



THE BUSINESS NEWSLETTER OF ASIAN TELECOMS, INTERNET, CABLE AND SATELLITE TV

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# ASIAcom

THE BUSINESS NEWSLETTER OF ASIAN TELECOMS, INTERNET, CABLE AND SATELLITE TV

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INDIA REGULATION

## MSOs ready to demand compensation for CA farce

OUTRAGED INDIAN MSOs are expected to launch compensation claims against the government if it abandons plans for the mandatory implementation of conditional access for cable pay television channels.

The Information and Broadcasting Ministry issued an official notification Feb. 27 suspending indefinitely the first-phase introduction of CA in Mumbai, Kolkata, Chennai and Delhi.

The decision follows the TRAI's interim recommendation, revealed Feb. 26, that conditional-access deployments, which kicked off in July, should be suspended for at least three months pending its reassessment of the key issues facing the cable TV sector.

"There is absolutely no way that the MSOs will not be making attempts to claim compensation for their investment in CA infrastructure if the government does not proceed with CA deployment," a local analyst told

ASIACom. "They have outlaid significant capex on settops, new headends and upgrading networks to deploy CA, in line with the government's demands, and now they feel they will be left high and dry."

Several MSOs contacted by ASIACom refused to comment since they are waiting for the TRAI to release its final recommendations on the issue.

The TRAI intends to form a panel, including state government representatives, to examine key issues involving CA implementation before making its final recommendations within two months. The I&B Ministry will then decide whether to revise its CA timetable, scale down the implementation or even dump CA altogether, though no decision is likely until after April's national elections.

"After all the problems that they have faced [in introducing CA], it seems the ▶

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## Asia-Pacific breaks 550 million-sub barrier

ASIA-PACIFIC'S mobile subscriber base had passed the 550 million mark as of end-4Q03, according to the latest *Global Mobile Subscriber Database* (see pp. 5-8).

China contributed 48.7% of 4Q03's total customers, with Japan taking the No. 2 spot with 79.79 million subs, followed by South Korea and India with 33.59 million and 28.44 million, respectively.

Asia-Pacific's top 20 operators had 33.57 million net adds during the quarter, equal to 85.77% of the region's 4Q03 total net adds (see fig.), with China Mobile Hong Kong and China Unicom Ltd. amassing 12.53 million new subs.

Reliance emerged as the third-largest operator by net adds, and demonstrating India's fast-paced mobile growth, six Indian cellcos were among the 20 fastest-growing Asian mobile operators, collectively adding 8.7 million subs.

Malaysia's Maxis Communications was

the ninth-biggest net-add mover, adding more than 2.5 times as many subs in 4Q03 as its archrival, Celcom, and in the process regaining its spot as Malaysia's largest cellular company, with 4.46 million users.

"The biggest surprise with Maxis' 4Q03 results was its ability to grow its subscriber base by 10% quarter on quarter and yet maintain profitability," CLSA says. Maxis' blended ARPU declined only 1% quarter on quarter, to M\$94 (US\$25), while prepaid price cuts in East Malaysia and new M\$30 reload cards increased subscriber affordability, boosting the number of prepaid subs 14.5% quarter on quarter to 3.25 million.

Meanwhile, Indosat's two mobile companies, Satelindo and IM-3, passed the 6 million-sub mark combined in the first week of January, thanks to discount prepaid starter packages, and the pair overtook Telkomsel in terms of 4Q03 net adds (Indosat is due to report exact figures by end-March).

Top 20 operators by net adds (000s)

Operator	Country	Net adds (4Q03)
1 CMHK	China	6,615,000
2 China Unicom Ltd.	China	5,910,000
3 Reliance	India	5,632,270
4 China Mobile	China	5,600,000
5 Smart	Philippines	1,069,184
6 BSNL	India	932,282
7 Bharti	India	883,562
8 Telkomsel	Indonesia	801,967
9 Maxis Comms.	Malaysia	759,000
10 AIS	Thailand	745,530
11 KDDI	Japan	685,700
12 Hutchison	India	547,937
13 Mobilink	Pakistan	547,019
14 Globe Telecom	Philippines	535,230
15 Satelindo	Indonesia	436,270
16 IM3 (Indosat)	Indonesia	434,696
17 Digitel	Philippines	400,000
18 Aircel	India	363,383
19 Idea Cellular	India	342,921
20 Piltel	Philippines	327,221
<b>TOTAL</b>		<b>33,569,172</b>

Source: Global Mobile Subscriber Database



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government has finally grasped that CA implementation is far more difficult in practice than they originally realized," says one local analyst.

In the wake of fierce resistance from local bureaucrats and last-mile operators, which culminated in High Court lawsuits, fewer than 30,000 boxes have been deployed, and only in Chennai and Delhi.

Meanwhile, leading channel provider STAR, backed by News Corp., also prefers not to enter the CA debate, despite being a long-standing critic of MSOs and last-mile operators for underdeclaring their subscriber numbers.

"The current situation with CA remains quite fluid, and we have nothing to add," a STAR India representative told ASIACOM. "We are now waiting for TRAI's final consultation paper on CAS, which we expect to be released soon."

One local analyst claims that STAR is relieved that CA is seemingly doomed because it can now focus on its DTH joint venture with the Tata group, Space TV.

"STAR really has no interest in seeing CA get up and running now

its DTH platform is finally on the move," the analyst claims. "STAR knows that with CA, they would still be only getting a part of the overall pay TV pie, as revenues still have to be shared with MSOs and last-mile operators.

"From STAR's point of view, a powerful DTH platform would be much more effective in the long term in achieving a greater revenue base from subscribers. That is why they have been so silent on the CA breakdown."

Recent local reports say that Space TV has filed an application for a DTH license with the I&B Ministry and has earmarked a commercial launch for 4Q04. The joint venture, 80%-owned by the Tata group, has also reportedly paid the government an entry fee of Rs100 billion (US\$2.2 billion) and plans an initial investment of Rs4 billion.

Another local analyst says the potential overthrow of mandatory CA for cable pay channels could hit Zee Telefilms the hardest of all the players. Zee owns leading MSO Siticable and several pay cable TV channels and controls fledgling DTH operator Dish TV.

"Zee had planned to squeeze the

last-mile operators into declaring more subscribers through a combination of CA and their DTH platform, but with the blockage on CA, they will have to rethink that strategy," the analyst says. "Without CA to really force the last-mile operators' hands, Zee will not only find it hard to squeeze extra pay revenues from them, but will also find it even harder to market Dish TV, as it has no chance of competing against [non-CA] cable on either price or content."

Zee-backed ASC Enterprises' Dish TV had signed up 100,000 DTH subs as of end-February, after launching the service in late October, Ashish Kaul, vice president for corporate development at ASC, told ASIACOM. "At the moment, we are adding around 800,000 subs per day," Kaul claims.

Analysts say the ongoing deadlock on CA deployment is great news for Reliance Infocomm, which is planning FTTH-based pay TV services (ASIACOM, 13 Jan, 2004). "Every day that the industry fails to deploy CA Reliance gains more and more time to get its own pay TV service up and running," one analyst says. ▲

## SOUTH KOREA BROADBAND

# KT seeking VDSL expansion, has sights set on FTTH

KT PLANS TO spend 23% of its 2003 total capex, which is capped at Won2 trillion (US\$1.72 billion), on the rollout of VDSL and fiber-to-the-home services.

"This year, most of our capex will be spent on VDSL, as we plan to buy 500,000 VDSL lines," Cho Chol-Joo, a representative from KT, told ASIACOM.

KT had 1.37 million VDSL subscribers and 4.22 million ADSL users at end-December.

Meanwhile, a joint KT-Electronics and Telecommunications Research Institute (ETRI) team is field-testing FTTH equipment in the major cities of Daejeon and Pusan. KT is rolling out FTTH services so it can deliver data-transmission speeds up to 100Mbps, as part of its road map to convert its network infrastructure to an all-IP-based Broadband Convergence Network by the end of 2008.

Cho says it will take "some time"

for FTTH services to replace KT's DSL drive, especially while VDSL remains cheap and fast enough to meet consumer needs. "We can now also buy 50Mbps VDSL equipment almost at the same price that we once bought 13-20Mbps VDSL infrastructure," he adds.

