



Malaysian Communications and Multimedia Commission

Access List Review

Public Inquiry Paper

15 May 2015

This Public Inquiry Paper was prepared in fulfilment of sections 55(2), 55(4) and 61 of the Communications and Multimedia Act 1998

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PREFACE

The Malaysian Communications and Multimedia Commission (**MCMC**) invites submissions from industry participants, other interested parties and members of the public on the questions and issues raised in this Public Inquiry Paper (**PI Paper**) concerning the **Access List Review**. In this PI Paper the MCMC sets out a number of preliminary views. Submissions are welcome on the preliminary views where comment is specifically sought. Submissions are also welcome on the rationale and analysis in this PI Paper where no specific questions have been raised. All submissions should be substantiated with reasons and, where appropriate, evidence or source references. Written submissions, in both hard copy and electronic form, should be provided to the MCMC in full by **12 noon, 10 July 2015**.

Submissions should be addressed to:

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In the interest of fostering an informed and robust consultative process, the MCMC proposes to make submissions received available to interested parties upon request. The MCMC also reserves the right to publish extracts or entire submissions received. Any commercially sensitive information should be provided under a separate cover clearly marked '**CONFIDENTIAL**'. However, for any party who wishes to make a confidential submission, a "public" version of the submission should also be provided.

The MCMC also proposes to conduct a Public Inquiry Clarification Session at which stakeholders may make oral submissions to the MCMC and seek clarification on the issues raised in this paper. The session will be held at the Auditorium of MCMC, Level 21, MCMC Tower 1, Jalan Impact, Cyberjaya on **16 June 2015**.

Members of the public who wish to attend the session should register with the MCMC on the above contact details by **12 noon on 1 June 2015**. Parties who wish to address questions to the MCMC during the public hearings should also notify the MCMC of those questions in advance to the above contact details by **12 noon on 1 June 2015**.

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ABBREVIATIONS AND GLOSSARY

ACCC	Australian Competition and Consumer Commission
ADSL	Asymmetric Digital Subscriber Line
ANE	Access to Network Elements
BSC	Base Station Controller
BSS	Business Support Systems
BT	British Telecommunications plc
BTS	Base Transceiver Station
CDN	Content Delivery Network
CIIP	Common Integrated Infrastructure Provider
CMA	Communications and Multimedia Act 1998
CNII	Critical National Information Infrastructure
DEL	Direct Exchanged Line
DMT	Digital Multimedia Terminal
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DTT	Digital Terrestrial Television
DTTB	Digital Terrestrial Television Broadcast
DWDM	Dense Wavelength Division Multiplexing
EU	European Union
FTA	Free to Air
FTTH	Fibre to the Home
FTTN	Fibre to the Node
GSM	Global System for Mobile Communications
HSBB	High-Speed Broadband
HSBA	High-Speed Broadband Access
HSBC	High-Speed Broadband Connection
HSBT	High-Speed Broadband Transmission
IDA	InfoComm Development Authority of Singapore
IMT-2000	International Mobile Telecommunications 2000
IP	Internet Protocol
IPTV	Internet Protocol Television
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ITU	International Telecommunication Union
IXP	Internet Exchange Point
Kbps	Kilo Bit Per Second

LTBE	Long-Term Benefit of the End User
LTE	Long-Term Evolution
Mbps	Mega Bit Per Second
MAFB	Malaysian Access Forum Berhad
MCMC	Malaysian Communications and Multimedia Commission
MDA	Media Development Authority of Singapore
MDF	Main Distribution Frame
Metro-E	Metro Ethernet
MMS	Multimedia Messaging Service
MNO	Mobile Network Operator
MSA	Mandatory Standard on Access
MSAP	Mandatory Standard on Access Pricing
MSAP 2012	Commission Determination on the Mandatory Standard on Access Pricing, Determination No.1 of 2012
MVNO	Mobile Virtual Network Operator
MyIX	Malaysia Internet Exchange
NGN	Next-Generation Network
Ofcom	Office of Communications in the UK
OLT	Optical Line Terminal
OSA	One Stop Agency
OSI	Open Systems Interconnection
OSS	Operational Support Systems
OTT	Over-the-Top
O&M	Operations and Maintenance
PDM	Poles, Ducts and Manholes
PI Paper	This Public Inquiry Paper on Access List Review
POI	Point of Interconnection
PON	Passive Optical Network
POP	Point of Presence
PPIT	Persatuan Penyedia Infrastruktur Telekomunikasi
PPP	Public Private Partnership
PSSB	Puncak Semangat Sendirian Berhad
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RAN	Radio Access Network
RTM	Radio Televisyen Malaysia
SAO	Standard Access Obligation
SBC	State-Backed Company

SLA	Service Level Agreement
SIP	Session Initiation Protocol
SMS	Short Messaging Services
SSNIP	Small but significant non-transitory increase in price
SS7	Signalling System Number 7
TM	Telekom Malaysia
UK	United Kingdom of Great Britain and Northern Ireland, commonly known as United Kingdom
ULL	Unconditioned Local Loop (also known as Full Access Service in the Access List)
UNE	Upstream Network Element
VoIP	Voice over Internet Protocol
VoLTE	Voiceover LTE
WiMAX	Worldwide Interoperability for Microwave Access
3G	Third Generation
4G	Fourth Generation

Part A Background

1 Overview

Structure of this PI Paper

- 1.1 This PI Paper comprises four parts:
- (a) **Part A (Background)** – Chapters 1 to 5 are an introduction to this Public Inquiry, providing details about this document, the Public Inquiry process, the legal and historical context, key concepts and the MCMC’s methodology to considering Access List changes.
 - (b) **Part B (Review of Access List Services)** – Chapters 6 to 15 review the existing Access List facilities and services in the context of the markets to which they are relevant, consider potential changes to the facilities and services and summarise stakeholders’ views. The MCMC gives a preliminary view on the continuing regulation of each of those facilities and services, including any proposed changes to the description of the facilities and services.
 - (c) **Part C (Proposed New Access List Facilities and Services)** – Chapters 16 to 29 review the potential new Access List facilities and services in the context of the markets to which they are relevant and summarise stakeholders’ views. The MCMC gives a preliminary view on whether each of those facilities and services should be regulated, including potential changes to existing Access List service descriptions to accommodate the potential new facilities and services, where required. Part C also sets out a potential mechanism to remove regulation of Access List facilities and services in a targeted way, where justified, in response to the emergence of genuine competition.
 - (d) **Part D (Removal of Access List Facilities and Services)** – Chapter 30 reviews stakeholders’ views and the MCMC’s assessment of whether any facilities or services should be removed from the Access List.

Purpose of this Public Inquiry and PI Paper

- 1.2 Under section 55(1) of the Communications and Multimedia Act 1998 (**CMA**), the MCMC may, from time to time, make a determination on any matter specified in the CMA. The relevant matter in this case is the question of access under Part VI, Chapter 3 of the CMA.
- 1.3 Access regulation, or forbearance in respect of access regulation, has long-term consequences: overall economic implications for industry, financial implications for firms, impacts on consumers and technological innovation. The MCMC has adopted the widest possible consultative approach under the CMA in order to obtain maximum industry and public input. The MCMC’s

approach is also designed to promote certainty and transparency in the exercise of its powers.

- 1.4 This PI Paper has been issued by the MCMC to solicit views from industry participants, other interested parties and members of the public to assist the MCMC to determine whether:
- (a) existing Access List facilities and services should be retained or removed;
 - (b) the descriptions of any Access List items that are to be retained in the Access List remain appropriate or should be revised; and
 - (c) additional facilities and services should be included in the Access List.
- 1.5 As discussed below, the MCMC has already undertaken an information gathering exercise which included the circulation of an informal questionnaire and presentations to industry about the proposed Public Inquiry. The MCMC has had regard to feedback provided by industry during this information gathering phase in preparing this PI Paper.

Public Inquiry Process

- 1.6 The Public Inquiry process is subject to certain requirements under the CMA. Chapter 2 of this PI Paper sets out a more complete description of the CMA provisions which apply to this Public Inquiry. However, in brief:
- (a) section 61(1)(d) of the CMA requires that the Public Inquiry period must be a minimum of 45 days, within which public submissions will be invited;
 - (b) section 65(2) of the CMA requires the MCMC to publish a report setting out the findings of an inquiry within 30 days of the conclusion of its Public Inquiry; and
 - (c) section 55(5) of the CMA requires the MCMC to make a determination about a matter regarding which a public inquiry is held within 45 days of the conclusion of its Public Inquiry.
- 1.7 At the end of the Public Inquiry, the MCMC will:
- (a) publish a report setting out its findings in relation to the Public Inquiry during the 30 day period following the close of the Public Inquiry; and
 - (b) make any determinations arising out of the Public Inquiry within a further 15 days (during the 45 day period following the close of the Public Inquiry).

IMPORTANT NOTE: *The MCMC has provided a period for submissions of close to 60 days. As a result, the MCMC will not be providing extensions of time for late submissions.*

Scope of Public Inquiry

- 1.8 In conducting this Public Inquiry, the MCMC will be undertaking the following tasks:
- (a) applying a robust and transparent methodology for determining which facilities and services will be considered for inclusion in the Access List, and which existing facilities and services should be removed or amended;
 - (b) a review of the state of competition in the Malaysian communications and multimedia industry and an assessment as to whether there are any potential access issues which arise;
 - (c) an analysis of the likely market structures and outcomes arising from access regulation, in particular whether the inclusion of certain facilities and services in the Access List would be consistent with the objects of the CMA; and
 - (d) reviewing and/or drafting supporting regulatory documents such as drafting a revised Access List to accommodate any changes in the access regime arising from this Public Inquiry.
- 1.9 In undertaking these tasks, the MCMC will have regard to:
- (a) feedback from industry during the information gathering phase described above; and
 - (b) the work it has recently carried out in its Assessment of Dominance in Communications Market, including the Market Definition Analysis it produced as part of that assessment process.

Matters outside scope

- 1.10 Matters that are outside the scope of this review include:
- (a) determinations on access terms and conditions;
 - (b) determinations on pricing; and
 - (c) consideration of exemptions from the standard access obligations (**SAOs**), which are subject to the grant by the Minister.

Outputs from Public Inquiry

- 1.11 The first output of the Public Inquiry will be a Public Inquiry Report which will set out the MCMC's findings on the Public Inquiry.
- 1.12 The regulatory instruments that may potentially be issued following this Public Inquiry are:
- (a) a Determination that varies the existing Determination on the Access List; or

- (b) a new Access List Determination, which would include all retained facilities and services (as amended) and any new facilities and services to be included in the Access List Determination.
- 1.13 The existing Access List is set out in two instruments: the Commission Determination on Access List, Determination No. 1 of 2005 and a variation to that determination, set out in the Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009. This Access List would be modified, varied or revoked under sections 56 and 146 of the CMA.

2 Legislative Context

- 2.1 The CMA governs the communications and multimedia industry in Malaysia and establishes the regulatory and licensing framework applicable to the industry.
- 2.2 Chapter 3 of Part VI of the CMA is about Access to Services. It contains processes for the MCMC to regulate access to facilities and services which are listed in the Access List.
- 2.3 The relevant provisions of the CMA for the purposes of the Access List Review are as follows:
- (a) section 55 – the general processes for the MCMC to follow in making a determination under the CMA, including the requirement for the MCMC to hold an inquiry;
 - (b) section 56 – the general processes for the MCMC to follow in modifying, varying or revoking a determination under the CMA (which are the same as the processes that apply to the making of a determination under section 55);
 - (c) section 58 – the discretion of the MCMC to hold a public inquiry on any matter which relates to the administration of the CMA, either in response to a written request from a person or on its own initiative if the MCMC is satisfied that the matter is of significant interest to the public or to the industry;
 - (d) section 60 – the discretion for the MCMC to exercise any of its investigation and information-gathering powers in Chapters 4 and 5 of the CMA in conducting an inquiry, such as issuing directions to persons to produce any information or documents that are relevant to the performance of the MCMC’s powers and functions under the CMA;
 - (e) section 61 – the requirement for the inquiry to be public and for the MCMC to invite and consider submissions from members of the public relating to the inquiry;
 - (f) sections 62 and 64 – the discretion of the MCMC to conduct an inquiry (or parts of an inquiry) in private in certain cases, to direct

that confidential material presented to the inquiry or lodged in submissions not be disclosed or that its disclosure be restricted;

- (g) section 65 – the requirement to publish a report into any inquiry undertaken under the previous sections of the CMA within 30 days of the conclusion of the inquiry;
 - (h) section 145 – the categories of facilities and services which the MCMC may determine are to be included in the Access List;
 - (i) section 146 – the power of the MCMC to determine that facilities and services be included in or removed from the Access List; and
 - (j) section 147 – the ability for an access forum to recommend the inclusion or removal of a facility or service from the Access List.
- 2.4 The MCMC has determined under section 58(2) that a public inquiry will be held as part of the Access List Review, as the review is of significant interest to the public or industry. This process accords with international regulatory best practice.
- 2.5 The Malaysian Access Forum Berhad (**MAFB**), which has been designated as an “access forum” pursuant to section 152 of the CMA, has been consulted in the information gathering phase of the Access List Review, but at this stage has declined to provide a recommendation for the inclusion or removal of a facility or service from the Access List under section 147.

Objects and national policy objectives

- 2.6 This Public Inquiry will be conducted in accordance with the objects and national policy objectives of the CMA. The objects of the CMA are set out in section 3(1) as follows:
- (a) to promote national policy objectives for the communications and multimedia industry;
 - (b) to establish a licensing and regulatory framework in support of national policy objectives for the communications and multimedia industry;
 - (c) to establish the powers and functions for the Malaysian Communications and Multimedia Commission; and
 - (d) to establish powers and procedures for the administration of this [Communications and Multimedia] Act.
- 2.7 The national policy objectives are set out in section 3(2) as follows:
- (a) to establish Malaysia as a major global centre and hub for communications and multimedia information and content services;
 - (b) to promote a civil society where information-based services will provide the basis of continuing enhancements to quality of work and life;

- (c) to grow and nurture local information resources and cultural representation that facilitate the national identity and global diversity;
- (d) to regulate for the long-term benefit of the end user;
- (e) to promote a high level of consumer confidence in service delivery from the industry;
- (f) to ensure an equitable provision of affordable services over ubiquitous national infrastructure;
- (g) to create a robust applications environment for end users;
- (h) to facilitate the efficient allocation of resources such as skilled labour, capital, knowledge and national assets;
- (i) to promote the development of capabilities and skills within Malaysia's convergence industries; and
- (j) to ensure information security and network reliability and integrity.

3 Key Concepts

Long-Term Benefit of the End User

- 3.1 In the MCMC's 2008 review of the Access List, the MCMC adopted the principle of regulation in the long-term benefit of the end user (**LTBE**) as its guiding point of assessment for whether facilities or services should be included in the Access List. The LTBE is one of the national policy objectives for the communications and multimedia industry set out in section 3 of the CMA (discussed below). The previous review drew particular attention to the following elements of the LTBE:
- (a) the objective of promoting competition in relevant markets;
 - (b) the objective of achieving any-to-any connectivity in relation to communications services; and
 - (c) the objective of encouraging the economically efficient use of and investment in communications infrastructure.
- 3.2 The MCMC also considered other national policy objectives that were relevant to access regulation, including national development, equitable provision of services over ubiquitous national infrastructure, and the promotion of a civil society. These objectives are, to some extent, inherent in the LTBE concept. However, the MCMC found it useful to have separate explicit regard to these objectives when one of them was particularly relevant to the inclusion or exclusion of a particular facility or service in the Access List.

Bottleneck Facilities

- 3.3 In the MCMC's most recent Access List review, the MCMC also proceeded on the presumption that the inclusion of 'bottleneck' facilities and services in the Access List would be in the LTBE. The sharing of 'bottlenecks' or 'essential facilities' which cannot feasibly be duplicated is a well-established concept in economic regulation.
- 3.4 The concept requires the existence of two markets, typically designated as an 'upstream' and a 'downstream' market, and usually the presence of one firm in both markets. Other firms that are (or seek to become) active in the downstream market require access to an input in the upstream market. That input is supplied only by the rival firm operating in both markets.
- 3.5 As noted in the PI Paper for the 2008 Access List Review,¹ four elements are required to establish liability under the essential facility doctrine in United States antitrust law (where the concept of essential facilities originated):
- (a) the essential facility is controlled by a monopolistic firm;
 - (b) a competitor is unable to practically or reasonably duplicate the essential facility;
 - (c) denial of the use of the facility to a competitor; and
 - (d) feasibility of providing access to the facility.
- 3.6 These four elements provide a sound basis for determining the existence of a bottleneck or essential facility and assessing whether mandated access to the facility is justified.
- 3.7 However, even if the bottleneck test was satisfied, in the 2008 Access List Review, the MCMC did take into account the other considerations above, having regard to the Malaysian context in practice rather than in theory, prior to determining that access regulation should apply. Conversely, the MCMC considered that even if a facility or service is not characterised as a bottleneck, it will be assessed against the individual components or factors of the LTBE test.

4 Methodology

- 4.1 In deciding to list a particular service in the Access List, the MCMC has previously employed a variety of specific approaches to determine whether the LTBE has been satisfied. These have included:
- (a) the "with or without" test, which posed the question of whether it was more desirable (that is, in the LTBE) to impose regulation rather than to exercise regulatory forbearance; and

¹ 2008 Access List Review PI Paper, p. 56.

- (b) a qualitative cost-benefit analysis of access regulation, based on the submissions received to the MCMC's public inquiries.
- 4.2 Based on this methodology, in 2009, the MCMC added certain facilities and services onto the Access List, removed others and varied the descriptions of certain facilities and services which were already in the Access List.²
- 4.3 This methodology reflects international best practices and was generally well received by the industry. Accordingly, the MCMC proposes applying the same methodology in this Access List Review.
- 4.4 Part B (Review of Access List Services) of this PI Paper reviews existing facilities and services listed in the Access List in the context of the markets in which they exist and sets out the MCMC's preliminary analysis of whether they should be retained in the Access List (with or without amendment), having regard to the above methodology.
- 4.5 Similarly, Part C (Proposed New Access List Facilities and Services) of this PI Paper reviews potential facilities and services to be listed in the Access List in the context of the markets in which they exist and sets out the MCMC's preliminary analysis of whether they should be added to the Access List having regard to the above methodology.
- 4.6 For each market, the PI Paper sets out:
 - (a) a market overview; and
 - (b) a competition analysis.
- 4.7 Where sensible for discussion purposes, one market described in the Market Definition Analysis has been split into multiple sub-topics or the discussion of multiple markets has been combined.
- 4.8 For each facility or service being considered for addition to, removal from or retention (with or without amendment) in the Access List, the PI Paper sets out:
 - (a) a short description of the market(s) in which the facility or service exists;
 - (b) a summary of the competition in the market(s) in which the facility or service exists;
 - (c) any submissions received on the facility or service during the information gathering phase;
 - (d) a public policy assessment of retaining, amending, removing or adding the facility or service (at which stage the PI Paper considers the tests above for determining whether access regulation is in the LTBE);

² Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

- (e) a preliminary finding on whether to retain, amend, remove or add the facility or service to the Access List (as applicable); and
- (f) specific questions on the facility or service.

5 Focus areas

Focus areas generally

5.1 The 2008 Access List Review focused on five key concerns:

- (a) **any-to-any connectivity**, particularly the need to ensure that access regulation facilitates connection between new entrants' facilities and services and established facilities and services where the operator providing those established facilities and services may not have a commercial incentive to allow such connection;
- (b) **rationalisation of the Access List**, including consolidation of special services into more general, purpose-neutral services;
- (c) **next generation network (NGN) regulation**, including the need to account for aspects of Telekom Malaysia's (TM) High-Speed Broadband (HSBB) Network rollout which were uncertain at the time of the review;
- (d) **services which were potentially redundant or not being acquired**, including an investigation into the reasons that particular services were not being acquired; and
- (e) issues that were beyond the scope of the review, including enforcement and pricing.

5.2 The variations made to the Access List following the 2008 review in the *Variation to Commission Determination on Access List (Determination No. 1 of 2005)*, *Determination No. 1 of 2009*, reflected the key focus areas above (to the extent that the MCMC considered that variations were necessary to address the focus areas). In particular:

- (a) several use-specific transmission services were rationalised into a single general Transmission Service for 'trunk segment' transmission and a single general Wholesale Local Leased Circuit Service for 'tail segment' transmission;
- (b) the HSBB Network Service with QoS and the HSBB Network Service without QoS were introduced to regulate access to the emerging next generation access network in Malaysia; and
- (c) a number of services were removed where access regulation was no longer necessary due to technological developments or the success of access regulation in fostering a competitive market for the services.

- 5.3 By comparison to preceding regulatory review periods, in the period between the 2008 Access List Review and this review there have been fewer fundamental technological developments in the lower layers of the network stack that are inputs to other facilities and services. As the lower layers of the network stack are inputs to other facilities and services, they are generally where bottleneck facilities are found. Consequently, access regulation is generally focused on the lower layers of the network stack.
- 5.4 This relative lack of fundamental development in lower layer technologies is reflected in the information provided by operators in the information gathering phase. The MCMC's review of that information suggests five focus areas for the current review which are shaped less by technological development and more by the state of competition and investment in the industry. The five focus areas are:
- (a) **enhancement of access regulation related to the Access List:** the MCMC seeks to ensure that all industry participants understand and comply with the standard access obligations which apply to facilities and services in the Access List – in the information gathering phase, access seekers informed the MCMC that they had been unable to obtain access to a number of facilities and services in the Access List including HSBB Network services and Network Co-location Services, and that they had instead been acquiring different related services on a commercial basis (e.g. Layer 3 HSBB Network services with bundled transmission);
 - (b) **incentive-based regulation:** adding and removing facilities and services in the Access List in a manner focused on incentivising access providers to supply those facilities and services to access seekers;
 - (c) **more developed regulation of transmission services:** ensuring that access regulation is developed to reflect experience gained from the first period of regulated access to the consolidated Transmission Service and the Wholesale Local Leased Circuit Service;
 - (d) **improved access to next generation access network services:** ensuring that NGN regulation reflects the Malaysian experience following the first period of regulated access to HSBB Network services; and
 - (e) **fostering investment in access network infrastructure:** ensuring that operators wishing to expand fast broadband access or other fixed transmission infrastructure in Malaysia beyond those premises currently served by an HSBB Network have access to bottleneck facilities which are necessary for such expansions.
- 5.5 The common theme underlying all areas is the need to continuously refine the Access List and its implementation to reflect the state of competition in the markets for supply of regulated facilities and services.

- 5.6 These focus areas are particularly relevant to:
- (a) the MCMC's proposal to list several new facilities and services in the Access List (discussed in Part C of this PI Paper); and
 - (b) the MCMC's proposal to introduce regulation of downstream facilities and services in response to a failure by operators to supply access to related upstream facilities and services which are currently regulated (discussed below).

Incentive-Based Regulation

- 5.7 As noted above, the MCMC proposes to include mechanisms to remove regulated access to facilities and services in the Access List in a targeted manner when there is evidence that supply is occurring in respect of a related upstream facility or service and will continue to occur on reasonable terms even if regulation is removed. Such a mechanism would have the benefit of providing:
- (a) an incentive for access providers to offer the upstream facility or service, maximising the scope for competition, price and service differentiation in the downstream facility or service; and
 - (b) an incentive for access providers to offer the downstream facility or service on commercially attractive terms to access seekers (which also increases competition in the ultimate downstream retail markets).
- 5.8 Accordingly, and given that some facilities and services in the Access List have not been supplied at all to date, the MCMC proposes to introduce additional regulation of facilities and services in higher layers of the network stack, where those alternative facilities and services are being supplied in the market at present (e.g. end-to-end transmission in addition to separate 'trunk segment' and 'tail segment' transmission; and Layer 3 HSBB Network services in addition to (Layer 2) HSBB Network services). Including such facilities and services in the Access List will ensure that such facilities and services are subject to SAOs, which oblige access providers to make the facilities and services available to all access seekers on an equivalent basis and on equitable and non-discriminatory terms in accordance with section 149(2) of the CMA.
- 5.9 Including such facilities and services in the Access List may also allow the MCMC, in due course, to regulate the terms and prices on which such facilities and services are supplied through mandatory standards if appropriate (and subject to consultation).
- 5.10 The MCMC also proposes to include mechanisms to deregulate these additional facilities and services (e.g. Layer 3 HSBB Network services) once there is evidence of the supply of the original upstream facilities and services set out in the Access List (e.g. (Layer 2) HSBB Network services) as a method of incentivising access providers to offer those original facilities and services.

- 5.11 Such regulatory design is consistent with the 'ladder of investment' theory which has been proven robust in other jurisdictions. That is, regulation of services in higher layers of the network stack would be removed as access seekers are given the opportunity to make additional infrastructure investments and need only rely on regulated access to facilities and services in lower layers of the network stack. However, such regulation would need to be sensitive to the fact that different access seekers will acquire customers, invest in infrastructure and be ready to acquire facilities and services in lower layers of the network stack at different rates in different regions, and access regulation of facilities and services in higher layers of the network stack therefore cannot be removed prematurely. In jurisdictions like the United Kingdom (**UK**) and Australia, the regulators have had regard to multiple data points to determine when a critical mass of supply has been reached in a particular area that justifies removal of access regulation. The MCMC's proposal for regulating access to Layer 3 HSBB Network services and a mechanism for removing such regulation is discussed in Chapter 19, below.
- 5.12 The MCMC's proposal for regulating end-to-end transmission services and a mechanism for removing such regulation is discussed in Chapter 20, below.

Part B Review of Access List Services

6 Overview of current Access List

- 6.1 The current Access List includes the following listed facilities and services, organised by market(s), each of which is considered in this Part B (Review of Access List Services) of the PI Paper:
- (a) Wholesale origination markets (fixed and mobile)
 - (i) Fixed Network Origination Service
 - (ii) Mobile Network Origination Service
 - (b) Wholesale termination markets (fixed and mobile)
 - (i) Fixed Network Termination Service
 - (ii) Mobile Network Termination Service
 - (c) Wholesale fixed telephony services market (including Voice over Internet Protocol (**VoIP**))
 - (i) Wholesale Line Rental Service
 - (d) Wholesale access to facilities and upstream network elements market (for the access network)
 - (i) Full Access Service
 - (ii) Line Sharing Service
 - (iii) Sub-loop Service
 - (iv) Bitstream Services
 - (e) Wholesale access to facilities and upstream network elements market (for the core network)
 - (i) Infrastructure Sharing
 - (ii) Network Co-Location Service
 - (f) Wholesale fixed broadband and data market (business / residential)
 - (i) Digital Subscriber Line Resale Service
 - (ii) HSBB Network Service with QoS
 - (iii) HSBB Network Service without QoS
 - (g) Wholesale transmission services markets
 - (i) Transmission Service
 - (ii) Wholesale Local Leased Circuit Service

- (h) Interconnect link markets
 - (i) Interconnect Link Service
 - (ii) Domestic Connectivity to International Service (Connectivity only)
- (i) Wholesale broadcasting transmission market
 - (i) Digital Terrestrial Broadcasting Multiplexing Service

7 Wholesale origination markets (fixed and mobile)

Introduction

7.1 The wholesale origination markets (fixed and mobile) include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
Individual wholesale origination markets for each fixed and mobile network	<ul style="list-style-type: none"> ▪ Fixed Network Origination Service ▪ Mobile Network Origination Service

Market Descriptions

- 7.2 In its Market Definition Analysis of September 2014 (**Market Definition Analysis**), the MCMC defined separate markets for the fixed and mobile wholesale origination services provided by each network operator.³ These are markets for services that one network operator (**Originating Operator**) provides to another network operator (**Terminating Operator**) to allow the Originating Operator's end users (**Calling Parties**) to make calls to end users that are connected to the Terminating Operator's network (**Called Parties**). Originating services are transmission and switching services provided by the Originating Operator between the Calling Party's location and a point of interconnection (**POI**) with the Terminating Operator.
- 7.3 Most calls in Malaysia do not need wholesale originating services, since the Calling Party will pay for the cost of call origination directly through the call charges it pays to the Originating Operator. However, wholesale originating services are needed for toll free (1300) or freephone (1800) numbers, where the Calling Party does not pay any (or all) call charges to the Originating Operator. In these cases, the Originating Operator must recoup the cost of origination from the Terminating Operator (who is itself paid a charge by the Called Party, to whom the toll free/freephone number service relates).

³ Market Definition Analysis, pp. 98–100.

- 7.4 There are separate markets for the wholesale origination services provided by each network operator, since each network operator has an effective monopoly in providing origination for calls made by its own end users. In other words, a Called Party connected to the Terminating Operator's network will only be able to receive calls from Calling Parties connected to an Originating Operator's network if the Terminating Operator purchases an originating service from that particular Originating Operator.

Competition Analysis

- 7.5 In the 2008 Public Inquiry Report on the Review of the Access List and Mandatory Standard on Access (**2008 Access List Review**), the MCMC held that fixed wholesale origination service was a "bottleneck" service, and that there were no reasons to remove mobile wholesale origination service. Hence, the MCMC determined that they should continue to be subject to regulation through inclusion in the Access List, as doing so would be in the long-term benefit of end users.⁴
- 7.6 Since the previous Access List review, the MCMC does not believe that there have been any material changes in the level of competition in wholesale origination markets which would justify a change in this approach.
- 7.7 As mentioned above at paragraph 7.4, each network operator has an effective monopoly in providing origination for calls made by its own end users to Called Parties on the Terminating Operator's network. No other operator is able to provide origination services for Calling Parties connected to that operator's network. Accordingly, in its Public Inquiry Report regarding the Assessment of Dominance in Communications Markets of September 2014 (**Assessment of Dominance**), the MCMC found that each operator with a network is dominant in the market for call origination on its own network.⁵ This suggests that there continues to be a strong basis for regulating access to wholesale origination services.

Fixed Network Origination Service

Description

- 7.8 The Fixed Network Origination Service is currently described in the Access List as follows:⁶

(1) Fixed Network Origination Service

- (a) *A Fixed Network Origination Service is an Interconnection Service provided by means of a Fixed Network for the carriage of Call Communications from an 'A' party to a POI. The Fixed Network Origination Service comprises transmission and switching (whether packet or circuit) for Fixed Network-to-Fixed Network, Fixed Network-to-Mobile Network and Fixed Network-to-international outgoing calls insofar as they relate to freephone 1800 number services, toll free 1300 number services, and other similar services which require Any-to-Any Connectivity.*

⁴ 2008 Access List Review PI Report, pp. 39, 60 and 61.

⁵ Assessment of Dominance PI Report, p. 105.

⁶ Commission Determination on Access List, Determination No.1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

- (b) *The functionalities of the Fixed Network Origination Service include:*
- (i) *transmission and switching (whether packet or circuit); and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the provision of the Fixed Network Origination Service include Public Switched Telephone Network (PSTN), Integrated Services Digital Network (ISDN) and other IP based networks.*

7.9 "Call Communications" has the following definition in the Access List:

"Call Communications" means communications involving (in whole or in part) a number or IP address used in the operation of each Operator's network including Message Communications.

7.10 In turn, "Message Communications" is defined in the following manner:

"Message Communications" means communications that provide only text with or without associated images, audio clips and video clips. Examples of Message Communications include Short Message Service and Multimedia Message Service.

7.11 Accordingly, the description of the Fixed Network Origination Service comprises not only voice call origination, but also SMS and MMS message origination.

7.12 The scope of the Fixed Network Origination Service is illustrated in the diagram below:

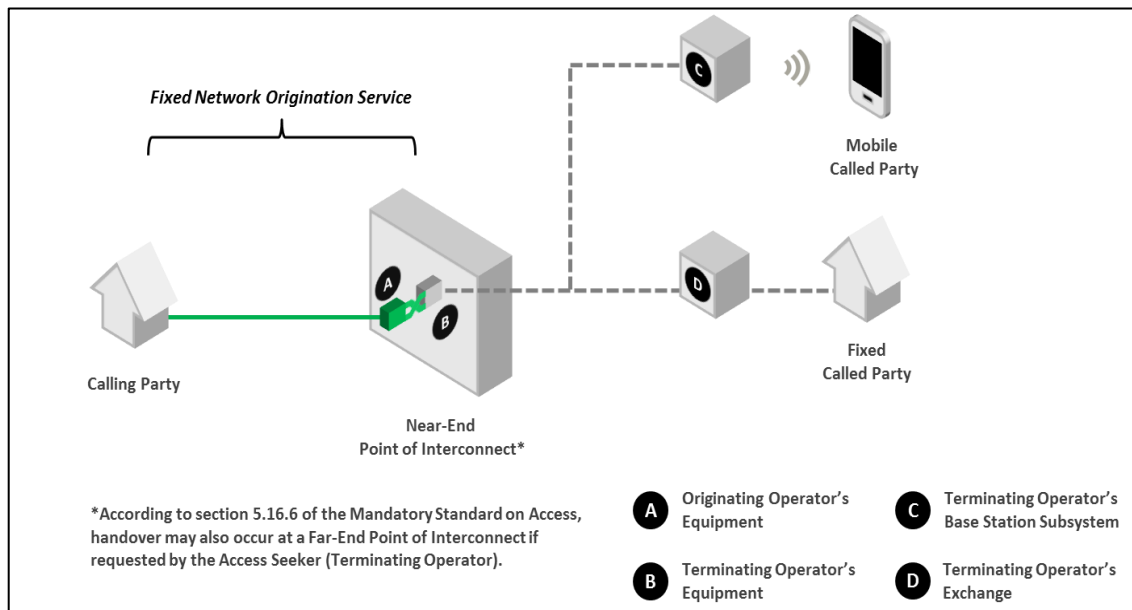


Figure 1 – Scope of Fixed Network Origination Service

Submissions Received

7.13 Atel submitted that the service description for the Fixed Network Origination Service is appropriate, although Atel does not plan to acquire this service.

7.14 Celcom submitted that the Fixed Network Origination Service is a usable input to access the Access Provider's network for the provision of freephone

1800 services and toll free 1300 services. Celcom submitted that the Fixed Network Origination Service is essential to Celcom's mobile voice service as it allows any-to-any connectivity. Celcom stated that there is no impediment to gaining access to this service. However, Celcom submitted that the description of the Fixed Network Origination Service should include IP interconnection and voice over broadband to make it "crystal clear" that these terms are included, despite the fact that the terms "packet" and "IP based networks" are already used in the description.

- 7.15 DiGi submitted that there are no impediments to acquiring the Fixed Network Origination Service from fixed network operators. Historically these services have been provided with no serious impediment.
- 7.16 An operator submitted that it does not currently acquire the Fixed Network Origination Service, and explained that if it does need an origination service as part of its Internet Protocol Television (**IPTV**) offering, it will rely on partners to provide the final products to its customers.
- 7.17 Maxis submitted that it acquires the Fixed Network Origination Service for call origination from fixed operators' networks to access Maxis 1300 and 1800 services.
- 7.18 Packet One submitted that although it acquires the Fixed Network Origination Service to ensure connectivity for its customers, the MCMC should move towards abolishment of charge number areas. Packet One submitted that advancement of technology allows for a single handover without sacrificing the quality of service (**QoS**) experience by consumers.
- 7.19 REDtone submitted that it has no concerns about the functionality or service description of the Fixed Network Origination Service. However, it considers that for small operators competitive pricing could be an issue.
- 7.20 TM is an access seeker and provider for Fixed Network Origination Services and feels there are few impediments to providing these services. Given the lack of impediments, TM queries the need for access regulation of the Fixed Network Origination Service.
- 7.21 TIME submitted that the Fixed Network Origination Service is an essential input to the voice services it provides to customers. TIME is of the opinion that the functionality and price structure of the Fixed Network Origination Service needs to be more specific since the access provider has the ability to manipulate where it hands over calls made by its subscribers to the access provider's advantage. TIME submitted that the Fixed Network Origination Service is based on non-geographical numbers and since access providers are not aware of the location of numbers they could potentially handover calls at the furthest region in order to charge the access seeker double tandem charges along with submarine cable origination charges (see the Mandatory Standard on Access Pricing (**MSAP**) for details of charges). Therefore TIME suggests that Fixed Network Origination Service should only have a single price which should be set at the single tandem rate. TIME also submitted that the predominant agreement among operators is to handover at the far end, which is typically in the Central region.

- 7.22 U Mobile submitted that the MCMC should consider regulating a number of other services, described in Part C, although it does not acquire the Fixed Network Origination Service itself.
- 7.23 YTL submitted that the Fixed Network Origination Service provides the functionalities needed to build customer services, and that the market is competitive with no functional limitations. YTL acquires the Fixed Network Origination Service as an access seeker and offers the service to enterprise customers that require 1300 and 1800 services. YTL proposed that subscriber numbers should be non-geographical and the service should be technology neutral.

MCMC Assessment

- 7.24 As noted above, the MCMC considers that the rationale for regulating access to wholesale fixed network origination services remains valid. Operators have not raised any concerns regarding the basic definition of the service and the MCMC is not aware of any material changes in the market.
- 7.25 Operators suggested two improvements to the service:
- (a) making the service technology neutral or reinforcing that the service is technology neutral; and
 - (b) abolishing the geographic aspect of origination charges by requiring that all calls originated on a wholesale basis will be charged at a uniform rate regardless of the Calling Party location or the POI at which the call is handed over to the Terminating Operator (or otherwise improving price regulation of the service).
- 7.26 With regard to the first suggested improvement, the MCMC reiterates that the Fixed Network Originating Service is already technologically neutral. However, to reinforce that fact, the MCMC proposes minor variations to the service description and related definitions, set out at paragraphs 7.34 and 7.35 below, to underscore that the Fixed Network Originating Service may be supplied using any relevant current or future fixed network technology.
- 7.27 The MCMC reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 7.28 With regard to the second suggested improvement, as noted above, pricing matters are outside the scope of the present Public Inquiry. However, the MCMC will make a note of the suggestion that Fixed Network Originating Service should be price regulated in a non-geographic manner and may consider the issue as part of any future inquiry into the MSAP.
- 7.29 Operators are invited to submit any other price related concerns in response to consultations on the MSAP, but the MCMC will not be reviewing price related regulation in the current inquiry into the Access List.

- 7.30 With regard to TM's assertion that the Fixed Network Origination Service is provided without impediments and therefore should not be regulated, the MCMC notes that the overarching factor for determining whether the Fixed Network Origination Service should be listed in the Access List is the state of competition in the wholesale fixed network origination markets.
- 7.31 The fact that access regulation is successful in enabling access to a facility or service is not in itself an argument for removal of the regulation, if the underlying rationale for regulation continues to exist and analysis shows that the problems which are addressed by regulation may recur upon removal of regulation.
- 7.32 The MCMC reiterates that wholesale fixed network origination services constitute a key bottleneck or "essential facility" in telecommunications networks, given that they can only be provided by the Originating Operator in relation to each network.
- 7.33 Accordingly, unless there is clear evidence that Originating Operators face effective external competitive constraints, the economic rationale for regulating the Fixed Network Origination Service remains strong.

MCMC Preliminary View

- 7.34 The MCMC's preliminary view is that the Fixed Network Originating Service should remain in the Access List with minor modifications to underscore that the service description is technologically neutral as follows. Words that appear in underlined red text have been added relative to the existing description, while words that appear in ~~striketrough-text~~ are proposed to be deleted:

(1) Fixed Network Origination Service

- (a) *A Fixed Network Origination Service is an Interconnection Service provided by means of a Fixed Network for the carriage of Call Communications from an 'A' party to a POI. The Fixed Network Origination Service comprises transmission and switching (whether packet or circuit) for Fixed Network-to-Fixed Network, Fixed Network-to-Mobile Network and Fixed Network-to-international outgoing calls insofar as they relate to freephone 1800 number services, toll free 1300 number services, and other similar services which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Fixed Network Origination Service include:*
- (i) *transmission and switching (whether packet or circuit); and*
- (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the provision of the Fixed Network Origination Service include PSTN, Integrated Services Digital Network (ISDN), ~~and~~ other IP based networks and any other fixed network technology which is currently available or which may be developed in future that involves the carriage of Call Communications.*
- 7.35 The MCMC also proposes a minor modification to the definition of the term "Message Communications" as follows:

"Message Communications" means communications that provide only text with or without associated images, audio clips and video clips. Examples of Message Communications include Short Message Service and Multimedia Message Service and any other technology which is currently available or which may be developed in future that involves the carriage of text communications with or without associated images, audio clips and video clips.

Questions

Question 1: Do you acquire the Fixed Network Origination Service as an access seeker or supply the Fixed Network Origination Service as an access provider?

Question 2: Are you experiencing any difficulty in acquiring or supplying the Fixed Network Origination Service? If not, why not? (Please provide details).

Question 3: Should the Fixed Network Origination Service remain in the Access List?

Question 4: Do you have any comments on the proposed clarifications to the service description for the Fixed Network Origination Service?

Question 5: Have you had any difficulty in acquiring the Fixed Network Originating Service as an access seeker on the basis of technology used to implement the service? (Please provide details).

Mobile Network Origination Service

Description

7.36 The Mobile Network Origination Service is currently described in the Access List as follows:⁷

(4) Mobile Network Origination Service

- (a) *A Mobile Network Origination Service is an Interconnection Service for the carriage of Call Communications from a 'A' party to a POI. The Mobile Network Origination Service supports Mobile Network-to-Mobile Network, Mobile Network-to-Fixed Network and Mobile Network-to-international outgoing calls insofar as they relate to freephone 1800 number services, toll free 1300 number services, and other similar services which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Mobile Network Origination Service include:*
 - (i) *transmission and switching (whether packet or circuit); and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the Mobile Network Origination Service would be:*
 - (i) *Global System for Mobile Communications (GSM);*
 - (ii) *International Mobile Telecommunications 2000 (IMT-2000); and*
 - (iii) *Worldwide Interoperability for Microwave Access (WiMAX).*

⁷ Commission Determination on Access List, Determination No. 1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

7.37 As explained in paragraphs 7.9 to 7.11 above, the broad definition of “Call Communications” in the Access List means that the description of the Mobile Network Origination Service comprises voice call origination and message origination (SMS and MMS).

