

# Malaysia Telecom Brief

By Ken Zita



The Malaysian government has been heavily engaged in industrial policy for telecom and information technologies. Network services were liberalized in the early 1990s under the nationalistic and closely managed economic policies of the former Prime Minister, Tun Dr. Mahathir Mohamad. Mahathir's detractors view these early stages of market opening as being characterized by an opaque regulatory environment that favored political supporters, heavy restrictions on foreign investment, and protection of the incumbent state-controlled network provider, Malaysia Telekom. The Asian financial crisis of 1997-1998 ushered in a new era of market transformation. The government engineered a dramatic consolidation of the telecom services market but simultaneously introduced an institutional framework for progressive policy reform. The creation of an independent policy and regulatory body, the Malaysian Communications and Multimedia Commission (MCMC), has brought a new dimension of transparency and public accountability to technology sector administration.

Large, state-funded infrastructure and training projects are a trademark of the government's New Economic Policy (NEP). The Malaysia Multimedia Super Corridor (MSC) – Malaysia's answer to Silicon Valley – was crafted from textbook strategies for best practices in industrial planning and latest generation communications infrastructure. While the MSC is an impressive 'demonstration of the possible,' the success of its infrastructure development efforts has thus far been discrete: programs aimed at increasing ICT usage and promoting an "e-society" have yet to ignite widespread adoption of broadband services and applications throughout Malaysian society. Broadband penetration today stands at less than 1 percent, a glimmer of national ambitions. The government is formulating a new National Broadband Plan to extend high-speed access and content services nationwide and deepen

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## Contents

### Political and Economic Brief 3

Economy 3

### Telecom Policy Environment 5

Telecom Sector Restructuring 6

MCMC 9

### Telecom Market Environment 11

Mobile Market 12

Telekom Malaysia 14

Maxis 15

Digi 15

## Key Indicators

Malaysia	
Population <sup>^</sup>	25.58million
GDP <sup>#</sup>	\$248 billion
GDP real growth <sup>*#</sup>	7.0 percent
GDP per capita	\$14000 2004
Literacy	94percent
Phone lines <sup>*</sup>	4.5 million
Telephone density <sup>*</sup>	17.2 million
Mobile phones <sup>*</sup>	14.46 million
Mobile penetration rate <sup>*</sup>	55.9percent

Sources: CIA Factbook, US Department of State,  
#: Bank Negara Malaysia (Malaysian Federal Bank)  
\*: MCMC, ^: Malaysia Department of Statistic  
Network Dynamics Associates



services.

Of late the private sector has placed its bets only on mobile, including 3G, but more robust broadband infrastructure is required for a modern information ecosystem to take hold. Many are looking toward WiMax and IP local services, and greater unbundling of the local loop, to spark the next phase of services growth.

### Political and Economic Brief

Malaysia is a constitutional monarchy, nominally headed by the *Yang di-Pertuan Agong* ("paramount ruler"), and customarily referred to as the king.<sup>1</sup> Kings are elected for 5-year terms from among the nine sultans of the peninsular Malaysian states. The king is also the leader of the Islamic faith in Malaysia. Executive power is vested in the cabinet led by the prime minister who must be a member of the majority party. The United Malays National Organization (UMNO) has been the dominant political force since Malaysia's independence in 1957. Until 2003, the country was led by Tun Dr. Mahathir Mohamad, who served for 22 years as prime minister, longer than any other democratically elected leader in power anywhere in the world.

Dr. Mahathir's apparent successor had been Anwar Ibrahim, who was dismissed and accused of immoral and corrupt conduct in September 1998. Although Anwar was convicted on both charges in 1999 and 2000, the trials were viewed as seriously flawed and Anwar was eventually freed in September 2004 after overturning his immoral conduct conviction. Mahathir replaced Anwar in 1999 with Dato' Seri Abdullah bin Ahmad Badawi, who became Prime Minister in 2003. Abdullah won an overwhelming victory in March 21, 2004 general elections, with Barisan Nasional, a coalition partner of UMNO, winning 199 of 219 seats in the lower house of parliament. UMNO itself won 110 seats. PAS, the Islamist party, was reduced to six seats in parliament (from 42 in 1999) and lost control of the state of Terengganu, a conservative stronghold; it still leads in Kelantan.



### Economy

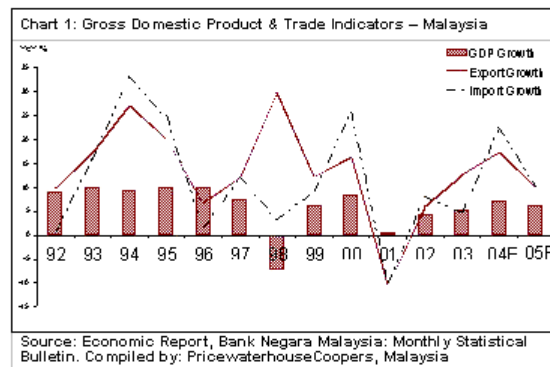
The Government of Malaysia seeks to make the leap to a knowledge-based economy and achieve developed country economic status by 2020. At independence Malaysia inherited an economy dominated by rubber and tin. In the 40 years since its economic record had been one of Asia's best. The economy sustained growth averaging almost 8 percent annually through the 1980s and mid 1990s, and saw diversification into a variety of high-tech sectors. Manufacturing grew from 13.9 percent of GDP in 1970 to 30.9 percent in 2003, while agriculture and mining, which together accounted for 42.7 percent of GDP in 1970, dropped to 8.7 percent and 7.2 percent, respectively, in 2003. Malaysia is one of the world's largest exporters of semiconductor devices,

<sup>1</sup> This section excerpted from the U.S. Department of State: <http://www.state.gov/r/pa/ei/bgn/2777.htm>

electrical goods, and appliances, and the government has ambitious plans to make Malaysia a leading producer and developer of high-tech products, including software. Malaysia is a major destination for outsourcing after China and India.

