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Briefing paper

# Competition in the Local Loop: unbundling or unbungling?

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# Telecoms InfoTechnology Forum

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## Competition in the Local Loop: Unbundling or Unbungling?

‘We were too early because we really believed network charges would come down.’ Thomas Kressner, CEO Yes TV *South China Morning Post*, 18 June 2003, B2.

### Aims & Objectives

Unbundling network elements (UNEs) has been the widely adopted regulatory solution to introducing competition in the local customer access network (CAN) or local loop. The EU’s list of unbundled elements includes (a) local loops for narrowband and broadband,<sup>1</sup> plus sub-loops, (b) network interface devices, (c) local switching circuits except for customers in large urban centres, (d) shared and dedicated inter-office transmission facilities, (e) signaling and call-related data bases, (f) operations support systems (OSS). In the USA the list went further to include fibre and dark fibre, but the FCC has recently moved to abandon unbundling for broadband.<sup>2</sup> Japan is also considering opening fibre and dark fibre. In smaller jurisdictions local loop unbundling (known as Type II interconnection in Hong Kong) stops at the MDF and switching is part of the interconnection arrangement (known as Type I interconnection in Hong Kong).

Needless to say, incumbent operators are generally reluctant to open their local networks to their competitors while new entrants can’t get enough of it. Unlike core network interconnection, which is universally accepted as necessary for the achievement of network economics and any-to-any connectivity, opening the local loop is controversial. On the one hand it offers immediate choice to users and easy access to customers for new entrants, on the other it can be seen as a disincentive to new investment by the incumbent and to new entrants investing in their own facility networks.

What is the aim of unbundling? It is an end in itself, or a means to an end? If the former then perhaps the answer is structural separation between wholesale and retail. If the latter, how do we know when that end has arrived? For instance, how do we measure the level of local service competition? By the market shares of the operators? By the penetration rate of networks among residential and business customers? By trends in prices and quality and range of services on offer? The first measure may indicate how successful market entrants have been but is not inconsistent with a sluggish market. The second measure can signal the achievement of a social or economic objective that is not inconsistent with zero competition. The third can measure consumer welfare but is not inconsistent with either low penetration rates or dominance. Clearly we need to meet a combination of objectives before unbundling can be claimed a success. But how do we know that unbundling was responsible for the success and didn’t delay its achievement?

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<sup>1</sup> Full unbundling occurs when a narrowband circuit is used by a new entrant. Shared access occurs when the circuit’s higher bandwidth is used by the new entrant to provide a broadband service while the lower narrow bandwidth remains with the incumbent. Bitstream is a data-rate broadband service provided by the incumbent to an ISP. An alternative is a leased circuit that allows an ISP to provide its own data-rate.

<sup>2</sup> The smorgasbord of unbundled network elements is called the unbundled platform or UNE-P solution.

## How Sound is the Economic Argument?

The argument for unbundling is usually posed in economic terms, as a means to bring about competition in the local loop and the benefits derived from competition, by sending the correct pricing signals at a time when there is near market failure. Market failure results from there being no natural way for new entrants to access the market, usually because of legal, technical or economic barriers to entry such as economies of scale. Non-subsidized local loops bear the highest unit costs of supply and the lowest unit revenues from access of any part of a telecommunications network. Revenues from usage, as opposed to access, can be high, but maybe 80 per cent of revenues will come from something like 20 per cent of the customers. Clearly, building a replica traditional public switched telecommunications network (PSTN) is in most cases a non-starter, but building a 'next generation network' (NGN) is a different matter. So the economic case is based upon the so-called 'build-buy' decision using forward-looking costs (i.e. the costs that can be expected to incur in building a new network) that will offer new entrants a chance to enjoy, even in the short run, a cost base that will allow them to compete for customers. But even this only makes sense if the new entrants can target either the 20 per cent of customers who generate the 80 per cent of usage revenues, or they can provide new services not traditionally available over the PSTN that users will wish to buy. These new services are seen to be Internet and Web-based services, or in a word 'broadband'.

However, this argument has a logical flaw in it. If new entrants are to be encouraged to build 'next generation networks' which have a lower cost base then the case that there is no natural way for them to enter the market becomes weaker, and so does the case for unbundling.<sup>3</sup> The argument is then confined to a provisional one that it takes time to build those new networks, perhaps longer than anticipated, and longer still to market the services, so unbundling provides a solution to a short-term problem. Following this logic some regulatory authorities, for example the CRTC in Canada and OPTA in the Netherlands, have adopted 'sunset' clauses to phase out unbundling or to phase out cost-based network charges, or at least to revise the method of calculating them as OFTA has hinted,<sup>4</sup> or trigger points, as Oftel did in the UK to allow network charges to increase once new entrants have won 10 per cent or 15 per cent market share.

There may be further problems with the standard economic argument. First, besides NGNs there are 'Other' networks available, notably cable TV, metro-Ethernet, FTTB, satellite and broadband wireless access. So again the 'no natural way' to enter the market assumption can be wrong. There is ample evidence that in many economies, including Canada and the USA, cable is the way most people access broadband,<sup>5</sup> but why should that be? There is no single answer. In some economies, for example beyond urban USA,

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<sup>3</sup> Forward-looking costs used in unbundling charges usually take the incumbent's network design and architecture as given and assume only new equipment at lower cost for the new entrant's substitute switches and circuits, the so-called 'scorched node' approach rather than assuming an entirely new NGN, the so-called 'scorched earth' approach.

