



China's Telecom Market Update

Prepared for XGP Forum

September 7, 2009

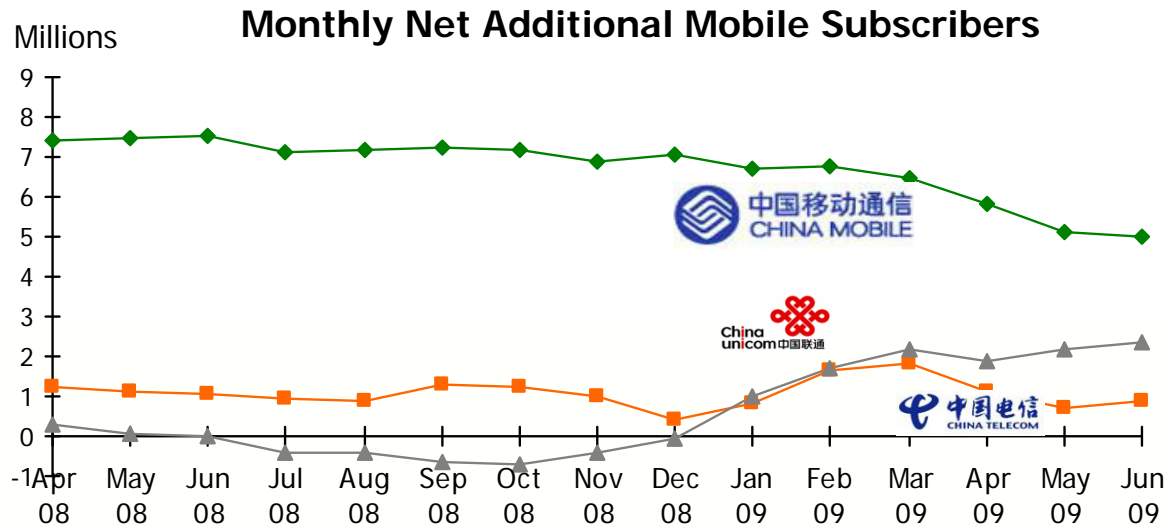
BDA China Limited

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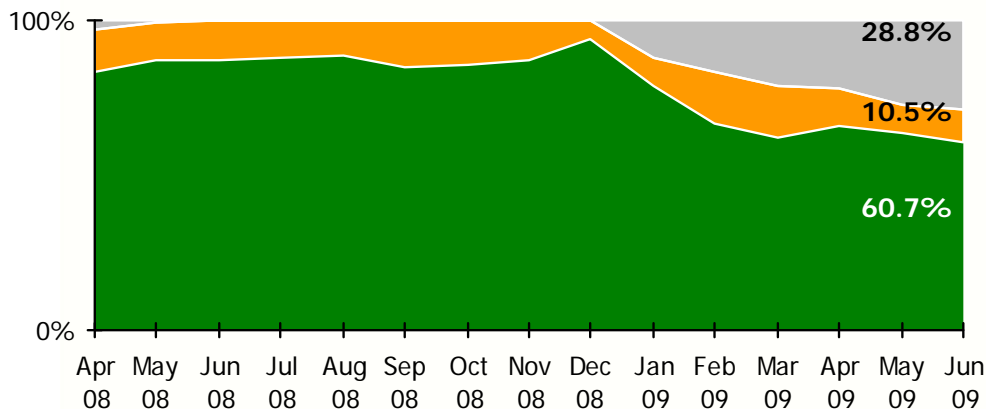
There were 8.2 million new mobile users in Jun 2009, up from 8.0 million in May; China Telecom continued to gain share from rivals