But South Korea could ultimately become Asia-Pacific's second-leading FTTH market after Japan, given its high broadband penetration, says Dror Sal'ee, vice president of marketing for Passave, a Santa Clara, CA-based fabless system-on-chip vendor. "Today, South Korea stands to be the next Japan for FTTH services, and China will probably be the next [after that]," Sal'ee told ASIACOM at last month's Global Press-organized Electronic Summit 2004 in California.

Passave offers end-to-end EPON silicon solutions for OEMs developing FTTH and fiber-to-the-business systems based on the

IEEE802.3ah Ethernet in the First Mile (EFM) standard for Ethernet Passive Optical Networks (EPONs).

"EPON delivers up to 1,000 times more bandwidth than DSL or cable modems, and EPON at Giga-bit Ethernet rates enables the delivery of new applications, such as high-definition video-over-IP," Sal'ee explains. "These advantages might be hard for South Koreans to resist."

In South Korea, three telecom OEMs are developing FTTH equipment using Passave's 1GB Ethernet-based EPON solution. NTT East/West recently chose to roll out EPON-based FTTH equipment, and Sal'ee hopes KT will be the next.

Passave is ready to ship 10,000 of its second-generation standards-compliant EPON chipsets in 1Q04 to its 20 paying customers, mostly in Japan, where it counts eight Tier 1 Japanese telecoms OEMs as customers.

## JC-HITS targeting 1 mil. subs in 3 years

JSAT-OWNED headend-in-the-sky operator Japan CableCast is aiming to break even with 1 million subscribers by March 2007, having launched its 64-channel JC-HITS digital cable platform Feb. 28.

JCC provides cablers with a one-stop digital programming solution, including pay-per-view channels, and is principally aimed at cash-strapped independent cable companies. The package is beamed from JCC's Yokohama digital distribution center to JSAT-110 and then encrypted and sent to cable operator digital headends.

JCC does not have any direct contact with the end-subscriber. The cablers pay JCC for its programming on a per-subscriber basis, and JCC takes an undisclosed cut of the PPV revenues generated by cable operators.

"JC-HITS is basically a satellite-based digital-content-distribution service for CATV operators," Hideto Usa, deputy general manager of investor relations at JSAT, told ASIACOM. "With JC-HITS, cable operators can offer value-added services with minimal investment."

By the end of February, JCC had signed deals to supply 60 cable operators across Japan with its JC-HITS platform and was talking with another 120 cablers about taking the service, Usa says.

JCC aims to be supplying at least 100 cablers with the service by March 2005. Its customers include Tokyo Digital Network, which has 200,000 subs on 12 networks, and

Tokai Digital Network Center, which has 250,000 subs on 20 systems.

JCC has also held preliminary negotiations with market-leading MSO Jupiter Telecommunications to take JC-HITS, but Usa says no deal has been signed with the Liberty Media-backed operator. Jupiter is investigating launching its own digital-cable-channel lineup.

I-HITS, controlled by Mitsubishi-backed satellite operator Space Communications, launched its rival service last month on about 40 cable operators' systems.

"I-HITS is a much more basic service than JC-HITS," Usa claims. "I-HITS does not provide an encrypted feed to headends, and they do not offer a pay-per-view service either."

Usa claims that it makes economic sense for the cablers to take up the JC-HITS platform rather than launch their own digital service.

"At the moment, most cable subscribers are still only receiving retransmission of terrestrial channels and are not true multichannel subscribers," Usa says.

At end-2003, he says, there were only about 4.65 million multichannel subs, out of a total base of 23 million cable subs.

"Therefore, with cheap DSL-TV services, like Yahoo! BB, now becoming available, these cablers need to upgrade their services to be able to compete with the new players and play a big part in the digital transmission era," Usa says.

## Two left in race for GSM cellco

TELEKOM MALAYSIA is monitoring Telstra's M&A talks with third-ranked Indonesian GSM cellco Excelcomindo "carefully," according to company sources.

"[TM is] waiting to see what Telstra is up to and how much they are willing to pay," says a Malaysian analyst. "TM's still interested in Excelcomindo but is not willing to pay too much for it."

Excelcomindo's controlling shareholder – Telekomindo, owned by Indonesia's Rajawali Group – has been willing to sell its 60% stake for more than three years, for the right price. Verizon has also long been rumored to want to sell its 23% stake, which has a book value of US\$116 million, according to Merrill Lynch. Other shareholders – Asia Infrastructure Fund (12%) and Mitsui (4%) – are also believed to want to exit Excelcomindo.

Telstra could thus possibly emerge with control of Excelcomindo, which is one of its criteria for making acquisitions, though lately Telstra has talked about softening its "control" criteria to "pathway to control."

Meanwhile, reports say that China Telecom is no longer chasing a stake in Excelcomindo because of Indonesia's political uncertainty.

For its part, Telstra is also reportedly still seeking M&A deals in Malaysia and Singapore, with Digi.com, Maxis and MobileOne being potential targets.

### TELEVISION

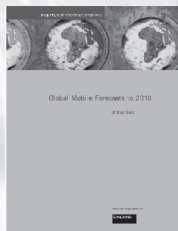
Second-ranked Filipino terrestrial broadcaster **GMA Network**, backed by the **Jimenez Group**, could be on course for an IPO on the Manila Stock Exchange by year-end, local reports say. GMA management has reportedly decided to go for an IPO by year-end, if market conditions are suitable, rather than sell a strategic stake to a new investor.

GMA will use any proceeds from the IPO to expand its international channel operations and to relaunch its defunct UHF channel.

Reports of the planned IPO have dampened speculation that **PLDT** subsidiary **Mediaquest** would make a renewed bid for GMA, having been close to buying a 66.67% stake in the broadcaster in late 2001 for P8.5 billion (US\$147 million).

But PLDT CEO Manuel Pangilinan has been quoted in the local press as saying that the firm is still eager to buy into the TV sector in order to acquire content to deploy over its mobile and fixed distribution networks.

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### INDONESIA

**Bimantara Citra** is planning a rights issue by end-March to raise an estimated Rp5750 billion (US\$90 million) to fund the expansion of its growing media and cellular businesses. Reports say Merrill Lynch, CLSA and Mandiri Sekuritas are advising Bimantara on the rights issue, which is awaiting shareholder approval.

As well as funding potential acquisitions in the broadcasting and telecoms sectors, proceeds will also reportedly be used to further develop existing operations, principally its 1xRTT cellular company, **Mobile-8**.

Separately, on Feb. 19, Bimantara completed the transfer of its 69.82% stake in top-ranked terrestrial broadcaster **RCTI** to wholly owned subsidiary **Media Nusantara Citra**.

Bimantara is positioning MNC as its media holding company. The unit already holds a 70% stake in UHF channel **Global TV** and a 51% stake in **MTV Indonesia**, which supplies MTV content to 24-hour channel Global TV.

According to a company statement, MNC is still in talks to acquire a 75% stake in cash-strapped terrestrial broadcaster **TPI**. Bimantara says MNC will bulk-buy programming and sell advertising for all three channels collectively.

### PAN-ASIA BROADBAND

## Metro Ethernet revenues grow 42.7%

ASIA-PACIFIC'S Metro Ethernet market generated US\$3.84 billion in revenues in 2003, 42.7% more than in 2002, with revenues forecast to reach US\$5.31 billion this year and US\$15.24 billion by 2008, according to Frost and Sullivan.

"Along with IP-VPN, Metro Ethernet is one of the fastest-growing service areas in the Asia-Pacific region," says Frost and Sullivan analyst Nitin Bhat.

A Metro Ethernet network is the network that connects geographically separated enterprise local-area networks (LANs) to form a larger wide-area network (WAN) in a metropolitan area. Based on a fiber-optic core network, service providers could use DWDM or MPLS as their underlying truck infrastructure. For gigabit or high-megabit Metro Ethernet services, the last-mile technology would be wireless or fiber.

Twenty-five Asia-Pacific service providers in eight countries – Australia, China, Hong Kong, Japan, New Zealand, Singapore, South Korea and Taiwan – accounted for 16.9 million Metro Ethernet subs in 2003, and Frost and Sullivan is forecasting 23.3 million subs by 2004. Last year, the Metro Ethernet market picked up, and several companies are expected to move into the black this year, says Bhat.

South Korea's share of total revenues slipped from 52.3% in 2002 to 40.4% in 2003 as Japan increased its share of the pie from 9.3% to 22.1%, thanks to a surge in NTT East/West's fiber-to-the-home subs base (see fig.).

