

New Age Customer Access Networks

Options for Wide Area Network (WAN) Access

Simon Brown
 ATUG/Macquarie Telecom Breakfast Series
 October 2006

Why Focus On Access?

- Over 60% of the Wide Area Network cost is Access cost.
- The LAN environment has huge bandwidth (100/1000Mbps)
- The Carrier's Telecommunications network has large diverse bandwidth as well
- The connection between the two – the "Customer Access" - is the costly, capacity constrained, component.

Where Are Changes Occurring?

- More bangs for your buck
- Bigger bandwidth bangs
- IP over everything / everything over IP
- Flexibility to change fast
- Mobility
- Simplicity for the customer
- Everything just works
- Applications are more graphics intensive

Access Technologies – Metropolitan Access Networks

- The Rise and Rise of Ethernet in the WAN
- Conventional fibre Ethernet
- Mid-band Ethernet Services over bonded copper pair
- Media Access Gateways
- Multiple VLANs
- 802.1Q in 802.1Q Services
- Point to multipoint services

Access Technologies Flavours of DSL

- Asymmetric
 - ADSL 6M/640K
 - ADSL2+ 24M/1M
 - VDSL 2 250M/1M+
- Symmetric
 - SHDSL 2M/2M
 - SADSLS 512K/512K
- Distance vs Speed
- SHDSL more robust
- Shared copper (LSS) or Unbundled Local Loop
- Contention Rates

Access Technologies Pure IP Satellite

- Pure 2 Way IP at last – not broadcast MPEG
- Spot beams – Multiple transponders for Australia
- IP Acceleration
- Power Variation / Data stream continuity
- Broadband symmetrical service speeds
- Smaller dish requirements
- High Angle for Australia – Geostationary
- Over subscription rate choices

Access Technologies Secure Socket Layer



- Secure Remote Access
 - With or without Digital Certificates
 - Radius Authentication
- Simple and flexible to use
- Good for corporate user control
- Does not need specialist setup of IP Sec
- Opens up the possibilities of Broadband speed for global corporate access via the Internet

Macquarie Telecom means business

Access Technologies Wireless Data



- GPRS
- 3G vs Wimax – the battle for useable speed and coverage
- Exploding area for standards
- The security vs useability trade-off

Macquarie Telecom means business

Decoding Reality From Rhetoric What do T3, G9, ULL, FTTN mean for competition in telecommunications in 2006 and beyond?

Maha Krishnapillai
ATUG/Macquarie Telecom Breakfast Series
October 2006



Macquarie Telecom means business

Telecommunications Regulation – “101” Refresher Course



- Australian Communications and Media Authority (ACMA)
 - National interest / technical issues / telco licensing / number control / etc
- Australian Competition & Consumer Commission (ACCC)
 - Competition policy
 - Monopoly areas
 - “Declared Services” & sets price, terms & conditions
 - 4 Major issues
 - ULL
 - PSTN – bottle neck
 - FTTN
 - T3 – Conflict of interest

Macquarie Telecom means business

Telstra Privatisation



- Initial sale – 29 September 1997
- Second tranche – 25 July 1999
- Third tranche – 23 October 2006
- Conflict of Interest – Govt as owner & regulator
 - Issue is not ownership, but **competition in the sector**
 - Public monopoly vs private monopoly

Macquarie Telecom means business

Telstra’s Business is Massively Profitable



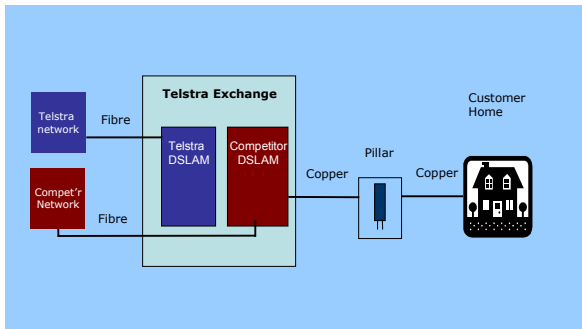
The Mix is Shifting to Lower Margin Products

	EBITDA Margin	1999 % Revenue	2005 % Revenue
Domestic LD	88.0%	13%	8%
Int'l LD	62.6%	4%	2%
Local calls	54.3%	23%	12%
Basic access	55.0%	17%	27%
Mobile	41.9%	22%	33%
Data Services	39.5%	21%	18%
		100%	100%