The Government has taken an active role in guiding the nation's economic development. Malaysia's New Economic Policy first established in 1971, sought to eradicate poverty and end the identification of economic function with ethnicity. In particular, it was designed to enhance the economic standing of ethnic Malays and other indigenous peoples (collectively known as "bumiputeras" in Bahasa Malaysia). Rapid growth through the mid-1990s made it possible to expand the share of the economy for bumiputeras without reducing the economic attainment of other groups. One controversial NEP goal was to alter the pattern of ownership of corporate equity in Malaysia, with the government providing funds to purchase foreign-owned shareholdings on behalf of the bumiputera population. In June 1991, after the NEP expired, the government unveiled its National Development Policy, which contained many of the NEP's goals, although without specific equity targets and timetables. In April 2001, the government released its "National Vision Policy" for 2001-2010, which seeks to refocus the economy toward higher-technology production. In 2004, the government announced plans to revamp the government-linked corporations (GLCs) to improve performance and gradually reduce the state's stakes in them.

The economy rebounded well after the 1997-1998 Asian financial crisis. It expanded 5.3 percent in 2003 and 7 percent in 2004, driven by solid growth in manufacturing and services. Growth for 2005 is estimated to reach 6 percent. This positive outlook, according to PriceWaterhouseCoopers, is based on strong domestic demand and continued export performance. Export growth in 2005 is expected to be tempered by macro tightening of monetary policies across major economies.<sup>2</sup>



The United States continues to be one of the largest sources of new investment in Malaysia and is its largest trading partner. In 2003, bilateral trade between the United States and Malaysia totaled \$36.4 billion, of which \$10.9 billion was composed of U.S. exports to Malaysia. Malaysia was the United States' 10th-largest trading partner and its 10th-largest export market for manufactured goods. The cumulative value of U.S. private investment in Malaysia exceeds \$20 billion, 60 percent of which is in the oil and gas and petrochemical sectors with the rest in manufacturing, especially semiconductors and other electronic products, according to an American Chamber of Commerce 2003 survey. In 2003, the Malaysian Government approved \$574 million in new manufacturing investment by U.S. companies, with the bulk in the electronics and electrical sectors.

Malaysia's population of 25.5 million (2004) continues to grow at a rate of 1.7 percent per annum; about 33.2 percent of the population is under the age of 15. Malaysia's population

<sup>2</sup> <http://www.pwcglobal.com/extweb/indissue.nsf/docid/9f9936ad03b6fbcfca256f0f0005db03>



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comprises many ethnic groups, with the politically dominant Malays comprising a majority. By constitutional definition, all Malays are Muslim. About a quarter of the population is Chinese, who have historically played an important role in trade and business. Malaysians of Indian descent comprise about 7 percent of the population and include Hindus, Muslims, Buddhists,

### Telecom Policy Environment

Malaysia's strategy for the telecom sector, mirroring that of overall industrial planning, has been guided by *Vision 2020*: the national goal of achieving developed country status by the year 2020. The government has adopted a 'big project' approach aimed at supporting its goal. The Multimedia Super Corridor, or MSC, that stretches south of Kuala Lumpur to the new KL International Airport, the creation of Cyberjaya as the center of the MSC, and Putrajaya as the new seat for Central Government offices are all examples of large and multi-sector initiatives designed to attract international IT and multimedia companies to Malaysia and improve domestic skills and capabilities. Each has involved careful integration of state spending, latest generation infrastructure, and public education and awareness programs aimed at raising technology literacy. Billions of dollars have been invested in a 'supply push' commitment to world-class infrastructure. So far, however, the marquee development projects – and attendant applications initiatives for e-education, e-health, e-government and e-commerce – have not led to widespread diffusion of ICT innovation in Malaysian society at large.

