Cover story

Cloud, big data and smart cities

DEMAND FOR ANALYTICS, INFORMATION SECURITY AND STATISTICS TO FUEL INDUSTRY GROWTH IN CHINA

By GAO YUAN
gaoyuan@chinadaily.com.cn

On a recent Saturday, Shenzhen was preparing for the strongest thunderstorm in years to strike the city. Less than 24 hours later, China's information technology hub in Guangdong province was deluged by torrential rain and hail.

But for Edward Tian it was another bright day for his business.

Tian, founder and chairman of China Broadband Capital Partners LP, is probably the best-known venture capitalist in the country and one of the first players in China's big data business.

China Broadband Capital recently set up a cloud computing data center in Shenzhen.

"Data is the most valuable asset in the 21st century. We can build a long industry chain based on data-related businesses such as analytics, information security and statistics exchange," Tian said during the opening of the Shenzhen data center on March 30, which was built in less than six months.

Data centers are the fundamental hardware infrastructure for cloud computing technology. Enterprises, governments and individuals can store all kinds of data center and let the powerful data-processing computers organize and analyze the information.

Data centers then send back the results to any devices its customers request, making sure the information is shared by the right person on the right devices.

The idea of storing data on a centralized platform will improve efficiency, reduce cost and — most of the time — limit security risk, says Jouni Hakanen, China head of technology consulting and IT strategy at global consultancy firm Accenture.

China embarked on a massive data construction project last year after the central government placed its bets on information technology to lift the slowing economy.

Demand for data centers has increased because major information consumption boosters, such as cloud computing and mobile Internet, are powered by data analytics and storage services.

China is also fast becoming one of the world's largest spenders on cloud computing facilities, surpassing even the United States and the European Union.

"Unlike other economies, China spends half of its investment on hardware including networks and other infrastructure," Hakanen says, adding that Western counties are spending less on hardware.

"Let's not forget that a well-functioning cloud computing system also requires considerable investment in software," he says.

Accenture believes that though infrastructure investment will remain robust in China, more money needs to be spent on network building and smart city initiatives.

State-owned enterprises and governments are the most promising customers for the nation's booming cloud industry.

The Big Three telecommunication carriers, China Mobile, China Telecom and China Unicom, are building their own data centers in inland areas such as Inner Mongolia autonomous region and Guizhou province.

In February, officials from Guiyang, capital city of Guizhou, indicated that they plan to make cloud computing a new "pillar industry". The southwestern city was known for its Soviet-era military industries such as fighter plane manufacturing.

But the mountainous province has also been a long-time research and design base for the People's Liberation Army. The heavy industry has largely depended on military-related factories since 1960s.

"The cloud computing infrastructure coming up in Guiyang will be the backbone of the emerging big data industry," says Mao Youbi, vice-mayor of Guiyang.

The city also hopes to lure more big data companies with its better natural environment and lower living costs than in Beijing, Shanghai and Shenzhen.

"Although economically developed cities such as Beijing and Shanghai still hold some technology advantages, Guiyang could become a major regional hub in big data because it is the only province that has a clear development blueprint for the sector," says Zhao Guodong, secretary of Zhongguancun Cloud Computing Industry Alliance, a Beijing-based industry association.

In 2013, the Big Three telecom carriers agreed to build regional data centers in Guiyang because of the cheaper land and power prices.

"Guiyang may also lead the country's statistics analytics service if local officials have an open-minded vision in data disclosure," says Zhao, adding that the turnover of China's big data market is more than 10 times bigger than that of the US, without revealing actual numbers.

"I am optimistic about the cloud computing and big data industries in China because of the high smartphone penetration rate in the country," Zhao says.

China is the world's largest buyer of smartphones and it had roughly 500 million mobile Internet users in 2013.

Similar developments are taking place in North China's Inner Mongolia autonomous region.

The local government has said that it plans to build the largest cloud computing industry park in China by equipping 2 to 3 million servers before 2015.

Hohhot, its capital city, is building nine major data centers for cloud services with investment surpassing 70 billion yuan ($11.3 billion; 8.2 billion euros).

In Yangquan, Shanxi province, online search giant Baidu Inc's 76 million yuan data center started operations in March.

Analysts believe that apart from favorable operation costs, the natural environment is another critical reason for these regions winning data center projects.

Large computing facilities are highly vulnerable to extreme temperatures as well as disasters such as earthquakes and unstable geological conditions.

The establishment of nationwide data centers will also safeguard the ongoing smart city initiative, say industry insiders.

In the second half of 2013, eight ministries jointly developed guidelines for the development of smart cities.

The cumulative investment of China's smart city effort is likely to break 2 trillion yuan by 2025, fueled by a massive state-sponsored urbanization project, according to a report from IDC.

Nearly 70 percent of the investment was used for infrastructure construction like data centers, says Wu Lianfeng, vice-president of IDC China. The proportion is around 16 percent in developed countries.

"When local governments promote smart city construction, it is critical to organically integrate hardware, software and service standards with overall business and technical specifications," Wu says.

A joint effort among the Internet of Things, cloud computing, big data, mobile Internet and social media and other emerging technologies over the following years will be the key to the success of the smart city project, IDC says.

The industry may pay increasing attention to software and service segments in the coming years, however, as more private capital enters the market.

In 2013, the public cloud computing market saw a rapid development as indicated by the provision of cloud computing services by major multinational IT companies in China and the development of cloud computing infrastructure by Chinese Internet companies, according to IDC.

Traditional companies in financial, manufacturing and energy industries have also started building cloud-computing applications.

Hakanen from Accenture predicts the nation's cloud market is on the way toward a "hybrid model", meaning more parts will join the effort of building a flexible cloud that fits various needs.

But he declines to forecast the future investment in data centers, saying too many uncertainties still remain.

With both local and overseas players eager to grab market share in the industry, more data centers with unique features are likely to emerge.

Chinese Internet giant Alibaba Group Holding Ltd has many localized solutions to offer, while Microsoft Corp and Amazon.com feature the best technologies.

These three companies will battle for the top slot in creation of cloud facilities in China. More competition will lower the floor price for data centers and accelerate the adoption rate of cloud services in China, insiders say.

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Liu Chuanzhi (right), founder and former president of Lenovo, at the signing ceremony of Zhongguancun science park in Guiyang. In 2013, the Big Three telecom carriers agreed to build regional data centers in Guiyang because of lower land and power prices.