China accounted for 24.5% of the region's Metro Ethernet revenues in

2003. Great Wall Broadband Access, China Telecom and China Netcom are using MPLS as their backbone and offer Metro Ethernet to limited cities, primarily for enterprise customers. The last mile for all three carriers is fiber (FTTH).

"Residential Metro Ethernet market prices are not very different from traditional broadband-access-technology prices in China, and this is driving growth," Bhat explains. "In most countries in Asia, there's not a significant price differentiation."

Bhat expects Metro Ethernet equipment prices to fall about 10% each year for the next few years.

While dedicated Metro Ethernet services are packet-based and can support high bandwidths, Bhat says that Metro Ethernet's biggest value proposition for the end-user is that it can be scaled up quickly. An enterprise customer, for instance, can buy incremental megabits on demand using software tools located in the customer-premise network.

The majority of Metro Ethernet customers in Asia want bandwidth speeds of 10Mbps, says Bhat. "I expect we will continue to see 10-15Mbps speeds being requested in the next one to two years," he adds. Metro Ethernet has a maximum theoretical speed of 1Gbps.

While service providers say enterprises can save 35% on capex and slightly more on opex if they opt for Metro Ethernet over traditional broadband technologies, some vendors put the opex/capex saving at as much as 50%, while Frost and Sullivan says it is about 20%. Enterprises can save on capex and opex because they don't have to buy hardware to increase bandwidth.

### SOUTH KOREA PAY TV

## AIG pulls plug on SkyLife deal

KT-BACKED DTH operator SkyLife is talking with other potential strategic investors after U.S. equity investment firm AIG pulled out of its plan to invest Won100 million (US\$85 million) in the firm.

On Feb. 18, AIG formally withdrew its plans to invest in Won20 million worth of new shares and Won80 million worth of convertible bonds, citing concerns about market conditions, a SkyLife representative told ASIACOM.

The companies signed a memorandum of understanding on the investment in October. SkyLife says that AIG was concerned about, among other things, fierce competition with cable operators and uncertainty regarding foreign-ownership regulations.

"AIG feels that the present question marks over the local pay TV industry will not be solved for some months," the SkyLife representative says. "We are now in talks with other domestic and foreign investors over a possible investment in the company."

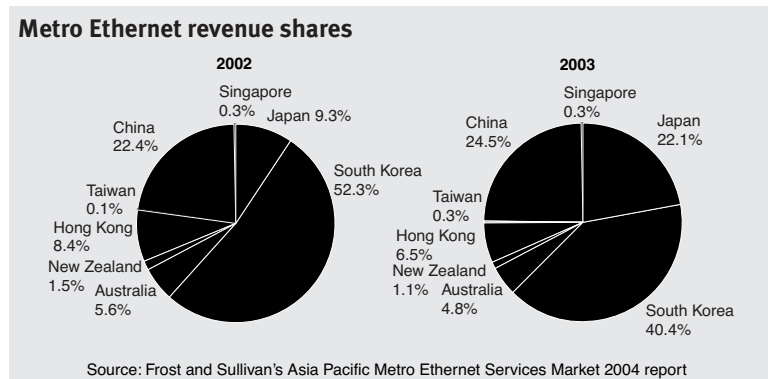
SkyLife says that satellite broadcasting needs a large capital investment in the initial rollout stage, and as such the company is planning to launch both convertible and corporate bond issues to raise about Won290 million.

In late December, the firm finalized the issue of 21 million new shares, subscribed to by existing shareholders, raising US\$90 million in new funds.

For its part, AIG had reportedly asked that, in return for its investment in SkyLife, it be given a seat on the board and be allowed to appoint the company's chief financial officer. AIG also wanted SkyLife listed by 2009.

Separately, the SkyLife representative says the operator will meet with terrestrial-channel chiefs again later this month to hammer out a deal for SkyLife to screen the terrestrial channels.

With 1.3 million subs, SkyLife is posing an increasingly serious threat to the country's cable operators (see comment, p. 12).





## Cellular telephone subscribers by country

Country	Subscribers 4Q03	Subscribers 3Q03	Subscribers 4Q02	Change 4Q03	Change 4Q02	Yearly change (%)	Penetration (%)
Australia	15,170,338	14,554,840	13,181,721	615,498	529,555	15.09	76.88
Bangladesh	1,330,580	1,222,800	931,926	107,780	67,726	42.78	0.96
Brunei	177,340	172,390	160,000	4,950	4,000	10.84	49.52
Cambodia	857,500	801,135	582,886	56,365	134,603	47.11	6.53
China	268,649,000	250,004,000	206,616,000	18,645,000	16,225,000	30.02	20.87
Hong Kong	7,194,335	6,754,217	6,123,984	440,118	211,884	17.48	97.30
India	28,444,288	18,297,147	10,480,430	10,147,141	1,949,048	171.40	2.71
Indonesia	18,278,828	16,580,174	11,386,852	1,698,654	1,795,395	60.53	7.78
Japan	79,787,200	78,594,300	73,514,000	1,192,900	1,432,900	8.53	62.72
Kazakhstan	1,339,100	1,209,600	955,640	129,500	58,140	40.13	7.99
Laos	93,600	81,449	51,340	12,151	5,740	82.31	1.58
Macau	364,031	331,738	276,138	32,293	17,545	31.83	77.47
Malaysia	11,037,000	10,344,000	8,630,700	693,000	344,700	27.88	47.79
Mongolia	257,000	250,000	185,000	7,000	5,000	38.92	9.48
New Zealand	2,778,190	2,670,420	2,388,000	107,770	76,480	16.34	70.31
Pakistan	3,349,647	2,724,971	1,956,412	624,676	233,368	71.21	2.22
Philippines	22,732,604	20,168,981	15,251,691	2,563,623	1,319,751	49.05	26.86
Singapore	3,477,100	3,402,200	3,244,000	74,900	122,200	7.19	83.50
South Korea	33,592,299	33,277,000	32,343,000	315,299	263,000	3.86	69.57
Sri Lanka	1,394,600	1,271,042	991,823	123,558	86,077	40.61	7.06
Taiwan	25,289,185	25,287,304	23,905,409	1,881	-33,708	5.79	111.88
Thailand	22,414,096	21,100,960	17,458,728	1,313,136	1,689,460	28.38	34.88
Uzbekistan	316,620	288,280	194,193	28,340	17,513	63.04	1.22
Vietnam	2,147,500	1,990,119	1,661,663	157,381	51,663	29.24	3.22
Others	720,506	670,600	515,026	49,906	43,888	39.90	2.63
<b>Total</b>	<b>551,192,487</b>	<b>512,049,667</b>	<b>432,986,562</b>	<b>39,142,820</b>	<b>26,650,928</b>	<b>27.30</b>	<b>15.76</b>

## Cellular telephone subscribers by network

Country	Operator	System	Launch	Subs 4Q03	Subs 3Q03	Subs 4Q02	Yearly change (%)
Australia	Telstra	GSM900	1994	6,139,000	5,925,000	5,421,000	13.24
Australia	Telstra	CDMA800	Aug-99	846,000	795,000	677,000	24.96
Australia	SingTel Optus	GSM900	1994	5,365,000	5,073,000	4,538,000	18.22
Australia	Vodafone	GSM900	1994	2,408,400	2,416,840	2,282,220	5.53
Australia	Orange One (Hutchison Telecom)	CDMA800	Jul-00	325,180	280,000	263,501	23.41
Australia	3	WCDMA	Apr-03	86,758	65,000	0	n/a
Bangladesh	GrameenPhone	GSM900	1997	1,141,000	1,047,000	769,000	48.37
Bangladesh	Sheba Telecom	GSM900	1998	36,120	32,800	29,800	21.21
Bangladesh	TMI	GSM900	1997	53,460	48,000	45,100	18.54
Bangladesh	Pacific Bangladesh	TDMA	Mar-99	100,000	95,000	88,026	13.60
Brunei	DST	GSM900	1996	177,340	172,390	160,000	10.84
Cambodia	MobiTel	GSM900	1997	431,900	413,720	325,264	32.78
Cambodia	Cambodia Shinawatra	GSM1800	1998	283,200	250,000	157,359	79.97
Cambodia	CamTel	AMPS	1993	2,000	2,000	2,000	0.00
Cambodia	Casacom	NMT900	1992	400	415	627	-36.22
Cambodia	Casacom	GSM900	Sep-99	140,000	135,000	97,635	43.39
China	China Mobile	GSM900/1800	1994	35,600,000	30,000,000	22,823,000	55.98
China	CMHK <sup>1</sup>	GSM900/1800	1994	141,616,000	135,001,000	117,676,000	20.34
China	China Unicom Group <sup>2</sup>	GSM900/1800	1995	8,600,000	8,400,000	20,494,000	-58.04
China	China Unicom Group <sup>2</sup>	CDMA800	Dec-01	2,000,000	1,680,000	2,509,000	-20.29
China	China Unicom Ltd. <sup>2</sup>	CDMA800	Jan-02	16,910,000	13,343,000	4,491,000	276.53
China	China Unicom Ltd. <sup>2</sup>	GSM900	1995	63,923,000	61,580,000	38,623,000	65.51
Hong Kong	Hong Kong CSL	GSM900	1993	1,251,814	1,234,167	1,153,984	8.48
Hong Kong	Hutchison	GSM900	1995	996,800	968,460	952,380	4.66
Hong Kong	Hutchison	CDMA800	1994	102,100	91,400	97,120	5.13
Hong Kong	Hutchison	GSM1800	1997	627,740	605,370	730,500	-14.07

