Telcos advance in cloud computing

As revenue growth in their traditional businesses declines, telcos are increasing investments in new growth areas such as cloud computing. With rising demand for cloud-based services, global cloud services revenues are expected to reach US$148.8 billion in 2014. Telcos have been acquiring cloud service providers to augment their cloud capabilities and are also expanding their existing cloud services in partnership with third-party vendors.
Cloud computing presents opportunities for telcos

Telecom operators worldwide are facing fall in revenue growth in their core businesses such as voice and messaging. While global wireline voice revenues have been declining for some time, the global mobile voice revenues are also expected to start slowing down from 2011. However, during 2010–15, the decline in mobile voice revenues is forecast to be offset by increased revenues from mobile data. At the same time, global mobile services revenues are likely to grow, although at a CAGR of only 3.3 percent. As a result, telcos are looking at new investment areas for sustained revenue growth, and cloud computing is one of the focus areas.1, 2, 3

Cloud opportunity for telcos

Cloud computing refers to the delivery of on-demand computational resources such as software, application platforms and IT infrastructure services through a shared network. It enables remote access of resources such as hosted software and applications via the internet. Cloud services are typically divided into the following three categories:

- **Software as a Service (SaaS)** – It is a software delivery model, in which the software applications are hosted in the cloud and accessed by consumers over the internet.
- **Platform as a Service (PaaS)** – With PaaS, consumers can create and deploy applications onto the cloud infrastructure.
- **Infrastructure as a Service (IaaS)** – IaaS enables consumers to access processing, storage, networks and other fundamental computing resources, and thereby deploy and run arbitrary software, including operating systems and applications.5

The global cloud computing services market is growing at a fast pace. As shown in Figure 3, by 2014, the worldwide cloud services market is expected to reach US$148.8 billion, up from US$68.3 billion in 2010. The US was the largest market for cloud services, with a market share of 58 percent in 2010. It was followed by Western Europe with 23.8 percent and Japan with a 10 percent market share.6, 7

Figure 3: Global cloud services market growth, 2010–14

### Global cloud services revenue growth, 2010–14

<table>
<thead>
<tr>
<th>Year</th>
<th>Global cloud services revenue, (US$ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>50</td>
</tr>
<tr>
<td>2014</td>
<td>200</td>
</tr>
</tbody>
</table>

CAGR ~ 21.5%

### Geographical breakdown of cloud services revenues, 2010–14

<table>
<thead>
<tr>
<th>Region</th>
<th>2010</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>58%</td>
<td>50%</td>
</tr>
<tr>
<td>Western Europe</td>
<td>23.8%</td>
<td>29%</td>
</tr>
<tr>
<td>Japan</td>
<td>10%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: Gartner

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Inherent advantages of telcos in offering cloud services

The high growth potential of the cloud computing services market is attracting telcos, as it offers a means to supplement the declining traditional services revenues and profit from their wireline network investments. Telcos have certain inherent advantages that give them an edge over other cloud computing service providers such as Amazon.com and Salesforce.com. Some of these advantages are listed in Table 4.

Table 4: Telco cloud advantages

<table>
<thead>
<tr>
<th>Opportunity to leverage existing sales relationships with enterprise customers</th>
<th>Ability to offer end-to-end service-level agreements to customers</th>
<th>In-house usage-based billing capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many telcos have already been providing services such as e-mail, managed hosting and storage solutions to their enterprise customers. The evolution to cloud computing is expected to be a natural progression for them. In addition, as they already have long-term relationships with enterprise customers, they are at an advantage over other service providers.</td>
<td>As telcos control the networks through which cloud services are offered, it enables them to offer end-to-end service-level agreements (SLAs) on application performance and availability. With their combination of service assurance and data center and network redundancy, telcos are also better positioned to offer secure cloud services to enterprise customers.</td>
<td>Cloud computing is characterized by usage-based billing as users only pay for services they actually use. Most cloud service providers find it difficult to run their billing infrastructure in-house, due to technical and cost challenges involved in building and running a pay-per-use billing infrastructure. Telcos are at an advantage, as they already have the charging and billing capabilities that are required for usage-based billing in a cloud environment. In addition, telcos can utilize their experience in pay-per-use billing to provide cloud billing solutions for other cloud vendors.</td>
</tr>
</tbody>
</table>

Telcos aligning their growth strategies with cloud

Telcos now consider cloud computing as key to their growth strategies. As a result, many telcos have recently announced investments in cloud services. Some examples are as follows:

- **Telstra** – In June 2011, Telstra announced plans to invest more than A$800 million (US$858 million) by 2016, to expand its cloud service capabilities and support the growing demand from Australian organizations for cloud services. The investment is likely to include building a new Australian data center, modernizing facilities at the existing Telstra data centers and expanding the range of enterprise applications offered.

- **Portugal Telecom** – In May 2011, Portugal Telecom announced plans to invest EUR350 million (US$500 million) in research and development, as well as applications in the field of cloud computing.
• AT&T – In May 2011, AT&T announced that it was accelerating its plans to deploy global network-based cloud, mobility and network sourcing solutions to companies across different industries. In 2011, the company plans to invest nearly US$1 billion to deploy these services.\(^{60}\)

Many leading telcos such as AT&T, BT and Verizon are already offering various cloud services. Table 5 shows the cloud service offerings of some of the major global telcos. Currently, telcos primarily offer IaaS and SaaS services. However, many telcos are also planning to offer PaaS services.