7.38 The scope of the Mobile Network Origination Service is illustrated in the diagram below:

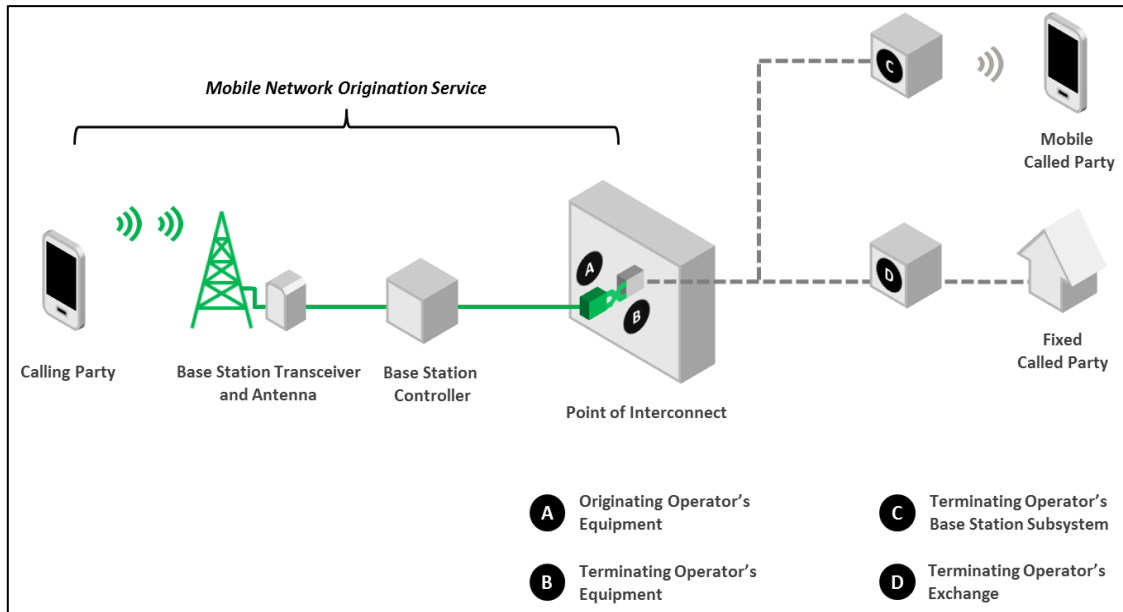


Figure 2 – Scope of Mobile Network Origination Service

Submissions Received

7.39 Altel submitted that it will be acquiring the Mobile Network Origination Service in order to provide end users with any-to-any connectivity. However, Altel noted that it is more challenging to gain access to services when the access provider perceives direct competition with an access seeker such as Altel. In particular, in order to be accepted as a Mobile Virtual Network Operator (**MVNO**), Altel submitted that it chose a less popular market segment than it otherwise would have to avoid direct competition with access providers.

7.40 Celcom submitted that there is no impediment to accessing the Mobile Network Origination Service, which it acquires as a usable input to access the access provider’s network to provide freephone 1800 service and toll free 1300 services. This helps Celcom to provide an essential service. Celcom suggested that the MCMC include Voice over LTE (**VoLTE**) under this service.

7.41 DiGi submitted that it currently acquires and provides the Mobile Network Origination Service with no serious impediment.

7.42 Telin Malaysia submitted that it currently acquires the Mobile Network Origination Service. Telin Malaysia did not suggest any changes to the service description or highlight any issues with the service currently.

- 7.43 U Mobile submitted that it acquires Mobile Network Origination Services and finds that the service provides appropriate functionality.
- 7.44 YTL submitted that it acquires Mobile Network Origination Services and finds that it has no functional limitations.

MCMC Assessment

- 7.45 The MCMC considers that the rationale for including the Mobile Network Origination Service in the Access List remains valid. Operators have not raised any concerns regarding the basic definition of the service and the MCMC is not aware of any material changes in the market that would necessitate changes to the Mobile Network Origination Service.
- 7.46 With regard to the suggestion that VoLTE or other technologies be expressly listed in the service description for the Mobile Network Origination Service, the MCMC reiterates that the Mobile Network Originating Service is already technologically neutral. However, to reinforce that fact, the MCMC proposes minor variations to the service description, set out at paragraph 7.48 below, to underscore that the Mobile Network Originating Service may be supplied using any relevant current or future mobile technology.
- 7.47 In relation to Altel's submission, the MCMC notes if operators face challenges gaining access to a listed service to which the SAOs apply (or face challenges gaining such access on non-discriminatory terms) after trying to resolve any such challenges directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.

MCMC Preliminary View

- 7.48 The MCMC's preliminary view is that the Mobile Network Originating Service should remain in the Access List with minor modifications to underscore that the service description is technologically neutral. Words that appear in underlined red text have been added relative to the existing description while words that appear in ~~strikethrough-text~~ are proposed to be deleted, and the amended service description is as follows:

(4) Mobile Network Origination Service

- (a) *A Mobile Network Origination Service is an Interconnection Service for the carriage of Call Communications from a 'A' party to a POI. The Mobile Network Origination Service supports Mobile Network-to-Mobile Network, Mobile Network-to-Fixed Network and Mobile Network-to-international outgoing calls insofar as they relate to freephone 1800 number services, toll free 1300 number services, and other similar services which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Mobile Network Origination Service include:*
- (i) *transmission and switching (whether packet or circuit); and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the Mobile Network Origination Service would be:*

- (i) Global System for Mobile Communications (GSM);
- (ii) International Mobile Telecommunications 2000 (IMT-2000); ~~and~~
- (iii) Worldwide Interoperability for Microwave Access (WiMAX);
- (iv) Long-Term Evolution (LTE); and
- (v) any other mobile technology which is currently available or which may be developed in future that involves the carriage of Call Communications.

Questions

Question 6: Do you acquire the Mobile Network Origination Service as an access seeker or supply the Mobile Network Origination Service as an access provider?

Question 7: Are you experiencing any difficulty in acquiring or supplying the Mobile Network Origination Service? If not, why not? (Please provide details).

Question 8: Do you have any comments on the proposed clarifications to the service description for the Mobile Network Origination Service?

8 Wholesale termination markets (fixed and mobile)

Introduction

- 8.1 The wholesale termination markets (fixed and mobile) include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
Individual wholesale termination markets for each fixed and mobile network	<ul style="list-style-type: none"> ▪ Fixed Network Termination Service ▪ Mobile Network Termination Service

Market Descriptions

- 8.2 In the Market Definition Analysis, the MCMC defined separate termination markets for the fixed and mobile wholesale termination services provided by each network operator. The wholesale termination markets comprise services provided by a Terminating Operator to an Originating Operator to allow Calling Parties to make calls and send SMS or MMS messages to Called Parties. The termination services are transmission and switching services provided by the Terminating Operator between a POI with the Originating Operator and the Called Party's location.
- 8.3 Originating Operators must purchase termination services from Terminating Operators in order to be able to provide full any-to-any connectivity to their end users (i.e. to allow end users to call or send SMS/MMS messages to parties connected to other networks). The cost of these termination services

is ultimately recouped through the subscription and/or call costs paid by Calling Parties to the Originating Operator.

- 8.4 Termination services that allow calls or messages to be terminated to Called Parties connected to a particular network can only be provided by the operator of that network. Because each end user number is unique, a call made (or message sent) to a particular Called Party on one network cannot be substituted by the Originating Operator for a call made to a different Called Party connected to a different network or to the same Called Party on a different network.
- 8.5 Accordingly, termination services provided by different service providers are not substitutable, with the effect that separate markets exist for the wholesale termination services provided by each fixed and mobile network operator in Malaysia.
- 8.6 Note that, in the Market Definition Analysis, the MCMC considered that SMS/MMS termination should be included within the same markets as voice call termination. This is because the same basic infrastructure that is used to supply call termination is used to supply SMS/MMS termination.⁸ Accordingly, the individual market for the wholesale termination services provided by a Terminating Operator to an Originating Operator comprises both voice call termination and SMS/MMS termination – there is no distinct market for SMS/MMS termination services. While SMS/MMS termination is typically provided over mobile rather than fixed networks, the inclusion of SMS/MMS termination within the wholesale termination markets applies in a technology neutral manner to both fixed and mobile networks.

Competition Analysis

- 8.7 In its Assessment of Dominance in Communications Markets, the MCMC found that each operator is dominant in the market for wholesale termination services in relation to its own network.⁹
- 8.8 The fact that termination services in relation to end users on -a particular network can only be provided by that particular network operator does not mean that it is theoretically impossible for competitive constraints to exist in these markets. Factors that may potentially constrain the behaviour of Terminating Operators include:
- (a) in the case of calls – the availability of VoIP calling services which allow the Calling Party to reach the Called Party in circumstances where one or both parties is using the VoIP calling service;
 - (b) in the case of SMS or MMS messages – the availability of over-the-top (**OTT**) messaging services that deliver messages over IP networks, usually where both parties are using the same OTT messaging service; or

⁸ Market Definition Analysis, p. 101.

⁹ Assessment of Dominance PI Report, pp. 102-103.

- (c) the same Called Party being available to receive calls or messages on multiple networks (e.g. by holding multiple SIM cards or both fixed-line and mobile subscriptions).
- 8.9 These factors would allow a Calling Party to choose from several options of making a call or sending a message to a single Called Party (e.g. a call could be made either to the Called Party number connected to Terminating Operator's network, or to the same Called Party's VoIP account provided by a third party, etc). This might constrain each single Terminating Operator from imposing a small but significant and non-transitory increase in price (**SSNIP**) for termination services.¹⁰ Such behaviour by a Terminating Operator could result in lower demand from Originating Operators for termination services *from that particular Terminating Operator*, as end users of those Originating Operators would choose alternative means of communicating with the end users on that Terminating Operator's network.
- 8.10 However, in its Market Definition Analysis, the MCMC found that VoIP calling services or OTT services were not substitutable with wholesale termination services and were therefore not in the same market. This is because, once a Calling Party decides to make a call or send a message to a Called Party connected to a Terminating Operator's network, the Originating Operator has no choice but to terminate the call on the Terminating Operator's network (and therefore purchase termination services from that operator).¹¹
- 8.11 In its 2008 Access List Review, the MCMC found that fixed network termination services were "bottleneck services which have not been sufficiently exposed to competitive pressures by VoIP in a manner that would justify its deregulation".¹² Similarly, mobile network termination services were found to be "a bottleneck, and all other factors such as [the] unlikely availability [of the services] on reasonable price and non-price terms in the absence of regulation" supported the retention of regulation.¹³
- 8.12 In Australia, the Australian Competition and Consumer Commission (**ACCC**) conducted a review in July 2014 about maintaining regulation of the "Mobile Terminating Access Service" (which regulates wholesale mobile network termination). The ACCC found that VoIP services should not be considered as effective substitutes for calls made over fixed and mobile networks, given that:
- (a) a significant number of users still do not use VoIP services;
 - (b) VoIP requires access to a reliable data connection, which may not be available to a significant number of end users; and

¹⁰ An explanation of the SSNIP test and its relevance to competition analysis is provided in the Market Definition Analysis, pp. 6-7 at [3.20]-[3.24].

¹¹ Market Definition Analysis, p. 96.

¹² 2008 Access List Review PI Report, p. 39.

¹³ 2008 Access List Review PI Report, p. 60.

- (c) technical limitations, such as reliance on an intermediate device, mean that some VoIP services may not function during power outages.¹⁴

8.13 In the UK, Ofcom conducted a review of the wholesale mobile voice call termination markets in April 2010 and found that neither VoIP services nor any other services (instant messaging, call-back arrangements, on-net mobile calls, etc) provided a "suitable substitute for a voice call to a mobile number in a sufficient number of instances to present a constraint on a hypothetical monopolist of termination rates".¹⁵ Ofcom suggested that a SSNIP in wholesale termination rates by one Terminating Operator would not induce enough end users of the Originating Operator to switch to alternative services (including VoIP services) so as to impose a competitive constraint on that Terminating Operator's market behaviour.¹⁶

Fixed Network Termination Service

Description

8.14 The Fixed Network Termination Service is currently described in the Access List as follows:¹⁷

(3) Fixed Network Termination Service

- (a) *A Fixed Network Termination Service is an Interconnection Service provided by means of a Fixed Network for the carriage of Call Communications from a POI to a 'B' party. The Fixed Network Termination Service comprises transmission and switching (whether packet or circuit) for Fixed Network-to-Fixed Network, Mobile Network-to-Fixed Network and incoming international-to-Fixed Network calls and messages which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Fixed Network Termination Service include:*
 - (i) *transmission and switching (whether packet or circuit); and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the provision of the Fixed Network Termination Service include PSTN, Integrated Services Digital Network (ISDN) and other IP based networks.*

8.15 As explained in paragraphs 7.9 to 7.11 above, the broad definition of "Call Communications" in the Access List means that the description of the Fixed Network Termination Service comprises voice call origination and message origination (SMS and MMS).

8.16 The scope of the Fixed Network Termination Service is illustrated in the diagram below:

¹⁴ ACCC, *Domestic Mobile Terminating Access Service Declaration Inquiry – Report on the ACCC's Final Decision* (June 2014), pp. 11, 14 <<https://www.accc.gov.au/system/files/MTAS%20declaration%20inquiry%20final%20decision%20report.pdf>>.

¹⁵ Ofcom, *Wholesale Mobile Voice Call Termination Market Review*, Volume 2: Main Consultation (1 April 2010), p. 25 [3.40] <http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/summary/wmvct_consultation.pdf>.

¹⁶ Ofcom p. 25, note 70.

¹⁷ Commission Determination on Access List, Determination No. 1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

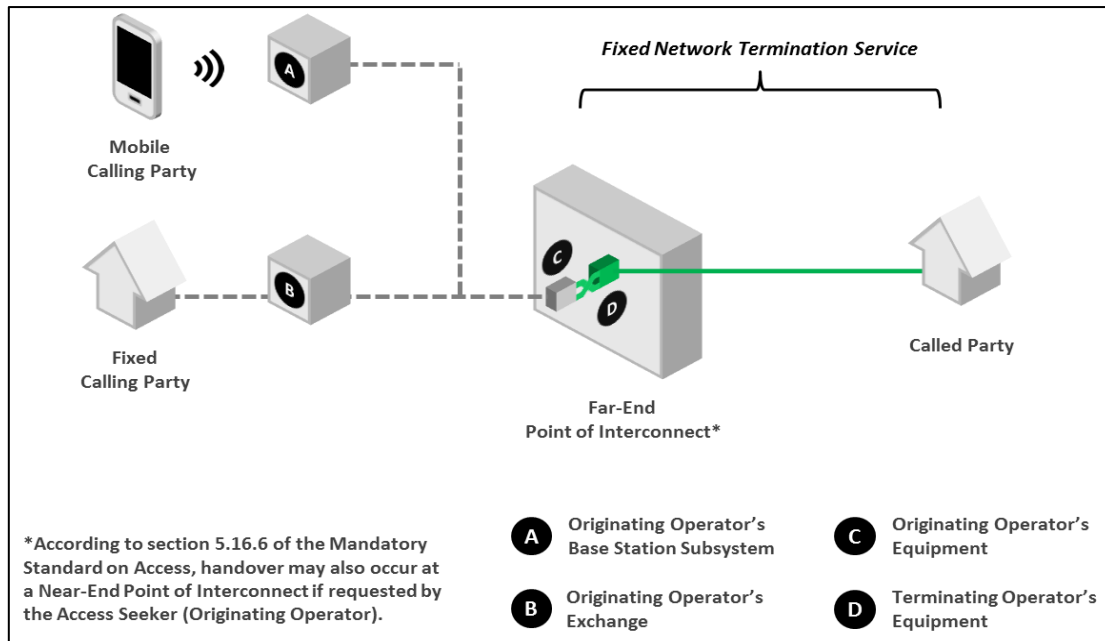


Figure 3 – Scope of Fixed Network Termination Service

Submissions Received

- 8.17 Atel submitted that it plans to acquire the Fixed Network Termination Service and is of the opinion that the existing service description is appropriate. Atel noted that access to Fixed Network Termination Service is crucial to providing end users with any-to-any connectivity, so the service should be provided on an equality of inputs basis. Atel expressed concern that where a wholesale provider operates a retail arm, they could favour that retail arm.
- 8.18 Celcom submitted that it acquires the Fixed Network Termination Service and finds it a usable input for terminating calls which originated from Celcom's network on an access provider's fixed network. Celcom noted that the Fixed Network Termination Service is essential to providing any-to-any connectivity and allowing Celcom subscribers to make calls to fixed networks. Celcom stated that it has experienced no impediment in gaining access to this service. However, Celcom submitted that the description of Fixed Network Termination Service should include IP interconnection and voice over broadband to make it "crystal clear" that these terms are included in the scope of the declared service, despite the fact that the terms "packet" and "IP based networks" are already used in the service description.
- 8.19 DiGi submitted that it has acquired the Fixed Network Termination Service historically with no serious impediment.
- 8.20 Jaring submitted that it acquires the Fixed Network Termination Service to enable Jaring's 0154 and PSTN customers to terminate their calls to other networks.
- 8.21 Maxis submitted that it acquires the Fixed Network Termination Service to allow call termination to other fixed operators' networks. Maxis submitted

that there are functional limitations on this service because Maxis is not allowed to terminate calls at local exchanges belonging to the incumbent fixed operator. Maxis explained that this is because the incumbent operator is not keen to explore the possibility of establishing POIs at local exchanges and, as a result, Maxis cannot apply the local rate for the service. Instead, Maxis applies a negotiated rate using a point between local and single tandem termination rates.

- 8.22 An operator submitted that it does not currently acquire the Fixed Network Termination Service and explained that if it does need this service as part of its IPTV offering, it will rely on partners to provide termination services to their customers.
- 8.23 REDtone submitted that it acquires the Fixed Network Termination Service and has no concerns with its functionality or service description. However, REDtone submitted that it considers that competitive pricing could be an issue for small operators.
- 8.24 TM is an access seeker and provider of Fixed Network Termination Services and feels there are few impediments to providing these services. Given the lack of impediments, TM queried the need for access regulation of the Fixed Network Termination Service.
- 8.25 TIME submitted that it is an access seeker and provider for the Fixed Network Termination Service, which is an essential input into its voice services. TIME has no issue with this service.
- 8.26 U Mobile submitted that although it does not acquire the Fixed Network Termination Service, the MCMC should consider regulating a number of other services, described in Part C.
- 8.27 YTL submitted that it acquires the Fixed Network Termination Service as an access seeker. YTL finds that the service provides the functionalities needed to build customer services and that the market is competitive with no functional limitations. Nonetheless, YTL proposed the following changes:
- (a) subscriber numbers should be non-geographical;
 - (b) the service should be technology neutral;
 - (c) the MCMC should do away with variable PSTN call charges and instead have one rate for the whole country with no peak and off peak rates and without limitations of distance;
 - (d) fixed numbers should be portable; and
 - (e) POIs should not be based on closed numbering areas, so Single and Double Tandem areas (as described in the MSAP) should be abolished.

MCMC Assessment

- 8.28 The rationale for regulating access to wholesale fixed network termination services remains valid. Operators have not raised any concerns regarding the basic definition of the Fixed Network Termination Service and the MCMC is not aware of any material changes in the state of competition in the market that would justify changes to the Fixed Network Termination Service.
- 8.29 Operators suggested two improvements to the service:
- (a) reinforcing that the service is technologically neutral (e.g. by explicitly referring to IP interconnection and voice over broadband); and
 - (b) abolishing the geographic aspect of termination charges by requiring that all calls terminated on a wholesale charge basis will be charged at a uniform rate regardless of the Called Party location or the POI at which the call is handed over to the Terminating Operator (or otherwise improving price regulation of the service).
- 8.30 With regard to the first suggested improvement, the MCMC reiterates that the Fixed Network Termination Service is already technologically neutral. However, to reinforce that fact, the MCMC proposes minor variations to the service description, set out at paragraph 8.39 below, to underscore that the Fixed Network Termination Service may be supplied using any relevant current or future fixed network technology.
- 8.31 The MCMC reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply (or unable to gain such access on a non-discriminatory basis) after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 8.32 With regard to the second suggested improvement, as noted in paragraph 1.10, pricing and terms of access are outside the scope of the present Public Inquiry. This includes the issues of discrimination and equivalence raised by Altel and summarised in paragraph 8.17. The SAOs already require that Access List services be provided on a non-discriminatory basis.¹⁸ If operators believe that there has been a breach of the SAOs and they have been unable to resolve the breach directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 8.33 However, the MCMC will make a note of the suggestion that Fixed Network Termination Service should be price regulated in a non-geographic manner and may consider the issue as part of any future inquiry into the MSAP.
- 8.34 Operators are invited to submit any other price-related concerns in response to consultations on the MSAP, but the MCMC will not be reviewing price-related regulation in the current inquiry into the Access List.

¹⁸ *Communications and Multimedia Act 1998*, section 149(2).

- 8.35 With regard to TM's assertion that the Fixed Network Termination Service is provided without any impediment and therefore should not be regulated, the MCMC notes that the overarching factor for determining whether the Fixed Network Termination Service should be listed in the Access List is the state of competition in the wholesale fixed network termination markets.
- 8.36 The fact that access regulation is successful in enabling access to a facility or service is not in itself an argument for removal of the regulation, if the underlying rationale for regulation continues to exist and analysis shows that the problems which are addressed by regulation would be likely to recur upon removal of the regulation.
- 8.37 The MCMC reiterates that wholesale fixed termination services constitute a key bottleneck or "essential facility" in telecommunications networks, given that they can only be provided by the Terminating Operator in relation to each network. As the European Commission suggested in its Explanatory Note to the *2014 Recommendation on Relevant Markets within the Electronic Communications Sector*, "call termination is the least replicable element required for the provision of retail call services".
- 8.38 Accordingly, the economic rationale for regulating the Fixed Network Termination Service remains strong.

MCMC Preliminary View

- 8.39 The MCMC's preliminary view is that the Fixed Network Termination Service should remain in the Access List with minor modifications to underscore that the service description is technologically neutral. Words that appear in underlined red text have been added relative to the existing description, while words that appear in ~~striketrough text~~ are proposed to be deleted, and the amended service description is as follows:

(3) Fixed Network Termination Service

- (a) *A Fixed Network Termination Service is an Interconnection Service provided by means of a Fixed Network for the carriage of Call Communications from a POI to a 'B' party. The Fixed Network Termination Service comprises transmission and switching (whether packet or circuit) for Fixed Network-to-Fixed Network, Mobile Network-to-Fixed Network and incoming international-to-Fixed Network calls and messages which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Fixed Network Termination Service include:*
- (i) *transmission and switching (whether packet or circuit); and*
- (ii) *the signalling required to support the Interconnection Service.*
- (d) *Examples of technologies used in the provision of the Fixed Network Termination Service include PSTN, Integrated Services Digital Network (ISDN), ~~and~~ other IP based networks and any other fixed network technology which is currently available or which may be developed in future that involves the carriage of Call Communications.*

Questions

Question 9: Do you acquire the Fixed Network Termination Service as an access seeker or supply the Fixed Network Termination Service as an access provider?

Question 10: Are you experiencing any difficulty in acquiring or supplying the Fixed Network Termination Service? If not, why not? (Please provide details).

Question 11: Do you have any comments on the proposed clarifications to the service description for the Fixed Network Termination Service?

Mobile Network Termination Service

Description

8.40 The Mobile Network Termination Service is currently described in the Access List as follows:¹⁹

(5) Mobile Network Termination Service

(a) *A Mobile Network Termination Service is an Interconnection Service for the carriage of Call Communications from a POI to a 'B' party. The Mobile Network Termination Service supports Mobile Network-to-Mobile Network, Fixed Network-to-Mobile Network, incoming international-to-Mobile Network calls and messages which require Any-to-Any Connectivity.*

(b) *The functionalities of the Mobile Network Termination Service include:*

(i) *transmission and switching (whether packet or circuit); and*

(ii) *the signalling required to support the Interconnection Service.*

(c) *Examples of technologies used in the Mobile Network Termination Service would be:*

(i) *Global System for Mobile Communications (GSM);*

(ii) *International Mobile Telecommunications 2000 (IMT-2000); and*

(iii) *Worldwide Interoperability for Microwave Access (WiMAX).*

8.41 As explained in paragraphs 7.9 to 7.11 above, the broad definition of "Call Communications" in the Access List means that the description of the Mobile Network Termination Service comprises voice call origination and message origination (SMS and MMS).

8.42 The scope of the Mobile Network Termination Service is illustrated in the diagram below:

¹⁹ Commission Determination on Access List, Determination No.1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

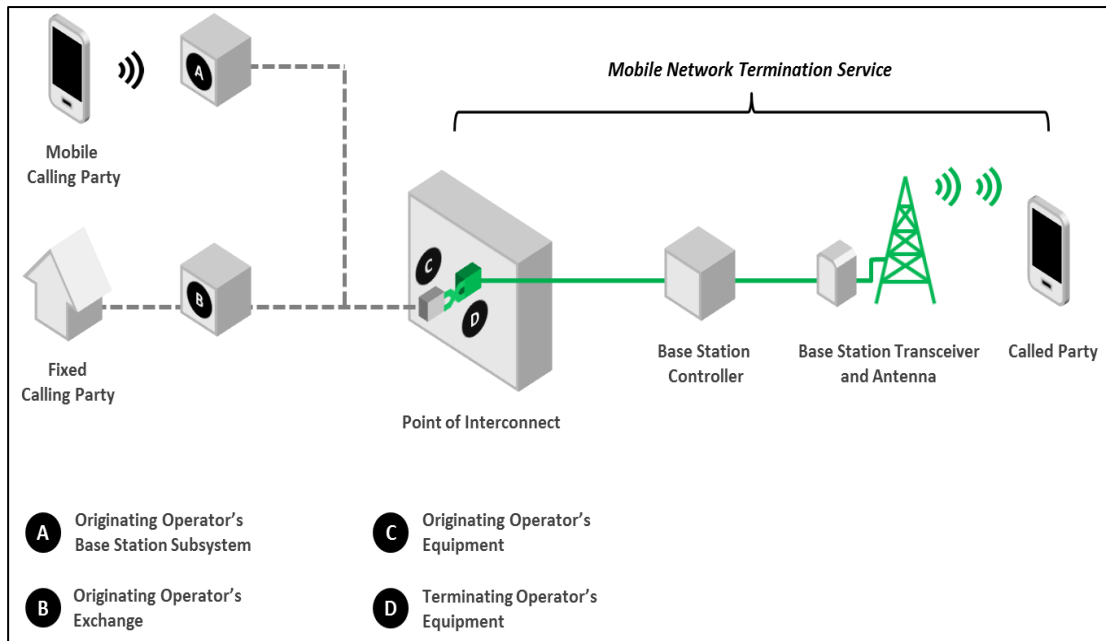


Figure 4 –Scope of Mobile Network Termination Service

Submissions Received

- 8.43 Atel submitted that it will be acquiring the Mobile Network Termination Service in order to provide end users with any-to-any connectivity.
- 8.44 Celcom submitted that there is no impediment to gaining access to the Mobile Network Termination Service, which it acquires as an access seeker in order to terminate calls which originated from Celcom's network on the access provider's mobile network. Celcom submitted that the Mobile Network Termination Service helps Celcom to provide an essential service. Celcom submitted that the MCMC should include VoLTE under this service description.
- 8.45 DiGi submitted that it acquires and provides the Mobile Network Termination Service with no serious impediment.
- 8.46 Jaring submitted that it faces no impediment in acquiring the Mobile Network Termination Service via existing Access Agreements.
- 8.47 Maxis submitted that the MCMC should consider excluding SMS, MMS and Video Call Termination from the scope of the Mobile Network Termination Service because these messaging services have been significantly substituted by OTT services like WhatsApp, Skype and Facebook which do not require termination. Maxis submitted that, in Europe (including Spain and the UK), MMS and SMS have been excluded from the scope of regulated termination services. Maxis also submitted that video calling is a niche service that does not merit regulation and the MCMC's costing for video calls shows that the rate to be charged is much higher than the rate agreed between operators.
- 8.48 REDtone submitted that for small operators, competitive pricing would be an issue.

- 8.49 Telin Malaysia submitted that it currently acquires the Mobile Network Termination Service and did not suggest any changes to the service description.
- 8.50 TIME submitted that it faces issues with operators who refuse to establish POIs in all regions but offer services nationwide. In particular, some operators have refused to establish a POI with TIME in Northern, Southern, Eastern, Sabah and Sarawak areas on the premise that the cost of establishing POIs is not commensurate with the traffic generated between TIME and their networks. Because of this TIME noted that it must pay those operators double tandem charges for voice traffic terminating on their networks. TIME recommended that the MCMC should make it mandatory to establish POIs in regions where operators provide services.
- 8.51 U Mobile submitted that it acquires the Mobile Network Termination Service and finds that it provides appropriate functionality. U Mobile also noted that in future it may look into IP, VoIP or VoLTE.
- 8.52 YTL submitted that it acquires the Mobile Network Termination Service and finds that it has no functional limitations. YTL also noted that POIs should not be based on Home Areas and IP interconnection should be implemented so that one interconnection rate applies to the whole nation.

MCMC Assessment

- 8.53 The MCMC considers that there remains a rationale for including the Mobile Network Termination Service in the Access List in its current form, subject to potential changes in response to the issues discussed below.
- 8.54 In response to Maxis' suggestion that SMS, MMS and video call termination be excluded from the service description because of competition from OTT services, the MCMC notes that, as discussed in paragraph 8.10 above, the MCMC's Market Definition Analysis found that OTT services were not included in the individual markets for wholesale termination services on each operator's network.
- 8.55 Moreover, in its Assessment of Dominance, the MCMC made the following observation:

Despite the inclusion of OTT services in the mobile messaging services market, the MCMC considers that a separate and distinct market is still necessary for SMS termination. [...] once the user decides to send an SMS message (as opposed to an OTT message), the termination of that SMS message is set and the ability of a rival network operator to act as a substitute is constrained. Thus, the MCMC considers it

*important to include a separate market for SMS termination.*²⁰

- 8.56 Accordingly, the MCMC does not consider that OTT services constitute an adequate competitive constraint on SMS, MMS and video call termination which would justify excluding the latter from the description of the Mobile Network Termination Service.
- 8.57 The MCMC notes that, in the absence of market data, it cannot properly ascertain whether the state of competition in relation to SMS/MMS termination has changed sufficiently to justify an amendment to the scope of the Mobile Network Termination Service.
- 8.58 In response to TIME's submission that certain operators are refusing to establish POIs in all regions where they operate, the MCMC notes that the Access List can only be used to regulate access to *existing* infrastructure and that the MCMC does not have the power to require operators to build new infrastructure by means of the Access List. Accordingly, the MCMC cannot mandate that operators build an exchange for the purposes of establishing a POI, even in areas where those operators provide service to end users.
- 8.59 To the extent that operators are failing to allow existing interconnection facilities, such as exchanges, to be used as POIs for termination services, such conduct may constitute a failure to supply the Network Co-Location Service, which is discussed at paragraph 11.73 onwards. Access to co-location for the purposes of interconnection falls within the terms of the Network Co-Location Service and not the Mobile Network Termination Service.
- 8.60 The MCMC reiterates that if operators are having any issues with obtaining access to existing facilities which are already regulated under the Access List after trying to resolve any impediments directly with the access provider, they are invited to submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 8.61 In response to the other comments made by stakeholders, the MCMC reiterates the following:
- (a) pricing issues are outside the terms of this current inquiry – stakeholders are invited to make comments in relation to pricing in the context of any future inquiry into the MSAP; and
 - (b) the description of the Mobile Network Termination Service is technology neutral, meaning that the lack of explicit inclusion of certain technologies, such as VoLTE, in paragraph (c) of the service description does not mean that such technologies are excluded from the service description.
- 8.62 Nevertheless, in response to point (b) above, the MCMC proposes minor variations to the service description, set out at paragraph 8.63 below, to

²⁰ Assessment of Dominance PI Paper, pp. 135-136.

underscore that the Mobile Network Terminating Service may be supplied using any relevant current or future mobile technology.

MCMC Preliminary View

8.63 The MCMC's preliminary view is that the Mobile Network Termination Service should remain in the Access List with minor modifications to underscore that the service description is technologically neutral. Words that appear in underlined red text have been added relative to the existing description while words that appear in ~~striketrough text~~ are proposed to be deleted, and the amended service description is as follows:

(5) Mobile Network Termination Service

- (a) *A Mobile Network Termination Service is an Interconnection Service for the carriage of Call Communications from a POI to a 'B' party. The Mobile Network Termination Service supports Mobile Network-to-Mobile Network, Fixed Network-to-Mobile Network, incoming international-to-Mobile Network calls and messages which require Any-to-Any Connectivity.*
- (b) *The functionalities of the Mobile Network Termination Service include:*
 - (i) *transmission and switching (whether packet or circuit); and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (c) *Examples of technologies used in the Mobile Network Termination Service would be:*
 - (i) *Global System for Mobile Communications (GSM);*
 - (ii) *International Mobile Telecommunications 2000 (IMT-2000); ~~and~~*
 - (iii) *Worldwide Interoperability for Microwave Access (WiMAX);*
 - (iv) *Long-Term Evolution (LTE); and*
 - (v) *any other mobile technology which is currently available or which may be developed in future that involves the carriage of Call Communications.*

Questions

Question 12: Do you acquire the Mobile Network Termination Service as an access seeker or supply the Mobile Network Termination Service as an access provider?

Question 13: Are you experiencing any difficulty in acquiring or supplying the Mobile Network Termination Service? If not, why not? (Please provide details).

Question 14: Do you have any comments on the proposed clarifications to the service description for the Mobile Network Termination Service?

9 Wholesale fixed telephony services markets (including VoIP)

Introduction

- 9.1 The wholesale fixed telephony services markets include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
Market for wholesale business-grade access to fixed-line connections and local calling services (including VoIP) ²¹	Wholesale Line Rental Service
Market for wholesale residential-grade access to fixed-line connections and local calling services (including VoIP) ²²	Wholesale Line Rental Service

Market Descriptions

- 9.2 In the Market Definition Analysis, the MCMC held that the wholesale markets for access to fixed telephony services are separated into business and residential markets and include the following separate product markets:
- (a) access to the fixed-line connection and local calling services; and
 - (b) separate calling markets for:
 - (i) national long distance calls;
 - (ii) international calls; and
 - (iii) fixed-to-mobile calls.²³
- 9.3 The markets comprise wholesale services which involve the provision of a connection to the PSTN fixed at a particular geographic location, as well as the ability to make or receive telephone calls or related services (e.g. fax) that may be subject to certain quality requirements.²⁴
- 9.4 The existence of separate markets for fixed-line connection and local calling services, on the one hand, and a range of separate calling services, on the other hand, arises because, with the exception of local calls, the fixed-line connection is separate from and not functionally substitutable for the different calling services that may be provided over the fixed-line.

²¹ This market excludes the separate calling markets for business-grade national long-distance calls, international calls and fixed-to-mobile calls, as explained at paragraphs 9.2 to 9.6.

²² This market excludes the separate calling markets for residential-grade national long-distance calls, international calls and fixed-to-mobile calls, as explained at paragraphs 9.2 to 9.6.

²³ Market Definition Analysis, p. 26.

²⁴ Market Definition Analysis, p. 17.

- 9.5 Furthermore, the calling charges that are accrued by a user are billed separately from the basic access fee that is paid, so that the fees for making a particular type of call are paid on top of the regular monthly access fee for use of a fixed telephony service.
- 9.6 For both the fixed-line connection and calling services markets, separate markets exist for business-grade and residential-grade services. Business users have different functionality and QoS demands than residential users. Accordingly, the lack of sufficient demand-side substitutability between business-grade and residential-grade services indicates the existence of separate markets. Pricing structures also tend to differ between business-grade and residential-grade services.²⁵
- 9.7 In the following discussion, the MCMC focuses on access to the fixed-line connection and local call services, being the market relevant to Wholesale Line Rental Service.

Services excluded from the wholesale fixed telephony services markets

- 9.8 In the Market Definition Analysis, the MCMC held that following services are excluded from the wholesale fixed telephony services markets relevant to Wholesale Line Rental Service, on the basis that they are not sufficiently substitutable with wholesale fixed telephony services provided over the copper network:
- (a) **Mobile telephony services.** While both mobile and fixed telephony services provide the basic function of making calls, mobile telephony services permit users to make or receive calls while on the move and in different locations, while fixed-line services are restricted to providing access at a single fixed location. Moreover, the pricing structures for mobile telephony services are significantly different to those for fixed telephony services, and the fundamentally different network architecture used by fixed and mobile telephony services hinders a sufficient level of supply-side substitutability.²⁶
 - (b) **Unconditioned local loop (ULL) access, which is also known as Full Access Service, or Line Sharing Services.** Instead of purchasing a Wholesale Line Rental Service and reselling it to the end user, an access seeker has the option of purchasing a ULL access or Line Sharing Service and using that service to deliver retail telephony services to the end user. However, the level of investment that an access seeker requires to enter the market using wholesale fixed telephony services by acquiring Wholesale Line Rental Service is significantly lower than the level of investment required to acquire ULL access and to build its own PSTN infrastructure. Moreover, it is not economically feasible for an access seeker to acquire ULLs purely to supply retail telephony

²⁵ Market Definition Analysis, p. 20-21.

²⁶ Market Definition Analysis, p. 22.

services. ULLs are typically acquired to provide retail broadband services or a mixture of retail broadband and telephony services. Accordingly, ULL or Line Sharing Services are not substitutable with Wholesale Line Rental Service and constitute a separate local access services market, discussed in Chapter 10, below.

- 9.9 The MCMC also notes that although the increase in both managed and unmanaged or OTT VoIP services may, over time, affect the market for the wholesale fixed telephony services, VoIP services are generally not provided at a wholesale level and rely on alternative upstream inputs to wholesale fixed telephony services (such as digital subscriber line (**DSL**) or Bitstream Services, rather than just access to the copper line). As such, VoIP is not substitutable to wholesale fixed telephony services.

Competition Analysis

- 9.10 In its 2008 Access List Review, the MCMC found that the wholesale fixed telephony services markets were not competitive.²⁷ The MCMC came to this view for the following reasons:

- (a) TM had a very high market share in relation to services supplied over the PSTN network (97.9% of direct exchange line (**DEL**) connections);
- (b) barriers to entry were prohibitively high due to the high sunk cost of constructing DELs; and
- (c) innovation, including in the form of VoIP services, had a limited role and impact in the market, including from VoIP services.²⁸

- 9.11 Significantly, at the time of the 2008 Access List Review, the MCMC found that VoIP services had not materially affected the state of competition in relation to fixed telephony services, with TM continuing to have a strong market share.²⁹

- 9.12 In its Assessment of Dominance, the MCMC still found that TM was dominant in all of the relevant wholesale fixed telephony service markets.³⁰ The markets also exhibit high barriers to entry, such as the significant infrastructure investment required to construct the telephony network in order to supply wholesale fixed telephony services.

- 9.13 Accordingly, the MCMC's assessment is that there has not been a material change in the state of competition in the wholesale fixed telephony markets since the 2008 Access List Review.

²⁷ 2008 Access List PI Report, pp. 26, 30.

²⁸ 2008 Access List Review PI Paper, pp. 66-67.

²⁹ 2008 Access List Review PI Report, p. 33; 2008 Access List Review PI Paper, pp. 67-68.

³⁰ Assessment of Dominance PI Report, pp. 42-43.

Wholesale Line Rental Service

Description

- 9.14 The Wholesale Line Rental Service is currently described in the Access List as follows:³¹

(24) Wholesale Line Rental Service

The Wholesale Line Rental Service is a Service which allows an Access Seeker's Customer to connect to an Access Provider's PSTN, and provides the Access Seeker's Customer with an ability to make and receive Call Communications.

- 9.15 The scope of the Wholesale Line Rental Service is illustrated in the diagram below:

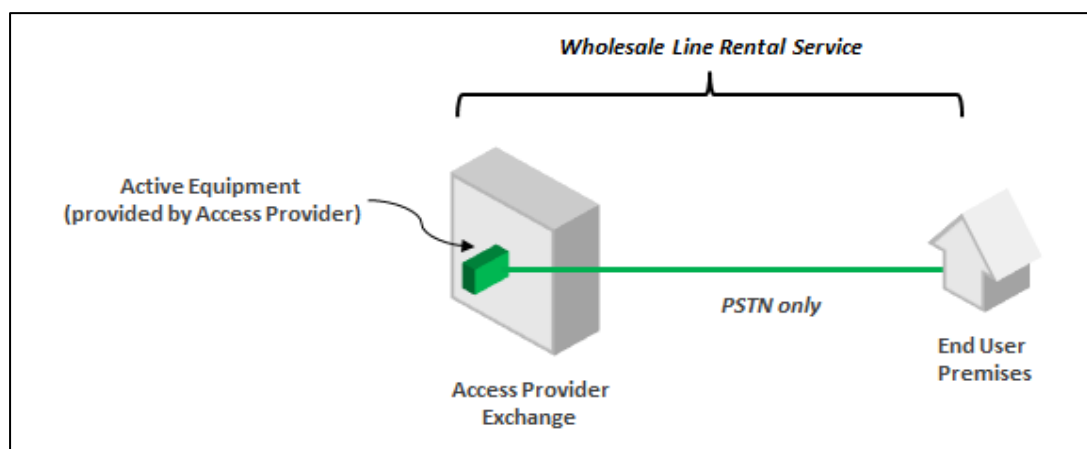


Figure 5 – Scope of Wholesale Line Rental Service

Submissions Received

- 9.16 Atel submitted that the service description for the Wholesale Line Rental Service is appropriate, although Atel does not plan to acquire this service. Atel submitted that the Wholesale Line Rental Service will provide the functionality required to build customer services. However, Atel noted that it finds it more challenging to gain access to services when the access provider has a wholesale and retail arm, and perceives Atel as a threat to that retail arm.
- 9.17 Celcom submitted that it does not acquire this service because it does not provide a PSTN service.
- 9.18 DiGi submitted that it does not acquire or seek the Wholesale Line Rental Service. However, DiGi noted that access to the service should continue to be regulated to enable new entrants who are interested in the provision of fixed telephony to enhance competition with the incumbent operator.
- 9.19 Maxis submitted that it does not acquire this service from the incumbent operator because the service currently offered is technically and functionally

³¹ Commission Determination on Access List, Determination No.1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

different from the Wholesale Line Rental Service defined in the Access List. Maxis stated that the incumbent operator provides Wholesale Line Rental Service for the purpose of providing retail broadband services only (including VoIP) but does not allow the access seeker to provide the normal voice/PSTN service. Maxis also stated that the incumbent operator also requires the access seeker to concurrently subscribe to the Wholesale Line Rental Service and Bitstream Services together. Maxis is of the opinion that Wholesale Line Rental Service without equal access and/or carrier pre-selection is meaningless and incomplete as access seekers cannot provide the complete alternative fixed voice services to end users.

