Executive Summary

- More than 1/4 of companies are already spending money on cloud services, and a further 1/3 plans to do so in the near future. Market CAGRs of over 30% can be expected.

- The cloud service market is typically segmented into three layers with increasing complexity:
  - Infrastructure as a Service (IaaS)
  - Platform as a Service (PaaS)
  - Software as a Service (SaaS)

- While implementation speed, access to latest technologies, standardization and investment advantages are key drivers for cloud services, security issues, dependency on external partners and lack of control over data can be serious barriers to adoption.

- Providers of cloud services need to define their value proposition of a cloud offering to their customers. Clear financial advantages, easy migration / integration as well as security and reliability are key themes.

- Potential customers of cloud services need to define clear and quantified goals for cloud implementations. Progress control and cost control, service level agreements as well as risk management should be in the focus.

Source: Solon
Most European IT decision makers use or are planning to use cloud services. Market forecasts expect growth with CAGRs above 30%.

IT decision makers’ view of cloud services
% of respondents, companies not active in the IT industry

- Don't know, no plans: 15% (2009) vs. 15% (2011)
- Started to think about cloud services: 7% (2009) vs. 25% (2011)
- Planning to introduce cloud (1-2 years): 7% (2009) vs. 33% (2011)
- Introducing cloud services: 0% (2009) vs. 14% (2011)
- Using cloud services: 13% (2009) vs. 7% (2011)

Western European cloud services
bn €, growth in %

- 2009: 9.5 bn €
- 2010: 11.8 bn €
- 2011: 14.8 bn €
- 2012: 19.6 bn €
- 2013: 26.0 bn €

- IT decision makers are quickly adopting the cloud concept. More than 1/4 of the companies are already spending money, 1/3 plan to do so in the near future and another 1/4 started to think about cloud services.
- Market forecasts indicate significant and further increasing growth potential over the next years.

1) Question: “Which of the following statements best describe the status of cloud in your company?”; 2011: n= 185, 2009: n= 805 IT decision makers
Source: IDC 2011, World Economic Forum 2010, Solon
So ... what is the cloud? And what is not the cloud? Important to note: Several technologies have been relabeled as part of cloud services.

**Cloud Computing:** The scalable and on-demand use of a provider’s (remote) IT resources - the “cloud” - aiming at lower prices and / or better services through scale effects.

### Key features

<table>
<thead>
<tr>
<th>B2C</th>
<th>B2B</th>
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<tbody>
<tr>
<td><strong>Not Cloud</strong></td>
<td><strong>Re-Labeled “Cloud”</strong></td>
</tr>
<tr>
<td>BitTorrent / peer-2-peer</td>
<td>Web 2.0</td>
</tr>
<tr>
<td>Web-Browsing</td>
<td>Social networks</td>
</tr>
<tr>
<td></td>
<td>Outsourcing capability</td>
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</table>

- Remote / mobile access
- Sharing of information / communication
- Backup functionality
- Very low price / for free
- Flexible / on-demand / self-service resources
- Continuously upgraded / modernized
- Included installation / maintenance, i.e. no middlemen
- Lower priced due to scale effects

Source: Solon
A bit more complicated: The cloud service market is usually segmented into 3 layers with increasing complexity

Cloud services: Scale effects via remote on-demand services

**SaaS (Software as a Service)**
Customers can use applications running on remote servers (i.e. in the cloud) instead of on own local IT infrastructure, e.g. email, office software, call center / CRM solutions
- Flexible payments, continuous upgrades, central maintenance and scale effects
- Accessible through a thin client, e.g. web browser
- Customers only control some application settings, not infrastructure or platform

**PaaS (Platform as a Service)**
Offers customers the functionality of a specific remote platform, e.g. a hosting environment, to build and deploy user-created or acquired applications
- Customers do not control infrastructure, OS and environment, e.g. web-servers, but they control / decide on applications running on top
- Configuration is done using script languages or supported tools

**IaaS (Infrastructure as a Service)**
Offers customers on-demand processing, storage and network services to deploy (nearly) any platform or software
- Customers do not control the underlying infrastructure
- Customers do control OS, storage and applications

Source: Apptis, GoGrid, Gartner, AltmanVilandrie&Co., Solon
From a historic perspective, cloud computing is a shift (back) to client-server networks driven by lower costs of communication and flexible data center resources.