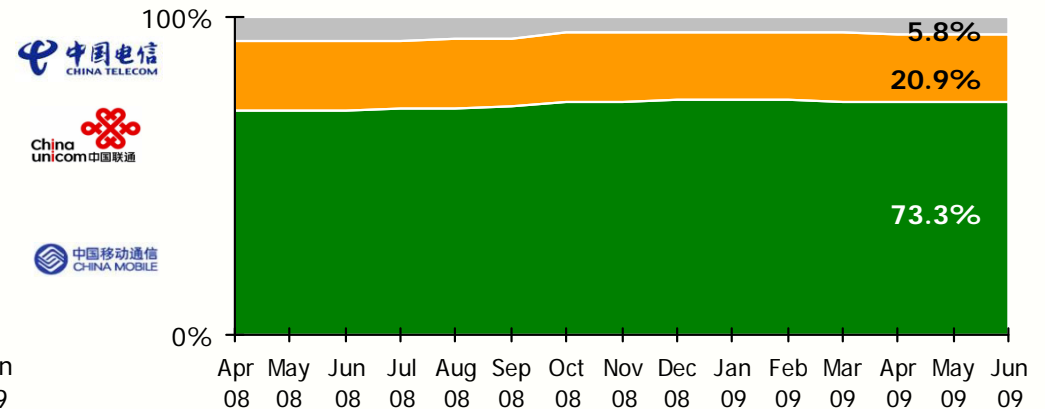
| (Millions) | Net Add. In May 2009 | Net Add. In Jun 2009 | Total Subs. In Jun 2009 |
|--------------|----------------------|----------------------|-------------------------|
| CM GSM | 5.1 | 5.0 | 493.1 |
| CU GSM | 0.7 | 0.8 | 140.4 |
| CT CDMA | 2.2 | 2.4 | 39.3 |
| Total | 8.0 | 8.2 | 672.8 |

*Note: Includes 959,000 TD-SCDMA users

Carriers' Shares of Monthly Net Additions

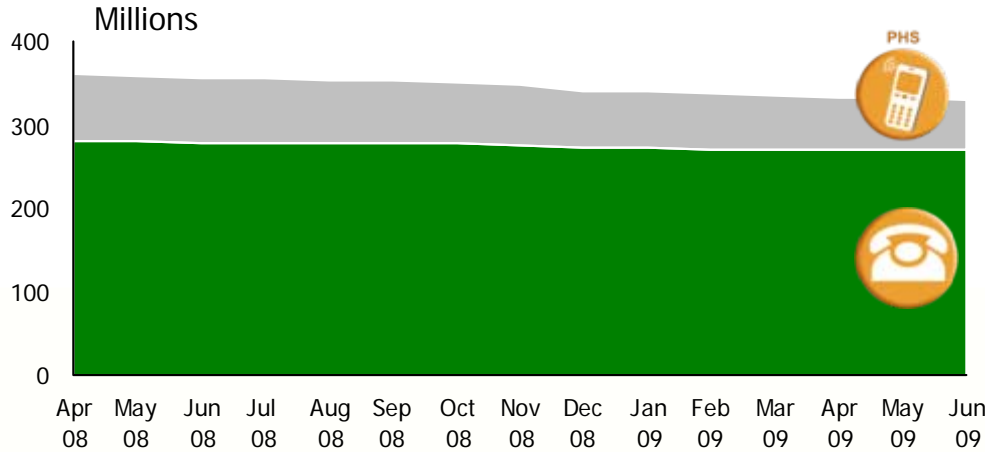


Carriers' Shares of Total Mobile Subscribers



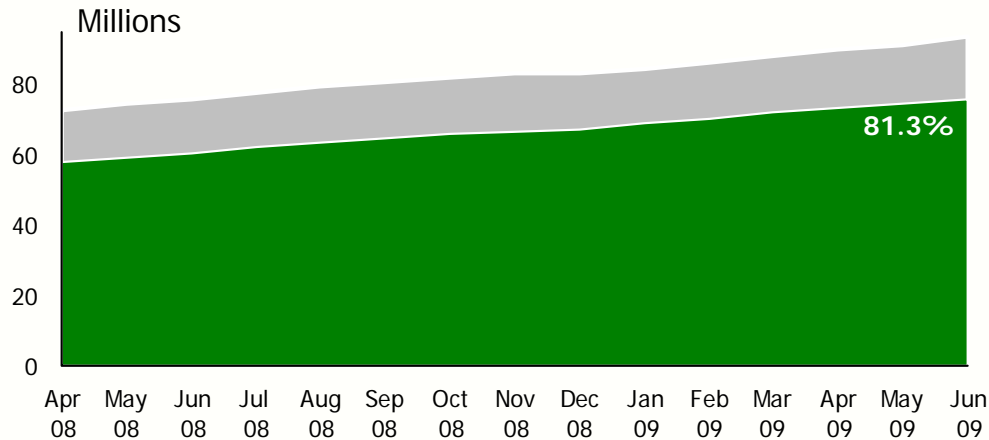
In May and June, the number of PHS users who churned continued to be 1.6-1.7 million per month; Broadband user growth was flat and xDSL maintained its dominance