- 9.20 An operator submitted that it does not currently acquire the Wholesale Line Rental Service and explained that if it does need the service as part of its IPTV offering, it will rely on its partners to provide the final products to its customers.
- 9.21 TM's submission questioned why TM is subject to significant regulation when providing the Wholesale Line Rental Service. TM is an access provider for the Wholesale Line Rental Service and feels that there are few impediments to providing these services. TM submitted that all the unbundled services, including this service is not sought by access seekers and should be removed from the Access List. TM explained that there are material costs that it incurs in offering such services, even when there is no take-up, because BSS/OSS is expensive without the optimal number of subscribers.
- 9.22 TIME submitted that it does not subscribe to Wholesale Line Rental Service and does not find the service attractive for two reasons. First, the wholesale prices charged by the incumbent are not attractive compared to its retail offerings. Second, the incumbent imposes mandatory bundling of transmission services from exchanges to access seeker points of presence (**POP**), and has a policy of not allowing other operators to co-locate equipment at TM premises on the basis that these locations are identified as Critical National Infrastructure Installations (**CNIIs**). TIME recommended that the MCMC analyse the situation holistically from a functionality standpoint and consider prices and terms of access. TIME was of the opinion that in order to provide long-term benefit to the end user, the MCMC needs to ensure more effective competition in the fixed-line industry.
- 9.23 U Mobile submitted that that the MCMC should consider regulating a number of services, described in Part C. However, U Mobile does not acquire Wholesale Line Rental Service.
- 9.24 YTL submitted that it acquires Wholesale Line Rental Services as an access seeker. YTL finds that the service provides the functionalities needed to build customer services and that the market is competitive with no functional limitations.

MCMC Assessment

- 9.25 The MCMC has carefully considered the views expressed by the stakeholders above in relation to the Wholesale Line Rental Service.

- 9.26 The MCMC is concerned that several operators have expressed difficulties in acquiring the Wholesale Line Rental Service or do not currently acquire the Wholesale Line Rental Service because of the alleged terms under which it is supplied, including:
- (a) challenges gaining access where the access provider provides preferential access to its retail arm;
 - (b) requirements that the service be bundled with Bitstream Services or Transmission Services;
 - (c) failure to allow other operators to co-locate equipment at the access provider's premises; and
 - (d) unattractive wholesale prices charged by the incumbent when compared to the incumbent's retail prices.
- 9.27 Despite the MCMC's concern about these allegations, the MCMC notes that none of the above issues relate explicitly to the appropriate scope of the Wholesale Line Rental Service or of regulation under the Access List more broadly. Instead, the first two points relate to alleged failures by the access provider to effectively implement existing access regulation:
- (a) discriminating against an access seeker which competes with the access provider's retail arm is already prohibited by the SAOs in section 149 of the CMA, which require equivalent and non-discriminatory access to listed services, including as between the service self-supplied by the access provider to itself and the service supplied by the access provider to the access seeker; and
 - (b) forced bundling, also known as "conditional access", is already prohibited under section 5.13.22 of the MSA.
- 9.28 The MCMC reiterates that if operators are having any issues with obtaining access to the Wholesale Line Rental Service according to the existing regulatory framework, and they are not able to resolve any impediments directly with the access provider, they are invited to submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 9.29 In relation to TIME's submission that it is not able to co-locate equipment at the access provider's premises, the MCMC points out that co-location at an exchange is not required in order to acquire the Wholesale Line Rental Service. The Wholesale Line Rental Service is a Layer 3 resale service where the access provider (and not the access seeker) supplies all necessary active equipment at the exchange end. Accordingly, the access seeker does not require physical access to co-location at an exchange for the purposes of accessing the Wholesale Line Rental Service.
- 9.30 In relation to the submission by TIME that the access provider charges unattractive wholesale prices when compared to the access provider's retail prices, the MCMC suggests that charging wholesale prices that prevent effective retail competition may potentially constitute anti-competitive

conduct in contravention of section 133 of the CMA. This is a matter that does not concern access regulation and is therefore beyond the scope of this current inquiry. The MCMC reminds stakeholders that they can refer complaints of alleged anti-competitive conduct to the MCMC according to section 69 of the CMA.

- 9.31 The MCMC acknowledges the comment by TIME that the MCMC should analyse the situation holistically and consider prices and terms of access to the Wholesale Line Rental Service. Nevertheless, the MCMC reiterates that, as set out in paragraph 1.10, determinations on access terms and pricing are explicitly **excluded** from the scope of this review. The MCMC takes a structured approach to regulation that reflects international best practice and will look at pricing and terms of access to regulated services separately to the question of what facilities and services should be subject to regulation in the Access List and how they should be described, which is the focus of this current inquiry.
- 9.32 The MCMC considers Maxis' comment concerning the need to regulate equal access and/or carrier pre-selection alongside the Wholesale Line Rental Service in Chapter 16 of this PI Paper.
- 9.33 The MCMC does not believe that there have been any relevant changes in the market that require a change in the MCMC's perspective towards regulating equal access and carrier pre-selection. However, the MCMC welcomes further stakeholder input on this issue if there is specific data available that demonstrates that the MCMC's previous findings need to be updated.
- 9.34 With regard to TM's assertion that the Wholesale Line Rental Service is provided with few impediments, is not sought by access seekers and therefore should be removed from the Access List, the MCMC notes that:
- (a) TM's submission is contradicted by the submissions of several other stakeholders, which mention that they face challenges gaining access to the Wholesale Line Rental Service or are required to purchase the service bundled with other services, as summarised in paragraph 9.26; and
 - (b) even if TM was correct in saying that access seekers do not face impediments obtaining the Wholesale Line Rental Service, this factor is not relevant to the MCMC's consideration of whether a service should be regulated – the overarching factor for determining whether the Wholesale Line Rental Service should be listed in the Access List is the state of competition in the fixed telephony services markets in the absence of regulation.

MCMC Preliminary View

- 9.35 The MCMC's preliminary view is that the Wholesale Line Rental Service should remain in the Access List without any modification.

Questions

Question 15: Do you acquire the Wholesale Line Rental Service as an access seeker or supply the Wholesale Line Rental Service as an access provider?

Question 16: Are you experiencing any difficulty in acquiring or supplying the Wholesale Line Rental Service? If not, why not? (Please provide details).

Question 17: Have there been any relevant changes in the wholesale fixed telephony services markets that would justify regulating equal access and/or carrier pre-selection alongside the Wholesale Line Rental Service? (Please provide details).

10 Wholesale access to facilities and upstream network elements markets (for the access network)

Introduction

10.1 The markets for wholesale access to facilities and upstream network elements (for the access network) include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
National market for the wholesale supply of lead-in ducts and manholes (not including aerial or sewer access to end user locations)	<i>Not currently regulated in the Access List; regulation is proposed through amendments to the Infrastructure Sharing (see Chapter 17)</i>
National market for the wholesale supply of local access services	<ul style="list-style-type: none">▪ Full Access Service▪ Line Sharing Service▪ Sub-loop Service▪ Bitstream Services
Individual markets for wholesale access to main distribution frames (MDFs) and in-building wiring in each building	<i>Not currently regulated in the Access List – see paragraphs 10.5 to 10.7 below</i>

Market Descriptions

10.2 In the Market Definition Analysis, the MCMC discussed a number of wholesale markets for access to facilities and upstream network elements. For ease of discussion in the context of the Access List, those markets are considered in this PI Paper separately:

- (a) in this Chapter 10 in the context of the access network; and
 - (b) in Chapter 11 below, in the context of the core network.
- 10.3 There are three separate markets for wholesale access to facilities and upstream network elements within the access network (i.e. the “last mile” of the network between a POI and the end user premises):
- (a) a national market for the wholesale supply of lead-in ducts and manholes (not including aerial or sewer access to end user locations);
 - (b) a national market for the wholesale supply of local access services (ULL access or Full Access Service, Sub-loop Service, Bitstream Services and Line Sharing Service); and
 - (c) individual markets for wholesale access to MDFs and in-building wiring in each building.

National market for wholesale supply of lead-in ducts and manholes

- 10.4 The market for the wholesale supply of lead-in ducts and manholes, including the state of competition in this market and the rationale for regulation, is discussed in Chapter 17 of Part C of this PI Paper.

Individual markets for wholesale access to MDFs and in-building wiring in each building

- 10.5 Access to MDFs and in-building wiring is not currently a regulated service listed in the Access List. The MCMC is not aware of any stakeholders who have requested that this service be regulated via the Access List.
- 10.6 Moreover, the MCMC notes that MDFs and in-building wiring are conventionally located on the customer side of the network boundary: section 128(2) of the CMA defines the MDF in a building as constituting the “network boundary point”, unless the customer and the network facilities provider have agreed on a different network boundary point. According to section 128(3) of the CMA, facilities located on the customer side of the network boundary cannot be subject to access regulation.
- 10.7 For the above reasons, the MCMC does not propose adding access to MDFs and in-building wiring as a regulated facility or service under the Access List. However, the MCMC is interested to receive stakeholders’ feedback relating to whether there are a significant number of buildings in Malaysia (or buildings of commercial significance) where:
- (a) the MDF and/or in-building wiring falls on the operator side of the network boundary; and
 - (b) there is a rationale for regulating access to the MDF and/or in-building wiring.

National market for wholesale supply of local access services

- 10.8 As set out in the MCMC's Market Definition Analysis, this market comprises services that provide access to the network of physical lines that run from an end user premises to the local exchange. These lines may be either in the form of copper pairs or optical fibre.³²
- 10.9 There are number of distinct local access services that fall within this market, including:
- (a) **ULL access services or Full Access Services.** These services allow the access seeker to gain unconditional access to lines that run between a potential POI that is related to a customer access module (typically at a local exchange) and the end user premises. These lines, which allow for a high degree of control for the access seeker, can be used to provide a mixture of voice telephony services and broadband services to end users, at speeds and quality levels determined by the access seeker. Access seekers must provide their own equipment to facilitate the delivery of end user services over the relevant lines. For example, broadband services are provided through the access seeker connecting a Digital Subscriber Line Access Multiplexer (**DSLAM**) at the exchange end of the line, permitting them to supply DSL services to end users.
 - (b) **Line Sharing Services.** These services are similar to ULL access services but only permit the access seeker to access high-frequency bands (typically greater than 20,000 Hz) within the line. Accordingly, such services only allow the access seeker to provide broadband services over the line, not traditional voice telephony services (which utilise a lower-frequency band).
 - (c) **Sub-loop Services.** These services are similar to the ULL access services, but only provide access to a subset of the ULL, typically between a street cabinet and the end user premises (rather than between the local exchange and the end user premises as in the case of ULL).
 - (d) **Bitstream Services.** Similar to ULL and Line Sharing Services, Bitstream Services are also provided between a POI related to a customer access module (typically at a local exchange) and an end user premises, thereby permitting the access seeker to provide broadband (xDSL) access to end users. However, unlike ULL and Line Sharing Services (which are provided at Layer 1 of the Open Systems Interconnection (**OSI**) model), Bitstream Services are provided at Layer 2, meaning that the access provider rather than the access seeker provides active equipment such as the DSLAM (alongside providing the passive infrastructure).

³² Market Definition Analysis, p. 119.

- 10.10 ULL access services or Full Access Services, Line Sharing Services, Sub-loop Services and Bitstream Services) are also referred to collectively as “access to network elements” (**ANE**) in Malaysia.
- 10.11 In its Market Definition Analysis, the MCMC held that all of the local access services listed above fall within the same market because they all provide access to the “last mile” of the network and are substitutable, in the sense that a SSNIP in relation to one of the services would result in an access seeker purchasing one of the other access services listed above.³³
- 10.12 The market for the wholesale supply of local access services does not include access to ducts (including lead-in ducts).³⁴ While lead-in ducts also exist within the “last mile” network, duct access is distinct from the services listed in paragraph 10.9 above because it requires an access seeker to self-supply copper or optical fibre lines in order to provide an end user service, which exhibits very high barriers to entry. Accordingly, duct access is not a sufficiently close substitute for ULL access, Line Sharing, Sub-loop and Bitstream Services.
- 10.13 At the opposite end of the ladder of investment, the market for the wholesale supply of local access services also excludes wholesale access to fixed broadband and data services which can be resold to end users. These services provide access seekers with a significantly lower level of functionality and control when compared to ULL access, Line Sharing, Sub-loop and Bitstream Services.³⁵

Competition Analysis

- 10.14 In the 2008 Access List Review, the MCMC considered the ANE services in the context of the broadband services market, since they were used to support the provision of retail broadband services.³⁶ At that time, the MCMC decided to maintain regulation of the ANE services in areas outside of the footprint of the HSBB Network, on the basis that they could promote facilities-based competition.³⁷ However, in the 2008 Access List Review, the MCMC also considered that:
- (a) Full Access Service, Line Sharing Service and Sub-loop Service should not be regulated in areas where the HSBB Network will be located, including during the transitional period before the HSBB Network is deployed;³⁸ and
 - (b) Bitstream Services should not be regulated in respect of particular premises once the HSBB Network has been rolled out to that premises, but are available in the transitional period before the HSBB network is deployed.³⁹

³³ Market Definition Analysis, p. 120.

³⁴ Market Definition Analysis, p. 121.

³⁵ Market Definition Analysis, p. 121.

³⁶ 2008 Access List Review PI Paper, p. 179.

³⁷ 2008 Access List Review PI Report, p. 166-171.

³⁸ 2008 Access List Review PI Report, pp. 164, 168 and 170.

³⁹ 2008 Access List Review PI Report, p. 171.

10.15 The MCMC does not consider that the state of competition has changed materially since the 2008 Access List Review.

10.16 As discussed in the MCMC's Assessment of Dominance, the market for the wholesale supply of local access services is characterised by high barriers to entry, with fixed-line infrastructure in the access network having characteristics similar to those of a natural monopoly given the significant investment required to deploy such infrastructure.⁴⁰ In particular, the MCMC considered that there are no suitable alternatives to the local access services for achieving access in the "last mile" of the network:

- (a) Digital Subscriber Line Resale Services or Wholesale Line Rental Service provide less control and potential for competitive differentiation to the access seeker; and
- (b) conversely, duct access requires a greater degree of investment by the access seeker.⁴¹

Access List descriptions of the local access services

Full Access Service

10.17 The Full Access Service is currently described in the Access List as follows:⁴²

(16) Full Access Service

- (a) *The Full Access Service is a Facility and/or Service for the use of Unconditioned Communications Wire between the Network Boundary at an end user's premises and a point on a network that is a potential POI located at or associated with a Customer Access Module and located on the end user side of the Customer Access Module.*
- (b) *The Full Access Service includes the use of optical fibre cable and associated transmission services between an Intermediate Point and the POI, associated tie cable services, shared splitting services, interfaces to operational support systems and network information.*

⁴⁰ Assessment of Dominance PI Report, p. 125.

⁴¹ Assessment of Dominance PI Paper, pp. 160-161.

⁴² Commission Determination on Access List, Determination No. 1 of 2005.

10.18 The scope of the Full Access Service is illustrated in the diagram below:

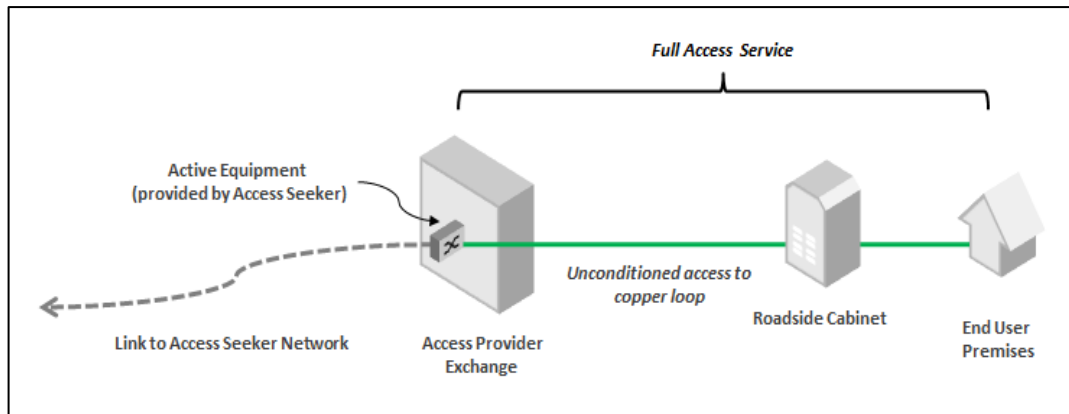


Figure 6 – Scope of Full Access Service

Line Sharing Service

10.19 The Line Sharing Service is currently described in the Access List as follows:⁴³

(17) Line Sharing Service

- (a) *The Line Sharing Service is a Facility and/or Service for the use of the non-voiceband frequency spectrum of Unconditioned Communications Wire (over which wire an underlying voiceband PSTN service is operating) between the Network Boundary at an end user's premises and a point on a network that is a potential POI located at, or associated with, a Customer Access Module and located on the end user side of the Customer Access Module.*
- (b) *The Line Sharing Service includes the use of optical fibre cable and associated transmission services between an Intermediate Point and the POI, associated tie cable services, shared splitting services, interfaces to operational support systems and network information.*

10.20 The scope of the Line Sharing Service is illustrated in the diagram below:

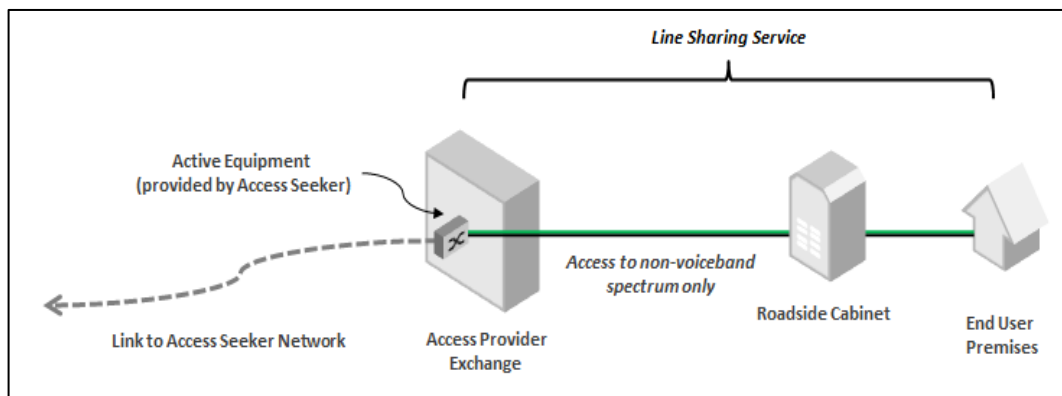


Figure 7 – Scope of Line Sharing Service

⁴³ Commission Determination on Access List, Determination No. 1 of 2005.

Sub-loop Service

10.21 The Sub-loop Service is currently described in the Access List as follows:⁴⁴

(19) Sub-loop Service

- (a) *The Sub-loop Service is a Facility and/or Service for the use of Unconditioned Communications Wire between the Network Boundary at an end user's premises and a point on a network that is a potential POI located at or associated with a Customer Access Module and located on the end user side of the Customer Access Module. For Sub-loop Service, the Customer Access Module is housed in a roadside cabinet.*
- (b) *The Sub-loop Service includes the use of optical fibre cable and associated transmission services between an Intermediate Point and the POI, associated tie cable services, shared splitting services, interfaces to operational support systems and network information.*

10.22 The scope of the Sub-Loop Service is illustrated in the diagram below:

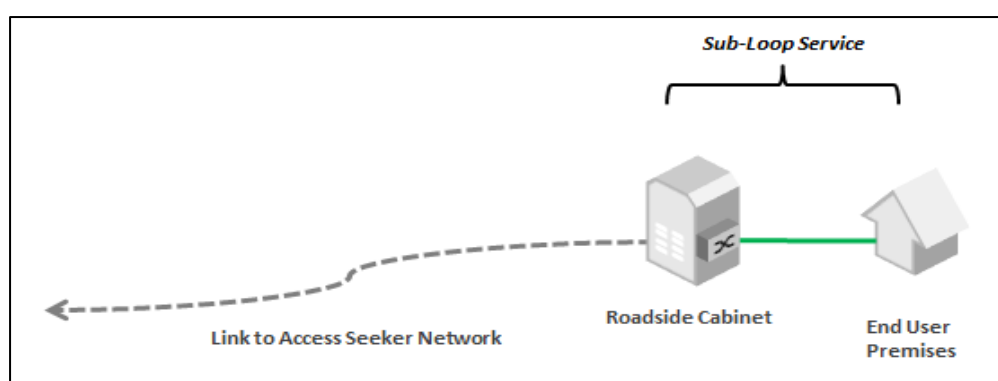


Figure 8 – Scope of Sub-loop Service

Bitstream Services

10.23 Bitstream Services are currently described in the Access List as follows:⁴⁵

(18) Bitstream Services

- (a) *Bitstream with Network Service*

The Bitstream with Network Service is a Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at an end user's premises and a POI at the Access Seeker's premises, where:

- (i) *The Customer's equipment is directly connected to an Access Provider's network; and*
- (ii) *The Access Seeker, but not the Access Provider, assigns the Customer with an IP address.*

⁴⁴ Commission Determination on Access List, Determination No.1 of 2005.

⁴⁵ Commission Determination on Access List, Determination No.1 of 2005.

Bitstream with Network Service includes shared splitting services, interfaces to operational support systems and network information.

(b) *Bitstream without Network Service*

The Bitstream without Network Service is a Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at an end user's premises and a POI at the Access Provider's premises, where:

- (i) *The Customer's equipment is directly connected to an Access Provider's network; and*
- (ii) *The Access Seeker, but not the Access Provider, assigns the Customer with an IP address.*

Bitstream without Network Service includes shared splitting services, interfaces to operational support systems and network information.

10.24 As can be seen in the service description above, there are two distinct Bitstream Services listed in the Access List. The key difference between the two services is the location of the POI:

- (a) for the Bitstream with Network Service, the POI is located at the access seeker's premises (meaning that the access provider provides transmission from the access provider's exchange to the access seeker's premises); and
- (b) for the Bitstream without Network Service, the POI is located at the access provider's premises (meaning that the access seeker must provide their own transmission to the access provider's exchange).

10.25 The scope of the Bitstream with Network Service is illustrated in the diagram below:

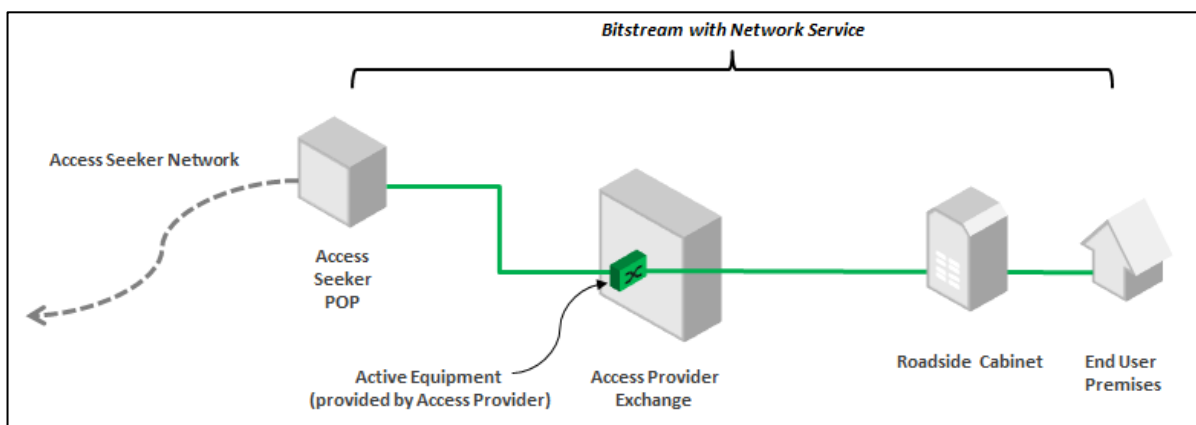


Figure 9 – Scope of Bitstream with Network Service

10.26 The scope of the Bitstream without Network Service is illustrated in the diagram below:

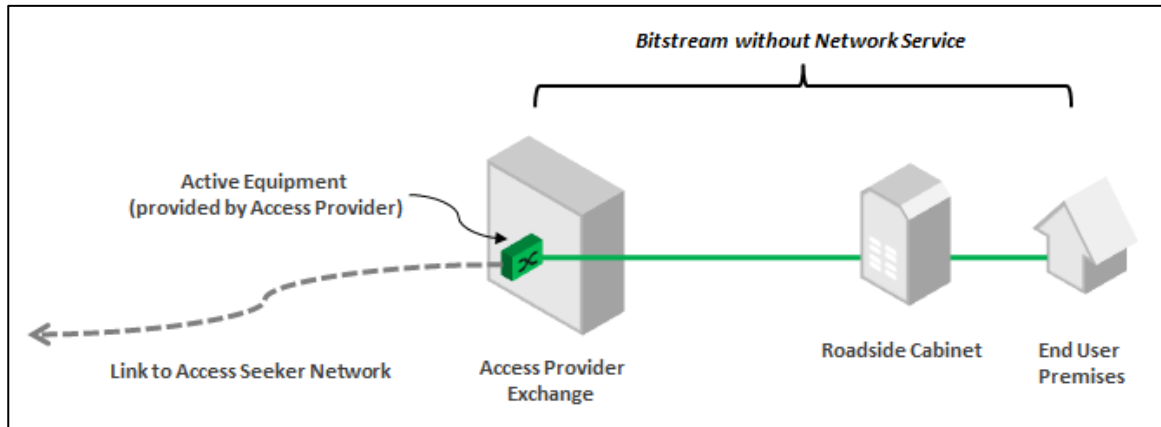


Figure 10 – Scope of Bitstream without Network Service

Local access services in the context of the HSBB Network

10.27 The 2009 variation to the Access List inserted the following provisions in paragraph 5 of the Access List which restrict the scope of application of the Full Access Service, Line Sharing Service, Sub-loop Service and Bitstream Services described above:

Implementation of services under paragraphs 6(16), 6(17), 6(18) and 6(19)

5. (1) *Unless otherwise determined by the Commission,*

- (i) *paragraphs 6(7), 6(8), 6(13)(i) and 6(22) shall be in force until 30 June 2010; and*
- (ii) *paragraphs 6(10) and 6(21) shall be in force until 1 January 2011.*

(2) *Paragraphs 6(16), 6(17) and 6(19) shall have application except where subject to deferment by the Ministerial Direction on High-Speed Broadband and Access List, Direction No. 1 of 2008.*

(3) *Paragraphs 6(18) and 6(20) shall have application except in respect of premises to which High-Speed Broadband Network is connected.*

10.28 Paragraph 7 of the Ministerial Direction on High-Speed Broadband and Access List, Direction No. 1 of 2008 (**Ministerial Direction on High-Speed Broadband**) provides as follows:

7. ...

- (b) *the implementation of Full Access Service, Line Sharing Service and Sub-loop Service listed in the Commission Determination on Access List, Determination No. 1 of 2005 where the facilities and services are provided over the high-speed broadband network shall be deferred for 7 years from 16 September 2008 to 15 September 2015;*

10.29 These provisions have the following effect on the application of the local access services:

- (a) the Full Access Service, Line Sharing Service and Sub-loop Service (described at paragraphs 6(16), 6(17) and 6(19) of the Access List) do not apply where they are provided over the HSBB Network until 15 September 2015;
- (b) the Bitstream Services (described at paragraph 6(18) of the Access List) do not apply in respect of premises connected to the HSBB Network.

Submissions Received in relation to the local access services

- 10.30 Altel submitted that it does not acquire local access services because Altel is of the opinion that services provided over copper lines are redundant and outdated.
- 10.31 Celcom submitted that it does not acquire the local access services, and noted that to keep up with increasing bandwidth demands operators are migrating from copper-based telephone and cable television networks to fibre-based networks which can deliver higher speeds.
- 10.32 DiGi submitted that because the local access services are confined to the copper network, they are unattractive to access seekers. Instead DiGi is of the view that HSBB should be made available in the access loop to ensure competition in the provision of high speed data services to end users.
- 10.33 Maxis submitted that it does not acquire any local access services due to the following reasons:
- (a) high wholesale prices (and possible margin squeeze);
 - (b) minimum subscription number of ports required;
 - (c) co-location at POIs is not permitted; and
 - (d) bundling of services.
- 10.34 Maxis acknowledged that, under the Ministerial Direction on High-Speed Broadband, regulated access to Full Access Service, Line Sharing Service and Sub-loop Service in areas served by HSBB Networks has been deferred until September 2015. In Maxis' view, this has essentially removed 102 TM exchanges from providing the three services, while TM still provides retail services using the copper network without competition. Maxis submitted that the MCMC should consider lifting the moratorium so that access is also allowed in areas in which TM is concurrently providing HSBB and Streamyx services. In addition, Maxis submitted that the MCMC could also revisit the terms of access imposed by the incumbent operator such as the minimum ports commitment, minimum ports per location and bundling of services.
- 10.35 Maxis also submitted that a customer cannot be forced to upgrade to a retail service that uses the HSBB Network while their premises is connected to an existing copper service, so the exclusion of local access services essentially removes competition to the detriment of customers. By way of example, Maxis explained that if there are 3 million DSL homes passed and 1.6 million

HSBB homes, this means a large subset of customers are captive subscribers of the incumbent, without facing any competition from other service providers.

- 10.36 TM submitted that access seekers have not sought access to any of the ANE services, Digital Subscriber Line Resale Service or Wholesale Line Rental Service. Accordingly, TM submitted that these services should be removed from the Access List. TM explained that it incurs material costs in offering such services, even when there is no take-up, because BSS/OSS is expensive without the optimal number of subscribers.
- 10.37 TIME submitted that it does not acquire ANE services from TM as they are bundled with mandatory transmission services. This is due to the fact that TIME is unable to install equipment at TM exchanges as they are CNII locations. TIME submitted that TM should not be permitted to refuse to offer ANE services in areas where the HSBB Network is present, as this is not in the best interests of end users.
- 10.38 YTL submitted that the local access services should remain in the Access List and issues such as QoS should be clarified and resolved.

MCMC Assessment

- 10.39 The MCMC considers that there remains a strong rationale for maintaining the local access services in the Access List in respect of premises not served by the HSBB Network. As explained in paragraph 10.16 above, the local access services are bottleneck facilities which are not substitutable with other facilities or services that provide access to the "last mile" of the telecommunications network (such as duct access, Digital Subscriber Line Resale Services or Wholesale Line Rental Services). Accordingly, the obligation to supply the Full Access Service, Line Sharing Service, Sub-loop Service and Bitstream Services in respect of premises not connected to the HSBB Network is essential in order to facilitate downstream competition at the retail level of the fixed telephony and broadband markets.
- 10.40 In particular, regulating access to the local access services in areas not yet served by the HSBB Network has the potential to facilitate competition in retail markets even once the HSBB Network has been rolled out in those areas. Access to the local access services allows access seekers to build up a user base in the retail fixed telephony and broadband markets which will then allow them to compete more effectively in the same markets once the HSBB Network is rolled out.
- 10.41 Without an established user base existing *before* HSBB Network is deployed, access seekers will face barriers competing in retail markets once the HSBB Network is rolled out (even though they will have wholesale access to the HSBB Network services).
- 10.42 Nevertheless, once the HSBB Network has been deployed to particular premises, the MCMC does not consider it appropriate to regulate access to local access services in respect of those premises.

10.43 The MCMC notes Maxis' submission that the Ministerial Direction on High-Speed Broadband, which defers the implementation of the Full Access Service, Line Sharing Service and Sub-loop Service in areas served by the HSBB Network until 15 September 2015, should be withdrawn. However, the MCMC considers that:

- (a) it is not technically possible to provide the Full Access Service and Line Sharing Service in respect of end users connected to the HSBB Network;
- (b) there is unlikely to be a sufficient economic basis for listing a service equivalent to the Sub-loop Service in respect of end users connected to the HSBB Network; and
- (c) services equivalent to Bitstream Services already exist in the Access List in respect of the HSBB Network.

10.44 The HSBB Network uses a passive optical network (**PON**) point-to-multipoint design, where a single set of fibre strand runs from the exchange to an optical line terminal (**OLT**) which serves multiple end user premises. A dedicated fibre strand for each end user premises runs only between the OLT and the end user premises. Accordingly, under a PON design, it is technically impossible for an access provider to provide unbundled access at Layer 1 of the OSI model for the full length between the exchange and the end user premises. The Full Access Service and the Line Sharing Service cannot therefore be technically provided over the HSBB Network.

10.45 Moreover, the Line Sharing Service, which provides access to the non-voiceband frequency spectrum of a line, is not relevant in the context of fibre networks such as the HSBB, given that fibre lines do not have separate voiceband and non-voiceband frequencies.

10.46 In relation to extending the Sub-loop Service in respect of end users connected to the HSBB Network, the MCMC notes that it is theoretically possible to provide unbundled access at Layer 1 to:

- (a) fibre strands between the OLT and the end user premises, in the case of fibre to the home (**FTTH**) deployments of the HSBB Network; and
- (b) copper loops between the node containing the DSLAM and the end user premises, in the case of fibre to the node (**FTTN**) deployments of the HSBB Network.

10.47 Nevertheless, this would require an access seeker to install their own OLTs or DSLAMs at or near the aggregation point (i.e. the point where the access provider has installed its own OLT or DSLAM). The MCMC considers this to be an uneconomic investment unless an access seeker has a sufficient user base in a given area.

10.48 At this stage of HSBB Network development in Malaysia, it is not clear that there is sufficient demand from access seekers for Layer 1 unbundled access

between the OLT/DSLAM and the end user premises to justify regulating such access through the Access List (either by amending the description of the Sub-loop Service or creating a new Access List service).

- 10.49 However, the MCMC is interested in obtaining information from stakeholders about whether they could economically make use of unbundled access to the “last mile” of the HSBB Network (between the OLT or DSLAM and the end user premises) at Layer 1.
- 10.50 In relation to extending the Bitstream Service in respect of end users connected to the HSBB Network, the MCMC notes that the HSBB Network Service with QoS provides a functional equivalent to the Bitstream Service in relation to the HSBB Network. Both services provide Layer 2 access between the exchange and end user premises.
- 10.51 Accordingly, the MCMC considers that paragraph 5(3) of the Access List, which states that the Bitstream Services do not apply in respect of premises to which the HSBB Network is connected, should be retained. Moreover, paragraph 5(3) should be expanded to also include the Full Access Service, Line Sharing Service and Sub-loop Service. This would have the effect of ensuring that these services do not apply in respect of end user premises connected to the HSBB Network, even after 15 September 2015 when the deferment specified in Ministerial Direction on High-Speed Broadband is no longer applicable.
- 10.52 The MCMC notes that there is a slight difference between the wording of the Ministerial Direction on High-Speed Broadband and the wording of paragraph 5(3) of the Access List. If paragraph 5(3) were to be expanded to include the Full Access Service, Line Sharing Service and Sub-loop Service, these services would be exempted “in respect of premises to which the HSBB Network is connected”. In comparison, the Ministerial Direction on High-Speed Broadband exempts these services from applying “where they are provided over the HSBB Network”.
- 10.53 Even if paragraph 5(3) of the Access List is amended in this manner, the deferment specified in the Ministerial Direction on High-Speed Broadband would continue to apply until 15 September 2015. However, the MCMC does not consider that the practical scope of the exemption in the Ministerial Direction on High-Speed Broadband is different to the scope of the exemption in paragraph 5(3). Accordingly, the MCMC does not consider that any problems will arise through the concurrent application of paragraph 5(3) of the Access List and the Ministerial Direction on High-Speed Broadband.
- 10.54 Finally, the MCMC is concerned with the submissions by several stakeholders that they face barriers accessing the local access services in non-HSBB areas, including high wholesale prices, mandatory bundling of services and barriers to co-locating at POIs. The MCMC reiterates that:
- (a) if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA;

- (b) pricing matters are outside the scope of this inquiry, as outlined in paragraph 1.10 above, although charging wholesale prices that prevent effective retail competition (margin squeeze) may potentially constitute anti-competitive conduct in contravention of section 133 of the CMA and stakeholders can refer complaints of alleged anti-competitive conduct to the MCMC according to section 69 of the CMA; and
- (c) failure to access to co-location at exchanges or other POIs are matters that relate to the Network Co-Location Service, discussed at paragraphs 11.73 to 11.90 below, and not the local access services.

MCMC Preliminary View

10.55 The MCMC's preliminary view is that:

- (a) the Full Access Service, Line Sharing Service, Sub-loop Service and Bitstream Services should remain in the Access List without modifications; and
- (b) paragraph 5(3) of the Access List, which states that the Bitstream Services (among others) do not apply in respect of premises to which the HSBB Network is connected, should be expanded to also include the Full Access Service, Line Sharing Service and Sub-loop Service; and
- (c) the deferment specified in the Ministerial Direction on High-Speed Broadband should continue to apply until 15 September 2015, after which paragraph 5(3) of the Access List will become the sole provision for ensuring that all local access services do not apply in respect of premises to which the HSBB Network is connected.

Questions

Question 18: Do you acquire the Full Access Service, Line Sharing Service, Sub-loop Service or Bitstream Services as an access seeker or supply the these local access services as an access provider?

Question 19: Are you experiencing any difficulty in acquiring or supplying the Full Access Service, Line Sharing Service, Sub-loop Service or Bitstream Services? If not, why not? (Please provide details).

Question 20: Would it be economical for you to acquire unbundled Layer 1 access to the "last mile" between the OLT or DSLAM and the end user premises in an HSBB Network context, even if this would require you to deploy your own infrastructure at or near the access provider's OLT or DSLAM? (Please provide details).

Question 21: Are you aware of any jurisdiction that regulates unbundled Layer 1 access to the "last mile" between the OLT or DSLAM and the end user premises in the context of next-generation access networks? (Please provide details).

Question 22: As an access seeker, does the Bitstream Service provide any additional functionality which you are not able to obtain through the HSBB Network Service with QoS (as applied to the HSBB Network)?

11 Wholesale access to facilities and upstream network elements market (for the core network)

Introduction

11.1 The wholesale access to facilities and upstream network elements markets (for the core network) include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
State-based geographic markets for access to towers, mastheads and rooftop space	Infrastructure Sharing
Individual markets for access to common in-building mobile systems in each building	Infrastructure Sharing
Individual markets for the wholesale supply of co-location services at each exchange building	Network Co-Location Service
Individual markets for the wholesale supply of access to each submarine cable landing station and satellite earth station	Network Co-Location Service
National market for the wholesale supply of inter-exchange and mainline ducts (which includes access to aerial or sewer systems)	Not currently regulated in the Access List; regulation is proposed through amendments to the Infrastructure Sharing (see Chapter 17)
National market for the wholesale supply of access to dark fibre services	<i>Not currently regulated in the Access List (see discussion in Part C)</i>

11.2 The markets for wholesale supply of inter-exchange and mainline ducts, and for access to dark fibre services, comprise services which are not currently subject to regulation in the Access List. The description and competition analysis of these markets, as well as discussion of whether they ought to be

subject to regulation via the Access List, are discussed in Part C of this PI Paper, which relates to proposed new Access List facilities and services.

- 11.3 Accordingly, this chapter only discusses the remaining four markets in the table in paragraph 11.1 above, which are relevant to the Infrastructure Sharing and the Network Co-Location Service.

Markets relevant to the Infrastructure Sharing

- 11.4 Within the markets for wholesale access to facilities and upstream network elements for the core network, there are two distinct groups of markets that are relevant to the Infrastructure Sharing:

- (a) state-based geographic markets for access to towers, mastheads and rooftop space; and
- (b) individual markets for access to common in-building mobile systems in each building.

Market descriptions for the state-based geographic markets for access to towers, mastheads and rooftop space

- 11.5 In its Market Definition Analysis, the MCMC defined state-based markets for access to towers, mastheads and rooftop space.⁴⁶ Mobile network operators require towers, mastheads and rooftop space in order to install active equipment that forms part of their radio access network (RAN) (i.e. enables wireless transmission of traffic to mobile end user devices).
- 11.6 Towers, mastheads and rooftop space are generally substitutable with each other, in that they all provide physical space for the access seeker to store active equipment that facilitates the transmission of mobile signal to end users. However, the suitability of towers, mastheads and rooftop space depends on geography and usage density, with towers typically being the preferred form of infrastructure, especially in non-urbanised areas and along highways and busy thoroughfares.⁴⁷
- 11.7 As noted above, separate state-based markets exist for access to towers, masthead and rooftop space.⁴⁸ This is because, in several states of Malaysia, towers are owned and operated predominantly by state-owned entities who are only active within the geographical boundaries of a single state. Indeed, some states restrict the building of towers to these state-owned companies.

Competition analysis for the state-based geographic markets for access to towers, mastheads and rooftop space

- 11.8 In the 2008 Access List Review, the MCMC found that sharing of towers, mastheads and rooftop space was working well on a commercial basis in some cases, but that it was to the long-term benefit of the end users to maintain regulation more generally, since smaller new entrants would not be

⁴⁶ Market Definition Analysis, p. 116.

⁴⁷ Market Definition Analysis, pp. 114-115 [4.6].

⁴⁸ Market Definition Analysis, p. 115.

able to negotiate with tower owners on an equal footing, and broadcasters continued to face access issues.⁴⁹

- 11.9 The MCMC also found that the removal of regulation for Infrastructure Sharing (including mobile Infrastructure Sharing) would lead to a “limited likelihood of reasonable price and non-price terms and conditions of access”.⁵⁰
- 11.10 The MCMC considers that the state of competition in the markets for access to towers, mastheads and rooftop space has become more complex since the 2008 Access List Review, given the increasing involvement of State-Backed Companies (**SBCs**) in the provision of tower access in some states.
- 11.11 In its Assessment of Dominance, the MCMC found that there was a dominant operator in four of the state-based markets for access to towers, mastheads and rooftop space:
- (a) Infra Quest Sdn Bhd was found dominant in the Kelantan market;
 - (b) Melaka ICT Holdings Sdn Bhd was found dominant in the Melaka market;
 - (c) Rangkaian Minang Sdn Bhd was found dominant in the Negeri Sembilan market; and
 - (d) Sacofa was found dominant in the Sarawak market.⁵¹
- 11.12 All four of these operators are SBCs which have exclusive legal rights to construct towers in their respective states. The MCMC acknowledges that other entities continue to operate towers in these states (e.g. because these towers were installed before SBC exclusivity came into force). Nevertheless, SBC exclusivity creates a significant barrier to entry in these markets which prevents sufficient competition.
- 11.13 Furthermore, while access seekers are still able to install their active equipment on rooftops, mastheads or other non-tower infrastructure, this does not provide an adequate competitive constraint on the behaviour of the SBCs, given that towers are the preferred form of infrastructure for rolling out a RAN for geographical and performance reasons.
- 11.14 Accordingly, while there may be good environmental and other reasons for allowing SBCs to be exclusive providers in these four above-mentioned markets, there also remains a very clear rationale for the MCMC to regulate tower access.
- 11.15 In the other states, there are varying views among stakeholders about the level of competition in the market, and the MCMC’s Assessment of Dominance did not find any tower operators to be dominant in those states. However, stakeholders have pointed out that, in some states, planning

⁴⁹ 2008 Access List Review PI Paper, p. 110.

