



## NB-IoT is a blue ocean for operators

*IoT transformation for operators isn't just about building new networks. It involves challenges like growing users, occupying controlling positions in the value chain, and avoiding pipefication – challenges that telecom operators around the world are now facing.*

By Xu Jianmin & Zhu Cheng

**A**fter voice and data, the Internet of Things (IoT) represents a third opportunity for operators. With the sluggish growth of people-to-people connections and the near-saturation of traditional services, IoT is a new blue ocean for operators that can help them

compete and expand. IDC forecasts that in 2020, around 28.1 billion IoT connections globally will generate over US\$7 trillion in revenue. There is vast room for growth for all players in the IoT industry chain. Operators can develop IoT services and move into the enterprise market. Doing so early will open up commanding

positions.

### What's the catch?

Operators' existing networks aren't designed for IoT scenarios. They primarily lack coverage and end devices are too power-hungry to provide IoT services successfully. This is a considerable handicap

for operators looking to expand into the enterprise market.

For example, when bidding for a £2 billion smart meter reading project in 2013, the British government's Department for Energy and Climate Change eliminated one carrier in the second round because its GPRS solution couldn't meet coverage requirements. In the project's smart meter scenario, the winning operator had to guarantee over 99 percent coverage – an extremely high requirement.

NB-IoT is designed specifically for IoT. Hence, it provides wide coverage and supports a high number of connections and, on the device end, consumes little power and is low cost. NB-IoT is the first cellular network with the capability for large-scale IoT, and is optimized for LPWA (Low Power Wide Area) applications like smart metering, smart street lighting, and tracking in logistics. For operators, it's recognized as the best route into the IoT market.

Since NB-IoT standards were fixed, the NB-IoT industry has entered a period of steady upward growth, with over a year of development under its belt. Operators that previously had to take a wait-and-see stance or that carried out technical pilots are now going ahead with large-scale commercial deployment – as of December 2017, 28 operators in 21 countries had launched commercial NB-IoT networks, including nationwide networks in China, South Korea, Belgium, the Czech Republic, Ireland and the Netherlands. There are approximately 500,000 active NB-IoT base stations around

the world as of today. This undoubtedly positions NB-IoT as the biggest IoT network in the world.

## Move quickly

When it comes to choosing a network technology, enterprise customers are mainly concerned about coverage and price. In particular, LPWA applications have stringent coverage requirements. For example, for asset tracking services, they demand continuous coverage over a wide area. In addition, changing an IoT device subscription from one operator to another can be extremely difficult. In many LPWA use cases, including smart utilities and smart cities, most customers sign five- to ten-year contracts. Operators know that they must rapidly achieve nationwide coverage to quickly stake a claim in this new market.

In June 2017, China Telecom activated 310,000 stations, becoming the first operator to implement an NB-IoT network with nationwide coverage. It also released its first IoT tariff. The network's successful implementation greatly boosted enterprise customers' confidence. In less than six months, China Telecom had secured around 10 million connections with a host of companies, including Shenzhen Water, Shenzhen Gas, Tianjin Jinran, Haier, and ofo, each of which signed contracts for the carrier's IoT services.

## Multiple channels

The enterprise market covers many different types of businesses. It can be divided into

*Since NB-IoT standards were fixed, the NB-IoT industry has entered a period of steady upward growth.*

*Operators should focus on the B2B market because B2B services are easy to implement and the results are fast.*

three sectors based on business type B2B, business-to-government (B2G), and B2C. The B2B market can be further sub-divided into the B2SB (small business) and B2BB (big business) sectors. Each sector varies in a number of ways: size, ease of expansion into the market, and ways to expand into the market.

Operators should focus on the B2B market because B2B services are easy to implement and the results are fast.

## Supersizing with B2BB

The B2BB market includes major players like the home appliance manufacturers Haier and Midea and the bike-sharing giants ofo and Mobike.

