Business model innovations in cloud computing

By Zhu Bo & Cheng Rentian

The high costs incurred in multiple supplier/buyer transactions forms the basis for the introduction of a high-value agent service, the existence of which Adrian J. Slywotzky and David J. Morrison categorize as a new business model in *The Profit Zone*. This type of agent-based model can lower costs for both buyers and sellers, including monetary, mental, and physical expenditure. It is also a model that pervades daily life; traditional retailers, banks, stores, and real estate agents not only operate under this new model, but many of the big names in e-commerce are also its successful proponents, including Amazon, eBay, and Alibaba. Unsurprisingly, the model has begun to edge its way into the telecom field.

This new business model can be categorized as HaaS, SaaS, and cloud computing.

**HaaS**

Apple is now one of the world’s most well-known companies, and its iPod, iPhone, and Apple TV have become household names. An important catalyst driving Apple’s success is the connection of its products with Apple’s virtual supermarket, the iTunes store, without which the company’s products could not thrive. The iTunes store sells both Apple hardware and digital content such as music, films, videos, podcasts, and applications. This retail model takes on a service format, which is referred to as Hardware as a Service (HaaS). Apple is not the only pioneer of the HaaS business model, as Amazon’s Kindle Store also allows users to download digital content, such as E-books, newspapers, magazines, and blogs.

Amazon Web Services (AWS) leases IT facilities that enable other companies to rent rather than purchase servers or data centers. Other IT hardware companies also lease IT facilities online, including EMC, IBM, HP, and Dell. The HaaS business model that provides IT facilities is broadly referred to as cloud computing, though at present this term lacks definitive parameters. In terms of its service features, cloud computing embodies an infrastructure service that provides computing capability in the same way that utilities’ companies provide electricity, water, and gas. For example, if a family buys an air conditioner, they do not need to consider the power station from which it draws electricity, but simply turn it on. Equally, a cloud computing service user does not think about whether or not the infrastructure provider will need to increase expense.

**SaaS**

In addition to HaaS, the Software as a Service (SaaS) business model also falls under cloud computing. SaaS
The HaaS, SaaS and cloud computing inter-relationship

HaaS and SaaS are not as conceptually complete as cloud computing, though rapid Internet popularization has initiated the evolution of both into cloud computing. Of the three, SaaS enjoyed the earliest inception in 1999, when Salesforce, the representative company of the SaaS business model, was founded. HaaS, on the other hand, has been widely recognized since Amazon released the AWS in 2005. In the early stages of HaaS and SaaS operations, cloud computing is not necessary, as a traditional data center can form the necessary infrastructures. However, it is not cost-efficient to expand data centers in the event of either service expansion or a large subscriber increase. Cloud computing can be adopted to significantly decrease infrastructure investment, including in applications and hardware.

The core of the HaaS business model is “hardware+software”. Hardware is the service carrier, while software forms the specific service. For example, a GPS device is the carrier, while the GPS software provides the location service. The core of SaaS is “software+Internet”. Traditional software that requires licenses is transformed into online software that provides services through the Internet. Cloud computing is thus a service for end users; metaphorically, the hardware and software are obscured by a cloud that is neither reachable for users, nor is it their concern.

The new business model and IT & CT

Influence on IT

HaaS, SaaS and cloud computing are set to influence various fields in the IT industry. Firstly, PC-centric computing will become Internet-centric and the Internet will be available not only on PCs, but on mobile terminals such as phones and intelligent terminals. Secondly, PC-based applications and software will be replaced by Internet-based SaaS that too is available cross-terminal. Thirdly, hardware-and software-driven business models will evolve into new models driven by HaaS, SaaS, and cloud computing.

Just as desktop computing is gradually replaced by Internet-centric cloud computing, the IT service will be replaced by the cloud service. Existing IT software and hardware industries will need to fall in line with this trend and adjust their strategies to maintain commercial viability. Companies that own cloud computing centers will operate as virtual supermarkets and provide applications and online computing capability according to demand. IT software and services existing outside this platform will gradually become obsolete.

Influence on CT

While HaaS, SaaS, and cloud computing first emerged in IT, they are also influencing CT. Being an open system, IT has been developing quickly and gradually merging with CT, though ICT is not yet a mature field. Nevertheless, telecom operators’ traditional walled garden is being breached by uninvited guests who are bringing with them services unrelated to telecom, rather than traditional VAS. They use wireless connections given by telecom operators, and gain the most profits from their own VAS. This process is gradually marginalizing operators into becoming merely wireless broadband channel providers.

Operators, especially those in the mobile field, need to provide these services themselves rather than simply hosting wireless connections, which necessitates their own SaaS, HaaS and cloud computing platforms. In other words, it is time that the telecom industry had its own Kindle Store and iTunes store.

In a speech delivered at the 7th Chinese Internet Research Conference in September 2008, Lu Xiangdong, Vice President of China Mobile, stated that the next-generation mobile Internet terminals were the key to future networks. The launch of the iPhone and Google’s G1 has illustrated the rapid expansion of IT into CT. As the Internet is becoming mobile, mobile operators are faced with both threats and opportunities; the former entails being sidelined as a channel provider, the latter encapsulates the wealth of profits up for grabs.