Fixed-line Service Subscribers



| (Millions) | Net Add. in May 09 | Net Add. in Jun 09 | Total Subs. in Jun 09 |
|--------------|--------------------|--------------------|-----------------------|
| PHS | -1.7 | -1.6 | 59.3 |
| PSTN | 0 | 0 | 270.6 |
| Total | -1.7 | -1.6 | 329.9 |

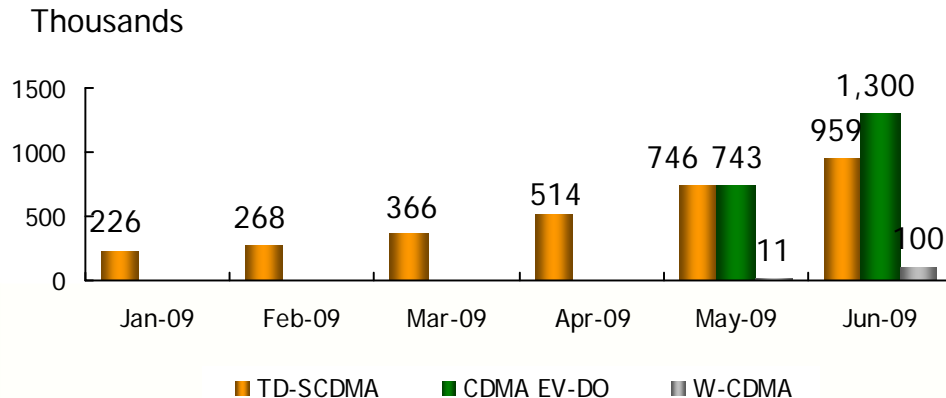
xDSL Users as % of Total Broadband Subscribers



| (Millions) | Net Add. in May 09 | Net Add. in Jun 09 | Total Subs. in Jun 09 |
|--------------|--------------------|--------------------|-----------------------|
| Others | 0.5 | 0.4 | 17.4 |
| xDSL | 1.3 | 1.4 | 76.1 |
| Total | 1.8 | 1.8 | 93.5 |

China Telecom had the highest number of 3G users by June 2009, thanks to robust growth of data card user numbers; China Unicom lags behind due to the late commercial launch and poor promotion

3G Subscribers



TD-SCDMA commercially launched in 10 cities on 8 Jan; Netbooks released on 15 April

CDMA EV-DO commercially launched in 120 cities on 16 April; EV-DO data cards available from March

W-CDMA commercially launched in 55 cities on 17 May

China Telecom: Excellent Performance

- China Telecom had secured over 1 million EV-DO data card users by June 2009, up from the 600,000-700,000 a month earlier.
- EV-DO data cards achieve similar data rates to the two other 3G technologies but work more stably, according to user feedback.
- EV-DO data cards can achieve data rates up to 1.4 Mbps, similar to those of TD-SCDMA, according to some user tests. In some cases W-CDMA achieves higher data rates but the signal is unstable and only available in certain locations of some cities.

China Unicom: A Poor Start

- The last operator to launch a commercial trial service
- Comments about data card performance are negative, due mainly to the poor signal, worse than EV-DO's
- Limited advertising campaign and little price subsidy

