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IP telephony

global market developments

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INTUG contents

- trends in international telephony
  - broadband
  - international telephony
- challenges to operators
  - flat rate tariffs
  - bundling with other services
- conclusions

INTUG broadband Internet access

- significant push for broadband
- link to economic growth
- wide divergence in national performances
- bundled with voice telephony:
  - cable modem plus cellular
  - ADSL plus CPS/VoIP
- e.g. Free in France (free.fr):
  - 20Mbps/1Mbps ADSL2+ €29.99 per month
  - with free calls to the fixed network in France
  - €0.03 per minute for many countries

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INTUG international telephony

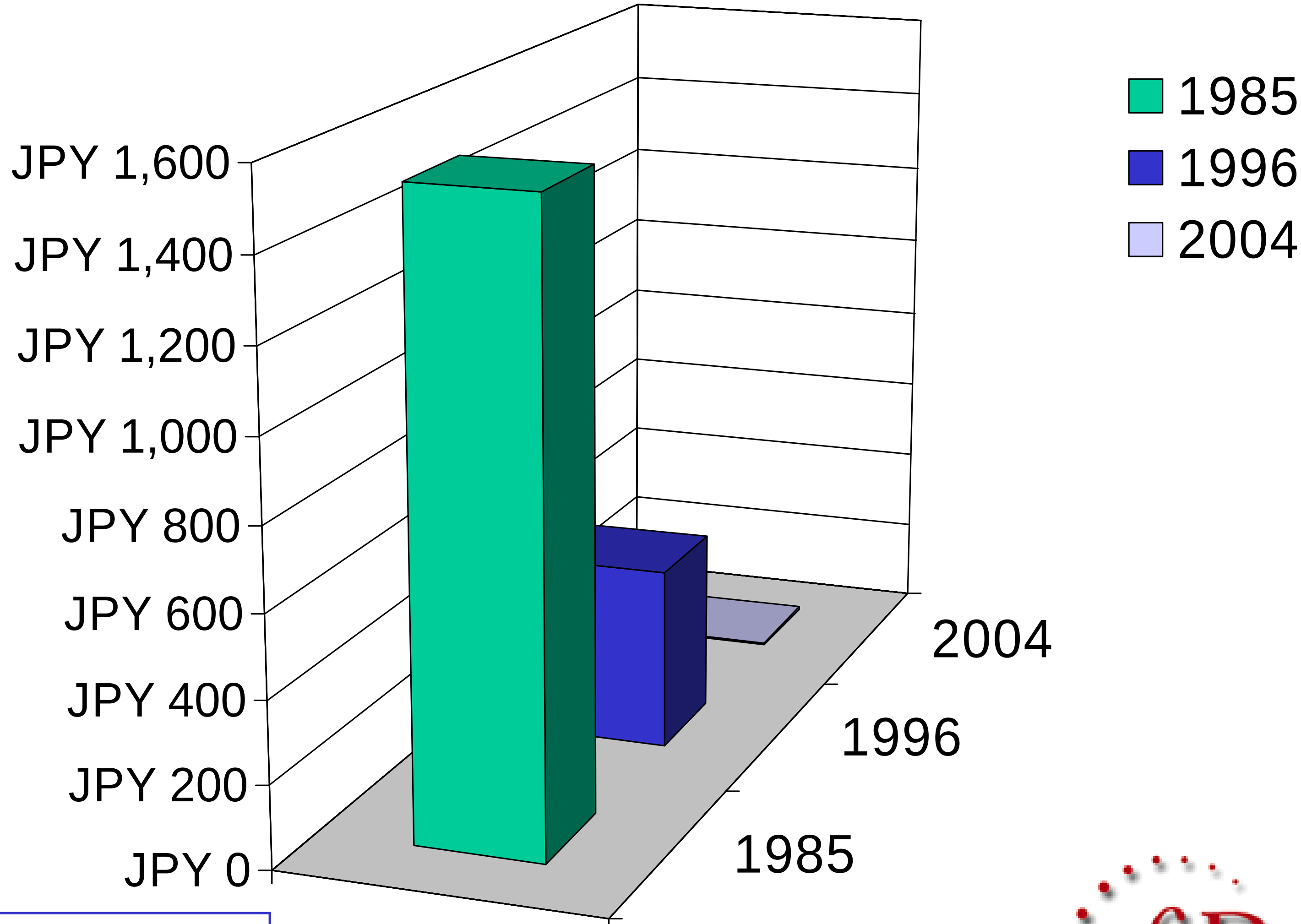
- governments have removed bottlenecks
- which has increased competition
- causing sharp reductions in prices
- except for calls to mobile networks with Calling Party Pays (CPP)
- in developed countries:
  - – incumbent operators response to the challenged of cheap VoIP is to bundle:
    - "all you can eat" national tariff conceals per minute rates
    - DSL plus "telephony" (plus video, etc.)
    - but excluding fixed-to-mobile
  - – enormous benefits from economies of scale
  - – some operators offer in-bound numbers in other cities and countries

