Cloud Computing: An Introduction and Applications

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Who are in the cloud?
You can’t trust the cloud computing!

Presentation Outline

- Introduction
- The Past and Present of Cloud Computing
- Cloud Computing Applications
- The Future of Cloud Computing
- Conclusions
Introduction

- Cloud computing is HOT!

Which cloud should you believe?
Cloud computing for everything!
Introduction

- Different angles have different opinions!
Free Software Foundation founder Richard Stallman said (interviewed by the Guardian):

- Cloud computing was simply a trap aimed at forcing more people to buy into locked, proprietary systems that would cost them more and more over time.
- One reason you should not use web applications to do your computing is that you will lose control.
- If you use a proprietary program or somebody else's web server, you're defenceless. You're putty in the hands of whoever developed that software.

Cloud computing is a trap, warns GNU founder Richard Stallman

Cloud-based programs like Google's GMail will force people to buy into locked, proprietary systems that will cost them more and more over time, according to GNU founder Richard Stallman.

Bobbie Johnson, technology correspondent, guardian.co.uk, Monday 29 September 2008 14.11 BST

Cloud computing was simply a trap aimed at forcing more people to buy into locked, proprietary systems that would cost them more and more over time.

One reason you should not use web applications to do your computing is that you will lose control.

If you use a proprietary program or somebody else's web server, you're defenceless. You're putty in the hands of whoever developed that software.

The computer industry is the only industry that is more fashion-driven than women's fashion. --- Larry Ellison (Oracle CEO)
Introduction

- Computer manufacturer Dell even tried to trademark the term "cloud computing", although its application was refused.
- But Dell got the domain name cloudcomputing.com, cloud-computing.com

Who coined the phrase Cloud Computing?

Figure 1. The Internet's Confederation Approach
Introduction

Who coined the phrase Cloud Computing?

The New York Times
August 9, 2006

What's interesting [now] is that there is an emergent new model, and you all are here because you are part of that new model. I don't think people have really understood how big this opportunity really is. It starts with the premise that the data services and architecture should be on servers. We call it cloud computing -- they should be in a "cloud" somewhere. And that if you have the right kind of browser or the right kind of access, it doesn't matter whether you have a PC or a Mac or a mobile phone or a BlackBerry or what have you -- or new devices still to be developed -- you can get access to the cloud. There are a number of companies that have benefited from that. Obviously, Google, Yahoo!, eBay, Amazon come to mind. The computation and the data and so forth are in the servers.
Introduction

中華文化「雲端」的起源

明朝西遊記第二十七回：「他在那雲端裡，咬牙切齒」。Reliability issue

明朝金瓶梅第二十回：「雲端裡老鼠──天生的耗！」Security issue

清朝三俠五義第十六回：「猶如入雲端的一般，樂的他不知怎麼樣才好。」Cost saving

清朝兒女英雄傳第二十二回：「天下事最妙的是雲端裡看廝殺，你我且置身事外，袖手旁觀。」Business competition

中華文化的雲端計算 in action(208 AD)

三國演義第四十六回「用奇謀孔明借箭，獻密計黃蓋受刑」中：「一天濃霧滿長江，遠近難分水渺茫。驟雨飛蝗來戰艦，孔明今日服周郎。」
The Past of Cloud Computing

Introduction

The poetry was written by 賈島(779-843 AD)
Introduction

From Wikipedia:

- Cloud computing is Internet-"cloud-"
  based development and use of computer technology
  ("computing").

- In concept, it is a paradigm shift whereby details are
  abstracted from the users who no longer have need of,
  expertise in, or control over the technology
  infrastructure "in the cloud" that supports them.

- Cloud computing describes a new supplement,
  consumption and delivery model for IT services based
  on the Internet, and it typically involves the provision of
  dynamically scalable and often virtualized resources
  as a service over the Internet.
Introduction

- A style of computing where massively scalable IT-enabled capabilities are provided "as a service" over the network.