<sup>4</sup> OFTA Statement of the TA, 18 March 2002, para 11.

<sup>5</sup> In the USA 65% of broadband access is provided by cable TV companies and 35% by phone companies over DSL. In the EU it is 73% DSL, 25% cable and 2% other technologies like Ethernet on Sweden. See Dr Michelle S. Kosmidis 'Deployment of broadband infrastructure in the EU: Is state intervention necessary?' TPRC Meeting, 28-30 September, 2002, Alexandria, Virginia, USA.

local loop distances make xDSL costly. In other economies, such as Denmark the same company owns the leading cable and telephone companies. Some cable companies are able to bundle telephony, Internet and content packages, but in other cases cable networks are neither digitized nor two-way. In some economies, such as South Korea and Japan, the Government has subsidized the telecommunications companies rather than cable companies to roll out broadband. Some commentators argue that in the USA cable rather than the phone companies have captured the market precisely because cable has not been subject to unbundling unlike the phone companies. Others point out that while cable serves residential markets it has no economic interest in providing infrastructure to business customers, and the industry remains doggedly reluctant to provide high-definition digital content that typically requires bandwidths of 20Mbps for fear of cannibalizing its current business.<sup>6</sup>

This leads directly to a second qualification to the economic argument. Whatever the optimum 'build-buy' price point, the regulator cannot know it. Even the new entrants will not know it because the broadband business is a content and applications-driven business and no one knows what the future flow of revenues will be, nor the net present value of current investment. This isn't so much new entry as an entry into new business. Even the incumbent is a new entrant in this sense, albeit with specific advantages of an established and closely related market, a brand name, etc. In such markets everything comes down to business strategy, and every new entrant will have their own, unlike the common strategies of phone companies offering commodities like the plain old telephone service. In this regard it is noticeable that in Hong Kong the original three FTNS new entrants, HGC, NWT and Wharf T&T each has their own strategy in terms of target market sectors, the geography they serve and the different degrees to which they 'build or buy'. Yet they all face essentially the same price points. This suggests that the pricing issue, central to the economic argument, may not be most important part of the story. On the contrary, other factors such as the general investment sentiment in the market on the one hand, and company forecasts of revenues from specific market segments on the other may be more decisive in determining whether and when to build out network facilities, when and where to 'pass' potential customers and when to offer to connect them.

Third, the logic of new entry is either to target existing high-spending customers and/or to target potentially profitable new service and product markets. The dot.com crash and the failed dreams of Web-casting and inter-active TV remind the industry of the risks and uncertainties attached to investments based on exploiting these new markets, and this lies at the heart of the debate about whether or not to mandate the unbundling of broadband.<sup>7</sup> So the incentive to invest in broadband access technologies, such as ADSL and two-way

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<sup>6</sup> See AEI-Brookings Joint Forum, 3 March 2002: <http://www.brookings.edu/comm/policybriefs/pb117.htm> comments by Charles Ferguson.

<sup>7</sup> Coming from a New Zealand perspective, Bronwyn Howell - 'Broadband Uptake and Infrastructure Regulation: Evidence from the OECD Countries' (February 2002) - has argued against unbundling on the grounds that early evidence from the OECD countries suggests the key market driver of investment is competition between phone networks and other networks such as cable TV. Prof. Howell also argues that the issue is essentially one of demand for broadband services so supply-side regulation misses the point. But can attractively priced supply create demand? And how far is such demand a substitute good for other forms of 'infotainment'? See [http://www.trp.hku.hk/papers/2003/broadband\\_uptake.pdf](http://www.trp.hku.hk/papers/2003/broadband_uptake.pdf)

digital cable, is one aspect of the issue, and involves, for example, whether LRIC+ or other formulations of cost-oriented network charges are appropriate if broadband unbundling is mandated. For example, Oftel in the UK has opted for Retail-Minus network tariffing (see below) with price capping on BT's wholesale tariffs to prevent 'margin-squeeze'. The EU has followed this lead. More recently the Federal Communications Commission (FCC) in the USA voted to abolish mandatory broadband unbundling altogether.

### Retail-Minus, Price Caps and Cost-Oriented Network Charges

An emerging practice among many regulators is to distinguish between traditional markets in which an incumbent player is dominant or exercises significant market power, especially over essential bottleneck facilities which constitute a barrier to entry,<sup>8</sup> and new or emerging markets in which there is either no dominant network operator, perhaps because of the availability of alternative routing and transmission technologies that can be supplied by a third party, or in which competition can be expected to arise despite an existing operator having significant market power, again perhaps because of emerging technologies, such as IP telephony, broadband wireless, metro Ethernets, etc.