Broadband penetration remains extremely low at below 1 percent, a relatively small figure given the energy and resources that have been committed to stimulating the sector. Competition in last mile services has yet to take root. Telekom Malaysia still commands an estimated 97 percent of access lines, showing the policy of managed competition for fixed services to be less than effective. The private sector, meanwhile, has been seduced by the quick returns and ready market for mobile services and invests almost nothing in last-mile access infrastructure. Competitive network operators have also been deterred by government policies and high barriers of entry favoring the incumbent. Competition policy and unbundling, for example, are at a relatively basic stage considering the sophistication and maturity of the local telecoms marketplace. The government and MCMC declare a preference for establishing an "enabling environment" and a "light touch" in guiding regulatory priorities. The light touch is a recent development and applies chiefly to peripheral issues, not to those that have the power to transform Malaysia's carefully calibrated status quo. Difficult economic policy questions such as unbundling (and supporting alternative carriers and access methods generally) are not codified in concrete action. MCMC is routinely engaged in painstaking consultation with the private sector regarding core issues<sup>3</sup>, though operators just as routinely seek to avoid any policy that can be perceived as meddling interference. In some respects MCMC is in a difficult position: it seeks to advance a social agenda but must negotiate with the powerful private sector to affect change. Government energies are thus often placed on helpful but softer development issues such as capacity building, vocational training and public awareness, in parallel with other bodies such as the Multimedia Development Corporation. Because soft programs address the human component of technological change they are clearly important. Until the core macroeconomic issue is addressed, achieving development milestones will prove a challenge.

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<sup>3</sup> <http://www.cmc.gov.my/Admin/FactsAndFigures/Paper/PC%20Report%20ECAN.pdf>



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MCMC has begun a review of the National Broadband Policy. According to the Ministry of Energy, Water and Communications, the goal is to ensure approximately 1.3 million broadband connections by 2006 (5 percent penetration) and 2.8 million connections by 2008 (10 percent penetration). Less clear is how the targets will be attained. Several high-profile application projects are hoped to stimulate adoption, particularly in sectors where the government has a principle management role. According to former Minister of Energy, Water and Communications Datuk Amar Leo Moggie: "The government's usage of broadband will be huge like [in] the health industry and the application of e-government. So once you install the capacity, there is a good chance to use and expand it. So there must be a combination between the government and industry." Among the key vertical market programs being supported:

- *Government Departments at the Federal, State and Local Level* - Approximately 900 government departments at 22,000 offices will utilize 84,000 broadband connections by 2006.
- *Schools* - The SchoolNet program, completed in 2004, linked 10,000 schools and five million schoolchildren.
- *Universities and Research Institutions* - Research institutions and public universities will be provided with 74,000 broadband connections while the Malaysian Education and Research Network (MYREN) is planned to reach the Korea and Trans Eurasian Information Network, among other research networks.
- *Hospitals and Clinics* - Approximately 4,000 hospitals and clinics are expected to be fully wired.
- *Libraries* - More than 1,700 broadband connections will be provided to connect approximately 800 libraries.
- *Community Centers*. Broadband connections will be expanded to all Internet community centers in most towns.

Given the right political support and incentives, policymakers may be able to look beyond programmatic policy pushes (and obvious obstacles to broadband demand, such as content restrictions), and focus on improving high-speed local access at affordable rates. The greatest test will be to enable alternatives to Telekom's significant market power.

### **Telecom Sector Restructuring**

Restructuring of the telecom sector began in 1984 with the creation of Syarikat Telekom Malaysia (STM) as a state run telecommunications monopolist incorporated as a separate entity from the then Ministry of Energy, Posts & Telecommunications (MEPT). In 1990 Telekom Malaysia was partially privatized through a listing on the Kuala Lumpur stock exchange. Telekom's largest shareholder after listing was PNB (Permodalan Nasional Berhad). PNB was set up in 1978 as an instrument of the Government's New Economic Policy to promote share ownership in the corporate sector among the Bumiputera: 'people of the soil' or native Malays as opposed to Malaysians of Chinese, Indian or other ethnic descent. The firm's monopoly formally ended in 1993 with the licensing of Time Telecommunications, part of the Time Engineering Group, which was in turn part of the Renong Group, the industrial arm of the ruling political party, UMNO. While market reform had indeed begun, the state and ruling political apparatus

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played a heavy role in managing the timing, scope and role of a nationalist vision for the telecom sector. Industrial policy and political policy were thus firmly wedded together as in other important areas of the economy.

Throughout the 1990s licenses for paging, cellular mobile, telephone call boxes, satellite communications, value added services and fixed line networks were issued, albeit in a largely opaque manner. Requests for licenses frequently by-passed the Jabatan Telekom Malaysia or JTM (the Department of Telecommunications) under the MEPT, going directly to the Prime Minister's Office, with the JTM periodically not informed of licensing decisions until after the fact. Many notable political allies and personal associates of UNMO's leadership were successful at obtaining licenses.

To best understand the current consolidated market structure, some history is helpful. In the early and mid 1990s a total of six additional mobile wireless licenses were issued in addition to Telekom's 450 MHz Nordic system already in place:

- 1) *Mobikom*, a joint venture involving Telekom and Sapura Holdings, a company chaired by Shamsuddin, a close associate of - Prime Minister Tun Dr. Mahathir Mohamad, received licenses for 800 MHz and GSM1800;
- 2) *Celcom*, owned by TRI (Technology Resource Industries Sdn Bhd) and headed by Tajudin Ramli, with close ties to the Renong Group, received a 900MHz license;
- 3) *Maxis*, the mobile arm of Binariang (which had received a license to launch Malaysia's first satellite, Measat, and to offer broadcasting and Internet services), and owned by T. Ananda Krishnan, one of Malaysia's richest people and a close associate of Dr. Mahathir;
- 4) *Mutiara Swisscom* (later renamed *Digi*), backed by Malaysian tycoon Vincent Tan; while
- 5) *Sapura Digital*, and
- 6) *TimeWireless* each received GSM 1800 PCN licenses.

