EXPLANATORY MEMORANDUM TO THE DECISION OF THE INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE ON THE REQUEST BY SINGAPORE TELECOMMUNICATIONS LIMITED FOR EXEMPTION FROM DOMINANT LICENSEE OBLIGATIONS WITH RESPECT TO THE "INTERNATIONAL CAPACITY SERVICES" MARKET

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PART I: INTRODUCTION

1 On 2 March 2004, Singapore Telecommunications Limited ("SingTel") has requested the Info-communications Development Authority of Singapore ("IDA"), pursuant to Sub-section 2.6.1 of the Telecom Competition Code, as adopted on 15 September 2000 ("Code 2000"), to exempt it from the application of most of the Dominant Licensee requirements in Code 2000 as applied to 10 categories of services – consisting of 28 separate telecommunication product offerings – that, collectively, SingTel labels as the "International Capacity Services" or "ICS" market.[1]

2 This paper provides a single document ("Explanatory Memorandum") that describes: SingTel's request for exemption filed on 2 March 2004 ("Request"); the comments received in response to IDA's First Public Consultation Paper issued on 4 March 2004 and through interviews with industry participants and end users; the Second Public Consultation on IDA's preliminary decision issued on 25 November 2004, and the comments received in response to IDA's Second Public Consultation; the impact of IDA's adoption of the Telecommunication Competition Code 2005, which became effective on 4 March 2005 ("Code"); the legal standards and procedures that IDA uses to assess requests for exemption from Dominant Licensee requirements; IDA's analysis of SingTel's Request; and IDA's final decision.

PART II: EXECUTIVE SUMMARY

3 IDA has determined that the 28 telecommunication product offerings for which SingTel has requested an exemption do not constitute a single market because they are not reasonable substitutes for each other. Rather, most of these telecommunication product offerings fall within 10 separate markets: Backhaul, Terrestrial International Private Leased Circuit ("Terrestrial IPLC"), International Managed Data Service ("IMDS"), International IP Transit, Leased Satellite Bandwidth, Very Small Aperture Terminal ("VSAT") Service, Digital Video Broadcast-IP ("DVB-IP"), Satellite TV Uplink, Satellite TV Downlink and Satellite International Private Leased Circuit ("Satellite IPLC") markets.

[1] SingTel did not request to be exempted from the interconnection obligations contained in Section 5 of Code 2000.

4 Based on the evidence, IDA has concluded that, nearly 5 years after the full liberalisation of the Singapore telecommunications market, continued imposition of most of the Dominant Licensee obligations is no longer necessary for services that SingTel provides in the International IP Transit, Leased Satellite Bandwidth, VSAT, DVB-IP, Satellite TV Uplink, Satellite TV Downlink and Satellite IPLC markets. There is little evidence that SingTel has significant market power, or the ability to impede competition, in these markets. IDA, therefore, grants in full SingTel's Request to be exempted from the application of the Dominant Licensee obligations to SingTel's provision of telecommunication product offerings in these markets.

5 IDA further concludes that, although competition has developed in the IMDS market, SingTel retains the potential to leverage on its dominance in the Local Leased Circuit ("LLC") market to distort competition in this downstream market. Therefore, while imposition of *ex ante* Dominant Licensee obligations is no longer necessary for telecommunication services that SingTel provides in the IMDS market, retention of *ex post* rules prohibiting abuse of dominant position remains appropriate. Accordingly, IDA grants SingTel's Request to be exempted from the application of the *ex ante*, but denies SingTel's Request to be exempted from the application of the *ex post*, Dominant Licence obligations to SingTel's provision of telecommunication product offerings in the IMDS market. IDA will consider conducting a review of this decision in two years.

6 Finally, IDA has determined that, while competition is developing in the Backhaul and Terrestrial IPLC markets, these markets are only partially competitive. Therefore, IDA rejects SingTel's Request in these markets. However, IDA has taken significant measures – especially the adoption of the LLC and Cable Landing Station decisions[2] – that IDA expects will promote competition in downstream markets, including the Backhaul and Terrestrial IPLC markets. Therefore, IDA will consider conducting a review of the status of these markets in two years and, based on competitive conditions at that time, will determine whether a grant of an exemption is appropriate.

PART III: SINGTEL'S REQUEST

7 SingTel has requested IDA to exempt it from the application of most of the Dominant Licensee obligations to telecommunication services that SingTel provides in the "ICS market", on the ground that the ICS market is "vigorously competitive". SingTel has provided a non-exhaustive list of 10 telecommunication service categories that it claims are within this ICS market. SingTel has further identified 28 separate telecommunication product offerings that, it contends, are within these 10 telecommunication service categories. **Table 1** identifies the 10 telecommunication service categories for which SingTel has requested an exemption, and the specific telecommunication product offerings that SingTel has indicated are within

[2] See IDA's Decisions on Mandating Wholesale of SingTel's Local Leased Circuits (16 Dec 2003) and Allowing Greater Access to Cable Landing Stations (10 Sep 2004) on the IDA website at www.ida.gov.sg.

each telecommunication service category. A Glossary, which contains further description of each telecommunication service category, is attached as **Annex A**.

Table 1 – SingTel's List of Service Categories for Which Exemption is Sought

International Capacity Service Category (SingTel's Request)	SingTel's Product Offerings
Domestic Backhaul	• Backhaul (to GNCC) • Point-to-Point Backhaul • Standard Point-to-Point Backhaul • Backhaul with Interface Protection • Point-to-Point Backhaul with Interface Protection
International Private Leased Circuits (IPLC)	• ConnectPlus Bilateral IPLC • ACASIA IPLC • ConnectPlus N2N (Node-to-Node) IPLC
International Frame Relay (FR)	• Bilateral FR • ConnectPlus FR • ACASIA FR • Infonet FR
International Asynchronous Transfer Mode (ATM)	• Bilateral ATM • ConnectPlus ATM • ACASIA ATM • Infonet ATM
International Internet Protocol – Virtual Private Network (IP-VPN)	• ConnectPlus IP-VPN
IP Transit	• Standard Universal Internet Access service • Prioritised Asia Direct Universal Internet Access service • SingTel EXPAN MyNetwork Service
Leased Satellite Bandwidth (LSB)	• SingTel LSB Service
Very Small Aperture Terminal (VSAT)	• SingTel Global VSAT
Digital Video Broadcast – IP (DVB-IP)	• SingTel DVB-IP Service
Satellite TV uplink/downlink	• SingTel Telecast Local Access Service • SingTel Occasional Telecast Video/Audio Switching (Teleswitch) Service • Permanent Telecast Uplink/Downlink Service • Occasional Telecast Uplink/Downlink Service • Telecast Broadcast Fibre Network Service

8 SingTel requested IDA to exempt it from the application of the following Dominant Licensee obligations contained in Code 2000 to any service that it provides that falls within the "ICS market":

(a) Sub-section 3.3.1 – Duty to Provide Service on Demand;

(b) Sub-section 3.3.2 – Duty to Provide Service at Just and Reasonable Prices, Terms and Conditions;

(c) Sub-section 3.3.3 – Duty to Provide Service on a Non-discriminatory Basis;

(d) Sub-section 3.3.4 – Duty to File and Provide Service Pursuant to Tariffs;

(e) Sub-section 3.3.5 – Duty to Provide Unbundled Telecommunication Services;

(f) Sub-section 5.8.1 – Duty to Allow Resale of End User Telecommunication Services;

(g) Sub-section 5.8.2 – Duty to Allow Sales Agency;

(h) Sub-section 5.8.3 – Duty to Tariff and Make Wholesale Telecommunication Services Generally Available;

(i) Sub-section 7.2.1 – Pricing Abuses (e.g., predatory pricing, price squeezes and cross-subsidisation); and

(j) Sub-section 7.2.2 – Other Abuses (e.g., discrimination and predatory network alteration).

9 In its Request, SingTel contends that the telecommunication product offerings for which it sought an exemption are all within a single market. SingTel claims that each of these telecommunication product offerings (other than backhaul) is substitutable, and that backhaul should be included in the ICS market "because it is bundled or clustered with international capacity." SingTel also argues that the geographic market in which it provides ICS is regional or global, and that IDA should not conduct a route-by-route analysis. SingTel further asserts that the ICS market is a "vigorously competitive" market characterised by substantial capacity, multiple competitors, numerous alternative technologies, low entry barriers, substantial price declines and significant product diversity. Finally, SingTel notes that the Hong Kong telecommunication regulator, OFTA, has exempted Reach from dominant licensee requirements applicable to its provision of "external bandwidth" services.

10 IDA released SingTel's Request, along with a public consultation paper, on 4 March 2004 ("First Public Consultation Paper").

PART IV: FIRST PUBLIC CONSULTATION ON SINGTEL'S REQUEST

11 Eight parties filed comments in response to the First Public Consultation Paper: AT&T Worldwide Telecommunications Services Singapore Pte Ltd ("AT&T"), British Telecommunications plc, Cable & Wireless plc ("C&W"), Macquarie Corporate Telecommunications Pte Ltd ("Macquarie"), MCI WorldCom Asia Pte Ltd ("MCI"), MobileOne Ltd, Reach Ltd and StarHub Pte Ltd ("StarHub")[3].

12 All of the commenting parties opposed SingTel's Request. Some of them went further, asking IDA to summarily dismiss SingTel's Request. The commenting parties contended that:

(a) SingTel had not correctly defined the relevant product and geographic markets in which it provides the telecommunication product offerings for which it seeks an exemption.

(b) SingTel had failed to provide "verifiable data" regarding market shares, market concentration, price trends, international benchmarks and barriers to market entry.

(c) SingTel had not demonstrated why each Dominant Licensee obligation from which it is requesting exemption is no longer necessary to protect end users or to promote and preserve effective competition among Licensees for each telecommunication service.

(d) SingTel had not adequately addressed the effect of its vertical integration on its ability to act anti-competitively in the provision of the telecommunication product offerings for which it seeks an exemption.

(e) SingTel had improperly relied on the decision of the Hong Kong regulator, OFTA, to reclassify Reach as non-dominant in the provision of external bandwidth services, despite significant factual distinctions between the two markets and the scope of SingTel's Request.

13 IDA subsequently requested additional information and sought clarifications from SingTel and other major industry participants. IDA also conducted interviews with SingTel, most of the parties that filed comments, other significant industry participants and several end users.

PART V: IDA'S PRELIMINARY DECISION AND SECOND PUBLIC CONSULTATION

14 On 25 November 2004, IDA released a second public consultation paper ("Second Public Consultation Paper"), which contained IDA's preliminary decision regarding SingTel's Request. In the preliminary decision, IDA tentatively concluded that it would adopt the following decisions for the markets as summarised in **Table 2** below:

[3] The comments are posted on the IDA website at http: www.ida.gov.sg/idaweb/pnr.

Table 2 – IDA's Preliminary Decision

Market	Exemption from Dominant Licensee Obligations under Code 2000		
	Section Three	**Section Five**	**Section Seven**
	Consumer Protection	**Cooperation With other Licensees**	**Abuse of Dominant Position**
Backhaul	Deny	Deny	Deny
Terrestrial IPLC	Deny	Deny	Deny
International Managed Data Service	Grant	Grant	Grant
International IP Transit	Grant	Grant	Grant
Leased Satellite Bandwidth	Grant	Grant	Grant
VSAT	Grant	Grant	Grant
DVB-IP	Grant	Grant	Grant
Satellite TV Uplink	Grant	Grant	Grant
Satellite TV Downlink	Grant	Grant	Grant
Satellite IPLC	Grant	Grant	Grant
Miscellaneous Services*	Deny	Deny	Deny

* Telecast Local Access Service and Occasional Telecast Video/Audio Switching (Teleswitch) Service.

15 Five parties filed comments in response to the Second Public Consultation Paper[4]: SingTel, StarHub, MCI, Reach and the Asia Pacific Carriers Coalition (representing AT&T, BT Singapore Pte Ltd, C&W Global Pte Ltd, MCI, Reach International Telecom (Singapore) Pte Ltd, Macquarie and T-Systems ITC Singapore Pte Ltd).

(a) SingTel supported IDA's decision to grant an exemption in the IMDS, International IP Transit, and the suite of satellite services markets, but opposed IDA's decision not to grant an exemption in the Backhaul and Terrestrial IPLC markets. SingTel further argued that, if IDA is not prepared to grant an exemption from the application of Dominant Licensee regulation to all IPLCs routes, it should at least exempt SingTel from the application of Dominant Licensee regulation to IPLCs on routes between Singapore and those jurisdictions that have fully liberalised their international telecommunications markets.

(b) All of the other commenting parties supported IDA's decision to deny SingTel's exemption request in the Backhaul and IPLC markets.

[4] The industry was initially given 4 weeks to respond to the Second Public Consultation. Following the industry's request, IDA granted an additional 2-week extension (i.e., until 6 January 2005) for the submission of comments.