⁵⁰ 2008 Access List Review PI Report, p. 75.

⁵¹ Assessment of Dominance PI Report, p. 120.

restrictions create barriers to entry, by imposing high fees for permit renewal or by prohibiting rooftop structures.⁵² Stakeholders have complained about the market behaviour of SBCs, even though these SBCs account for a relatively small share of overall tower ownership.⁵³

- 11.16 Overall, the MCMC is of the view that, while the state of competition differs across the various state-based markets for access to towers, mastheads and rooftops, the underlying factors leading to the MCMC's competition concerns persist or have been exacerbated and there is no data supporting the removal or amendment of access regulation in these markets.

Market descriptions for the individual markets for access to common in-building mobile systems in each building

11.17 Common in-building mobile systems refer to dedicated in-building devices which are used to achieve or improve mobile signal coverage for end users within a building. In-building mobile systems, also known as Common Antenna Systems, typically consist of a central equipment room within the building which houses the following active equipment:

- (a) a base transceiver station (**BTS**) provided by each mobile operator, which is typically connected to fixed-line or microwave transmission networks (for backhaul);
- (b) a multi-band combiner, which combines the radio signals from the different BTSs; and
- (c) a multi-band distributed antenna system, which distributes the radio signal throughout the building.⁵⁴

11.18 In-building mobile systems are designed to be shared by multiple mobile network operators, by allowing the signal of multiple operators to be transmitted from a single in-building antenna system. Access to common in-building mobile systems typically consists of access to the central equipment room itself (to enable the access seeker to locate its BTS), as well as access to the shared multi-band combiner and antenna system within the central equipment room.

11.19 In its Market Definition Analysis, the MCMC defined an individual market for access to the common in-building mobile systems in each building.⁵⁵ These markets are distinct to the markets for access to towers, mastheads and rooftop space, for two reasons:

- (a) even though equipment installed on towers can also be used to transmit mobile signal to end users within a building, such equipment is typically limited in the penetration it can achieve within buildings and the level of service that it is able to provide across multiple floors; and

⁵² Assessment of Dominance PI Report, pp. 116-118.

⁵³ Assessment of Dominance PI Paper, p. 154, [21.22]-[21.23].

⁵⁴ 2008 Access List Review PI Paper, p. 109.

⁵⁵ Market Definition Analysis, p. 125.

- (b) in-building mobile systems are active equipment (i.e. radio base stations), while towers, mastheads and rooftop space are passive equipment which requires the access seeker to install its own active equipment.

11.20 Accordingly, access to external infrastructure such as towers and mastheads is not a viable substitute for access to in-building mobile systems for mobile network operators that seek to achieve a high level of in-building mobile coverage.

11.21 The market for access to common in-building mobile systems in each building is an individual market, since a mobile network operator will only be able to satisfactorily serve users within a particular building if it gains access to the in-building mobile systems within that building.

Competition analysis for the individual markets for access to common in-building mobile systems in each building

11.22 In the 2008 Access List Review, the MCMC found that in-building sharing arrangements were not working effectively and that regulatory intervention was necessary in order to ensure access to common in-building mobile systems on "reasonable and timely terms and conditions".⁵⁶ On this basis, the MCMC amended the service description of the regulated Infrastructure Sharing in 2009 to include common in-building mobile systems (referred to as "Common Antenna Systems").⁵⁷

11.23 The MCMC does not believe that there has been any material change in the state of competition in the market since the 2008 Access List Review. In its Assessment of Dominance, the MCMC found that the owner and/or operator of each in-building mobile system was dominant in the individual market for access to common in-building mobile systems in that building.⁵⁸

11.24 While it is possible for a mobile network operator to gain access to a building by constructing its own in-building mobile systems, this is likely to be significantly more costly than obtaining shared access to the common in-building system, and may also be limited by space considerations in some buildings as well as potential interference with existing in-building mobile systems.⁵⁹ Moreover, building owners often grant exclusive rights of access to buildings to a single operator (including a related party) to deploy their own in-building mobile systems, which has the effect that, in many cases, it may be impossible for an alternative operator to roll-out its own in-building mobile system. Accordingly, operators of common in-building mobile systems are not subject to a sufficient degree of competitive constraint so as to suggest that the markets for access to common in-building mobile systems are sufficiently competitive.

⁵⁶ 2008 Access List Review PI Report, p. 76.

⁵⁷ Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No 1 of 2009, section 4(j).

⁵⁸ Assessment of Dominance PI Report, pp. 131-132.

⁵⁹ Market Definition Analysis, pp. 124-125.

Infrastructure Sharing

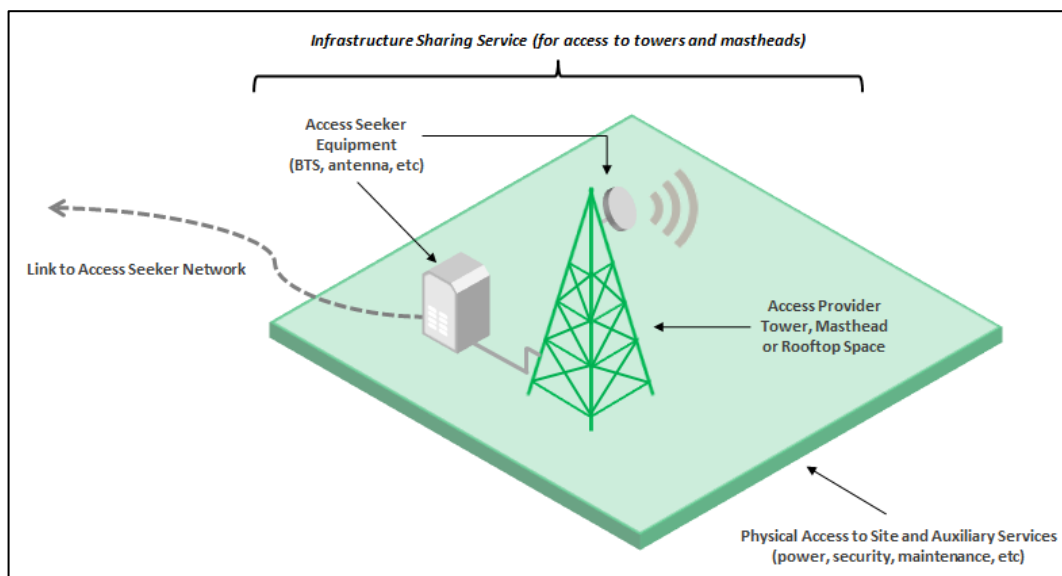
Description

11.25 The Infrastructure Sharing is currently described in the Access List as follows:⁶⁰

(12) Infrastructure Sharing

- (a) Infrastructure Sharing is a Facility and/or Service which comprises the following:
- (i) Provision of physical access, which refers to the provision of space at specified network facilities to enable an Access Seeker to install and maintain its own equipment; or
 - (ii) Provision of access to in-building Common Antenna Systems and physical access to central equipment room.
- (b) Specified network facilities include towers and associated tower sites.
- (c) Physical access includes power, environmental services (such as heat, light, ventilation and air-conditioning), security, site maintenance and access for the personnel of the Access Seeker.

11.26 The scope of the Infrastructure Sharing is illustrated in the diagrams below:



**Figure 11 – Scope of Infrastructure Sharing
(for access to towers and mastheads)**

⁶⁰ Commission Determination on Access List, Determination No.1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

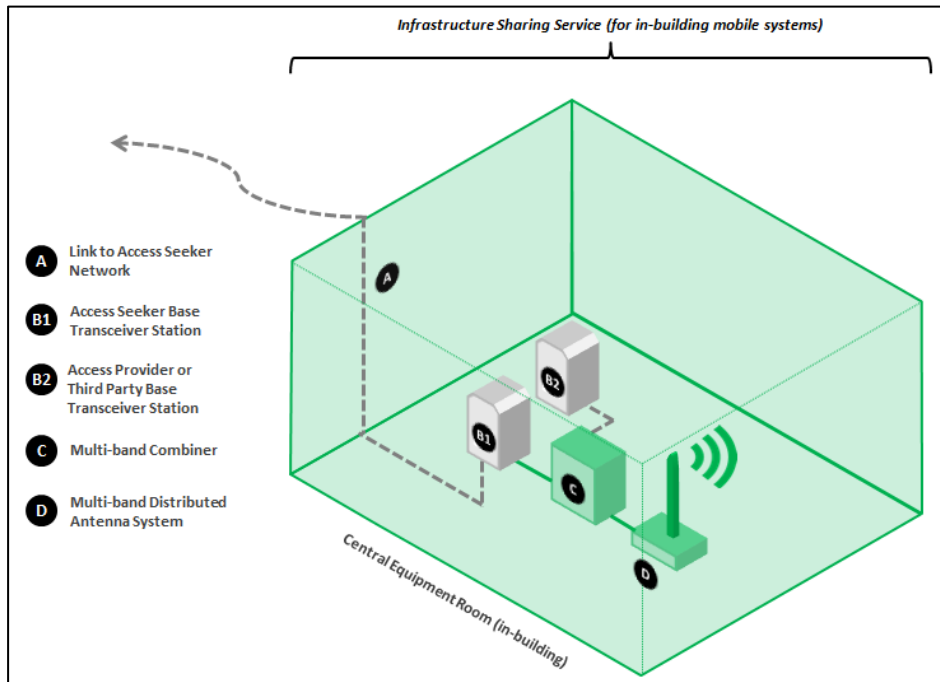


Figure 12 – Scope of Infrastructure Sharing (for in-building mobile systems)

Submissions Received

- 11.27 Altel submitted that the description of the Infrastructure Sharing in the Access List needs to be more comprehensive. In particular, Altel submitted that the Access List should clearly define the associated tower site to include the space and land owned, leased or tenanted by an operator surrounding or on which the tower is situated. Altel submitted that this definition should include space where the access seeker may place its cabin or outdoor equipment, including the space required for cable gantry connecting to the tower and generator set.
- 11.28 Celcom submitted that it acquires Infrastructure Sharing as an access seeker, and that this service is an essential input in the downstream market for mobile services because it reduces the costs of building and maintaining the network. Celcom noted in its submission that mobile operators are more successful at obtaining the Infrastructure Sharing where they are able to accumulate and swap Cost Sharing Units. Celcom also submitted that it has faced challenges obtaining the Infrastructure Sharing from SBCs and state-appointed One Stop Agencies (**OSAs**).
- 11.29 DiGi submitted that Infrastructure Sharing is an integral service because it allows mobile operators to extend coverage for end users. DiGi depends on access to towers, roof tops and in-building coverage to provide services to customers, as the DiGi network is a mixture of self-built towers and towers leased from third party providers. In relation to DiGi's own towers, DiGi has observed the following issues:
- (a) The decision to build or buy tower space is highly dependent on land authorizations by the local government. DiGi noted that often

infrastructure owners have exclusive rights to key sites that serve a particular location, meaning access can be unduly constrained.

- (b) DiGi has found that the commercial terms of access seeker agreements are not open to scrutiny and/or oversight by MCMC which leads to excessive licence fees and charges which are not cost oriented.
- (c) OSAs that are not licensed and may or may not be directly owned by SBCs have been claiming that they must approve applications for the permits required to erect towers and other network facilities. This creates difficulties for access seekers, for instance they must use certain appointed contractors to build towers. Sometimes these contractors fail to deliver on time, charge high permit renewal fees and restrict building. In some cases, DiGi has been forced to dismantle existing sites. DiGi is also concerned because recently other companies have been claiming to be OSAs and acting extortionately. DiGi also submitted that SBCs are charging operators additional arbitrary fees to "fiberize" sites. DiGi is concerned that other SBCs are imitating this model.

11.30 Edotco submitted that the following impediments exist to gaining access to and supplying Infrastructure Sharing:

- (a) SBCs wield significant influence. As a result, the market for infrastructure services is relatively closed, and this makes it difficult (at times impossible) for other infrastructure providers to penetrate a given area. This in turn has led to restrictive business models including rent-seeking, indiscriminate development and overlapping/parallel capacities of towers. Edotco submitted that, in this environment operators cannot optimise their infrastructure expenditure and costs to consumers have increased.
- (b) Local OSAs have proven to provide little, if any advantages in the permitting process, yet most SBCs continue to insist that operators deal with them as a condition of entry.
- (c) Public complaints are a significant obstruction to the implementation and installation of infrastructure. Edotco has found that a large proportion of complaints are based on fears of radiation and emissions, however some also appear to be politically motivated.
- (d) The lack of common uniform guidelines across municipalities complicates infrastructure activities. Edotco gives the example of Selangor and Penang – in Selangor, no structure may be erected on top of a pitched roof and no punch-through of rooftops or slabs are permitted, whereas in Penang, infrastructure providers must procure consent for each structure from the relevant State assembly-person.

- (e) Overloading of existing infrastructure and single-way structures may prohibit other mobile operators from using it.
- (f) Camouflage requirements in some states require operators to use certain contractors.

11.31 Among other things, in response to its submissions, Edotco suggested that the MCMC consult with local governments to establish a common set of practice standards or guidelines to apply across states. Edotco also submitted that network facilities provider licensees should not be appointed as OSAs to avoid possible conflicts of interest. Edotco also suggested that common sharing infrastructure should also be introduced, and the Government should recognise that mobile telephony should be regarded as a national utility so that mandatory infrastructure space is included in all development projects as a condition of planning approval. Finally, Edotco submitted that compulsory camouflage requirements should be abolished.

11.32 Fiberail submitted that Infrastructure Sharing meet its technical functional requirements and could significantly reduce costs and allow operators to balance their profitability. However Fiberail has experienced some issues in relation to gaining access to sites and negotiating terms and conditions for right-of-way. In addition, Fiberail submitted that advanced security systems should be implemented to minimise vandalism and hence, reduce the operational costs of repair and replacement. Likewise, the design of equipment could also be improved so that it is more compact, has higher capabilities and lower power consumption.

11.33 Jaring submitted that instead of imposing Infrastructure Sharing obligations on telcos, a neutral service provider should offer tower services.

11.34 Maxis submitted that it has generally not faced any major impediments to acquiring or providing the Infrastructure Sharing with existing cellular operators. However, recently in-building Infrastructure Sharing has been challenging. In particular, with reference to the KLIA2 building, rollout of services has been delayed and hampered by the lengthy commercial and technical negotiations between cellular operators and MAHB (the building owner/operator). Although the issue in relation to KLIA2 has now been resolved, Maxis is concerned that similar issues with exorbitant prices and complex network/technical design elements will arise in the future with other third party infrastructure owners. Maxis noted that in-building access is increasingly critical to cellular operators to ensure good coverage and reliable service. Annually, Maxis requires a significant number of in-building services, and with the introduction of LTE, this amount has been increasing. Maxis submitted that a costing guideline for in-building access to third party premises should be introduced.

11.35 Packet One submitted that tower sharing can be challenging, especially in cases where tripartite arrangements are in place. Packet One is of the opinion that there must be an arrangement in place to extend sharing beyond physical and hardware sharing only. It submitted that the possibility of software or radio sharing will promote entry by new players that can lead

to a more lively and innovative industry which will benefit consumers at large.

- 11.36 Persatuan Penyedia Infrastruktur Telekomunikasi (**PPIT**) submitted on behalf of its members that tower owners do not impose barriers to access to towers on commercial terms, provided that the structure has available space and that there are no loading issues with the structure.
- 11.37 REDtone submitted that the issue for small operators in relation to Infrastructure Sharing is competitive pricing.
- 11.38 TM submitted that as an access seeker it has experienced significant issues in relation to Infrastructure Sharing with mobile operators, as a barter trade operates in relation to tower access. Since the Celcom demerger, TM does not have the right to tower infrastructure located in areas where there is a barter arrangement in place. TM was strongly of the view that quasi-engineering reasons such as load factors are used by tower owners to block TM's access, and TM recommended that the MCMC include certain parameters on the sharing of towers in the MSA. TM also notes that when it does obtain access at other providers' sites, its equipment has been stolen due to a lack of security.
- 11.39 As an access provider, TM submitted that it has been difficult to meet the requirement that it provide an escort who can be on site within 30 minutes, particularly at unmanned sites. In addition, TM submitted that it has borne the cost of upgrading electric circuit breakers to cater for access seekers' additional power requirements, but could not claim those costs back from access seekers. Access seekers have also refused to share costs of generator and battery backup power, although they were always willing to take advantage of these backup power sources, when in need.
- 11.40 TIME noted that it offers the Infrastructure Sharing as an access provider to mobile operators who are seeking backhaul between their base stations and radio network controllers or mobile exchanges. TIME submitted that SBCs control the tower business including access to towers. As such, TIME has faced challenges in obtaining right-of-way and high fees are also charged by the SBCs.
- 11.41 U Mobile acquires the Infrastructure Sharing but submitted that it sometimes found that it received equivalent access but not equivalent quality, as the access provider's systems introduced interference which reduced the QoS. U Mobile also submitted that access providers sometimes requested that access seekers tap power directly from building management. In addition, U Mobile submitted that right-of-way charges imposed by landowners and high operational expenditure costs are other impediments for access seekers. U Mobile suggested that the MCMC impose regulations on landowners to minimise the impact of right of way charges. This would align with the CMA on Infrastructure Sharing requirements.
- 11.42 YTL submitted that it acquires Infrastructure Sharing with no functional limitations, although there are some impediments to gaining access. YTL has observed a tendency for operators to implement infrastructure swapping

practices that exclude new operators who do not have any common antenna or duct systems of their own, as those operators have nothing to offer or swap in exchange.

- 11.43 YTL also submitted that the MCMC should add Common Antenna Systems to the Access List to ensure that access is available other than through infrastructure swapping. YTL explained that this is because the current practice disadvantages new operators.

MCMC Assessment

- 11.44 The MCMC considers that there remains a strong rationale for maintaining the Infrastructure Sharing in the Access List. None of the stakeholder submissions summarised above suggest that the service be deregulated, while the MCMC's own analysis in its Assessment of Dominance reveals that the markets for access to towers, mastheads and rooftop space and for access to common in-building mobile systems remain uncompetitive.
- 11.45 Several stakeholders have mentioned that they face barriers to building tower infrastructure, including due to planning restrictions, lack of consistent guidelines across states and municipalities, and potential for conflicts of interest between SBCs, who provide tower access, and OSAs, who must approve applications for permits to erect towers.
- 11.46 The MCMC believes that this information emphasises the need for continuing regulation of the Infrastructure Sharing. The stakeholder views indicate that barriers to entry in the market for access to towers, mastheads and rooftop space remain high and that access seekers are restricted in their alternative supply options (including the option of self-supply by rolling out their infrastructure). Accordingly, existing tower infrastructure remains a bottleneck facility in many cases.
- 11.47 The MCMC rejects Jaring's submission that access to towers should be provided by a "neutral service provider" instead of imposing Infrastructure Sharing obligations on telecommunications operators. As has been pointed out above, the MCMC's jurisdiction under the Access List extends only to mandating access to existing facilities rather than making determinations as to which parties are allowed to roll-out facilities or provide services. Moreover, the MCMC notes that state laws or regulations typically control who is allowed to build and operate towers in Malaysia. The MCMC has no jurisdiction in respect of such laws and cannot designate a single "neutral service provider" of tower access.
- 11.48 Stakeholders have raised a number of other issues in their submissions on the Infrastructure Sharing, including:
- (a) impediments and barriers to gaining access to towers and other facilities that fall within the scope of the Infrastructure Sharing due to "infrastructure-swapping" or "barter trade" arrangements between operators or technical design requirements;

- (b) an inability to gain access to towers at an equivalent quality to the access provider;
- (c) excessive charges imposed by providers of access to towers, particularly SBCs;
- (d) excessive charges imposed by land-owners for rights-of-way to towers; and
- (e) difficulties in meeting requirements imposed on access providers by the MSA, such as providing site escorts for access seekers.

11.49 While the MCMC is concerned about these issues and has carefully considered stakeholders' submissions in this regard, the MCMC notes that none of the above issues fall within the scope of the current inquiry and do not relate to the regulatory scope and/or description of the Infrastructure Sharing under the Access List. In particular, the MCMC offers the following guidance to operators facing these problems:

- (a) if access seekers are facing barriers to gaining access to the Infrastructure Sharing, or believe that they are not gaining access on non-discriminatory terms, they should submit a complaint to the MCMC in accordance with section 69 of the CMA after first trying to resolve any impediments directly with the access provider;
- (b) if access seekers believe that they are not obtaining access on non-discriminatory terms (including relative to the access provider's own downstream arm), they should submit a complaint according to the procedure outlined in paragraph (a) above;
- (c) excessive charges by access providers are a matter that stakeholders should raise during a future review of the MSAP, although the MCMC notes that the Infrastructure Sharing is not currently subject to price regulation under the MSAP;
- (d) excessive charges for rights-of-way are outside the scope of this inquiry not only because they relate to pricing but because rights-of-way are not covered by the Infrastructure Sharing or by the Access List, more generally. However, the MCMC notes that, under section 228 of the CMA, a network facilities provider or a public utility provider must provide another network facilities provider with non-discriminatory access to any right-of-way owned by the first network facilities provider (or public utility provider); and
- (e) issues relating to the MSA are beyond the scope of this inquiry and the MCMC invites stakeholders to bring such issues to the MCMC's attention in any future reviews of the MSA.

11.50 The MCMC invites stakeholder views on Altel's submission that the definition of "associated tower sites" in paragraph (b) of the service description should be more comprehensive by explicitly including:

- (a) land owned, leased or tenanted by an operator surrounding or on which the tower is situated; and
- (b) space where the access seeker may place its cabin or outdoor equipment, including space required for cable gantry connecting to the tower and generator set.

11.51 In relation to Packet One’s submission that Infrastructure Sharing should extend beyond physical sharing to software or radio sharing, the MCMC discusses whether access to RAN sharing should be included within the Access List in Chapter 21 of this PI Paper.

11.52 In relation to YTL’s submission that Common Antenna Systems should be added to the Access List, the MCMC notes that the Infrastructure Sharing already includes the “provision of access to in-building Common Antenna Systems” in paragraph (a)(ii) of the service description. If YTL is facing barriers accessing Common Antenna Systems other than through infrastructure swapping, paragraphs 11.48 and 11.49 above set out the MCMC’s observations on barriers to accessing the Infrastructure Sharing more generally, which also apply to access to Common Antenna Systems.

11.53 Finally, while the discussion of the Infrastructure Sharing in this chapter 11 does not deal with access to poles, ducts and manholes (PDM), including lead-in ducts and manholes, the MCMC discusses whether the description of the Infrastructure Sharing should be modified to include access to PDM in Chapter 17.

MCMC Preliminary View

11.54 The MCMC’s preliminary view is that the Infrastructure Sharing should remain in the Access List subject to:

- (a) potential modifications to clarify the scope of the concept of “associated tower sites” in paragraph (b) of the description, subject to broad stakeholder agreement and if the MCMC considers such changes to be appropriate; and
- (b) the addition of access to lead-in ducts and manholes and certain other passive infrastructure within the service description – the rationale for this and the MCMC’s proposed wording is discussed in Chapter 17, and stakeholders are invited to comment on this proposal in that part of the PI Paper.

Questions

Question 23: Do you acquire the Infrastructure Sharing as an access seeker or supply the Infrastructure Sharing as an access provider?

Question 24: Are you experiencing any difficulty in acquiring or supplying the Infrastructure Sharing? If not, why not? (Please provide details).

Question 25: Should paragraph (b) of the description of the Infrastructure Sharing be amended to more comprehensively list the elements comprised by the term “associated tower sites”?

Markets relevant to the Network Co-Location Service

11.55 Within the markets for wholesale access to facilities and upstream network elements for the core network, there are two distinct groups of markets that are relevant to the Network Co-Location Service:

- (a) individual markets for the wholesale supply of co-location services at each exchange building; and
- (b) individual markets for the wholesale supply of access to each submarine cable landing station and satellite earth station.

11.56 This section will describe each of the markets above and analyse the state of competition in each.

Market descriptions for the individual markets for the wholesale supply of co-location services at each exchange building

11.57 As discussed in the MCMC’s Market Definition Analysis, an individual market exists for the wholesale supply of co-location services at each exchange building. Co-location services at exchange buildings are used by access seekers to facilitate interconnection with a particular network and to allow access to other network elements often belonging to the exchange building’s owner, such as ULL access services or full access services and line sharing services.

11.58 Co-location services comprise only access to passive infrastructure at the exchange, such as floor space, equipment racks, cable trays and the interconnection cables contained within them, and other services such as power, security and air-conditioning.

11.59 Co-location services do not include the actual in-building interconnect links that facilitate interconnection. Interconnect links form part of a distinct interconnect links market, discussed in Chapter 14.

11.60 The markets for co-location services are individual to each exchange building since access to one exchange building is not substitutable for access to another exchange building. For example, if an access seeker wants to obtain access to an operator’s ULL or line sharing services in a particular local area, it would be required to purchase co-location services at the particular exchange building to which those ULLs or line sharing facilities are connected.

Competition analysis for the individual markets for the wholesale supply of co-location services at each exchange building

11.61 In the 2008 Access List Review, the MCMC held that the Network Co-Location Service, which includes access to co-location services at exchange

buildings, should be retained in the Access List.⁶¹ The MCMC at that time examined co-location services as part of a broader “interconnection market” and held that there was “none or limited competition in relation to interconnection”, given that each operator was the exclusive supplier in relation to interconnection with their own networks.⁶²

11.62 The MCMC does not believe that the state of competition in the market has changed materially since the 2008 Access List Review. In its Assessment of Dominance, the MCMC held that the owner of each exchange building is dominant in the market for the wholesale supply of co-location services at that exchange building.⁶³

11.63 Access to co-location services at a particular exchange building constitutes a natural monopoly, given that only the operator of that exchange building is able to supply the relevant co-location services. Moreover, there are few external competitive constraints upon the market behaviour of exchange building owners. Access to a particular operator’s exchange building is essential in order to gain access to that operator’s local access services (ULL, line sharing service, etc).

11.64 Exchange building access is also the most efficient way of interconnecting with an operator’s network. While interconnection can sometimes be achieved in other ways (e.g. in-span interconnection, or purchasing transit from another provider), these are not typically economically efficient options.⁶⁴

11.65 Accordingly, the MCMC’s preliminary view is that the supply of co-location services at a particular exchange building is not subject to sufficient competition and that the rationale for regulatory intervention remains.

Market descriptions for the individual markets for the wholesale supply of access to each submarine cable landing station and satellite earth station

11.66 These markets comprise the provision of physical access to a particular submarine cable landing station or satellite earth station. A submarine cable landing station is a building located near a shoreline which contains submarine cable transmission equipment. It is the point at which a submarine cable connects to the domestic or landed components of the network. A satellite earth station is a building that transmits radio frequency signals to, or receives such signals from, a geostationary satellite in specified frequency bands.⁶⁵

11.67 Access to submarine cable landing stations and satellite earth stations allows service providers to locate their active equipment within the relevant stations so as to facilitate interconnection with submarine cables or satellite earth links. Access services are distinct from *transmission services* to a submarine cable landing station and satellite earth station. The transmission

⁶¹ 2008 Access List Review PI Report, p. 100.

⁶² 2008 Access List Review PI Paper, p. 133.

⁶³ Assessment of Dominance PI Report, p. 122.

⁶⁴ Market Definition Analysis, p. 117.

⁶⁵ Market Definition Analysis, p. 117.

component forms part of the separate wholesale markets for transmission to a submarine cable landing station or satellite earth station, discussed at paragraphs 13.14 to 13.17 below.

11.68 In a similar manner to co-location at exchange buildings, there is an individual market for access to each submarine cable landing station and satellite earth station. This is because access to a particular submarine cable or satellite is usually most efficiently obtained at a particular landing station or earth station, and alternative station locations do not therefore provide an adequate substitute.⁶⁶

Competition analysis for the individual markets for the wholesale supply of access to each submarine cable landing station and satellite earth station

11.69 In the 2008 Access List Review, the MCMC held that the level of competition for “Domestic Connectivity to International Services” (which included access to submarine cable landing stations and satellite earth stations) was minimal.⁶⁷

11.70 The MCMC stated in the Market Definition Analysis that access to submarine cable landing stations and earth stations exhibits natural monopoly characteristics, given that each submarine cable or satellite can typically be accessed only from a single station in any given jurisdiction:

The cost of a new entrant installing a rival or substitute station is impractical and infeasible and, in the case of access to a submarine cable landing station, is usually not permitted by the consortium agreement which governs the landing of the cable (i.e. the consortium will have appointed a specific landing party).⁶⁸

11.71 Further, in its Assessment of Dominance, the MCMC held that the owner of each submarine cable landing station and satellite earth station (to the extent that they are licensees) is dominant in the market for the wholesale supply of access to that submarine cable landing station or satellite earth station.⁶⁹

11.72 Accordingly, the MCMC considers that these markets are not sufficiently competitive to justify a change in the level of access regulation.

⁶⁶ Market Definition Analysis, pp. 118-119.

⁶⁷ 2008 Access List Review PI Report, p. 86.

⁶⁸ Market Definition Analysis, p. 118.

⁶⁹ Assessment of Dominance PI Report, p. 123.

Network Co-Location Service

Description

11.73 The Network Co-location Service is currently described in the Access List as follows:⁷⁰

(14) Network Co-Location Service

- (a) *The Network Co-Location Service is a Facility and/or Service which comprises:*
- (i) *Physical co-location, which refers to the provision of space at an Access Provider's premises to enable the Access Seeker to install and maintain equipment necessary for the provision of the Access Seeker's services through the Facilities and/or Services of any Operator. Physical co-location includes physical space, power, environmental services (such as heat, light ventilation and air-conditioning), security, site maintenance and access for the personnel of the Access Seeker;*
 - (ii) *Virtual co-location, which refers to the provision of facilities or services at an Access Provider's premises to enable the acquisition by the Access Seeker of Facilities and Services in the Access List, where equipment is owned and maintained by the Access Provider; or*
 - (iii) *In-span interconnection, which is the provision of a POI at an agreed point on a physical cable linking an Access Provider's network facilities to an Access Seeker's network facilities.*
- (b) *Network premises at which co-location is to be provided includes switching sites, submarine cable landing centres, earth stations, exchange buildings, other Customer Access Modules (including roadside cabinets) and such other network facilities locations associated with the provision of a Facility or Service in the Access List, and includes co-location provided at any location where main distribution frame is housed.*

⁷⁰ Commission Determination on Access List, Determination No. 1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

11.74 The scope of the Network Co-Location Service is illustrated in the diagram below:

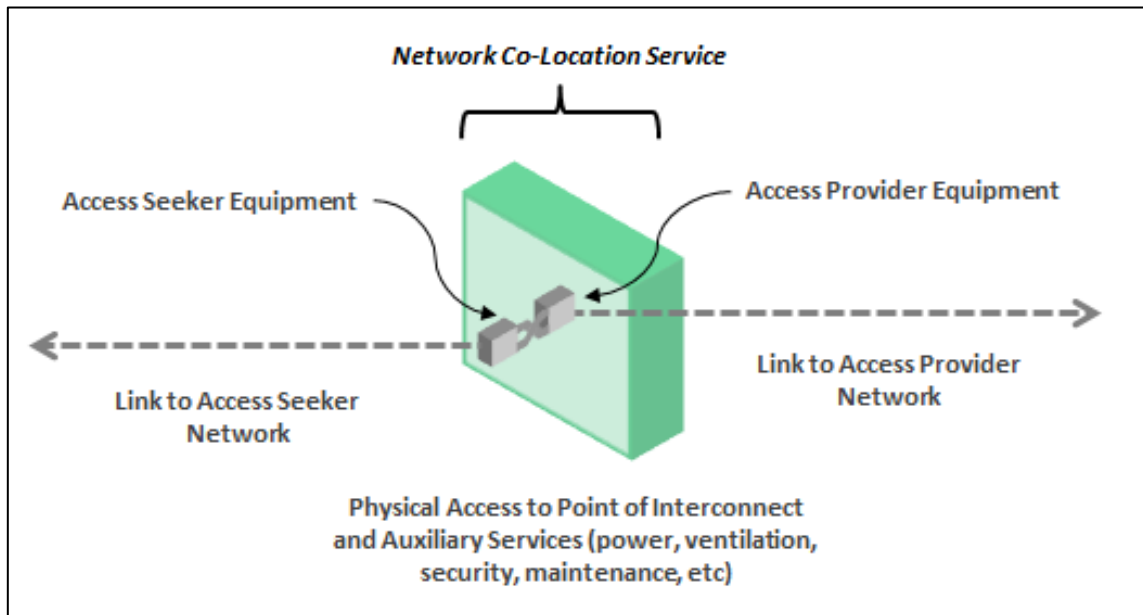


Figure 13 – Scope of Network Co-Location Service

Submissions Received

- 11.75 Altel submitted that it acquires the Network Co-Location Service and finds it useful. It has no comments on the service.
- 11.76 Celcom submitted that it acquires the Network Co-Location Service and notes that it is an essential input into Celcom mobile services.
- 11.77 DiGi submitted that the Network Co-Location Service is relevant to ensuring that interconnection is enabled at the lowest cost and in the most practical manner. DiGi noted that co-location at submarine cable landing stations is prohibitive, and that access seekers are compelled to interconnect from outside stations using the Domestic Connectivity to International Services provided by TM. DiGi did not explain the reason why it considers that co-location is prohibitive at submarine cable landing stations.
- 11.78 Fiberail submitted that it acquires the Network Co-Location Service as an access seeker and considers the service usable. Fiberail submitted that the functionality provided is adequate to meet Fiberail's requirements and noted that, because co-location centres are located in proper shelters (rather than at roadside cabinets), Fiberail faces no disruptions to service. However, Fiberail also noted that issues often arise in relation to co-location within buildings when building owners and developers enter into exclusivity arrangements with a single operator to deny others co-location. In such situations, even where interconnection allows access to the building, operators experience issues including high costs of provisioning services, maintenance and operational difficulties, issues with demarcation of their networks and service availability. An example is the KL Sentral building. Aside from this, vandalism and theft of equipment are also impediments to

supplying services to customers. Fiberail submitted that among the goals of efficient co-location is to meet the environmental requirement of the computing equipment and facility whilst lowering costs and increasing efficiency in power usage. Fiberail submitted that, in the most efficient scenario, customers would pay for the power they use on a metered basis multiplied by an additional power usage effectiveness factor to account for additional power needed to run the facility. Fiberail noted that its business is to provide physical interconnection so no other form of interconnection is required.

- 11.79 Maxis submitted that it does not acquire the Network Co-Location Service from the incumbent operator due to the obstacles involved. Maxis submitted that the incumbent operator does not allow access even though Network Co-Location Service is on the Access List. Maxis explained that it has received various reasons for denying co-location including the fact that the submarine landing cable station is a high security area. However, Maxis noted that in other countries like Singapore and Hong Kong, and at Sacofa's landing station in Sarawak, this is not perceived to be an issue.
- 11.80 Maxis also submitted that access routes, being the Access Provider's PDM which lead into the Access Provider's exchanges, buildings and submarine cable landing stations at which the Access Seeker is allowed to co-locate or install their equipment, are not regulated in the Access List. Therefore, Maxis submitted, it cannot use its own infrastructure to connect to the co-located space. Maxis submitted that the incumbent operator encourages Maxis to meet in the manhole outside its exchange or submarine cable landing station, or to acquire full transmission services. Maxis suggested that the MCMC add PDM to the Access List to overcome this problem. Maxis submitted that this would allow access seekers to price services and dimension their networks appropriately. Maxis emphasised that although it does not currently acquire the Network Co-Location Service, the service is important to Maxis as it facilitates other Access List services such as Infrastructure Sharing, Wholesale Local Leased Circuits, Transmission and HSBB services.
- 11.81 TIME submitted that it is an access seeker and access provider for the Network Co-Location Service. TIME notes that TM has imposed a barrier for TIME to locate its equipment at their exchanges and submarine cable landing stations on the basis that those are CNII locations. TIME is therefore not an access seeker at TM's premises. In addition, TIME submitted that TM exerts its dominance and strong bargaining power to refuse to classify the act of installing their equipment at TIME's exchanges as network co-location and thereby avoids the additional costs of acquiring a Network Co-Location Service, while other operators have to co-locate.
- 11.82 U Mobile submitted that it acquires the Network Co-Location Service and finds that it offers the necessary functionality with no major issues.

MCMC Assessment

- 11.83 The MCMC considers that there remains a strong rationale for including the Network Co-Location Service in the Access List. Several stakeholders have submitted that they acquire the service and that it is an essential input for providing other wholesale or retail services. No stakeholder has suggested removing the Network Co-Location Service from the Access List or amending the service description in a manner that materially reduces the regulated scope of the service.
- 11.84 Several stakeholders have mentioned that they face difficulties in accessing the Network Co-Location Service, with access providers allegedly denying access on the basis that the relevant co-location facilities are in a high-security area or are part of the CNII. Moreover, some stakeholders have mentioned an inability to co-locate equipment at an operator's premises in their responses relating to other Access List services (see, for example, TIME's submission summarised at paragraph 9.22 above).
- 11.85 As noted above in relation to other services, the MCMC reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.
- 11.86 The MCMC notes that the Network Co-Location Service does not include access to co-location at end user premises, including co-location within buildings that are beyond the public network boundary. The Network Co-Location Service only comprises co-location services provided at an exchange or another POI, such as a submarine cable landing station. Accordingly, Fiberail's comments about exclusivity arrangements between building owners/developers and operators are beyond the scope of the Network Co-Location Service and, more broadly, of access regulation under the Access List.
- 11.87 In relation to DiGi's submission that access to the Network Co-Location Service at submarine cable landing stations is "prohibitive", the MCMC invites DiGi to provide detailed information about the barriers to access that it faces and how amendments to the Access List could address these barriers.
- 11.88 In relation to the submission by Maxis that access routes comprising of poles, ducts and manholes should be added to the Access List to allow operators to effectively deploy infrastructure to connect to co-location spaces, the MCMC discusses whether access to PDM should be regulated in Chapter 17 of Part C of this PI Paper.
- 11.89 Finally, in relation to TIME's submission that TM is refusing to acquire a Network Co-Location Service from TIME even though it is installing its equipment at TIME exchanges, the MCMC makes the following observations:
- (a) if TIME is not able to take advantage of regulated terms of access for services listed in the Access List (whether as a seller or a buyer)

after trying to resolve any impediments directly with the access provider, it should lodge a complaint to the MCMC in accordance with section 69 of the CMA; and

- (b) to the extent that the situation described above arises due to a commercial arrangement between TIME and TM, which allows TM to co-locate its equipment at TIME exchanges without acquiring a Network Co-Location Service, this arrangement is beyond the jurisdiction of the access regime administered by the MCMC.

MCMC Preliminary View

11.90 The MCMC’s preliminary view is that the Network Co-Location Service should remain in the Access List without any modification.

Questions

Question 26: Do you acquire the Network Co-Location Service as an access seeker or supply the Network Co-Location Service as an access provider?

Question 27: Are you experiencing any difficulty in acquiring or supplying the Network Co-Location Service? If not, why not? (Please provide details).

12 Wholesale fixed broadband and data market (business / residential)

Introduction

12.1 The wholesale fixed broadband and data market comprises the following facilities and services listed in the Access List:

Markets	Access List facilities and services
National market for wholesale access to fixed broadband and data services (including both business-grade and residential-grade services)	<ul style="list-style-type: none"> ▪ Digital Subscriber Line Resale Service ▪ HSBB Network Service with QoS ▪ HSBB Network Service without QoS

Market Description

12.2 In its Market Definition Analysis, the MCMC defined a national market for wholesale access to fixed broadband and data services.⁷¹ This market comprises all wholesale Internet access services which allow for data transmission rates of 256 Kbps or greater at a fixed end user location, and includes services delivered over all fixed technologies, including:

⁷¹ Market Definition Analysis, p. 34.

- (a) DSL, including ADSL and Very High Bit Rate Digital Subscriber Line, also known as VDSL2;
- (b) cable networks;
- (c) FTTH, including TM's HSBB Network;
- (d) fixed wireless; and
- (e) satellite.

12.3 The market has been defined in a technology neutral way, on the basis that the different fixed technologies are substitutable and that speed and quality levels tend to be more significant differentiating factors rather than the underlying technology used to provide the service.⁷² However, the market excludes broadband services provided to a mobile end user location, through technologies such as LTE or WiMAX. As the MCMC explained in its Market Definition Analysis, mobile broadband services are not sufficiently close substitutes for fixed broadband services.⁷³

12.4 The wholesale fixed broadband and data market includes only those fixed broadband services sold for wholesale purposes (i.e. to enable the access seeker to provide a retail fixed broadband service to an end user). This wholesale market includes both residential-grade and business-grade services. Unlike the retail level of the fixed broadband markets, where the MCMC defined separate business-grade and residential-grade markets, at the wholesale level, both business-grade and retail-grade services are comprised within the same market. Given that wholesale services provide a greater degree of control to the retail service provider over functionality, pricing, access speeds and QoS, the residential/business segmentation that appears in the retail market is not as relevant in the wholesale market for fixed broadband services.

12.5 In the Market Definition Analysis, the MCMC held that wholesale fixed broadband access services are not sufficiently substitutable for local access services (such as Line Sharing Service and ULL access or Full Access Service). This is because local access services, which sit at Layer 1 of the OSI model, provide access seekers with a much greater degree of control and configurability (while also requiring greater investment) than wholesale fixed broadband access services, which sit at Layers 2 and 3 of the OSI model.⁷⁴ Accordingly, the local access services exist in a separate market to the wholesale fixed broadband market, and are discussed in Chapter 10 above.

12.6 Although, from the retail perspective, broadband demand is specific to the location at which it is required, the MCMC looked at supply-side factors to determine in its Market Definition Analysis that the fixed broadband markets were national markets. This is particularly the case at the wholesale level of

⁷² Market Definition Analysis, pp. 28 and 32.

⁷³ Market Definition Analysis, p. 28.

⁷⁴ Market Definition Analysis, pp. 33-34.

the market, where retail service providers make their commercial decisions on a national scale.

