cloud



Symantec and the Cloud

Software-as-a-Service



Symantec.cloud Services
- Email, IM, Web Security
- Email Archiving
- Email Encryption

Manage Private Clouds

Virtual Environments
- Application HA
- Data Protection

Leverage Public Clouds

AWS, Cloud Storage(CS)
- Data Protection using CS
- Security for AWS
- Protection for AWS

Email must operate 24/7

74%

Of all communication sent by a typical user is sent through email

Business Critical

68%

Projected growth in corporate email traffic between 2008 and 2012

Email Volume Increasing

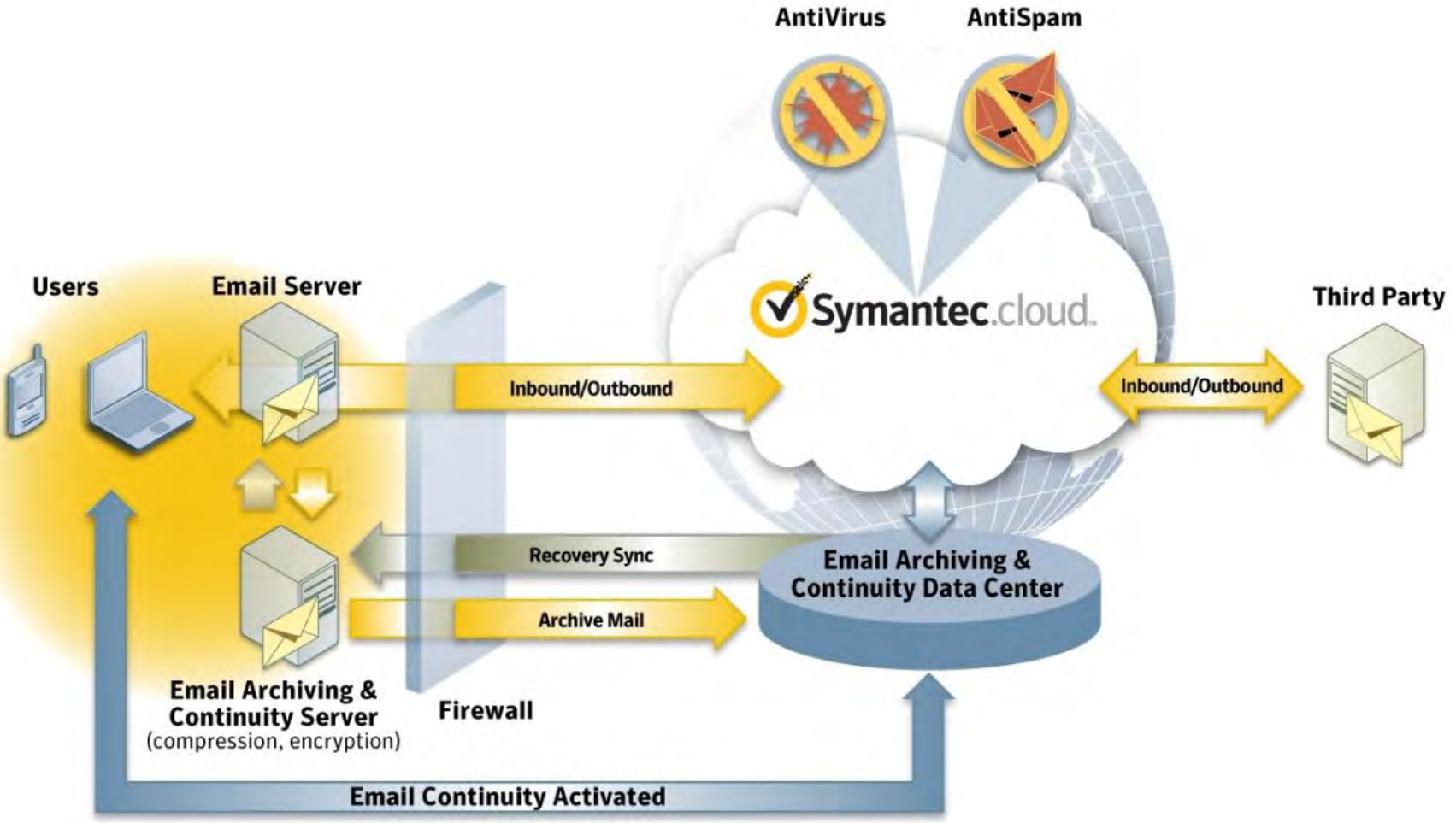
30%