### Table 5: Cloud offerings by major telcos\(^{61, 62, 63}\)

<table>
<thead>
<tr>
<th>Telco</th>
<th>SaaS</th>
<th>IaaS</th>
<th>PaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>✓</td>
<td>✓</td>
<td>✓ (Planned)</td>
</tr>
<tr>
<td>BT</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Deutsche Telekom / T-Systems</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>France Telecom / Orange Business Services</td>
<td>✓</td>
<td>✓</td>
<td>✓ (Plan to launch by second half of 2012)</td>
</tr>
<tr>
<td>NTT</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Telefónica</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Telstra</td>
<td>✓</td>
<td>✓</td>
<td>✓ (Planned)</td>
</tr>
<tr>
<td>Verizon</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>

#### Telcos engaging in partnerships and acquisitions to augment cloud capabilities

While telcos have the network advantage, they still need the technologies and platforms that are required for provision of various cloud services and applications. For this, most of the telcos have partnerships with technology companies that act as cloud enablers and also offer integrated solutions with telcos. The technology partners for telcos include hardware providers such as EMC, HP and Cisco, along with software and virtualization specialists such as VMware and Citrix Systems.\(^{64, 65}\)

Many telcos are also trying to have these capabilities internally by acquiring technology companies that have expertise in cloud services. In addition, companies that are operating globally may require a telco to handle their cloud service requirements globally, rather than having to sign individual agreements in different regions. Therefore, many telcos are expanding their global data center footprint by acquiring or collaborating with other technology companies. In June 2011, Orange Business Services and SITA, a provider of IT solutions for the air transport industry, agreed to jointly build a global managed cloud computing infrastructure based on six data centers in Atlanta.
Frankfurt, Johannesburg, Singapore, Hong Kong and Sydney. Over this infrastructure, Orange Business Services and SITA will offer their individual portfolio of cloud computing services to multinational enterprises across the globe. According to the two companies, the global data center footprint will lead to lower latency (less than 100 milliseconds) when customers are operating applications in the cloud.  

Table 6 discusses some examples of partnerships and acquisitions by telcos to augment their cloud capabilities.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Company</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Partnering with technology vendors              | Telstra     | In June 2011, Telstra announced that it is partnering with cloud technology vendors Cisco and VMware to build the next phase of its integrated cloud platform.  
|                                                 | Telecom Italia | In April 2011, Telecom Italia partnered with EMC to launch ‘Cloud IT Data Space,’ a cloud storage service based on EMC’s Atmos cloud delivery platform, for business users in the Italian market.  
|                                                 | KT Corp      | In December 2010, KT Corp announced plans to acquire NexR, a South Korean company that develops and operates cloud computing platforms. The telco also agreed to partner with virtualization software maker Citrix Systems to offer cloud services for iPad and desktop computer users.  
| Acquiring technology companies to boost cloud capabilities | NTT Corp     | In July 2011, NTT Corp said that its South African subsidiary, Dimension Data Holdings Plc, plans to acquire US-based OpSource Inc, which develops software for the core functions of cloud computing services, such as server management and access analysis at data centers, as well as billing. The acquisition price is estimated at US$90 million.  
|                                                 | Telefónica   | In June 2011, Telefónica acquired Acens Technologies, a leading hosting and colocation services provider for small and medium enterprises (SMEs) in the Spanish market. The deal value was not disclosed.  
|                                                 | CenturyLink  | In April 2011, CenturyLink agreed to acquire information technology firm Savvis for US$2.5 billion, to accelerate its ability to deliver managed hosting and cloud capabilities to its business customers.  
|                                                 | Verizon      | In January 2011, Verizon agreed to acquire data center operator Terremark Worldwide for US$1.4 billion. The acquisition enables Verizon to access Terremark’s large base of business and government customers, along with a global network of 13 data centers.  