The government's method for handing out licenses led to what is now an obvious result: oversupply. Seven networks are clearly too many for a population then of about 20 million. The first to be absorbed was Sapura Digital (STW, or Syarikat Telefon Wireless), which was merged into Time Wireless to become TimeCel. The parent company, Time Telecom was renamed Time.dotcom. Others quickly followed as the Asian financial crisis took its toll.

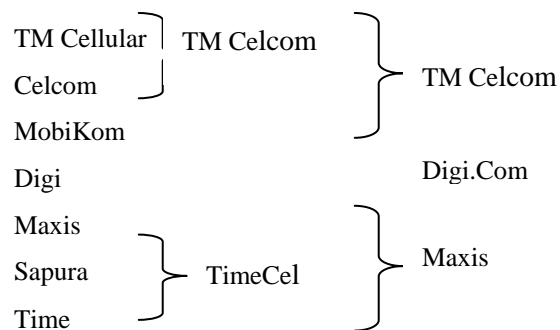
The 1998 suspension of currency convertibility left TimeCel and Celcom deeply in debt. To manage the crisis the Government turned to the country's pension funds, but only after rejecting a life saving bid from Singapore Telecom in 2000 for Time.dotcom. As a consequence about \$65 million of the Employees Pension Fund (EPF) was used to buy Time.dotcom shares. An IPO in 2001 designed to enable Time.dotcom to retire its debt was only 25 percent subscribed and pension fund money was again used as share prices collapsed, provoking a threat by Malaysia's trade unions to picket the fund's headquarters. Finally, in December 2002, Maxis stepped in to buy TimeCel for about \$300 million.

Celcom's route out of the crisis was to raise a \$375 million Eurobond in 1999 but defaulted on payments in 2002. To prevent the threat of foreign creditors seizing the company's assets, the

Government used another pension fund, Pengurusan Danaharta Nasional, to redeem the Eurobond for \$494 million. Telekom Malaysia was then used to make a hostile takeover bid for TRI as Tajudin Ramli's political influence waned. In 2002-2003, a share swap was arranged between TM Cellular, Telekom's renamed mobile cellular business, and Celcom, effectively merging the two.

Following the financial crisis and the competitive woes of the large field of players, the government aggressively encouraged rationalization of the sector. Three services providers emerged, a structure that remains in place today. Telekom acquired Time.dotcom and Celcom. Maxis acquired TimeCel. Telenor increased its minority position in Digi to effective control. Each consolidated mobile operator has its own trunk networks and international gateway.

### Consolidation of Malaysian Mobile Market, 1992-2002



Although Maxis and Digi have the right to offer fixed line services, neither have chosen to do so. Telekom still commands 97 percent of the fixed line market though it effectively halted major expansion of the copper last mile.<sup>4</sup> The universal emphasis on the mobile network has left the traditional access network strategically forgotten – a trend that has complicated the slow pace of adoption of consumer broadband.

What in Malaysia is called the universal service provision (USP) has fallen to Telekom. Competition in fixed line services began in the early 1990s and, in 2001, the MCMC opened the way for any operator to become a designated network in the provision of services to underserved areas. Unfortunately, the history of interconnection in Malaysia is a textbook case of *'how dominant operators use their market power to thwart competition'*.<sup>5</sup> The first commercial agreement between Celcom and Telekom Malaysia had Celcom pay the full PSTN rate and was required to bear the costs of setting up the points of interconnection.

<sup>4</sup> See MCM 'A Report on Public Consultation on Effective Competition in the Access Network' 18 November 2003 at: [http://www.mcmc.gov.my/facts\\_figures/papers/discussion/ViewFAFPaper.asp?cc=227993&pt=678845](http://www.mcmc.gov.my/facts_figures/papers/discussion/ViewFAFPaper.asp?cc=227993&pt=678845)

<sup>5</sup> John Ure (2000) Malaysia: Interconnection Case Study for the ITU at [http://www.trp.hku.hk/e\\_learning/pdf/case\\_study\\_my.pdf](http://www.trp.hku.hk/e_learning/pdf/case_study_my.pdf) and [http://www.itu.int/osg/spu/ni/fmi/Mobile\\_interconnection\\_Malaysia.ppt#11](http://www.itu.int/osg/spu/ni/fmi/Mobile_interconnection_Malaysia.ppt#11)

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With such a lopsided playing field, the policy of unbundling network elements takes on special significance. MCMC has been slow to push for unbundling – in part due to pressure from Telekom, in part because Maxis and Digi have been almost one-dimensionally focused on mobile. Neither has shown interest in fixed line networks. With political pressure rising to improve broadband – members of Parliament openly ask why broadband penetration is 100 times higher in Korea than Malaysia – unbundling would seem a natural step as a market-priming initiative. So far MCMC and the government have been slow to act.