Competition Analysis

- 12.7 In the 2008 Access List Review, the MCMC held that the “fixed broadband market” was not competitive and was dominated by TM, with other providers reselling TM’s services to end users.
- 12.8 The 2008 Access List Review discussion focused on TM’s very high share of the retail market. The fact that other providers were reselling TM services to end users suggests that, at the wholesale level of the market, TM’s dominance was even greater than at the retail level.
- 12.9 The 2008 Access List Review considered that “the high costs to deploy the [broadband] networks across the country, contribute to high barriers to entry”, preventing new entrants or competitors from engaging in facilities-based competition (i.e. the rollout of a fixed-line network to compete with TM in the wholesale market).⁷⁵
- 12.10 At the time of the 2008 Access List Review, the MCMC foreshadowed the possibility of competition through alternative broadband technologies, noting that “[i]t may be that over time, other wireless technologies present a competitive constraint to fixed broadband, such as LTE”.⁷⁶ However, as outlined above at paragraph 12.3, the Market Definition Analysis released in September 2014 found that, even at this time, mobile broadband services are not sufficiently substitutable with fixed broadband services and are not in the same market. Accordingly, they cannot be said to presently impose sufficient competitive constraints on services in the fixed broadband market.
- 12.11 The MCMC does not consider that there have been significant changes to the state of competition since the 2008 Access List Review. Indeed, in the MCMC’s recent Assessment of Dominance, TM was found to be dominant in the wholesale fixed broadband market.⁷⁷ This finding was made not only because of TM’s high market share, but also due to high barriers to entry, high switching costs for end users and pricing structures in the market.⁷⁸

Digital Subscriber Line Resale Service

Description

- 12.12 The Digital Subscriber Line Resale Service is currently described in the Access List as follows:⁷⁹

(20) Digital Subscriber Line Resale Service

- (a) *The Digital Subscriber Line Resale Service is a Service for the provision of connectivity for the carriage of certain communications (being data in digital form*

⁷⁵ 2008 Access List Review PI Paper, p. 173.

⁷⁶ 2008 Access List Review PI Report, p. 124.

⁷⁷ Dominance Assessment PI Report, p. 49.

⁷⁸ Dominance Assessment PI Report, p. 49.

⁷⁹ Commission Determination on Access List, Determination No. 1 of 2005.

and conforming to Internet Protocols) to customer equipment insofar as it relates to IP addresses directly and indirectly connected to the Access Provider's network. The Digital Subscriber Line Resale Service uses Digital Subscriber Line technology for carriage over the Communications Wire between the Network Boundary at an end user's premises and the Customer Access Module of the Access Provider's network.

- (b) The Digital Subscriber Line Resale Service is limited to the wholesale provision of the digital subscriber line service ordinarily provided by the Access Provider to end users.

12.13 The scope of the Digital Subscriber Line Resale Service is illustrated in the diagram below:

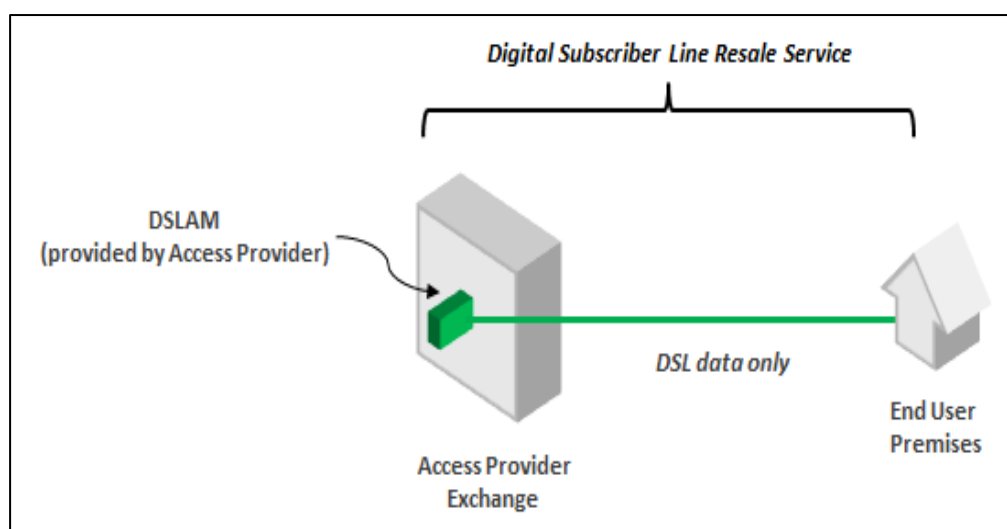


Figure 14 – Scope of Digital Subscriber Line Resale Service

Submissions Received

- 12.14 Altel submitted that it does not acquire the Digital Subscriber Line Resale Service because Altel is of the opinion that services provided over copper lines are redundant and outdated.
- 12.15 Celcom submitted that it does not acquire the Digital Subscriber Line Resale Service, and noted that to keep up with increasing bandwidth demands, operators are migrating from copper-based telephony and cable television networks to fibre-based networks which can deliver higher speeds.
- 12.16 DiGi submitted that because the Digital Subscriber Line Resale Service is confined to the copper network, it is unattractive to access seekers. Instead DiGi is of the view that HSBB should be made available in the access loop to ensure competition in the provision of high speed data services to end users.
- 12.17 Maxis submitted that it does not acquire Digital Subscriber Line Resale Service, although TM offers a wholesale DSL to Maxis which includes transmission back to a Maxis Technical Operating Centre. Maxis also submitted that the ladder of investment suggested in the MCMC's informal questionnaire (e.g. moving from Digital Subscriber Line Resale Service to Bitstream Services by investing in its own DSLAM infrastructure) is not

possible because regulated access services have not been offered in the first place. Maxis also suggested that it does not acquire this service due to:

- (a) high wholesale prices (and possible margin squeeze);
- (b) minimum subscription number of ports;
- (c) co-location at POIs not being permitted; and
- (d) bundling of services.

12.18 In respect of whether there is an effect on competition as the ANE services and Digital Subscriber Line Resale Service are not regulated at HSBB areas, Maxis responded that a customer cannot be forced to upgrade to a retail service that uses the HSBB Network while its premises is connected to an existing copper service. Hence, the exclusion of the Digital Subscriber Line Resale Service in HSBB areas essentially removes competition to the detriment of customers. By way of example Maxis explained that if there are 3 million DSL homes passed and 1.6 million HSBB homes, this means a large subset of customers are captive subscribers of the incumbent without facing competition from other operators.

12.19 TM submitted that all the unbundled services, including this service, are not sought by access seekers and should be removed from the Access List. TM explained that it incurs material costs in offering such services, even when there is no take-up, because BSS/OSS is expensive without the optimal number of subscribers.

12.20 YTL submitted that this service should remain in the Access List and issues such as QoS should be clarified and resolved.

MCMC Assessment

12.21 The MCMC considers that there remains a strong rationale for maintaining the Digital Subscriber Line Resale Service in the Access List in its current form.

12.22 Several stakeholders have expressed the view that the Digital Subscriber Line Resale Service, which is delivered over legacy copper networks, is outdated and that operators are increasingly moving to fibre-based networks.

12.23 Nevertheless, the MCMC considers that wholesale access to the Digital Subscriber Line Resale Service remains essential in order to promote competition in the retail fixed broadband and data market, and that including the service in the Access List is therefore in the long-term benefit of end users.

12.24 In areas where the HSBB Network has not yet been rolled out, the Digital Subscriber Line Resale Service provides a key entry point for operators seeking to compete at the retail level of the fixed broadband and data market. In the absence of acquiring a Digital Subscriber Line Resale Service

(at Layer 3 of the OSI model), the only other option that operators have is to acquire either:

- (a) a Bitstream Service (at Layer 2); or
- (b) one of the local access services, such as the Full Access Service or Line Sharing Service (at Layer 1).

12.25 However, as discussed in paragraph 12.5 above, wholesale services in the fixed broadband and data market, including the Digital Subscriber Line Resale Service, are not substitutable with any of the local access services that are supplied at lower layers in the OSI model. These services exist in a separate market for access to facilities and upstream network elements in the access network (discussed in Chapter 11).

12.26 Accordingly, in non-HSBB areas, there remains a clear basis for regulating the Digital Subscriber Line Resale Service.

12.27 More generally, the MCMC considers that maintaining the Digital Subscriber Line Resale Service has broader pro-competitive effects in the fixed broadband and data market, including once the HSBB Network is rolled out. Regulating access to the Digital Subscriber Line Resale Service allows access seekers to build up a user base in areas not currently served by the HSBB Network, which will then allow them to compete more effectively in the retail broadband and data market once the HSBB Network is rolled out to those areas.

12.28 This is particularly the case given that end users are often subject to long-term retail contracts for broadband and data services are therefore likely to use the same service provider for retail HSBB services as for copper-based retail broadband services delivered before HSBB deployment in that area. Accordingly, unless access seekers are able to build a meaningful user base in respect of services provided over legacy copper networks, competition will be hindered even once end users transition from the copper network to the HSBB Network.

12.29 In response to the submission by several stakeholders that the Digital Subscriber Line Resale Service should be expanded to include HSBB Network services, the MCMC notes that the Digital Subscriber Line Resale Service is necessarily technology-specific. DSL technology can only be used to transmit data over the legacy copper network: it is not technically possible for DSL technology to be used over optical fibre and therefore over the HSBB Network.

12.30 The HSBB Network Service with QoS and HSBB Network Service without QoS already provide wholesale access in respect of the HSBB Network (at Layer 2). Moreover, as discussed in Chapter 19 below, the MCMC also proposes to include Layer 3 HSBB Network services in the Access List. These services would provide a form of regulated access to the HSBB Network that is equivalent to the Digital Subscriber Line Resale Service in respect of the copper network.

12.31 In response to TM's submission that the Digital Subscriber Line Resale Service is not sought by access seekers, and therefore ought to be removed from the Access List, the MCMC points out that at least one access seeker has submitted that the lack of take-up for this service is due to TM's non-compliance with the SAOs and its restrictive terms of access. On this basis, the MCMC is not convinced by TM's submission that low take-up of the service suggests an intrinsic lack of demand or interest by access seekers.

12.32 Nevertheless, in response to submissions that access seekers face barriers in accessing the Digital Subscriber Line Resale Service, the MCMC reiterates that:

- (a) if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA; and
- (b) pricing matters are outside the scope of this inquiry, as outlined in paragraph 1.10 above, although charging wholesale prices that prevent effective retail competition (margin squeeze) may potentially constitute anti-competitive conduct in contravention of section 133 of the CMA and stakeholders can refer complaints of alleged anti-competitive conduct to the MCMC in accordance with section 69 of the CMA.

12.33 Moreover, in relation to Maxis' submission that it faces barriers in gaining access to co-location at POIs, the MCMC points out that co-location is not required in order to acquire the Digital Subscriber Line Resale Service. The Digital Subscriber Line Resale Service is a Layer 3 resale service where the access provider (and not the access seeker) supplies all necessary active equipment at the exchange end. Accordingly, the access seeker does not require physical access to co-location at a POI for the purposes of accessing the Digital Subscriber Line Resale Service.

MCMC Preliminary View

12.34 The MCMC's preliminary view is that the Digital Subscriber Line Resale Service should remain in the Access List without any modifications.

Questions

Question 28: Do you acquire the Digital Subscriber Line Resale Service as an access seeker or supply the Digital Subscriber Line Resale Service as an access provider?

Question 29: Are you experiencing any difficulty in acquiring or supplying the Digital Subscriber Line Resale Service? If not, why not? (Please provide details).

HSBB Network Service with QoS

Description

12.35 The HSBB Network Service with QoS is currently described in the Access List as follows:⁸⁰

(25) HSBB Network Service with QoS

- (a) *The HSBB Network Service with QoS is an access and transmission Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at a Customer's premises and a POI at the Access Seeker's premises, where in respect of the service:*
- (i) *The customer equipment is directly connected to an Access Provider's High-Speed Broadband Network;*
 - (ii) *The Access Seeker selects the bit rate;*
 - (iii) *The Access Seeker selects the QoS Class;*
 - (iv) *The Access Seeker selects the Contention Ratio; and*
 - (v) *The Access Seeker assigns the Customer with an IP address.*
- (b) *The HSBB Network Service with QoS includes shared splitting services, interfaces to operational support systems and network information. Nothing in this service description is intended to limit the number of concurrent HSBB Network Services with QoS acquired by an Access Seeker from an Access Provider associated with a single Customer. Further, an Access Seeker may acquire HSBB Network Service without QoS from an Access Provider associated with a Customer for which the Access Seeker is acquiring HSBB Network Services with QoS.*
- (c) *The HSBB Network Service with QoS shall be supplied to the Access Seeker as follows:*
- (i) *At pre-defined speeds which are capable of providing the bit rates specified below, as selected by the Access Seeker:*

Bit rate		Note and example applications
Downstream	Upstream	
Unconstrained	Unconstrained	Access Provider does not constrain the speed of the service itself but would provide a "raw" network service which the Access Seeker rate shapes (that is, determines the speed). This option is only available with QoS Class 5.
135 kbps	135 kbps	VoIP service
1 Mbps	256 kbps	Entry level broadband access service
6 Mbps	1 Mbps	Mid level broadband access service

⁸⁰ Added to the Access List by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

Bit rate		Note and example applications
Downstream	Upstream	
10 Mbps	1 Mbps	Full high speed broadband access service

(ii) In accordance with the following classes (each a "QoS Class"), as selected by the Access Seeker:

QoS Class	Latency	Jitter	Packet Loss	Notes and example applications
0	≤ 100 ms	≤ 50 ms	≤ 10 ⁻³	Real-time, jitter sensitive, high interaction – VoIP
1	≤ 400 ms	≤ 50 ms	≤ 10	Real-time, jitter sensitive, interactive – IPTV
2	≤ 100 ms	-	≤ 10	Transaction data, highly interactive – signalling
3	≤ 400 ms	-	≤ 10	Transaction data, interactive – business data
4	≤ 1 s	-	≤ 10	Low loss only (short transactions, bulk data) – video streaming
5	-	-	-	Best efforts – traditional applications of default IP networks

(iii) At the following contention ratios which correspond to the QoS Class selected by the Access Seeker in paragraph (ii):

Contention Ratio		Available with QoS Class
Downstream	Upstream	
1:1	1:1	0, 1, 2
1:1	10:1	1
10:1	10:1	3, 4
20:1	20:1	3, 4, 5

12.36 The scope of the HSB Network Service with QoS is illustrated in the diagram below:

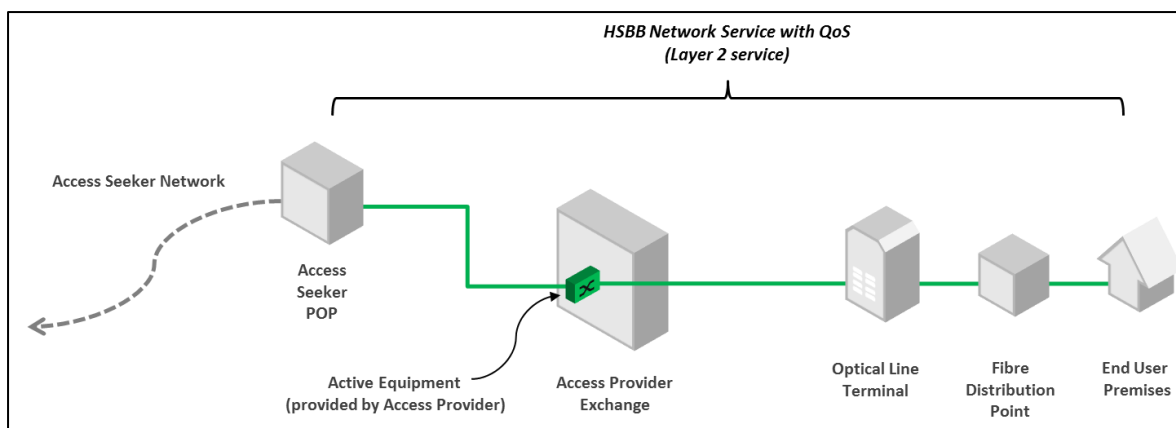


Figure 15 – Scope of HSBB Network Service with QoS

Submissions Received

12.37 Altel submitted that it does not currently acquire any HSBB services, but noted that it is known that TM defined its HSBB service offerings differently to the Access List. Altel submitted that the definition of HSBB services in the Access List should be improved and that TM should supply the service set out in the Access List.

12.38 Celcom submitted that it has obtained access to TM’s HSBB Network as a result of commercial negotiation, but requested that the MCMC add the service that TM provides to the Access List. Celcom explained that the HSBB Network services are a usable input to its FTTH product; however some operational issues have arisen during the implementation process. In particular, Celcom is seeking:

- (a) access to all serviceable addresses, not just ‘homes passed’ information;
- (b) seamless integration with the TM Portal to allow a single provisioning order;
- (c) permission for a single installer working for Celcom to perform all installation and restoration activities;
- (d) up to 99% accuracy of serviceable addresses when benchmarked against TM’s Unifi serviceable address list; and
- (e) upgrades of all port full requests within 14 days.

12.39 Celcom requested that the MCMC amend the Access List to cover all of TM’s HSBB services – High-Speed Broadband Access (**HSBA**), High-Speed Broadband Transmission (**HSBT**) and High-Speed Broadband Connection (**HSBC**). In addition, Celcom submitted that access seekers should be allowed to build in-span interconnections. Currently, TM only allows full-span interconnection. Finally, in respect of whether there is an effect on competition as ANE services and Digital Subscriber Line Resale Service are not regulated in HSBB areas, Celcom also expressed the view that exclusion of copper-based services from the Access List will have minimal effect on

competition between broadband services as broadband services require high speed capacity.

12.40 DiGi submitted that it does not seek or provide HSBB services for resale, but requires the HSBB Network Service with QoS at layer 2 to extend coverage via deployment of Femtocells and other Hetnet technologies. DiGi submitted that HSBB services at layer 2 can provide connectivity between these elements. However, DiGi submitted that TM has indicated that its HSBB service is not offered at layer 2. This provides functionality to providers offering resale broadband services, but not to mobile operators like DiGi. DiGi is of the opinion that because the HSBB Network rolled out by TM is partially funded by the Government, there should be a requirement for HSBB services to be accessible at layer 2. DiGi requested that the MCMC ensure that HSBB services are cost efficient and where possible that lower prices are implemented. DiGi's experience has been that prices comparable to international benchmarks are only available to access seekers willing to make significant volume, capacity and tenure commitments. DiGi also submitted that POIs should be made available at identified boundaries of each residential area.

12.41 Maxis submitted that it does not acquire the HSBB Network Service with QoS as it is not offered by the incumbent operator. However, Maxis procures a commercial service which is essentially a layer 3 service bundled with transmission from TM. This service does not include a transmission component, as the parties have agreed to an arrangement to meet in a manhole outside the exchange. Maxis explained that it did not acquire the HSBB Network service in the Access List because it was informed that TM's service is technically different to that described in the Access List. As a result of acquiring the existing service, Maxis submitted that it has faced the following implications:

- (a) higher cost due to bundling with transmission;
- (b) no differentiation at layer 3 (which makes the offering comparable to the Unifi retail service);
- (c) the existing non-binding Service Level Agreements (**SLA**) in the Operations and Maintenance (**O&M**) Manual of the HSBA Agreement do not align with the Mandatory Standard for QoS for Broadband, which causes difficulty for Maxis in meeting the parameters of the aforementioned Mandatory Standard;
- (d) prohibitively expensive unicast class of service, which means that offering video on demand is becoming commercially unfeasible; and
- (e) over-dimensioning of capacity due to contention rates which are lower than necessary, for instance the voice contention rate offered is 1:4 although Maxis' actual use is below 10% of that amount.

12.42 Maxis urged the MCMC to redefine the Access List definition of the HSBB Network Service with QoS to cover the types of service that can be technically provided by the incumbent. This will ensure that the incumbent

cannot use a technical reason to refuse access requests. In particular, Maxis suggests that the definition should cover layer 2 and layer 3 services and include different grades of services for each of these. A generic transmission definition is not sufficient as different services require different grades of service (e.g. business-grade services require different QoS to consumer-grade services). Maxis also submitted each access seeker should have the option to access each of TM's POIs and to co-locate directly if the access seeker wishes to provide its own backhaul.

- 12.43 Maxis submitted that the HSBB Network is not a substitute for traditional communications services.
- 12.44 An operator requested that the MCMC amend the definition of HSBB Network services in the Access List.
- 12.45 Packet One submitted that it acquires the HSBB Network Service with QoS as defined in the Access List and has not identified any impediments to acquiring it. Packet One has not proposed any changes to the service definition or scope of services included.
- 12.46 REDtone submitted that it acquires HSBB Network Service with QoS and experiences mainly operational limitations as the access provider limits contention and provides slow installation. In REDtone's opinion, this is an entry to market issue as the provider is also serving the retail market. REDtone also noted that the "HSBB price" is much lower than its previous pricing structure, affecting its business. REDtone submitted that it considers HSBB a good substitute to traditional communications.
- 12.47 TM submitted that it is a provider of HSBA, HSBT and HSBC services and is not aware of any impediments to access seekers gaining access to the HSBB Service with QoS. TM noted that some access seekers sought retail-minus pricing for certain services, and that this is not or should not be provided. TM claimed that it faced an access deficit. TM also claimed that it has never received any forecasts from access seekers for facilities and/or services offered by TM and that the commercial services it offers have sufficiently satisfied the operators' requirements for broadband access. For this reason, TM submitted that no changes to the service description are required.
- 12.48 In addition, TM submitted that access to HSBB services is covered comprehensively by the Public Private Partnership (**PPP**) Agreement between TM and the Government of Malaysia, as well as the Ministerial Direction on High-Speed Broadband. These require TM to make HSBA, HSBC and HSBT available on a commercially negotiated basis. TM submitted that the imposition of additional access obligations is contrary to the provisions and spirit of the Agreement and Direction, which TM submitted are akin to an access undertaking. TM submitted that those documents were intended to form a complete schema for HSBB services and comprehensively address all necessary conditions involved. TM provided evidence of five agreements entered into for HSBA and HSBT services to demonstrate that there is neither evidence of market failure nor a need for additional mandated access

obligations. Therefore, TM's submission is that no amendments should be made to the Access List.

- 12.49 TM submitted that it does not currently acquire HSBB services but is very interested in seeking broadband service on non-fixed technology in the near future.
- 12.50 TIME submitted that it does not acquire HSBB services from TM because the prices and terms and conditions of the service are very unattractive and the guarantee on QoS leaves much to be desired. TIME suggested that the MCMC conduct studies into the policies and strategies implemented overseas in order to promote broadband adoption. The study should be holistic and consider the demand and supply sides.
- 12.51 U Mobile submitted that in its view the HSBB Network is very much limited to backhaul only for selected areas within Zone 1 (high economic impact areas and industrial areas) and Zone 2 (urban, semi-urban and rural). U Mobile noted that as part of the MCMC's conditions for LTE 2600MHz rollout, operators are required to use fibre backhaul. For this reason, U Mobile submitted that it is crucial that HSBB Network backhaul be added to the Access List. Backhaul pricing is not competitive at this time. U Mobile is planning to acquire HSBB services in the future to support its move towards quad play but does not currently acquire them as the service is not regulated and it has not prevailed in commercial negotiations.

MCMC Assessment

- 12.52 The MCMC considers that the rationale for listing the HSBB Network Service with QoS remains. As fibre-based networks increasingly replace copper networks, it is important to ensure that access seekers have appropriate access to the new networks at multiple layers of the network stack to allow access seekers to progressively grow their customer base, invest in network elements and move up the ladder of investment, resulting in greater service innovation and competition in the market over time.
- 12.53 The MCMC notes that a number of access seekers have raised issues related to TM, as an access provider, in failing to comply with the SAOs and provide all service elements and operational support necessary for access seekers to effectively acquire HSBB Network Service with QoS at the wholesale level and compete in downstream retail markets. Access seekers have broadly made two types of submissions regarding such difficulties:
- (a) that the MCMC should require TM to comply with the SAOs in respect of the HSBB Network Service with QoS and amend the service description if required to facilitate effective supply; and
 - (b) that the MCMC should list a layer 3 equivalent of the HSBB Network Service with QoS in the Access List.
- 12.54 Regarding the first submission, the MCMC invites detailed submissions on what changes could be made to the service description for the existing HSBB Network Service with QoS to clarify or amend the service to better reflect

the service provided to, or required by, access seekers. The MCMC also reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.

12.55 Regarding the second submission, the MCMC proposes to list a new layer 3 service, which is discussed in Chapter 19 of this PI Paper.

12.56 The MCMC notes that some access seekers have raised the possibility of TM discriminating in favour of its retail arm over other access seekers. If such behaviour is occurring in breach of the SAOs to provide access to all access seekers on an equivalent basis and on equitable and non-discriminatory terms, access seekers should submit a complaint to the MCMC in accordance with section 69 of the CMA.

12.57 In response to TM's submission on the HSBB Network Service with QoS, the MCMC notes that:

- (a) while TM supplies its layer 3 HSBA, HSBT and HSBC services commercially, it remains obliged to supply the HSBB Network Service with QoS under the Access List and the CMA. The MCMC's original rationale for regulating the HSBB Network Service with QoS remains as described in this PI Paper;
- (b) while the MCMC acknowledges that the PPP Agreement between TM and the Government of Malaysia imposes certain contractual obligations on TM, it does not preclude the operation of the CMA or the Access List, and TM remains obliged to supply Access List services in accordance with the SAOs;
- (c) if TM's PPP Agreement with the Government of Malaysia has led to particular network architecture choices which technologically prevent TM from supplying the HSBB Network Service with QoS, TM is invited to submit proposed amendments to the service description for the HSBB Network Service with QoS, but following informal discussions and additional information provided by TM, the MCMC remains of the view that there is no fundamental technological barrier to TM complying with the SAOs;
- (d) there are clearly impediments to access seekers acquiring the HSBB Network Service with QoS as set out in the submissions above and the MCMC does not agree that the commercial services offered by TM have sufficiently satisfied operators' requirements for broadband access. Similarly, the MCMC does not consider that agreements signed for HSBA and HSBT services support TM's contention that there is no evidence of market failure or the need for additional mandated access obligations – indeed a number of the access seekers who have signed such agreements have submitted that they still desire for TM to supply the layer 2 Access List service;

- (e) the pricing of the HSBB Network Service with QoS or any other service is outside the scope of this Public Inquiry;
- (f) TM's evident failure to provide accurate and usable service qualification information to access seekers would presumably make it difficult for access seekers to forecast service requirements, but in any event TM is obliged to offer facilities and/or services under the SAOs regardless of whether access seekers supply forecasts.

MCMC Preliminary View

12.58 Subject to further comments from both access seekers and access providers regarding potential amendments to the service description for the HSBB Network Service with QoS, the MCMC proposes the following amendments as clarifications, corrections and to update the service description to reflect the addition of a layer 3 service as discussed in Chapter 19. Words that appear in underlined red text have been added relative to the existing description, while words that appear in ~~strikethrough text~~ are proposed to be deleted.

(25) Layer 2 HSBB Network Service with QoS

- (a) *The Layer 2 HSBB Network Service with QoS is an access and transmission Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at a Customer's premises and a POI at the Access Seeker's premises, where in respect of the service:*
 - (i) *The customer equipment is directly connected to an Access Provider's High-Speed Broadband Network;*
 - (ii) *The Access Seeker selects the bit rate;*
 - (iii) *The Access Seeker selects the QoS Class;*
 - (iv) *The Access Seeker selects the Contention Ratio; and*
 - (v) *The Access Seeker assigns the Customer with an IP address.*
- (b) *The Layer 2 HSBB Network Service with QoS includes shared splitting services, interfaces to operational support systems and network information.*
- ~~(c) Nothing in this service description is intended to limit:~~
 - ~~(i) the number of concurrent Layer 2 HSBB Network Services with QoS acquired by an Access Seeker from an Access Provider associated with a single Customer;~~
 - ~~(ii) Further, an Access Seeker may acquire HSBB Network Service without QoS from an Access Provider associated with a Customer for which the Access Seeker is acquiring and the HSBB Network Services with QoS concurrent acquisition of Layer 2 HSBB Network Service with QoS and other HSBB Network Services by an Access Seeker from an Access Provider associated with a single Customer; or~~

(iii) the number of HSBB Network Services by a single Access Seeker (or permit an Access Provider to require an Access Seeker to acquire any minimum or maximum number of HSBB Network Services as a condition of an Access Provider supplying the Layer 2 HSBB Network Service with QoS).

(d) The Layer 2 HSBB Network Service with QoS shall be supplied to the Access Seeker as follows:

(i) At pre-defined speeds which are capable of providing the bit rates specified below, as selected by the Access Seeker:

Bit rate		Note and example applications
Downstream	Upstream	
Unconstrained	Unconstrained	Access Provider does not constrain the speed of the service itself but would provide a "raw" network service which the Access Seeker rate shapes (that is, determines the speed). This option is only available with QoS Class 5.
135 kbps	135 kbps	VoIP service
1 Mbps	256 kbps	Entry level broadband access service
6 Mbps	1 Mbps	Mid level broadband access service
10 Mbps	1 Mbps	Full high speed broadband access service
[Specific bit rate increments between 10/1 Mbps and 100/10 Mbps to be determined based on stakeholder feedback]		
100 Mbps	10 Mbps	Maximum speed broadband access service

(ii) In accordance with the following classes (each a "QoS Class"), as selected by the Access Seeker:

QoS Class	Latency	Jitter	Packet Loss	Notes and example applications
0	≤ 100 ms	≤ 50 ms	≤ 10 ⁻³	Real-time, jitter sensitive, high interaction – VoIP
1	≤ 400 ms	≤ 50 ms	≤ 10 ⁻³	Real-time, jitter sensitive, interactive – IPTV
2	≤ 100 ms	-	≤ 10 ⁻³	Transaction data, highly interactive – signalling
3	≤ 400 ms	-	≤ 10 ⁻³	Transaction data, interactive – business data
4	≤ 1 s	-	≤ 10 ⁻³	Low loss only (short transactions, bulk data) – video streaming
5	-	-	-	Best efforts – traditional applications of default IP networks

(iii) At the following contention ratios which correspond to the QoS Class selected by the Access Seeker in paragraph (ii):

Contention Ratio		Available with QoS Class
Downstream	Upstream	
1:1	1:1	0, 1, 2
1:1	10:1	1
10:1	10:1	3, 4
20:1	20:1	3, 4, 5

Questions

Question 30: Do you acquire the HSBB Network Service with QoS as an access seeker or supply the HSBB Network Service with QoS as an access provider?

Question 31: Are you experiencing any difficulty in acquiring or supplying the HSBB Network Service with QoS? If not, why not? (Please provide details).

Question 32: Could any changes be made to the HSBB Network Service with QoS service description to better facilitate its supply? (Please provide details).

Question 33: If a Layer 3 HSBB Network Service is added to the Access List, should the existing (Layer 2) HSBB Network Service with QoS be retained? Please provide reasons for your answer, including whether you would provide or acquire the (Layer 2) HSBB Network Service with QoS (as applicable).

Question 34: Do you have any comments on the proposed amendments to the service description for the (Layer 2) HSBB Network Service with QoS?

Question 35: If the (Layer 2) HSBB Network Service with QoS is amended to include new bit rates as proposed above, are there particular bit rates or increments of bit rates at which the service should be supplied? Please provide reasons including your ability to supply at particular bit rates or increments as an access provider, or your business need for particular bit rates or increments as an access seeker.

HSBB Network Service without QoS

Description

12.59 The HSBB Network Service without QoS is currently described in the Access List as follows:⁸¹

(26) HSBB Network Service without QoS

The HSBB Network Service without QoS is an access Facility and/or Service (including transmission only to the POI) for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) on a best efforts basis and delivered over the High-Speed Broadband Network with a pre-defined Contention Ratio and delivered to a POI which is co-located with an aggregation router or other aggregation device, and where the bit rate is controlled by the Access Seeker.

12.60 The scope of the HSBB Network Service without QoS is illustrated in the diagram below:

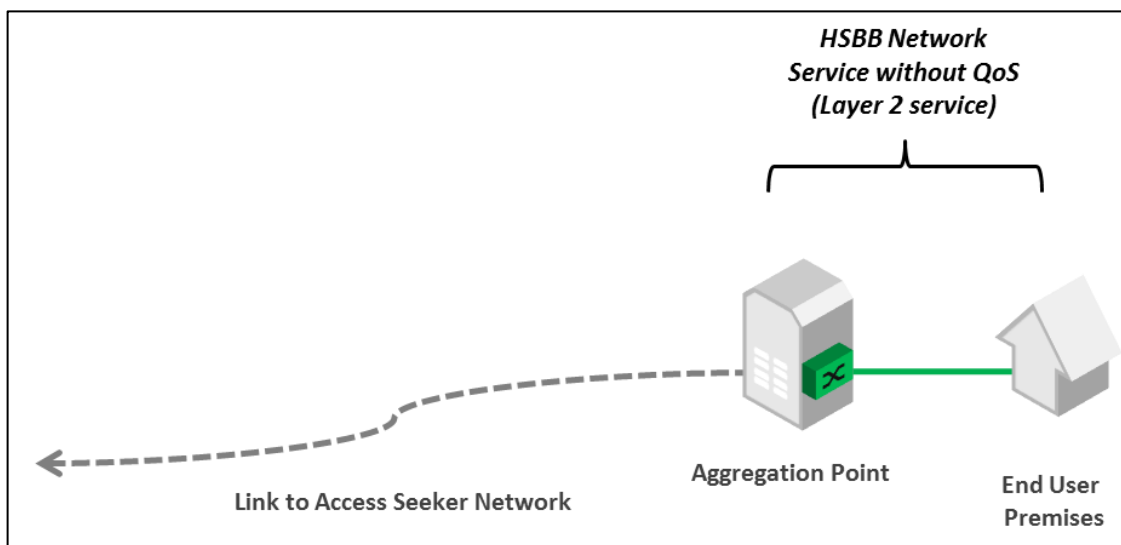


Figure 16 – Scope of HSBB Network Service without QoS

Submissions Received

12.61 Altel's submission expressed its opinion that given the broadband market today, HSBB Network Service without QoS is no longer relevant as the QoS should not be compromised in order to realise the aspirations of the National Broadband Plan.

⁸¹ Added to the Access List by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

12.62 As outlined in paragraph 12.38 above, Celcom submitted that it has obtained access to TM's HSBB Network as a result of commercial negotiation, but requested that the MCMC add the service that TM provides to the Access List. Celcom explained that the HSBB Network services are a usable input to its FTTH product; however some operational issues have arisen during the implementation process. In particular, Celcom is seeking:

- (a) access to all serviceable addresses, not just 'homes passed' information;
- (b) seamless integration with the TM Portal to allow a single provisioning order;
- (c) permission for a single installer working for Celcom to perform all installation and restoration activities;
- (d) up to 99% accuracy of serviceable addresses when benchmarked against TM's Unifi serviceable address list; and
- (e) upgrades of all port full requests within 14 days.

12.63 Celcom requested that the MCMC amend the Access List to cover all of TM's HSBB services – HSBA, HSBT and HSBC. In addition, Celcom submitted that access seekers should be allowed to build in-span interconnections. Currently, TM only allows full-span interconnection. Celcom also expressed the view that exclusion of copper based services from the Access List will have a minimal effect on competition in relation to broadband services.

12.64 Maxis submitted that it does not acquire the HSBB Network Service without QoS as it is not offered by the incumbent operator, although Maxis procures a commercial service which is essentially a layer 3 service hard bundled with transmission. Maxis explained that it did not acquire the HSBB Network Service without QoS as described in the Access List because it was informed that the TM service is technically different to the description in the Access List. As a result of acquiring the existing service from TM, Maxis submitted that it has faced the following issues:

- (a) higher cost due to bundling with transmission;
- (b) no differentiation at layer 3 (which makes the offering comparable to the Unifi retail service);
- (c) the existing non-binding SLAs in the O&M Manual of the HSBA Agreement do not align with the Mandatory Standard for QoS for Broadband, which causes difficulty for Maxis in meeting the parameters of the aforementioned Mandatory Standard;
- (d) prohibitively expensive unicast class of service, which means that offering video on demand is becoming commercially unfeasible; and
- (e) over dimensioning of capacity due to contention rates which are lower than necessary, for instance the voice contention rate offered is 1:4 although Maxis' actual use is below 10% of that amount.

- 12.65 Maxis urged the MCMC to redefine the Access List definition of the HSBB Network Service without QoS to cover the types of service that can be technically provided by the incumbent. This will ensure that the incumbent cannot use a technical reason to refuse access requests. In particular, Maxis suggested that the definition should cover layer 2 and layer 3 services and include different grades of services for each of these. A generic transmission definition is not sufficient as different services require different grades of service (e.g. business-grade services require different QoS to consumer-grade services). Maxis also submitted each access seeker should have the option to access each of TM's POIs and to co-locate directly if the access seeker wishes to provide its own backhaul.
- 12.66 Maxis submitted that the HSBB Network is not a substitute for traditional communications services.
- 12.67 As outlined in paragraph 12.47 above, TM submitted that it is a provider of HSBA, HSBT and HSBC services. TM noted that some access seekers sought retail-minus pricing for certain access services, and that this is not or should not be provided. TM claimed that it faced an access deficit. TM also claimed that it has never received any forecasts from access seekers for facilities and/or services offered by TM and that the commercial services it offers have sufficiently satisfied the operators' requirements for broadband access. For this reason, TM submitted that no changes to the service description are required.
- 12.68 An operator requested that the MCMC amend the definition of HSBB Network services in the Access List.
- 12.69 In addition, as outlined in paragraph 12.48 above, TM submitted that access to HSBB services is covered comprehensively by the PPP Agreement between TM and the Government of Malaysia, as well as the Ministerial Direction on High-Speed Broadband. These require TM to make HSBA, HSBC and HSBT available on a commercially negotiated basis. TM submitted that the imposition of additional access obligations is contrary to the provisions and spirit of the PPP Agreement and the Ministerial Direction, which TM submitted are akin to an access undertaking. TM submitted that those documents were intended to form a complete schema for acquiring HSBB services and comprehensively address all necessary conditions involved.
- 12.70 TM provided evidence of five agreements signed with other operators for HSBA and HSBT services to demonstrate that there is neither evidence of market failure nor a need for additional mandated access obligations. Therefore, TM's submission is that no amendments should be made to the Access List.
- 12.71 TM submitted that it does not currently acquire HSBB services but is very interested in seeking broadband service on non-fixed technology in the near future.
- 12.72 TIME submitted that it does not acquire HSBB services from TM because the prices and terms and conditions of the service are very unattractive and the guarantee on QoS leaves much to be desired. TIME suggested that the

MCMC conduct studies into the policies and strategies implemented overseas in order to promote broadband adoption. The study should be holistic and consider the demand and supply sides.

12.73 U Mobile submitted that in its view the HSBB Network is very much limited to backhaul only for selected areas within Zone 1 (high economic impact areas and industrial areas) and Zone 2 (urban, semi-urban and rural). U Mobile noted that as part of the MCMC's conditions for LTE 2600MHz rollout, operators are required to use fibre backhaul. For this reason, U Mobile submitted that it is crucial that HSBB Network backhaul is added to the Access List. Backhaul pricing is not competitive at this time. U Mobile is planning to acquire HSBB services in the future to support its move towards quad play but does not currently acquire them as the services are not regulated and U Mobile has not prevailed in commercial negotiations.

MCMC Assessment

12.74 As discussed throughout this PI Paper, the Access List is intended to facilitate competition for the long-term benefit of end users, where it would not otherwise be likely, by ensuring that operators have wholesale access to bottleneck facilities.

12.75 The HSBB Network Service without QoS was listed in the Access List in 2009, at a time when the development of high-speed broadband services in Malaysia and globally was still in its infancy and there was limited regulatory experience with the wholesale regulation of such services.

12.76 Since that time, the MCMC has reviewed and gained greater insight into the most appropriate settings for regulating wholesale access to high-speed broadband services in Malaysia, in light of the capabilities of access providers, the demands of access seekers, and the interests of promoting competition and the long-term interest of end users.

12.77 First, regarding access provider capabilities, TM, who (at least in the immediate future) would be the primary access provider of the HSBB Network Service without QoS, has cited technical hurdles in making this service available.

12.78 The MCMC has also conducted a regulatory review of regulated next generation access services which have been implemented globally in the period since the 2008 Access List Review. It has found that there are two particular aspects of the HSBB Network Service without QoS which are unusual in such regulated services:

- (a) the upstream network boundary of the HSBB Network Service without QoS, which is an aggregation router or other aggregation device (which is closer to the end consumer than the POI for the HSBB Network Service with QoS and the POI for the proposed Layer 3 HSBB Network Service, discussed below at Chapter 19, both of which are at or above the exchange); and

- (b) the requirement that the access seeker control the bit rate of the service.

- 12.79 TM's submissions, together with the MCMC's regulatory review of international developments in the regulation of next generation access networks both indicate that access provider capabilities are not well suited to support the regulation of an HSBB Network Service without QoS that requires interconnection at a point in the network below the exchange (i.e. closer to the end consumer) giving the access seeker control of active equipment, at this time.
- 12.80 Second, regarding access seeker demand, the lack of access seekers taking up the HSBB Network Service without QoS and access seekers' difficulty in acquiring access to the HSBB Network Service with QoS (which is an earlier step in the ladder of investment) indicates that it may not be appropriate to continue listing the HSBB Network Service without QoS. Acquiring the HSBB Network Service without QoS would require access seekers to build, or separately acquire, network access to the aggregation point at which they interconnect with an access provider to acquire the HSBB Network Service without QoS, essentially building out part of the access network.
- 12.81 At the present time, access seekers have generally favoured a move toward including a Layer 3 HSBB Network Service in the Access List, which is an approach that the MCMC supports, as discussed in Chapter 19. A Layer 3 HSBB Network Service is one step in the ladder of investment ahead of (Layer 2) HSBB Network Service with QoS and two steps ahead of (Layer 2) HSBB Network Service without QoS. Hence, this means that the (Layer 2) HSBB Service without QoS would require even more investment than the other two services.
- 12.82 Finally, to promote competition for the long-term benefit of end users, the MCMC has adopted a ladder of investment approach to listing services in the Access List. Given that the (Layer 2) HSBB Network Service without QoS only provides a link between the end user premises and an aggregation point below the exchange, it is only likely to be relevant for access seekers who have themselves made significant network investments and are therefore relatively far up the ladder of investment.
- 12.83 Access seekers' preference for listing Layer 3 HSBB Network services suggests a broader preference for the regulation of services at earlier steps on the ladder of investment. The MCMC considers that these market preferences are consistent with the MCMC's incremental approach to facilitating competition over time. The MCMC's assessment is that such facilitation may be best achieved by maintaining in the Access List a (Layer 2) HSBB Network Service with QoS as well as proposing the addition of a Layer 3 HSBB Network Service. Together, these two services can ensure effective access to the HSBB Network for access seekers and facilitate competition in the downstream retail fixed broadband and data market.
- 12.84 As access seekers progress on the ladder of investment in the future, and as technology progresses, there may be a rationale for re-regulating access to

a (Layer 2) HSBB Network Service without QoS. However, given the need for access regulation to be proportionate and carefully adapted to the realities of the market, the MCMC does not consider it appropriate to maintain the (Layer 2) HSBB Network Service without QoS in the Access List at this time.