Privileged and Confidential. Prepared at the request of legal counsel for the purpose of assisting legal advice. 5/10 Canberra Ave 11, 2005 Presentation version 11

Macquarie Telecom means business

ULL Declaration and the Debate Around Access



Macquarie Telecom means business

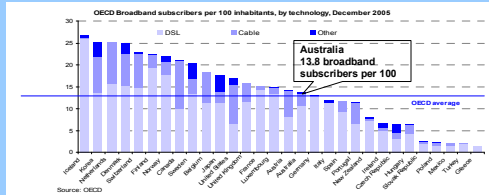
ULL Declaration and the Debate Around Access

- Clearly a monopoly
- Declared service
- ACCC arbitrate on price, terms & conditions
- Dispute notification
- Arbitration
- Telstra
 - Undertaking – \$30 flat rate across 4 bands
 - undermining the process through lobbying of Government

Macquarie Telecom means business

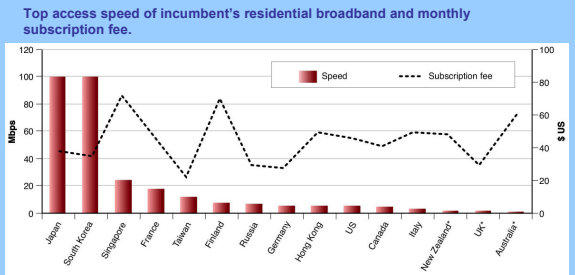
Competition in the Sector Driving Choice of Broadband Provider

- Objectives of competition
 - Lower prices / greater product choices / innovative services
- Broadband penetration is poor in Australia



Macquarie Telecom means business

Australia's Broadband Price and Bandwidth is Poor



Source: Assessing competition within the Australian market — a neutral view, Spectrum Strategy Consultants, 22 March 2006

Macquarie Telecom means business

The Myth of Fibre

- Only Telstra can deliver?
- Australians doomed to a future of 'fraudband' – between 256kbps and 1500kbps.
- ADSL2+ networks currently offer from 6mbps up to 24mbps.

Macquarie Telecom means business

Fibre to the Node (FTTN)

- All telecommunications networks in the world increasing number of fibre links
- Telstra's proposed \$3.4b FTTN Plans
 - Serving 4 million customers in 5 major cap cities (less than half of all Australians & excluding all regional areas).
 - Telstra discontinued talks with the ACCC on 7 August 2006

Macquarie Telecom means business

FTTN Cannot be Unbundled

macquarie TELECOM

Today

- Telstra controls the bottleneck.
- But the network can be unbundled.
- Competitors can get around the bottleneck.

FTTN

- Telstra controls the bottleneck.
- Cannot be unbundled.

Macquarie Telecom means business

G9 Plan for Higher Bandwidth in Australia

macquarie TELECOM

- Creation of an industry-owned, special purpose company called 'SpeedReach' to make key decisions about the network.
- A process to secure more extensive capital investment in the FTTN network — thus delivering high bandwidth broadband to millions more Australians than under Telstra's proposal.
- An access pricing model which sets fair prices for use of the network.
- An integrated process to move forward - including a managed process for transition from today's world of unbundled local loop to the future world of FTTN.

Macquarie Telecom means business

An Alternative Ownership Model Can Exist – Telstra Not Default Owner

macquarie TELECOM

Access

- SpeedReach → FANOC
- Other Access Seekers → FANOC
- FANOC → Telstra

Equity/debt

- Owners / financial investors → FANOC

Other details:

- Telstra copper from Node to Home
- Nodes
- Fibre from exchange to nodes
- Router in exchange
- FANOC charges access seekers an integrated access price covering:
 - Rate of return on capital invested in FTTN
 - FANOC operating costs
 - ULLS charges from Telstra
- Telstra charges FANOC for access to copper

Macquarie Telecom means business

G9 Position on FTTN for Australia

macquarie TELECOM

Telstra's position	G9 position if governance model (SpeedReach) applies	G9 position if governance model (SpeedReach) does NOT apply
• Agrees to joint ownership model	• FTTN can proceed	} FTTN can <u>NOT</u> proceed
• Rejects joint ownership model	• FTTN can proceed	
• Does not proceed with FTTN	• We will develop our own FTTN rollout proposal	

Macquarie Telecom means business

Questions?

macquarie TELECOM

Macquarie Telecom means business