In the traditional metallic local loop markets, where investment has been high and long ago depreciated, regulators prefer cost-oriented solutions that conceptually mimic competitive market outcomes, variants of LRIC using forward-looking costs to factor out the inefficiencies of older technologies. Clearly, the PSTN market can become competitive in some areas and in some markets such as densely populated urban centres and business markets. Even where subscriber installation and connection charges cannot fully cover the fixed costs of a newly constructed customer access network, the future flow of revenues from those customers, and the customer base itself, may still sustain a business case. Under these circumstances regulators have to consider in the longer run whether LRIC, or LRIC plus attributable common costs, or something closer to FDC that includes common indirect costs is justified. The logic being that (a) incumbents never just build local loops but sustain them with core networks – because without them they would have no reason to build the CAN – and therefore new entrants are enjoying the benefits of core network investment even though they may not be buying any of its UNEs; (b) the pricing signals should encourage new entrants to build their own networks whenever they are economically viable.

In emerging markets risk and uncertainty arise on the demand-side from (a) untried and untested market demand, and (b) market immaturity; on the supply-side from (c) rapidly changing technologies with difficult-to-predict chances of success, that (d) will change the cost structures of the industry, and (e) may or may not become either complementary or substitute technologies. Added to this is the uncertainty of future regulatory policy – regulatory risk – for example will the future allocation and licensing of spectrum, or the licensing restrictions on incumbents or new entrants, suddenly change? Where the

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<sup>8</sup> In Hong Kong '[t]here are no conditions similar to, say, the "impairment" or "necessity" concept in the US Telecommunications Act of 1996, or "essential facilities" and "near essential facilities" concepts in the Canadian regulatory regime, that qualify the right of entitlement to the unbundling of local loops.' OFTA, Consultation Paper, 23 May 2003, para. 24.

regulator takes the view that competition will eventually emerge, the choice of very flexible pricing controls is preferred, such as retail-minus and non-discriminatory safeguards on wholesale tariffs to prevent margin squeeze. The caveats usually concern (a) the timing, and (b) the specifics of different markets. Where competition is taking longer than expected – where the difficulties of raising capital, ordering and installing equipment and building up market share are simply under-estimated – the removal or relaxation of pricing controls may be delayed unless the regulator becomes persuaded that controls are part of the problem rather than part of the solution. The specifics concern particular difficulties encountered in particular markets or locations, which can be treated as exceptions to the rule. For example, access to older buildings or to uneconomic areas or to uneconomic customers within otherwise economically viable areas may justify the retention of controls that are being dropped for the rest of the market.<sup>9</sup>

## What Happens Overseas?

### EU

EU-wide unbundling was required from 2000 to promote ‘fair and sustainable competition’, but applies only to the metallic local loops<sup>10</sup> of ‘notified operators’ who exercise significant market power in the relevant market, where the definition of SMP is widened to include cases of ‘joint dominance’ in accordance with European case law.<sup>11</sup> It is worth noting the limitations on the scope of unbundling proposed by the Regulation.<sup>12</sup>

(20) ... *Ex ante* regulatory obligations designed to ensure effective competition are justified only for undertakings which have financed infrastructure on the basis of special or exclusive rights in areas where there are legal, technical or economic barriers to market entry, in particular for the construction of network infrastructure, or which are vertically integrated entities owning or operating network infrastructure for delivery of services to customers and also providing services over that infrastructure, to which their competitors necessarily require access.

(21) It is essential that such regulatory obligations should only be imposed where there is no effective competition and where national and Community competition law remedies are not sufficient to address the problem.

So regulated cost-oriented unbundling is only applicable in markets where competition is not yet effective,<sup>13</sup> and where the facilities are essential bottlenecks that present a barrier

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<sup>9</sup> Alternative solutions could be sharing the USO fund or the access deficit charge with new entrants.

<sup>10</sup> Fibre is excluded on the grounds that it ‘is a specific market that is developing under competitive conditions with new investments.’ Para 5, Regulation (EC) No 2887/2000 of the European Parliament and of the Council of the European Union, 18 December 2000. For all the associated documents see [http://europa.eu.int/information\\_society/topics/telecoms/regulatory/new\\_rf/text\\_en.htm](http://europa.eu.int/information_society/topics/telecoms/regulatory/new_rf/text_en.htm).

<sup>11</sup> See *Mergers & Acquisitions: a telecoms policy for Hong Kong?* TIF Background Briefing Paper, February 2003, [http://www.trp.hku.hk/tif/papers/2003/feb/briefing\\_030224.pdf](http://www.trp.hku.hk/tif/papers/2003/feb/briefing_030224.pdf)

<sup>12</sup> See <http://europa.eu.int/ISPO/infosoc/telecompolicy/review99/com2000-393en.pdf>.

<sup>13</sup> ‘When the national regulatory authority determines that the local access market is sufficiently competitive, it shall relieve the notified operators of the obligation laid down in Article 3 (3) for prices to

to entry. But this still leaves a grey area for EU National Regulatory Authorities (NRAs): how far to regulate markets in which competition is only just emerging or is expected to emerge? Following the Oftel model, the answer seems to lie in the flexibility given to incumbents in their Reference Offers to new entrants, subject to retail-minus guidelines of non-discrimination. To avoid margin squeeze regulators can reject proposed Reference Offers that over-price wholesale tariffs, but they have no direct power to determine them.