# Subscriber count



## Cellular telephone subscribers by network (cont.)

Country	Operator	System	Launch	Subs 4Q03	Subs 3Q03	Subs 4Q02	Yearly change (%)
Hong Kong	Sunday	GSM1800	1997	733,822	666,800	603,000	21.70
Hong Kong	New World	GSM1800	1997	1,165,482	1,100,000	820,000	42.13
Hong Kong	SmarTone	GSM1800	1997	453,600	447,720	385,000	17.82
Hong Kong	SmarTone	GSM900/1800	1997	683,105	624,300	572,000	19.42
Hong Kong	Peoples Telephone	GSM900	1993	1,179,871	1,016,000	810,000	45.66
India	Aircel Haryana	GSM900	1997	26,218	13,950	16,580	58.13
India	Aircel Rajasthan	GSM900	1997	47,371	25,094	29,766	59.14
India	Aircel Tamil Nadu	GSM900	1999	519,981	309,690	229,214	126.85
India	Aircel Uttar Pradesh East	GSM900	1997	272,086	153,539	109,988	147.38
India	BSNL Bihar	GSM900	Mar-02	230,623	174,262	24,987	822.97
India	BSNL Calcutta	GSM900	Mar-02	24,745	24,308	14,997	65.00
India	BSNL Tamil Nadu	GSM900	Sep-02	335,000	335,000	35,333	848.12
India	BSNL Maharashtra	GSM900	Nov-02	590,333	481,174	127,980	361.27
India	BSNL Gujarat	GSM900	Nov-02	480,500	411,098	75,350	537.69
India	BSNL Andhra Pradesh	GSM900	Nov-02	530,711	395,353	72,675	630.25
India	BSNL Karnataka	GSM900	Nov-02	320,617	296,228	65,779	387.42
India	BSNL Kerala	GSM900	Nov-02	350,131	301,932	73,084	379.08
India	BSNL Punjab	GSM900	Nov-02	276,747	232,641	58,780	370.82
India	BSNL Haryana	GSM900	Nov-02	150,121	136,854	36,632	309.81
India	BSNL Uttar Pradesh West	GSM900	Nov-02	310,325	251,932	31,916	872.32
India	BSNL Uttar Pradesh East	GSM900	Nov-02	330,164	255,262	61,305	438.56
India	BSNL Rajasthan	GSM900	Nov-02	187,709	161,034	38,322	389.82
India	BSNL Madhya Pradesh	GSM900	Nov-02	151,516	145,657	28,018	440.78
India	BSNL West Bengal	GSM900	Nov-02	152,031	125,243	18,137	738.24
India	BSNL Himachal Pradesh	GSM900	Nov-02	59,999	47,845	11,046	443.17
India	BSNL Orissa	GSM900	Nov-02	142,061	122,459	15,353	825.30
India	BSNL Chennai	GSM900	Apr-03	117,114	109,027	0	n/a
India	BSNL North East	GSM900	2003	403	0	0	n/a
India	BSNL Jammu & Kashmir	GSM900	2003	28,741	0	0	n/a
India	BSNL	CDMA	2003	170,000	0	0	n/a
India	Bharti (JT Mobiles) Andhra Pradesh	GSM900	1996	507,536	434,685	305,879	65.93
India	Bharti (JT Mobiles) Karnataka	GSM900	1996	681,508	563,655	329,219	107.01
India	Bharti (Modi Telstra) Calcutta	GSM900	1995	329,113	283,728	188,237	74.84
India	Bharti (Skycell) Chennai	GSM900	1995	305,106	254,325	200,728	52.00
India	Bharti Delhi	GSM900	1995	1,331,003	1,219,170	834,269	59.54
India	Bharti Himachal Pradesh	GSM900	1996	65,386	52,694	25,730	154.12
India	Bharti Punjab	GSM900	Jun-02	711,271	591,380	231,724	206.95
India	Bharti Haryana	GSM900	Jun-02	115,860	94,741	45,664	153.72
India	Bharti Uttar Pradesh West	GSM900	Jun-02	164,888	137,582	62,960	161.89
India	Bharti Madhya Pradesh	GSM900	Jun-02	89,346	92,909	28,282	215.91
India	Bharti Mumbai	GSM900	Aug-02	478,251	385,592	212,304	125.27
India	Bharti Maharashtra	GSM900	Aug-02	267,526	192,980	105,209	154.28
India	Bharti Gujarat	GSM900	Sep-02	156,539	113,014	62,926	148.77
India	Bharti Tamil Nadu	GSM900	Jul-02	165,785	100,380	75,048	120.91
India	Bharti Kerala	GSM900	Jul-02	131,462	100,183	66,379	98.05
India	Idea Cellular (formerly Birla Tata AT&T) Andhra Pradesh	GSM900	1996	377,238	333,220	308,210	22.40
India	Idea Cellular (formerly Birla Tata AT&T) Gujarat	GSM900	1996	350,185	308,027	240,211	45.78
India	Idea Cellular (formerly Birla Tata AT&T) Madhya Pradesh	GSM900	1996	251,510	216,899	131,113	91.83
India	Idea Cellular (formerly Birla Tata AT&T) Maharashtra	GSM900	1996	841,666	700,766	396,503	112.27
India	Idea Cellular (formerly Birla Tata AT&T) Delhi	GSM900	Nov-02	420,828	339,594	128,306	227.99
India	Tata Teleservices	CDMA	Dec-03	564,000	0	0	n/a
India	BPL Kerala	GSM900	1996	202,796	158,933	147,969	37.05
India	BPL Maharashtra	GSM900	1996	268,191	226,089	198,045	35.42
India	BPL Mumbai	GSM900	1995	854,823	750,063	573,877	48.96
India	BPL Tamil Nadu	GSM900	1996	215,654	170,098	159,422	35.27
India	Escotel Haryana	GSM900	1996	122,410	100,652	96,498	26.85
India	Escotel Kerala	GSM900	1996	338,707	289,252	244,032	38.80
India	Escotel Uttar Pradesh West	GSM900	1996	364,728	300,575	227,980	59.98
India	Hexacom (Oasis) Rajasthan	GSM900	1997	203,377	181,395	111,556	82.31
India	Hutchison (Fascel) Gujarat	GSM900	1997	817,778	731,298	420,255	94.59



