

Broadband service operational issues: landscape and policy framework

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Regulatory Implications of Broadband Workshop

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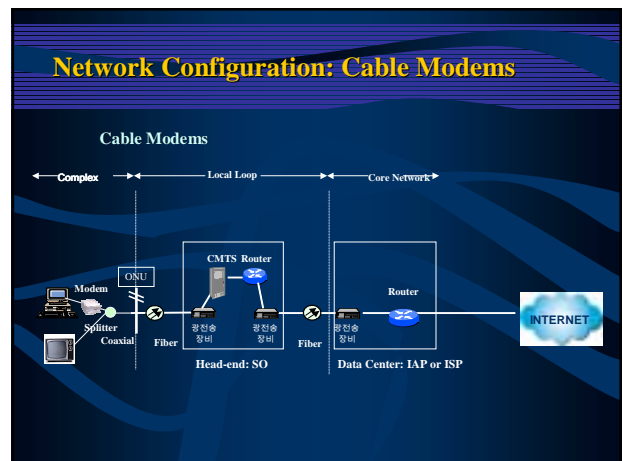
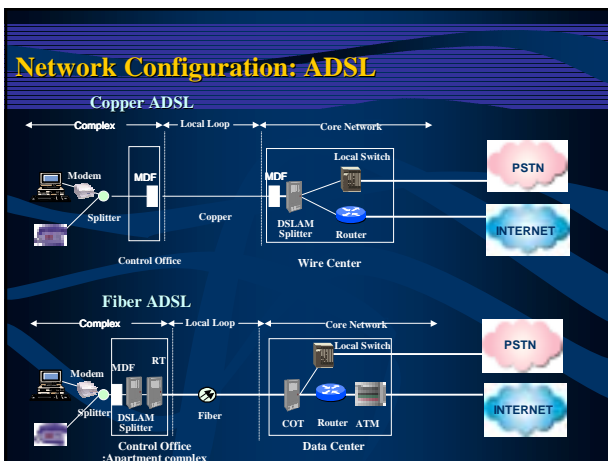
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- ## Actors in the Broadband Service Market
- Residential Users
 - Firms
 - Internet Access Providers (IAPs)
 - Internet Service Providers (ISPs)
 - Contents Providers (CPs)
 - Policy-maker
 - National Regulatory Authorities (NRAs)

Comparison: Broadband and Dial-up

	Access Networks	Speed	Joint Use	Charges
Dial-up	Local loop, Local Switch	Up to 56 Kbps	No	Usage-based, (Access only)
ADSL	Local Loop	Up to 8 Mbps Downstream	Yes	Flat-rate (incl. Internet)
Cable Modems	Cable TV network (tree & branch)	Up to 10Mbps Downstream	Yes	Flat-rate (incl. Internet)

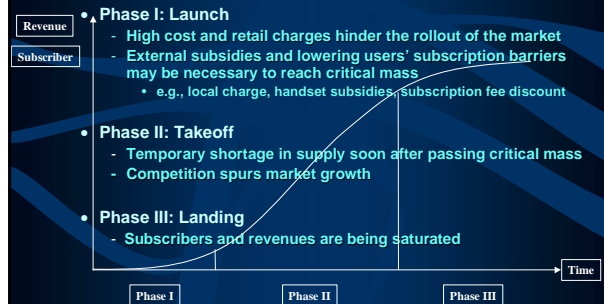


Different Objectives of Different Players

- Residential Users
 - lower charges and higher speeds
- Firms
 - Profit maximization
- Policy-maker
 - Advancing the advent of the Informatization Society
- National Regulatory Authorities
 - Guaranteeing fair competition and protecting consumers' right
 - Preventing duplication of facilities

Rise and Fall of the Market: General Principle I

■ Pattern of Growth: S-Shaped Logistic Function

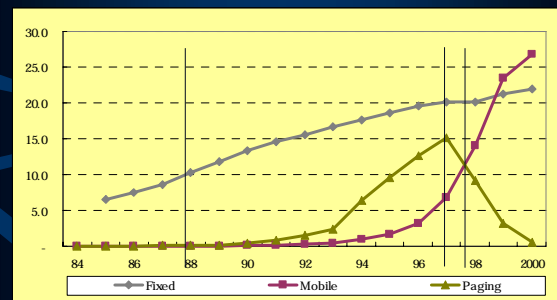


Rise and Fall of the Market: General Principle II

■ Migration between existing & emerging services

- As technology advances, emerging services evolve containing functions of the existing service
 - voice, speedier data service with abundant contents, more value-added services
- Although the emerging service may superior, churning does not occur since price is too high in Phase I
- Competition ignited in Phase II tips suddenly
 - Mobile Service versus Paging and CT-2 Service
 - Broadband versus Dial-up

Subscriptions in Korea (million)



Categorization of Costs

- Local service
 - Traffic Sensitive(TS) vs. Non-traffic Sensitive(NTS) costs
 - local loop related costs(depreciation, operating costs and etc.) belong to the NTS category for regulatory purposes
- Broadband service
 - Subscriber Sensitive(SS) vs. Non-subscriber Sensitive(NSS) costs
 - pure SS: subscribers modem, splitter
 - moderate SS: DSLAM, CMTS, ONU
 - NSS
 - **Core networks:** ATM switches or routers with leased lines
 - fiber optics in the case of fiber ADSL
 - **Marketing and General Administration costs**