China Mobile: Slow but Stable Growth

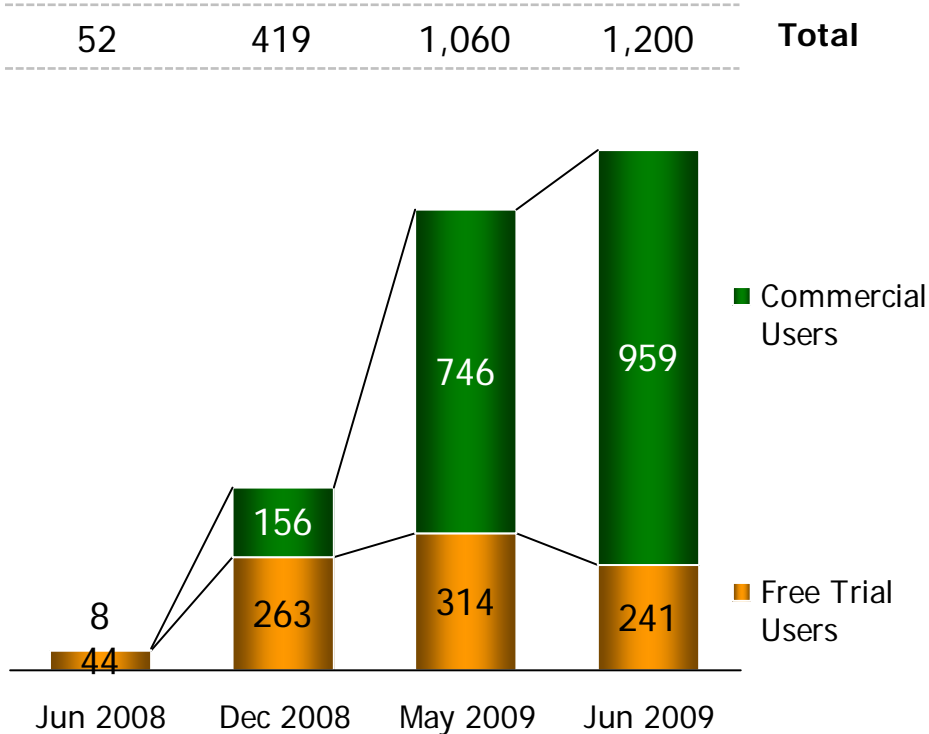
- The service is only available in 10 cities, to open in 38 cities soon
- Only 64,000 TD-SCDMA handsets were sold between Jan and May 2009, according to Sino-MR

Note: BDA estimates the number of TD-SCDMA and CDMA EV-DO users for June 2009

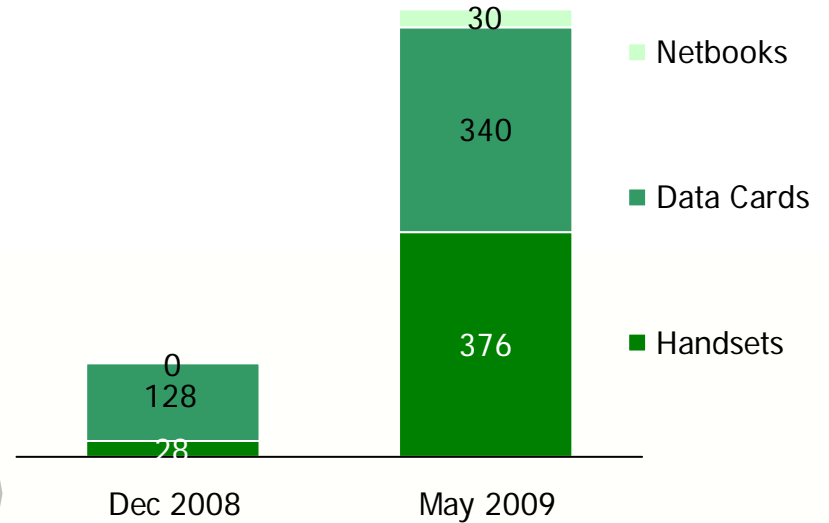
TD-SCDMA subscribers numbered 1.2 million by July with nearly one million commercial users; the number of free trial users began to decline as the free trials ended in July

TD-SCDMA: Subscription Growth

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Breakdown of TD-SCDMA Commercial Users



- Data cards achieved much stronger growth than handsets in late 2008 as at that time they were of higher quality than handsets.
- But the coming on stream of CDMA EV-DO data cards affected TD-SCDMA data card sales between January and May 2009. Between 600,000 and 700,000 EV-DO data cards had been sold by May 2009.