## Cellular telephone subscribers by network (cont.)

Country	Operator	System	Launch	Subs 4Q03	Subs 3Q03	Subs 4Q02	Yearly change (%)
India	Hutchison (Max Touch) Mumbai	GSM900	1995	1,005,723	873,592	615,836	63.31
India	Hutchison (Sterling Cellular) Delhi	GSM900	1995	1,026,077	875,826	580,328	76.81
India	Hutchison (Usha Martin) Calcutta	GSM900	1995	439,042	399,695	247,327	77.51
India	Hutchison Essar Chennai	GSM900	Jul-02	122,188	88,278	51,832	135.74
India	Hutchison Essar Andhra Pradesh	GSM900	Jul-02	130,024	100,033	53,489	143.09
India	Hutchison Essar Karnataka	GSM900	Jul-02	230,105	154,278	55,195	316.89
India	MTNL Delhi	GSM900	Jan-01	156,501	145,422	129,809	20.56
India	MTNL Mumbai	GSM900	Jan-01	168,432	165,495	110,279	52.73
India	MTNL	CDMA	Oct-03	86,000	0	0	n/a
India	Reliance Telecom Assam	GSM900	1996	42,160	42,636	40,728	3.52
India	Reliance Telecom Bihar	GSM900	1996	232,531	216,270	164,075	41.72
India	Reliance Telecom Himachal Pradesh	GSM900	1996	11,589	11,139	8,096	43.14
India	Reliance Telecom Madhya Pradesh	GSM900	1996	200,290	177,295	146,772	36.46
India	Reliance Telecom North East	GSM900	1996	10,220	9,390	7,433	37.49
India	Reliance Telecom Orissa	GSM900	1996	86,846	77,556	62,992	37.87
India	Reliance Telecom West Bengal	GSM900	1996	91,052	79,132	70,511	29.13
India	Reliance Infocomm	CDMA	Oct-03	5,571,000	0	0	n/a
India	RPG Cellular Chennai	GSM900	1995	226,082	193,312	166,305	35.94
India	Spice (Modicom) Karnataka	GSM900	1997	260,889	218,639	199,391	30.84
India	Spice (Modicom) Punjab	GSM900	1997	791,819	535,698	436,255	81.50
India	HFCL Connect	CDMA	Oct-03	26,000	0	0	n/a
India	Shyam Telelink	CDMA	Oct-03	30,000	0	0	n/a
Indonesia	Telkomsel	GSM900	1994	9,594,838	8,792,871	6,010,772	59.63
Indonesia	Mobisel	NMT450	1986	4,650	5,069	6,823	-31.85
Indonesia	Excelcomindo	GSM900	1996	2,703,340	2,640,000	1,679,100	61.00
Indonesia	Komselindo	AMPS	1991	0	3,000	35,637	-100.00
Indonesia	IM3 (Indosat)	GSM1800	Sep-01	1,203,304	768,608	511,276	135.35
Indonesia	Metrosel	AMPS	1991	0	40,000	56,198	-100.00
Indonesia	Satelindo	GSM900	1994	4,696,696	4,260,426	3,017,375	55.66
Indonesia	Telesera (formally Telekomindo)	AMPS	1993	0	6,200	9,671	-100.00
Indonesia	Mobile-8		Dec-03	10,000	0	0	n/a
Indonesia	Natrindo (Lippo Telecom)	GSM1800	Apr-01	66,000	64,000	60,000	10.00
Japan	NTT DoCoMo	PDC	1993	43,484,900	44,039,000	42,722,000	1.79
Japan	NTT DoCoMo	WCDMA	Oct-01	1,881,000	1,002,600	152,000	1137.50
Japan	KDDI au Group	PDC	Jun-01	0	0	157,200	-100.00
Japan	KDDI au Group	CDMA800	Jun-01	4,213,200	5,059,400	8,637,100	-51.22
Japan	KDDI (Tu-Ka Cellular)	PDC	1994	3,670,000	3,699,100	3,849,400	-4.66
Japan	KDDI au Group	1xRTT	Apr-02	11,764,100	10,203,100	4,673,500	151.72
Japan	J-Phone	PDC	1996	14,662,300	14,508,100	13,321,600	10.06
Japan	J-Phone	WCDMA	Dec-02	111,700	83,000	1,200	9208.33
Kazakhstan	Altel	AMPS	1994	73,100	72,600	69,000	5.94
Kazakhstan	K'cell	GSM900	Feb-99	964,000	837,000	598,000	61.20
Kazakhstan	K-Mobile	GSM900	Feb-99	302,000	300,000	288,640	4.63
Laos	Lao Telecom	GSM900	1994	76,300	69,200	51,340	48.62
Laos	Tango	GSM900/1800	Jul-03	17,300	12,249	0	n/a
Macau	CTM	GSM900	1995	209,438	195,120	186,938	12.04
Macau	Hutchison Telecom Macau	GSM900/1800	Aug-01	105,500	96,230	65,000	62.31
Macau	SMC Macau (SmarTone Mobile Comms)	GSM900/1800	Aug-01	49,093	40,388	24,200	102.86
Malaysia	Digi.com <sup>3</sup>	GSM1800	1995	2,207,000	2,055,000	1,616,000	36.57
Malaysia	Telekom Malaysia (Mobikom)	TDMA	1994	7,000	10,000	25,000	-72.00
Malaysia	Telekom Malaysia (TM Touch) <sup>4</sup>	GSM1800	1995	0	0	1,579,000	-100.00
Malaysia	Telekom Malaysia	NMT450	1985	22,000	24,000	30,000	-26.67
Malaysia	Maxis Comms (Binariang) <sup>5</sup>	GSM900	1995	4,464,000	3,705,000	3,098,000	44.09
Malaysia	Celcom	GSM900	1995	4,329,000	4,200,000	1,919,500	125.53
Malaysia	Celcom	ETACS	1989	8,000	10,000	69,500	-88.49
Malaysia	Time Cellular	GSM1800	1995	0	340,000	293,700	-100.00
Mongolia	Mobicom	GSM900	1996	205,000	200,000	185,000	10.81
Mongolia	SkyTel	AMPS	1999	40,000	39,000	0	n/a
Mongolia	Skytel	CDMA	2001	12,000	11,000	0	n/a
New Zealand	Telecom Corp. of New Zealand	AMPS/TDMA	1987	794,000	863,000	988,000	-19.64

# Subscriber count



## Cellular telephone subscribers by network (cont.)

Country	Operator	System	Launch	Subs 4Q03	Subs 3Q03	Subs 4Q02	Yearly change (%)
New Zealand	Telecom Corp. of New Zealand	CDMA800	3Q01	229,000	240,000	213,000	7.51
New Zealand	Telecom Corp. of New Zealand	1xRTT	Jul-02	274,000	167,000	28,000	878.57
New Zealand	Vodafone NZ	GSM900	1993	1,481,190	1,400,420	1,159,000	27.80
Pakistan	Mobilink	GSM900	1994	2,015,647	1,468,628	952,174	111.69
Pakistan	Pakcom	AMPS/TDMA	1990/Nov-00	491,000	465,343	344,702	42.44
Pakistan	Paktel	AMPS	1990	271,000	246,000	218,536	24.01
Pakistan	Ufone (Pakistan Telecom)	GSM900	Jan-01	572,000	545,000	441,000	29.71
Philippines	Touch Mobile (Formerly Islacom)	GSM900	1994	1,501,844	1,259,430	852,785	76.11
Philippines	Globe Telecom	GSM900	1994	7,358,039	6,822,809	5,719,400	28.65
Philippines	Piltel	GSM900	Apr-00	2,867,085	2,539,864	1,773,620	61.65
Philippines	Extelcom	AMPS	1991	25,524	35,950	80,200	-68.17
Philippines	Smart Communications	GSM900/1800	Apr-99	10,080,112	9,010,928	6,825,686	47.68
Philippines	Digitel	GSM1800	2002	900,000	500,000	0	n/a
Singapore	SingTel	GSM900/1800	1995	1,534,000	1,530,200	1,555,000	-1.35
Singapore	MobileOne	GSM900	1997	1,068,000	1,066,000	1,049,000	1.81
Singapore	StarHub	GSM1800	Apr-00	875,100	806,000	640,000	36.73
South Korea	LG Telecom	CDMA1700	1997	1,907,000	2,222,000	3,050,000	-37.48
South Korea	LG Telecom	1xRTT	Aug-02	2,930,000	2,526,000	1,740,000	68.39
South Korea	KTF	CDMA1700	Jun-01	2,970,000	3,456,000	5,471,000	-45.71
South Korea	KTF	1xRTT	May-01	6,656,000	6,555,000	4,812,000	38.32
South Korea	KTF	1xEV-DO	Aug-02	816,000	437,000	50,000	1,532.00
South Korea	KTF	WCDMA	Dec-02	94	n/a	0	n/a
South Korea	SK Telekom	CDMA800	1996	3,076,035	4,171,000	7,284,000	-57.77
South Korea	SK Telekom	1xRTT	Aug-02	11,737,100	11,048,000	9,816,000	19.57
South Korea	SK Telekom	1xEV-DO	Aug-02	3,500,000	2,862,000	120,000	2,816.67
South Korea	SK Telekom	WCDMA	Dec-02	70	n/a	0	n/a
Sri Lanka	MTN	GSM900	1995	825,000	750,000	554,373	48.82
Sri Lanka	Celltel Lanka	TACS	1989	368,100	328,042	266,372	38.19
Sri Lanka	Lanka Cellular/Orange	TACS	1993	64,000	61,000	50,000	28.00
Sri Lanka	Mobitel	AMPS/TDMA	1993/Dec-99	137,500	132,000	121,078	13.56
Taiwan	MobiTai	GSM900	1998	714,899	721,093	721,378	-0.90
Taiwan	TransAsia	GSM900	1998	2,279,470	2,332,242	1,875,745	21.54
Taiwan	Far EasTone	GSM900/1800	1998	4,365,961	4,304,694	4,340,514	0.59
Taiwan	Taiwan Cellular (TCC) <sup>6</sup>	GSM1800	1998	5,955,511	6,635,258	6,239,933	-4.56
Taiwan	KG Telecom	GSM1800	1998	3,626,202	3,442,280	3,306,217	9.68
Taiwan	Chunghwa Telecom	GSM900	1995	5,432,670	5,403,903	5,123,076	6.04
Taiwan	Chunghwa Telecom	GSM1800	1998	2,714,202	2,420,834	2,298,546	18.08
Taiwan	APBW	CDMA 1x	Jul-03	200,000	27,000	0	n/a
Thailand	AIS <sup>7</sup>	GSM900	1994	13,239,000	12,493,470	10,369,900	27.67
Thailand	AIS	NMT900	1990	0	0	3,400	-100.00
Thailand	Hutchison CAT Wireless Multimedia	CDMA1xRTT	Feb-27	450,000	300,000	0	n/a
Thailand	TAC	GSM1800	1991	6,405,496	6,101,634	5,255,000	21.89
Thailand	TAC	AMPS	1991	145,000	155,000	200,000	-27.50
Thailand	TA Orange	GSM1800	Feb-02	1,825,000	1,690,000	1,336,228	36.58
Thailand	Digital Phone (DPC)	GSM1800	1998	199,600	215,700	289,200	-30.98
Thailand	Thai Mobile	GSM1900	Nov-02	150,000	145,156	5,000	2,900.00
Uzbekistan	Uzdunrobita JV	TDMA	1992	19,200	23,400	37,000	-48.11
Uzbekistan	Uzdunrobita JV	GSM	Sep-00	86,400	78,900	19,000	354.74
Uzbekistan	DAEWOO Central Paging	GSM900	1997	98,530	91,000	70,470	39.82
Uzbekistan	Coscom	GSM900	Mar-01	31,340	28,200	22,310	40.48
Uzbekistan	Uzmacom	GSM900	Aug-97	20,300	17,000	14,016	44.83
Uzbekistan	Buztel	GSM900	2001	24,600	19,000	12,500	96.80
Uzbekistan	Rubicon Wireless	TDMA	1996	950	1,000	2,450	-61.22
Uzbekistan	Rubicon Wireless	CDMA800	Sep-01	35,300	29,780	16,447	114.63
Vietnam	Mobifone	GSM900	1995	1,035,500	908,119	686,663	50.80
Vietnam	Vinaphone	GSM900	1996	1,112,000	1,082,000	975,000	14.05
Others				720,506	670,600	515,026	39.90
<b>Total</b>				<b>551,192,487</b>	<b>512,049,667</b>	<b>432,986,562</b>	<b>27.30</b>