(c) StarHub supported granting SingTel an exemption in the Leased Satellite Bandwidth, Satellite TV Uplink and Satellite TV Downlink markets only.

(d) Reach, MCI and APCC opposed granting SingTel an exemption in any market.

16 The commenting parties raised a number of specific objections to IDA's preliminary decision. In particular:

(a) They raised a variety of objections to the methodology that IDA used to define markets and determine market shares. These include:

(i) whether, in defining markets, IDA had properly considered both demand-side and supply-side factors and properly applied the SSNIP (small but significant non-transitory increase in price) test;

(ii) whether IDA had improperly failed to assess wholesale and retail markets (such as in the Terrestrial IPLC market) separately;

(iii) whether IDA should have conducted route-by-route and cable-by-cable assessments (such as in the Backhaul and Terrestrial IPLC markets); and

(iv) whether, in calculating market shares, IDA properly included capacity that an operator supplied to itself. Some commenting parties also asked IDA to make public the information that it used to calculate market shares and price declines.

(b) Some commenting parties strongly objected to IDA's preliminary determination to grant SingTel a full exemption in the IMDS market. In particular, they claimed that IDA could have improperly understated SingTel's market share by failing to count revenues from SingTel's provision of LLCs used in conjunction with the downstream IMDS.

(c) Several commenting parties also objected to IDA's decision to grant SingTel an exemption in the Satellite IPLC market, given IDA's preliminary conclusion that SingTel is the only provider in the national market.

(d) Finally, they disagreed as to whether IDA should shorten or extend the date on which it will conduct a further review of competition in the Backhaul and IPLC markets.

17 IDA thanks all parties for their active participation throughout this proceeding. The information and comments that were provided significantly facilitated and assisted IDA in objectively assessing SingTel's Request and in reaching its final decision.

PART VI: ADOPTION OF THE NEW CODE

18 Following the close of the Second Public Consultation, Code 2000 was cancelled and replaced with the Code, which became effective on 4 March 2005.

19 Sub-section 12.4.4(a) of the Code provides, in relevant part, that:

"[A]ny proceedings commenced before the Effective Date of this Code, but which remains uncompleted after the Effective Date of this Code, will be deemed to have been made under the corresponding provisions of this Code and governed by this Code, provided that IDA is able to determine the proceeding in a manner that is consistent with the provisions of this Code."

20 SingTel's Request sought an exemption from three broad categories of Dominant Licensee regulation under Code 2000: the requirements to provide end user services on just, reasonable and non-discriminatory terms contained in Sub-sections 3.3.1 through 3.3.5 of Code 2000; the obligations regarding provision of wholesale and resale services contained in Sub-sections 5.8.1 through 5.8.3 of Code 2000; and the prohibitions on abuse of dominant position contained in Sub-sections 7.2.1 and 7.2.2 of Code 2000.

21 In this respect, IDA has determined that the Dominant Licensee obligations under Code 2000 that SingTel is seeking exemption in its Request, correspond to the following provisions of the Code, which address the same three categories of Dominant Licensee obligations:

(a) Sub-section 4.2.1.1 – Duty to Provide Service at Just and Reasonable Prices, Terms and Conditions;

(b) Sub-section 4.2.1.2 – Duty to Provide Service on a Non-Discriminatory Basis;

(c) Sub-section 4.2.1.3 – Duty to Provide Unbundled Telecommunication Services;

(d) Sub-section 4.2.2.1 – Duty to Provide Service on Reasonable Request;

(e) Sub-section 4.2.2.2 – Duty to Allow Resale of End User Telecommunication Services;

(f) Sub-section 4.2.2.3 – Duty to Allow Sales Agency;

(g) Sub-section 4.3 – Wholesale Services;

(h) Sub-section 4.4 – Tariffing;

(i) Sub-section 4.5 – Duty to Publish Tariffs;

(j) Sub-section 4.6 – Duty to Provide Service Consistent with Effective Tariffs; and

(k) Sub-section 8.2 – Abuse of Dominant Position in the Singapore Market.

22 Therefore, pursuant to Sub-section 12.4.4(a) of the Code, IDA will assess SingTel's Request for exemption in relation to the provisions of the Code specified in Paragraph 21 above.

PART VII: IDA'S ASSESSMENT FRAMEWORK

Requirements under the Code

23 Under the Code, a Licensee that is classified as a Dominant Licensee must comply with special provisions applicable to Dominant Licensees when it provides any telecommunication service pursuant to its licence. The Code recognises, however, that over time, a Dominant Licensee's telecommunication services may become subject to competition in certain markets in which it participates. Therefore, the Code provides that, as competition develops, IDA will cease applying these special provisions to the Dominant Licensee's telecommunication services that are no longer necessary to prevent Dominant Licensees from acting anti-competitively.

24 Sub-section 2.5.1 of the Code sets out the basic procedures and standards governing requests by a Dominant Licensee for exemption from any special provision applicable to Dominant Licensees. Specifically, Sub-section 2.5.1 provides that:

"[A] Dominant Licensee that seeks exemption from any special provision applicable to Dominant Licensees must submit an application to IDA that identifies the specific provisions (with Sub-section numbers) of this Code from which the Dominant Licensee seeks exemption. The Dominant Licensee must demonstrate that continued application of the provision to a specific facility or service is not necessary to protect End Users or to promote and preserve effective competition amongst Licensees. The Dominant Licensee must provide verifiable data to support its request."

25 Pursuant to Sub-section 2.6.2 of the Code, a Dominant Licensee is responsible for providing "verifiable data" that supports its request for an exemption. This evidence must persuade IDA that, if it grants the Dominant Licensee's request for exemption, the Dominant Licensee will not be able to act in a manner that harms consumers or impedes competition.

26 In a case, such as the present one, in which the Dominant Licensee seeks to be exempted in connection with specific telecommunication services, the Dominant Licensee generally should submit verifiable data regarding:

(a) the relevant market(s) for the telecommunication services for which the Licensee seeks an exemption;

(b) the participants in the market;

(c) the Licensee's market share;

(d) the estimated market share of other participants;

(e) the level of concentration in the market;

(f) the barriers to entry into the market;

(g) the likelihood of timely and sufficient increases in output (either through new entry or the provision of additional services by current market participants) in response to a significant and non-transitory price increase by the Licensee;

(h) the likelihood that end users would respond to a significant and non–transitory price increase by switching to a competing service provider;

(i) evidence of actual market competition – including new entry, changes in market share over time, price changes, introduction of new services and non-price competition; and

(j) any other relevant factors that could enhance or diminish the Dominant Licensee's ability to act anti-competitively.

27 Sub-section 2.6.2 of the Code requires a Dominant Licensee to submit certain evidence that was not required under Code 2000. In this respect, SingTel filed its Request at the time when Code 2000 was in effect. IDA has determined that the evidence that SingTel submitted in its Request, together with the additional information that SingTel submitted during the course of this proceeding, is sufficient to enable IDA to assess SingTel's Request and reach a decision. Requiring SingTel to submit a new request, and conducting a new proceeding, would not serve the industry's interest. Doing so would place significant burden on IDA, SingTel and industry participants, but would not significantly affect the outcome of this present proceeding. As requested by the industry, IDA has issued advisory guidelines governing petitions for reclassification and requests for exemption under Sub-sections 2.3 and 2.5 of the Code ("Guidelines") on 11 March 2005 for public consultation. IDA expects to adopt the Guidelines after taking into consideration comments from the public consultation, which will clarify the information that a Dominant Licensee must provide as part of any request for exemption. Going forward, IDA expects that Dominant Licensees will comply fully with the requirements of the Code, as clarified in the Guidelines.

Economic Framework

28 In assessing a request for exemption from Dominant Licensee obligations, IDA will seek to apply economic analysis to determine whether the Dominant Licensee is subject to effective competition in the market in which it seeks an exemption, and whether the regulations are necessary to protect end users or

competition. Exemption from Dominant Licensee obligations will generally be appropriate when a Licensee does not have significant market power in the market for the service for which it seeks an exemption.[5] In some cases in which a market is increasingly – but not yet effectively – competitive, or in which there is a remaining risk of anti-competitive conduct, it may be possible to remove certain regulations, while retaining those that remain necessary.

Market Definition

29 To determine if a Dominant Licensee has significant market power for the services for which it has requested an exemption, IDA will first determine the relevant service and geographic markets in which the Dominant Licensee provides the service for which an exemption is sought, as illustrated below:

(a) The relevant market for a telecommunication service provided by a Dominant Licensee consists of both the specific telecommunication service for which the Dominant Licensee seeks an exemption and any additional telecommunication service that buyers regard as interchangeable with, or a substitute for, the Dominant Licensee's telecommunication service. This is sometimes referred to as "demand-side substitutability". In defining the relevant product market, IDA will use the following methodology.

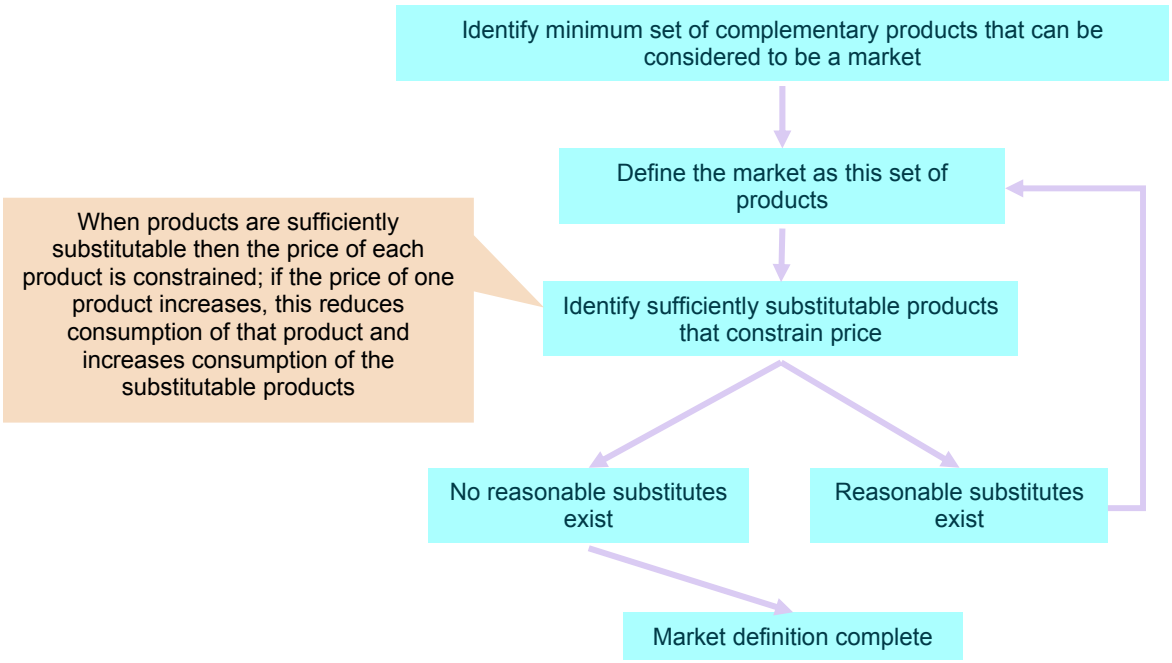
(i) IDA will consider which other telecommunication services customers would switch to if, following the grant of an exemption, the prices charged by the Dominant Licensee for the exempted telecommunication services increased by a small but significant, non-transitory amount. (This is sometimes referred to as the "SSNIP" test.) To do so, IDA may consider whether a hypothetical monopoly operator controlling the entire supply of the specific service for which the Dominant Licensee seeks an exemption would be constrained from profitably imposing a small but significant non-transitory increase in price above the competitive level (typically 5 to 10 percent for a year or more) because a sufficient number of consumers of the service would switch to another service, thereby rendering the price increase unprofitable. If the hypothetical monopolist would be constrained, IDA will include the other service in the market definition. IDA will repeat this process until no additional services could constrain the profitability of a price increase by the hypothetical monopolist. In some cases, IDA may conduct the SSNIP test by gathering and assessing specific evidence regarding consumer conduct. However, consistent with practices in other jurisdictions, in most cases IDA will use the SSNIP test as a more general analytic framework.

[5] Sub-section 1.9(t) of the Code defines significant market power as "the ability to unilaterally restrict output, raise prices, reduce quality, or otherwise act, to a significant extent, independently of competitive market forces."

(ii) IDA may also consider which other telecommunication services can reasonably be considered to be a substitute for the Dominant Licensee's service because they have a similar function, characteristic or customer base as the Dominant Licensee's telecommunication services.

(iii) The market definition process is illustrated in **Figure 1**, below.