Foreign companies are entitled to acquire up to 30 percent equity stake in existing fixed line operations, an investment ceiling codified as part of Malaysia offer to the WTO. Previously, foreign interests were required to follow a complex formula of selling down a potential majority share after five years. The 2004 change of leadership at UMNO, with Dato' Seri Abdullah Badawi succeeding Dr Mahathir as Prime Minister, opened a related chapter. Temasek Holdings, Singapore's state-run investment arm, was allowed to purchase 5 percent of Telekom Malaysia's shares, a move widely interpreted as lessening of friction between the two regional rivals.

### **MCMC**

The Malaysian Commission for Multimedia Communications (MCMC) (<http://www.cmc.gov.my/>) was established as an independent regulator by the Communications and Multimedia Commission Act of 1998, replacing the JTM. An Industry Forum among operators was established at the same time to encourage self-regulation wherever possible. Despite having difficulties recruiting sufficient expertise in its early stages, the MCMC has matured and has made significant progress promoting transparency and regulatory consistency. The MCMC's mandate extends to cover the convergence of telecom, IT and TV.

The 1998 Act proscribes 10 policy objectives that reveal the government's overall strategic objectives for the information and technology sector, and specifies goals for its managed-market approach to social engineering: The national policy objectives for the communications and multimedia industry are:

- (a) to establish Malaysia as a major global center and hub for communications and multimedia information and content services;
- (b) to promote a civil society where information-based services will provide the basis of continuing enhancements to quality of work and life;
- (c) to grow and nurture local information resources and cultural representation that facilitate the national identity and global diversity;
- (d) to regulate for the long-term benefit of the end user;
- (e) to promote a high level of consumer confidence in service delivery from the industry;
- (f) to ensure an equitable provision of affordable services over ubiquitous national infrastructure;
- (g) to create a robust applications environment for end users;

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- (h) to facilitate the efficient allocation of resources such as skilled labor, capital, knowledge and national assets;
  - (i) to promote the development of capabilities and skills within Malaysia's convergence industries; and
  - (j) to ensure information security and network reliability and integrity.<sup>6</sup>

The MCMC may be regarded as 'more of a promoter of the communications and multimedia industry than a regulator in the traditional sense.'<sup>7</sup> The continued close ties between Government and Telekom on the one hand, and Telekom's dominance on the other, really leave no other choice for MCMC. While the MCMC has asserted the importance of anti-competition clauses in Telekom's license and has assumed quite strong powers to impose fines, the preferred approach is industry self-regulation – no small matter when the state remains a significant shareholder in Telekom.<sup>8</sup>

Spectrum management comes directly under the MCMC.<sup>9</sup> According to an MCMC consultation paper in 2000, most of the 900 MHz spectrum was used as GSM networks covered about 90 percent of the population, while 60 percent of the 1800 MHz spectrum was used by PCN networks covering around 35 percent of the population. The shift to broader band data services using GPRS and EDGE technologies were expected to exhaust the frequency allocations. Reviewing spectrum assignment for 3G networks, the MCMC takes the view 'that duplication of investment at the network facilities level does not promote efficient allocation of resources.'<sup>10</sup> As network equipment requires being imported the MCMC sees this as another reason for limiting facilities building, and the potential of the MVNO (mobile virtual network operator) model to provide choice, competition and stimulation to the local content industry. The other major scarce resource is numbering, and the MCMC is in charge of national numbering plan (alphanumeric) and electronic addresses (alphabetical).

Licensing has been separated into four horizontal markets to distinguish vertical layers of activities. Within this breakdown, three licensing categories -- individual, class and exempt -- apply depending upon the degree of regulation considered necessary. Oddly, PSTN and cellular mobile network service providers have separate classifications, contradicting the MCMC's strategic policy to license services rather than technologies. The four horizontal categories are:

- *Network facilities providers (NFP)* own basic fixed line infrastructure and require individual (NFP1) licenses. In niche markets they require just a class license and none is required to provide private networks or content production studio facilities.

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<sup>6</sup> [http://www.msc.com.my/cyberlaws/ACT\\_percent20588\\_percent20-percent20Communications\\_percent20and\\_percent20Multimedia\\_percent20Act\\_percent201998/a0588s0003.htm](http://www.msc.com.my/cyberlaws/ACT_percent20588_percent20-percent20Communications_percent20and_percent20Multimedia_percent20Act_percent201998/a0588s0003.htm)

<sup>7</sup> ITU Regulatory Workshop: Broadband, The Case of Malaysia, 29 April 2001, can be found at: <http://www.itu.int/osg/spu/casestudies/#asia> along with similar studies.

<sup>8</sup> See Ure (TRP) 'Interconnection from Mobile to Fixed: The Case of Malaysia' for ITU, November 2000 at: [http://www.trp.hku.hk/e\\_learning/pdf/case\\_study\\_my.pdf](http://www.trp.hku.hk/e_learning/pdf/case_study_my.pdf)

<sup>9</sup> For Malaysia's frequency allocations and a discussion of allocations for digital terrestrial TV see <http://www.cmc.gov.my/Admin/FactsAndFigures/Paper/dttb-TV.pdf>

<sup>10</sup> MCMC *Concepts and Proposed Principles on the Implementation of IMT-2000 Mobile Cellular Service in Malaysia*, 10 November 2000 [http://www.cmc.gov.my/Admin/FactsAndFigures/Paper/Imt\\_2000.pdf](http://www.cmc.gov.my/Admin/FactsAndFigures/Paper/Imt_2000.pdf)

- *Network service providers (NSP)* can offer cellular mobile network services, broadcast distribution services, access and space services with an individual license (NSP1) while niche markets are covered by a class license. Private networks are exempt.
- *Applications service providers (ASP)* can provide voice and data services over the PSTN, such as calling card services, or over cellular mobile networks, and can provide public payphone services with an individual license (ASP1). ASPs can provide Internet services, audiotext and messaging services with a class license and electronic transactions services, web hosting and related services without a license.
- *Content application service providers (CASP)* need an individual license to provide satellite subscription TV and terrestrial free-to-air TV, and no license to provide Internet content services. No class licenses have been issued to CASPs.