## UK

BT's Reference Offer in October 2001 for cost-oriented DSLAM co-location charges was agreed only after Oftel rejected BT's original offer in December 2000. 'The final charges contained in this direction are based on estimates of the costs that BT is likely to incur when providing shared access. The reason for using cost estimates is that, currently, only limited information on the actual costs is available.'<sup>14</sup> Oftel anticipates that a price-cap, or RPI-X will subsequently govern any new charges. In a further step to enforce broadband unbundling and shared access, in 2002 Oftel determined that BT negotiate interconnection agreements with companies Energis and Thus for an ATM 'Multi-Service Platform' or MSP.<sup>15</sup> The new entrants were looking for interconnection at two levels. First, at the ATM closest to the end user (the local loop – Oftel's Service A and in Hong Kong OFTA's Type II interconnect) and second at a distant ATM (anywhere else in the network – Oftel's Service B and in Hong Kong OFTA's Type I interconnect). In both cases the Director of Oftel has determined that a non-discriminatory charging principle is the appropriate approach, otherwise known as Retail-Minus.<sup>16</sup>

This is to be regulated to ensure there is no 'Margin Squeeze' in services that are deemed to constitute a barrier to entry<sup>17</sup> and will require BT to provide details of unit costs of 'Relevant Services'. As the incumbent with significant market power, BT must make an 'ATM Reference Offer' to new entrants charging them no more than BT charges its own subsidiary or affiliated companies, namely the retail price to its own customers minus a discount. In light of uncertainties and risks the Director of Oftel associates with an emerging broadband market he decided against determining what that discount should be.

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be set on the basis of cost-orientation.' Article 4 (5) Text of Legal Notice at [http://europa.eu.int/smartapi/cgi/sga\\_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32000R2887&model=guichett](http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32000R2887&model=guichett)

<sup>14</sup> 'Local Loop Unbundling: final charges for shared access – 18 October 2001' at: <http://www.oftel.gov.uk/publications/broadband/llu/shac1001.htm>, para.1.16.

<sup>15</sup> 14 June 2002 *Direction to resolve a dispute between BT, Energis and Thus concerning xDSL Interconnection at the ATM switch*: <http://www.oftel.gov.uk/publications/broadband/dsl/atmi0602.htm>.

<sup>16</sup> 'He has decided that BT should set its interconnection charges on a non-discriminatory (retail-minus) basis. This is because the Director believes that, while key relevant markets are not effectively competitive, there is at present a great deal of uncertainty as to future market developments. There are a number of other access technologies either operational now or planned, such as LLU operators, line sharing operators, cable, 3G, satellite and fixed wireless access, which may develop and become further alternatives to BT's DSL services. In these circumstances the Director has concluded that cost based price regulation would not be appropriate, as it would be very likely to deter the potential development of effective competition. Instead the Director directs a regime of non-discriminatory (retail minus) price regulation which should prevent anti-competitive behaviour while not deterring either further investment in DSL or other access technologies.' (Explanatory Note, Summary, para S.6)

<sup>17</sup> The Director explicitly excludes new services that may fail the Margin Squeeze test if they are not considered entry barriers. Para 4.31.(n)

Further, while BT is under no licensing obligation to offer exactly similar terms to other operators, the Director makes clear that this determination should be the guideline.

For narrowband services the UK follows the EU's Regulation that came into effect 31 December 2000, and requires full local loop unbundling for the metallic circuits below 128 Kbps of 'Notified Operators' (operators designated as having 'significant market power') BT and Kingston Communications (Hull) plc. Oftel chose to set starting charges for unbundled local loops and tie cables,<sup>18</sup> but leave co-location rentals to negotiation, subject to Oftel's view they 'should be set on the basis of average cost with rental charged only for the space occupied by the operator.'<sup>19</sup> Cost-based circuit charges determined in December 2000 using LRAIC plus a mark-up for attributed common costs were due for review but in March 2002 Oftel declined revision 'due to unexpectedly low take up of loops, Oftel does not have more useful information on costs and other operational data than was available in December 2000.'<sup>20</sup> Oftel anticipates that a price-cap or RPI-X will subsequently govern any new charges.

## USA

Section 251 of the Telecommunications Act of 1996 requires unbundling wherever it is 'necessary' and where without it local competition would be 'impaired'. But under a Supreme Court ruling the FCC must take into account alternative facilities outside the incumbent's network that may be available to new entrants and must not assume that an increase in cost or a decrease in quality resulting from denial of access to an incumbent's network elements impairs the ability of a new entrant to offer service. In being ordered by the Supreme Court to develop a limiting standard that is 'rationally related to the goals of the Act', the FCC developed five factors to be considered when determining unbundling: (i) the rapid introduction of competition in all markets, (ii) promotion of facilities-based competition, investment and innovation, (iii) reduced regulation, (iv) market certainty, and (v) administrative practicality.<sup>21</sup>

Like all regulators the FCC is groping in the dark about the likely effects of unbundling. In its initial UNE Remand Order, 'the Commission agreed with competitive LECs that access to UNEs would lead to initial acceleration of alternative facilities build-out because acquisition of sufficient customers and necessary market information would justify new construction.'<sup>22</sup> But according to the FCC, by June 2001 of 190 million switched access lines nationwide, only 3.2 million UNE loops were provided without

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<sup>18</sup> The unbundled local loop is measured from BT's MDF to the 'network terminating equipment' at the customer's site. Tie cables are either type 1 connecting BT's MDF to a nearby co-located MDF or type 2 connecting to a joint cable chamber in the case of an operator's distant MDF.

