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Success and More
focused on ADSL
5 December 2001

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Contents

?. Introduction to KT

?. Overview on KT’s Broadband Access Service

?. Future Development Model for KT’s Broadband Access Service
Chronicles & General description

History
- Jan. 1982: Korea Telecom Established
- May 1996: 20 Million Subscriber Secured
- Dec. 2000: IMT-2000 and satellite broadcasting business licenses acquired
- 2002: Complete privatization scheduled

General description
- Employees: 46,000
- Turnover (2000): $9.6 Billion
- No. of telephone Sub.: 22 Million
- No. of Wireless Sub. (OCT. 2001): 9.7 Million
- Subsidiaries: KTF, ICOM, KTI, etc.

One of the 500 Global Largest Companies (Financial Times, 1 May 2001)

KT Group Overview

<table>
<thead>
<tr>
<th>Sector</th>
<th>Entity</th>
<th>KT’s Ownership</th>
<th>Business (Market share %, Market Position)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Line</td>
<td>KT</td>
<td>-</td>
<td>Local (86%, #1), Long distance (86%, #1), International (64%, #1)</td>
</tr>
<tr>
<td>Internet &amp; Data Communications</td>
<td>KT</td>
<td>-</td>
<td>Leased line (70%, #1), Broadband access (49%, #1)</td>
</tr>
<tr>
<td>Wireless</td>
<td>KTF</td>
<td>40.7%</td>
<td>Mobile services – Voice (34%, #2), Data (43%, #1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>46.6%</td>
<td>IMT-2000 services (4Q, 2002)</td>
</tr>
<tr>
<td>Contents &amp; e-Commerce</td>
<td>KT</td>
<td>66%</td>
<td>Service platform (Bizmeka), Internet broadcasting, Portal</td>
</tr>
<tr>
<td>Digital Satellite Broadcasting</td>
<td>KDB</td>
<td>15%</td>
<td>Multi-media broadcasting service (4Q, 2001)</td>
</tr>
</tbody>
</table>
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History of Megapass

1997 - First Trial Service (1,500 subscribers)
Sep. 1998 - Second Trial Service
Jun. 1999 - Launch of Commercial Service
Sep. 2000 - Number of Subscriber Exceeded 1 million
Feb. 13, 2001 - Number of Subscriber Exceeded 2 million
Oct. 31, 2001 - Number of Subscriber Exceeded 3.5 million

ADSL Pilot Service
1997 - First Trial Service (1,500 subscribers)
Sep. 1998 - Second Trial Service

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KT Broadband Access Overview

Broadband Market Share (Unit: Thousands)

Total # of Sub: 4,017
2000

KT 42% 750
HTI 27% 1,190
Others 15% 225
Thrunet 19% 760

Total # of Sub: 11,059
2001(E)

KT 49.4% 3,904
HTI 23.9% 1,890
Thrunet 15% 1,226
Others 11.5% 976
Others 11.5% 1,250

4Q.1999: KT 4.5%, HTI 47%, Thrunet 48.5%
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KT Broadband Service Performance

<table>
<thead>
<tr>
<th>Year</th>
<th># of subscribers</th>
<th>Revenue: Bil. US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.2</td>
<td>1,729</td>
</tr>
<tr>
<td>2001(E)</td>
<td>1.2</td>
<td>3,904</td>
</tr>
<tr>
<td>2002(E)</td>
<td>1.3</td>
<td>4,900</td>
</tr>
<tr>
<td>2003(E)</td>
<td>2.0</td>
<td>5,620</td>
</tr>
</tbody>
</table>

Source: KT Marketing Group (2001.5)

Key Success Factors of KT Broadband Market

All nation wide dry copper network of KT could cover 95% of total household without additional investment for ADSL service

On Time Network Delivery
- One stop installation team
- 2,500 Installation engineers
- Variety of product line
- ADSL Premium Lite, Homenet, Ntopia etc.

On Time Service Delivery
- Variaty of product line
- ATLAS (ADSL Transmission Line Analysis System)

Customer Care System
- Before subscribing step
  - ATLAS (ADSL Transmission Line Analysis System)
- Subscribing step
- On time service setup
- After subscribing step: Quick recovery support system

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Key Success Factors of KT-Mature Stage

- **Equipment Cost Reduction**
  - Bulk Purchase by KT
  - Reduction of equipment costs
    - 552 $ (‘99) → 276 $ (‘00) → 165 $ (‘01)
    (Unit cost of line)

- **Employee Training**
  - Training in-going
  - Training 3,000 persons in Research center

- **Various Solutions**
  - ADSL : ATM-based
  - Ntopia : LAN-based
  - B&A : Home PNA

- **New Service Induction**
  - VDSL
  - VOD
  - W-LAN etc...

- **Aggressive & Sophisticated Strategy**

- **Enhancement of Infrastructure**
  - Upgrading Backbone
  - Constructing DQME (Data Quality Measurement Equipment) etc...