<table>
<thead>
<tr>
<th>Acquisition Model</th>
<th>Service based</th>
<th>“I only care about results, not how IT capabilities are implemented”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Model</td>
<td>Usage based</td>
<td>“I want to pay for what I use, like a utility”</td>
</tr>
<tr>
<td>Access Model</td>
<td>Internet, Intranet</td>
<td>“I can access services from anywhere, from any device”</td>
</tr>
<tr>
<td>Technical Model</td>
<td>Dynamic, flexible</td>
<td>“I can scale up or down capacity, as needed”</td>
</tr>
</tbody>
</table>

Driving forces

- Data-Intensive Applications: Explosion of applications and user-generated content, Petabyte in 2010, Exabyte in 2013, Zettabyte in 2015
- Datacenter Pressures: Growing operational complexity and cost from infrastructure and application sprawls
- Increased network capacity and availability
- Rising Energy Cost & Green compliance
- Shared Services Across Lines of Business
- Innovation and Collaboration
Introduction

- A video to explain the concept

Cloud Computing

Past & Present
The Past and Present of Cloud Computing

- History of computing

<table>
<thead>
<tr>
<th>past</th>
<th>present</th>
<th>cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing resource</td>
<td>Owner</td>
<td>No</td>
</tr>
<tr>
<td>ownership</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>access</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>cost</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>control</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>destiny</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
The Past and Present of Cloud Computing

- The overarching concept of delivering computing resources through a global network is rooted in the sixties.

Memorandum For Members and Affiliates of the Intergalactic Computer Network
by J.C.R. Licklider

This memo sent from J.C.R. Licklider to his colleagues in 1966 explores the early challenges presented in trying to establish a time-sharing network of computers with the software of the era—ultimately, this vision would lead to ARPANet, the precursor of the Internet in use today. Will the future iterations lead to an Intergalactic Computer Network?

- Lick’s vision was for everyone on the globe to be interconnected and accessing programs and data at any site, from anywhere.
- Sound a lot like what we are calling cloud computing today.
The Past and Present of Cloud Computing

- Predicted that "computation may someday be organized as a public utility" in 1961.

The Past and Present of Cloud Computing

Tim Berners-Lee

With help from Robert Cailliau, he published a more formal proposal (on November 12, 1990) to build a "Hypertext project" called "WorldWideWeb" (one word, also "W3") as a "web" of "hypertext documents" to be viewed by "browsers", using a client-server architecture.

I will explain some of the techniques that can be used to make these nuggets easier to pick up so that we can all be richer.
The Past and Present of Cloud Computing

- Milestones
  - The arrival of Salesforce.com in 1999, which pioneered the concept of delivering enterprise applications via a simple website.
  - The next development was Amazon Web Services in 2002, which provided a suite of cloud-based services including storage, computation, and even human intelligence through Amazon Mechanical Turk.
The Past and Present of Cloud Computing

Amazon Mechanical Turk

Mechanical Turk is a marketplace for work.
We give businesses and developers access to an on-demand, scalable workforce. Workers select from thousands of tasks and work whenever it's convenient.

The Past and Present of Cloud Computing

Make Money by working on HITs

HITs - Human Intelligence Tasks - you work on. Find HITs now.

Get Results from Mechanical Turk Workers

Ask workers to complete HITs - Human Intelligence Tasks - and get results using Mechanical Turk. Register Now.

As a Mechanical Turk Worker you:
- Can work from home
- Choose your own work hours
- Get paid for doing good work

As a Mechanical Turk Requester you:
- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITs completed in minutes
- Pay only when you're satisfied with the results
The Past and Present of Cloud Computing

- Crowd+Outsourcing=Crowdsourcing (crowd computing)

1. Company has a problem
2. Company broadcasts problem online
3. Online "crowd" is asked to give solutions
4. Crowd submits solutions
5. Crowd vets solutions
6. Company rewards winning solvers
7. Company owns winning solutions
8. Company profits

The crowdsourcing process in 8 steps:

- It is a very effective kind of crowd computing
The Past and Present of Cloud Computing

In 2006, Amazon launched its Elastic Compute Cloud (EC2) as a core web service. It allows small companies and individuals to rent computers on which to run their own computer applications. Although companies may take years to abandon their proprietary supply operations, the savings offered by utilities eventually become too compelling to resist.
The Past and Present of Cloud Computing

- In 2009, as Web 2.0 hit its stride, and Google and others started to offer browser-based enterprise applications, though services such as Google Apps.