<sup>19</sup> 'Access to Bandwidth: Conclusions on charging principles and further indicative charges – August 2000': found at <http://www.oftel.gov.uk/publications/broadband/llu/a2b0800.htm>

<sup>20</sup> 'Determination... - December 2000': <http://www.oftel.gov.uk/publications/broadband/llu/llu1200.htm>  
'Direction on Local Loop Unbundling – 28 March 2002': at <http://www.oftel.gov.uk/publications/broadband/llu/llu0302.htm>, para.1.3.

<sup>21</sup> See FCC (1999) Triennial Review: [http://www.fcc.gov/web/cpd/triennial\\_review/](http://www.fcc.gov/web/cpd/triennial_review/)

<sup>22</sup> UNE Remand Order, at 3749, para 112:  
[http://www.fcc.gov/Bureaus/Common\\_Carrier/Orders/1999/fcc99238](http://www.fcc.gov/Bureaus/Common_Carrier/Orders/1999/fcc99238)

switching and 4.8 million with switching. CLECs reported a market share of 17.3 million or 9 per cent switched lines, of which 44 per cent were over acquired UNE loops, 23 per cent over leased circuits and 33 per cent over their own local loop facilities. In other words, CLECs had built only 3 per cent of the local loops. Whether this failure to meet the goals of the 1996 Act are due to rearguard resistance from the LECs or to a lack of incentives to CLECs or to market failure remains controversial, but suggests little opportunity for broadband to be provided by CLECs over their own networks.

The FCC has no fixed definition of broadband but has used the term ‘to mean sufficient capacity to transport large amounts of information, and recognized that under its evolving nature the Commission “may consider today’s ‘broadband’ services to be ‘narrowband’ services when tomorrow’s technologies appear.”(Line Sharing Order, 14 FCC Rcd at 20914, para. 1,n.2).’<sup>23</sup> At some stage the decision in February 2003 to abandon unbundling for broadband may have to take this shifting of the goal posts into account.

### **USA – A Synopsis of the FCC Ruling, 20 February 2003**

20 February 2003 the FCC ruled the following, subject to rebuttals from State Commissions and legal challenges.

1. **Impairment Standard** – occurs when a requesting carrier is unable to provide an economic service because of a barrier to entry under the control of the incumbent local exchange carrier (LEC). ‘The Commission’s unbundling analysis specifically considers market-specific variations, including considerations of customer class, geography, and service.’
2. **Broadband Issues** – unbundling is not required if LECs (i) provide fiber-to-the-home, or (ii) fiber close to the home (hybrid loops), and (iii) ‘the Commission will no longer require that line-sharing be available as an unbundled element. The Commission also provides clarification on its UNE pricing rules that will send appropriate economic signals to carriers.’
3. **Unbundled Network Element Platform (UNE-P) Issue** – based on the presumption of no impairment, switching, a key UNE-P issue, will no longer be unbundled for business customers served by high-capacity loops. For mass market customers ‘the Commission sets out specific criteria to determine, on a granular basis, whether economic or operational impairment exists in a particular market.’
4. **Role of States** – ‘have a substantial role in applying the Commission’s impairment standard’
5. **Dedicated Transport** – requesting carriers are not impaired by denial of Optical Carrier (Ocn) level transport circuits, but are impaired without access to dark fiber subject to route specific requirements.

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<sup>23</sup> FCC Note of Proposed Rulemaking, 12 December 2001, para.22:  
[http://hraunfoss.fcc.gov/edocs\\_public/attachment/FCC-01-361A1](http://hraunfoss.fcc.gov/edocs_public/attachment/FCC-01-361A1)

## Canada

By the Telecom Decision CRTC 97-8, the Canadian Radio-television and Telecommunications Commission (CRTC) requires that ‘essential facilities, functions and services’ in the local loop should be unbundled. A UNE must meet three criteria: ‘(1) it is monopoly controlled; (2) a CLEC requires it as an input to provide services; and (3) a CLEC cannot duplicate it economically or technically.’<sup>24</sup> Essential facilities, functions and services are classified as Category 1 competitive services and, under Telecom Decision CRTC 2003-11,<sup>25</sup> the network charge is now subject to a reduced cost mark-up of 15% and thereafter a price cap inflation (I) – X, currently 8%. Category 2 competitive services are ‘near-essential’ facilities, functions and services subject to a 25% mark-up over cost and the price cap. Broadband is assigned to Category 2, but the remote switching element and DSLAM equipment and ADSL coverage information is assigned to Category 1.