In July, China Mobile lowered its TD sub target for 2009 from 10 million to 3 million, partly due to the poor network performance on which China Mobile is still working

Key Problems



Weak Experience in Network Optimization

- Carriers and vendors had no experience in TD-SCDMA network optimization, to solve the problems on the handover from TD-SCDMA to GSM and interference between them. These problems cause calls to be dropped or fail. Frequent switching between GSM and TD results in terminals dead locking and even going offline



Compatibility Problem

- The various kinds of equipment from different vendors are not compatible; Handsets are not completely compatible with TD-SCDMA equipment
- Poor compatibility leads to dropped calls, muting and low signal strength



Insufficient Support from Vendors

- China Mobile has complained about the lack of support from vendors; the support engineers deployed are inexperienced or incompetent in maintaining the network

Performance Indicators

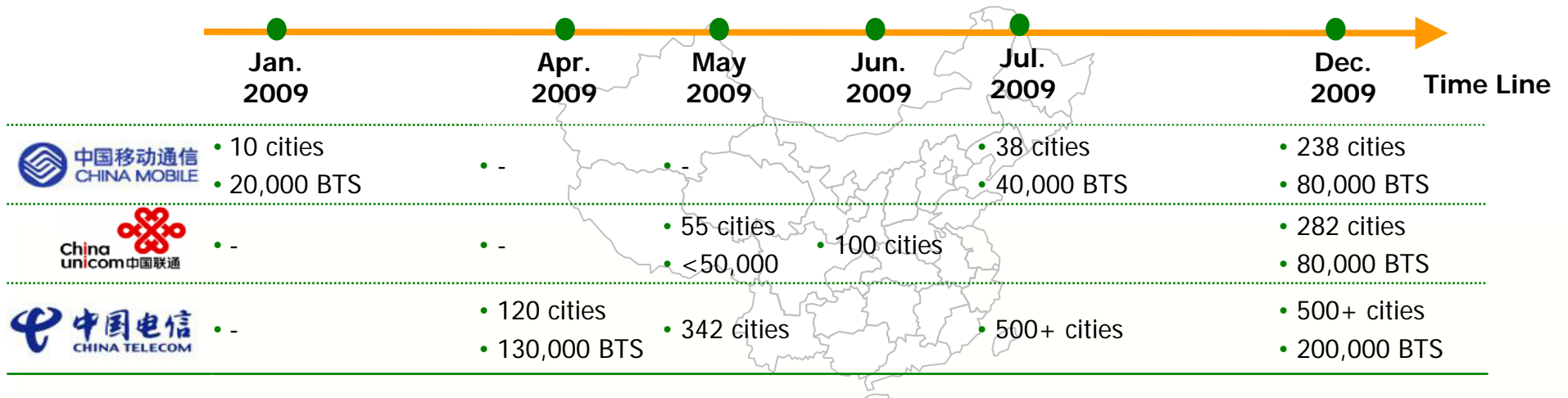
Network Quality KPI of China Mobile: GSM vs. TD-SCDMA

| | Connection rate | Call-drop rate |
|-----------------------|----------------------|----------------|
| GSM | >99.8% | <0.8% |
| TD-SCDMA in June 2009 | 96% | 2% |
| TD-SCDMA in Dec 2009 | Close to that of GSM | |

- In Shanghai in July 2009 the dropped call rate was 0.99%, but in Beijing the rate was 3.6% in April 2009. The data connection drop rate was higher than voice, registering 19.75% in Shanghai in July.
- China Mobile is targeting the improvement of the TD-SCDMA network and bring the KPI figures close to those of GSM by year-end 2009.