Figure 1 – The market definition process



(b) IDA will also define the relevant geographic market. The relevant geographic market for a telecommunication service provided by a Dominant Licensee consists of the geographic area in which the Dominant Licensee (and other Licensees that provide substitutable telecommunication services) provides telecommunication services and any additional geographic locations from which customers would obtain those services if prices charged by the Dominant Licensee increase by a small but significant, non-transitory amount. In practice, IDA will consider those areas that have similar competitive conditions to be in the same geographic market.

(c) IDA will also determine whether a telecommunication service is provided at the wholesale level (i.e., whether the service is provided to other Licensees), the retail level (i.e., whether the service is provided to end users), or both levels. In some cases, there may be significant differences in the service that Licensees offer to wholesale and retail customers. For example, the wholesale service may be offered at a different price, or have different functionality, than the retail service. In some cases, this may reflect regulatory obligations, such as the imposition of a mandatory wholesale discount. In those cases in which there are material differences between the wholesale and retail services that preclude the two services from being demand substitutes,

IDA will consider the wholesale and retail services to be in separate markets. By contrast, in other cases, Licensees will offer similar functionality, at similar prices, to both wholesale and retail customers. In such cases, IDA will consider the wholesale and retail services to be in the same market.[6]

30 In some cases, IDA may conclude that, even though different services may theoretically be in different markets, it is appropriate to assess the need for continued regulation of these services together because they are subject to similar competitive conditions. For example, in the IPLC market, each route theoretically is a different market – an IPLC between Singapore and Hong Kong is not a substitute for an IPLC between Singapore and Tokyo. If the competitive conditions on the two routes are similar, however, the cost to both IDA and industry of conducting a detailed separate assessment of each route analysis would outweigh the benefits.

Assessing Competitiveness

31 IDA will next analyse the competitiveness of the market using a 3-step process.

Estimation of Market Share

32 IDA will first seek to measure the market share of the Dominant Licensee and other significant market participants. In doing so, IDA may look at revenues, capacity or any other relevant unit of measurement. Where reliable information is available, IDA will seek to use the unit of measurement that best reflects the characteristics of the market.

33 For example, in markets for "upstream" services that could be used as an input for other services, and in which self-supply accounts for a significant portion of the market, capacity may be a more reliable measure than revenue because it is often not feasible to assign revenues to self-supplied inputs. In general, including capacity that a Licensee provides to itself, which is a substitute for the capacity provided to third parties, is necessary to assess fully the ability of the Licensee to exercise market power. Excluding such self-provide capacity could result in under-estimating a Licensee's competitive significance. For example, if a firm supplies 90 percent of the total capacity in a market to a single customer, the firm would almost certainly have significant market power. If the firm subsequently acquires the customer, it would still be appropriate to consider the firm's provision of capacity to its new affiliate in assessing the firm's market power. Similarly, if a firm provides capacity to

[6] Contrary to the suggestion made by one of the commenting parties, the fact that a Dominant Licensee does not choose to offer a service at a discounted price to wholesale customers does not necessarily mean that the Dominant Licensee has market power or that there has been a "market failure". In competitive retail markets, some service providers choose not to offer discounted price to wholesale customers. While a Dominant Licensee must offer telecommunication service on a non-discriminatory basis, and may not restrict other Licensees from reselling its service, unless specifically required to do so by IDA, a Dominant Licensee is not obligated to offer retail telecommunication service at discounted prices to its wholesale customers.

itself as a result of vertical integration, rather than as a result of an acquisition, such capacity should be considered in assessing the firm's market power.

34 By contrast, where a Licensee provides one service to itself, and a *different service* to other customers, IDA will not consider the two services to be in the same market. For example, in the International Telephone Service ("ITS") Exemption Decision[7], IDA did not consider SingTel's provision of raw international capacity to itself for the provision of retail ITS service to be in the same market as its provision of wholesale international traffic "minutes" to services-based Licensees.

35 Although market share provides a useful starting point for the assessment of a Dominant Licensee's market power, IDA will not impose an absolute maximum market share above which it will not consider an exemption request. However, all things being equal, a larger Dominant Licensee market share indicates a greater ability to act anti-competitively and, therefore, a greater need to retain regulation. Therefore, IDA will make an initial presumption that a Dominant Licensee that has a market share in excess of 40 percent has significant market power.

Factors Influencing Behaviour of Dominant Licensee

36 IDA will next consider other factors that would increase or decrease the ability of the Dominant Licensee to act anti-competitively. This includes the extent to which:

(a) the market is concentrated (*i.e.,* number, and size, of participants in the market);

(b) there are impediments to other Licensees entering, or expanding their participation in, the market, including:

(i) technical barriers (such as the need to use specialised or proprietary technology);

(ii) access barriers (such as the need to obtain access to another entity's infrastructure in order to provide service or significant economies of scale and scope);

(iii) financial barriers (such as the proportion of the Dominant Licensee's costs that are sunk and the scale of the sunk costs associated with the investments required to start-up or expand a business);

(iv) commercial barriers (such as high advertising and retail costs or high consumer switching costs); and

[7] The ITS Exemption Decision was issued by IDA on 12 November 2003. A copy of this decision is available at http:www.ida.gov.sg/idaweb/pnr

(v) regulatory barriers (such as limitations on the number of licences or on the entities eligible to provide a service).

(c) Licensees that currently provide other telecommunication services can shift resources, relatively quickly and costlessly, in order to provide a service that is a reasonable substitute for the Dominant Licensee's service ("supply substitutability");

(d) "strong" customers can exercise countervailing buying power;

(e) the Dominant Licensee has the ability to leverage market power in vertically integrated markets; and

(f) the Dominant Licensee's customers can switch service providers.

Evidence of Actual Market Performance

37 IDA also will consider evidence of actual market performance. This includes evidence regarding:

(a) price and/or non-price competition in the market;

(b) entry into and exit from the market; and

(c) any prior anti-competitive conduct by the Dominant Licensee in the market or in any similar or related market.

38 In conducting this assessment, no one factor will be dispositive. For example, IDA could find that a Dominant Licensee with a market share in excess of 40 percent lacks significant market power if barriers to entry are low and there has been a history of successful market entry. Conversely, IDA may find that a Dominant Licensee whose market share is less than 40 percent retains significant market power where there is evidence that the Dominant Licensee has the ability and incentive to restrict competition in the market under review or if the evidence shows that the Dominant Licensee has consistently priced its services above competitive levels.

39 Finally, IDA may also consider whether granting the exemption will have any pro-competitive benefits, such as allowing the Dominant Licensee to introduce new services or respond more quickly to changing market conditions.

40 IDA will give special scrutiny to requests by a Dominant Licensee that seeks exemption from the prohibitions, contained in Section 8 of the Code, against abusing its dominant position. These prohibitions, which are derived from the general principles of competition law as developed in other jurisdictions, generally do not impose *ex ante* obligations on a Dominant Licensee. Rather, they provide an effective means of enforcement in the event a Dominant Licensee abuses its dominant position. Thus, to the extent that a Dominant Licensee retains, or has any reasonable possibility of regaining, significant market power in a market, or using its dominant position in another market to

adversely affect competition in the relevant market, retaining these prohibitions may be necessary to deter potential anti-competitive conduct and, if necessary, take appropriate enforcement action.

PART VIII: IDA'S ASSESSMENT

Preliminary Matters

IDA's Acceptance of SingTel's Request

41 Evident from the First Public Consultation, SingTel and the competing operators have divergent views on the definition of the relevant market, and the level of competition. After conducting a detailed assessment, IDA rejects SingTel's contention that all of the service categories for which it has sought an exemption should be considered to be in a single "international capacity services" or "ICS" market. IDA also views OFTA's decision to declare Reach non-dominant in the "external bandwidth services" market is of little relevance to SingTel's Request due to significant differences in competitive conditions and market structures between the Singapore and Hong Kong telecommunications markets.

42 Nonetheless, IDA has determined that it would not be appropriate to summarily reject SingTel's Request for the following reasons:

(a) SingTel's Request provided an adequate basis for the industry to provide meaningful comments. SingTel first submitted the Request to IDA on 27 March 2003. SingTel's submission made broad claims about the competitiveness of the ICS market and lacked sufficient market data and economic analysis to justify the claims. IDA therefore required SingTel to re-file its Request. IDA did not initiate any public consultation until SingTel had expanded its Request and provided a significant amount of confidential information in its re-filed Request.

(b) SingTel's proposed market definition does not preclude consideration of its Request. SingTel has sought an exemption for 28 separate telecommunication product offerings, which it claims are all within a single market. IDA recognises that it is not uncommon for a market participant to define a market in which it participates, and for which it seeks exemption from regulatory obligations, as broadly as it can in order to make the market appear as competitive as possible. However, SingTel's market definition does not bind IDA. Rather, IDA's responsibility is to assess all available information, define the relevant market independently and make a determination regarding the actual level of competition for the specific services for which the Dominant Licensee seeks an exemption.

43 Rather than dismissing SingTel's Request, IDA concluded that it would be more appropriate to conduct a public consultation on SingTel's Request to

seek the industry's views. IDA therefore released SingTel's Request for public consultation on 4 March 2004.

44 At the industry's request, IDA subsequently released its Second Public Consultation Paper containing its preliminary decision, and provided a second opportunity for public comment. The comments and information received from both the consultations as well as interviews from the industry and end users, have enabled IDA to fully assess the appropriateness of SingTel's market definition and the competitiveness of the markets concerned.

Information Disclosure

45 Several commenting parties requested that IDA make public the information that it used to calculate market shares and price declines. IDA declines to do so. In arriving at its final decision, IDA has balanced the benefits of transparency with the need to provide confidential treatment to commercially sensitive or proprietary information. To the extent feasible, IDA has incorporated into this Explanatory Memorandum, the aggregated market share and price information obtained in the course of the First and Second Public Consultations. However, IDA does not believe that it would be appropriate to release more operator-specific information provided by individual Licensees during the course of the public consultation process. IDA must uphold its commitment to protect the confidentiality of commercially sensitive or proprietary information, in order to preserve IDA's ability to readily obtain information necessary to assess the level of competition in the market.

Economic Analysis

Market Definition

46 The evidence collected during the Public Consultations and the interview process do not support SingTel's contention that all of the telecommunication product offerings for which it has sought an exemption should be considered to be in a single "ICS market". The 28 telecommunication product offerings that IDA analysed plainly are not all reasonable substitutes for each other. As an initial matter, because of significant price and performance differences, customers do not view cable-based and satellite-based services as substitutes. For example, in the event of a small but significant non-transitory increase in the price of Terrestrial IPLCs, customers would be unlikely to switch to Satellite IPLC services. Even within the cable and satellite segments, some services – such as leased satellite bandwidth – are inputs into (rather than substitutes for) other services. Other services plainly perform different functions. For example, a customer that wants to uplink content from Singapore to a satellite will not view downlink services as an acceptable substitute. Therefore, in the event of a small but significant non-transitory increase in the price of an uplink service, customers plainly would not switch to a downlink service.

47 Consistent with the economic assessment framework as explained in PART VII of this Explanatory Memorandum, IDA has concluded that most of the 28

telecommunication product offerings for which SingTel has sought an exemption fall within 10 separate markets as follows:

(a) Backhaul;

(b) Terrestrial IPLC;

(c) IMDS;

(d) International IP Transit;

(e) Leased Satellite Bandwidth;

(f) VSAT;

(g) DVB-IP;

(h) Satellite TV Uplink;

(i) Satellite TV Downlink; and

(j) Satellite IPLC.

Please refer to **Annex B** for a diagrammatic representation of the various markets.

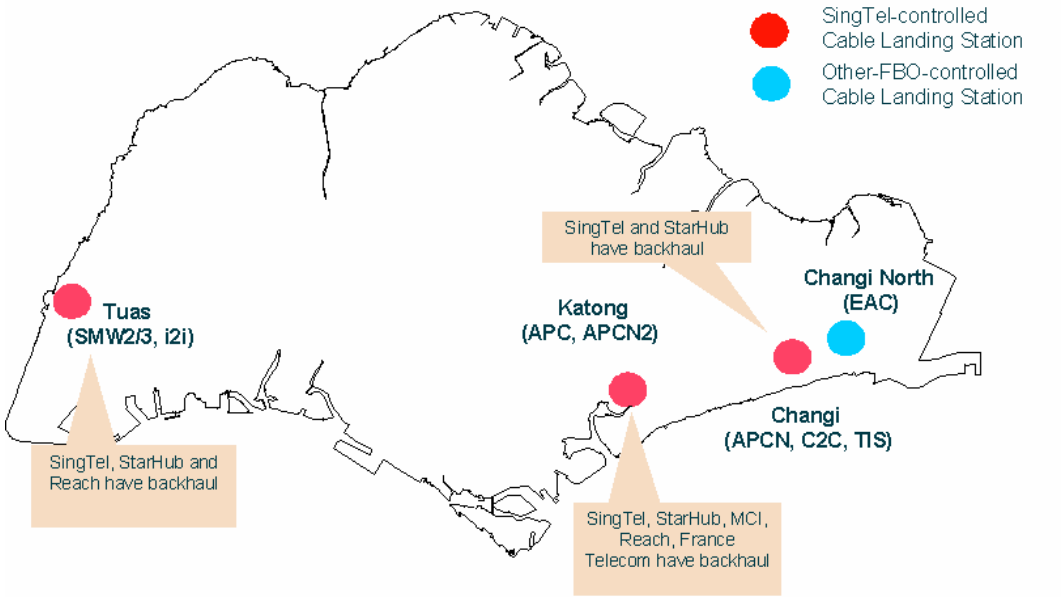
48 IDA notes that, in the Second Public Consultation, SingTel commented that IDA's market definition was too narrow, while some other commenting parties took the view that the definition for certain markets was too broad. IDA has reviewed its definition and believes that it has correctly defined the relevant markets based on demand substitutability. In doing so, IDA has considered the functional characteristics of the telecommunication services. IDA will therefore maintain its decision to classify SingTel's suite of 28 telecommunication product offerings into those 10 markets. IDA's assessment of each of the market is further explained below.

