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Broadband Definitional issues, comparability and Australian experiences

Australian Bureau of Statistics (ABS)

Introduction

1 Broadband technologies make a range of networked communications possible. They provide a technology with the capability to transfer information faster and change the way services can be delivered, the way business can be conducted and the way householders interact with the Internet. Broadband represents a second generation of digital telecommunication services, providing much faster access than first generation services such as dial-up modems using analog networks. Definitional issues around broadband technologies are discussed below, followed by an outline of the existing and planned sources of information on broadband in Australia.

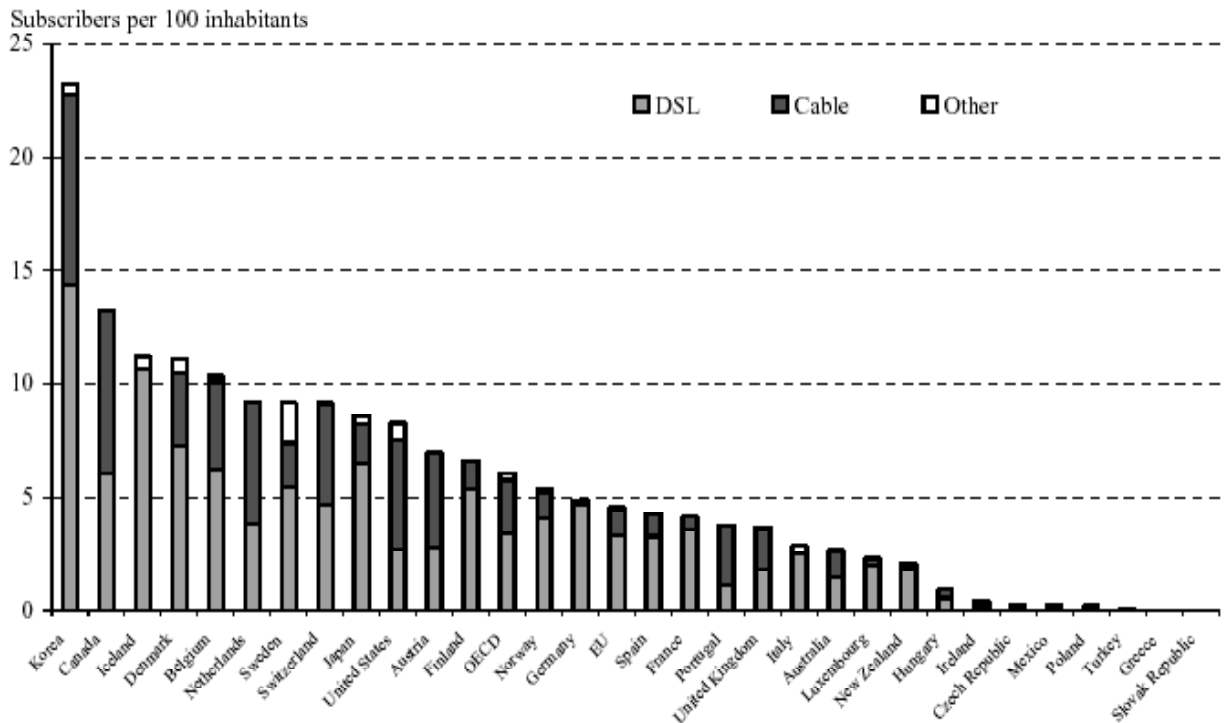
Background

2 The main current broadband technologies in the Australian context are digital subscriber line (DSL) and cable. Satellite is important in areas where the infrastructure to provide these other services is not available. Other forms of wireless broadband technologies are also expected to play an increasingly important role in both extending the reach of affordable broadband services to all Australians, and taking advantage of the growth in mobile technologies that enable access other than by PC. Other technologies such as frame relay are used by large subscribers with high levels of data interchange.

3 While Australia was a fast adopter of earlier generations of communications technology, Australia is currently lagging behind other Organisation for Economic Cooperation and Development (OECD) countries in broadband take-up. The OECD Information Technology Outlook 2004 indicated that in June 2003 Australia was ranked 20th in broadband penetration out of 30 OECD countries, a statistic that has been heavily used by commentators and lobbyists critical of government policy and the major infrastructure provider. However, over the last year, the rate of broadband take-up in Australia has lifted, increasing from around 517,000 subscribers at 30 June 2003 to around 1,048,000 subscribers at 30 June 2004¹.

The graph below shows levels of broadband penetration for OECD countries.

Figure 3.6. Broadband access per 100 inhabitants, June 2003



Source: OECD.