The CDMA EV-DO network is outstanding in terms of signal quality and coverage thanks to China Telecom's major investments and the efficient upgrade work

3G Network Coverage in Terms of Cities Covered and Number of BTS



Users' Comments on 3G Access Quality in Beijing and Guangdong

| Carriers | 3G Access Quality | Details |
|---------------------|-------------------|---|
| 中国移动通信 CHINA MOBILE | Good | <ul style="list-style-type: none"> The signal is received in most places where the network is available but is not stable. Users have found access is down from time to time in some cases. |
| China unicom 中国联通 | Poor | <ul style="list-style-type: none"> The signal is not received in some places even though the WCDMA network is meant to be available. The signal is also not stable from time to time. The number of BTS for most cities is small and in-door signal is not good due to high frequency |
| 中国电信 CHINA TELECOM | Very poor | <ul style="list-style-type: none"> CDMA EV-DO signals are stable and widely available. China Telecom increased the number of BTS significantly in 2009. Most of the CDMA BTS have been upgraded to EV-DO this year. |

W-CDMA handsets sales will take off in 2H 2009 as vendors and distributors make major marketing efforts; EV-DO will continue to grow steadily, but still faster than TD-SCDMA

Comparison of Carriers' 3G Handsets (Jul 2009)

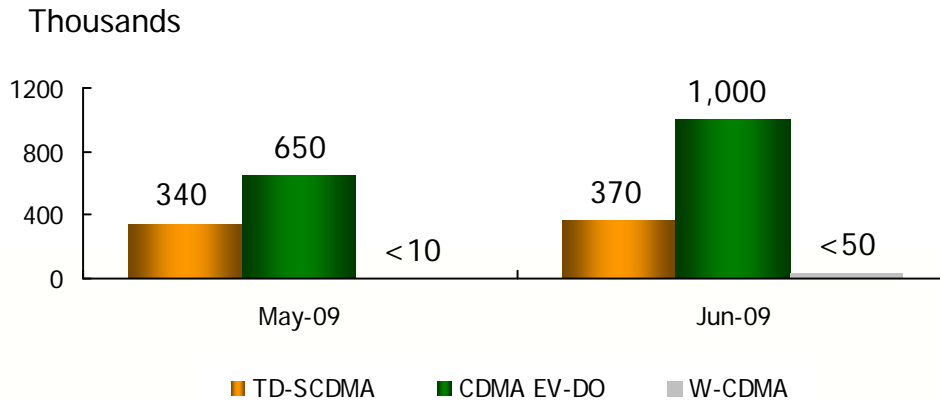


| | 中国移动通信 CHINA MOBILE | 中国电信 CHINA TELECOM | China unicom 中国联通 |
|---|---|---|---|
| Date 3G Handsets Available | April 2008 | April 2009 | May 2009 |
| Number of Available 3G Models | 10 | 9 | 7 |
| Number of 3G Models in September | 20+ | 30+ | 60+ |
| Main Vendors* | Yulong, ZTE | LG, Samsung, Yulong | Samsung, Sony Ericsson |
| Price Band (RMB) | 999-4,380 | 1,860-6,180 | 898-5,680 |
| Subsidy | 50% of user's committed expenditure | 40% of user's committed expenditure | 0 |
| 3G Handset Quality | Mediocre | Good | Excellent |
| Distribution Channels | <ul style="list-style-type: none"> • Own outlets • Electronic chain stores | <ul style="list-style-type: none"> • Own outlets • Electronic chain stores | <ul style="list-style-type: none"> • Own outlets • Electronic chain stores • Handset chain stores |
| BDA Comments | <ul style="list-style-type: none"> • Handset quality and the level of support from global vendors will continue to be problematic • TD handset sales will be limited in 2009. | <ul style="list-style-type: none"> • China Telecom offers a greater subsidy than China Unicom and has a better 3G handset quality than China Mobile. • Sales of CDMA EV-DO handsets will increase, driven by China Telecom's marketing efforts and an expanding range of models | <ul style="list-style-type: none"> • 2009 will see many more W-CDMA handsets coming onto the market • China Unicom will continue to offer a limited handset subsidy. • Vendors and distributors will contribute the bulk of future sales. • WCDMA handset sales will improve markedly in 2H 2009. |

Note: * Main vendors here means those firms which supply no less than two 3G customized models.

China Telecom has attracted the greatest number of users for its data card service and will continue to lead the market

3G Data Card Users



- China Telecom outperformed its rivals in the data card business thanks to its good marketing and coverage, plus attractive prices, as show in the table below.
- China Telecom had an over 80% share in the 2G data card market in 2008 and will continue to lead the market with its 3G+WLAN service and bundled strategies.
- China Unicom may ramp up marketing of its W-CDMA data card business in 2H 2009.