The Telecom Decision CRTC 97-8 also provided five year sunset provisions for the unbundling of certain non-essential facilities to speed up the start of competition, such as non-essential local loops, transit traffic trunks, and CCS& signaling. But in 2001 these provisions were extended ‘until such time as the market for such facilities is sufficiently competitive’,<sup>26</sup> reflecting the fact that by end 2000 competitors served on average around just 10% of the business market and only 0.2% of the residential market.

## South Korea

Not until 2002 did the Ministry of Information and Communication (MIC) open Korean Telecom’s national metallic network to local loop unbundling using LRIC-based charging. A fully unbundled leased line is charged KRW 9,200 per month (HK\$60) and a shared-line charge for ADSL services KRW 6,100 per month (HK\$40). Broadband open access to ISPs is also mandated. South Korea’s phenomenal take-up of broadband is well known. By end 2001 the penetration rate was already close to 15 per cent of the population, the world’s highest. About 60 per cent of broadband was through ADSL and over 30 per cent by cable modem. This growth preceded unbundling and has been driven on the supply side by a combination of Government’s NII policy to bring broadband to every home by 2010 and to 30 per cent of the population by 2005, backed up by massive subsidies, and by a high degree of market competition between telecom chaebols to grab market share. On the demand side entertainment services are very popular among 80 per cent of users, and there is a growing use of IP telephony. As Lee notes ‘a peculiar characteristic in broadband subscriptions is that residential Internet use exceeds that of business use.’<sup>27</sup>

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<sup>24</sup> See <http://www.crtc.gc.ca/archive/eng/Decisions/1997/DT97-8.htm>, Telecom Decision CRTC 97-8, 1 May 1997, para. 74

<sup>25</sup> See <http://www.crtc.gc.ca/archive/eng/Decisions/2003/dt2003-11.htm> Telecom Decision CRTC 2002-34, 18 March 2003

<sup>26</sup> See <http://www.crtc.gc.ca/archive/eng/Orders/2001/O2001-184.htm> Order CRTC 2001-184 1 March 2001, para.33

<sup>27</sup> Nae-Chan Lee, Broadband Internet Service: Korea’s Experience, February 2002: <http://broadbandkorea.kisdi.re.kr/0home/>

## Japan

According to Ovum Research (July 2002) Japan 'is the only country where full and fair local loop unbundling has successfully driven DSL, broadband take-up.' Just as Hong Kong and Singapore benchmark each other, so too Japan and South Korea and Japan was trailing badly, due it seems to NTT's resistance to cannibalize its own business and to open access. The e-Japan Strategy was the counterpart to Korea's NII and the response of the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) was to mandate unbundling based on LRIC in 2000 following the split of NTT into NTT East and NTT West, and to announce the National Broadband Initiative in 2001. By first quarter of 2003 Japan (over 7 million) had just pulled ahead of the USA and South Korea in the number of DSL lines and was the fastest growing market.

Japan has the world's lowest network charges for shared lines. From 2000 they fell from an initial ¥ 800 to ¥ 187 per month (HK\$12), and along with them Japan enjoys the world's lowest DSL retail prices, averaging around ¥ 2,300 per month (HK\$151). The result is twofold, a rapid growth in subscribers – DSL subscribers have jumped from 760,000 in May 2000 to 7.9 million in May 2003<sup>28</sup> – and squeezed or negative margins for major competitors<sup>29</sup> – companies like Japan Telecom, eAccess and Softbank – who between them have won over 60 per cent of the DSL retail market share. NTT does not provide bitstream services, but other operators co-locate their DSLAMS and then sell end-to-end bitstream services to ISPs and content providers such as Yahoo! Japan and Sony.

An amendment to the Telecommunications Business Law (TBL) and the NTT Law heralds a move away from regulated prices and towards retail-minus discounts and control over margin squeeze approach, as well as the abolition of the distinction between facilities (Type 1) and service providers (Type 2) in recognition of the convergence of wireline, wireless and cable technologies, platforms and networks. Operators without significant market power will be required only to notify the authority of their entry into the market. Fibre may also be unbundled. The National Broadband Initiative aims to have 10 million households connected to fibre by 2005.

## Hong Kong

If the objective of unbundling is to encourage market entry and give the new entrants incentive to build their own networks, then at first sight it would seem Hong Kong has been more successful than the USA or Europe. The data shows the four FTNS new entrants have captured 18% of the narrowband market and over half of this on their own networks.<sup>30</sup> How far is this due to the fully unbundled price point in Hong Kong? The reference prices stand around €5 monthly rental and between €52-97 connection charges