As of year-end 2004, there were 181 individual licensees, out of which 37 were Network Facilities Providers (NFP), 34 Network Service Providers (NSP), 90 Applications Service Providers (ASPs) and 20 Content Applications Service Providers (CASP). There are also 209 class licensees: 29 NFPs, 29 NSPs and 151 ASPs.

The MCMC has adopted modern good practice by issuing standard licenses together with special provisions for individual licenses, and is transparent about cost-recovery annual licensing fees, charging 0.5 percent of annual gross turnover or RM50,000 (about \$13,000), whichever is greater.

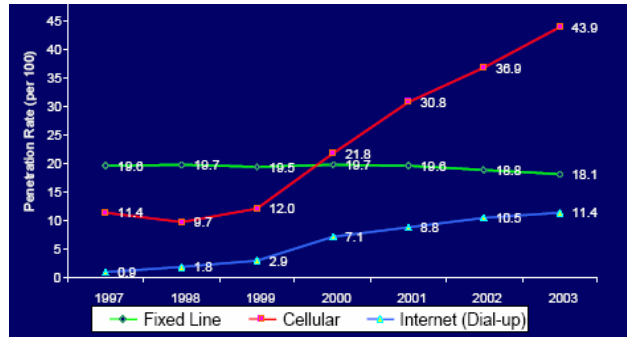
NFPs, NSPs and ASPs with turnover greater than RM500,000 contribute 6 percent of annual service revenues to a universal service fund, which the MCMC estimates is equivalent to 2 percent of the gross turnover. Included in the scope of universal service provision is Internet access. Services with regulated tariffs, which means local call charges, new services yet to establish themselves, and CASPs are exempt, while revenues from cellular mobile and international roaming services weighted 0.5.

## Telecom Market Environment

Only three major companies -- Telekom Malaysia, Maxis and Digi -- offer public telecom services following the Government's encouragement of sector restructuring and the absorption of fixed line operator Time.com and mobile operator Celcom into Telekom Malaysia, and of mobile operator TimeCel into Maxis. Although all three have licenses to provide fixed line services, Maxis and Digi are focused almost entirely upon mobile cellular leaving PSTN investment to Telekom Malaysia. Fixed lines have fallen from their peak of 4.6 million in 2Q 2003 to under 4.5 million in 2004. Although the Ministry has mandated the rebalancing of tariffs, which should increase the incentive to provide local services, the substitution of mobile for fixed lines means investment in fixed lines is likely to remain predominantly from Government-owned Telekom Malaysia. Until recently TM has been slow to upgrade its network to broadband, despite the government's push to build a broadband society. Since 2002 the total number of broadband

Network Operators in Malaysia	
Company	License
Telekom Malaysia	Fixed; Mobile 450, 800, 900, 1800 MHz
Maxis	Fixed; Mobile 900, 1800 MHz
Digi	Fixed; Mobile 900, 1800 MHz

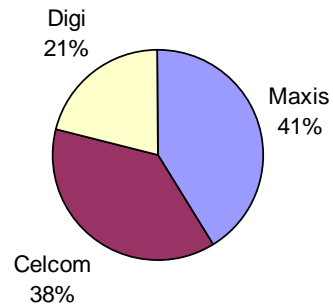
connections of all kinds has risen from 19,000 to over 200,000 though still accounting for only miniscule market penetration, especially for residential customers. Over the same period cell phones have risen from 9 million to 13 million, national penetration rate of just over 50 percent. Growth has been fueled by pre-paid subscribers.



Source: MCMC

**Mobile Market**

Malaysia is Southeast Asia's third-most developed mobile market, with 13.1 million cellular phone users at the end of September 2004, accounting for about 52 percent of the country's 25 million people. Maxis is the mobile leader, with about 41 percent share, followed by Celcom with 38 percent and Digi, with about 21 percent. Total value of the market in 2004 was estimated at approximately \$3.5 billion. The sector has seen compounded annual subscriber growth rates of 20-30 percent every year since 1998 and subscriber growth has predictably begun to slow. Merrill Lynch believes that Malaysia may reach saturation levels of around 60-65 percent by the end of 2005, while UOB-Kay Hian Securities forecasts mobile phone penetration to peak around the fourth quarter of 2006 at nearly 70 percent. MCMC estimates that 76 percent of users are pre-paid (Maxis 79 percent pre-paid; Digi 99 percent pre-paid).