Comparison of Carriers' Data Card Sales Strategies

| | China Mobile | China Telecom | China Unicom |
|----------------------------|--|---|---|
| Procurement | - | 1.5 million units | 250,000 units |
| Card Subsidy (RMB) | 500-700 | 300-400 | <100 |
| Data traffic charge | <ul style="list-style-type: none"> • RMB 100/month for up to 2GB • RMB 200/month for up to 5GB | <ul style="list-style-type: none"> • RMB 80/month for 65-80 hours • RMB 160/month for 200-300 hours | <ul style="list-style-type: none"> • RMB 150/month for up to 3GBc • RMB 300/month for up to 10GB • 50% off till the end of Sept. |
| User Feedback | <ul style="list-style-type: none"> • Poor signal • Suitable for light data service | <ul style="list-style-type: none"> • Stable and good speed at 1.4 MB at most times | <ul style="list-style-type: none"> • Poor signal and limited subsidy • Suitable for light data service |

3G Netbooks: How the Three Operators Compare (by June 2009)

| |  中国移动通信 CHINA MOBILE |  中国电信 CHINA TELECOM |  China unicom 中国联通 |
|--|--|---|--|
| Available 3G Netbook Models | 8 | 2 | 3 |
| Price Band (RMB) | 3,499 - 4,199 | 3,399 - 3,499 | 3,899 - 4,399 |
| Subsidy (RMB) | 900 - 2,100 | 0 | 600 |
| Distribution Channels | <ul style="list-style-type: none"> • Own outlets • Electronic chain stores • Handset chain stores | <ul style="list-style-type: none"> • China Telecom's on-line Store | <ul style="list-style-type: none"> • China Unicom's on-line Store |
| Accumulated Sales by June (Units) | 60,000 | Less than 20,000 | Less than 20,000 |

Reasons for Poor Sales and Prospects in 2009

- **Key reasons for poor sales:**
 - Netbooks are new to the market and haven't proved very popular in the short term. Most users prefer ordinary netbooks to 3G built-in versions because it's more flexible and cost effective to use a data card to access 3G. They can switch between carriers' 3G services as they wish rather than being bound to one 3G service.
 - China Mobile's heavy subsidies cannot compensate for the poor TD-SCDMA signal. Users complain about the low data rates caused by the absence of a TD-SCDMA signal in many places (EDGE works when TD-SCDMA is not accessible.)
 - Supply is limited for other operators' 3G netbooks, and subsidies are minimal. Only a few models are available and can be bought only through online stores. While China Telecom is concentrating more on data cards, China Unicom is focusing on handsets.
 - Vendors are not keen to produce 3G built-in netbooks. They prefer to turn out traditional netbooks because they have doubts about the demand for 3G built-in products. The need to work with carriers on the design of 3G built-in products means the process is also relatively time consuming and costly
- **BDA believes the sales of 3G built-in netbooks will not take off in 2009. The problems outlined above will not be overcome in the short term.**

Government-backed LTE research started to switch from tests to products at the end of 2008, indicating the acceleration of LTE industrialization

| Aspects | Before | After |
|--|---|---|
| Funding for R&D projects | <ul style="list-style-type: none"> Central government fully funded projects as part of the 863 Plan | <ul style="list-style-type: none"> Central government: local government: companies = 1:1:2 (the ratio may vary but this is a typical one) As major investors in projects, companies will pay more attention to the final return on the investment |
| Government body to fund LTE R&D | <ul style="list-style-type: none"> MOST, and not MIIT, funded projects MOST specializes in theoretical verification in labs and standards | <ul style="list-style-type: none"> MIIT lead the projects in place of MOST MIIT will focus more on the outcome of projects in commercial terms |
| Applicants for funds | <ul style="list-style-type: none"> Universities, research institutes, companies | <ul style="list-style-type: none"> Companies will act as project leaders |
| Required project outputs | <ul style="list-style-type: none"> Research papers or prototypes of products | <ul style="list-style-type: none"> Commercial products including chipsets, equipment, devices Specific requirements in terms of power consumption, performance under test, chipset production capacity |

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