The B2BB market has the following characteristics:

**Short profit chains and easy to replicate:** Home appliance enterprises, for example, are service operators as well as device manufacturers. Services in this market can be implemented without third parties and easily replicated in various countries.

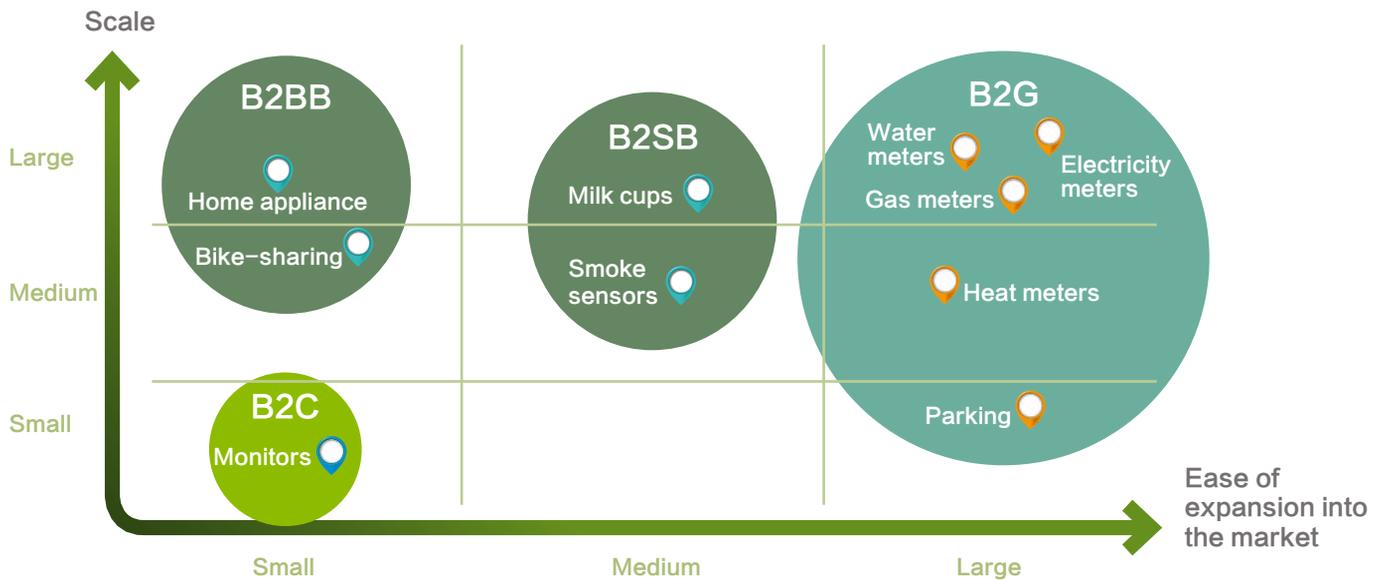
**Device enterprises are global and have strong capabilities for market expansion:** Haier, for example, exports to over 100 countries and produces tens of millions of units a

year. Operators can leverage device company's sales channels to quickly increase the number of connections.

The B2SB market is similar to the B2BB market in that it has relatively short profit chains, involves companies that are both device manufacturers and service operators, and enables relatively simple service deployment. Small companies, however, lack resources for international market development. Consequently operators can leverage their own sales channels to resell the devices and services of these small businesses, increasing the value of their connections. For example, to monitor dairy cows, device manufacturers can join forces with operators and use operators' national channels to deploy a nationwide NB-IoT monitoring solution. They can then share revenues.

The **B2G market** is typified by government control of resources, long decision-making chains, and difficult project acquisition for private operators. However, B2G projects (like smart street lighting, smart parking, and smart metering) are usually very large in scale. With many players involved in the B2G market, the operator has little influence in the value chain, and decision-making power rests with the industry customer.