1) Beginning in 3Q02, CMHK data is for 21 provinces. 2) Beginning in 1Q03, all China Unicom Ltd. data is for 21 provinces. 3) Digi.com has restated all subscriber numbers using a three-month-active rule. 4) Starting in Apr-03, TM incorporated Celcom with TM Touch (now under the Celcom brand). ATUR and Mobikom businesses remain separately under TM. 5) Maxis completed the acquisition of TimeCel in May-03. 6) TransAsia bought by TCC. 7) AIS owns 98.17% of DPC

Source: Global Mobile Subscriber Database. For more information, contact monica.gonzalez-correa@informa.com



## AUSTRALIA

### DSL price war continues

Singapore Telecom Optus has responded to Telstra's ADSL price cuts, lowering its 300MB/512Kbps plan from A\$49.95 a month to A\$39.95 a month, starting Feb. 27. SingTel Optus is attempting to differentiate itself by offering only a 512Kbps DSL service.

Telstra's low-end 200MB/256Kbps plan, which kicked in Feb. 27, costs A\$29.95 a month for subs taking one-year contracts. The Australian Consumer and Competition Commission has issued a notice to Telstra to reduce its wholesale prices since it charges its DSL resellers more than A\$30 a month.

Meanwhile, Telstra is also reportedly planning to roll out a fiber-to-the-home service to new housing-estate areas this year.

## CHINA

### CTC seeks U.S. funding

China Telecom Corp. plans to raise up to US\$1 billion selling debt and equity to U.S. investors over the next two years, according to a U.S. Securities and Exchange Commission filing. Proceeds will be used for capex, working capital and acquisitions, among other things.

CTC is conducting due diligence on buying all or some of the fixed-line operations in the 11 provinces of its parent, China Telecom, a move that could reportedly cost up to US\$3 billion. A decision is reportedly expected in two months.

## INDIA

### Tata in market for partner

The Tata group is reportedly seeking a partner to help it fund the expansion of its CDMA wireless unit, Tata Teleservices, following the implementation of the unified licensing regime in India.

The group is reportedly conducting preliminary discussions with NTT DoCoMo, KDDI, Verizon Communications, KTF, SKT and China Unicom, with a view to selling up to a 26% stake in Tata Teleservices. Three Tata group companies own 76% of Tata Teleservices, while Tata-backed VSNL

holds a 20% stake.

Tata group chairman Ratan Tata is quoted as saying that the firm sees Tata Teleservices as its main mobile play, suggesting it could be looking to exit its 33% stake in GSM operator Idea Cellular. AT&T Wireless still also reportedly wants out of Idea.

## JAPAN

### NTT targets 2 mil. FTTH subs

NTT West plans to spend 38.5% of its total capex budget in the year to March 2005 on its fiber-optic business. NTT West has earmarked ¥150 billion (US\$1.4 billion) for fiber-optic capex, while NTT East plans to spend ¥130 billion of its ¥410 billion capex budget on fiber optics.

The duo is aiming for at least 2 million fiber-to-the-home subscribers by March 2005, up from 705,000 at end-January.

Broadband rival Softbank Broadband Investments, meanwhile, has inked a US\$1.14 billion loan with Citibank.

### MNP possible in 2006

In a draft proposal, a telecoms ministry study group recommended that mobile number portability be adopted as soon as possible. Reports say MNP could be introduced in Japan by mid-2006. A final proposal is due to be delivered in late April following comments from the general public.

A ministry survey found that about 30% of Japan's 80 million mobile subs would be interested in switching carriers even if they had to pay to do so.

In neighboring South Korea, fixed-line number portability has spread to the cities of Incheon and Taegu, in the buildup to nationwide FNP being available by next month.

### TBS ups Sky Perfect stake

Tokyo Broadcasting System has increased its holding in DTH operator Sky Perfect Communications from 3.8% to more than 5%, having acquired a 1.23% stake in Sky from Mitsui for ¥5 billion (US\$45 million). Sony, Fuji TV and Itochu are the main shareholders in Sky, each with a 12.65% stake.

## MALAYSIA

### Temasek gets TM foothold

Singapore government investment arm Temasek Holdings has acquired a 4.6% stake (165 million shares) in Telekom Malaysia for M\$1.6 billion (US\$421 million) via a private placement. Khazanah Nasional, owned by the Malaysian government, sold 300 million shares it held in TM, reducing its stake by 9.4 percentage points to 34%.

The Malaysian government is willing to reduce its stakes in state-owned companies, but not give up its majority control, so it can improve the liquidity of the domestic equity market, reports say.

## NEW ZEALAND

### Sky posts net profits

DTH player Sky Network TV has moved into the black, posting a net profit of NZ\$12.3 million (US\$8.2 million) in 1H-FY04 (ending December) on revenues of NZ\$212.1 million.

But public broadcaster TVNZ's Rugby World Cup coverage stymied Sky's subs growth. Sky added only 5,150 subs in 1H-FY04, compared to 13,482 new subs in 1H-FY03. Sky had 548,000 subs at end-December.

## SOUTH KOREA

### Hanaro to tap U.S. bond market

Hanaro Telecom hopes to raise US\$600 million from the U.S. bond market to help it refinance part of its Won1.3 trillion (US\$1.1 billion) short- and medium-term liabilities. Following a US\$500 million investment in November, AIG and Newbridge Capital emerged as the largest shareholders in Hanaro.