- In the past decades, it was more lucrative (in most environments) to use independent computing capacity and limit data exchange to a minimum:
  - Price for storage and processors in devices decreased strongly and continuously
  - Data connections were expensive
  - Data centers were inflexible expensive tools for big companies

- Game changers:
  - Decreasing price of fiber connections and 3G / 4G services
  - Virtualization enabling flexible use of data center capacity

### Timeline

<table>
<thead>
<tr>
<th>Network of server &amp; clients</th>
<th>Independent devices</th>
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<tbody>
<tr>
<td><strong>Mainframes</strong></td>
<td><strong>PCs</strong></td>
</tr>
<tr>
<td><strong>Sun thin clients</strong></td>
<td><strong>Mobile devices</strong></td>
</tr>
<tr>
<td><strong>Web 2.0</strong></td>
<td><strong>Tablets</strong></td>
</tr>
<tr>
<td><strong>Cloud computing</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Computing / storage performed largely by central servers
- Devices with lower capabilities
- Heavy communication
- Computing / storage mainly performed by devices
- Servers with low importance
- Low communication
Who are the players? … and considering the dynamic market environment, what are their advantages and disadvantages?

Cloud players (examples)

„Old“ giants

- + KAM and B2B relationships
- + Infrastructure
- - Legacy products and approach
  \( \Rightarrow \) Push new product lifecycle

„New“ giants

- + B2C relationship / # of users
- + Infrastructure & no legacy product
- - Partly limited B2B exposure
  \( \Rightarrow \) Monetize B2C & push B2B

Hosters / data centers

- + Infrastructure
- + Customer relationship
- - Low experience with complex IT
  \( \Rightarrow \) Up-sell business customers, utilize IaaS off-peak resources

Specialists

- + Front-runner advantage
- + Specialized products
- - Some SaaS providers with narrow focus or narrow sales
  \( \Rightarrow \) Expand on current advantages

Software providers

- + KAM, software experience
- - Legacy products, required operational changes
  \( \Rightarrow \) Sustain & push (subscription) revenues

Telcos

- + B2C / B2B customer relationships, network, QoS
- - Low experience on complex IT
  \( \Rightarrow \) Upsell B2B customers
  \( \Rightarrow \) Use as USP in B2C

Source: Solon
The strategies of these 4 “cloud giants” concentrate on providing cloud services to existing customers/users thereby leading to different cloud business focuses.