Of organizations experience monthly email outages lasting 30 min or more

Downtime = Lost Revenue and Productivity

Increased regulatory and governance requirements

Email Protection.cloud



Email Continuity.cloud

Email Continuity.cloud

Standby email system in the cloud for planned or unplanned outages

Protect against on-premise disasters
- When something happens to your physical facilities email continuity will be activated automatically

Low Total Cost of Ownership
- No dedicated staffing required
- Predictable operating costs

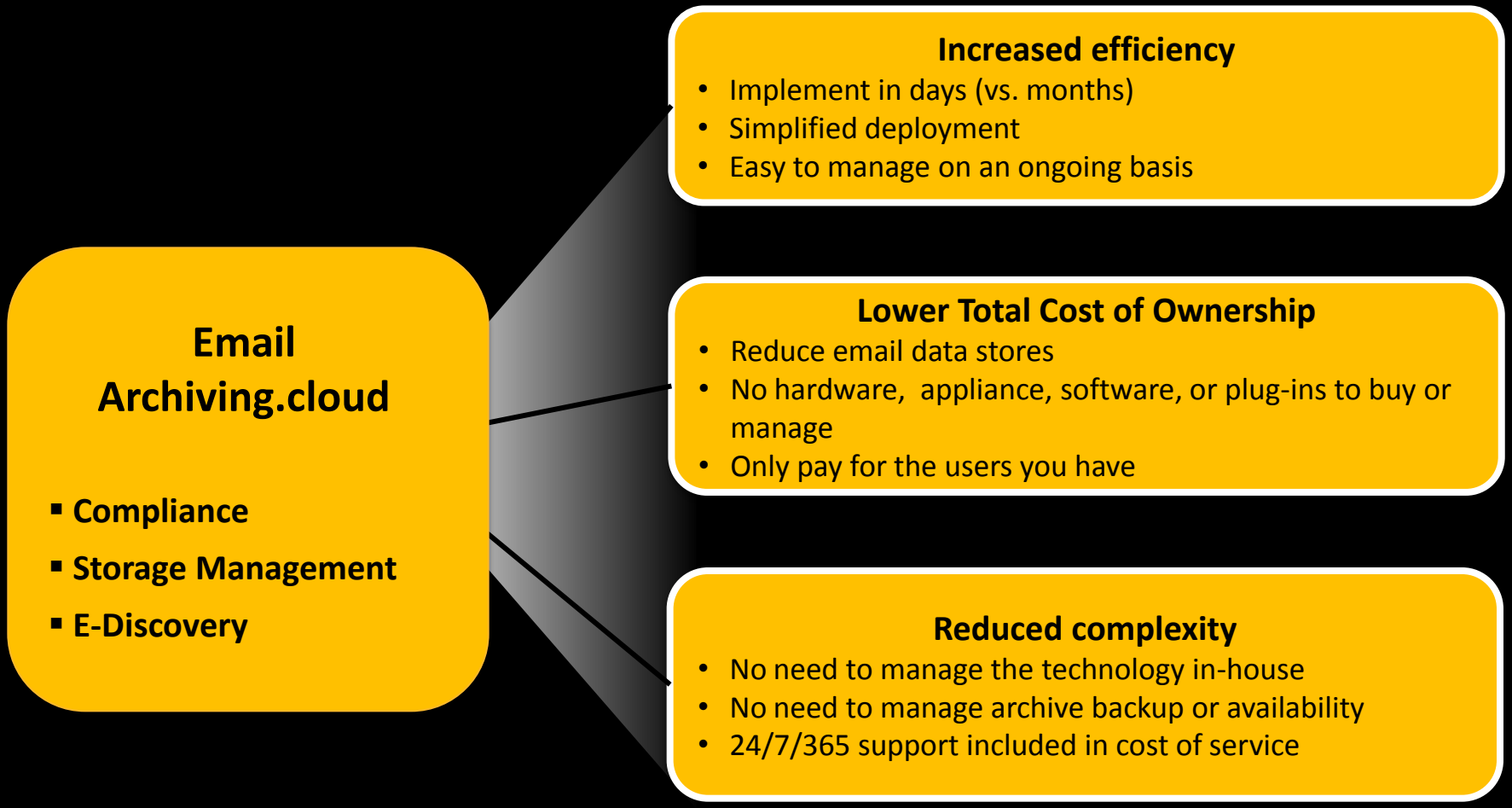
Quick, Low Risk Deployment
- Implement in a day