INTUG Japan

- BBphone launched in August 2002
  - now has > 4 million lines
  - it is a significant factor in consumer selection of broadband supplier
  - free on-net calls
  - ¥ 7.5 for 3 minute call to PSTN in USA
- NTT launched VoIP in February 2003
- some operators peering VoIP August 2003
- Ministry of Internal affairs and Communications has defined:
  - ambitious targets for the ubiquitous network society
  - 4 classes of Quality of Service (QoS)
  - special 050 number range

INR 1 = JPY 2.4

INTUG call from Japan to the USA



INR 1 = JPY 2.4

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INTUG United States of America

- mobile operators have offered flat-rate plans
- Vonage (unlimited calls within USA and Canada):
  - works with broadband connection
  - area codes available in most states
  - US$ 24.99 per month residential
  - US$ 49.99 per month small business
- Broadvoice:
  - Unlimited world US$ 24.95 per month (35 countries, to fixed not mobile)
  - also numbers for United Kingdom
- the end of the long distance operators:
  - AT&T acquired by SBC
  - MCI acquired by Verizon

US$ 1 = INR 44

INTUG United States of America

- supposedly light regulation, but:
  - contribution to universal service fund
  - engineered to allow wire-tapping
  - access to emergency services
- call rates are not regulated
- on-going dispute between federal government and the states over their ability to regulate and tax VoIP
- FCC has ruled against blocking VoIP
- many legal challenges still to be heard

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VoIP as an application

- simple download
- instant messaging (ICQ, Yahoo, etc)
- Skype:
  - is not a service
  - already reached 2,000,000 concurrent users
  - shows on-line status of “buddies”
  - can be embedded in a PDA
  - SkypeOut gateway to the PSTN
- games consoles with voice (and Wi-Fi):
  - Nintendo DS
  - Sony PSP

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INTUG challenges for fixed carriers

- low (economic) barriers to entry
- new carriers with lower cost structures
- loss of traditional revenues
- perceptions of the financial markets:
  - they do not like declining revenues
- additionally, in developing countries:
  - lack of resources, skills and capital
  - “grey market” eroding their profit margins
  - bundling with broadband and video is not financially significant

INTUG challenges for 3GSM operators

- Arun Sarin (CEO, Vodafone) thinks VoIP is 3-5 years away from mobile operators
- VoIP "prices" make fixed-to-mobile calls look yet more expensive:
  - for many, the only itemised call charges
- can MNOs move to a "flat fee" model?
  - for subscription customers?
  - for pre-paid customers?
- VoIP over EDGE or UMTS?
  - not with per Megabyte charges
  - unnecessary with flat rate voice fees

INTUG corporate IP-VPNs

- regulation in most countries is:
  – antiquated and silent on IP, MPLS, etc.
- thus very unclear what is (not) permitted
- problems of integration with mobile
- corporate users want:
  – truly global services on resilient infrastructure
  – dial-in access from fixed and mobile networks
  – IP/IP.sec access from DSL, cable modem, etc
  – break-out to PSTN and the Internet
  – binding Service Level Agreements (SLAs)
  – MPLS interconnection

INTUG small and medium businesses

- limited attention to ICTs
- slow uptake of ICTs
- opportunities to provide IP telephony as a managed service

INTUG conclusions

- change is and will remain rapid
- strong economic drivers
- increasing technological capabilities
- needs of equipment manufacturers for new products
- tendency to "bundle" to get greater monthly Average Revenue Per User (ARPU)

INTUG thank you

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