Operators in the B2G market can collaborate with industry customers



and integrators in lab trials to let industry customers become more involved in technical verification to boost their confidence in NB-IoT network capabilities. However, the decision-making cycle is very long in this market, so operators need to prepare for a drawn-out process.

In the **B2C market**, products are sold to individual consumers using a retail sales model. Tracking bracelets are an example of a B2C product. But, volume is hard to achieve and returns are slow to materialize. Operators, though, already have extensive experience in the B2C market and can leverage their existing sales channels, especially customer stores.

## Lessons from Internet companies

In the Internet era, OTT enterprises are scrambling to become traffic hubs by locking in massive numbers of users with freemium products plus user-based profit models. For example, although WeChat didn't profit from its 800 million users in 2016, Tencent generated almost 152 billion yuan (US\$23.4 billion) in revenue mainly from games, payments, and online stores. With a large user base, a company can continuously create new profit models to monetize traffic.

In the IoT era, connections have become a new type of traffic hub that e-commerce platforms can be built on. IoT providers can construct multiple profit models around connectivity; for example, water purifiers that automatically order a new filter when the old ones

become ineffective, refrigerators that report their contents to the platform so brands can push discounts to refrigerator displays, air conditioners that report motor data so that manufacturers can carry out preventive maintenance and offer value-added services, and cars that report data to insurance companies to provide personalized policy pricing based on individual driving behavior.

With these new business platforms, operators will need to innovate profit models rather than focus on the prices of connections themselves. They will also need to build control points by leveraging IoT platforms and avoid being reduced to a new kind of dumb pipe, watching on as OTT players feast on the rich profits of the enterprise market.

***NB-IoT is the best starting point to transition from connecting people to connecting things. Operators need to leverage NB-IoT so they can start developing commercial IoT services.***

Another rule from the Internet era is the principle of winner-takes-all. IoT connection service contracts are mostly long-term, with customers locked in to the operator's platform and ecosystem, so transferring subscriptions to other networks is difficult. As such, it's essential for operators to quickly transform and build NB-IoT networks, ecosystems, and organizational capabilities.

## Organizational restructuring

With mobile broadband, operators are ordinary consumers and most services are B2C. In the IoT era, customers will come from different industry verticals, with services provisioned in multiple models, including B2B, B2B2B, and B2B2C. Operators will therefore need to carry out organizational restructuring and build operations capabilities for specific vertical industries.

A number of pioneering carriers have successfully carried out organizational transformation.

**AT&T** set up an enterprise sales team comprising several hundred sales experts, enabling it to penetrate various industry chains. It also established an advanced solutions team to provide IoT solutions services for the B2B market. In the US, AT&T enjoys a 43 percent IoT market share.

**China Telecom** has established group- and provincial-level IoT sales and service centers with integrated sales, support, and

service teams that combine front- and back-end services to quickly respond to customer needs. In August 2017, China Telecom reported that it had made nearly 28 million IoT connections in China, on course to double its 2016 year-end number. The general manager of China Telecom, Yang Xiaowei, predicts that in 2018, its IoT subscribers will exceed 100 million.

Transforming organizational structuring and capabilities is a long process. Operators can harness NB-IoT as a starting point by which to optimize their organizational structure. They can gradually accumulate the organizational capabilities for forming an ecosystem, integrating solutions, and expanding services in the enterprise market as they roll out IoT services.

IoT represents a historic opportunity. OTT companies are already keenly aware of the enormous business opportunities, with Internet giants such as Amazon, IBM, Alibaba, and JD.com already deploying IoT services on cloud platforms. For telecom operators, the clock is ticking. NB-IoT is the best starting point to transition from connecting people to connecting things. Operators need to leverage NB-IoT so they can start developing commercial IoT services, involving nationwide network deployment, attracting new customers, launching new profit models, organizational restructuring, and quickly transforming from carriers into information service providers. Doing so will give them a strong hand in the hyper-connected world of the future. **H**