Secure and Efficient
- Email is encrypted in transit via TLS

Service Level Agreement
- 99.9% service uptime

Archiving.cloud

Retain Control and Offload the Burden and Headaches



Avoiding Unnecessary Complexity

Hardware Scoping Issue

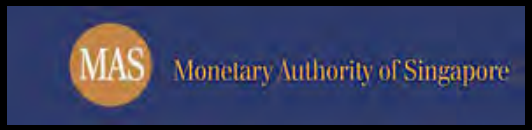
Storage Estimates are Difficult

Daily Management is Time Consuming

Bypass Implementation Nightmares

Symantec.cloud Customers

31,000 clients in 80+ countries



Symantec

Symantec.cloud

Cloud Computing: Accelerating Asia's Knowledge Economy and Digital Future

John Galligan
Regional Director – Internet Policy
Microsoft Asia Pacific

Microsoft

AGENDA

THE ERA OF CHANGE

DEFINING RESPONSIBILTIES

REALISING POTENTIAL

CHANGE

Change is affecting how we, live, work, and interact with people all around the world

CHANGES IN SCALE

107 TRILLION
Emails sent

50 TRILLION
Gigabytes Of Data

31 BILLION
Connected Devices

2 BILLION
Internet Users

25 MILLION
Applications

Source: IDC
IDC Directions 2010, ICT Outlook: Recovering Into a New World, Doc.# DR2010_GS2_JG, March 2010
*forecast