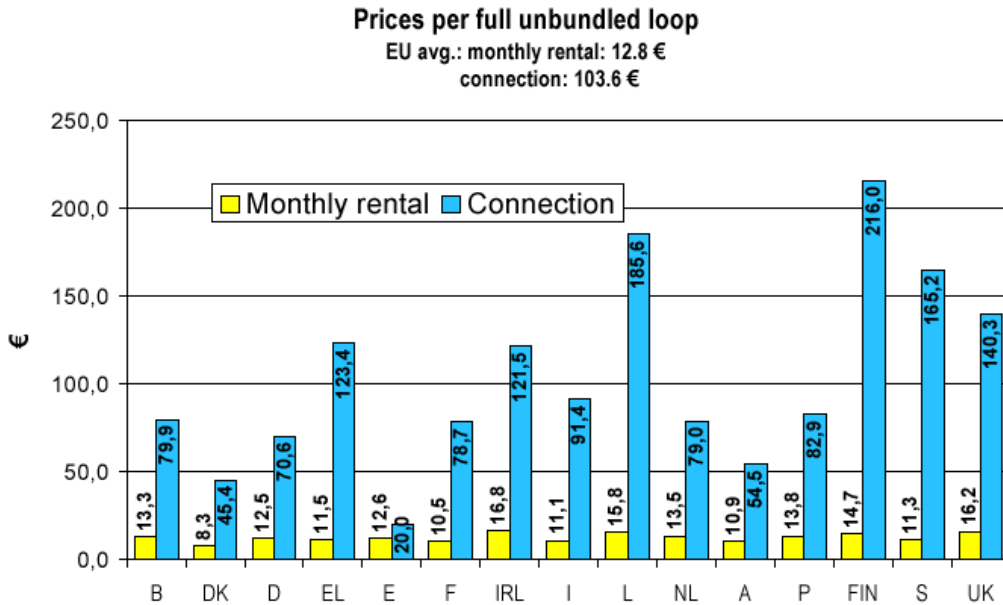
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<sup>28</sup> [http://www.soumu.go.jp/joho\\_tsusin/eng/Statistics/dsl/index.html](http://www.soumu.go.jp/joho_tsusin/eng/Statistics/dsl/index.html)

<sup>29</sup> The average cost of a subscriber line in 2000 was ¥ 2,062 according to data submitted to the MPT. Cited Hidenori Fuke (2002) Facilities-Based Competition and Broadband Access [http://users.wbs.warwick.ac.uk/cmur/conference\\_publications/fuke\\_paper4.pdf](http://users.wbs.warwick.ac.uk/cmur/conference_publications/fuke_paper4.pdf)

<sup>30</sup> According to figures supplied by Ovum, in Europe only Denmark at 12% has a higher percentage of unbundled local loops than Hong Kong.

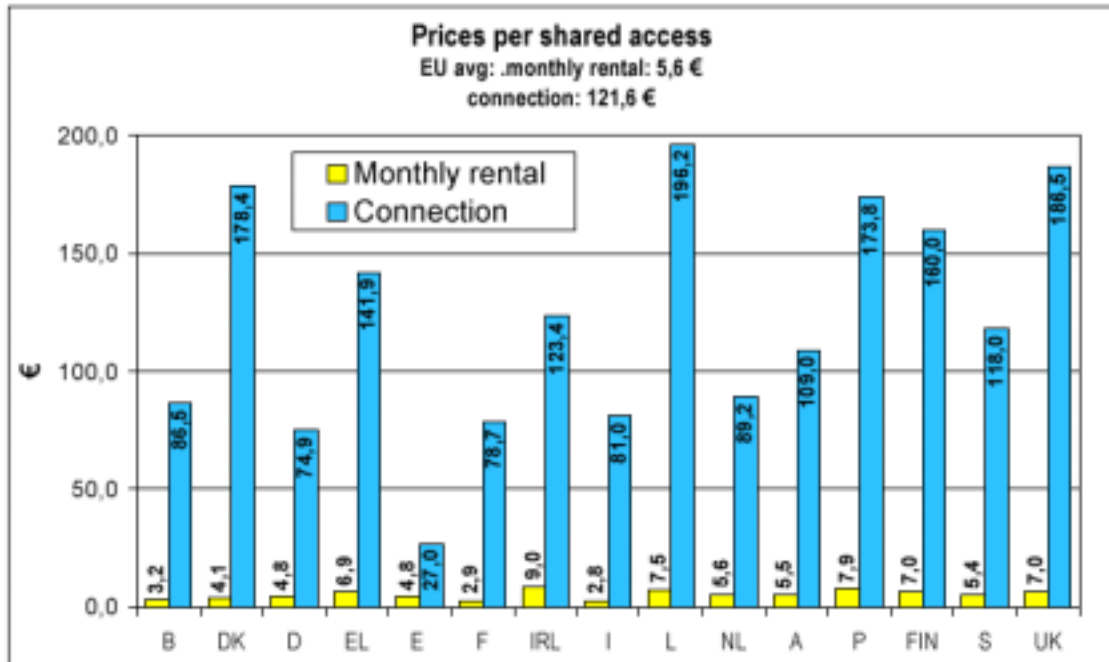
(using HK\$9: €1). As the following table shows, these compare favourably with EU tariffs where the averages are respectively €12.8 and €103.6, but crude comparisons have to be taken cautiously. Real costs vary, local loop distances across different economies vary, and the way in which regulators impute incremental and common costs vary. (Following graphs from Commission of European Communities, 3 December 2002)



Does this indicate the price point for network charges is about right? Does it imply that given market access, the new entrants have found the incentive to invest independently? It is really difficult to say because the context needs to be taken into account. First, each new entrant was given a minimum building target in their licence conditions. Second, a simple explanation of the narrowband market is that new entrants made a beeline for IDD calling revenues to sustain the cashflow of their business plans. Although IDD margins have fallen dramatically they may still represent 20-40 per cent on some routes and it remains a volume business. While the fastest way to secure customer IDD traffic is to promote the indirect access calling code, the surest way to capture customer business is through direct access and the fastest way for that is unbundled local loops. Third, three of the four new entrants have close links to property companies, and this can be seen as offering each of them a structural rather than a price incentive to build.