Defining broadband

ABS

4 Broadband is defined by the ABS as an 'always on' Internet connection with an access speed equal to or greater than 256 kilobits per second (kbps). This definition has been accepted by the Australian Communications Authority and other Australian users of the statistics. Major considerations in arriving at this definition were:

- **Always on**

This is a fundamental division between broadband and conventional dialup services. It is generally accepted that a broadband service is permanently connected to the Internet Service Provider (ISP).

The major problem with using this definition alone in the Australian context is the availability of always-on Integrated Services Digital Network (ISDN), usually at speeds of 64kbps and 128kbps. There are also some instances of always-on analog services, where businesses utilise a dedicated line that is never "hung up". As these technologies are not regarded as offering significant improvements in response and download times compared to traditional "narrowband" (dial-up access using a modem and analog telephone line), access speed is also considered in determining whether a service falls into the category of broadband.

- **Access speed**

Although anything in excess of 56kbps is an improvement on traditional dial-up modem-based, 256kbps has been adopted as the minimum download speed at which significant improvement in response and download times is realised (this is usually the entry-level access speed for Digital subscriber line (DSL) technologies). Note that this is applied to downloads only - the majority of DSL available in Australia is Asymmetric DSL, with an upload speed at best 50% of the download speed.

Some users have argued that the minimum speed for broadband should be set at the much higher rate of 1.5 Megabits per second (Mbps), at which speed interactive video applications are possible. (These users refer to the 128kbps - 1.5Mbps range as "high speed internet, rather than broadband.) While this speed cut-off is appropriate in the sense of measuring "third generation" connectivity, it would be too restrictive in the current Australian environment. Only 15% of broadband subscribers were connected to the Internet at this speed or greater at March 2004, which represents just 4% of all Australian Internet subscribers². The ABS is addressing this issue by collecting and releasing information on numbers of subscribers accessing the Internet by a range of download speeds, which allows subscriber data to be grouped according to users' definitions and requirements.

- **Access technology**

As outlined above, there are a range of broadband access technologies available, such as DSL cable, wireless and satellite. The ABS has chosen not to specifically include or exclude specific technologies from the definition of broadband, as the combination of always on and high access speed allows the separation of technologies into broadband and non-broadband. This avoids potential confusion caused by providers subjectively assigning access technologies to broadband.

Other Australian definitions

5 The other major collector of Broadband statistics in Australia is the Australian Competition & Consumer Commission (ACCC). The ACCC define broadband as using access speeds in excess of 200kbps and always on. However, as research has shown that there are currently no access technologies that provide access speeds between 200kbps and 256kbps, this definition means ABS and ACCC definitions are essentially the same.

International views

6 There is no agreed international definition of broadband. OECD papers on the subject raise many of the same definitional issues as mentioned above, particularly the categorisation of ISDN and whether technologies operating between 256kbps and 1.5Mbps should be regarded as broadband or an intermediate category like "high speed internet access". The overall approach seems to be to accept each individual country's definition for incorporation into comparative figures. Other international figures, such as those used in the table below, are based on types of technology used, with a heavy reliance on major service providers as the source of information³.

Figure 2 (continued) DSL lines, cable modems etc., and total broadband lines in major countries: Asia-Pacific

Country	Thousands of lines at 31 March 2004			Thousands of lines at 30 June 2004			Growth in Q2 2004		
	DSL	Cable modems etc	Total	DSL	Cable modems etc	Total	DSL	Cable modems etc	Total
Asia-Pacific	32496	15208	47704	36440	17369	53808	12.1%	14.2%	12.8%
Australia	528	322	850	710	338	1048	34.5%	4.7%	23.2%
China	10300	4870	15170	12710	6420	19130	23.4%	31.8%	26.1%
Hong Kong	620	650	1270	753	667	1420	21.5%	2.6%	11.8%
India	49	38	87	98	91	189	99.0%	139.6%	116.8%
Japan	11197	3720	14917	12069	4119	16188	7.8%	10.7%	8.5%
Singapore	258	143	401	268	143	411	3.9%	0.0%	2.5%
South Korea	6581	4847	11428	6666	4952	11618	1.3%	2.2%	1.7%
Taiwan	2590	603	3193	2720	625	3345	5.0%	3.6%	4.8%
Other Asia-Pacific	374	14	388	446	14	460	19.3%	0.0%	18.6%

Source: Point Topic Ltd.

7 Amongst statistical agencies, Statistics Canada defines broadband as anything that is not "traditional" dialup, therefore including ISDN subscribers in their broadband data. The Office of National Statistics in the UK distinguishes between dialup and permanent connections in their monthly ISP data, but do not refer to access speed. Their household internet use survey does not distinguish between types of access.

8 The US Federal Communications Commission (FCC) uses the term "high speed connection to the internet", rather than broadband, distinguishing between high-speed lines, providing services exceeding 200kbps in at least one direction, and advanced speed lines, providing services exceeding 200kbps in both directions⁴.