## THAILAND

### UBC moves out of the red

United Broadcasting turned around its losses in 2003, posting a net profit of Bt131 million (US\$3.3 million) on revenues of Bt7.17 billion, thanks to its 8% subscription-rate hike in May. The number of UBC subs declined by 3,030 in 2003 to 434,815.

## News bites

### ALLIANCE UPDATE

A new alliance was launched at the 3GSM World Congress to accelerate the development of UMTS TDD as a standard for delivering wide-area wireless broadband and other high-speed packet services. Operators and vendors have founded the Global UMTS TDD Alliance to provide a forum for setting requirements for future solutions and for fostering the market environment for TDD. "There is an issue with knowledge about TDD, even among IT experts," Barry Hastings, general manager of sales and marketing at New Zealand wireless broadband operator **Woosh Wireless**, told *ASIAcom*. "We need to address that and make people aware of what the services can do."

Fourteen Japanese CE and telecoms firms have formed the Ubiquitous Open Platform Forum to develop an open standard to facilitate networked consumer devices. Members are **Hitachi, KDDI, Matsushita Electric Industrial, Matsushita Electric Works, Mitsubishi, NEC, Nifty, NTT Communications, Pioneer, Sanyo Electric, Sharp, Sony, Sony Communication Network** and **Toshiba**. The group wants to see UOPF products on the shelves in 2H04. This month, NTT Communications plans to market its Coden Plasma TV this month, which has a 43-inch screen and broadband Net-access capabilities. The product, initially available in a limited shipment of 400 units, will cost ¥678,000 (US\$6,395).



## WiMAX heads for market as 802.16d finalized

### SINGAPORE

The Infocomm Development Authority of Singapore says it plans to allocate spectrum at 2.3GHz and 2.5GHz for trial and commercial wireless broadband services.

"Examples of such wireless broadband systems are those based on the IEEE 802.16 and IEEE 802.20 standards," the IDA states.

The regulator says its decision to award the spectrum is "timely" since various wireless broadband technologies are ready for trial or deployment.

Wireless broadband trials can be conducted for a maximum of six months.

The regulator says it will seek public feedback on the future development of wireless broadband in the city-state soon.

"A wireless broadband network, typically operating at frequency bands under 6GHz, provides broadband access at speeds of 256Kbps and above, to both mobile users and fixed locations," the IDA states. "Each base station generally serves an area of up to several square kilometers."

WiMAX-CERTIFIED products could hit the market by year-end, according to a new and highly ambitious timetable unveiled last month by the WiMAX Forum.

The IEEE, which largely completed work on the new 802.16d standard for fixed wireless broadband access in January, will finalize 802.16d in 3Q04, and the WiMAX Forum will launch an interoperability certification program for it in October, says Margaret LeBreque, president of the WiMAX Forum and marketing manager for Intel's broadband wireless division.

That means vendors could ship the first WiMAX-certified products by year-end, leading to operator deployments in 2005. Nokia, a founding member of the WiMAX Forum, expects to launch a WiMAX mobile phone in 2005.

802.16d, which specifies non-line-of-sight Broadband Wireless Access technology delivering speeds up to 75Mbps over a typical range of three to five miles, is technically "revision d" of 802.16a, which was finalized in January 2003 but was not robust enough to take to market.

802.16d includes support for advanced antenna systems, and a host of other modifications to 802.16a, which are designed to improve performance and reduce equipment costs.

Silicon vendors say the 802.16d standard is now stable enough to finish designs and to ship first-generation silicon by as early as mid-year. For example, startup Wavesat says it will ship 802.16d silicon by May or June, while Intel plans to launch chipsets in 2H04.

Industry backing for 802.16 and WiMAX is increasing, with the WiMAX Forum jumping from 28 to more than 70 members in the past five months.

As with 802.11, there are various flavors of 802.16, including the umbrella 802.16 standard and the more specific 802.16a, 802.16d and 802.16e versions.

802.16d, which is essentially an update of 802.16a, is for fixed-wireless services, while 802.16e supports

Fig. 1: 802.16 standards compared

Feature	802.16	802.16a/d	802.16e
Completion date or target	Dec-01	16a, Jan-03; 16d, 3Q04	3Q04
Spectrum (GHz)	10-66	<11	<6
Coverage (miles)	1-3	3-5*	1-5
Type of coverage	Line-of-sight	Non-line-of-sight	Non-line-of-sight
Mobility	Fixed	Fixed	Pedestrian mobility and regional roaming

\*Can be up to 30 miles with ideal tower height, antenna gain and power transmit.

Source: WiMAX Forum

limited mobility (see fig. 1).

The IEEE aims to finalize 802.16e in the third quarter. The fact that 802.16e products won't be ready until 2006 is not seen as a major hindrance to the take-up of WiMAX. "The carriers who are really interested in the mobile capabilities are 100% aware of the timeline, and they are still spending massive amounts of time with us," says LeBreque.

802.16 will see a "three-phased deployment," according to Sean Maloney, executive vice president at Intel. The first will be "fixed outdoor antenna installations" to introduce broadband services in emerging markets, with services dependent on operator-installed antennas and related equipment at customer premises. This will be followed by "indoor antenna installations," which will make BWA services easier and cheaper to deploy, for example, by supporting consumer self-installations. The third phase will be when 802.16e arrives to support roaming within or between service areas.

WiMAX will initially be used for BWA services in emerging markets without wired broadband infrastructure and also for public WLAN and cellular operators for backhaul and enterprises for building-to-building connectivity.

Pyramid Research forecasts that WiMAX will account for some 5% of the global fixed BWA equipment market in 2005, 15% in 2006, 32% in 2007 and 60% in 2008. In-Stat estimates that WiMAX will help global fixed-wireless equipment revenues more than double from US\$559 million last year to US\$1.2

billion by end-2007.

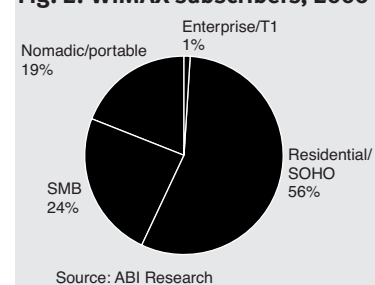
ABI Research predicts that WiMAX equipment will serve 1 million Broadband Fixed Wireless subscribers in 2006, 2 million in 2007 and 4-5 million in 2008. The group estimates that in 2006, some 80% of WiMAX BFW subscribers will be residential/SOHO users and small-to-medium-sized businesses, and 19% will be nomadic/portable users, who typically use notebook computers to access WiMAX from different locations within a service area (see fig. 2).

The boom in the 802.11 Wi-Fi market is regarded in part as the result of efforts by the Wi-Fi Alliance to educate the market about the technology. Members of the WiMAX Forum hope and are convinced that it can perform the same role for WiMAX.

But in terms of translating a complicated standard with multiple profiles into user-friendly products, WiMAX faces many of the same challenges the Bluetooth industry faced.

"Vendor resistance, operator reluctance and general market confusion pose significant – but surmountable – hurdles to WiMAX success," notes Pyramid Research.

Fig. 2: WiMAX subscribers, 2006





CHINA TELECOMS

## Net adds reach all-time high

Jay Chang and Chris Fang – Credit Suisse First Boston

“ACCORDING TO THE Ministry of Information Industry, as of the end of January, there were 268.9 million fixed-line [subscribers] and 276.8 million mobile subscribers in China. Net adds for January were 5.63 million for fixed and 8.11 million mobile subs.

“This 50-60% month-on-month increase in net adds – an all-time high – was significantly higher than the 10% month-on-month subscriber net-add figures of China Mobile Hong Kong and China Unicom Ltd. during the same period.

“We suspect there may some accounting changes that occurred in January to the MII data, which has historically only had a loose relationship to listed operator subscriber figures. Chinese New Year issuance of pre-paid cards to subscribers traveling to avoid roaming fees may have had an impact here. We also would suspect strong fixed-line growth to be driven by PHS promotions going into and during the CNY holiday, where we estimate PHS subs [made up as much] as 60-70% of total fixed-line net adds.

“[Meanwhile,] total telecoms-industry revenues were RMB41.4 billion (US\$5 billion) for the month of January, compared to RMB35.85 billion in January 2003, a 15.5% increase year on year.

“Implied blended ARPU across both fixed and mobile subs was RMB75.90, a slight 0.9% increase from December.