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KT Broadband Access Overview

Megapass Classes

Megapass is the umbrella brand of KT’s broadband access services which includes ADSL, B&A, Satellite, BWLL, and Ntopia.

<table>
<thead>
<tr>
<th>Description</th>
<th>Speed</th>
<th>Service charge</th>
<th>Target</th>
<th>Target proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSL (ATM)</td>
<td>download 2–8Mbps</td>
<td>24 $</td>
<td>Large quantity of</td>
<td>85.6%</td>
</tr>
<tr>
<td></td>
<td>upload 256–640Kbps</td>
<td></td>
<td>housing</td>
<td></td>
</tr>
<tr>
<td>B&amp;A (HomePNA)</td>
<td>Symmetric 1Mbps</td>
<td>22 $</td>
<td>Low-cost based, Existing APT</td>
<td>13.4%</td>
</tr>
<tr>
<td>Satellite</td>
<td>download 1Mbps</td>
<td>23 $</td>
<td>Agricultural/Fishing villages</td>
<td>0.34%</td>
</tr>
<tr>
<td></td>
<td>upload 56Kbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BWLL</td>
<td>Symmetric 1Mbps</td>
<td>22 $</td>
<td>Blind spot, Industrial complex</td>
<td>0.02%</td>
</tr>
<tr>
<td>Ntopia (LAN)</td>
<td>Symmetric 2-2.5Mbps</td>
<td>29 $</td>
<td>Newly-building APT</td>
<td>0.64%</td>
</tr>
</tbody>
</table>

? Proportion as of October 2001
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**ADSL Network Coverage**

**Network Coverage**

- 4Km: 42%
- 3Km: 36%(78%)
- 2Km: 17%(95%)
- 5%(100%)

- Direct installation without quality degradation
- Direct installation with a little quality degradation

2Mbps guarantee:
- 91%
- 86%
- 78%
- 39%

Quality guaranteed through optical fiber

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**ADSL Network Configuration**

**Configuration**

- ATM Exchange
- ATM Network
- ATM-BRAS
- KT Broadband Access Overview
- Kornet Node
- GSR
- FES
- DHCP Server
- GES
- Customer Network
- FE
- Local Exchange Office
- FE
- Router
- POSSTM-1
- Local Server
- STM-1
- STM-1
- SDH
- T3
- Apartment Local Exchange Office
- KORNET Node
- FES
- Stacking
- DL/UL: Downstream/Upstream (high speed) / Asymmetric (high upload / downstream)
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**Profitability of ADSL**

**Comparison of Profitability**

(as of August 2001, U.S.: USD)$

<table>
<thead>
<tr>
<th>Description</th>
<th>ADSL</th>
<th>Local</th>
<th>Long Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARPU (US $)</td>
<td>24</td>
<td>3.3</td>
<td>3.4</td>
</tr>
</tbody>
</table>

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**Equipment Investment Ratio**

**Trends of ADSL Equipment Investment**

<table>
<thead>
<tr>
<th>Description</th>
<th>Dec 2000</th>
<th>Mar 2001</th>
<th>Apr 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buying Cost (US $)</td>
<td>372</td>
<td>276</td>
<td>165</td>
</tr>
</tbody>
</table>
Economical Efficiency Analysis

Analysis on Profit and Loss

NPV Analysis

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<table>
<thead>
<tr>
<th>Service Types</th>
<th>Description</th>
<th>Additional Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Charge</td>
<td>- Create additional profit, e.g., leased-line fee based on interconnection with CDN ISPs and other ISPs (e.g., SuperNet)</td>
<td>8.3 M annually</td>
</tr>
<tr>
<td>Applied services</td>
<td>- Moving picture service: web-camera (for PCs and remote-control monitors)</td>
<td>N x 80 M</td>
</tr>
<tr>
<td></td>
<td>- Home G/W service, indoor wireless LAN</td>
<td>(Interconnection with other ISPs)</td>
</tr>
<tr>
<td>Value-added services</td>
<td>Web TV STB, local server installation, cyber-community, apartment remote management, cyber-school, VOD service, intranet service, cyber security service, etc.</td>
<td>304 M (2003)</td>
</tr>
<tr>
<td>Wire/wireless Integrated services</td>
<td>-Wire wireless integrated services bundled with wireless LAN services on notebooks and PDAs in Hot Spot areas, anywhere, anytime available with a single device (e.g., OnePhone)</td>
<td>214M(2003)</td>
</tr>
</tbody>
</table>
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Emerging as Major Cash Cow from 2001

<table>
<thead>
<tr>
<th>Year</th>
<th>Voice wired</th>
<th>Megapass</th>
<th>Others</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
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<td></td>
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<td>1998</td>
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<td>2000</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Resource: Marketing Group in KT)

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KT's Advantages

KT has merits in ADSL Business which it gets faster than others

- Network Architecture Designing
- Network Management System
- Maintenance on the user side
- Operation & Maintenance Capability
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**Future Plan of KT Broadband Service**

**Intentions**

- Providing unified solution for user’s Value Networking
  - User-oriented wire/wireless convergence service of Seamless Connectivity