But network building by new entrants may be driven more by a strategic understanding that future revenues lie in broadband services and delivery. That is a risky proposition and can help explain why over half their 45% share of the broadband access market is over an alternative technology network, cable and why one new entrant is using another alternative technology network, a metro-Ethernet, after having started with a broadband wireless network. Is it coincidence then that this has happened where the incumbent's

approved wholesale charge for shared-line higher bandwidth is \$198 per month<sup>31</sup> which leaves little margin for ISPs who mostly charge flat rates and rely upon value-added services on top for their profit? Compared with the EU's average monthly shared access charge of €5.6, Hong Kong at around €22 looks expensive, although again the problem of making direct comparisons needs to be stressed.



## Conclusion

Experience from around the world suggests there is as yet no clear cut evidence one way or the other that unbundling encourages facilities competition, or that it encourages investment in broadband networks in particular. Further, facilities competition often arises more from competing alternative technologies, such as DSL versus cable, than from unbundling. On the other hand, after an initial slow start the take-up of broadband seems to have accelerated in many countries, good examples being Japan, Britain and Hong Kong and in each case unbundling was a policy. But was unbundling a driver, a facilitator or an irrelevance? And do the answers for narrowband and broadband differ? For example, half the homes in Britain access broadband by cable.

With these considerations in mind PCCW-HKT's diminishing dominance in the fixed-line access market may not translate into significant market power over large geographical or service swathes of the broadband market, and may represent only limited

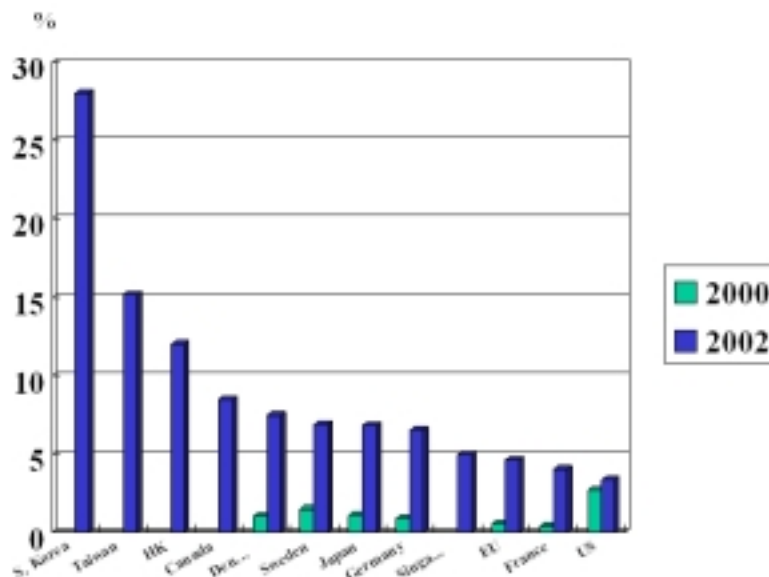
<sup>31</sup> OFTA adopted TS-LRAIC with forward-looking costs and a risk-adjusted cost of capital in making a judgment as to the reasonableness of PCCW-HKT's ADSL charge which contrasts starkly with the fully unbundled \$42 monthly charge and the \$110 monthly PSTN line rental.

control over essential bottleneck facilities, for example in access to older buildings. There was early criticism of the first three new entrants for being slow to build rather than buy, but in light of the mix of commercial realities and the logistical difficulties in designing a network from scratch, of ordering, taking delivery and installing very new technologies, their achievements have kept Hong Kong on the map. There is a way to go, as the opening quote suggests, and the time is now ripe to reconsider the regulation, especially what incentives will persuade the entrants to build the last mile.

But if the real incentive is demand rather than supply, the whole industry may be better off focusing on ways to stimulate the content side of the business. Since the content business works with very different business models the challenges ahead for the industry are more strategic than tactical because convergence is more difficult to achieve as a commercial arrangement than as a technical issue. The Hong Kong market is too small on its own to sustain a major content business and at the very least a regional perspective will be necessary. In helping to drive broadband, regulatory issues are bound to give way to wider policy initiatives focused on at least three areas: (a) encouraging a greater cross-fertilization of creative ideas, content production and applications between Hong Kong's ICT sectors, (b) developing clear guidelines for mergers and acquisitions and other forms of commercial collaboration between these sectors, (c) promoting regional and global commercial collaboration. Under these circumstances the regulation of broadband network development could be better designed if it targeted special problem areas of access in recognition of just how successful Hong Kong is becoming in broadband.

## Appendix: How Hong Kong Compares in DSL Lines

DSL connections as a percentage of telephone lines



Source: Point Topic Ltd

Appendix 1: Modes of Entry in the EU – Commission of European Communities (3.12.2002)