Firms: Opportunities and Threats

- Best Strategy: capturing as many customers as possible
 - Revenue increases proportionately with the number of subscribers
 - Economies of scale is stronger in NSS costs
 - Although it is weaker in pure and moderate SS costs
 - but, utilization of facilities will be increased and costs for additional procurement would be reduced sharply as demand increases
- Threats
 - Few demands in Phase I, cutthroat competition in Phase II accelerates marketing costs
 - Lack of revenue models in contents
 - Alternative services such as wireless Internet, PLC and IP sharing come in on the scene too early

Role of the Policy-maker

- **In the voice market**
 - Supply : construction of the nationwide telecom infrastructure
 - Demand: guaranteeing universal access to basic telephony service
- **Now, leading role, given away to the private-sector**
 - Supply : upgrading and digitalization of the networks
 - Demand: affordable Internet access
- **Focus has shifted : Bridging the Digital Divide**
 - guaranteeing universal access to information for the under-served areas and the socially under-privileged

Concerns of NRAs

- **Vertical Foreclosure**
 - Vertical Integration of **access** and **Internet** services or between **Internet** and **contents** might preclude fair competition
 - ADSL: difficulty in implementing LLU
 - Cable Modems: basically, deregulated market, hard to implement regulation as in the telecom market
- **QoS(Quality of Service) Deterioration**
 - Difficulties in pinpointing where responsibility for QoS lies since several networks are interconnected with each other
- **Duplication of facilities**
 - Cutthroat competition might waste scarce resources

Regulatory Framework I: Quality of Service

- **Concerns and necessary measures**
 - Shortage in Supply in Phase I
 - monitoring necessary for launching the market
 - Selection of providers by users in Phase II
 - information about QoS necessary for rational choice by users
 - Reimbursing users throughout all phases
 - in case of QoS deterioration, customers should be compensated
- **Approaches**
 - **Enforcement Approach:** setting benchmarks on providers' QoS
 - penalizing providers or reimbursing customers for quality problems
 - **Encouragement Approach:** publicizing QoS info periodically
 - correcting information asymmetry between customers and providers
 - inducing quality competition among providers

QoS(continued)

- **Korea**
 - Telecommunications Performance Monitoring System(1999)
 - announced customer service for fixed, call quality for mobile semiannually
 - extended to the speed of Internet service including broadband(2000)
 - Customer Guarantee Scheme(CGS) through terms and conditions
- **Recommendations**
 - **Reporting requirements in Phase I** (e.g., Japan)
 - **TPMS in Phase II** (e.g, Korea)
 - **CGS** throughout Phase II thereon

Regulatory Framework II: LLU and Open Access

- **Debates over facilities and service-based competition**
 - Facilities-based competition facilitates the deployment of advancing networks,
 - But might result in possible duplication of facilities and financial burdens for new entrants
 - Service-competition, utilizing existing facilities, might quickly spur market growth
 - but networks might be deployed slowly.
 - Same arguments in roaming between 2G and 2.5G(3G)

Wide Spectrum of Policy: Local Loop Unbundling

- Japan
 - Since Dec. 2000, all modalities of LLU with LRIC
- Canada
 - Sunset requirement until 2003 in population dense areas with de-averaged pricing
- Korea
 - LLU(Full unbundling, Line Sharing) with LRIC, bit stream with Revenue Sharing, scheduled to implement in the first half of 2001
- Ireland, Luxembourg, Portugal: not required

Wide Spectrum of Policy: Open Access

- Canada: wholesale tariff filing required
- US: open access requirement imposed on M&As
 - AOL vs. TimeWarner: contents & access networks
 - AT&T vs. MediaOne: ISPs(@Home,RoadRunner) & access networks
- Korea
 - Initially, NO Powercomm's first-come-first-serve based exclusive contracts with ISPs
 - Voluntarily, open networks to (Multi) ISPs in the late 2000
 - **Key point: Powercomm does not offer retail service**
- UK: not currently justified

Korean and Evolutionary Models: Phase I

■ Korean Model

- The market fully open initially without regulation
 - The government primed the pump with prime rate(1999, 2000)
- Facilities-based competition has moved up Phase II, leveling out the playing field, and advanced network deployment
 - **Subscription: 5 million as of March 2001**
 - **Advancing 'last one mile' through FTTC, FTTO**

■ Evolutionary Model

- Service-based competition through LLU from the start
 - Based on regulated wholesale price, lessees set retail price

Korean and Evolutionary Models: Phase II

■ Korean Model

- In spite of market growth
 - incumbent local service provider has extended market share, while new entrants, aggravated financially
 - Facilities, duplicated
- Needs to cool down overheat for further vault
 - LLU with LRIC, rights of way(pole, ducts, conduits) scheduled to implement in the first half of 2001

■ Evolutionary Model

- The market has not yet rolled out since price are too high
- How to heat it up ?