<table>
<thead>
<tr>
<th>Cloud giants</th>
<th>Google™</th>
<th>amazon.com</th>
<th>Microsoft®</th>
<th>IBM</th>
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</thead>
<tbody>
<tr>
<td><strong>Status</strong></td>
<td>B2C services with Web 2.0: GMail, Google+, etc.</td>
<td>“Inventor of IaaS” and resulting B2B perception</td>
<td>Supports private and public cloud as well as integration</td>
<td>Complete corporate service provider</td>
</tr>
<tr>
<td></td>
<td>B2B PaaS and IaaS services using strong own infrastructure</td>
<td>Large product portfolio around EC2 product</td>
<td>Offers whole productivity suite for B2B, e.g. Azure, Office 365, as well as B2C services</td>
<td>Redefines itself in the cloud</td>
</tr>
<tr>
<td></td>
<td>Service for ad customers</td>
<td>Cloud services for shops</td>
<td>Customer relationships</td>
<td>Both provider of service and hardware supplier</td>
</tr>
<tr>
<td></td>
<td>Strong infrastructure</td>
<td>B2C, e.g. via Kindle</td>
<td>Excellent understanding of current IT / SW situation of customers</td>
<td>Customer relationships</td>
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<td></td>
<td>Open platform</td>
<td>Good IaaS perception</td>
<td>Channel conflicts / risk of cannibalization</td>
<td>Leverage outstanding reputation with corporates</td>
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<td>Not limited by legacy software</td>
<td>Not limited by legacy software</td>
<td>Integration with on-site legacy software</td>
<td>Integration with on-site legacy IT</td>
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<td></td>
<td>Increasing complexity of environment – differing products vs. same brand</td>
<td>Large B2C base</td>
<td>Consumers</td>
<td>Large enterprises</td>
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<tr>
<td></td>
<td>B2B perception</td>
<td>Moving up the value chain to larger customers / more depth of service</td>
<td>SoHo &amp; SME</td>
<td>(incl. private / hybrid cloud)</td>
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<td></td>
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<td>Online shops</td>
<td>Mid size companies</td>
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<td><strong>Opportunities</strong></td>
<td>Consumers</td>
<td>Consumers</td>
<td>Consumers</td>
<td>Large enterprises</td>
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<td></td>
<td>SoHo &amp; SME</td>
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<td>Soho &amp; SME</td>
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<td></td>
<td>Developers, start ups</td>
<td>Online shops</td>
<td>Large enterprises</td>
<td></td>
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<tr>
<td><strong>Challenges</strong></td>
<td>Consumers</td>
<td>Challenges</td>
<td>Integration with on-site legacy software</td>
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<td>Channel conflicts / risk of cannibalization</td>
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<td>Consumers</td>
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<td>SoHo &amp; SME</td>
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<td>Large enterprises</td>
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<td><strong>Target customers</strong></td>
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Source: Solon
Key drivers of cloud solutions are outsourcing or scale focused. Key barriers relate to outsourcing-downsides, security issues and the low market maturity

Top 5 drivers and barriers of public cloud services *(based on a survey of IT decision makers)*

<table>
<thead>
<tr>
<th>Top 5 drivers¹</th>
<th>Top 5 barriers²</th>
</tr>
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<tbody>
<tr>
<td>1. Quick installation / implementation</td>
<td>1. Security Issues</td>
</tr>
<tr>
<td>2. Access to up-to-date technologies / functions</td>
<td>2. Dependency on partner</td>
</tr>
<tr>
<td>3. High level of standardization</td>
<td>3. Lack of control / knowledge of data location</td>
</tr>
<tr>
<td>4. No additional investment in IT infrastructure</td>
<td>4. Low maturity of services</td>
</tr>
<tr>
<td>5. Quicker response to needs of departments</td>
<td>5. Low market transparency</td>
</tr>
</tbody>
</table>

1) What are the key drivers for the increased usage of public cloud services?  
Source: IDC 2011, World Economic Forum 2010, Solon

2) Which barriers of entry do you see in implementing public cloud service?
Security risks and quality of service issues limit the trust in cloud services leading to private and hybrid cloud implementations

<table>
<thead>
<tr>
<th>Selected availability issues 2011</th>
<th>Usage of public vs. private cloud services</th>
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</table>
| **October 4 days**  
Core switch failure and chain reaction. Worldwide email delivery problem | **E-Mail / Calendar** |
| **August Hours**  
Lightning hitting an Irish data center led to a failure of Amazon’s EC2 server | **Collaboration** |
| **April 3-4 days**  
Server crash and emergency reaction leading to not reachable cloud servers  
Only 99.93% of data recovered | **System / Network Mgmt** |
| **May Hours**  
14% of users could not reach Google due to a system failure and all traffic being routed over Asia | **Databases** |
| **May 2-3 days**  
Days-long SaaS outage of Microsoft’s Business Productivity Online Services (BPOS) | **IT Security** |

Source: IDC 2011, World Economic Forum 2010, Solon
And what does this mean for me? As a provider, focus on your customers first!
As a user, have quantified goals and focus on business continuity!