The Backhaul Market

49 The Backhaul market consists of services that use fibre optic links to enable a Licensee that has capacity on an international submarine cable system to transport that capacity from a cable landing station in Singapore to the Licensee's international gateway or point-of-presence ("POP") in Singapore. The Backhaul market includes both self-provided backhaul (*i.e.,* the provision of backhaul, by a Licensee, to itself) and third-party backhaul (*i.e.,* the provision of wholesale backhaul, by a Licensee, to another Licensee). There are, however, no other substitutes for backhaul. In particular, due to the remote location of cable landing stations, and restrictions on connections at cable landing stations, LLCs are not a reasonable substitute for backhaul.

50 Although, during the Second Public Consultation, SingTel disagreed that the Backhaul market should include both self-provided and third-party backhaul, IDA believes that both services are in the same market because self-providing backhaul is a substitute for purchasing backhaul from another carrier. IDA also considered the suggestion, made by several commenting parties in the Public Consultations, that it defines separate markets for backhaul services provided in connection with each cable system. This approach has some theoretical justification. As shown in **Figure 2** below, Singapore has four cable landing stations. IDA recognises that backhaul of capacity on a cable system that lands at one cable landing station is not a substitute for backhaul of capacity that lands at a different cable landing station. However, as discussed further below, each backhaul route on which SingTel provides service is generally subject to similar competitive conditions. As a practical matter, defining each cable landing station as a separate market would not alter IDA's assessment. Therefore, IDA has concluded that it is appropriate to assess all routes together in this proceeding.

Figure 2 – Cable landing stations in Singapore



51 The geographic market in which SingTel offers backhaul is national. Customers in Singapore that require backhaul service must purchase it from a backhaul provider within Singapore.

52 Backhaul is provided exclusively on a wholesale basis. The only customers requiring backhaul are facilities-based operators ("FBOs") seeking to access capacity on international submarine cables.

The Terrestrial International Private Leased Circuit ("IPLC") Market

53 The Terrestrial IPLC market consists of services, provided over submarine cables, that offer customers the exclusive use of a point-to-point, dedicated

transparent transmission path for voice, data or video between a location in Singapore and a location outside of Singapore.[8]

54 IDA considered, but rejected, the option of defining a broader market that includes satellite-based IPLCs, Indefeasible Rights of Use ("IRUs") and IMDS.

(a) IDA has concluded that there are two separate IPLC markets: one consisting of IPLCs provided via undersea submarine cables, and the other consisting of IPLCs provided via satellite. Satellite-based IPLCs are not a substitute for Terrestrial IPLCs because satellite-based IPLCs have significantly higher costs and relatively inferior performance characteristics. Customers today typically use satellite-based IPLCs only to reach locations that cannot be accessed using Terrestrial IPLCs, or as a back-up to Terrestrial IPLCs. Thus, even if Terrestrial IPLC prices increase by a small but significant non-transitory amount, end users would be unlikely to switch to Satellite IPLCs.

(b) IDA also has concluded that the Terrestrial IPLC market does not include capacity obtained pursuant to an IRU[9]. IRUs are not substitutes for Terrestrial IPLCs because they do not have transmission capability and do not include the "dry" segment (i.e., they do not extend beyond the cable landing station). IRUs also usually do not have the same service level guarantees as Terrestrial IPLCs. Rather than being a substitute for IPLCs, IRUs can provide the international capacity input used to offer IPLCs.

(c) Finally, IDA has concluded that the Terrestrial IPLC market does not include IMDS, such as ATM, Frame Relay and IP-VPN. While interviews with end users revealed that, as IPLC prices have fallen, some large corporate users have migrated from IMDS to IPLCs, these customers would be unlikely to migrate back even if IPLC prices increase by a small but significant non-transitory amount because they could not recover the cost of setting up their networks using IPLCs. In any case, for most IPLC customers, IMDS are not substitutes because IMDS provide a different service: managed network capability among multiple points, rather than pure dedicated connectivity between two points.

55 IDA has considered whether it should treat each Terrestrial IPLC route as a separate market and assess separately the competitiveness of each IPLC route. While some commenting parties supported this approach, SingTel

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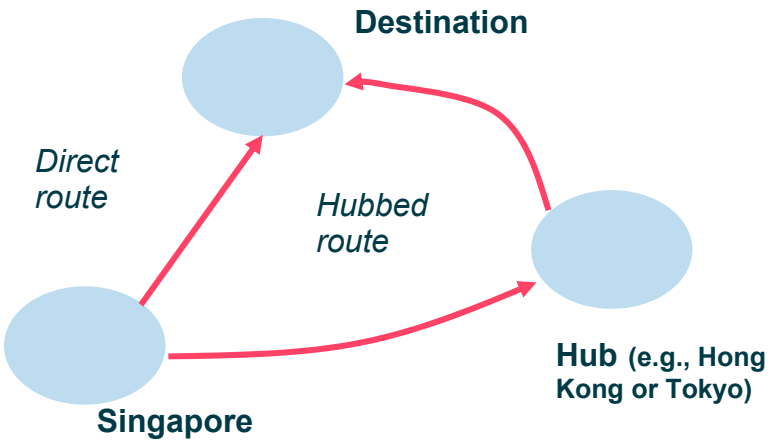
[8] This market includes SingTel's Telecast Broadcast Fibre Network Service, which allows permanent/occasional video/audio transmission through fibre networks for content providers and corporate customers to distribute content between Singapore and overseas.

[9] An IRU typically represents an ownership interest or long-term lease of a portion of the capacity of a submarine cable. IRUs are specified in terms of a certain number of channels of a given bandwidth. Because the sale of an IRU is the sale of an ownership interest in a facility, made by the company or consortium of companies that built the cable, rather than the provision of a telecommunication service, IDA does not regulate the price, terms and conditions on which cable owners sell IRUs.

contended that route-by-route assessment is inappropriate because a customer in Singapore can access any destination by hubbing through Hong Kong or Tokyo. The difference between direct and hubbed access is illustrated in **Figure 3.**

Figure 3 – Direct versus hubbed access



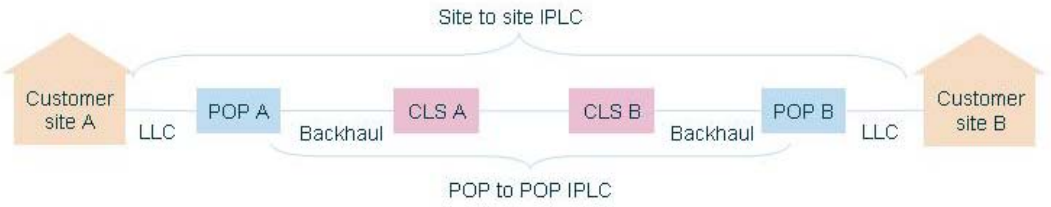
56 IDA has concluded that, taken as a whole, the evidence does not support SingTel's contention. While hubbing is technically possible, evidence gathered during the Public Consultations and the interview process indicates that, as the Terrestrial IPLC market has developed, where direct connections are available, hubbing has ceased to be an economically or a technically acceptable substitute for a direct connection because of increased latency (delay) and the increased likelihood of service interruption. Rather, routing traffic through a third country is only acceptable where no direct connection is available, such as the route between Singapore and Vietnam.

57 Nonetheless, IDA does not believe that it is necessary to conduct a separate competitive analysis of each route. Although IDA reserves the right to conduct a route-by-route analysis where it is necessary to adequately assess an exemption request, in the present case, because each route is generally subject to the same competitive constraints, it is sufficient for IDA to review the competitiveness of the Terrestrial IPLC market as a whole. In any case, as discussed further below, the use of a route-by-route analysis would not alter IDA's decision in this proceeding.

58 The geographic market in which SingTel offers Terrestrial IPLC services is national. It consists of all Terrestrial IPLCs purchased in Singapore (so-called "A-end" sales). IDA recognises that some big wholesale customers in Singapore might consider obtaining connectivity to a second country by purchasing an IPLC from that country to Singapore (so-called "B-end" sales). However, the evidence gathered by IDA during the Public Consultations and interview process indicates that most retail customers in Singapore would not consider this as a viable alternative because of the difficulty of managing a facility provisioned by an operator in a foreign country. Therefore, IDA does not believe that B-end sales are in the relevant market.

59 Terrestrial IPLCs may be provided on a wholesale or retail basis. When a wholesale customer purchases an IPLC, it typically buys connectivity between its Point-of-Presence ("POP") in Singapore and its POP in another country ("POP-to-POP IPLCs"). The wholesale customer will then buy an LLC in each country in order to provide end-to-end service, which can be purchased by its retail customers ("Site-to-Site IPLCs"). This is illustrated in **Figure 4** below.

Figure 4 – Wholesale and retail IPLCs



Note: Diagram for POP-to-POP IPLCs is simplified for illustration purposes. Some POP-to-POP service providers may require domestic connections from their POP to SingTel's POP before reaching the Cable Landing Station ("CLS").

60 Despite the differences between wholesale and retail Terrestrial IPLCs, the evidence indicates that both services are subject to similar competitive conditions. Indeed, in many cases, Licensees provision and price the two services similarly. For example, when SingTel provisions a Terrestrial IPLC to a retail customer, the retail customer must purchase a SingTel LLC between SingTel's POP and the customer location. Similarly, when SingTel provisions an IPLC to a wholesale customer that has not co-located at SingTel's POP, the wholesale customer will have to purchase a SingTel LLC between SingTel's POP and the wholesale customer's POP. Thus, in practice, the competitive conditions applicable to both wholesale and retail are similar, and the outcome of IDA's assessment on both markets will be similar. As a practical matter, IDA, therefore, has assessed wholesale and retail Terrestrial IPLCs together. This, however, does not preclude IDA from assessing both markets separately in future reviews, should market conditions change.

The International Managed Data Services Market

61 The IMDS market consists of packet-based services – such as ATM, Frame Relay, and IP-VPN – that provide managed connectivity among multiple customer sites, at least one of which is located outside of Singapore. These services allow for data to be prioritised, in order to ensure that more time-sensitive data is delivered more rapidly.

(a) As raised by one commenting party, IDA recognises that there are certain differences among the three services. Frame Relay and ATM provide connectivity by means of a permanent virtual circuit; IP-VPN provides logical connections among sites, either over the public Internet or private networks. Frame Relay typically provides service at speeds below 2 Mbps, which is significantly slower than most ATM services. Nonetheless, although these services are not perfect

substitutes, IDA has concluded that, as a practical matter, it is appropriate to assess them together.

(i) First, there is a significant degree of demand substitutability among these three services. Customers can substitute between small IP-VPN ports and Frame Relay, and between large IP-VPN ports and ATM. Indeed, as prices for IP-VPN have declined, end users have increasingly migrated from Frame Relay and ATM to IP-VPN service.

(ii) Second, as a result of supply substitutability, these services are subject to similar market conditions. Most Licensees supply all three of these services, and can easily shift facilities used to provide one service in order to provide another.

(b) By contrast, IDA does not believe it is appropriate to assess IPLCs and IMDS together. These services are neither reasonable substitutes nor subject to similar market conditions. Although there has been evidence of customers switching from Frame Relay and ATM to IPLC as IPLC prices have declined, feedback gathered by IDA during interviews with end users suggest that this is fairly limited and that most customers do not view a point-to-point IPLC as a reasonable substitute for a managed data network. In any case, IPLC is often used as an input to providing IMDS.