Telcos expanding cloud services

Telcos are aggressively expanding their cloud service portfolios and have announced many cloud initiatives recently. Some of the major initiatives are summarized in Table 7.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Company</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investing in data centers to expand capacity</td>
<td>Belgacom</td>
<td>In May 2011, Belgacom announced its plan to start the construction of a new 2,250 square-meter data center in Brussels in August. This is expected to expand its current capacity of 15,000 square meters by 15 percent and help meet the growing demand for cloud and data center services.²⁴, ²⁵</td>
</tr>
<tr>
<td></td>
<td>Portugal Telecom</td>
<td>In February 2011, Portugal Telecom announced plans to build one of Europe’s largest data centers, with more than 45,000 square meters of operational space. The new data center is expected to come into operation in the second half of 2012.²⁶</td>
</tr>
<tr>
<td></td>
<td>Bell Canada</td>
<td>In January 2011, Bell Canada Enterprises announced its plans to build a new tier 3 certified data center in the National Capital Region (Ottawa and the surrounding area). The telco stated that three customers had already signed long-term co-location contracts worth about C$100 million (US$100.6 million), to use the new Bell data center, which is scheduled to begin operation in late 2012.²⁷</td>
</tr>
<tr>
<td>Partnering with third parties to offer various cloud applications and services</td>
<td>China Telecom</td>
<td>In May 2011, China Telecom and SAP announced a partnership to offer cloud-based services to SMEs in China. The partnership is likely to enable China Telecom to offer SAP’s Business By Design cloud-based software suite bundled with telecom services to SMEs.²⁸, ²⁹</td>
</tr>
<tr>
<td></td>
<td>Softbank Corp.</td>
<td>In May 2011, Softbank Corp. and Oracle Corp. announced a cloud computing partnership to offer software and information services over the internet.³⁰</td>
</tr>
<tr>
<td></td>
<td>Verizon</td>
<td>In March 2011, Verizon and SAP America announced plans to jointly deliver the SAP Customer Relationship Management rapid-deployment solution to enterprise workers through Verizon’s cloud offering, Computing as a Service.³¹</td>
</tr>
<tr>
<td>Offering cloud-based unified communication services</td>
<td>Orange Business Services</td>
<td>In June 2011, Orange Business Services introduced ‘Business Together as a Service.’ This service allows unified communications solutions to be offered via the cloud, using an ‘as a service’ model that allows enterprises to quickly and cost-effectively access communication and collaboration tools any time, anywhere, on any device.³²</td>
</tr>
<tr>
<td></td>
<td>Verizon</td>
<td>In February 2011, Verizon introduced cloud-based unified communications and collaboration (UC&amp;C) solutions for businesses and government agencies. The new offerings are expected to be available to US customers from spring 2011.³³</td>
</tr>
<tr>
<td>Expanding private and hybrid cloud offerings</td>
<td>SingTel</td>
<td>In March 2011, SingTel and virtualization software provider VMware unveiled a hybrid cloud computing offering called PowerON Compute. PowerOn Compute allows companies to expand the resources of their private cloud infrastructure into SingTel’s secure public cloud.³⁴</td>
</tr>
<tr>
<td></td>
<td>AT&amp;T</td>
<td>In February 2011, AT&amp;T announced enhancements to its Synaptic Compute as a Service Solution. The enhancements include integration with AT&amp;T’s VPN service to enable virtual private clouds, an expanded number of operating system templates, improvements to firewall policies to meet special security requirements, and new self-service and self-provisioning capabilities.³⁵</td>
</tr>
<tr>
<td></td>
<td>BT</td>
<td>In February 2011, BT expanded its virtual data center package with an option to manage private cloud environments. Virtual Data Centre (VDC) Private is expected to enable businesses to manage applications and data on a virtualized infrastructure, mounted on their own or BT’s hardware.³⁶, ³⁷</td>
</tr>
</tbody>
</table>
Outlook

Telcos have stepped up investments in their cloud businesses to tap the fast-growing revenues from cloud services. However, in the wake of recent high-profile data thefts and outages, there are growing concerns regarding the security and reliability of cloud services. Although most users show interest in cloud computing — as it can lower their technology costs — they may refrain from using these services if the security of the data stored on a cloud is at a risk of being compromised.48

Many telco cloud service providers are adding appropriate security features to their services to gain consumer confidence and ensure secure and uninterrupted services. For example, NTT America has dedicated enterprise-class firewalls for its cloud services and requires every customer in its Enterprise Cloud to use two-form authentication.49

While most cloud providers offer a significantly more secure environment than clients — especially small and medium businesses — can manage themselves, the issue of access control needs special consideration.

As users move applications involving sensitive data to the cloud, a service provider’s ability to segregate different clients’ data and environments at an application and virtual infrastructure level, so that only authorized users can access that data, is essential for data security. In this regard, telcos are expected to lag behind pure play SaaS vendors (Office365, Salesforce.com, etc.) and IaaS vendors (AWS, HP, etc.) who have greater capability in this respect.50

In addition to security and reliability, telcos need to differentiate their service offerings with superior energy and environmental performance to improve their ability to win contracts for cloud computing services. “Telecom operators who can’t communicate their own energy, environment and sustainability performance are now at a competitive disadvantage. This is particularly true when bidding for public sector telecoms contracts,” said David Metcalfe, Director of research firm Verdantix.51

As a result, more companies are now focusing on minimizing the environmental footprints of their cloud offerings. In June 2011, Verizon announced that it has significantly reduced energy consumption and carbon emissions at 24 of its US data centers, by using innovative technology that targets cooling efficiency. The technology enabled Verizon to reduce the annual energy consumption of its data centers by more than 55 million kilowatts. In addition, greenhouse gas emissions declined by more than 66 million pounds of CO2 on an annualized basis.52
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Key contacts

Sean Collins
Global Head of Communications & Media
KPMG in Singapore
Tel. +65 6597 5080
seanacollins@kpmg.com

David McAllister
Global Executive – Communications & Media
KPMG in Australia
Tel. +61 2 9335 8143
dmcallister@kpmg.com.au
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