12.85 The MCMC also considers that the principle of proportionate regulation requires that, given the difficulties that access providers might face in making the service available, there must be some likelihood of access seekers acquiring the service in the near future to justify the cost of continued regulation.

12.86 Consequently, the MCMC is considering removing the HSBB Network Service without QoS from the Access List, subject to submissions from access seekers.

MCMC Preliminary View

12.87 The MCMC's preliminary view is that the HSBB Network Service without QoS should be removed from the Access List because:

- (a) it is unlikely that any access provider will be in a position to supply it or any access seeker will be in a position to acquire it in the near future;
- (b) the MCMC considers that continuing to list the HSBB Network Service with QoS and newly listing a Layer 3 HSBB Network Service (as discussed in Chapter 19) is more likely to facilitate competition on HSBB Networks in the immediate future; and
- (c) it is consistent with the principle of proportionate regulation to remove the HSBB Network Service without QoS from the Access List where competition and the long-term benefit of end users can be best achieved by regulating access to bottleneck facilities at a higher level of the network stack.

Questions

Question 36: Do you acquire the HSBB Network Service without QoS as an access seeker or supply the HSBB Network Service without QoS as an access provider?

Question 37: Have you experienced difficulty after trying to acquire or supply the HSBB Network Service without QoS? (Please provide details).

Question 38: Do you agree that moving the scope of regulation 'up' the network stack by including the Layer 3 HSBB Network Service in the Access List and removing the (Layer 2) HSBB Network Service without QoS from the Access List will facilitate greater competition in the supply of fixed broadband and data services to end users?

Question 39: Do you support the removal of the HSBB Network Service without QoS from the Access List? If not, why not? (Please provide details).

13 Wholesale transmission services markets

Introduction

13.1 The wholesale transmission services markets include the following facilities and services listed in the Access List:

Markets	Access List facilities and services
National market for wholesale inter-exchange transmission	Transmission Service
Market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia	Transmission Service
Individual wholesale markets for transmission to a submarine cable landing station or satellite earth station	Transmission Service
National market for broadcasting transmission to towers	Transmission Service
National market for wholesale tail transmission	Wholesale Local Leased Circuit Service

Markets relevant to the Transmission Service

13.2 In its Market Definition Analysis, the MCMC defined a series of markets that relate to the Transmission Service, including:

- (a) the national market for wholesale inter-exchange transmission and the market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia;
- (b) individual wholesale markets for transmission to a submarine cable landing station or satellite earth station; and
- (c) a national market for broadcasting transmission to towers.

13.3 A description of these markets, as well as an overview of the state of competition in these markets, is provided below.

Market description for the national market for wholesale inter-exchange transmission and the market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia

- 13.4 The national market for wholesale inter-exchange transmission comprises transmission services provided between exchanges. Inter-exchange transmission allows access seekers to carry traffic (voice or data) over long distances, in order to connect their access networks to other access networks in different locations (including the access networks of other service providers). Access to transmission capacity is required in order to allow service providers to supply end-to-end voice and data services to end users. Transmission links can be provided through a range of technologies (typically optical fibre or microwave). However, in its Market Definition Analysis, the MCMC included only optical fibre transmission links in the scope of the inter-exchange transmission market, given that licensees expressed a preference for fibre links and microwave links do not provide the same performance over the long distances that transmission links typically connect.⁸²
- 13.5 With the exception of the transmission route from Peninsular Malaysia to East Malaysia (discussed in paragraph 13.6 below), all inter-exchange transmission services in Malaysia form part of a single national market for wholesale inter-exchange transmission. This is because demand-side and supply-side substitution tends to occur on a national level rather than on a route-by-route level:
- (a) on the supply side, the decision to build rival infrastructure along a particular route by a competitor will often be determined by reference to the operator's network portfolio across the entire country; and
 - (b) on the demand side, access seekers tend to require access to national transmission networks as a whole rather than only to particular routes, particularly in the case of voice transmission – this is because end-to-end connectivity can only be provided to end users if the service provider has access to the national transmission network.
- 13.6 In its Market Definition Analysis, the MCMC also found that the transmission route from Peninsular Malaysia to East Malaysia constituted a separate geographic market and did not form part of the national market for wholesale inter-exchange transmission. The MCMC defined this route as forming a separate geographic market on the basis of higher barriers to entry, the submarine nature of the transmission route, limited alternative routes and more limited competition on this route, relative to the other inter-exchange transmission routes in Malaysia.⁸³

⁸² Market Definition Analysis, p. 36.

⁸³ Market Definition Analysis, p. 39.

Competition analysis for the national market for wholesale inter-exchange transmission and the market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia

- 13.7 In its 2008 Access List Review, the MCMC conducted an analysis into the state of competition that applies to the Domestic Network Transmission Service, a service that was listed in the Access List until 2009, and the scope of which is effectively coterminous with the scope of the services included in the market for wholesale inter-exchange transmission.
- 13.8 The MCMC found at that time that it was difficult to determine the state of competition for Domestic Network Transmission Services on a route-by-route basis due to a lack of information. However, even though competition had improved since the 2005 Access List Determination, the number of competitors in the national market remained low, with TM being a monopoly provider of analogue transmission links and the major provider of digital transmission links along with Fiberail and Fibrecomm (which TM had and continues to have a majority shareholding in). Moreover, barriers to entry were high because of the high cost of rolling out transmission links and the fact that TM controlled duct access, a key upstream input to the deployment of transmission links.⁸⁴
- 13.9 In its Assessment of Dominance, the MCMC considered that:
- (a) TM, Fiberail and Fibrecomm were collectively dominant in the national market for wholesale inter-exchange transmission; and
 - (b) TM alone was dominant in the market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia.⁸⁵
- 13.10 The MCMC's findings were based on a number of factors which characterise the state of competition in these markets, including:
- (a) the high market share held by TM;
 - (b) the fact that TM is the majority shareholder in Fiberail and Fibrecomm, which prevents Fiberail and Fibrecomm from competing with TM in a fully independent manner;
 - (c) high switching costs due to long-term contracts for services in these markets; and
 - (d) the competencies gained by TM in its time as the only provider in Malaysia.⁸⁶
- 13.11 In its Market Definition Analysis, the MCMC also considered that the wholesale inter-exchange transmission markets suffer from high barriers to entry, due to the time and cost of constructing transmission links. This is particularly the case for the market for wholesale inter-exchange

⁸⁴ 2008 Access List Review PI Paper, pp. 146-149.

⁸⁵ Assessment of Dominance PI Report, pp. 68-69.

⁸⁶ Assessment of Dominance PI Report, p. 69.

transmission between Peninsular Malaysia and East Malaysia, where barriers to entry are even higher given the fact that submarine cables are used for the transmission link, which require particular expertise and higher cost to deploy.⁸⁷

- 13.12 However, the MCMC welcomes views from stakeholders on whether certain individual transmission routes in Malaysia are sufficiently competitive (or have become sufficiently competitive in the past few years) to justify a different regulatory approach. As the MCMC pointed out in its Market Definition Analysis, while the market is defined as a national market:

*"The MCMC will still take into account whether competition exists on particular transmission routes, if we receive sufficient evidence from licensees that indicate so."*⁸⁸

- 13.13 It may be possible to exclude specific routes from the scope of the regulated Transmission Service if they are sufficiently competitive. However, such a determination must be based on detailed evidence of competition for the supply of wholesale transmission services on those routes.

Market descriptions for the individual wholesale markets for transmission to a submarine cable landing station or satellite earth station

- 13.14 In the Market Definition Analysis, the MCMC defined individual markets for transmission to a submarine cable landing station or satellite earth station.⁸⁹ These services comprise transmission links between an agreed network transmission point and a submarine cable landing station or satellite earth station, typically provided by the same party that operates the landing or earth station.

- 13.15 Transmission to each submarine cable landing station constitutes its own individual market because a given submarine cable usually only lands in one location in Malaysia. Accordingly, access to that submarine cable can only be provided by the transmission links which connect to the particular submarine cable landing station where that submarine cable has been landed. A transmission link that connects to one submarine cable will not typically be substitutable with a transmission link that connects to another submarine cable, given that each submarine cable typically has its own distinct route and service characteristics.

- 13.16 A similar analysis applies to transmission to satellite earth stations, which are location-specific and non-substitutable, and which the MCMC has correspondingly defined as forming individual markets.⁹⁰

- 13.17 The markets for transmission to a submarine cable landing station do not include non-transmission components of the network that relate to submarine cable landing stations or satellite earth stations, such as:

⁸⁷ Market Definition Analysis, p. 39.

⁸⁸ Market Definition Analysis, p. 38.

⁸⁹ Market Definition Analysis, pp. 104-105.

⁹⁰ Market Definition Analysis, p. 105.

- (a) physical access to submarine cable landing stations and satellite earth stations for the purposes of co-location – this falls within the separate individual markets for the wholesale supply of access to each submarine cable landing station and satellite earth station, discussed in paragraphs 11.66 to 11.72 above, and is covered by the Network Co-Location Service discussed at paragraph 11.73 to 11.90, above; and
- (b) access to cross-connect equipment within the submarine cable landing station or satellite earth station which allows access to the capacity on the submarine cable or space segment capacity at the earth station – this service falls within the separate interconnect links markets discussed in Chapter 14 and is covered by Domestic Connectivity to International Services (Connectivity only), discussed at paragraph 14.31 to 14.49.

Competition analysis for the individual wholesale markets for transmission to a submarine cable landing station or satellite earth station

13.18 In its 2008 Access List Review, the MCMC held that the state of competition for Domestic Connectivity to International Services was “minimal” and that the MCMC had not been provided with strong evidence to suggest competition on “specific backhaul routes” so as to justify removing access regulation.⁹¹ Before being subsumed into the technology neutral Transmission Service in the 2009 variation to the Access List, Domestic Connectivity to International Services was an Access List service that comprised of transmission, network co-location at, and connection services to submarine cable landing stations and satellite earth stations. Accordingly, the MCMC’s comments in the 2008 Access List Review are relevant when considering the state of competition in the wholesale markets for transmission to a submarine cable landing station or satellite earth station.

13.19 There is no indication of any material change in the state of competition since the 2008 Access List Review. The individual wholesale markets for transmission to a submarine cable landing station or satellite earth station exhibit natural monopoly characteristics. The remote and inaccessible location of these stations makes the provision of transmission links costly and impracticable. Accordingly, there are very high barriers to entry by an alternative provider seeking to build an alternative transmission link from a network transmission point to a submarine cable landing station or satellite earth station, to compete with the submarine cable landing station or satellite earth station operator providing the initial link.⁹²

13.20 On the basis of the reasons above, in its Assessment of Dominance, the MCMC held that each submarine cable landing station operator and satellite earth station operator was dominant in the market for transmission to that particular station.⁹³ Even though the majority of stations are operated by

⁹¹ 2008 Access List PI Report, p. 86.

⁹² Market Definition Analysis, p. 105.

⁹³ Assessment of Dominance PI Report, pp. 84-85.

TM, the MCMC held that this was irrelevant, given that the market is defined on an individual per-station basis rather than on a national basis.⁹⁴

Market description for the national market for broadcasting transmission to towers

13.21 The national market for broadcasting transmission to towers comprises transmission links between a broadcaster's play-out facilities and a transmission tower. These transmission links allow a Free to Air (**FTA**) broadcaster's content to reach the transmission tower, from where the content is transmitted to the end user's equipment (antenna) via an analogue wireless signal.

13.22 In the Market Definition Analysis, the MCMC defined the market for broadcasting transmission to towers as a national market. Broadcasting occurs on a national basis in Malaysia, meaning that broadcasters also typically purchase access on a national scale rather than on a tower-by-tower basis. Moreover, services within this market are priced on a national basis and are not dependent on the location of the tower.⁹⁵

13.23 This market does not include the transmission segment from the tower to the end user. In the digital context, it also excludes the multiplexing step involved in digital broadcasting transmission (as well as the transmission segment from the tower to the end user). Digital multiplexing and broadcasting from the tower to the end user falls within a separate market for digital broadcasting transmission, which is discussed in Chapter 15.

Competition analysis for the national market for broadcasting transmission to towers

13.24 In its 2008 Access List Review, the MCMC held that the market for broadcasting transmission (as it was characterised in that review) featured TM as the main supplier and that there were only a limited number of competitors in the market.⁹⁶ Accordingly, the MCMC suggested at that time that broadcasting transmission to towers continue to be regulated through the Access List.

13.25 The MCMC does not believe that the state of competition has materially changed in the national market for broadcasting transmission to towers since the 2008 Access List Review.

13.26 In its Assessment of Dominance, the MCMC designated TM as dominant in the national market for broadcasting transmission to towers.⁹⁷ The state of competition in this market remains similar to the state of competition in the other transmission markets discussed above. In other words, it is characterised by high barriers to entry due to the high cost of rolling out transmission links as well as TM's incumbency advantage in the market.⁹⁸

⁹⁴ Assessment of Dominance PI Report, p. 85.

⁹⁵ Market Definition Analysis, p. 54 [8.21].

⁹⁶ 2008 Access List Review PI Report, p. 112.

⁹⁷ Assessment of Dominance PI Report, p. 87.

⁹⁸ Assessment of Dominance PI Report, p. 87.

13.27 The MCMC considers that the level of competitive constraints on access providers in this market is very low. As the MCMC discussed in its Market Definition Analysis, FTA broadcasters do not have access to any effective or viable substitutes for reaching transmission towers.⁹⁹

Transmission Service

Description

13.28 The Transmission Service is currently described in the Access List as follows:¹⁰⁰

(27) Transmission Service

- (a) *Transmission Service is a Facility and/or Service for the carriage of communications between any two technically feasible network transmission points (not being Customer transmission points) via network interfaces at such transmission rates as may be agreed between the Access Provider and the Access Seeker on a permanent or virtual basis.*
- (b) *Network interfaces may use any technology as may be agreed between the Access Provider and the Access Seeker.*
- (c) *The functionalities of the Transmission Service include:*
 - (i) *Transmission and switching (whether packet or circuit);*
 - (ii) *The signalling required to support the technology or to provide a service;*
 - (iii) *Termination at either end by a port, router, network termination unit, switch, submarine cable landing centre or earth station;*
 - (iv) *A digital protocol (including Internet Protocols).*
- (d) *A technically feasible network transmission point in paragraph (a) includes submarine cable and satellite link between Sabah and Sarawak and Peninsular Malaysia, submarine cable landing centre and an earth station.*
- (e) *The Transmission Service may be for the carriage of communications which comprise of content applications service.*
- (f) *An Access Seeker for the Transmission Service includes (but is not limited to) a network facilities provider or network service provider which is only authorised to provide limited (e.g. in the last mile) network facilities or network services, but wishes to acquire the Transmission Service in order to connect its limited network facilities or network services.*
- (g) *For the avoidance of doubt, the Transmission Service comprises but is not limited to the Facilities and/or Services specified in paragraphs 6(8), 6(13)(i) and/or paragraph 6(22).*

⁹⁹ Market Definition Analysis, pp. 53-54 [8.15].

¹⁰⁰ Added to the Access List by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

13.29 The scope of the Transmission Service is illustrated in the diagram below:

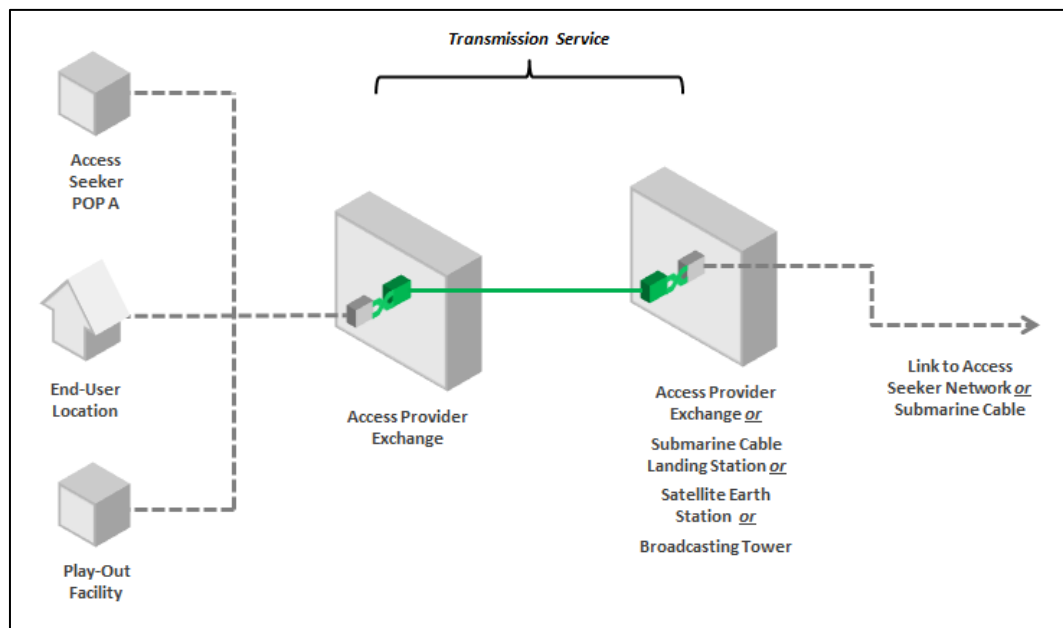


Figure 17 – Scope of Transmission Service

Submissions Received

- 13.30 Altel submitted that it acquires the Transmission Service to be used as backhaul for carriage of voice and data communications.
- 13.31 Puncak Semangat submitted that it intends to acquire the Transmission Service to distribute its Digital Terrestrial Television (**DTT**) service. It foresees issues related to commercial pricing of the Transmission Service, but no other major issues. It also noted that the current DTT distribution network sites are typically located on top of mountains but that the network will need to be expanded to include sites on building rooftops in order to cater for future Mobile Television services.
- 13.32 Celcom submitted that it is facing a significant problem with the Transmission Service due to the implementation of mandated access prices. Celcom submitted that its concern is not with the price *per se* but with the abusive conduct of access providers who apply a different pricing structure to the service. Celcom submitted that the access provider (TM) has made changes to its service offering since MSAP 2012 was in place. Celcom's submission explained that, prior to 1 March 2013, TM offered an end-to-end transmission service, but after that point TM claimed that the transmission service is in two parts – one trunk segment connected to two tail segments, each supplied with a port. According to Celcom, TM then claimed that the regulated pricing in MSAP 2012 only applied to the trunk segment. Celcom claimed that TM used this rationale to charge access seekers for the port and tail segment separately, and that TM also increased the relevant installation charge. By Celcom's analysis, there should be a reduction of about 70% of the wholesale leased line rental cost, however due to TM's changed pricing structure, there has been an increase in cost so that charges are now five times those specified in the MSAP 2012. Celcom

submitted that the Transmission Service should be regulated nationwide without exemption to any route, and without separation into segments. Celcom also submitted that the service description should be technology neutral.

- 13.33 DiGi submitted that there are currently limited numbers of access providers offering the Transmission Service. DiGi submitted that the time is not right to deregulate this service, although DiGi notes that the MCMC has suggested doing this on a route-by-route basis. DiGi submitted that this is not appropriate for three reasons. First, increasingly the Transmission Service is procured to connect clusters of sites rather than on a link-by-link basis. Second, links are provided based on technologies such as Metro Ethernet (**Metro-E**) or other IP-based technologies, and requirements for Transmission Services are sold wholesale in giga-bit speed bandwidth ranges as distance-independent products. Third, the limited number of access providers and dominance of TM leaves access seekers with limited options. DiGi submitted that access seekers require the use of alternative access providers to build backup connectivity.
- 13.34 DiGi also submitted that the MCMC should consider mandating prices for the higher bandwidth capacities (including 10Gbps and above) required for current transmission of data to enable QoS and/or to meet MCMC's requirements. DiGi noted that with LTE network rollout, operators will now also require Transmission Services across West-East Malaysia for which specifications such as guaranteed transmission latency are crucial.
- 13.35 Edotco submitted that it does not currently acquire the Transmission Service, but that it is of the opinion that high capacity routes should not be excluded from the Access List as customers will benefit from these competitive services.
- 13.36 Fiberail submitted that it acquires the Transmission Service to complete/provide comprehensive end-to-end solutions for its customers. Fiberail explained that the problem that it generally faces is in providing connectivity to end users where there is no network coverage or there is technical incompatibility. Fiberail submitted that Kuala Lumpur – JB causeway and Kuala Lumpur – North routes are sufficiently competitive and should be excluded from the Access List. Fiberail also noted that it has faced difficulty in dealing with 'no man's land' areas, especially in gaining access for emergency maintenance.
- 13.37 Fibrecomm submitted that it acquires the Transmission Service for last mile connectivity and a link to international gateways. Fibercomm, is of the opinion that Southern and Northern gateways should be removed from the Access List because there are a lot of international players in those markets and therefore those areas should not be considered as part of the general market for transmission services. Fibrecomm also noted that the market dominance of certain service providers, especially in Putrajaya, Cyberjaya and Penang, is an issue.

- 13.38 Konsortium Rangkaian Serantau submitted that the definition of the Transmission Service should be amended to cover wavelength and lambda access. Konsortium Rangkaian Serantau submitted that a single fibre strand can be used to transmit several wavelengths or lambdas concurrently, or in other words, where an access seeker obtains access to a dedicated wavelength, it has the ability to access dense wavelength division multiplexing (**DWDM**) functionality.
- 13.39 Maxis submitted that it acquires the consolidated Transmission Service for the purposes of backhaul network connection. Maxis commented that it does not use the service for broadcasting transmission or domestic connectivity to international services, and that previously it did not acquire those specialist services either.
- 13.40 Maxis explained that initially the incumbent operator offered a service similar to what was previously known as the Domestic Network Transmission Service. However, after the MSAP 2012 was implemented, Maxis claimed that the incumbent operator has included additional segmentation of ports and tails in the description of Transmission Service and has also increased the total distance of the existing circuit by 20-30% (at Maxis' estimate). By Maxis' calculation, this has caused a significant increase in cost, rather than the projected cost saving to access seekers.
- 13.41 Maxis also submitted that in its experience there are only a few transmission routes that are capable of being provided by more than one service provider which are connected to the Maxis Technical Operation Centre. Maxis named the following: Pusat Bandar Seberang Jaya, Subang Hitech, Bandar Baru Nilai, Bandar Indera Mahkota, Taman Gembira, Pending and Inanam. In other areas, Maxis' view is that most of the time there is only one service provider capable of providing the transmission service, mainly due to limitation at the last mile connection which is largely controlled by the incumbent operator. Because of this, Maxis strongly suggested that the MCMC does not exclude any areas from the scope of transmission services. Maxis submitted that this will ensure competitiveness in terms of quality and pricing, and eventually benefit the end users.
- 13.42 Maxis submitted that there are on-going disputes between operators on the scope of the Transmission Service, and almost all operators are of the opinion that ports and tails are included in the scope of the service. Maxis claimed that this was also the earlier industry understanding. Maxis submitted that the MCMC should redefine the scope of the Transmission Service to include all network elements, including ports and tails. Specific QoS should also be considered and included in the functionality of the Transmission Service, and pricing should be regulated and implemented according to the Public Inquiry Report on Access Pricing dated 14 December 2012. Finally, Maxis submitted that network co-location and access routes, being the Access Provider's PDM which lead into the Access Provider's exchanges, buildings and cable landing stations at which the access seeker is allowed to co-locate or install their equipment, should be regulated in addition to the Transmission Service.

- 13.43 Maxis further submitted that in the existing Access List there is no QoS standard for the Transmission Service, and as a result, the service is offered on a 'best efforts' basis. In Maxis' view Ethernet transmission is preferred for advanced data backhaul. Maxis noted that the MCMC requires operators to deploy fibre from their base stations or to purchase fibre from other operators for LTE deployment. However, the pricing for Ethernet transmission services is not regulated by the MCMC and TM prefers to offer Ethernet via commercial contracts and prices on a regional, rather than a distance-based price model. Maxis alleged that TM has refused to apply the Ethernet Transmission price provided by the MCMC in the Public Inquiry Report on Access Pricing dated 14 December 2012.
- 13.44 Media Prima submitted that it acquires the Transmission Service to distribute high quality video, audio signals and data services across the country and to provide international connections for video and audio signals. Media Prima noted that they have had difficulties acquiring Transmission Services in the past because the service provider has been unable to provide the service due to unavailability or because the Transmission Services have been too expensive.
- 13.45 An operator submitted that it acquires the Transmission Service in order to provide a transmission link between certain nodes, and has not encountered any problems. However, the operator noted that it may require 'leasing fibre core service' or dark fibre access in the future for transmission purposes.
- 13.46 REDtone submitted that it acquires the Transmission Service for voice interconnection domestically and does not agree with the port and tail charges imposed by TM, as they had not been previously discussed and exceeded the prices set out in the MSAP. REDtone also submitted that it does not believe that any routes should be excluded from the scope of the Transmission Service. REDtone acknowledged that as a small player its main concern is on competitive pricing.
- 13.47 Sacofa submitted that it acquires the Transmission Service to extend its service coverage to areas which are not commercially viable for its own expansion. Sacofa had no comments on issues experienced and did not think that any routes should be excluded from the Transmission Service.
- 13.48 TM submitted that it continues to provide the same service for the same purpose that it did prior to the 2009 variation to the Access List. TM submitted that there are no impediments to acquiring the Transmission Service given the degree of competition in the market. To the contrary, TM submitted that a significant number of routes and areas should be removed from the Access List, as TM is of the opinion that only those services for which there is a clearly established bottleneck should be placed in the Access List. In TM's view, where there is insufficient evidence of a bottleneck and sufficient competition exists, parties should be allowed to freely negotiate terms of access on a commercial basis. TM is of the opinion that sufficient competition exists where competition allows access seekers to gain access on reasonable terms. TM cited competition from Sacofa and Celcom Timur; and also provided evidence of declining subscriptions to TM's

transmission services to highlight the competition in the market and alternative sources of supply. TM further cited foreign countries in which equivalents to the Transmission Service are no longer subject to access regulation. In particular, TM cited evidence that the ACCC in Australia has recently decided to de-list transmission services in 120 geographical areas on the basis that there was sufficient competition.

- 13.49 TIME submitted that it is an access seeker for Transmission Services and uses the service to provide end-to-end managed network services for enterprise customers and government agencies in areas where they do not have the requisite network coverage. TIME submitted that since the MSAP 2012 was implemented, TM has redefined its Transmission Service to include only the trunk segment. TIME's submission is that this is inconsistent with their practice prior to the MSAP 2012. TIME believed the change is due to the loss of revenue that TM experienced when the price for services was reduced by the MSAP 2012. TIME recommended that the MCMC study the types of transmission services required by access seekers and compare the results with industry practices. TIME also submitted that the following areas are highly competitive and should be removed from the scope of the Transmission Service as defined in the Access List: Menara Aik Hua in Kuala Lumpur, Menara Ansar in Johor Bahru, Cyberjaya, Kulim High Tech and Penang.
- 13.50 U Mobile submitted that it acquires Domestic Network Transmission Services and Domestic Connectivity to International Services for last mile connectivity, but submitted that it does not require a consolidated Transmission Service as this is not currently in its pipeline. U Mobile submitted that its current practice is based on commercial negotiations rather than on regulated pricing for inter-regional transmission. U Mobile also submitted that dark fibre should be listed as a regulated service.
- 13.51 YTL submitted that it acquires the Transmission Service to provide fully managed interconnect link services and point to point (E1) leased lines. YTL submitted that it has experienced no problems with the service.

MCMC Assessment

- 13.52 The MCMC considers that there remains a strong rationale for maintaining the Transmission Service in the Access List. Several stakeholders have made submissions that they acquire the service and that the service should not be deregulated. The MCMC believes that access to the Transmission Service is an essential facility for promoting competition in the communications sector in Malaysia, given that Transmission Service acts as an input to a wide range of services provided by access seekers.
- 13.53 There is disagreement among stakeholders about whether certain routes should be removed from the Transmission Service. While some operators enumerate certain routes that they submit should be deregulated, others have submitted that no routes should be removed for the time being.
- 13.54 The MCMC has previously expressed its openness to deregulating the Transmission Service on a route-by-route basis. However, this decision can

only be made where there is sufficient evidence of competition on a given route. The MCMC can only make such a finding if it receives detailed market data from stakeholders about the state of competition on a given route, including information about:

- (a) concentration levels on the given route;
- (b) barriers to entry on the given route;
- (c) pricing of transmission services on the given route; and
- (d) countervailing buyer power on the given route.

13.55 The factors above are adapted from the factors that the ACCC considered in its 2004 decision to exclude transmission links between Australian state capital cities from the scope of the domestic transmission capacity service in Australia (equivalent to the Transmission Service).¹⁰¹

13.56 The MCMC invites stakeholders to provide detailed submissions in relation to the factors listed in paragraph 13.54 in respect of routes that they believe are sufficiently competitive to justify the removal of regulation.

13.57 Subject to further considering detailed information submitted by stakeholders, the MCMC is considering applying a two-step test for determining whether a particular route is sufficiently competitive in respect of the supply of the Transmission Service, and therefore whether it is appropriate to exclude that route from the scope of the Transmission Service:

- (a) whether there are three or more independent operators providing the Transmission Service on the route, this would be a preliminary indication that there is sufficient competition on that route (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and
- (b) this preliminary indication could be subject to broader evidence of competition or lack thereof, evidence of barriers to entry, pricing and countervailing buyer power for the supply of the Transmission Service on that route.

13.58 A similar test was used by the ACCC in Australia in its most recent access determination in respect of the domestic transmission capacity service (the equivalent of the Transmission Service). The ACCC used the "three or more providers" test as a "starting point" or "initial threshold" for assessing whether a particular route was competitive and then also considered a number of qualitative and quantitative factors, such as the size of the access providers on the particular route, whether the access providers are

¹⁰¹ ACCC, *Review of the declaration for the domestic transmission capacity service*, Final Report, April 2004, p. 23.

independent of each other, the potential for competition to develop at a future date and the level of price competition in relation to that route.¹⁰²

- 13.59 In addition to detailed submissions on the factors listed in paragraph 13.54, the MCMC invites stakeholders to submit their views on whether the two-step test proposed above, including the “three or more independent providers” criterion, is appropriate to determining whether a route should be removed from the scope of the Transmission Service.
- 13.60 Several stakeholders have submitted that the description of the Transmission Service should be amended to include specific QoS standards, including guaranteed latency. The MCMC notes that this is an issue to be determined in a potential future review of the MSA. The MSA, rather than the Access List which describes the Transmission Service, is the instrument that governs the terms of access associated with regulated services, including matters such as minimum QoS requirements.
- 13.61 Some access seekers have also submitted that certain access providers are not offering the Transmission Service according to the service description in the Access List and the regulated price contained in the MSAP. In particular, access seekers have submitted that the Transmission Service is being offered with additional port and tail segments, and that certain access providers are charging higher prices for these additional port and tail segments than those set out in the MSAP for the Transmission Service.
- 13.62 The MCMC clarifies that the Transmission Service as currently described in the Access List does not include transmission between “customer transmission points”, and therefore excludes tail transmission. Tail transmission is covered within the scope of the separate Wholesale Local Leased Circuit Service.
- 13.63 As a response to the provision of an end-to-end transmission service (including port and tail segments) in the market on a commercial basis, the MCMC proposes to include an additional End-to-End Transmission Service in the Access List. This service, and the rationale for including it in the Access List, is discussed in Chapter 20 below.
- 13.64 Due to the proposed addition of a new End-to-End Transmission Service, the MCMC also proposes to change the name of the Transmission Service to the “Trunk Transmission Service” and to make any consequential amendments to reflect this change of name in the service description. The MCMC also proposes making minor amendments to the language of the service description that improve clarity but do not have any substantive impact on the scope of the service.
- 13.65 The proposed service description for the Trunk Transmission Service (as compared to the existing description of the Transmission Service) is contained in paragraph 13.69 below.

¹⁰² ACCC, *Domestic Transmission Connectivity Service – Final Report* (March 2014), p. 9.
<https://www.accc.gov.au/system/files/ACCC%20Final%20Report%20on%20the%20review%20of%20the%20declaration%20for%20the%20DTCs.pdf>

- 13.66 In relation to Konsortium Rangkaian Serantau's submission that DWDM functionality (which Konsortium Rangkaian Serantau refers to as a "wavelength or lambda service") be added to the definition of the Transmission Service, the MCMC notes that the description of the Transmission Service is technology neutral and therefore already includes transmission links which make use of DWDM technology. Accordingly, to the extent that an access provider supplies access to DWDM functionality within a transmission link, either to itself or to a third party, it is obligated by the SAOs in section 149 of the CMA to provide equitable and non-discriminatory access to DWDM functionality in respect of that transmission link to all access seekers.
- 13.67 However, if an access provider does not currently supply DWDM functionality in respect of a particular transmission link (including through self-supply), the Access List cannot be used to mandate that DWDM functionality be provided in relation to that transmission link. The MCMC reiterates that the scope of the Access List extends only to regulating access to the existing capabilities and functionality of network facilities and network services. The Access List is not a mechanism for requiring access providers to roll out new technologies or functionality.

MCMC Preliminary View

- 13.68 The MCMC's preliminary view is that the Transmission Service be renamed as the "Trunk Transmission Service" (with consequential amendments made to reflect this change of name), but that it otherwise remain in the Access List without any substantive modifications to its scope or application.
- 13.69 The MCMC proposes to substitute the existing description of the Transmission Service with the following description of the Trunk Transmission Service. Words that appear in underlined red text have been added relative to the existing description, while words that appear in ~~strikethrough text~~ are proposed to be deleted.

(27) Trunk Transmission Service

- (a) The Trunk Transmission Service is a Facility and/or Service for the carriage of communications between any two technically feasible network transmission points (not being Customer transmission points) on the Access Provider's network via such network interfaces at such transmission rates as may be agreed between the Access Provider and the Access Seeker on a permanent or virtual basis.
- (b) Network interfaces may use any technology as may be agreed between the Access Provider and the Access Seeker.
- (c) The functionalities of the Trunk Transmission Service include:
- (i) transmission and switching (whether packet or circuit);
 - (ii) the signalling required to support the technology or to provide a service;
 - (iii) termination at either end by a port, router, network termination unit, switch, submarine cable landing centre or earth station; and

- (iv) a digital protocol (including Internet Protocols).
- (d) A technically feasible network transmission point in paragraph (a) ~~includes~~ *may include a submarine cable and or satellite link between Sabah and Sarawak and Peninsular Malaysia, submarine cable landing centre and or an earth station.*
- (e) The *Trunk* Transmission Service may be for the carriage of communications which comprise a content applications service.
- (f) An Access Seeker for the *Trunk* Transmission Service includes (but is not limited to) a network facilities provider or network service provider which is only authorised to provide limited (e.g. in the last mile) network facilities or network services, but wishes to acquire the *Trunk* Transmission Service in order to connect its limited network facilities or network services.
- (g) ~~For the avoidance of doubt, the Transmission Service comprises but is not limited to the Facilities and/or Services specified in paragraphs 6(8), 6(13)(i) and/or paragraph 6(22).~~

13.70 The MCMC is considering including the following mechanism for removal of regulated access of trunk transmission services on a route-by-route basis and invites operators to comment on the mechanism:

(1) *If an Access Provider submits to the MCMC:*

- (a) a proposal to remove one or more routes from the scope of the *Trunk* Transmission Service;
- (b) commercial terms of supply, including prices, that the Access Provider proposes to offer for the *Trunk* Transmission Service should it be de-regulated; and
- (c) evidence that three or more independent Access Providers are offering the *Trunk* Transmission Service over the identified route(s),

the MCMC will conduct a two-step test as follows:

- (d) *if there are three or more independent operators providing *Trunk* Transmission Services on a particular route, the MCMC will form a preliminary view that there is sufficient competition on that route (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and*
 - (e) *this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of *Trunk* Transmission Services on that route.*
- (2) *Upon satisfaction that the proposal satisfies the two-step test, the MCMC will conduct a Public Inquiry on whether to remove the *Trunk* Transmission Services (over the identified route(s)) from the Access List.*
- (3) *Any Operator may object to the potential removal of the *Trunk* Transmission Service from the Access List by providing evidence on the lack of competition on the identified route(s), including number of independent providers, barriers to entry, pricing and countervailing buyer power, during the Public Inquiry.*

- (4) *If the MCMC receives an objection with the evidence specified in paragraph (3) within the deadline set out in the Public Inquiry, it may extend the Public Inquiry to conduct such further inquiries as it considers necessary, including by gathering information from Operators.*
- (5) *Following the completion of the Public Inquiry, including any extended Public Inquiry, where applicable, the MCMC shall publish a Public Inquiry Report setting out its findings*

13.71 Additionally, as explained in further detail in Chapter 20, the MCMC proposes to add a new End-to-End Transmission Service to the Access List that will exist alongside the Trunk Transmission Service.

Questions

Question 40: Do you acquire the Transmission Service as an access seeker or supply the Transmission Service as an access provider?

Question 41: Are you experiencing any difficulty in acquiring or supplying the Transmission Service? If not, why not? (Please provide details).

Question 42: Do you agree that routes on which there are three or more independent providers of the Transmission Service, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the Transmission Service?

Question 43: Are there any particular transmission routes that should be removed from the scope of the Transmission Service? Please provide detailed market data that establish the state of competition on those routes, including information relating to market concentration, barriers to entry, pricing and countervailing buyer power.

Question 44: Do you agree with the proposed changes to the service description for the Transmission Service? If not, please provide detailed reasons for why this change would be detrimental to you as an access seeker or an access provider.

Question 45: Do you agree with the proposed approach to removing routes from the scope of the Transmission Service where warranted, through a Public Inquiry process? If not, please provide details of an alternative process.

Markets relevant to the Wholesale Local Leased Circuit Service

Market description for the national market for wholesale tail transmission

13.72 The national market for wholesale tail transmission comprises transmission services provided between an end user at a fixed location and the nearest local exchange. Wholesale tail transmission services are acquired by service providers to:

- (a) connect their own sites (e.g. mobile operators connecting their mobile base stations to a network location) or;
- (b) connect to end user premises (e.g. for the purposes of providing retail services such as managed services or leased lines, typically acquired by large corporate or government customers).

- 13.73 In the Market Definition Analysis, this market has been defined by the MCMC in a technology neutral manner, including transmission services provided over optical fibre, satellite or microwave.¹⁰³
- 13.74 Moreover, the market is national in scope, given that most suppliers of tail transmission charge on a uniform per-kilometre basis rather than on a route-by-route basis, and barriers to entry apply nationally rather than on a route-by-route basis.¹⁰⁴
- 13.75 The wholesale tail transmission services market does not include ULL access services or Line Sharing Services, which are included within a separate market for the wholesale supply of local access services (see Chapter 10 above for a description of this market). In its Market Definition Analysis, the MCMC considered that ULL access services were not substitutable for tail transmission services, given that the symmetric transmission capabilities of ULL is dependent on the distance between the transmission points to a much greater extent than tail transmission.¹⁰⁵
- 13.76 Similarly, the wholesale tail transmission services market excludes wholesale fixed broadband services, on the basis of differences in service features and pricing between tail transmission services and broadband services.¹⁰⁶

Competition analysis for the national market for wholesale tail transmission

- 13.77 In its 2008 Access List Review, the MCMC found that TM had a high market share in the provision of leased lines in Malaysia (a concept analogous to tail transmission services). On that basis, the MCMC determined that regulation of wholesale tail transmission in the form of the Private Circuit Completion Service (renamed as the Wholesale Local Leased Circuit Service in the 2009 variation to the Access List) remained justified.¹⁰⁷
- 13.78 The MCMC does not believe that the state of competition has materially changed in the national market for wholesale tail transmission since the 2008 Access List Review. In its Assessment of Dominance, the MCMC found that TM was dominant in the wholesale tail transmission market.¹⁰⁸ This finding was based on the high market share held by TM in this market, as well as the inability of other operators to compete with TM due to financial constraints, poor regulation and historical factors. The Market Definition Analysis also found that the tail transmission market faced high barriers to entry given the difficulty and expense of duplicating tail-end transmission lines to a wide range of locations.¹⁰⁹

¹⁰³ Market Definition Analysis, p. 40.

¹⁰⁴ Market Definition Analysis, pp. 43-44.

¹⁰⁵ Market Definition Analysis, p. 42.

¹⁰⁶ Market Definition Analysis, pp. 42-43.

¹⁰⁷ 2008 Access List Review PI Report, p. 106.

¹⁰⁸ Assessment of Dominance PI Report, p. 76.

¹⁰⁹ Market Definition Analysis, p. 42.