62 The geographic market for IMDS is national; it consists of all sales of IMDS made within Singapore. IMDS are typically purchased on a network basis, which connects multiple customer sites globally or regionally. A company that has its headquarters in Singapore typically will have its network hub in Singapore and, therefore, will purchase IMDS in Singapore (A-end sales). Such customers are unlikely to locate the network hub in a different country in order to buy IMDS from an operator in that country. Therefore, sales of International IMDS in other countries (B-end sales) are not substitutes for IMDS sold in Singapore.

63 IMDS are typically provided on a retail basis. Although one commenting party suggested that there may be an increasing move towards wholesale supply of IMDS, no operator reported that it currently has any wholesale IMDS customers. Neither is there any indication that the wholesale service would differ from the retail service in price or non-price aspects. IDA, therefore, has assessed the IMDS market as a single market for this proceeding.

The International IP Transit Market

64 The International IP Transit market consists of the provision of a service, for compensation, in which one operator terminates international Internet traffic on its network or transits the Internet traffic for termination on a third operator's network. This service does not include the provision of domestic access facilities, such as LLCs.

(a) The International IP Transit market includes both carrier-class Internet backbone products (such as SingTel Internet Exchange ("STIX") services), and IP transit services offered to customers who are co-located in data centres (such as SingTel's EXPAN MyNetwork product). While there are qualitative differences between different SingTel services (e.g., EXPAN MyNetwork offers overbooking while STIX does not), most Licensees provide only a single class of IP Transit.

(b) The International IP Transit market does not include dedicated Internet access. That service, which Internet Access Service Providers ("IASPs") provide to customers, offers dedicated Internet connectivity that would require the customer to obtain a domestic LLC. Thus, if the price of one of the IP Transit services increase by a small but significant non-transitory amount, users would not be likely to switch to dedicated Internet access. Instead, the International IP Transit service is an input to the IASPs' provision of dedicated Internet access to end users.

65 The geographic market in which SingTel offers International IP Transit services is national. It consists of sales of International IP Transit service to customers in Singapore. While some customers in Singapore might be able to purchase service from a provider elsewhere in the region, the customer would have to incur the cost of purchasing an IPLC from Singapore to the provider's location. In general, customers are not likely to do so because the costs of the IPLC would outweigh any savings from purchasing the International IP Transit service outside of Singapore.

66 International IP Transit service is sold to both wholesale and retail customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Indeed, most Licensees provide only a single International IP Transit offering, which is used by both wholesale and retail customers. Therefore, IDA maintains that both wholesale and retail International IP Transit services are in the same market for this proceeding.

The Leased Satellite Bandwidth Market

67 The Leased Satellite Bandwidth services market consists of the provision of the satellite transmission ("space segment") capacity between Singapore and one or more locations outside of Singapore. Leased Satellite Bandwidth is an input for other satellite services used for point-to-multi-point communications or communications to remote locations. There is no substitute for this service.

68 The geographic market in which SingTel provides Leased Satellite Bandwidth services is regional. Customers in Singapore that want to send information to, or receive information from, another country can access space segment capacity from providers in other countries that own capacity on any satellite that: (a) can "see" both Singapore and the other country; and (b) are authorised to provide service in the other country. In addition to SingTel's ST-

1, other regional/global satellite systems that are accessible from Singapore include those of Apstar, Asiasat, Measat, Palapa, Thaicom, Intelsat, PanAmSat and New Skies. This is illustrated in **Figure 5**.

Figure 5 – The Leased Satellite Bandwidth market consists of all satellites that can be assessed from Singapore

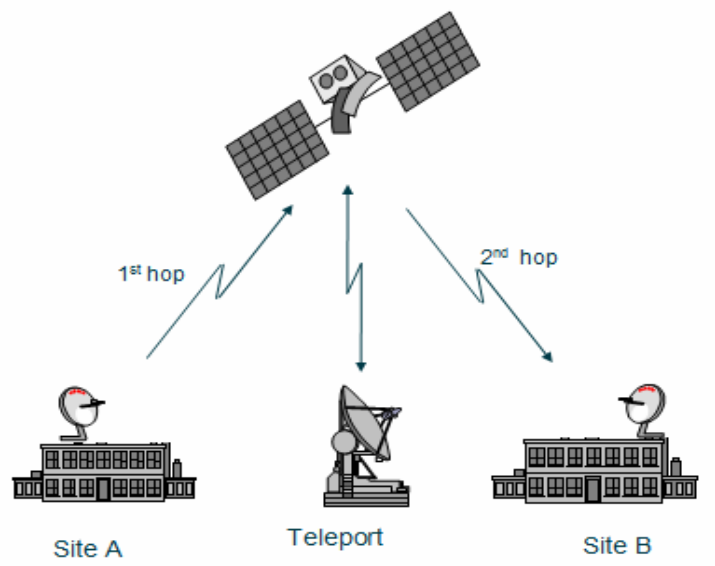
69 IDA considered whether it would be appropriate to define separate markets for Leased Satellite Bandwidth on satellites that can be used to communicate with locations for which there is significant demand and those satellites that serve low-volume routes. Based on the feedback during the interviews, IDA concluded that it is not necessary to do so because most satellite traffic can be routed through any satellite than can be accessed from Singapore.

70 Leased Satellite Bandwidth can be sold to both retail and wholesale customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail Leased Satellite Bandwidth services are considered to be in the same market for this proceeding.

The VSAT Market

71 The VSAT market consists of the provision of a service that typically uses Leased Satellite Bandwidth to transmit data or video between or among small-diameter satellite dishes located at multiple customer locations, at least one of which is located outside of Singapore. The VSAT signal typically transits between customer sites via a ground-based central controller. VSAT service is illustrated in **Figure 6**. VSAT service is generally used either for: (a) point-to-multi-point communications; or (b) communications with remote locations. There are no reasonable substitutes for VSAT service.

Figure 6 – Operation of a VSAT network



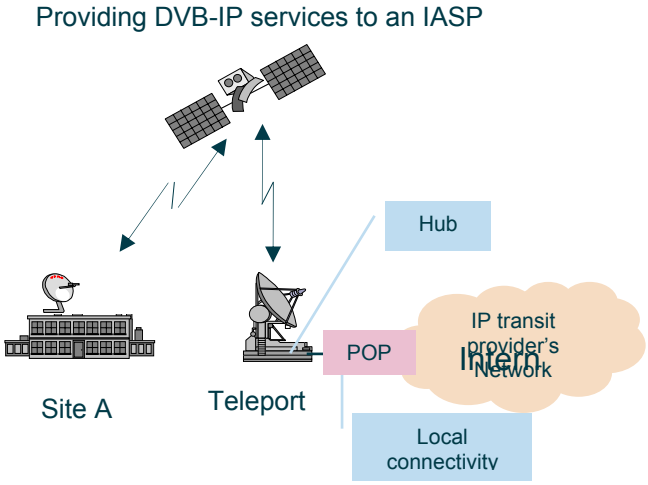
72 IDA notes that, during the Second Public Consultation, one commenting party asserted that the geographic market is national. However, based on the evidence that it has compiled, IDA continues to believe that the geographic market in which SingTel provides VSAT service is regional. Customers in Singapore can obtain VSAT service from any provider that has capacity on a satellite that can be accessed from Singapore.

73 VSAT services are typically provided to retail customers, but can be purchased by wholesale customers for resale. There is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail VSAT services are considered to be in the same market for this proceeding.

The DVB-IP Market

74 The DVB-IP market consists of the transmission of data or video, in Internet Protocol, between a hub and multiple sites, at least one of which is located outside of Singapore. DVB-IP services are typically used to send content to, or receive content from, remote locations. For example, DVB-IP service can be used to connect Internet cafes in developing countries to an Internet exchange (such as STIX or Equinix) located in Singapore. (To be able to provide Internet connectivity to these customers, a DVB-IP provider needs to be connected to an Internet gateway for an IP transit connection.) Similarly, a Singapore-based company can use DVB-IP to transmit information to remote corporate offices. DVB-IP service is illustrated in **Figure 7**. Because DVB-IP services is used for different purposes and is delivered using different equipment and spectrum, it is not a substitute for VSAT services.

Figure 7 – Operation of a DVB-IP network



75 The geographic market in which SingTel provides DVB-IP services is regional. Customers in Singapore can cost-effectively obtain this service from regional providers, via an IP-based connection, from Singapore.

76 DVB-IP services are provided to both retail and wholesale customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail DVB-IP services are considered to be in the same market for this proceeding.

The Satellite TV Uplink Market

77 The Satellite TV Uplink market consists of the provision of capacity for the transmission of broadcast content from a satellite television earth station in Singapore to a satellite for delivery to a country outside Singapore.

(a) Satellite TV Uplink services are in a separate market from Satellite TV Downlink services. A customer in Singapore that seeks to send satellite TV content to another country cannot use satellite downlink service. Rather, the customer must use a satellite uplink service, which requires different (and more costly) facilities.

(b) IDA recognises that some satellite systems (such as Intelsat and New Skies) use circular polarisation, while other satellite systems use linear polarisation. Although different types of antennas must be used to uplink signals to each type of satellite, IDA does not believe it is necessary to define separate markets based on the type of polarisation that a Licensee uses. Customers seeking to uplink content to a specific location generally can choose from among multiple satellites, some of which use linear polarisation and some of which use circular polarisation. Therefore, customers generally will consider uplink services that use linear and circular polarisation to be substitutes.

78 The geographic market in which SingTel provides Satellite TV Uplink services is national. A customer in Singapore that wants to uplink its content must use an uplink facility located in Singapore.

79 Satellite TV Uplink services are provided to both retail and wholesale customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail Satellite TV Uplink services are considered to be in the same market for this proceeding.

The Satellite TV Downlink Market

80 The Satellite TV Downlink market consists of the provision of capacity for the transmission of broadcast content that originates in a country outside Singapore, from a satellite, to an earth station in Singapore. For the reasons discussed above, Satellite TV Uplink and Downlink are in separate markets.

81 The geographic market is national. A customer in Singapore that wants to downlink content must use a downlink facility located in Singapore.

82 Satellite TV Downlink services are provided to both retail and wholesale customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail Satellite TV Downlink services are considered to be in the same market for this proceeding.

The Satellite IPLC Market

83 The Satellite IPLC market consists of services that provide a dedicated transmission path, over satellite, for voice and data between a location in Singapore and a location outside of Singapore. The service provides end-to-end connectivity using an LLC, uplink/downlink and space segment capacity.

(a) As discussed above, Satellite IPLCs are not in the same market as Terrestrial IPLCs. Satellite-based IPLCs have significantly higher cost and relatively inferior performance characteristics. Customers typically use satellite-based IPLCs only to reach locations that cannot be accessed using Terrestrial IPLCs.

(b) Satellite IPLCs are also not in the same market as VSATs. VSAT networks require a higher initial capital investment, which typically is justified for networks that connect multiple sites. By contrast, Satellite IPLCs typically provide end-to-end connectivity between specified points with no end user capital investment. Thus, for most customers, if the price of Satellite IPLCs increased by a small but significant non-transitory amount, VSAT service would not likely be a reasonable substitute.

84 Based on additional information obtained during the Second Public Consultation, IDA has determined that the geographic market is regional. A

customer in Singapore that wants to purchase a Satellite IPLC to a location outside of Singapore can access this capacity in other regional commercial centres – such as Hong Kong. Because space segment capacity is often more costly compared to Terrestrial IPLCs, it is often cost-effective to access lower-priced Satellite IPLCs in another country by leasing a Terrestrial IPLC between Singapore and these locations, or by using spare capacity on an existing Terrestrial IPLC that the end user has already leased. Routing this traffic through a third country using a Terrestrial IPLC would not significantly add to the latency inherent in any satellite-based service.

85 Satellite IPLCs can be provided to both retail and wholesale customers. However, there is no evidence that Licensees provide different functions, or price services at different levels, for wholesale and retail customers. Therefore, both wholesale and retail Satellite IPLCs are considered to be in the same market for this proceeding.

Summary of IDA's Market Definition

86 **Table 3** provides a summary of the markets defined by IDA and the specific SingTel telecommunication product offerings that are in each market.

Table 3 – List of Relevant Markets Defined by IDA

Relevant Market	***SingTel's Telecommunication Product Offerings***
Backhaul (National)	• Backhaul (to GNCC) • Point-to-Point Backhaul • Standard Point-to-Point Backhaul • Backhaul with Interface Protection • Point-to-Point Backhaul with Interface Protection
Terrestrial International Private Leased Circuits (IPLC) (National)	• ConnectPlus Bilateral IPLC • ACASIA IPLC • ConnectPlus N2N (Node-to-Node) IPLC • Telecast Broadcast Fibre Network Service
International Managed Data Services (IMDS) (National)	• Bilateral FR • ConnectPlus FR • ACASIA FR • Infonet FR • Bilateral ATM • ConnectPlus ATM • ACASIA ATM • Infonet ATM • ConnectPlus IP-VPN
International IP Transit (National)	• Standard Universal Internet Access service • Prioritised Asia Direct Universal Internet Access service • SingTel EXPAN MyNetwork Service
Leased Satellite Bandwidth (LSB)	• SingTel LSB Service

(Regional)	
Very Small Aperture Terminal (VSAT) (Regional)	• SingTel Global VSAT
Digital Video Broadcast – IP (DVB-IP) (Regional)	• SingTel DVB-IP Service
Satellite TV Uplink (National) and Satellite TV Downlink (National)	• Permanent Telecast Uplink/Downlink Service • Occasional Telecast Uplink/Downlink Service
Satellite IPLC (Regional)	• IPLC service (via satellite).