But we are not floating in the cloud yet!
- Internet connections aren't fast enough
- Internet connections aren't reliable enough
- Internet connections aren't available at all times in all places
- Issues related to reliability, privacy, security, etc.

Amazon S3 Crash Raises Doubts Among Cloud Customers
The company's Simple Storage Service suffered a similar outage lasting about two hours in February, an incident that at the time led many to question its dependability.
- outage in Feb. 2008 and July 2008 (down 8 hours)
- While things you may keep in your house are constitutionally protected, the things you place in the "cloud" are not.
Lack of standards

Everybody seems to be developing a piece of the puzzle, but nobody has brought all the pieces together.

The methods used in today's commercial clouds have not been open and general purpose, but instead been mostly proprietary and specialized.

“At some point, it makes sense for somebody to say, ’I want to move my data from cloud A to cloud B,’ ” but the different clouds do not know each other, he said.
The Past and Present of Cloud Computing

Busting the nine myths of cloud computing

Robert L. Scheier (InfoWorld) | 22 June, 2008 20:27 |

MYTH NO. 5: THE TRUTH ABOUT THE CLOUD

What’s the takeaway? That the cloud isn’t a magic wonderland of carefree computing, but a complex resource that requires understanding and hard work to manage correctly.

And that’s no myth.

YOU CAN SEAM IF YOU’RE RUNNING VMS, YOU’RE DOING PRIVATE "CLOUD" CLOUD COMPUTING DATA CENTER) WITH PUBLIC PROVIDERS

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The Past and Present of Cloud Computing

HP Labs
Intel Research
Yahoo!
University of Illinois at Urbana-Champaign
Karlsruhe Institute of Technology, Germany
InfoComm Development Authority, Singapore
ETRI
MIMOS
Russian Academy of Sciences
Carnegie Mellon
Carnegie Mellon University
The Past and Present of Cloud Computing

- Many commercial products

A cautious note:

- Don’t put all your eggs into one basket.
Cloud Computing Applications
Cloud Computing Applications

- 就個人角度而言
  - 所有的服務都是雲端計算

- 就圖書館的角度而言呢?

<table>
<thead>
<tr>
<th>資料查詢</th>
</tr>
</thead>
</table>
| 個人借閱狀況  
| 館藏目錄查詢 |
| 電子資料整合查詢 |
| 電子資料庫  
| 電子期刊 |

Cloud Computing Applications

- 例如“個人借閱狀況”的查詢
  - 這些資料是放在甚麼地方？
  - 圖書館的server，圖書館自己負責管理這些server和上面的資料
  - 可以把server放到計算機中心代管，但資料還是要自己維護（除錯、備份等）

- 私有雲(Private Cloud)
  - 計中建一個私有雲來放資料和維護

- 公有雲(Public Cloud)
  - 如果有公有雲有提供此服務
Cloud Computing Applications

- Those applications Google failed to lead the trend?
  - Skype
  - Twitter
  - Facebook
  - Social Networks (社交網路)
Cloud Computing Applications

- A network
Cloud Computing Applications

Social Networking

Cloud Computing Applications
Cloud Computing Applications

Plurk is a social journal for your life
Tired of your existing Social Networks?
Share your life easily with friends, family and fans.

Sign Up For Free

Cloud Computing Applications

Facebook users and population

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>50M</td>
</tr>
<tr>
<td>Chile</td>
<td>30M</td>
</tr>
<tr>
<td>Taiwan</td>
<td>20M</td>
</tr>
<tr>
<td>Venezuela</td>
<td>10M</td>
</tr>
<tr>
<td>Brazil</td>
<td>20M</td>
</tr>
<tr>
<td>Thailand</td>
<td>15M</td>
</tr>
<tr>
<td>Sweden</td>
<td>15M</td>
</tr>
<tr>
<td>Egypt</td>
<td>10M</td>
</tr>
<tr>
<td>Belgium</td>
<td>5M</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>5M</td>
</tr>
<tr>
<td>Israel</td>
<td>5M</td>
</tr>
<tr>
<td>South Africa</td>
<td>3M</td>
</tr>
<tr>
<td>Greece</td>
<td>2M</td>
</tr>
<tr>
<td>Poland</td>
<td>2M</td>
</tr>
<tr>
<td>Austria</td>
<td>2M</td>
</tr>
<tr>
<td>Serbia</td>
<td>2M</td>
</tr>
</tbody>
</table>