**Key for cloud providers**

1. **Focus first on existing client relationships**
   - First assess your customers’ needs / demand and implementation hurdles regarding cloud services
   - Your cloud products have to focus on these needs
   - Asap push cloud reputation with existing customers

2. **Communicate a clear financial advantage**
   - Advantages have to be proven and easy to understand
   - Decide for optimal payment model (pay-per-use vs. license)
   - Prepare solutions for compliance, reporting, legal topics

3. **Enable easy / trivial service use and integration**
   - Develop easy / trivial installation and migration solutions
   - Time of technology-driven cloud sales is over. Customer-focus is key (e.g. including plug-and-play, transparent metering, etc.)

4. **Provide highest data security and reliability**
   - Gain possible certifications and provide insights for customers
   - Fully transparent communication in case of failures / leaks
   - Have attractive and ready-to-use SLAs prepared for customers

5. **Prioritize scale over depth of services**
   - In case of own infrastructure, utilize it optimally for growth
   - In case of low own infrastructure scale effects, use other cloud providers (PaaS, IaaS) instead of using own IT

**Key for cloud customers**

1. **Have a cloud migration strategy**
   - Have a strategy! Know your strategy’s key requirements!
   - Define quantified goals / KPIs and monitoring ahead of time
   - Focus on business continuity. Prepare to switch providers
   - Be aware of governance, compliance and reporting needs

2. **Perform detailed cost calculations**
   - Detailed calculation of future IT capacity demand
   - Detailed calculation of long-term costs / savings (with buffer)
   - Calculate advantages and costs of multi-vendor sourcing

3. **Focus on contract terms and SLAs**
   - Define SLAs, control, reporting and pricing details in advance
   - Define data procedures in case of provider switch/bankruptcy
   - Define location / country of data storage and corresponding rules for providers’ sub-contractors

4. **Implement risk assessment and monitoring**
   - Define risk profile of your data and assess available providers
   - Apply right level of security and reliability (public, hybrid, private cloud and assessed providers) to each risk profile

5. **Optimize implementation and migration plans**
   - Migrate with the same care as always! Do not lose control!
   - Standardization is key for easy migration to cloud services, multi-vendor strategies and changing providers later on

Source: Solon
5 hypotheses on cloud services

A. B2C cloud adoption will explode despite security concerns driven by demand for mobile and remote access to data and marketing/branding push. **Players with earliest and best integration into existing products likely to succeed**

B. Public cloud adoption by international corporate customers will run into issues with national data laws. A global harmonization appears unlikely. Strategies will have to adjust to these limitations

C. Cut-throat competition expected for IaaS - per definition easily switchable service. **Scale** will ultimately decide on which player prevails. **Large M&A activities expected.** Age and energy efficiency of data centers as key drivers

D. Increasing types of applications will be offered as SaaS, leading to significant differentiation and fragmentation. **Specialized providers will prevail.** Large M&A activities focused on new players with attractive products/business models can be expected

E. Providers of private cloud equipment and services as attractive players – though not so hyped – with typically more stable business models

Source: Solon
Solon – strategy consulting for media and telecommunications

Solon Management Consulting

- Founded 1996
- Specialized in the TMT industries
- Combination of commercial and operational expertise as well as capital markets perspective
- Trusted advisor to C-level executives from blue-chip companies throughout Europe
- Over 500 client engagements in more than 30 countries
- Borderless approach: One firm working across Europe, with Altman Vilandrie & Company, our US partner, covering the US
- Team of 60 professionals in three European offices with access to a further 100 professionals in the US

Note: Boston, New York, and San Francisco offices are through partnership with Altman Vilandrie & Company
Source: Solon
Please contact us for further information

Matthias Hamel
Principal
Head of the Solon Technology and Innovation Practice

Consulting focus

- Transactions support and due diligences in the telecommunications, TV and the technology sectors with a focus on market, company positioning, infrastructures and business plan
- Strategy development and implementation for broadband, TV and mobile operators as well as their shareholders, particularly with regards to investments, product portfolio development and infrastructures

Career

- Matthias Hamel has been at Solon since 2005. From 2006 to 2008, he worked from the Solon Budapest office, helping to establish Solon’s activities in Central and Eastern Europe. He heads Solon’s Technology and Innovation Practice since 2009
- Matthias studied business information technology at the Technical University of Darmstadt and at the University of British Columbia, Vancouver

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