IDA's Assessment of Competitiveness of the Relevant Markets

The Backhaul Market

87 Competition has been developing in the Backhaul market. A number of operators – including MCI, Reach and StarHub – have entered this market, and prices have fallen.

88 However, market evidence indicates that SingTel continues to have significant market power in the Backhaul market. When both self-supply and the provision of third-party backhaul are considered, SingTel continues to have a market share of around 50 percent. This is sufficient to give rise to a presumption of significant market power. Indeed, while competition has developed on backhaul for cable systems such as SMW3 and APCN2, SingTel remains the only supplier of backhaul for C2C, i2i and TIS cables. No party submitted evidence during the Second Public Consultation that would provide a basis for IDA to alter its preliminary conclusion that SingTel retains significant market power in this market.

89 A number of other factors also demonstrate that SingTel continues to have significant market power in the Backhaul market.

(a) First, SingTel controls three of the four cable landing stations in Singapore and is potentially able to leverage its control over the cable landing stations in a manner that could limit competition in the Backhaul market. Prior to 10 September 2004, only competing FBOs meeting certain conditions were permitted to use facilities located at a SingTel cable landing station to backhaul traffic from that station. Specifically:

(i) Only FBOs that owned cable capacity in the form of an IRU in the submarine cable system landing at SingTel's cable landing station were allowed to obtain connection service and co-location space at the cable landing station;

(ii) An FBO that co-located in SingTel's cable landing station was required to own IRUs in a submarine cable system before it was allowed to connect a third party FBO's cable capacity in that submarine cable system and provide backhaul service to that third party FBO; and

(iii) An FBO that co-located in SingTel's cable landing station was required to own IRUs in the submarine cable systems before it was allowed to provide transit service between these submarine cable systems to a third party.

As a result of these restrictions, competing FBOs were precluded from providing third-party backhaul and transit services on any cable system that landed at a SingTel cable landing station on which the competing FBOs did not have IRU capacity. Competing FBOs were also precluded from providing backhaul and transit services for non-IRU capacity (such as capacity obtained pursuant to long-term leases) either for themselves or for other FBOs. IDA's decision of 10 September 2004 eliminated these restrictions on access to cable landing stations. However, it will take some time for the full competitive impact of this decision to be seen in the market.

(b) Second, industry participants expressed concerns that SingTel continues to have the ability to impede competition in the provision of connection services at its cable landing stations. As the name implies, connection services enable a Licensee to connect its domestic backhaul facilities at SingTel's cable landing station in order to access its international capacity. A Licensee that wants to backhaul capacity from a SingTel cable landing station must use SingTel's connection service. Pursuant to its Reference Interconnection Offer ("RIO"), SingTel must provide connection service within 30 working days of receiving a request from a competing FBO. Industry participants, however, expressed concerns that SingTel may be impeding competition by taking the full 30-working-day period to provide this service to other FBOs, while providing connection service to itself in a shorter period of time. IDA notes SingTel's response, in the Second Public Consultation, that the complaints have no basis because SingTel complies with the requirements in its RIO to treat FBOs in a non-discriminatory manner and processes their requests within a specified time period. As part of its review of SingTel's RIO, which is currently underway, IDA will examine whether the time period and procedures currently specified in SingTel's RIO need to be modified to promote competition in the Backhaul market.

(c) Third, entry barriers to the Backhaul market are high because of the amount of time and investment needed to build the network infrastructure.

90 Evidence of actual market performance further supports the conclusion that SingTel retains significant market power in the Backhaul market. Although

SingTel has reduced its list prices for some backhaul services by up to 80 percent since 2001, evidence gathered during the interviews suggests that SingTel's backhaul prices remain substantially higher than prices charged by other FBOs. SingTel's charges for backhaul are also higher than its charges for LLCs – which provide similar functionality[10]. There is also no current backhaul service competition on the SingTel-controlled cables, such as TIS and i2i, on which SingTel declines to sell IRUs.

91 Given the above findings, IDA has determined that SingTel continues to possess significant market power and that continued application of Dominant Licensee regulation to services provided in the Backhaul market is still necessary to promote and preserve competition amongst Licensees. However, IDA believes that the implementation of its 10 September 2004 cable landing station decision, which requires SingTel to eliminate many restrictions concerning access to its cable landing station, should enhance competition in downstream markets, such as the Backhaul market. IDA, therefore, is prepared to initiate a review of the need for the continued imposition of Dominant Licensee regulation on SingTel's provision of backhaul services two years after the effective date of this decision. IDA believes that a 2-year period will be sufficient for IDA to assess the full competitive effect of the cable landing station decision. Based on that review, IDA will remove any regulation that it determines is no longer necessary.

The Terrestrial International Private Leased Circuit Market

92 Like the Backhaul market, the market for Terrestrial IPLC has seen increasing competition. New operators such as Asia Netcom, Cable & Wireless, MCI, Reach and StarHub have entered the market, and prices have fallen. With increasing competition, SingTel has also reduced its list prices for some IPLC services by up to 95 percent since market liberalisation in 2000. IDA recognises that the drop in SingTel's list prices may over-state the extent of actual price decreases in the market. However, it does provide relevant evidence regarding the direction in which prices have moved.

93 While competition appears to be growing, the evidence demonstrates that SingTel retains significant market power in this market. SingTel's market share remains high both in the aggregate and on selected routes, based on capacity sold to end users and other Licensees.

(a) Overall, SingTel's estimated share of the Terrestrial IPLC market remains in excess of 60 percent, which is well above the level at which IDA makes an initial presumption that a Licensee has significant market power.

[10] IDA recognises that, due to the risk of stranded investment, it may be reasonable for SingTel to price backhaul at a level that is modestly higher than its LLC rates. However, SingTel's current backhaul charges, which, in some cases, are about twice as high as its retail LLC rates, reflect a high degree of market power.

(b) IDA also assessed the level of competition on SingTel's 10 largest routes (where competition would be expected to be most developed). Based on information provided by industry participants, IDA estimated that SingTel has a market share of less than 40 percent on only two of its top 10 routes – the Singapore-Hong Kong and Singapore-Japan routes. SingTel's estimated market share remains in excess of 90 percent for five of its top 10 routes.

94 There is additional evidence that SingTel continues to have significant market power in the Terrestrial IPLC market. SingTel is vertically integrated and has the ability to leverage its dominant position in critical input markets to restrict competition in the Terrestrial IPLC market.

(a) SingTel controls the two essential inputs required to provide Terrestrial IPLC. In order to provide a Terrestrial IPLC, a competing Licensee must connect to the capacity at a cable landing station and must backhaul that capacity to its POP within Singapore. As discussed above, for cables that land at a SingTel cable landing station, SingTel is the only provider of connection services. SingTel also continues to have significant market power in the provision of Backhaul.

(b) SingTel also has the ability to leverage its dominant position in the provision of LLCs when competing in the Terrestrial IPLC market. A Licensee that wants to provide a Terrestrial IPLC to an end user typically must also provide the end user with an LLC between the Licensee's POP and the end user's premises. Therefore, in most cases, if a competing Licensee wants to provide a Terrestrial IPLC to an end user, the competing Licensee must obtain the LLC from SingTel. According to industry participants, the cost of the Singapore LLC constitutes a significant portion of the total cost of the LLC-IPLC "package". Competing Licensees have expressed significant concern that SingTel could use its dominant position in the provision of LLCs to impede competition in the Terrestrial IPLC market by subjecting competing Licensees to a price squeeze.

95 IDA has already taken action to address the competitiveness of the LLC market. In December 2003, IDA mandated that SingTel offer wholesale LLCs to competing FBOs at prices that are discounted by up to 50 percent off the retail prices for up to two years. However, due to SingTel's appeal to the Minister for Information, Communications and the Arts, IDA's LLC decision was not implemented until October 2004. As a result, this decision has not yet had a significant effect on the market.

96 The fact that SingTel has a lower market share on the Hong Kong and Japan routes does not indicate that competition is currently feasible on all routes. Rather, SingTel's lower market share on these routes reflects the fact that they are being served by many cable systems including C2C, APCN2 and East Asia Crossing (EAC) cables. EAC lands at Changi North – the only cable landing station that is not controlled by SingTel. Licensees that have capacity on EAC do not need to use SingTel-provided connection service or

SingTel-provided backhaul. Licensees that seek to serve other routes, by contrast, remain largely dependent on SingTel.

97 As mentioned earlier, at the present time, IDA does not intend to define markets, or grant exemptions, on a route-by-route basis. Granting an exemption on certain routes would impose significant burdens on both IDA and SingTel. If IDA were to do so, it would have to impose conditions to ensure that SingTel would not use its market position in the non-exempted routes to impede competition in the exempted routes. For example, IDA might have to require SingTel to: (i) separately offer service on exempted and non-exempted routes; (ii) adopt safeguards to prevent provision of preferential treatment to customers that purchase service on exempted routes, and (iii) prepare separate accounting separation reports for exempted and non-exempted routes.

98 In particular, IDA does not accept the proposal, which SingTel made in the Second Public Consultation, that – if IDA is not willing to fully exempt it from the application of Dominant Licensee regulation in respect of its provision of IPLCs – IDA should exempt SingTel from the application of Dominant Licensee regulation in respect of its provision of IPLCs on those routes that have been fully liberalised on the foreign end.

(a) First, SingTel has made no attempt to demonstrate why the fact that legal impediments to market entry have been removed on a specific route demonstrates – without additional evidence – that the route currently is competitive. For instance, the Singapore telecommunication sector itself is fully liberalised, but not all markets within the sector are effectively competitive. Before IDA can grant an exemption, IDA must determine that the application of Dominant Licensee obligation is not necessary at the present time, given current market conditions.

(b) Second, even on some routes that have been liberalised at the foreign end, SingTel continues to have substantial market shares. Indeed, on one of the largest routes between Singapore and a fully liberalised country, SingTel's market share remains in excess of 90 percent.

99 Given that competition for the Terrestrial IPLC market as a whole is not yet effective, IDA determines that SingTel continues to possess significant market power and that continued application of Dominant Licensee regulation to services provided in this market is still necessary to promote and preserve competition amongst Licensees. As noted above, IDA expects that its adoption of the LLC Decision, as well as the removal of restriction on competitive provision of backhaul, should increase competition in the downstream markets, such as Terrestrial IPLC. IDA, therefore, will consider initiating a review on the need for the continued imposition of Dominant Licensee regulation on SingTel's provision of Terrestrial IPLC services two years after the effective date of this decision. IDA believes that two years is a reasonable period to allow for the full competitive effect of this decision to be seen in the market.

The International Managed Data Services Market

100 The evidence gathered in this proceeding demonstrates that the market for IMDS is competitive. However, because of its position in the LLC market, significant concerns were raised that SingTel retains the potential to distort competition in this market.

101 Most IMDS sales to end users in Singapore are B-end sales, *i.e.*, sales to multi-national corporations ("MNCs"), for which Singapore is a "spoke" in their regional or global network. Several MNCs interviewed by IDA indicated that they did not consider SingTel a viable competitor in the B-end market because it does not have the geographical reach of the global players. Indeed, one party contended that global operators are competing in the market for the top 100 MNCs, while local operators such as SingTel and StarHub usually are serving the smaller companies.

102 SingTel's Request applies to customers that purchase IMDS services in Singapore (A-end sales), which is subject to IDA regulation. The evidence shows that SingTel is a participant in this market, where it is subject to competition from a number of providers – including AT&T, BT, Cable & Wireless, Equant, MCI, Infonet, Sprint and StarHub. Based on A-end revenues, SingTel's estimated share of the market is around 35 percent. While SingTel's share in the legacy International ATM service is somewhat higher, its share of the growing International IP-VPN service is significantly lower.

103 IDA's computation of the Licensees' market share in the IMDS market is based on the best estimates/information provided by Licensees. Because IMDS is not an input into other services, and because of the availability of reliable revenue information, IDA determined that it is appropriate to use revenue to estimate the Licensees' market shares. In response to concerns raised in the Second Public Consultation, IDA requested Licensees to provide additional data regarding IMDS revenues. Specifically, IDA asked operators to provide the total A-end IMDS revenue booked in Singapore (*i.e.*, the total revenue received from end users and other operators in Singapore for the sale of IMDS in Singapore). In order to provide the most accurate and consistent assessment of the market position of each Licensee, in calculating market shares, IDA sought to include revenue from the sale of LLCs in Singapore where they are provided in conjunction with the Licensee's IMDS, and exclude revenue paid to a Licensee to compensate it for domestic connectivity in overseas countries[11]. IMDS revenues generated by IDA's Licensees from B-end sales are excluded.