Mark Zuckerberg
Cloud Computing Applications
### Cloud Computing Applications

#### Top Twitter Trends This Week: 2/4 – 2/10

<table>
<thead>
<tr>
<th>Rank</th>
<th>Topic</th>
<th>Intensity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Britney Spears</td>
<td>3</td>
<td>Britney Spears announced her seventh studio album will be titled ‘Femme Fatale’. It will be released on March 29, 2011 and her fans are very excited, creating a trend that stayed in Twitter’s Top 10 for seven days.</td>
</tr>
<tr>
<td>#2</td>
<td>Super Bowl XLV</td>
<td>2</td>
<td>The Green Bay Packers won Super Bowl XLV, defeating the Pittsburgh Steelers 31-25 in Arlington, Texas. Along with talking about the game, Twitter users created trends about Super Bowl ads, the Black Eyed Peas halftime show and Animal Planet’s popular Puppy Bowl.</td>
</tr>
<tr>
<td>#3</td>
<td>Lady GaGa</td>
<td>2</td>
<td>Lady Gaga has revealed that her newest single “Born This Way” will be unveiled on Friday, February 11, 2011. She also reached 8 million Twitter followers and continues to be the most-followed user on Twitter.</td>
</tr>
<tr>
<td>#4</td>
<td>Justin Bieber</td>
<td>2</td>
<td>Justin Bieber’s docu-move detailing his rise to fame, titled Never Say Never, was released February 11, 2011 and fans counted down the days until its release. Also, ESPN commentator Jay Crawford &amp; Katt Williams retweeted pictures that featured rappers Lil Wayne &amp; 50 Cent with Justin Bieber’s haircut.</td>
</tr>
</tbody>
</table>

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### Cloud Computing Applications

<table>
<thead>
<tr>
<th>#5</th>
<th>UFC</th>
<th>2</th>
<th>UFC 126: Silva vs. Belfort was a mixed martial arts event held by the Ultimate Fighting Championship on February 5, 2011 at the Mandalay Bay Events Center in Las Vegas, Nevada. UFC Middleweight Champion Anderson Silva gave Steven Seagal credit for helping him perfect the front kick.</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6</td>
<td>Soccer/Football</td>
<td>1</td>
<td>This week featured several matches between national teams. The most-discussed on Twitter was the Philippines’ (popularly known as the Azkals) victory against Mongolia, 2-0.</td>
</tr>
<tr>
<td>#7</td>
<td>Carmen Aristegui Firing</td>
<td>1</td>
<td>Mexican journalist Carmen Aristegui confirmed she was fired due to government pressure on news station Noticias MVS for having questioned President Felipe Calderón’s possible alcoholism. In his column on January 8, Ciro Gómez Leyva, defends allegations of Felipe Calderón’s alcoholism.</td>
</tr>
<tr>
<td>#8</td>
<td>Lil Wayne</td>
<td>1</td>
<td>Lil Wayne’s song “Green and Yellow” is a ref to Wiz Khalifa’s “Black and Yellow” and it’s popularity grew in the wake of the Green Bay Packers’ (whose colors are green and yellow) Super Bowl victory.</td>
</tr>
<tr>
<td>#9</td>
<td>Gary Moore</td>
<td>1</td>
<td>The legendary Belfast-born guitarist Gary Moore (ex-Thin Lizzy) died in his sleep last Saturday night while on holiday in Spain.</td>
</tr>
<tr>
<td>#10</td>
<td>Egyptian Protests</td>
<td>1</td>
<td>A crowd filled Tahrir Square to hear a prerecorded speech by Egyptian president Hosni Mubarak. Many people were speculating that he would step down after the protests of the past three weeks but he only transferred some powers to Vice President Omar Suleiman. As of this writing, Mubarak has since stepped down from office.</td>
</tr>
</tbody>
</table>
Cloud Computing Applications