- Convergence of KT group capability thru Confirmation of assignment of roles and real-time coordination between Business sectors and group companies
  - Prevent dispersion of group capability thru coordination of the whole business system

- Maximizing profit thru United adjustment and elaborateness of Business Model
  - Exploit business strategy for maximizing synergy thru packaging businesses concerned

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**Future Plan of KT Broadband Service**

**Short Term Roadmap**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- First stepper as Telco bringing it into wide use</td>
<td>- Providing high-speed wireless Internet service over notebook or PDA in the places of indoor users, SOHO and in Hot Spot</td>
<td>- Providing high-speed broadband Internet service of symmetric 10-13Mbps for newly built APT</td>
<td>- Providing exclusive PDA-use portal available anytime, anywhere tying wire communication and wireless one thru wire/wireless converged device with a large screen of 4”-6” of high quality</td>
<td>- Transmission business of multimedia of animated video based on next stage broadband service, Metro-Ethernet and Ntopia</td>
</tr>
</tbody>
</table>

**Short-term Roadmap on Key Businesses Aimed at Reducing the Time to Market**
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**Future Plan of KT Broadband Service**

Pushing forward with the broadband business expansion, in tandem with the trend towards cross-industrial convergence.

**Long Term Roadmap**

- **2001**
  - Network Game
  - Chatting
  - Internet Banking

- **2002**
  - VOD
  - P2P
  - Set-top Box

- **2003**
  - Home Networking
  - VoIP
  - Working at home

- **2004**
  - FTTH
  - HDTV
  - 3D

- **2005**
  - 20Mbps
  - Symmetric 10~13Mbps

- **2~8Mbps**
  - ADSL
  - B&A
  - Ntopia

- **Ntopia V**
  - VOD
  - Interactive TV

- **ADSL**
  - Bandwidth
  - 2~8Mbps

**Network Game**

**Chatting**

**Internet Banking**

**VOD**

**P2P**

**Set-top Box**

**Home Networking**

**VoIP**

**Working at home**

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**Future Plan of KT Broadband Service**

**Next Stage Broadband Internet Service**

Realizing Value-Networking based on the maximized conveniences of communication.

- Fundamental network of future services: Moving images, VOD, wireless LAN, Home Networking.

**Service Concept**

**Basic**

- **Ntopia**
  - Speed: Symmetric 10 ~ 13 Mbps
  - Tariff: 30~40 US$

**Package**

- **Ntopia V** + **VOD**
- **Ntopia V** + **Nespot (Wireless LAN)**
Wireless LAN

Definition
Creating new business opportunity by integrating the wireline broadband service with the mobility of wireless services, using wireless LAN technology such as 802.1X.

Considerations
- As the world’s first public business model, Nespot has some technical and business issues to be ironed out, e.g., indoor solution (AP+ xDSL), development of corporate & educational solution, synchronization among services.

Strategy
- Step#1: Maximize synergy providing package services, W-LAN(Notebook) + Megapass + Leased Line.
- Step#2: PDA-based, roaming with PCS.

Future Plan
- Install 200 thousand Access Points in Hot Spot areas.

Home Networking

How to Cope with the Emerging Home Networking Market

Considerations
- Illegal IP share
- Propelling of Home Automation by cyber APT constructors
- Increase in users’ needs for Internet on TV, video, VOD

Future Plan
- Induction of indoor use of authorized IP thru supplying LAN outfits
- Propelling standardization of Home Gateway equipments
- Launching video and VOD services
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Creating a true multi-portal-based VOD service based on the next-generation broadband Internet service

- Indoor PC: One or twice the current speed
- Set top Box: Symmetric 13Mbps
- VOD via TV: Watching video using remote control at home
- Choosing the channel at the user’s convenience using remote control
- Checking price, time upon using the genre (e.g., drama, action movie, ...) for confirmation of program watching

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B2B Portal solution named Bizmeka which chains Business concerned each others such as 2.8M SME, Solution suppliers, Vendors

- Business Partners
  - Solution Suppliers
  - Corporate CP
  - Consulting Firms
  - SI/NI Carriers
  - e- Marketplace

- Relevant Authorities/Organizations
  - Government
  - Local Autonomous Bodies
  - SME-Related Organizations
  - Tax Authority
  - Financial Institutions

2.8 Million SME
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| **KT’s Picture in 2005 when KT is one of the Best Company in the World** |
|-----------------|-----------------|
| **(Unit: US$)** |
| **Revenue**     | 16 Billion      |
| **Operating Income Rate** | 25%           |
| **Net Income**  | 2.5 Billion     |
| **ROE**         | 17.7%           |

- Fueled by New Services
  - Next Stage Broadband Service (Ntopia V)
  - Wireless LAN (Nespot) + PCS
  - Home Networking
  - Animated Video (VOD...) etc

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- Providing an integrated service environment to enable users to utilize valuable communications platform, with any device at anytime and anywhere
- Megapass DSLAM