104 During the last two years, SingTel's list prices for IMDS services have fallen significantly, in some case by up to 90 percent. Some competing parties, during the Second Public Consultation, commented that the actual market

[11] One Licensee, however, indicated that it was unable to split these revenues for domestic connectivity in overseas countries. Because this Licensee has a relatively small market share, IDA does not believe that the inclusion of these revenues significantly altered IDA's conclusion.

price reduction for IMDS was in the range of 12.5 to 40 percent over the last one year. Thus, even if, as argued, the list price reduction overstates the actual reductions, the price drop is still significant. SingTel's prices today are generally comparable to prices charged by other IMDS providers.

105 Notwithstanding the above, the evidence gathered during the Second Public Consultation indicates the need for IDA to take a cautious approach. IMDS providers, like IPLC providers, typically use SingTel's LLCs to provide service to end users. Indeed, in some cases, the two services are bundled together and offered for a single price. In its preliminary decision, IDA tentatively concluded that SingTel has less ability to use its dominant position in the LLC market to impede competition in the IMDS market than it has in the Terrestrial IPLC market. However, competing operators raised serious concerns with this tentative conclusion. Specifically, some Licensees claimed that, because LLCs remain a critical input for IMDS, SingTel could price LLCs in a manner that would preclude competing Licensees from being able to compete in the provision of IMDS. IDA recognises the significant concerns raised by the competing operators on the impact of LLCs on the IMDS market. Given the importance of LLCs as an input for IMDS, SingTel retains the potential to use its dominant position in the LLC market to adversely affect competition in the IMDS market. Because there is a remaining risk of anti-competitive conduct, IDA has determined that it is necessary to retain certain prohibitions to deter potential anti-competitive conduct.

106 IDA therefore concludes that it is necessary to continue to subject SingTel's provision of IMDS to *ex post* enforcement under Sub-section 8.2 of the Code as a competitive safeguard. Retaining Sub-section 8.2 will impose no regulatory obligations on SingTel. Indeed, it will have no impact whatsoever if SingTel does not engage in anti-competitive conduct. At the same time, IDA also concludes that continued application of the *ex ante* Dominant Licensee regulations contained in Section 4 of the Code to services provided in this market is no longer necessary in view of the competitive market environment.

107 IDA, however, will consider conducting a review of the need for the continued imposition of Sub-section 8.2 requirement on SingTel's provision of IMDS two years after the effective date of this decision. IDA believes that two years is a reasonable period to allow for the full competitive effect of the LLC decision to be seen in the downstream IMDS market.

The International IP Transit Market

108 The market for International IP Transit is effectively competitive.

109 SingTel is subject to intense competition from numerous competitors, including Asia Netcom, Equant, MCI, Reach, Sprint and StarHub. Competition continues to grow. Indeed, during the last two years, significant additional Internet capacity has been deployed between Singapore and other

major hubs, such as the United States, Japan and India. SingTel's estimated market share, based on capacity, is less than 30 percent.[12]

110 In addition, SingTel's list prices for certain IP transit services have fallen by more than 60 percent since March 2004. As noted above, IDA recognises that the drop in SingTel's list price may over-state the extent of price drop in the market. However, it does provide relevant evidence regarding the direction in which prices have moved. Comments from interviews suggest that SingTel's prices still appear relatively high compared to prices in other regional hubs such as Hong Kong. IDA, in its preliminary decision, attributed this possibly to factors unique to Singapore – such as its small market size and its distance from key Internet destinations like the United States, to which a relatively high portion of Singapore's Internet traffic is sent. However, in the Second Public Consultation, one commenting party said it believed that relevant costs are relatively distance independent. The commenting party also quoted a report from TeleGeography, which projected that Asian prices will continue downwards toward the European and US levels as competition improves, but with no discussion of the size or distance issues.

111 While IDA notes the TeleGeography report[13], IDA believes that the report has little relevance to this proceeding. The TeleGeography report made observations about the general IP transit price trends in different geographical regions, including Asia, Europe and the US, and the relative price competitiveness amongst the regions. IDA notes that the report made no specific analysis of why prices in Asia were higher to start with and why they would begin to drop. It also made no specific analysis of pricing differences among cities in Asia including Singapore. IDA therefore believes that nothing in the report contradicts the fact that volume and distance are drivers of price for competitive markets such as Singapore.

112 One commenting party also asserted that SingTel's operation of a number of domestic data centres would provide it with the ability to impede competition in the International IP Transit market. The party claimed that SingTel impedes competition in the International IP Transit market by providing content and application providers who are co-located at its data centres with direct access to SingTel's International IP Transit service, while denying other competing International IP Transit providers direct access to these co-located customers. IDA believes that SingTel's practice in the provision of domestic data centre services does not enable SingTel to impede competition in the International IP Transit market. There are at least 20 data centres in Singapore, providing facilities management services to customers, such as content and application providers who host their content and house their servers in the data centres. International IP Transit is just one of many services being offered to customers. Most of these data centres, such as those operated by Equinix

[12] Because a significant portion of SingTel's and StarHub's sales of IP transit are to their affiliates, SingNet and StarHub Internet/SCV respectively, IDA believes that capacity, rather than revenue, is the appropriate unit of measurement in this market.

[13] TeleGeography's Bandwidth Pricing Report published in July 2004.

and Global Switch, are carrier neutral. That is, they allow co-located customers to directly access telecommunication services, including International IP Transit service, provided by any Licensee that chooses to provide these services. Thus, end users who want access to multiple International IP Transit service providers can co-locate their facilities at competing data centres. Indeed, during the course of the interview process, IDA obtained evidence that some end users have relocated their facilities from SingTel's data centres to another competing data centre in order to have access to multiple International IP Transit Service providers.

113 IDA also rejects the suggestion, made by some commenting parties, that SingTel could use its dominant position in the LLC market to impede competition in the International IP Transit market. International IP Transit service does not include LLC and is not provided in conjunction with LLC to end user premises island-wide. Rather, this service is provided to IASPs or end users co-located in data centres.

114 IDA therefore concludes that SingTel does not have significant market power in the International IP Transit market, and that continued application of Dominant Licensee regulation to services provided in this market is no longer necessary.

The Leased Satellite Bandwidth Market

115 The market for "space segment" capacity is effectively competitive.

116 Customers in Singapore can obtain capacity directly from numerous regional providers or through the London Satellite Exchange. SingTel is a very small participant in this market. It owns one satellite, ST-1, and is an investor in the Hong Kong-based APT Group, which has several transponders on the Apstar satellite system in the region. Given that SingTel itself uses Leased Satellite Bandwidth to provide downstream services, IDA believes the most appropriate unit of measure is capacity. Based on information provided by SingTel, IDA estimates SingTel's share of the market is below 5 percent. Comments received from interviews also confirm that SingTel has no significant market power in this market.

117 Some commenting parties suggested that the assessment of the competitiveness of the market should take into account the fact that SingTel is the largest earth station operator in Singapore. However, there is no evidence that SingTel is using its control over its earth stations to impede competition in the market for space segment capacity. As mentioned earlier, customers in Singapore can obtain capacity directly from numerous regional providers without using SingTel's earth stations. Moreover, SingTel's earth stations are not the only satellite stations in Singapore. Several teleport operators in Singapore, such as ST Teleport, MediaCorp and Ascent Media have built their own satellite dishes, and do not rely on SingTel and its earth stations. Hence, IDA believes that SingTel's control of satellite earth stations is not relevant to the assessment of the competitiveness of the "space segment" market.

118 IDA therefore concludes that SingTel does not have significant market power in the Leased Satellite Bandwidth market, and that continued application of Dominant Licensee regulation to services provided in this market is no longer necessary.

The VSAT Market

119 The market for VSAT service is effectively competitive.

120 Customers in Singapore can obtain VSAT service from numerous providers located both in Singapore (such as ST Teleport, Ascent Media and WebSatMedia) and within the region. In addition, end users can purchase and install their own VSAT dishes/equipment, and access any provider that has capacity on a satellite that can be accessed from Singapore, for their own corporate communication needs.[14] There are no significant market entry barriers.

121 SingTel is a very small participant in this market. Based on estimated regional satellite capacity, and additional information provided by SingTel, IDA estimates that SingTel's share of the regional VSAT market is less than 5 percent.[15]

122 SingTel's control of local connectivity does not enable it to impede competition in the VSAT market. Generally, VSAT service provides for connectivity from a satellite dish, via a controller, to another satellite dish, thereby completely bypassing the terrestrial local access network.

123 IDA therefore concludes that SingTel does not have significant market power in the VSAT services market, and that continued application of Dominant Licensee regulation to services provided in this market is no longer necessary.

The DVB-IP Market

124 The market for DVB-IP services is effectively competitive.

125 Customers in Singapore can obtain service from SingTel, two Singapore-based competitors (Ascent Media and ST Teleport) and numerous other providers within the region. At the present time, however, most – and, possibly, all – customers appear to be located outside of Singapore. SingTel is a very small participant in the regional market. Based on information

[14] A number of end users currently self-provide VSAT service. These include Credit Agricole Indosuez, Prosafe Productions, Texas Instruments, the International Herald Tribune, and several foreign Embassies. The list of end users can be found on IDA's website at www.ida.gov.sg.

[15] Because reliable information regarding revenues cannot be obtained, IDA based its estimate on capacity. Regional satellite capacity estimates were provided by SingTel, based on a Euroconsult 2002 report.

provided by SingTel on the number of DVB-IP sites in the region, SingTel's share of the regional market is less than 5 percent.[16]

126 Singapore customers that want to use DVB-IP service to send or receive content typically must purchase a local access connection between their premises and a teleport. However, IDA does not believe that SingTel could use its control over local access to impede competition in the DVB-IP market. If SingTel sought to do so, Singapore-based providers of DVB-IP or even end users could cost-effectively use their existing international IP transit connections to obtain connectivity to a DVB-IP hub in another country, thereby bypassing SingTel's local access network.

127 IDA therefore concludes that SingTel does not have significant market power in the DVB-IP services market, and that continued application of Dominant Licensee regulation to services provided in this market is no longer necessary.

The Satellite Television Uplink and Downlink Markets

128 The satellite television (TV) uplink and downlink markets are effectively competitive.

129 SingTel is the largest provider of Satellite TV Uplink services in Singapore. However, based on SingTel's share of total satellite uplink dishes in Singapore, its estimated market share is below 40 percent. SingTel is subject to competition from at least two significant Singapore-based competitors – ST Teleport and Ascent Media. In addition, because the cost is relatively low, end users, including major broadcasters such as Disney and ESPN, often self-provision uplink capacity.

130 The satellite TV Downlink market is even more competitive, with at least 40 satellite TV downlink dishes in Singapore. As the cost of the facilities required to downlink content is less than the cost of the facilities required to uplink content, self-provisioning is even more common in the Satellite TV Downlink market. As a result, more entities hold downlink-only licences than uplink/downlink licences. Based on this, IDA believes that SingTel's market share is even lower in the Satellite TV Downlink market than in the Satellite TV Uplink market.

131 The evidence suggests that SingTel does not have significant market power in either the uplink or downlink markets. SingTel's list prices for some services have fallen by more than 40 percent over the last year. Because customers are able to self-provision uplink and downlink services, SingTel cannot use its control over local access facilities to impede competition.

132 IDA therefore concludes that SingTel does not have significant market power in the Satellite TV Uplink and Satellite TV Downlink services markets, and that

[16] This estimate is based on Singapore's percentage of all regional DVB-IP sites. This estimate was derived from a global estimate compiled by Broadband Satellites Markets, which IDA adjusted to reflect the estimated portion of the total sites that are in the Asia/Pacific region.

continued application of Dominant Licensee regulation to services provided in these markets is no longer necessary.

The Satellite IPLC Market

133 The demand for Satellite IPLC services in Singapore is small and declining. End users obtain this service to access low-demand countries that cannot be reached by Terrestrial IPLCs (such as Nepal and Myanmar) or as a backup to Terrestrial IPLCs. During the Second Public Consultation, several commenting parties objected to IDA's decision to grant exemption to SingTel in this market because of SingTel's near 100 percent share of the Satellite IPLC market. In response to these concerns, IDA conducted further analysis of this market.