Microsoft

CHANGES IN INSIGHTS

Changing the way we interpret and consume data

Create Compelling Experiences

Simplify Information Analysis

Share experiences / lessons

Microsoft

CHANGES IN INTERFACE

DOS

GUI

INTERNET

CLIENT + CLOUD

NUI

Microsoft

CHANGES IN USE

Changing the way we work

Increase Collaboration

Build and Leverage Communities

Instantaneous and Suitable Sharing

Microsoft

CHANGE FOR GOVERNMENTS

In a world that is increasingly complex and intertwined…

Economic Crisis and Budget Constraints

Growing Demand for Services

Rising Constituent Expectations

Geo-political and external threats

Microsoft

CHANGE FOR BUSINESS

In a world that is increasingly complex and intertwined…

Higher costs
Market uncertainty

Growing
Competition

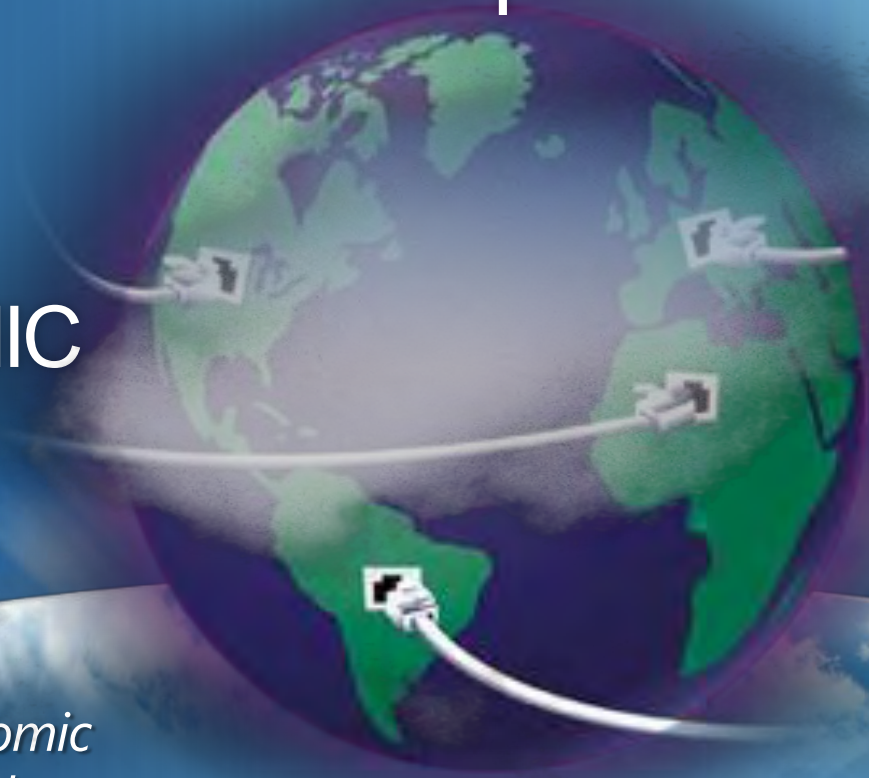
Rising
Consumer
Expectations

Changing security
threats

Microsoft

CHANGES IN THE PLATFORM

AGILITY



ECONOMICS

Significant Economic and Financial Differences

Changing the expectations for business agility

INNOVATION

Removing barriers to focus on enterprise challenges

Microsoft

CHANGE STARTS WITH A VISION

"A **PC** On **Every Desk**
And In **Every Home!**"