9 The ABS is interested in definitions used and issues encountered in other Asia-Pacific countries.

Broadband data collection by the ABS

10 Information on aspects of broadband are available from a number of ABS sources, as outlined below.

Business Surveys - supply side

11 As a component of the ABS **Internet Activity Survey** (IAS) which is currently conducted biannually, data are collected from retail ISPs. From September 2003, information is available on the number of Internet subscribers, by subscriber type, by a range of download speeds of connection. Data is also collected on the number of Internet subscribers by type of access technology.

12 Break-ups of subscriber numbers by speed and access technology are readily available from ISPs and considered to be of good quality. The following outputs are considered to be of less quality:

- Volume of downloaded data, which is split by dialup and non-dialup, by subscriber type. This is unavailable from a significant proportion of ISPs, and outputs rely heavily on imputation based on those who can provide data.
- State-level data for broadband is regarded as indicative only, as it is based on methodologies that are not necessarily applicable to more recent technology. It provides an adequate measure of distribution but not a good indicator of movement. Regional data is no longer released, due to these quality concerns, but remains a key user requirement. Large ISPs have indicated that they can provide numbers and types of subscriber by postcode, but not volume data. While postcode level data could be used to derive other geographical level information, this is unlikely to be collected until supported by some level of user funding, and until processing systems are reengineered.

Business Surveys - demand side

13 As a component of the ABS **Business Use of Information Technology Survey** (BUIIT), data has been collected on the type of Internet access technology being used by the business. This was changed from multiple types of access technology (the "tick any applicable" approach) to main type from the 2003-04 survey. This data can be cross tabulated across a range of other variables collected in the survey to provide information about businesses using broadband technologies, including by size and industry. For the 2003-04 collection, additional questions have been asked to specifically identify broadband connections, and reasons why businesses were not using broadband.

14 Results of testing indicated a good level of understanding of the requirements of the questions, and businesses were able to answer accurately. As testing showed that many businesses with broadband have retained dialup connections as a backup, the question was changed to ask main type of connection (tick one box) rather than ticking all that apply. Processing results have been consistent with testing, with the only notable definitional issue being some confusion with the status of ISDN, which some providers regard as a broadband technology. Data are expected to be released in March 2005.

Household Surveys

15 Details on the type of Internet access technology (including type of broadband connection) being used by the household are being asked in the household use of information technology module being used in the 2004-05 multi-purpose household survey (which is conducted as part of the monthly population survey). This data will be able to be cross tabulated across a range of other socio-economic variables collected in this survey, to provide information about households using broadband.

Population census

16 A topic on household access to the Internet is planned for inclusion on the 2006 Census of Population and Housing. This topic will provide data on whether private dwellings have Internet connectivity and whether this is broadband or dial-up access. This data will be able to be cross tabulated across a range of other variables collected in the Census to provide a rich source of information about households with broadband access, including small geographical area estimates. The question, which is currently undergoing final major census testing, is shown below. Results of this testing are expected by the end of November 2004.

<p>53 Can the Internet be accessed at this dwelling?</p> <ul style="list-style-type: none">• Include any Internet service regardless of whether or not paid for by the household.• If more than one type of connection in dwelling, mark the higher type.• Remember to mark box like this: <input type="checkbox"/>	<ul style="list-style-type: none"><input type="checkbox"/> No Internet connection<input type="checkbox"/> Yes, broadband connection (including ADSL, Cable, Wireless and Satellite connections)<input type="checkbox"/> Yes, dial-up connection (including analog modem and ISDN connections)<input type="checkbox"/> Other (including Internet access through mobile phones, etc)
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Other Australian broadband information

17 The ACCC currently collects information on a quarterly basis from a small number of the largest carriers providing broadband services including details on the number of broadband subscribers by access technology. Details are released in the ACCC's *Snapshot of Broadband Deployment* report. Broadband is defined by ACCC to mean any high speed connection greater than 200 kbps over a mix of media. Satellite services with a broadband capability, that may or may not be being utilised, are included in the survey. Broadband subscriber numbers from the ACCC are very close to those produced by the ABS.

Conclusion

18 Data on broadband penetration is a key requirement for users of ICT statistics. International comparative figures on the uptake and penetration of broadband represent a key aspect of this requirement. The conference may wish to discuss the possibility of reaching agreement on definitional and measurement issues to ensure that broadband data for Asia-Pacific countries is directly comparable.

References

¹ *Snapshot of Broadband Deployment as at 30 June 2004*, Australian Competition and Consumer Commission.

² *Internet Activity Survey (ABS Cat 8153.0)*, March 2004

³ *World Broadband Statistics Q2 2004*, Point Topic Ltd

⁴ *High Speed Services for Internet Access 31/12/03*, Federal Communication Commission (USA)