Voice services dominate the mobile market today. There are signs that consumers are increasingly willing to embrace basic mobile data services: SMS has recently begun to take off with its adoption in the youth market segment. Analyst reports found that Malaysia ranked Japan and the Philippines in terms of high usage and high interest for advanced mobile services – strictly speaking, demand is for SMS services as 3G is not widely deployed. GPRS and multimedia messaging services provide patchy coverage and networks have not been uniformly upgraded to handle higher data speeds.

Operators have been taking their time with 3G – it is now running into a three-year saga – blaming both handset availability and soft market demand for the pace. 2005 is meant to be the year when operators make the transition from pilot to commercial deployment. Telekom and UMTS Sdn Bhd, a Maxis subsidiary, were awarded IMT-2000 frequencies through a beauty contest in 2002 and began pilot operations in 2004. Each company received 2x15MHz paired plus 1x5MHz unpaired spectrum, good for 15 years. The fee for the frequencies was RM 50 million (\$13.2 million), or about \$1.80 per population, a figure perceived as a government gift to hasten introduction of new services. It is also a sign of an explicit policy to concentrate investment in infrastructure rather than spectrum. Reports estimate that Telekom's rollout will cost just over \$1 billion while UMTS is expected to invest \$920 million over the next 10 years.



The MCMC is expected to solicit new bids for the two remaining 15 MHz blocks of 3G spectrum this year, again managed through a beauty contest. Companies that failed to secure licenses in the first round as likely to participate: Time dotCom Bhd and DiGi.Com Bhd have expressed interest. E-Touch Sdn Bhd was another unsuccessful bidder. It is unclear as to whether the government will open the bidding process to foreign firms – or, for that matter, to investors from outside of the telecommunications sector. One approach reportedly being considered is to stimulate financial investments in spectrum and infrastructure independent of operations. In 2004, the government was encouraging the creation of mobile virtual network operators (MVNO) but the policy produced little traction.

Malaysia 3G Frequency Assignment	
Spectrum per license	2x15MHz paired spectrum plus 1x5MHz unpaired spectrum
Frequency bands	Telekom Malaysia 1950MHz – 1965MHz 2140MHz – 2155MHz 2020MHz – 2025MHz Maxis/UMTS 1935MHz – 1950MHz 2125MHz – 2140MHz 2015MHz – 2020MHz

Despite Malaysia’s big project approach to infrastructure development, the country has been slow to develop broadband networks in the local loop. Several national trunk and submarine optical fiber networks exist, and companies can access fibers from Fiberail as well as from the electricity grid and from Time Engineering along the national highways. Telekom, however, has been slow to invest in ADSL for residential purposes and SDSL for corporate business users. Cable TV network, Mega TV (Cableview Service SBD BHD) has so far been unable to compete because it uses broadcast MMDS technology rather than interactive cable. The slow development of broadband has been in part due to the Ministry’s hesitation over a policy of unbundling the local loop to allow other service providers access to customers, a process still under consultation in 2004 when an ‘Access List’ of network elements that should be unbundled on a commercial basis was issued.

Where Malaysia has pushed ahead is in the use of wireless local loop (WLL), in rural areas using CDMA technology that can offer data speeds of 144 kbps and thereby access to Internet as well as voice services. In 2004 the Government set aside RM800 million (\$200 million) in 2002 for rural systems in 86 districts. As of 2004 Telekom had WLL capacity close to 200,000 though only 10 percent take up; it introduced pre-paid cards to encourage take-up among lower income users. Installation cost was RM50 and calling charges the same as for fixed line phones. AtlasOne was also licensed, in 2001, to provide WLL to provide towers and wireless transmitters for broadband access and services.

The ITU estimates the two leading ISPs, TMNet and Jaring (Mimos) control around 90 percent of the dial-up Internet access market, Maxis and Digi being two other important ISPs.<sup>11</sup> Jaring is managed by MIMOS Berhad, the Malaysian Institute of Microelectronics Systems. It will invest about \$52 million in 2005 to expand broadband connectivity services nationwide. In mid 2004 Jaring purchased a non line-of-sight wireless access platform from Soma Networks, with which it expects to migrate its nearly 800,000 dial-up customers to broadband. Jaring hopes to secure 10,000 broadband subscribers on its “my015” service by the end of 2005, beginning in Kuala

<sup>11</sup> See [http://www.itu.int/asean2001/reports/material/MYS\\_percent20CS.pdf](http://www.itu.int/asean2001/reports/material/MYS_percent20CS.pdf) p.20



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Lumpur, Klang Valley, Johor Baru and Penang, and reach 500,000 users by 2008 – which Jaring estimates as 30 percent share of the broadband access market. It will offer corporate customers speeds up to 12 MB per second, as well as a range of retail VoIP service packages.

### **Telekom Malaysia**

Telekom Malaysia is the undisputed powerhouse in the national telecom sector. It has a nationwide full service network born from its period as the national monopoly and covers all services areas. It still carries the national universal service obligation. The company's fortunes remain linked to voice, which still accounts for 82 percent of total market revenue. IDC forecasts that fixed line voice services will fall -2 percent over the next several years, which may be conservative given anticipated pricing pressure from VoIP. IDC believes that data services revenues will grow 7 percent from 2003 to 2008, fed chiefly by traditional leased lines, IP-VPN and MPLS services.