Microsoft

OUR CLOUD VISON

Continuous **Cloud Services** for
Every Person and **Every Business!**

DEFINING RESPOSIBILITIES

NEW TRUST MODELS

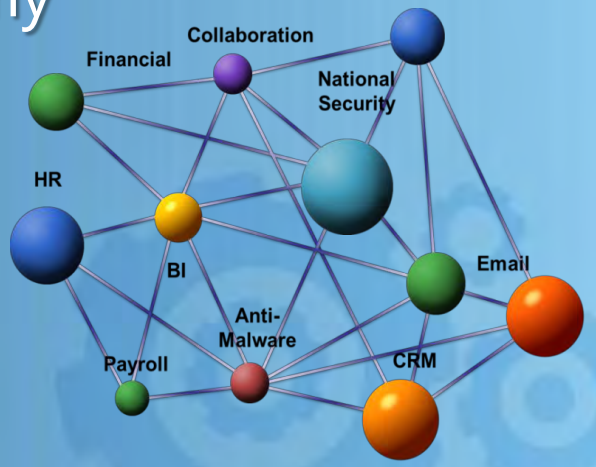
NEW WORLD FOR INFORMATION

SHARED RESPONSIBILITIES

Microsoft

NEW WORLD FOR INFORMATION

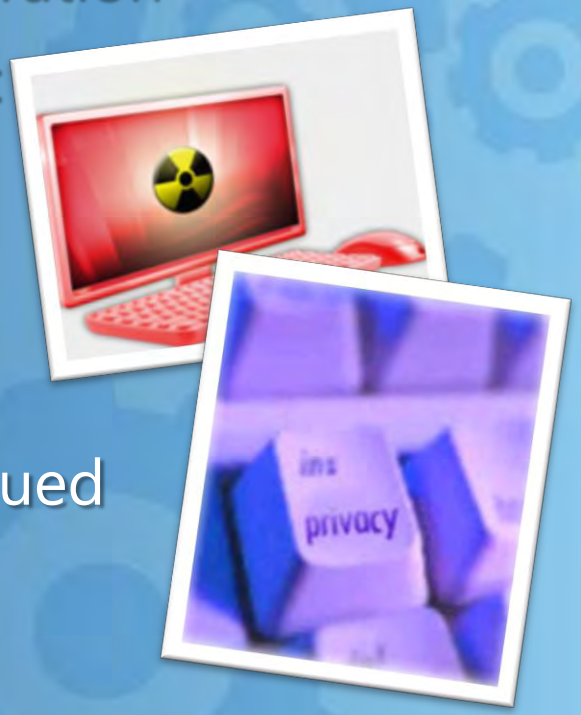
- Data new currency of the digital economy
- New environments for data:
  - Social
  - Economic
  - Geo-political
- Analogue v digital policy frameworks
- Local priorities v global realities
- Data will go where is it safe, secure & valued



Microsoft

NEW MODELS FOR TRUST

- Security & Privacy are about creating trust
- Privacy laws can be both enablers as well as barriers
- Patchwork of privacy laws hampering growth
- Cyber security is equally a major consideration
- Need to foster regulation harmonisation:
  - National
  - Regional
  - Global
- Data will go where is it safe, secure & valued



Microsoft

SHARED RESPONSIBILITIES

- Need to build ‘Trustworthy computing experience’
- Test for industry & government to work together
- Foster *responsible information stewardship*
- Together we can work to protect the five I’s:
  1. Infrastructure
  2. Information
  3. Identity
  4. Independence
  5. Intellectual Property

Microsoft

REALISING POTENTIAL

NEW OPPORTUNITIES

NATIONAL COMPETITIVENESS

NEW ENGAGEMENT

Microsoft

THE OPPORTUNITY FOR ASIA

- Knowledge Economy will fuel Asia's future
- The cloud is the next great 'leveler'
- Cloud is a General Purpose Technology
  - Lowers the barriers to entry
  - Reduces costs (cap-ex to op-ex)
  - Allows flexibility for scale and deployment

- Incubate innovation right across the economy, especially SME sector
- 30% of all SMEs in Asia are using the cloud v global average of 21%.
- Worldwide spending on cloud services to reach US$150 billion by 2014
- Spending on cloud computing to reach 30-40% of IT budgets by 2013

Microsoft

NATIONAL COMPETITIVENESS

INNOVATION AND SOPHISTICATION FACTORS

- Business Sophistication
- Innovation

EFFICIENCY ENHANCERS

- Higher Education and Training
- Goods Market Efficiency
- Labor Market Efficiency
- Financial Market Sophistication
- Technological Readiness
- Market Size

BASIC REQUIREMENTS

- Health and Primary Education
- Macroeconomic Stability
- Institutions
- Infrastructure

National Competitive Agenda

NEW ENGAGEMENT

- 20th Century saw trade and economic integration around goods & services
- The 21st Century should be about the new online community with legal and regulatory frameworks to drive inclusion
- Policy framework that enables this 'exchange' - respecting national sovereignty but enabling greater integration
- Technology already benefitted by international harmonisation
- A '*common market for online information*' is needed to facilitate effective trade in digital information and services

Microsoft

WORKING TOGETHER

- Next generation trade agreements
- Mechanisms for integration already there:
  - Bi-lateral agreements (FTA/DTA/MLAT/CER)
  - Regional & global economic and trade fora

- This can be done by sector, by policy or at whole-of-economy level
- Government need to think about new information ecosystem and the human capital dividends
- No better time for Asia to take leading role

Microsoft

THANK YOU

Microsoft