Wholesale Local Leased Circuit Service

Description

13.79 The Wholesale Local Leased Circuit Service is currently described in the Access List as follows:¹¹⁰

(7A) Wholesale Local Leased Circuit Service

- (a) *A Wholesale Local Leased Circuit Service is an Interconnection Service for the carriage of communications by way of a private circuit between a POI and an end user, available only at one end of a private circuit. The Wholesale Local Leased Circuit Service comprises transmission and switching (whether packet or circuit) at such transmission rates as may be agreed between the Access Provider and the Access Seeker on a permanent or virtual basis.*
- (b) *The functionalities of the Wholesale Local Leased Circuit Service include:*
 - (i) *Transmission and switching (whether packet or circuit);*
 - (ii) *The signalling required to support the Interconnection Service; and*
 - (iii) *A digital protocol (including Internet Protocols).*
- (c) *An example of a technology used in the Wholesale Local Leased Circuit Service would be Integrated Services Digital Network (ISDN) and IP based networks.*
- (d) *An end user includes a wholesale or retail customer and includes an Operator and the final recipient of the service.*
- (e) *For the avoidance of doubt, the Wholesale Local Leased Circuit Service comprises but is not limited to the Facilities and/or Services specified in paragraph 6(7).*

¹¹⁰ Added to the Access List by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

13.80 The scope of the Wholesale Local Leased Circuit Service is illustrated in the diagram below:

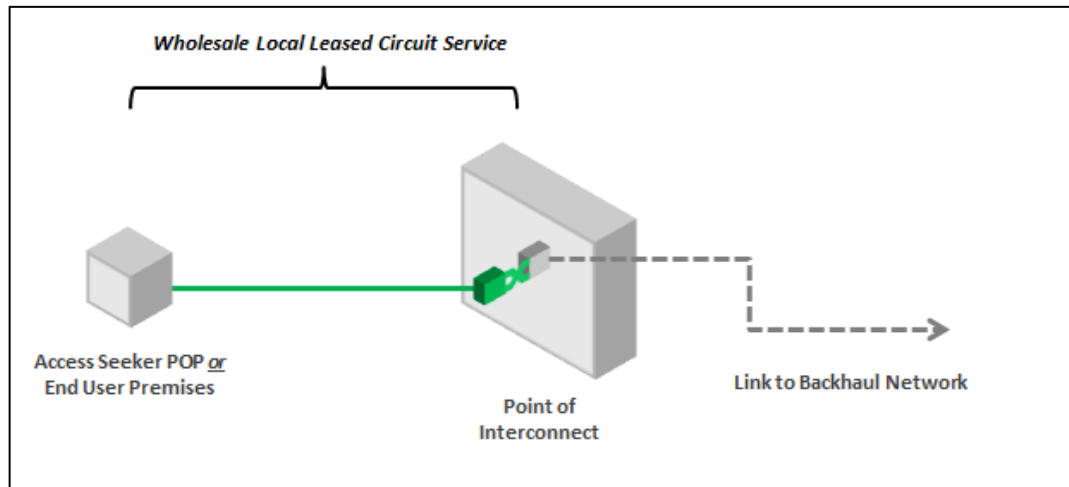


Figure 18 – Scope of Wholesale Local Leased Circuit Service

Submissions Received

- 13.81 Altel submitted that it does not have any intention to acquire the Wholesale Local Leased Circuit Service. Altel submitted that Wholesale Local Leased Circuit Service provided over copper lines is redundant and will become outdated once services provided over the HSBB Network become widely available in the market. Altel also submitted that the regulated price for the service is not competitive and the bandwidth tier pricing adopted is not applicable to the services required by operators. Altel claimed that other operators are also not acquiring these services, and therefore proposed that the MCMC remove the Wholesale Local Leased Circuit Service from the Access List or undertake a total reform of its pricing. When making this submission Altel clarified that Transmission Services and Domestic Connectivity to International Services should be maintained in the Access List.
- 13.82 Celcom submitted that it does not currently acquire the Wholesale Local Leased Circuit Service but is considering acquiring it in the near future, particularly in the Golden Triangle (Kuala Lumpur), the Free Trade Zone and Heritage Zone areas of Pulau Pinang and Melaka. Celcom's view is that Transmission Services should be regulated on a technology neutral basis nationwide without exempting any routes. In its submission, Celcom expressed concerns that some operators with significant market power may dampen effective competition by refusing to supply Transmission Services or delaying implementation of the Transmission Services.
- 13.83 DiGi does not seek or provide the Wholesale Local Leased Circuit Service, but submitted that it should be maintained to ensure access seekers are able to connect to POIs in situations where there is a lapse in their core transmission.
- 13.84 Fiberail is an access provider for the Wholesale Local Leased Circuit Service and submitted that competition is sufficient to exclude high-demand

locations from the Access List. Fiberail suggested that Cyberjaya, KLCC and AIMS meet this requirement.

- 13.85 Maxis submitted that it does not, and did not previously acquire any Private Circuit Completion Services, due to functional limitations with the service. In particular, Maxis submitted that the Wholesale Local Leased Circuit Service provided by the incumbent is not technically feasible because network co-location in local exchanges is not permitted and access routes to the co-located space, being the Access Provider's PDM which lead into the Access Provider's exchanges, buildings and submarine cable landing stations at which the access seeker is allowed to co-locate or install their equipment, are also not regulated. Maxis explained that the incumbent operator requests that access seekers meet via fibre splicing outside the exchange area and then it would connect the spliced fibre to the access seeker's transmission equipment at one end and the incumbent's transmission equipment at the other. In Maxis' view, the costs and technical elements of this proposal are not feasible because even for a 1x2 Mbps circuit, both access seeker and access provider need to allocate a dedicated fibre cable and transmission equipment.
- 13.86 Maxis submitted that, in its experience, there are only a few high-demand buildings that are capable of being supplied by more than one service provider. They are as follows: KLCC, Megan Avenue, Phileo Damansara, Plaza Sentral and Bangsar South in Kuala Lumpur; Menara PSCI in Penang; and Menara Ansar and Cyberport in Johor Bahru. In most other situations, Maxis submitted that there is only one service provider, mainly due to limitations of the last mile connection (access part) being controlled by the incumbent operator. As a result, Maxis submitted that the MCMC should not exclude any areas from the defined scope of the Wholesale Local Leased Circuit Service. In Maxis' view, this would ensure healthy competition in terms of quality and pricing, to the benefit of the end users.
- 13.87 REDtone submitted that it does not acquire the Wholesale Local Leased Circuit Service, but would still prefer to retain all routes for the service in the Access List.
- 13.88 TM submitted that there are several areas, including the Klang Valley, which can and ought to be excluded from the Access List in relation to the Wholesale Local Leased Circuit Service. TM also claimed that there is no demand for this service given other viable alternatives open to licensees, including self-build.
- 13.89 TIME submitted that it is not an access seeker or access provider for Wholesale Local Leased Circuit Services because it is of the opinion that provisioning Transmission Services via POI through another operator can be cumbersome to manage in terms of ensuring quality to customers. TIME is of the opinion that the MCMC should revise the end-to-end prices of the Wholesale Local Leased Circuit Service in order to promote downstream retail competition for managed network services. TIME suggested that value-added network service providers like HeiTech Padu could provide competition to incumbent service providers.

13.90 U Mobile submitted that it acquires the Wholesale Local Leased Circuit Service and has no issues with it. U Mobile preferred the current arrangement rather than removing some locations from regulation, and suggested that the MCMC continues to include the high-demand locations in the Access List to avoid causing disadvantage in the competitive environment.

13.91 YTL submitted that it does not currently acquire the Wholesale Local Leased Circuit Service but may acquire it in the future. YTL submitted that it is not possible to exclude locations from the scope of the regulated service because the exclusive tendencies of the current operator in the area make it difficult for other operators to provide services. YTL also submitted that there are interrelationships between major fixed-line operators which discourage competition.

MCMC Assessment

13.92 The MCMC considers that there remains a strong rationale for maintaining the Wholesale Local Leased Circuit Service in the Access List. The Wholesale Local Leased Circuit Service is an essential facility for promoting competition in the communications sector in Malaysia, given that the service acts as an input to a wide range of downstream services provided by access seekers at the wholesale and retail levels.

13.93 The Wholesale Local Leased Circuit Service does not currently exclude any particular areas or routes from its scope. The MCMC has expressed its openness to deregulating the service on an area-by-area basis if there is sufficient evidence of competition. While a significant number of stakeholders have suggested that no areas should be exempted from the scope of the Wholesale Local Leased Circuit Service, certain stakeholders have identified particular locations that they believe to be competitive:

- (a) Fiberail suggested that Cyberjaya, KLCC and AIMS were sufficiently competitive;
- (b) TM suggested that a range of areas, including the majority of the Klang Valley, should be excluded from the scope of the service; and
- (c) Maxis suggested a number of buildings that are *capable* of being supplied by more than one service provider: KLCC, Megan Avenue, Phileo Damansara, Plaza Sentral and Bangsar South in Kuala Lumpur; Menara PSCI in Penang; and Menara Ansar and Cyberport in Johor Bahru. However, Maxis submitted that, on the whole, the MCMC should not exclude any areas from the scope of the service.

13.94 The MCMC proposes a two-step test for determining whether a particular location is sufficiently competitive in respect of the supply of Wholesale Local Leased Circuit Services, and therefore whether it is appropriate to exclude that location from the scope of the Wholesale Local Leased Circuit Service:

- (a) if there are three or more independent operators providing Wholesale Local Leased Circuit Services at a particular location, the

MCMC will form a preliminary view that there is sufficient competition at that location (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and

- (b) this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of Wholesale Local Leased Circuit Services at that location.

13.95 As noted above in paragraph 13.58, a similar test was used by the ACCC in Australia in its most recent access determination in respect of the domestic transmission capacity service (the equivalent of the Transmission Service) as a “starting point” or “initial threshold” for assessing whether a particular route was competitive and then also considered a number of qualitative and quantitative factors.¹¹¹

13.96 The MCMC considers that the buildings identified by Maxis and listed in paragraph 13.93(c) above provide a useful indicative list of the types of locations that may be sufficiently competitive (subject to further investigation and submissions from stakeholders):

- (a) KLCC, Megan Avenue, Phileo Damansara, Plaza Sentral and Bangsar South in Kuala Lumpur;
- (b) Menara PSCI in Penang; and
- (c) Menara Ansar and Cyberport in Johor Bahru.

13.97 The MCMC invites stakeholders to submit:

- (a) their views on whether the two-step test proposed above, including the “three or more independent providers” criterion, is appropriate to determining whether a location should be removed from the scope of the Wholesale Local Leased Circuit Service;
- (b) detailed information about the state of competition at the locations identified above in paragraph 13.96, including information about the number of operators providing Wholesale Local Leased Circuit Services at such locations, as well as barriers to entry, pricing and countervailing buyer power at such locations; and
- (c) detailed information about the state of competition at other locations which would be appropriately removed from the scope of the Wholesale Local Leased Circuit Service.

13.98 The MCMC notes that it is not appropriate to exclude broad geographic areas, such as the Klang Valley or Cyberjaya, from the scope of the Wholesale Local Leased Circuit Service. Large geographic areas contain a

¹¹¹ ACCC, *Domestic Transmission Connectivity Service – Final Report* (March 2014), p. 9.
<https://www.accc.gov.au/system/files/ACCC%20Final%20Report%20on%20the%20review%20of%20the%20declaration%20for%20the%20DTCS.pdf>

variety of locations at which Wholesale Local Leased Circuit Services are provided, making it very difficult to assess the level of competition for such services in a precise manner. Accordingly, the MCMC prefers a location-by-location (or building-by-building) approach to exclusions from the scope of the Wholesale Local Leased Circuit Service.

- 13.99 As explained in Chapter 20, the MCMC proposes to include an additional End-to-End Transmission Service in the Access List. This is in response to submissions by stakeholders that certain access providers are only supplying an end-to-end transmission service between two access seeker POPs or two end user locations, rather than allowing access seekers to purchase a separate Transmission Service (between two access provider exchanges) and a separate Wholesale Local Leased Circuit Service (between an access provider exchange and an access seeker POP or end user location).
- 13.100 Some operators have expressed concerns about the regulated prices for the Wholesale Local Leased Circuit Service not being competitive and that the MCMC should revise these prices.
- 13.101 While the MCMC appreciates these comments, it notes that, as established at paragraph 1.10, issues relating to pricing and to the MSAP are outside the scope of this inquiry. Accordingly, the MCMC invites stakeholders to submit comments relating to pricing of Access List services when a review of the MSAP is conducted at a future date.
- 13.102 The MCMC notes that the current description of the Wholesale Local Leased Circuit Service includes “the signalling required to support the Interconnection Service” as one of its functionalities (listed in paragraph (b)(ii) of the service description). This envisages the service being provided between an end user premises (or access seeker POP) and a POI, where the Wholesale Local Leased Circuit Service is connected to the access seeker’s network by means of an Interconnect Link Service.
- 13.103 Given stakeholder submissions that some access providers are bundling the Wholesale Local Leased Circuit Service with a (Trunk) Transmission Service, the MCMC proposes to amend the service description of the Wholesale Local Leased Circuit Service to allow the possibility of the service to be connected not only to an Interconnect Link Service at the POI end, but also to be connected directly to a Trunk Transmission Service provided by the same access provider at the POI.
- 13.104 The MCMC has proposed changes to the service description that put into effect this change in paragraph 13.107 below.
- 13.105 In relation to Maxis’ submission that access routes to local exchanges are inaccessible and not regulated, the MCMC notes that the MCMC has responded to Maxis’ submission in paragraph 11.88 above.

MCMC Preliminary View

13.106 The MCMC's preliminary view is that the Wholesale Local Leased Circuit Service remain in the Access List but that certain locations be excluded from the scope of the service where:

- (a) three or more independent operators are providing Wholesale Local Leased Circuit Services at that location; and
- (b) other factors, such as barriers to entry, pricing and countervailing buyer power, suggest that the location is sufficiently competitive.

13.107 Furthermore, as explained above in paragraphs 13.102 to 13.104, the MCMC proposes to make a change to the service description to allow the Wholesale Local Leased Circuit Service to connect not only to an Interconnect Link Service at the POI end, but also directly to a Trunk Transmission Service provided by the same access provider. This change is reflected below. Words that appear in underlined red text have been added relative to the existing description, while words that appear in ~~strikethrough text~~ are proposed to be deleted.

(7A) Wholesale Local Leased Circuit Service

- (a) *A Wholesale Local Leased Circuit Service is ~~an Interconnection Service~~ a Facility and/or Service for the carriage of communications by way of a private circuit between a POI and an end user location or an Access Seeker Point of Presence, available only at one end of a private circuit. The Wholesale Local Leased Circuit Service comprises transmission and switching (whether packet or circuit) at such transmission rates as may be agreed between the Access Provider and the Access Seeker on a permanent or virtual basis.*
- (b) *The functionalities of the Wholesale Local Leased Circuit Service include:*
 - (i) *Transmission and switching (whether packet or circuit);*
 - (ii) *The signalling required to support the ~~Interconnection Service~~ Interconnect Link Service or onward transmission via a Trunk Transmission Service provided by the same Access Provider; and*
 - (iii) *A digital protocol (including Internet Protocols).*
- (c) *An example of a technology used in the Wholesale Local Leased Circuit Service would be Integrated Services Digital Network (ISDN) and IP based networks.*
- (d) *~~An end user includes a wholesale or retail customer and includes an Operator and the final recipient of the service.~~*
- (e) *~~For the avoidance of doubt, the Wholesale Local Leased Circuit Service comprises but is not limited to the Facilities and/or Services specified in paragraph 6(7).~~*

13.108 The MCMC is also considering including the following mechanism for removal of regulated access of Wholesale Local Leased Circuit Services on a location specific basis and invites operators to comment on the mechanism:

- (1) *If an Access Provider submits to the MCMC:*

- (a) *a proposal to remove one or more locations from the scope of the Wholesale Local Leased Circuit Service;*
- (b) *commercial terms of supply, including prices, that the Access Provider proposes to offer for the Wholesale Local Leased Circuit Service should it be de-regulated; and*
- (c) *evidence that three or more independent Access Providers are offering the Wholesale Local Leased Circuit Service at the identified location(s),*

the MCMC will conduct a two-step test as follows:

- (d) *if there are three or more independent operators providing Wholesale Local Leased Circuit Services at a particular location, the MCMC will form a preliminary view that there is sufficient competition at that location (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and*
 - (e) *this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of Wholesale Local Leased Circuit Services at that location.*
- (2) *Upon satisfaction that the proposal satisfies the two-step test, the MCMC will conduct a Public Inquiry on whether to remove the Wholesale Local Leased Circuit Service (at the identified location(s)) from the Access List.*
 - (3) *Any Operator may object to the potential removal of the Wholesale Local Leased Circuit Service from the Access List by providing evidence on the lack of competition at the identified location(s), including number of independent providers, barriers to entry, pricing and countervailing buyer power, during the Public Inquiry.*
 - (4) *If the MCMC receives an objection with the evidence specified in paragraph (3) within the deadline set out in the Public Inquiry, it may extend the Public Inquiry to conduct such further inquiries as it considers necessary, including by gathering information from Operators.*
 - (5) *Following the completion of the Public Inquiry, including any extended Public Inquiry, where applicable, the MCMC shall publish a Public Inquiry Report setting out its findings.*

Questions

Question 46: Do you acquire the Wholesale Local Leased Circuit Service as an access seeker or supply the Wholesale Local Leased Circuit Service as an access provider?

Question 47: Are you experiencing any difficulty in acquiring or supplying the Wholesale Local Leased Circuit Service? If not, why not? (Please provide details).

Question 48: Do you agree that locations where there are three or more independent providers of Wholesale Local Leased Circuit Services, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the Wholesale Local Leased Circuit Service?

Question 49: Are there any particular areas or locations that should be removed from the scope of the Wholesale Local Leased Circuit Service? (Please provide details of number of providers at these locations, as well as other factors such as barriers to entry, pricing and countervailing buyer power).

Question 50: What is your view on the changes proposed by the MCMC to the description of the Wholesale Local Leased Circuit Service to allow the service to connect directly to a Trunk Transmission Service at the POI end, instead of only to the access seeker's network by means of an Interconnect Link Service?

Question 51: Do you agree with the proposed approach to removing locations from the scope of the Wholesale Local Leased Circuit Service where warranted, through a Public Inquiry process? If not, please provide details of an alternative process.

14 Interconnect link markets

Introduction

14.1 The interconnect link markets comprise the following facilities and services in the Access List:

Markets	Access List facilities and services
Individual market for wholesale access to each interconnection link	<ul style="list-style-type: none"> ▪ Interconnect Link Service ▪ Domestic Connectivity to International Services (Connectivity only)

Market Descriptions

14.2 As discussed in the MCMC's Market Definition Analysis, the interconnect link market comprises all facilities and services that facilitate a connection between two networks at a particular point, such as an exchange.¹¹² Two key types of interconnect links exist:

- (a) in-span interconnect links, which occurs when the POI is located in an optical fibre within a cable duct or cable chamber that is located between the respective operators' premises, at which the various network elements that make up the interconnect circuit are located; and
- (b) in-building interconnect links, which occurs at an optical interface between two network elements within one operator's premises – this includes access to cross-connect equipment at submarine cable landing stations or satellite earth stations, which facilitate access to

¹¹² Market Definition Analysis, pp. 102-103.

the capacity on the submarine cable or space segment capacity at the earth station.

- 14.3 Interconnect links are essential for allowing end-to-end connectivity for end users.
- 14.4 The interconnect link market does not include physical access to exchanges, submarine cable landing stations or satellite earth stations, which may be required to access the interconnection links located within these facilities. Physical access to these facilities falls within separate individual markets for access to exchanges, submarine cable landing stations and satellite earth stations. These markets are discussed in paragraphs 11.57 to 11.72 above and the services within these markets fall within the scope of the Network Co-Location Service.
- 14.5 Following the Market Definition Analysis and Assessment of Dominance process, in which there was broad stakeholder input and widespread agreement, the geographic dimension of the market was defined so that the relevant market is now an individual wholesale market for each interconnect link.¹¹³

Competition Analysis

- 14.6 In the 2008 Access List Review, the MCMC did not explicitly analyse the state of competition in the interconnect link market. However, the MCMC held that:

"... interconnection is fundamental to competition and the [MCMC] did not seek specific views on the state of competition because it is apparent there has been no change – interconnection remains a bottleneck in respect of each operator for origination and termination on their own networks."¹¹⁴

- 14.7 Accordingly, the MCMC decided to retain Interconnect Link Service in the Access List when the Access List was amended in 2009.
- 14.8 In the Market Definition Analysis, the MCMC held that interconnect links typically do not have any viable substitutes and are considered to be a natural monopoly. A potential substitute for interconnect links would be for the access seeker to purchase transit going through the same route or facility where the interconnect link is located. However, the MCMC considers that transit is not likely to be economically viable, particularly for a large operator's transit of traffic.¹¹⁵

¹¹³ Assessment of Dominance PI Report, p. 107.

¹¹⁴ 2008 Access List Review PI Report, p. 92.

¹¹⁵ Market Definition Analysis, p. 103.

14.9 In its Assessment of Dominance, the MCMC held that each operator with a network is dominant in the interconnect link market for each POP along that operator's network.¹¹⁶

Interconnect Link Service

Description

14.10 The Interconnect Link Service is currently described in the Access List as follows:¹¹⁷

(6) Interconnect Link Service

An Interconnect Link Service is a Facility and/or Service which enables:

- (i) The physical connection between the network of an Access Provider and the network of an Access Seeker for the purpose of providing an Interconnection Service; and*
- (ii) The interconnection of the Signalling System Number Seven (SS7) network of an Access Provider to the SS7 network of an Access Seeker at the signal transfer points.*

14.11 The scope of the Interconnect Link Service is illustrated in the diagram below:

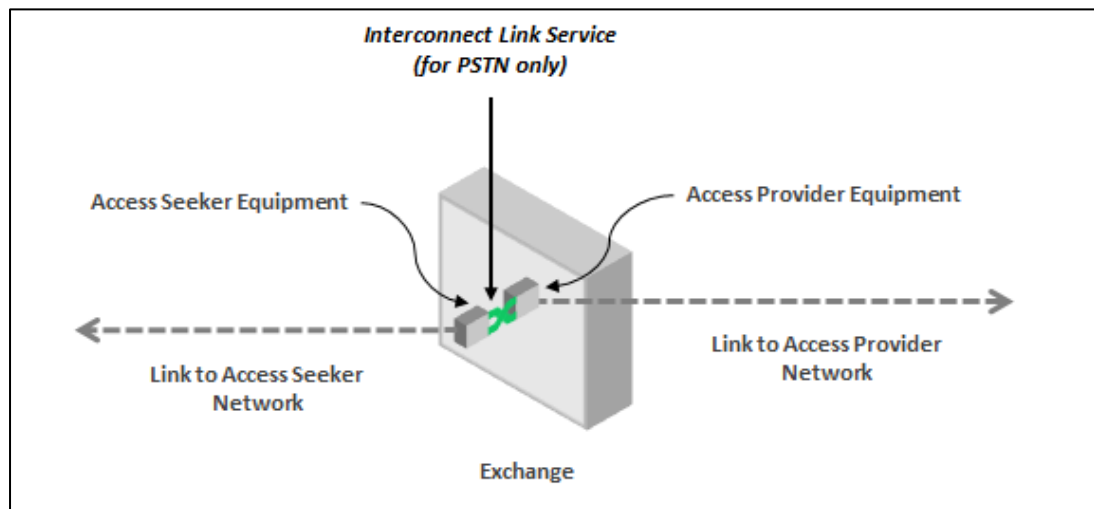


Figure 19 – Scope of Interconnect Link Service

Submissions Received

14.12 Altel submitted that it acquires the Interconnect Link Service and finds that it is crucial to facilitating accessibility for end users. Altel suggested that the MCMC add IP interconnection to the Access List because this is necessary to fully utilise the capability of IP and next generation networks and avoid duplication of infrastructure.

¹¹⁶ Assessment of Dominance PI Report, p. 107.

¹¹⁷ Commission Determination on Access List, Determination No. 1 of 2005, as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

- 14.13 Celcom submitted that it acquires the Interconnect Link Service and noted that the service is an essential input into Celcom mobile services. Celcom submitted that it has faced some difficulties acquiring full-span interconnection links due to the implementation of MSAP 2012. However, Celcom noted that the issue is to do with the access provider's abusive conduct in applying a different pricing structure to services, rather than an issue of the price per se.
- 14.14 DiGi submitted that the Interconnect Link Service is crucial for interconnection between operators.
- 14.15 Jaring submitted that it acquires the Interconnect Link Service at 2Mbit/s from all operators and suggested that it would be interested in acquiring IP interconnect services too, as most networks are NGN-ready.
- 14.16 Konsortium Rangkaian Serantau's submission noted that that the Interconnect Link Service may have to be extended to include alternative signalling systems such as Session Initiation Protocol.
- 14.17 Maxis submitted that it acquires the Interconnect Link Service to carry interconnect traffic for customers' off-net calls and finds that the service has adequate functionality with no impediments to access. Maxis does not acquire alternative forms of interconnection at this stage.
- 14.18 Packet One submitted that it acquires the Interconnect Link Service and noted that the capability of IP should be recognised, as IP interconnection is an alternative or option for interconnection. In Packet One's view, advancements in technology have enabled IP to perform on par with traditional arrangements.
- 14.19 REDtone submitted that it acquires the Interconnect Link Service and has no major issues to report.
- 14.20 TM submitted that it acquires the Interconnect Link Service and expressed the view that there is no impediment to gaining effective access to the service under the current access framework. TM noted that the great majority (approximately 90%) of interconnection services are established by means of in-span or mid-span. TM believes mid-span is the preferred form of interconnection for all market participants.
- 14.21 TIME submitted that it is both an access seeker and provider for Interconnect Link Services and believes they are an essential input to provision of POIs and interconnection for voice services between operators. TIME is of the view that the current service definition is functionally sufficient.
- 14.22 U Mobile submitted that it acquires the Interconnect Link Service and finds that the service offers the functionality required with no major issues.
- 14.23 YTL submitted that it acquires the Interconnect Link Service as an access seeker and finds it to be a usable input into services offered to customers with no functional limitations. YTL proposed establishing services based on

IP networks, as it submitted that IP interconnection is preferable for operational cost control, management efficiency and differentiated service strategy. YTL suggested that the following issues could be impediments to gaining access:

- (a) the timeline for implementation for fully managed Interconnect Link Services;
- (b) an agreement to implement in-span Interconnect Link Services being (wrongly) subjected to capacity of Interconnect E1 circuits; or
- (c) access providers adopting their own definitions of elements comprising the service.

MCMC Assessment

14.24 The MCMC considers that there remains a strong rationale for maintaining the Interconnect Link Service in the Access List. As explained in paragraphs 14.6 to 14.9 above, interconnect links are a key bottleneck facility which is fundamental to achieving competition and any-to-any connectivity in the communications sector in Malaysia. Moreover, several stakeholders have submitted that they consider the Interconnect Link Service to be an essential input to the wholesale and retail services they supply.

14.25 A large number of stakeholders have mentioned that IP interconnection should be included in the Access List. The MCMC is interested in obtaining more detailed views from stakeholders in relation to IP-based interconnection, with a view to possibly amending the description of the Interconnect Link Service to explicitly include IP-based interconnection.

14.26 In particular, the MCMC is interested in obtaining information from stakeholders about:

- (a) their demand for IP-based interconnection, including information about the downstream services that IP-based interconnection is required for; and
- (b) their experience with acquiring or supplying IP-based interconnection, including whether they currently acquire or supply IP-based interconnection on commercial terms and whether they face any barriers in doing so.

14.27 The MCMC supports technology neutral regulation as a general principle and notes that a large number of services listed in the Access List are described in technology neutral terms. The MCMC is interested in obtaining views about how the description of the Interconnect Link Service could be specifically amended to include IP-based interconnection. In particular, the MCMC is interested in whether it is preferable to:

- (a) create a new technology neutral service description that includes both circuit-switched and packet-switched interconnection; or

- (b) add IP-based interconnection as a separate type of Interconnect Link Service, alongside SS7 interconnection currently covered in paragraph (ii) of the service description.

14.28 The MCMC notes that some stakeholders have submitted that they face difficulties acquiring the Interconnect Link Service, although most reported no major issues. As the MCMC has pointed out above, dealing with access and pricing issues to existing Access List services, including allegations of abusive conduct, is beyond the scope of this inquiry.

14.29 However, the MCMC reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.

MCMC Preliminary View

14.30 The MCMC's preliminary view is that the Interconnect Link Service should remain in the Access List, subject to modifications to include IP-based interconnection if the MCMC determines that it is appropriate to do so.

Questions

Question 52: Do you acquire the Interconnect Link Service as an access seeker or supply the Interconnect Link Service as an access provider?

Question 53: Are you experiencing any difficulty in acquiring or supplying the Interconnect Link Service? If not, why not? (Please provide details).

Question 54: What related or downstream services do you require IP-based interconnection for?

Question 55: Do you acquire or supply IP-based interconnection on a commercial basis? If yes, do you face any barriers in doing so? (Please provide details).

Question 56: How should the description of the Interconnect Link Service be amended to include IP-based interconnection, if at all? What features of IP-based interconnection need to be included in the service description if it is amended?

Domestic Connectivity to International Services (Connectivity only)

Description

14.31 Domestic Connectivity to International Services (Connectivity only) is currently described in the Access List as follows:¹¹⁸

(13) Domestic Connectivity to International Services

Domestic Connectivity to International Services is a Facility and/or Service which comprises connection services to the submarine cable system.

¹¹⁸ Commission Determination on Access List, Determination No.1 of 2005, as varied by the Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009.

14.32 Until 30 June 2010, the description of Domestic Connectivity to International Services also included “backhaul transmission service between a network transmission point and a submarine cable landing centre or an earth station”. However, the 2009 Variation to the Access List provided that this component of the service description would only be in force until 30 June 2010.¹¹⁹ This is because the backhaul transmission components of Domestic Connectivity to International Services were incorporated within the description of the new generic Transmission Service that was introduced in the 2009 Variation to the Access List.¹²⁰

14.33 Further, during the 2008 Access List Review, the MCMC expressed concern that connection services have been misinterpreted to require that equipment be co-located at the submarine cable landing station, as a prerequisite, and hence, an amendment was made to the service description.¹²¹ Consequently, the current description of Domestic Connectivity to International Services only includes connection services and the description included in paragraph 14.31 has been edited to reflect this.

14.34 The scope of Domestic Connectivity to International Services (Connectivity only) is illustrated in the diagram below:

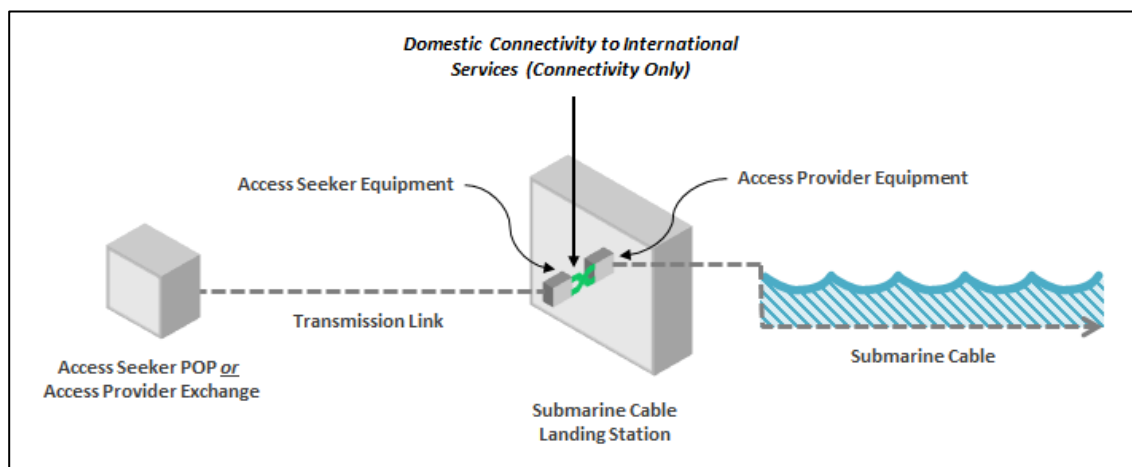


Figure 20 – Scope of Domestic Connectivity to International Services (Connectivity only)

Submissions Received

14.35 Altel made no specific comments on Domestic Connectivity to International Services (Connectivity only), except for mentioning that it intends to acquire this service.

14.36 DiGi is of the view that carriers should be encouraged to ‘land’ in Malaysia so that there is open access for direct interconnection, because no operator should have a monopoly in providing access to international carriers.

¹¹⁹ Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009, paragraph 3.

¹²⁰ 2008 Access List Review PI Report, pp. xi, 188.

¹²¹ 2008 Access List Review PI Report, p. 90.

- 14.37 Konsortium Rangkaian Serantau submitted that some access providers only offer Domestic Connectivity to International Services to access seekers who also acquire Transmission Services from that provider. Konsortium Rangkaian Serantau submitted that TM is requiring that access seekers negotiate commercially 'punitive' Point of Access agreements if they seek to only access Domestic Connectivity to International Services. Konsortium Rangkaian Serantau also submitted that currently TM offers access seekers three options:
- (a) full circuit connection whereby TM delivers the service on a POP-to-POP or end-to-end basis with one end in Kuala Lumpur and another end in a different country;
 - (b) a domestic half circuit combining TM's domestic Transmission Service with connectivity to international services; and
 - (c) a foreign half circuit where TM only provides the connection to the international service and the domestic access seeker provides transmission to TM's submarine cable landing stations.
- 14.38 Konsortium Rangkaian Serantau submitted that it is cheapest to purchase a full circuit. It also submitted that the MCMC's definition should cover both physical and logical connections, because these are monopolized bottleneck services.
- 14.39 Fiberail submitted that technology-wise it currently provides Domestic Connectivity to International Services via DWDM rather than synchronous digital hierarchy. Fiberail also submitted that competitive backhaul routes are an impediment to access for operators seeking to provide Domestic Connectivity to International Services and that prerequisite conditions imposed by the incumbent owner of submarine cable landing stations makes it impractical for access seekers to gain access.
- 14.40 Maxis submitted that it does not currently acquire Domestic Connectivity to International Services (Connectivity only), because the incumbent operator's offering is technically not feasible. In Maxis' view, it is not feasible because network co-location is not allowed in submarine cable landing stations and access routes, being the Access Provider's PDM which lead into the Access Provider's exchanges, buildings and submarine cable landing stations at which the access seeker is allowed to co-locate or install their equipment, are not regulated. Maxis further explained that the current Point of Access arrangement offered by the incumbent is for the access seeker and incumbent operator to meet via fibre splicing in a manhole outside the station. This is expensive and technically difficult because the access seeker has only limited capacity access and has to pay the incumbent operator for each unit at a higher commercial price. Maxis is of the opinion that if the incumbent allowed network co-location in the submarine cable landing station and the MCMC regulated the access route then the costs would be much lower and capacity would not be restricted.

14.41 TIME submitted that it limits its acquisition of Domestic Connectivity to International Services because the MSAP prices are irrelevant for the capacities utilized by TIME.

MCMC Assessment

14.42 The MCMC considers that there remains a strong rationale for maintaining Domestic Connectivity to International Services (Connectivity only) in the Access List. Similar to the Interconnect Link Service, Domestic Connectivity to International Services (Connectivity only) remains a bottleneck facility which is essential for operators seeking access to downstream services such as international private leased circuits or transmission links from submarine cable landing stations to a network transmission point in Malaysia, as well as services further downstream such as Internet interconnection services.

14.43 In relation to DiGi's submission that carriers should be encouraged to land their submarine cables in Malaysia, the MCMC notes that access regulation cannot be used to compel operators to deploy new infrastructure or to change their infrastructure rollout plans. The scope of the Access List is limited to regulating access to existing infrastructure.

14.44 Several operators have submitted that they face barriers acquiring or supplying Domestic Connectivity to International Services (Connectivity only) because they are unable to access network co-location at submarine cable landing stations or have difficulty acquiring competitive backhaul routes to submarine cable landing stations. In response, the MCMC notes that:

- (a) the Network Co-Location Service requires access to co-location at submarine cable landing stations (amongst others), which enables the access seeker to locate any equipment it needs to facilitate the cross-connects that comprise Domestic Connectivity to International Services (Connectivity only); and
- (b) the Transmission Service requires access to transmission links between a network transmission point in Malaysia and a submarine cable landing station.

14.45 The MCMC is concerned about allegations of difficulties in accessing the above services and recognises that barriers to accessing the Network Co-Location Service and the Transmission Service can prevent access to Domestic Connectivity to International Services (Connectivity only).

14.46 The MCMC reiterates its guidance that if operators are unable to obtain access to a listed service to which the SAOs apply after trying to resolve any impediments directly with the access provider, operators should submit a complaint to the MCMC in accordance with section 69 of the CMA.

14.47 Operators have also made allegations about other barriers they face in accessing Domestic Connectivity to International Services (Connectivity only), including:

- (a) bundling of Domestic Connectivity to International Services (Connectivity only) with Transmission Services to a POP in Malaysia, or the imposition of commercially punitive conditions if the access seeker acquires only Domestic Connectivity to International Services (Connectivity only); and
- (b) issues with pricing of Point of Access arrangements or of Domestic Connectivity to International Services (Connectivity only).

14.48 The MCMC makes the following observations in relation to each:

- (a) forced bundling, also known as “conditional access”, is already prohibited under section 5.13.22 of the MSA, and operators are invited to lodge a complaint to the MCMC according to the process described in paragraph 14.46 if they believe that a breach of the MSA has taken place; and
- (b) pricing issues, including pricing as set out in the MSAP, are outside the scope of this current inquiry – stakeholders are invited to make any submissions relating to pricing of Access List services when the MCMC conducts a review of the MSAP at a later stage. The MCMC notes, however, that the Point of Access arrangement is a connection service, and hence, it falls within the service description of Domestic Connectivity to International Services (Connectivity only).

MCMC Preliminary View

14.49 The MCMC’s preliminary view is that Domestic Connectivity to International Services (Connectivity only) should remain in the Access List without any modifications.

Questions

Question 57: Do you acquire Domestic Connectivity to International Services (Connectivity only) as an access seeker or supply Domestic Connectivity to International Services (Connectivity only) as an access provider?

Question 58: Are you experiencing any difficulty in acquiring or supplying Domestic Connectivity to International Services (Connectivity only)? If not, why not? (Please provide details).

15 Wholesale digital broadcasting transmission market

Introduction

15.1 The wholesale digital broadcasting transmission market comprises the following facility and service in the Access List:

Markets	Access List facilities and services
Wholesale digital broadcasting transmission market	Digital Terrestrial Broadcasting Multiplexing Service

Market Descriptions

- 15.2 In its Market Definition Analysis, the MCMC defined two distinct markets that relate to broadcasting transmission:
- (a) a national market for broadcasting transmission to towers (for the purposes of onward transmission to end users); and
 - (b) a national market for digital broadcasting transmission.
- 15.3 The national market for broadcasting transmission to towers is discussed at paragraphs 13.21 to 13.23 above, since the services that comprise that market fall within the terms of the regulated Transmission Service which is discussed more broadly in Chapter 13.
- 15.4 This Chapter 15 discusses the national market for digital broadcasting transmission. This market comprises access to the national Digital Terrestrial Television Broadcasting (**DTTB**) infrastructure, which includes:
- (a) multiplexers, which combine several digital television channels into a single stream; and
 - (b) digital television transmitters, which deliver the multiplexed stream to end users by means of wireless digital signals.¹²²
- 15.5 The national market for digital broadcasting transmission does not include transmission from a broadcaster’s play-out facilities to the DTTB infrastructure (e.g. to the multiplexing and transmitting equipment). This transmission segment, which is typically fixed-line, is included within the separate national market for broadcasting transmission to towers, discussed at paragraphs 13.21 to 13.23 above.
- 15.6 Since 8 January 2014, DTTB infrastructure is managed by a single national operator, Puncak Semangat Sdn Bhd (PSSB), which has been designated by the MCMC as the Common Integrated Infrastructure Provider (CIIP) for DTTB.
- 15.7 Given that the PSSB has been designated as the CIIP on a national basis, and is therefore the only operator of DTTB infrastructure in Malaysia, the geographic dimension of the market for digital broadcasting transmission is national in scope.¹²³

¹²² Market Definition Analysis, pp. 53-54.

¹²³ Market Definition Analysis, pp. 54-55.

Competition Analysis

- 15.8 There have been significant changes in the state of competition in this market since the previous Access List Review in 2008. At the time of that review, the MCMC had not yet licensed any CIIP to act as the sole national provider of DTTB infrastructure. Moreover, the rollout of digital television was still in the trial phase and had not yet commenced on a commercial scale. Nevertheless, the MCMC decided that access to DTTB infrastructure should continue to be regulated by maintaining the Digital Terrestrial Broadcasting Multiplexing Service in the Access List.¹²⁴
- 15.9 As noted in paragraph 15.6 above, DTTB infrastructure is now managed by a single national operator, PSSB. This means that all digital FTA broadcasters' channels, whether they are government-owned or privately-owned, are now required to share access to the infrastructure operated by PSSB, providing PSSB with a monopoly over digital transmission.¹²⁵ On this basis, PSSB was designated dominant in the national market for digital broadcasting transmission in the MCMC's Assessment of Dominance.¹²⁶
- 15.10 The only alternatives available to FTA broadcasters for delivering their content to end users without using PSSB's infrastructure are to use analogue transmission or online delivery. However, the MCMC does not consider that these options are viable substitutes for digital transmission.

Digital Terrestrial Broadcasting Multiplexing Service

Description

- 15.11 The Digital Terrestrial Broadcasting Multiplexing Service is currently described in the Access List as follows:¹²⁷

(23) Digital Terrestrial Broadcasting Multiplexing Service

The Digital Terrestrial Broadcasting Multiplexing Service is a Facility and/or Service for the combining of multiple content applications service Transport Streams into a single Transport Stream with or without the addition of conditional access information.

¹²⁴ 2008 Access List Review PI Report, pp. 117 and 119.

¹²⁵ Market Definition Analysis, p. 54.

¹²⁶ Assessment of Dominance PI Report, p. 87.

¹²⁷ Commission Determination on Access List, Determination No. 1 of 2005.

15.12 The scope of the Digital Terrestrial Broadcasting Multiplexing Service is illustrated in the diagram below:

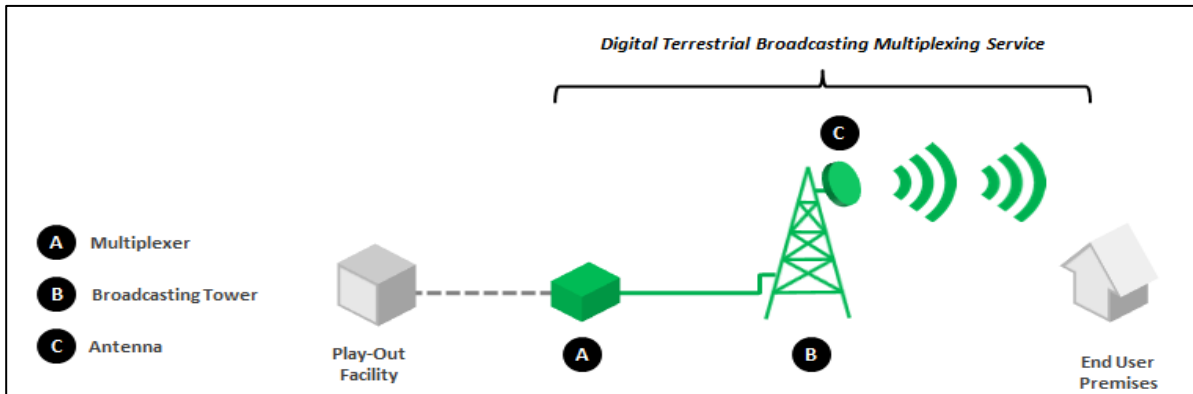


Figure 21 – Scope of Digital Terrestrial Broadcasting Multiplexing Service

Submissions Received

15.13 PSSB submitted that the Digital Terrestrial Broadcasting Multiplexing Service should be removed from the Access List because it is only a small part of the end-to-end system of the DTTB service. PSSB does not have sole control of the whole supply of the DTTB service because the contribution and distribution network requires Transmission Services which are provided by access providers. PSSB submitted that it is of the view that removal of the Digital Terrestrial Broadcasting Multiplexing Service will not affect the launch of digital television broadcast, as the contribution and distribution network elements, which refer to the transmission links between a broadcaster's play-out facilities and the transmission of multiplexed content to end users respectively, are more crucial elements to the service.