TM's advantage -- its effective monopoly over fixed line services, including broadband and Internet access services -- has also been its weakness as there is little pressure from domestic competitors to innovate. Now the pressure comes from falling international revenues and Malaysia's commitments to the WTO to open its market and create an independent regulator. TM's strategy is falling in line as it plans a migration to Next Generation Network, the bundling of domestic services such as telephony and Internet access, and a restructuring of its services into wholesale and retail divisions.

Telekom is aggressively looking in its regional backyard for growth, and to improve its standing among equity investment analysts that have a dim view of the company's balance sheet. In a flurry of investment announcements in early 2005, TM bought a 27.3 percent stake in Indonesia's third-largest cellular-phone operator, privately-held PT Excelcomindo Pratama, for \$314 million; pledged \$300 million for its Bangladeshi subsidiary Telekom Malaysia International Bangladesh (TMIB) ("Aktel"); and acquired Multinet, a major ISP in Pakistan, for \$11 million with a plan to invest \$100 million or more in a national fiber optic backbone. It is also known to be eyeing a 26 percent stake in the privatization of Pakistan's state operator, PTCL, worth an estimated \$1.4 billion, just as Malaysia and Pakistan are negotiating a bilateral free trade agreement. These investments suggest an investment strategy that focuses, in part, on the Green Crescent of high-growth Islamic countries. Telekom also placed \$156 million into Idea Cellular, in India's fifth-largest mobile company, in a joint deal with Singapore's ST Telemedia. The portfolio is estimated to encompass a total mobile subscriber base of 11.3 million. The company maintains that overseas operations contributed 29 percent to Telekom's 2003 earnings, though this is projected to fall to 21-22 percent in 2004.

While pursuing Southeast and South Asia deals with gusto, Telekom is also purposely divesting its portfolio in the African continent. Its excursion into this geography in the 1990s was due in part to a national vision of become a significant economic leader in south-south trade. In November 2004 Telekom announced its intention to exit South Africa's Telkom S.A., its largest overseas deal, for \$790 million. The company realized a net gain of about \$210 million from the sale, which it had pursued in partnership with SBC Communications Inc of the U.S. in 1997. Other recent divestments in Africa include its 60 percent stake in Guinea's Societe des Telecommunications de Guinee (Sotelgui), in which it invested an initial \$45 million in 1995, as



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well as its 60 percent position Telekom Networks Malawi (TNM). The company is reportedly considering selling its 30 percent stake in Ghana Telecommunications Company, where it has invested about \$90 million and become embroiled with a nasty legal fight with the government. Telekom earlier disposed of its stakes in India's Usha Martin and Thailand's Digital Phone Company (now a unit of Shin Corp).

### **Maxis**

Maxis has steadily built up its role to become Malaysia's leading cellular operator by focusing on its core business, adding 600 base stations during 2003. Although Maxis has a fixed line license it operates only in Kuala Lumpur. In 2003 the company acquired an additional 25 MHz spectrum in the 1800 MHz band and with a 3G license will be ready to launch the service by 2006. Another aspect of the Maxis strategy is to grow the data segment of its cellular market, from 7 percent to 12 percent of its total 2002-2003 revenue, including information services and games as well as SMS and ring tones.

Maxis invested \$25 million (RM96 million) in 2003 on its fixed line corporate services, which exceed 10,000 accounts. Maxis also offers corporate VSAT services and won a government universal service contract to supply a community VSAT service to 224 libraries and clinics. Maxis parent company owns Measat, Malaysia's satellite. Maxis has withdrawn from the unprofitable dial-up Internet market, looking to broadband services instead. Maxis also operates an international gateway, although downwards pressure on IDD prices limits Maxis investment in international services.<sup>12</sup>

### **Digi**

DiGi.com, the smallest of the major operators that is majority controlled by Telenor, is holding its own in the face of its two bigger rivals. Its overall share has increased to about 21.5 percent as of fourth quarter 2004, up from 20 percent in 2003. Since 2000, Digi's largest shareholder has been Telenor (Norway) providing the company with financial and technical stability. Digi as the smallest of the three remaining mobile cellular companies has benefited from the sustained growth in market demand for cell phones in Malaysia, and from being granted spectrum in the 900 MHz bandwave to complement its 1800 MHz frequency assignment. Digi targets the lower end of the market with customer-friendly services, such as being the first to launch MMS services and leading the way to simplify the number of calling zones in Peninsular Malaysia to two and in Eastern Malaysia to four. Digi relies heavily upon a dealership network with 99 percent of its users being pre-paid, placing the company under continuous pressure to lower prices and at the same time maintain quality and innovative services. To achieve this Digi is placing a lot of emphasis upon backend systems, efficient billing systems, CRM systems, and IN software. Digi is using EDGE technology as a migration path to 3G. Digi, which has an international gateway, is trying to build traffic from partnerships with applications service providers at home and abroad, including pre-paid IDD cards with ring tones download features.

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<sup>12</sup> See [http://www.maxis.com.my/personal/about\\_us/investor/annual\\_report/25Dec04\\_04.pdf](http://www.maxis.com.my/personal/about_us/investor/annual_report/25Dec04_04.pdf)