Facebook poll results and comments:

*This FB page has been closed, but the poll results are still visible.*

**Comment!**
Good governance and other hot topics on Facebook

- Yes, because they are in governance. (41%)
- No, it is a waste of time. (20%)
- Yes, it will prove that we can have smart discussions. (27%)
- No, FB fans can’t have discussions. (5%)
- Only if my comment counts. (7%)

In August 2009 Secretary of State Hillary Clinton visited seven countries in Sub-Saharan Africa. Fans of the Facebook page showed USA made more than 700 comments about her trip and many of the profound issues facing Africa and the world today. Presented here is a selection of their remarks.
Cloud Computing Applications

As Facebook

Facebook suggested that Cloud Computing Applications

By JENNA WORTHAM
Published: July 17, 2016

Cloud Computing Applications

天下雜誌每期封面透過FB的粉絲來票選

天下雜誌【搶先看】封面票選結果公佈了！

最新期《天下》封面票選出了多數粉絲支持的2號封面，謝謝大家踊躍投票……

封面故事＞駿騏 男人的七種敵人

繼續閱讀

天下雜誌

www.cw.com.tw
Cloud Computing Applications

Information dissemination in Internet age

- Pull – People pull it when needed (e.g. Browse a web page)
- Push – Sent automatically (e.g. SMS, email)
- Pull is ineffective while push can be intrusive!
Of course, what you see depends on what they post.

It may be selective and biased.

Cloud Computing Applications

The Top 10 Everything of 2009

TIME charts the highs and lows of the past year in 50 wide-ranging lists.

Select a Section Story All Best and Worst Lists

Top 10 Facebook Stories

1. The Site that Ate the Internet

By CLAIRE SUDDATH Tuesday, Dec. 08, 2009
Political Candidates Hope to Turn Facebook Friends Into Ballot Buddies

“Online campaigning is certainly important and the dynamics are shifting in a social media direction,” said Matthew Hindman, a media professor at George Washington University and an expert on online politics. “At the same time, I think the jury is still out on how much this is going to matter.”

Cloud Computing

Future
The Future of Cloud Computing

Many clouds

backup
SOA privacy
scalability reliability
hardware
scheduling heterogeneity
software middleware
replication maintenance
management infrastructure

The Future of Cloud Computing
The Future of Cloud Computing

- The robot company fears that a robot becomes too smart and creative.
- The company decides to “centralize the brains” by removing the intelligence from the robot.
- PC becomes too powerful. So it must be clouded!
EARLIER this month Google announced a new operating system called Chrome. It’s meant to transform personal computers and handheld devices into single-purpose windows to the Web. This is a trend: Chrome moves us further toward running code and storing our stuff on our own PCs toward doing everything in the cloud.

PC and the Internet were originally “generative” platforms, where users can improve the basic function of the platform through easily adding applications.

Now we are full of non-generative devices that only the vendor in charge can control.
The Future of Cloud Computing

- The Ultimate Cloud - IBM's Project KittyHawk

Kitty Hawk, North Carolina, is the site of the Wright brothers' first powered airplane flight.

- Thomas John Watson, Sr.

ARIA: The ultimate cloud computer. “We are everywhere!”
The Future of Cloud Computing

Nature is a mutable cloud, which is always and never the same. --Ralph Waldo Emerson (1803 - 1882)

Conclusions
Conclusions

☐ The bottom line for IT directors is that they will need to continue to manage their internal computing environments, whilst learning how to secure, manage and monitor the growing range of external resources residing in the cloud.

Security issue will always be a problem!