134 As noted above, based on information obtained during the Second Public Consultation, IDA has determined that the geographic market for Satellite IPLC is regional, rather than national. Customers in Singapore can cost-effectively access satellite IPLC capacity from other countries. SingTel is a small participant in this market, with an estimated market share of significantly lesser than 40 percent in the regional market[17]. SingTel's Satellite IPLC prices are at the low end of what a satellite operator such as Intelsat would charge for comparable services. Given the competitiveness of the Leased Satellite Bandwidth market, other Singapore-based providers could easily obtain "space segment" capacity in order to enter the Satellite IPLC market in response to a small, but significant, non-transitory price increase by SingTel. Indeed, other satellite operators have confirmed that they have the ability to offer satellite access to those countries where SingTel currently offers Satellite IPLC service. However, so far, no new Singapore-based entrant has shown interest in entering the market to serve these "thin" (low demand) routes.

135 Based on the above findings, IDA concludes that continued application of Dominant Licensee regulation to services provided in this market is no longer necessary.

Miscellaneous Services

136 SingTel has also sought an exemption for two services: Telecast Local Access and Occasional Telecast Video/Audio Switching (Teleswitch) Services, which SingTel introduced in mid-2004, under the satellite uplink/downlink suite of services. These appear to be local connectivity services, rather than international connectivity services. SingTel's Occasional Telecast Video/ Audio Switching (Teleswitch) Service allows customers, such as content providers, to exchange content among multiple sites within Singapore, using SingTel's local connectivity service. SingTel's Telecast Local Access service is a local connectivity service used to connect a customer site to a SingTel earth station[18]. This is very similar to a LLC or

[17] Base on SingTel's total Satellite IPLC capacity sold as a percentage of the estimates of the Satellite IPLC capacity in competing centres in the region such as Hong Kong.

SingTel's Videosonic service[19]. IDA has previously found that the market for LLCs is not yet effectively competitive, given the lack of effective facilities-based competition in the local infrastructure.

137 Given SingTel's dominance in local connectivity services, IDA's rejects SingTel's Request to be exempted from the application of Dominant Licensee regulation to these services.

PART IX: IDA'S FINAL DECISION

138 Based on the findings explained above, IDA arrived at the following final decision.

139 IDA denies in full SingTel's Request for exemption from the application of all the Dominant Licensee obligations specified in Sub-sections 4.2.1.1 to 4.2.1.3, 4.2.2.1 to 4.2.2.3, 4.3 to 4.6 and 8.2 of the Code, to SingTel's provision of telecommunication services in the Backhaul and Terrestrial IPLC markets.

140 IDA will consider initiating a review on the level of competition in the Backhaul and Terrestrial IPLC markets two years after the effective date of its final decision. If IDA proceeds to conduct a review, it will issue a consultation paper, which will provide Licensees and interested parties with a full opportunity to express their views. IDA further anticipates that, at the conclusion of any public consultation, it will make a determination as to whether to grant an exemption based on market conditions as they exist at that time. SingTel retains the right, under the Code, to file another request for exemption applicable to these markets at any time. If SingTel chooses to do so, however, IDA expects that it will provide specific evidence that competitive conditions have changed significantly from those that IDA has found to exist at the present time. IDA will look with disfavour on any request that simply asks IDA to reconsider the findings that it made in its final decision without any verifiable market information.

141 IDA denies in full SingTel's Request for exemption from the application of all the Dominant Licensee obligations specified in Sub-sections 4.2.1.1 to 4.2.1.3, 4.2.2.1 to 4.2.2.3, 4.3 to 4.6, and 8.2 of the Code, to SingTel's provision of Telecast Local Access Service and Occasional Telecast Video/Audio Switching (Teleswitch) Service.

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[18] SingTel's Telecast Local Access service provides point-to-point connectivity similar to its Videosonic service, but only to be used to connect a customer site to a SingTel earth station. The customer must also be its Telecast (Satellite Uplink/Downlink) customer in order to be able to subscribe to this service.

[19] VideoSonic service is an example of the specific local connectivity service that SingTel provides for its satellite uplink/downlink customers. Its VideoSonic service provides a dedicated video channel circuit to transmit analogue video signals from one location to another location instantly within Singapore. VideoSonic service offers SQ (Studio Quality) link which supports 6MHz or 12MHz input signal for use in broadcasting. It can be seen as a video-grade LLC.

142 IDA grants in full SingTel's Request for exemption from the application of all the Dominant Licensee obligations specified in Sub-sections 4.2.1.1 to 4.2.1.3, 4.2.2.1 to 4.2.2.3, 4.3 to 4.6, and 8.2 of the Code, to SingTel's provision of telecommunication services in the following markets:

(a) International IP Transit;

(b) Leased Satellite Bandwidth;

(c) VSAT;

(d) DVB-IP;

(e) Satellite TV Uplink;

(f) Satellite TV Downlink; and

(g) Satellite IPLC.

The specific telecommunication product offerings of SingTel to which the exemption applies are:

(1) Standard Universal Internet Access service;

(2) Prioritised Asia Direct Universal Internet Access service;

(3) SingTel EXPAN MyNetwork Service;

(4) SingTel LSB Service;

(5) SingTel Global VSAT;

(6) SingTel DVB-IP Service;

(7) Permanent Telecast Uplink/Downlink Service;

(8) Occasional Telecast Uplink/Downlink Service; and

(9) IPLC service (via satellite).

143 IDA grants SingTel's Request for exemption from the application of the Dominant Licensee obligations specified in Sub-sections 4.2.1.1 to 4.2.1.3, 4.2.2.1 to 4.2.2.3 and 4.3 to 4.6 of the Code, to its provision of telecommunication services in the IMDS market. The specific telecommunication product offerings of SingTel to which the exemption applies are:

(a) Bilateral FR;

(b) ConnectPlus FR;

(c) ACASIA FR;

(d) Infonet FR;

(e) Bilateral ATM;

(f) ConnectPlus ATM;

(g) ACASIA ATM;

(h) Infonet ATM; and

(i) ConnectPlus IP-VPN.

144 However, IDA denies SingTel's Request for exemption from the application of the Dominant Licensee obligations specified in Sub-section 8.2 of the Code, to its provision of telecommunication services in the IMDS market. IDA will consider conducting a review of the level of competition in the IMDS market two years after the effective date of its final decision.

145 **Table 4** summarises IDA's final decision:

Table 4: Summary of IDA's Decision

Market	Exemption from Dominant Licensee Obligations under the Code		
	Section Four – Duty of Dominant Licensees	**Section Eight – Abuse of Dominant Position**	**Remarks**
Backhaul	Deny	Deny	IDA to consider reviewing after two years
Terrestrial IPLC	Deny	Deny	IDA to consider reviewing after two years
IMDS	Grant	Deny	IDA to consider reviewing after two years
International IP Transit	Grant	Grant	N.A.
Leased Satellite Bandwidth	Grant	Grant	N.A.
VSAT	Grant	Grant	N.A.
DVB-IP	Grant	Grant	N.A.
Satellite TV Uplink	Grant	Grant	N.A.
Satellite TV Downlink	Grant	Grant	N.A.
Satellite IPLC	Grant	Grant	N.A.
Miscellaneous Services*	Deny	Deny	N.A.

* Telecast Local Access Service and Occasional Telecast Video/Audio Switching (Teleswitch) Service.

Implementation Procedures

146 The following paragraph describes the implementation procedure of IDA's final decision.

(a) The exemptions granted to SingTel will become effective upon publication in the *Government Gazette*. IDA intends to publish the exemptions granted to SingTel in the *Government Gazette* within 14 days from the date of its final decision.

(b) The exemptions granted to SingTel will remain in effect permanently, unless IDA determines that re-imposition of any requirement is necessary to protect end users or promote and preserve competition amongst Licensees.

(c) The exemptions granted to SingTel will also apply to any telecommunication service or product offering that has been introduced during this proceeding or new telecommunication service or product offering that SingTel may offer in future, that is in the same market for which IDA has granted an exemption, provided that SingTel satisfies the following conditions:

(i) SingTel must provide a written notification to IDA that it requests the relevant exemption to apply to such telecommunication service or product offering; and

(ii) SingTel must obtain IDA's prior written confirmation that such telecommunication service or product offering is within the same market for which IDA has granted the relevant exemption.

To do so, SingTel must submit a detailed description of such telecommunication service or product offering – including pricing, functionality and expected customer base. IDA will make the final determination as to whether such telecommunication service or product offering falls within a market for which IDA has granted the relevant exemption. IDA will find that a telecommunication service or product offering is in the same market if the evidence demonstrates that such service or product offering is a reasonable substitute for any existing service or product offering in that market.

(d) In the event IDA imposes any additional provisions applicable to Dominant Licensees, IDA will determine, at that time, whether SingTel should be exempted from the application of that provision to the telecommunication service or product offerings in any market in which IDA has granted SingTel an exemption.

ANNEX A

GLOSSARY

International Capacity Services ("ICS") provided by SingTel include those that are listed below. The general descriptions below are provided as a reference and may not be exhaustive.

(a)	**Terrestrial International Private Leased Circuits (IPLC)**	A terrestrial IPLC is a point-to-point dedicated private line via submarine cable systems used by an organisation to communicate between offices that are geographically dispersed throughout the world. An IPLC can be used for Internet carriage, business data exchange, video conferencing, and any other form of telecommunication.
(b)	**Satellite International Private Leased Circuits (IPLC)**	An IPLC service provided via satellite.
(c)	**Frame Relay**	Frame relay is a managed network connectivity service, using packet-switching technology, designed for cost-efficient data transmission for intermittent traffic between local area networks (LANs), and between many end-points in a wide area network (WAN). Frame relay complements and provides a mid-range service between ISDN (which offers bandwidth at 128 Kbps) and Asynchronous Transfer Mode (ATM) (which operates in somewhat similar fashion to frame relay but has higher speeds from 1 Mbps or 622 Mbps).
(d)	**Asynchronous Transfer Mode (ATM)**	ATM is a managed network connectivity service, using packet-switching technology, that has high speed transportation capability (1 Mbps and above), network manageability and network accountability. It is able to meet point-to-point, point to multipoint as well as multipoint-to-multipoint connectivity needs. ATM is suited to handle real-time traffic, as well as bursty applications. With the ability to define jitter, delay, cell/packet loss ceilings, bandwidth on an application, ATM technology is able to deliver quality of service by allocating resources to traffic which have the highest priority.
(e)	**Internet Protocol Virtual Private Network (IP-VPN)**	A virtual private network (VPN) via Internet Protocol (IP) is a managed network connectivity service to provide remote offices or individual users with secure access to their organisation's network. It is used to meet enterprise networking requirements such as Intranet, business-to-business Extranet, and remote access. A VPN can be contrasted with an expensive system of owned or leased lines that can only be used by one organisation. The goal of

		a VPN is to provide the organisation with the same capabilities, but at a much lower cost. A VPN works by using the shared public infrastructure while maintaining privacy through security procedures and tunnelling protocols. IP is the method or protocol by which data is sent from one computer to another on the Internet. IP VPN is therefore an Internet Protocol based VPN, which harnesses the strength and reach of IP networks.
(f)	**Backhaul (of undersea capacity)**	High capacity circuits which enable carriers with capacities in submarine cable systems to "carry" these capacities from cable landing stations to their points of presence (gateway) usually within the same country.
(g)	**Satellite TV Uplink/Downlink**	A service catered to satellite broadcast television. It provides the transmission link from an earth station to a communications satellite (uplink), and the transmission link from a satellite to an earth station (downlink), for the transmission of broadcast content.
(h)	**Very Small Aperture Terminal (VSAT)**	VSAT is a satellite communications system that could be used to serve home and business users. It refers to receive/transmit terminals installed at dispersed sites, connecting to a central satellite, using small diameter antenna dishes. VSAT handles data, voice, and video signals. VSAT offers a number of advantages over terrestrial alternatives. For private applications, companies can have total control of their own communication system without dependence on other companies. Business and home users can also get higher speed reception than if using ordinary telephone service or ISDN.
(i)	**Digital Video Broadcast Internet Protocol (DVB-IP)**	DVB-IP is an IP Broadband via satellite solution which receives packets of data, voice, video and multimedia and other content in the form of IP. These content are encapsulated into MPEG-2 transport stream (DVB stream) to be subsequently multiplexed and modulated by their receiving audience at the remote sites.
(j)	**Leased Satellite Bandwidth**	Leased satellite bandwidth refers to the satellite transmission component of any satellite communications system, the "space segment" between the satellite and the earth station. It can be used as a basic input to all satellite services including DVB-IP, VSAT and satellite TV uplink/downlink.
(k)	**International IP Transit**	International IP transit is an arrangement whereby one (often smaller) operator pays another (often larger) operator to

	either terminate Internet traffic on its network, or to transit Internet traffic for termination on a third operator's network. IP transit service providers compete by providing extensive peering arrangements and access to a large number of routes and content sources, performance, reliability and value.

ANNEX B

ILLUSTRATION OF SINGTEL'S ICS MARKET