“Total local minutes of usage on fixed lines was 55.42 billion connections/pulses in January, compared to 46.8 billion connections/pulses in January 2003, or a 18.5% increase year on year.

“Total mobile minutes of usage, however, was 69.76 billion minutes in January, compared to 44.2 billion minutes in January 2003, or a 58% year-on-year increase.

“This demonstrates the increase in usage that has occurred over the past year due to both subscriber

growth, but more importantly voice tariff competition, as we estimate average MOUs increased from 211 minutes in January 2003 to 256 minutes in January based on the MII figures.

“[Higher MOUs] obviously has potentially negative implications for mobile operators [as they weight] keeping network quality high with growing usage vs. slower revenue growth.

### New SMS/b'band stats

“Incremental in the January figures were new statistic categories for total national SMS volumes and broadband subscribers, demonstrating the growing importance of tracking both wireless data and the rapidly growing broadband segment.

“In January, there were 15.66 billion SMS messages sent, with the MII indicating a 91.2% year-on-year growth rate. This compares to the roughly 21.95 billion SMS messages for the entire first quarter of 2003 for listed provinces under China Mobile and Unicom combined.

“Total broadband subscribers in China number 11.86 million, according to MII data, and we believe that DSL/broadband will be a key focus area for fixed-line operators in 2004.”

JAPAN FTTH

## FTTH to hit 10 mil. subs by 2010

Mark Berman – Credit Suisse First Boston

“BY MARCH 2004, there will be about 1 million fiber-to-the-home connections in Japan, and we expect that figure to rise to ... about 10 million by March 2010. [The latter] would be equal to a 20% household penetration in Japan.

“We cite FTTH as being a potential competitive threat over time because of:

1) the accelerated pace at which FTTH is being deployed

2) the fact that HDTV signals can be transmitted at 6Mbps, while FTTH offers as much as 100Mbps shared or dedicated depending on the connection type

3) the providers of FTTH services – NTT East/West, Yahoo! BB, KDDI, Usen, Tokyo Electric Power and NTT Communications – are all relatively well capitalized companies

4) ubiquitous access to broadcasting content makes barriers to entry quite low.

“In terms of [FTTH's] impact on advertising revenue, however, this is less clear. In particular, the timing, scale, pricing, etc. of FTTH broadcasting appears to be a moving target, with only KDDI having begun offering a service.

“KDDI's Hikari Plus service ... consists of a basic package of 28 broadcast channels, video-on-demand and karaoke songs.

“KDDI hopes to capitalize on its ability to offer multiple services, including VoIP phone service and Internet access, all in one package.

“The cost per month for all three services (Internet, phone and TV) is ¥6,950 (US\$63), not including some other unspecified charges [such as VOD]. This service is offered to individuals in apartments where KDDI believes it can connect 16 users, to make the shared fiber or VDSL connection economically viable.

“We believe the service is interesting except for one major problem: most people do not at this point want to watch TV on their PCs or access the Internet on their TV sets. Given that manufacturers are now mass-producing plasma-display TVs (PDPs) and LCD TVs, we expect the convergence to gradually occur, the key being the word gradually.

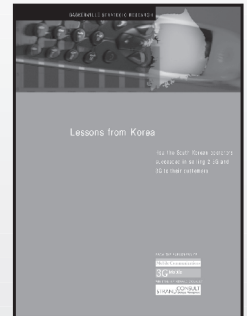
“Such attempts at combining TV and Internet in the U.S. failed miserably given that most computer users actively scroll through stories, surf the Internet and write e-mails or instant messages. TV viewing, however, tends to be a passive activity. For these reasons, we believe that KDDI will have limited success with its Hikari Plus offering.

“Moreover, we believe that the advertisers will generally respond rather slowly to any convergence attempts, instead likely opting to wait until one of the major terrestrial broadcasters wades into the market by tying up with KDDI or one of the other telecommunications companies.”

Insightful Strategic Research report from the publishers of

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## Lessons from Korea: How the South Korean operators succeeded in selling 2.5G and 3G to their customers

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# South Korean cablers need to get digital-smart

WITH ANY LUCK, the announcement last month that Dacom-backed digital media center Broadband Solutions (BSI) would launch an OpenCable (OCAP)-compliant digital cable service by year-end (ASIAcom, 24 Feb, 2004) has sent a wake-up call to the rest of the country's cablers.

For the last two years, South Korean cable operators by and large have used the Ministry of Information and Communication's mandate that they adopt OCAP as an excuse for not deploying digital services. They claim that OCAP is too expensive to deploy for a variety of reasons, including its limited economies of scale.

BSI's bold move to go ahead with OCAP-compliant systems suggests that many of those complaints were simply a smokescreen to cover the fact that the cablers do not have the cash or inclination to deploy digital services.

Lack of available capital for digital upgrades is a common problem for operators across the region, but the tech-savvy South Koreans really should have done more to learn from others' mistakes.

It is the height of ridiculousness for six or seven rival MSOs and two major DMCs, which provide digital platforms to cablers, to all be plotting separate digital launches in a market of only about 12 million analog cable subs. In other words, the MIC's OCAP-compliant stipulation does have substance.

To date, Qrix and C&M Communications have both launched non-OCAP digital platforms with special permission from the MIC, though neither has deployed more than a couple of thousand digital boxes. Other MSOs, including CJCableNet, are planning digital launches, and Taegwon Group-backed DMC Korea Digital Media Center is also planning its own digital deployment.

As has been demonstrated by BSKyB's digital upgrade in the UK, the primary goal in any mass analog-to-digital conversion is to achieve an economy of scale that enables the operator to make cost savings it can pass on to subs. Having so many different operators duplicating each other's investments in several areas, excluding necessary network upgrades, simply does not make sense.

If operators were to come around to a more unified approach, such as taking a digital package put together by a DMC, then significant savings could be made on digital infrastructure, including settop acquisitions, programming and interactive applications.

Ultimately, digital will offer a massive boost to the cable industry, so cablers must look upon cooperation as a "necessary evil" required to get their digital operations up and running.

Four years ago, many in the industry were predicting that there would only be two or three major MSOs left in the market by 2005, yet consolidation has taken longer than expected, with six majors still slogging it out for market leadership.

In all of this, the role of the DMC will be crucial. That is especially true in the case of KDMC, which has distribution deals with system operators that have

about 6 million subs combined and is discussing a possible digital collaboration with Qrix.

Some people in the DMC industry reckon the entire digital market could be cornered by only two DMCs, but that might be overly optimistic given events so far.

Aside from the fact that digital cable offers cablers the chance to substantially enhance their revenues, thanks to multiple subscription rates and iTV services, the success of KT-backed DTH operator Skylife is also prevalent.

Although many cablers are still dismissive of Skylife as a serious threat, often claiming that the operator has compiled huge debts in acquiring the 1.3 million subs it had at end-February, the truth is that Skylife is more of a threat than ever to cablers.

First, it has persuaded more than 1 million South Koreans to do something the cablers have never managed: pay international-market rates for pay TV programming. Skylife is charging subs between Won10,000 (US\$8.50) and Won20,000 per month, compared to the cablers, which are lucky to get a monthly subscription fee of Won8,500 per month from their subs.

Second, Skylife has already proved to be a major hit with subscribers in the cable-market heartlands of Seoul and has gained more than 600,000 subs in the greater Seoul area – not bad for an operator the cablers said would be largely a regional player.

Furthermore, Skylife is turning its attention even more closely to the urban market. It recently launched digital SMATV services to newly constructed apartment blocks, meaning even greater competition for cablers.

Skylife is also forming ever closer relationships with urban and rural relay operators, which have yet to upgrade to official system-operator status, offering to upgrade their networks to full digital SMATV status in return for carrying a scaled-down Skylife program package.

Adding yet more salt to cablers' wounds is the fact that the country's three main terrestrial broadcasters – KBS, SBS and MBC – are putting their weight behind Skylife's calls to be allowed to screen the terrestrial channels on its basic platform.

Since most South Koreans watch their terrestrial channels through cable, and given that some Skylife subs still subscribe to cable in order to view the terrestrial channels, the cablers are fiercely resisting the proposal, fearing it would remove a great barrier to Skylife adding even more subs.

In short, Skylife is proving to be a way tougher competitor than the cablers ever really envisioned. There are two clear choices for the cablers: They can choose to carry on down the splintered path they are on, or they can make a concerted effort to ramp up their digital deployments in unison, which would ultimately reap rewards. ▲

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