Securing cloud environments was one of the big topics at the RSAsecurity conference earlier this month. According to a survey by IDCon attitudes towards the cloud, 87.5 percent of participants said security concerns were the most significant challenges to cloud adoption.
Conclusions

- **Dos and Don’ts**
  - Don’t be reactive
  - Don’t go it alone.
  - Do consider the cloud a financial issue
  - Do think about your architecture
  - Don’t neglect governance
  - Don’t forget about business process
  - Do make security the centerpiece of your strategy
  - Don’t apply the cloud to everything
  - Don’t forget about service management
  - Do start with a pilot project

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**Threat #1:** Abuse and Nefarious Use of Cloud Computing

**Threat #2:** Insecure Interfaces and APIs

**Threat #3:** Malicious Insiders

**Threat #4:** Shared Technology Issues

**Threat #5:** Data Loss or Leakage

**Threat #6:** Account or Service Hijacking

**Threat #7:** Unknown Risk Profile

Prepared by the
Cloud Security Alliance
March 2010
Conclusions

- **Chinese Wisdom**
  - Do 撥雲見日
  - Don’t 雲端跌落谷底
  - Don’t 不測風雲
  - Don’t 前後判若雲泥
  - Do 平步青雲
  - Don’t 翻雲覆雨
  - Don’t 風雲變色
  - Do 富貴如浮雲
  - Don’t 煙消雲散
  - Do 美女如雲

- **Cloud computing as a move to Green computing**
  - For both suppliers and users of IT equipment, green computing is part of a larger effort to be good corporate citizens.
  - IBM Project Big Green (try to save 42% of energy in data centers)
  - UCSD GreenLight project (build an instrumented datacenter to measure energy savings and CO2 reductions using different server configurations and software in a real-world environment)
  - Google’s solar panel (RE<C initiative)

- **But don’t Green Washing**
  - Repositioning your product so that its shortfalls are now positioned as environmental benefits.
  - Not enough power? Just re-position as energy-saving.

*Renewable Energy cheaper than Coal*
Conclusions

- “In the era of the cloud, open source without open data is only half the application.” Tim O’reilly
- Don’t be clouded computing
- Ground(e)
- Living in
  - You farm land you don’t own with tools you really couldn’t afford.
  - You run the code you don’t have on servers you don’t own.

Conclusions

- Ian Foster: The economics of computing will look more and more like those of energy sector
- Start with figuring out problems to be solved, not what technology to bring in, and the right solution should surface
- 三國演義早說了：「話說天下大勢，分久必合，合久必分。」
Conclusions

The amazing power of social cloud!

Top 20 Social Networking Websites

The following report shows websites for the industry 'Computers and Internet - Social Networking and Forums', ranked by visits for the week ending 03/06/2010.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Website</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facebook</td>
<td>50.88%</td>
</tr>
<tr>
<td>2.</td>
<td>YouTube</td>
<td>15.27%</td>
</tr>
<tr>
<td>3.</td>
<td>MySpace</td>
<td>14.75%</td>
</tr>
<tr>
<td>4.</td>
<td>Twitter</td>
<td>1.16%</td>
</tr>
<tr>
<td>5.</td>
<td>Tagged</td>
<td>1.15%</td>
</tr>
<tr>
<td>6.</td>
<td>Yahoo! Answers</td>
<td>0.97%</td>
</tr>
<tr>
<td>7.</td>
<td>Yahoo! Profiles</td>
<td>0.76%</td>
</tr>
<tr>
<td>8.</td>
<td>myYearbook</td>
<td>0.60%</td>
</tr>
<tr>
<td>9.</td>
<td>Windows Live Home</td>
<td>0.55%</td>
</tr>
<tr>
<td>10.</td>
<td>Meebo</td>
<td>0.41%</td>
</tr>
</tbody>
</table>
Conclusions

Google已经成功将地球殖民化，但它自己也面临著巨大的风险：版权问题、隐私问题和规模问题，犹如“会在Google脸上爆炸的三颗原子弹”。

Ken Auletta

2010/3/2
IDG News Service - It's not easy being Steve Ballmer. The Microsoft CEO was asked for the umpteenth time Tuesday if his company will ever be number one in search.

"There's no good answer to this question. If you say yes you seem like you're arrogant and if you say no it looks like you have no faith. So the answer is yes, someday," Ballmer said.

"The truth is, the number one thing Google benefits from is they did it right first," he said.

Ken Auletta

Conclusions


One way to solve the feud, witness history says.

"It's two of..."
Conclusions

☐ Final Quote

Every cloud has a silver lining.

– English Proverb

The end. Thanks for your attention.