15.14 In addition, PSSB submitted that it does not foresee any difficulty providing access to the multiplexing service. DTT transmission infrastructure will be built at more than 60 locations around the country, whereas multiplexing technology will only be built at two. In addition, the multiplexing system will require less integration than other elements of the service, like the digital multimedia terminal or set-top box.

15.15 Media Prima submitted that the Digital Terrestrial Broadcasting Multiplexing Service should continue to be listed, and suggested that the service description should be amended to account for the following impediments:

- (a) single operators are monopolising services, especially access to transmitter sites and other broadcasting infrastructure;
- (b) service providers do not implement new technologies at the request of access seekers; and
- (c) there are restrictions imposed by certain providers if connectivity is provided by a different service provider, for instance TM restricts other operators from entering premises to provide connectivity services for the access seeker.

- 15.16 TM submitted that it does not support removal of the Digital Terrestrial Broadcasting Multiplexing Service from the Access List. TM explained that now that the MCMC has awarded the spectrum to PSSB to build and manage the DTTB services, the service will be a monopoly and other service providers will be unable to compete. As a result, the service should be subject to access regulation. However, TM noted that some refinements to the service description may be possible.
- 15.17 TIME submitted that this is a bottleneck service where TM has the largest market share and controls key hill stations for the transmission of broadcasting programs. TIME is of the opinion that the government (specifically RTM) stands to gain by saving the cost of transmitting their programs on air if there is sufficient competition in this market.

MCMC Assessment

- 15.18 The MCMC considers that there are very strong grounds for retaining the Digital Terrestrial Broadcasting Multiplexing Service in the Access List in its current form.
- 15.19 The MCMC disagrees with PSSB's submission that the Digital Terrestrial Broadcasting Multiplexing Service should not be regulated because it is only a small component of end-to-end digital terrestrial broadcasting and the distribution and contribution network elements are more crucial to digital broadcasting.
- 15.20 Even if it is only a small step in the end-to-end transmission process, multiplexing is an essential element in this process. Under the digital broadcasting network design currently used in Malaysia and across the world, digital broadcasts cannot be transmitted to end users unless they have been multiplexed. Moreover, the fact that PSSB is the sole provider of Digital Terrestrial Broadcasting Multiplexing Service means that this service constitutes a classic example of a bottleneck service (i.e. a service that is not subject to competitive constraints or reasonable supply alternatives under market conditions). Accordingly, the MCMC considers that there remains a very clear rationale for regulating the Digital Terrestrial Broadcasting Multiplexing Service.
- 15.21 The MCMC considers that the submissions made by Media Prima and TIME do not relate to the Digital Terrestrial Broadcasting Multiplexing Service, but instead refer to services that fall within the separate market for broadcasting transmission to towers, which is described in paragraphs 13.21 to 13.23 above and which is regulated by means of the Transmission Service, discussed in paragraphs 13.28 to 13.64 above. The general concerns raised by Media Prima and TIME in relation to broadcasting transmission to towers have been addressed in the MCMC's assessment of the Transmission Service in paragraphs 13.52 to 13.67 above.
- 15.22 Finally, in relation to TM's submission regarding possible refinements to the service description, the MCMC invites TM (and other stakeholders) to provide more specific details about how and why it suggests that the service description be refined.

MCMC Preliminary View

15.23 The MCMC's preliminary view is that the Digital Terrestrial Broadcasting Multiplexing Service should remain in the Access List.

Questions

Question 59: Do you acquire the Digital Terrestrial Broadcasting Multiplexing Service as an access seeker or supply the Digital Terrestrial Broadcasting Multiplexing Service as an access provider?

Question 60: Are you experiencing any difficulty in acquiring or supplying the Digital Terrestrial Broadcasting Multiplexing Service? If not, why not? (Please provide details).

Question 61: Can you suggest any refinements to the description of the Digital Terrestrial Broadcasting Multiplexing Service? If so, please provide details and reasons for such refinements. (Please provide details).

Part C Proposed New Access List Facilities and Services

16 Access to Carrier Pre-selection and Equal Access

Introduction

- 16.1 Carrier pre-selection and equal access services form part of the wholesale fixed telephony services markets (including VoIP) discussed in Chapter 9 of this PI Paper.
- 16.2 Carrier pre-selection and equal access services are not currently regulated under the Access List.

Submissions Received

- 16.3 Maxis has submitted that the Wholesale Line Rental Service (which is listed in the Access List) is meaningless and incomplete without equal access and/or carrier pre-selection as access seekers cannot provide the complete alternative fixed voice services to end users.
- 16.4 Maxis cited overseas examples from Australia, where wholesale access is regulated along with local carriage services and PSTN originating access (pre-selection and override), and from Spain and the UK, where Maxis submitted that wholesale access is regulated together with carrier selection and pre-selection.

MCMC Assessment

- 16.5 The equal access service was previously a regulated facility and service under the Access List. When listed, the Equal Access (PSTN) Service was described as follows:

Equal Access (PSTN) Service

- (a) *The Equal Access (PSTN) Service is an Interconnection Service provided by means of a PSTN for the carriage of Call Communications from customer equipment to a POI which allows an end user to select and use the services of the Access Seeker. The Equal Access (PSTN) Service is only required to be provided on a call-by-call basis (for instance, through dialling of an equal access prefix code).*
- (b) *The Equal Access (PSTN) Service comprises transmission and switching for PSTN-to-PSTN network calls (including Centrex services) and PSTN-to-international outgoing calls only.*
- (c) *The functionalities of the Equal Access (PSTN) Service include:*
- (i) *circuit switching; and*
 - (ii) *the signalling required to support the Interconnection Service.*
- (d) *An example of a technology used in the Equal Access (PSTN) Service would be Integrated Services Digital Network (ISDN).*

- 16.6 Following its 2008 Access List Review, the MCMC decided to remove the Equal Access (PSTN) Service from the Access List because the level of end user reliance on it was negligible and the increased use of VoIP allowed for greater end user choice of operator without disproportionate regulatory intervention.¹²⁸ The service was removed from the Access List in 2009.
- 16.7 In its 2008 Access List Review, the MCMC also considered listing a carrier pre-selection service in the Access List. The MCMC decided not to mandate access to carrier pre-selection and specifically found that regulated carrier pre-selection was not necessary for the Wholesale Line Rental Service to operate effectively and to the long-term benefit of end users. At the time, the MCMC reasoned that the Wholesale Line Rental Service could be used not only for the supply of retail voice telephony services (where pre-selection has pro-competitive effects), but also for the supply of retail Naked DSL services, which do not require mandated carrier pre-selection and which can be used to implement voice over broadband.¹²⁹ Indeed, the Wholesale Line Rental Service tends to be most economic for access seekers where it is used to deliver mixed broadband and voice services to end users.
- 16.8 The MCMC's preliminary view is that its reasoning at the time of the 2008 Access List Review remains relevant at this time.
- 16.9 The MCMC notes that, in contradiction with Maxis' submission that the UK regulates carrier selection and pre-selection, Ofcom decided in September 2013 to partially remove the obligation on BT¹³⁰ to offer carrier pre-selection and "indirect access" (the equivalent of equal access services in Malaysia), in circumstances where BT provides the retail access line.¹³¹ Ofcom found that use of carrier pre-selection by end users had declined significantly in the UK and that neither carrier pre-selection nor equal access remained important drivers of competition at the retail level of the market. Accordingly, Ofcom held that it was no longer proportionate to impose carrier pre-selection or equal access obligations on BT.¹³²
- 16.10 Carrier pre-selection on *non-BT access lines* (i.e. where the line is leased to another operator through a Wholesale Line Rental Service) was never subject to a specific access obligation in the UK, although Ofcom noted that BT was already providing this service as part of its general access obligations in relation to wholesale call origination. Ofcom also noted that the provision of a carrier pre-selection function on non-BT lines would constitute a "reasonable access request" in the context of wholesale call

¹²⁸ 2008 Access List Review PI Report, p. 42

¹²⁹ 2008 Access List Review PI Report, p. 55.

¹³⁰ BT was designated by Ofcom to have significant market power in the United Kingdom wholesale call origination market (excluding the Hull Area). Due to the European Union's asymmetric system of regulation, no access obligations apply to other operators in the market, i.e. those which do not have significant market power.

¹³¹ Ofcom, *Review of the Fixed Narrowband Services Markets: Statement on the Proposed Markets, Market Power Determinations and Remedies*, 26 September 2013, pp. 2-3 <http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf>.

¹³² Ofcom, *Review of the Fixed Narrowband Services Markets: Statement on the Proposed Markets, Market Power Determinations and Remedies*, 26 September 2013, pp. 110 [5.302], 111 [5.304] <http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf>.

origination, thereby suggesting that such a service potentially remains regulated in the UK (although only in relation to non-BT lines).¹³³

16.11 The MCMC notes that, as submitted by Maxis, Australia and Spain retain regulation of carrier pre-selection and equal access services. However, the relevant markets in each of those jurisdictions differs from the Malaysian wholesale fixed telephony services markets. In those jurisdictions, a substantial number of end users rely on equal access and carrier pre-selection type services and the services play a substantial role in enabling competition for the supply of retail services. As noted in the MCMC's 2008 Access List Review, the same cannot be said in Malaysia. Therefore, while the MCMC always considers international regulatory precedents, it is not appropriate to adopt the same approach as taken in Australia and Spain in relation to these services.

16.12 In addition, the fact that the UK partially removed regulation of carrier pre-selection and equal access in September 2013, citing similar reasons as the MCMC did in its 2008 Access List Review, suggests that there is support in best-practice jurisdictions for the MCMC's position.

MCMC Preliminary Views

16.13 The MCMC proposes not to regulate access to carrier pre-selection and equal access services through the Access List.

Questions

Question 62: Do you acquire or supply carrier pre-selection or equal access services on a commercial basis?

Question 63: If you do acquire or supply carrier pre-selection or equal access services on a commercial basis, are they a usable input to your retail or downstream services? Please provide details of any problems using them as an input.

Question 64: If you do not acquire or supply carrier pre-selection or equal access services on a commercial basis, have you tried to acquire or supply those services and faced barriers? Please provide details.

Question 65: Do you consider VoIP to be an acceptable substitute to carrier pre-selection or equal access services? Please provide details with reference to variables like quality and end user preferences.

Question 66: Do you supply VoIP as an alternative to carrier pre-selection or equal access services? If so, please provide details of any challenges with substitution of VoIP services for carrier pre-selection or equal access services.

¹³³ Ofcom, *Review of the Fixed Narrowband Services Markets: Statement on the Proposed Markets, Market Power Determinations and Remedies*, 26 September 2013, p. 113 [5.311] <http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf>.

17 Poles, ducts and manholes (PDM)

Introduction

- 17.1 PDM form part of the wholesale access to facilities and upstream network elements markets discussed in Chapters 10 and 11 of this PI Paper.
- 17.2 PDM are essential inputs to almost all other telecommunications facilities and services. Even wireless services such as mobile telephony and terrestrial broadcasting rely on networks which require wireline infrastructure in part (typically for transmission and interconnection) and therefore rely on PDM. Such PDM facilities are usually referred to as 'Layer 0' facilities. While 'Layer 0' is not formally part of the OSI model, the term usefully describes the relationship of such upstream facilities to the layers of the OSI model.
- 17.3 As noted in the Market Definition Analysis in relation to 'upstream network elements' generally:¹³⁴

Network infrastructure by its nature is very costly to build and often difficult or impractical to replicate. Similarly, most investments in telecommunications infrastructure are 'sunk' costs, which means that they can only be used for the particular purpose for which they were originally built. As such, economies of scale can be very important for a network owner to recoup its investments, which elevates barriers to entry for infrastructure-related communications market.

When considering the demand side and supply side substitution possibilities, it is important to note that the definition of communications market in the CMA relates to "access to facilities" not the facilities themselves. Accordingly, when considering substitution possibilities, the MCMC is considering the substitutability of access to that facility. For example, when considering exchanges, the MCMC will assess whether there are other options for obtaining access to those exchanges, not other options for building the exchange itself.

Network segments in PDM access

- 17.4 A number of operators have recommended regulating access to PDM through the Access List. The purpose for which PDM access is sought is an important factor in determining whether it would be to the long-term benefit to the end user to include PDM access in the Access List. Some operators seek access to 'backbone', others seek access to lead-in ducts and some operators have not specified if they seek access to particular PDM network segments. The different segments of a duct network are described below.

¹³⁴ Market Definition Analysis, p. 110.

17.5 Just as with active network elements, passive network elements can be divided into 'trunk' and 'tail' segments (also described as 'exchange-interconnection' and 'access' segments). Tail or access segments are further divided at a distribution point close to an end user location where a smaller duct or conduit is built to serve a specific building or other end user location – this last segment is often referred to as a 'lead-in duct' or 'lead-in conduit' and can be contrasted with a 'mainline' conduit. These concepts are illustrated below in Figure 22 – PDM segments:

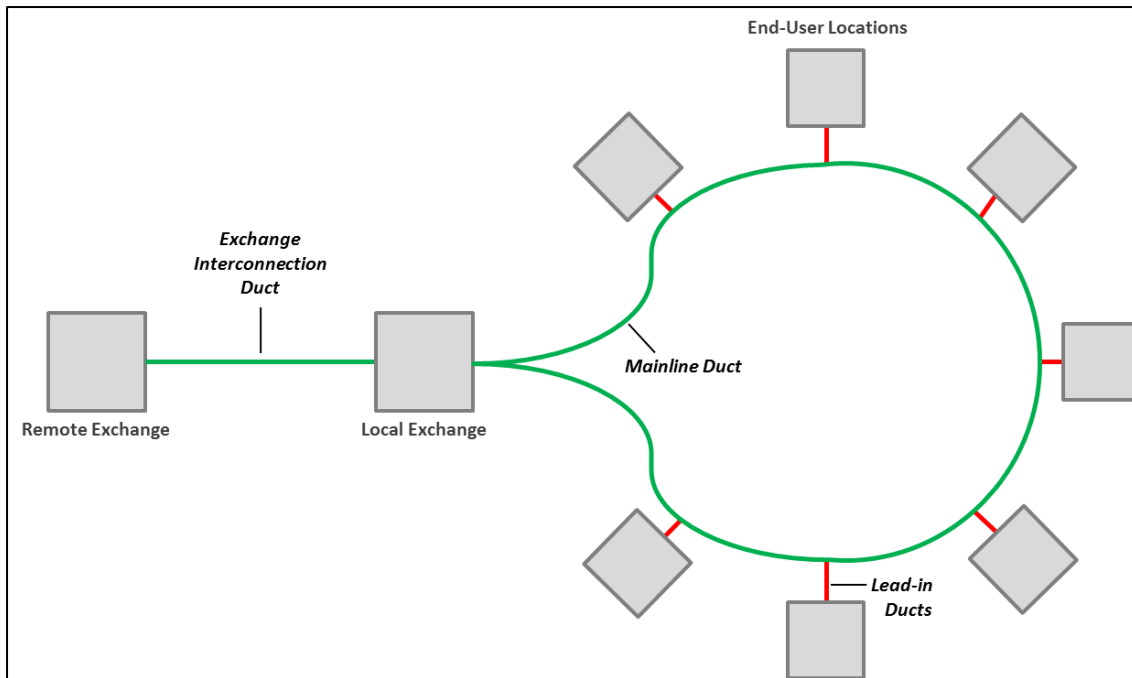


Figure 22 – PDM segments

17.6 In the Market Definition Analysis, the MCMC expressed the view that there were two distinct markets for these segments of passive infrastructure:

- (a) a national market for the wholesale supply of lead-in duct and manhole infrastructure, which does not include aerial or sewer access to end user locations; and
- (b) a national market for the wholesale supply of inter-exchange and mainline ducts, which includes access to aerial or sewer systems where available.¹³⁵

17.7 The distinction drawn in the Market Definition Analysis between exchange interconnection ducts and mainline ducts on the one hand, and lead-in ducts on the other hand, follows the approach taken by the InfoComm Development Authority (**IDA**) in Singapore. The Singaporean approach treats lead-in ducts as essential support facilities (bottleneck facilities) which are subject to access regulation.¹³⁶

¹³⁵ Market Definition Analysis, pp. 112 and 114.

¹³⁶ Market Definition Analysis, p. 112.

- 17.8 The Assessment of Dominance discusses the bottleneck effect of TM's dominance in the national market for the wholesale supply of lead-in duct and manhole infrastructure, noting for example that the inability to access lead-in manholes and ducts is also likely to have competitive effects at other 'layers' of the network. For example, one fixed-line operator identified TM's control over most ducts and manholes into high rise buildings as a key factor behind the operator's inability to lay fibre and access end user customers in certain areas.
- 17.9 The MCMC determined that TM should be viewed as dominant in relation to the market for access to lead-in ducts and manholes associated with each network location across its national network.¹³⁷
- 17.10 By comparison, the MCMC found that the national market for wholesale access to inter-exchange and mainline ducts is relatively competitive due to the presence of alternative forms of ducting (e.g. aerial, sewer, etc.).¹³⁸ This conclusion follows the same reasoning as the IDA adopted in Singapore, where (as discussed in the Assessment of Dominance) inter-exchange ducting was deregulated due to the number of different ducting systems available from a range of power and road authorities in Singapore.
- 17.11 Notwithstanding this general finding that the national market for wholesale access to inter-exchange and mainline ducts is relatively competitive in general, the MCMC notes that developers may enter into exclusivity arrangements with particular operators to develop dedicated telecommunications infrastructure which includes mainline and lead-in duct and manhole networks. In those areas, the operator given exclusive duct development rights may have a high degree of market power in relation to mainline duct and manhole access which creates a bottleneck to competition in downstream markets and therefore raises an access issue.
- 17.12 The MCMC notes that the MAFB has developed a framework under which operators can voluntarily provide other operators with wholesale access to PDM in greenfields and within private property lines. In the information gathering phase the MCMC specifically asked operators about their views on the MAFB framework, and a number of those views are discussed below.

Submissions Received

- 17.13 Altel and Puncak Semangat submitted that they intend to acquire access to PDM in order to facilitate accessibility for end users, but had not yet requested access to these services at the time of submission.
- 17.14 Celcom submitted that it was involved with developing the MAFB framework but that it believes implementation is a crucial aspect of the framework which requires regulatory intervention by the MCMC. In Celcom's opinion, this is because TM has indicated that it is averse to open access to its PDM, especially in brownfields. As evidence supporting this opinion, Celcom cited

¹³⁷ Assessment of Dominance PI Report, p. 110.

¹³⁸ Assessment of Dominance PI Report, pp. 110-114.

the MAFB framework, which Celcom submitted contained the option to provide access to ducts within limited geographical areas, rather than a recommendation to open access without limitation. Celcom also cited examples of incumbents in Portugal and Poland abusing their respective dominant positions by refusing to provide duct access. Celcom submitted that PDM access services should be included in the Access List, and that the MAFB framework should address dispute resolution in detail and that disputes should be handled by the MCMC. Celcom submitted that it will acquire PDM access service in the near future to support its LTE backhaul.

- 17.15 DiGi submitted that it would acquire PDM services if they were available, however in its experience "access to PDM services is non-existent". DiGi was of the opinion that access to PDM would allow multiple operators to serve locations otherwise operated by a single operator, and hence, reducing duplication of facilities, disruption to the general public during civil constructions and increasing the speed of build-out of broadband networks including fibre-based transmission backhaul, which is required for LTE networks.
- 17.16 DiGi also submitted that at some locations where operators are seeking excessive rentals, access to infrastructure is often refused. For example, DiGi submitted that YTL has declined to discuss access to the sites it uses to provide 1BestariNet services. DiGi submitted that because the network is funded by the Malaysian government, access should be allowed to all required facilities.
- 17.17 DiGi's submission included evidence that duct sharing has been implemented extensively in countries like the UK, where companies like Openreach partner with customers who wish to build their own next generation access networks. DiGi cited a study for Ofcom which concluded that civil work required to deploy next generation access infrastructure constitutes almost 80% of the overall cost.
- 17.18 DiGi also submitted that the International Telecommunication Union (**ITU**) recognises best practices in open access to passive infrastructure and highlighted that this is critical for such bottleneck facilities, and that open access is particularly justified where public funds have been committed to broadband infrastructure, as is the case of TM's HSBB network. DiGi further submitted that the ITU recognises that open access should allow fair and equivalent access for all access seekers but should also provide a reasonable rate of return for the infrastructure owner and manager. DiGi submitted that access to ducts and manholes is permitted in Australia, Singapore, Portugal, France, the UK and other countries using various regulatory and commercial models. DiGi submitted that in some of these countries asymmetrical regulation is imposed on incumbent fixed-line operators only, demonstrating the focus of regulation on bottleneck facilities. As an example, DiGi submitted that in Singapore, the government and regulator concluded that provision of passive infrastructure needed for rollout of HSBB is not prospectively competitive and acts as a bottleneck in the market. DiGi submitted that the Singaporean government separated ownership of facilities from other market players. In DiGi's opinion, this significantly

enhanced competition and the speed of broadband rollout in that country. DiGi also offered evidence to suggest that prices for broadband are significantly lower in Singapore than they are in Malaysia, and suggested that perhaps the underlying cost structures in each country are responsible for these price differences.

- 17.19 DiGi also submitted that the MAFB framework is intended to be adopted by all licensees, rather than on a voluntary basis. However, DiGi submitted that the MAFB members could not agree on where PDM sharing should be implemented, and that the MCMC needs to set the direction. DiGi submitted that TM wishes to confine sharing to what it describes as a 'development area' – namely the area within the private property line of a building or cluster of buildings. By comparison, mobile operators seek PDM sharing in a wider area for transmission backhaul purposes.
- 17.20 DiGi submitted that the MAFB framework indicates that the MAFB will propose a pricing principle or model six months after the framework is introduced, if approved by the MCMC. In DiGi's opinion, this is vital for implementation of PDM sharing as it will create a structure for providers to price their product around.
- 17.21 DiGi submitted that there are provisions in the Access Regime which allow providers to refuse access due to space constraints and risks relating to safety, security and reliability of the access provider's network. DiGi expressed concern that access providers could abuse those provisions to prevent sharing. DiGi also submitted that access providers may argue that sharing is inconvenient or impossible because they may not be aware of all PDM infrastructures in existence. However, in DiGi's opinion, this is not a valid argument as operators are required to submit network information to the MCMC's National Network Database. DiGi suggested that the MCMC could implement an industry code that includes provisions on: availability of useable space in a duct, exchange of information, reasons for refusal to provide PDM and dispute resolution provisions. DiGi acknowledged that to regulate PDM will require a complex survey of ducts and manholes available, and that the detailed procedures of establishing available space and calculating prices will be a key challenge. DiGi suggested that, from the outset, the main impediment would be to undertake relevant surveys to determine and record existence of useable ducts and manholes. DiGi acknowledged that a similar challenge will apply to poles as the various descriptions of relevant types of poles will need to be categorised and recorded. DiGi is of the opinion that the information contained in the National Network Database has a vital role in facilitating sharing.
- 17.22 Edotco submitted that as it does not currently acquire PDM services, it is not able to comment on any operational or commercial challenges to acquisition. However, Edotco submitted that in some Malaysian states, SBCs hold monopolies over PDM services. In Edotco's opinion, there are also issues created because some local authorities favour certain providers. However, Edotco submitted that the MAFB framework is technically sufficient to address all relevant issues.

- 17.23 Fiberrail submitted that the MAFB framework is clearly drafted to ensure that it addresses each aspect of the issues relating to access to PDM services. Fiberrail commented that the issues it currently faces to obtaining access to PDM services are: seeking access to buildings managed or owned by private entities, different rates in way-leave fees, seeking approval from OSAs and delays in getting approval, prolonged negotiations before it can agree on terms and conditions, and vandalism due to lack of security provided by other providers. Fiberrail nonetheless does acquire these services.
- 17.24 Fiberrail viewed PDM as being limited to the purposes of laying necessary communication infrastructure; hence, fair and open access will generally benefit end users. Fiberrail submitted that the meaning of the terms 'Poles', 'Duct' and 'Manhole' should be clearly defined, and that the MCMC should provide guidelines that address those facilities at international borders where they are being used for inter-border interconnection with foreign operators, in order to avoid any confusion that may arise.
- 17.25 Fibrecomm submitted that every commercial and technical angle of PDM access is comprehensively addressed by the MAFB framework. Fibrecomm submitted that currently all operators face the same issues in brownfield areas which are locked up by appointed or first-entry operators, and are inaccessible to other operators. Fibrecomm explained that it has not encountered this issue so far, as its focus is on the wholesale market. It added that if this service is regulated by the MCMC, then this issue will be addressed in brownfield areas as well as in greenfield areas.
- 17.26 Fibrecomm submitted that most operators do not offer PDM access and it is normally difficult to commercially acquire these services as there is a lack of standard prices, terms and conditions. Fibrecomm submitted that the greatest impediments as an access provider to supplying these services are the impact on its revenue and competitive markets.
- 17.27 Maxis submitted that it was actively involved in developing the MAFB's PDM framework and believed that the draft framework provides some guidelines and an overview of implementation procedures. However, Maxis viewed that if PDM is not included in the Access List, the framework is not enforceable enough to facilitate commercial negotiation between the necessary industry players or to address disputes. Maxis therefore strongly recommended that the MCMC consider including PDM in the Access List. Maxis submitted that this would provide key network elements for the industry players to expand their network coverage, improve QoS and provide competitive pricing for end users' benefit.
- 17.28 Maxis also provided evidence of PDM regulation in other countries. In most of these countries, there was at least asymmetric regulation on the incumbent fixed-line operator. Maxis also submitted that the main shortcoming of the framework is that there are disagreements between operators on the scope of PDM sharing. Maxis submitted that two operators are of the view that PDM should only apply within the private property lines in a development area, whereas others are of the view that it should apply to a whole development area and beyond. Maxis is of the view that PDM

should be available in all areas. In addition, Maxis submitted that the framework should provide indicative prices as a guideline for the industry to benchmark against. Maxis submitted that these prices should be set by the MCMC after detailed costing studies.

- 17.29 Maxis was of the opinion that PDM is a key factor in network operators expanding their network coverage effectively in order to provide competitive and high quality services to end users. Maxis submitted that there is currently no PDM sharing service commercially offered by any service provider, so Maxis does not currently acquire these services. Maxis submitted that based on its own cellular Infrastructure Sharing, it does not foresee any significant impediments to access providers providing PDM access. Maxis submitted that similar Infrastructure Sharing concepts including tower, rooftop and in-building sharing have been successfully implemented by cellular operators. Maxis acknowledged that at the beginning it may be difficult for access providers to maintain a complete database of all their PDM, however with time and regular updates, this survey can be managed effectively.
- 17.30 MAFB submitted that the Access List should address PDM. MAFB noted that there are different views between members as to the scope of the relevant area for PDM sharing.
- 17.31 An operator submitted that it does not currently require access to PDM services, but may require them in the future for fibre core services. The operator noted that the MAFB framework is merely a guideline, and submitted that it is of the opinion that the framework can address access issues to a certain extent but not entirely as compliance is not mandatory. The operator also submitted that the MCMC should include 'fibre core service' or dark fibre access into the framework, which is discussed at Chapter 18, below.
- 17.32 Packet One submitted that the overall idea of the MAFB framework is good, but that it does not currently acquire PDM services and it is most unlikely that it will be an access provider of these services.
- 17.33 PPIT submitted that the MAFB framework is workable, so PDM does not need to be added to the Access List.
- 17.34 REDtone submitted that the MAFB framework adequately addresses PDM issues. REDtone also submitted that it requires PDM access for backhaul and that PDM should be regulated. Currently, REDtone commercially negotiates access, and it submitted that in some areas access is too expensive.
- 17.35 Sacofa submitted that the MAFB framework is sufficient to address issues on PDM access. However, Sacofa also stated in its submission that the current practice is that developers have exclusive relationships with one party and deny entry to Sacofa, despite the fact that Sacofa wants to access PDM services.
- 17.36 TM submitted that it has spent considerable time in developing the MAFB framework in a manner consistent with section 228 of the CMA. TM

submitted that the framework is in line with the fact that the CMA promotes self-regulation. For this reason, TM submitted that PDM access should be negotiated on a commercial basis, and that the MAFB framework is evolving and will address shortcomings as it progresses.

- 17.37 TM noted that it is agreeable to share ducts in greenfields and within private property lines where there is proper planning and joint commitment on implementation. However, TM submitted that where planning is not done properly there are potential issues such as security, safety, network issues and possibility of implementation affecting QoS 'hugely'. TM's initial view is that there are significant impediments in supplying PDM access in brownfields where there was never any planning or forecasting that these facilities would be shared, because there can be significant impacts such as capacity requirements for passive infrastructure, security and safety of existing cables.
- 17.38 TIME submitted that it derives its main revenues from its wholesale business for transmission services, and that having PDM in the Access List would greatly affect this business. TIME submitted that it should not have to invest in laying ducts and manholes when other operators which do not do the same can reap tremendous profits from accessing these services. TIME submitted that other operators have chosen to use microwave instead of laying ducts.
- 17.39 TIME reminded the MCMC that other operators have affiliations overseas and may have been investing outside of Malaysia while leaving the quality of Malaysian networks with much to be desired. TIME also submitted that due to RAN sharing arrangements and duct swapping arrangements, the take up rate of Transmission Services will drop should PDM be added to the Access List, and this would make investments in fixed-line and wired broadband unattractive.
- 17.40 YTL submitted that the MAFB framework is not comprehensive and does not include the legacy network, and technical issues involving existing facilities would need to be resolved. YTL also submitted that many operators may not feel compelled to offer the facilities for access. YTL submitted that it requires PDM facilities to fulfil the MCMC's conditions on fiberisation of base stations, and therefore, currently acquires them on a commercial basis. YTL submitted that it has encountered some issues in commercial negotiations, as these services are not productised and hence cannot be offered for access.
- 17.41 The submissions demonstrate that there is disagreement amongst access providers and access seekers about the viability of the MAFB framework. The MAFB itself noted the differences in opinions between its members.

MCMC Assessment

- 17.42 As noted above, the national market for the wholesale supply of lead-in duct and manhole infrastructure access is uncompetitive, with TM being dominant in this market. By comparison, the national market for the wholesale supply of inter-exchange and mainline ducts, which includes access to aerial or

sewer systems where available, is generally competitive, with no operator being found dominant in that market in the Assessment of Dominance. The exception is in areas in which operators are granted exclusive rights to install telecommunications infrastructure. These operators necessarily have a high degree of market power relating to mainline duct and manhole access required by competing operators to deploy their infrastructure. Accordingly, any access regulation of PDM should be limited to lead-in duct and manhole access generally and to mainline ducts and associated manhole access only in areas where operators have been granted exclusive rights to install telecommunications infrastructure. For ease of reference, the remainder of this section refers to lead-in ducts and manholes nationally and mainline ducts and associated manholes in greenfields and in other areas where operators have been granted exclusive rights to install telecommunications infrastructure together as **Uncompetitive Duct Infrastructure**.

- 17.43 There is a strong argument for regulating access to Uncompetitive Duct Infrastructure. As discussed above, these are bottleneck facilities that have a significant impact on competition for the supply of downstream facilities and services.
- 17.44 While operators' views vary, a number of operators consider that there are currently issues in obtaining PDM access and that the MAFB framework will not sufficiently address these issues. Notably, the MAFB itself noted differing views amongst members about the correct scope for the framework. Equally notably, TM, which appears to be one of the stronger proponents of the MAFB framework, indirectly acknowledged that the framework had shortcomings which would need to be addressed in due course.
- 17.45 The MCMC considers that regulating access to Uncompetitive Duct Infrastructure is likely to lead to an increased supply of such PDM facilities and related services, which may have a significant positive impact on a range of downstream facilities and services. This is particularly so as such services are currently not being supplied at all, or only rarely.
- 17.46 Increased supply of services at the passive infrastructure level is likely to foster competition at all higher layers of the network stack, including by enhancing infrastructure investment at Layer 1 of the network stack, and by that, increasing investment in turn increasing price competition and service innovation at Layer 1 and above.
- 17.47 Regulated access to Uncompetitive Duct Infrastructure is unlikely to reduce infrastructure investment by access providers because:
- (a) in areas where it is economic for the access provider to build lead-in ducts, mainline ducts and associated manholes, the benefit of having a ubiquitous network is likely to continue to incentivise investment; and
 - (b) in less economically beneficial areas, universal service funding is likely to continue to incentivise investment.

17.48 As with any regulation, the costs of regulating access to PDM must be properly considered (including in relation to security, complexity and operational costs), which provides further reasons for limiting regulation to Uncompetitive Duct Infrastructure where such costs and risks are proportionate to the long-term benefit for end users.

MCMC Preliminary Views

17.49 The MCMC's preliminary view is that access to Uncompetitive Duct Infrastructure should be included in the Access List. The MCMC proposes to add access to Uncompetitive Duct Infrastructure to the existing Infrastructure Sharing in the Access List.

17.50 The Infrastructure Sharing currently only relates to infrastructure used in connection with mobile networks. The MCMC's amendment would have the effect of expanding the facilities and services covered by the Infrastructure Sharing to fixed network facilities and services for the first time. This does not affect the scope of the current facilities and services addressed by the Infrastructure Sharing.

17.51 The MCMC proposes that the amended Infrastructure Sharing, as amended might be described as follows:

(12) Infrastructure Sharing

(a) *Infrastructure Sharing is a Facility and/or Service which comprises the following:*

- (i) *Provision of physical access, which refers to the provision of space at specified network facilities to enable an Access Seeker to install and maintain its own equipment; or*
- (ii) *Provision of access to in-building Common Antenna Systems and physical access to central equipment room.*

(b) *Specified network facilities include:*

- (i) *towers and associated tower sites;*
- (ii) *lead-in ducts and associated manholes; and*
- (iii) *mainline ducts and associated manholes in areas in which a single operator has exclusive rights to develop or maintain duct and manhole infrastructure (whether or not in combination with other facilities and services).*

(c) *Physical access includes power, environmental services (such as heat, light, ventilation and air-conditioning), security, site maintenance and access for the personnel of the Access Seeker.*

17.52 In the Access List, the MCMC proposes the following definitions:

- (a) 'Lead-In Duct' means a duct which extends from a Customer location to the first manhole associated with such a duct; and
- (b) 'Mainline Duct' means each duct (or series of ducts) which extend(s) from one or more Lead-In Duct(s) to the closest exchange building associated with the duct(s).

Questions

Question 67: Do you agree that the MCMC should regulate access to duct and manhole infrastructure? If not, please provide reasons.

Question 68: If you agree, do you agree that the scope of the duct and manhole infrastructure which the MCMC proposes to regulate (lead-in ducts and associated manholes nationwide and mainline ducts and associated manholes only in areas where operators have been granted exclusive rights to install telecommunications infrastructure) is the correct scope for access regulation? If not, please provide your proposed alternative scope for regulation and reasons.

Question 69: Do you agree with the MCMC's proposal to regulate access to duct and manhole infrastructure through amendments to the service description for the Infrastructure Sharing? If not, please provide your proposed alternative method for regulating such access and reasons.

Question 70: Do you agree with the specific amendments which the MCMC has proposed to the description to the Infrastructure Sharing? If not, please propose alternative amendments and provide reasoning for your proposal.

18 Access to Dark Fibre in the Core Network

Introduction

18.1 In the Market Definition Analysis, the MCMC defined a distinct national market for the provision of wholesale access to dark fibre.¹³⁹ This market comprises access to passive fibre strands at Layer 1 of the OSI model, requiring the access seeker to provide its own active infrastructure in order to "light" the fibre and transmit data over it. Dark fibre access can theoretically be provided within both:

- (a) the access network (e.g. between a POI and an end user premises); and
- (b) the core network (e.g. between two access provider exchanges, or between a POI and a submarine cable landing station or satellite earth station).

18.2 Given that the HSBB Network uses a point-to-multipoint PON network design, where there is no dedicated fibre strand running the whole length between the exchange and the end user premises, it is not currently possible, from a technical perspective, to provide dark fibre access in the access network in Malaysia. Wholesale access to the HSBB Network can only be provided at Layer 2 or above, and is regulated through the Access List by means of the HSBB Network Service with QoS and the HSBB Network Service without QoS (both at Layer 2), as well as the proposed Layer 3 HSBB Network Service discussed in Chapter 19 below. Moreover, the MCMC

¹³⁹ Market Definition Analysis, p. 123 [8.12].

has not received any submissions requesting for dark fibre to be regulated within the access network.

- 18.3 However, it may be possible to provide wholesale access to dark fibre within transmission links in the core network, provided that the transmission link uses optical fibres that can be physically unbundled across the whole length of the link (i.e. a dedicated fibre strand can be allocated to the access seeker, who is then able to install its active equipment at each end). The types of transmission links in respect of which dark fibre access may be provided include:
- (a) inter-exchange transmission links;
 - (b) transmission links to broadcasting towers;
 - (c) transmission links between mobile BTSs and upstream elements of the mobile network, such as BSCs; and
 - (d) transmission links to submarine cable landing stations or satellite earth stations.
- 18.4 Access to dark fibre in the core network is not currently listed in the Access List. The Access List regulates wholesale access to transmission links in the core network by means of the Transmission Service and the Wholesale Local Leased Circuit Service, which provide access at Layer 2 and are discussed in Chapter 13.
- 18.5 There are certain material differences between Layer 2 access to transmission links and Layer 1 access to the dark fibre within those transmission links. At Layer 2 (i.e. the Transmission Service or Wholesale Local Leased Circuit Service), the access provider provides the active equipment at each end of the transmission link and sells capacity to the access seeker, typically through a usage-based access fee.
- 18.6 At Layer 1 (dark fibre access), the access seeker provides the active equipment at each end of the transmission link, with the access provider supplying only the physical fibre strand. This enables the access seeker to choose how to use the fibre strand, including transmission protocols and technologies. The access seeker is typically charged a flat per-fibre or distance-based charge.
- 18.7 In the Market Definition Analysis, the MCMC held that Layer 2 Transmission Services were not substitutable for dark fibre services, given that the pricing for Layer 2 services was usually significantly higher than for dark fibre services. Accordingly, a SSNIP in relation to Transmission Service was not likely to lead to an increase in demand for dark fibre services, or vice versa. Similarly, the MCMC did not consider that other passive infrastructure (such as PDM) were substitutable for dark fibre access.¹⁴⁰

¹⁴⁰ Market Definition Analysis, p. 122.

Submissions Received

- 18.8 Altel submitted that there is an abundance of dark fibre being deployed which is underutilised and not available to the market, despite significant demand for it. Altel submitted that dark fibre should be added to the Access List to ensure efficient backhaul capacity, because non-cable transmission is not sufficient to meet high demands from end users. Altel submitted that dark fibre is crucial to facilitating faster network expansion. In addition, Altel noted that the MCMC has required Altel to use fibre backhaul for the purpose of connectivity of base stations in the 2.6Ghz rollout. Altel suggested that dark fibre is essential in assisting Altel to achieve this objective and to allow operators to offer superior and innovative services to end users.
- 18.9 DiGi submitted that the market for dark fibre facilities is diminishing as existing dark fibre providers are forcing buyers to migrate to bandwidth services instead, thus increasing the cost of transmission networks.
- 18.10 Konsortium Rangkaian Serantau submitted that dark fibre should be added to the Access List as the cost of laying fibre cables has decreased tremendously over the years while the number of fibre cables installed has increased. Konsortium Rangkaian Serantau submitted that facility owners and service providers are reluctant to sell dark fibres, and suggested that this may be because the potential volume of bandwidth that can be transmitted across a single dark fibre cable is huge. Konsortium Rangkaian Serantau is of the opinion that facility owners worry that this will reduce their future revenue and bandwidth capacity services. However, Konsortium Rangkaian Serantau submitted that access to unused dark fibre is important in order to avoid network duplication.
- 18.11 Maxis submitted that dark fibre should be added to the Access List as currently access is not allowed and the product is not available commercially.
- 18.12 U Mobile submitted that dark fibre should be added to the Access List because of space limitations in existing ducts, as well as the practice of withholding capacity that some operators follow. U Mobile submitted that the obligation to provide dark fibre should be designed so that strategic withholding of capacity is not possible – U Mobile suggests that this could be done by either placing the burden of proof on the incumbent or imposing dark fibre access only in the case where no duct space is available. U Mobile’s submission included evidence of dark fibre regulation in Austria, Norway, Germany and Sweden.

MCMC Assessment

- 18.13 The MCMC acknowledges that several stakeholders have requested that dark fibre access in the core network be listed in the Access List as a new service. Nevertheless, the MCMC does not consider that there is, at present, a sufficient economic basis for regulating dark fibre access in the core network in Malaysia.

- 18.14 The MCMC does not consider dark fibre within the core network to be a bottleneck facility. In its Assessment of Dominance, the MCMC did not find any operator to be dominant in the market for wholesale dark fibre access. The MCMC noted that several operators, such as TM, TIME, Maxis and Celcom Timur, own dark fibre in the core network¹⁴¹. This creates a competitive constraint on access providers while also allowing access seekers to obtain dark fibre access through alternative operators if one operator is not supplying dark fibre on competitive terms.
- 18.15 Moreover, the MCMC considers that the entry barriers to an operator deploying its own dark fibre (either for self-supply or to compete with incumbent access providers) are not prohibitive. In order to roll out dark fibre in the core network, an operator requires access to inter-exchange or mainline ducts. In its Assessment of Dominance, the MCMC held that the market for inter-exchange and mainline ducts is relatively competitive, due to the presence of alternative forms of ducting (aerial, sewer, etc).¹⁴² On this basis, the MCMC's preliminary view, expressed in Chapter 17 above, is that it is not generally necessary to regulate access to mainline and inter-exchange ducts by way of the Access List.
- 18.16 The state of competition in the inter-exchange and mainline duct market suggests that operators do not face prohibitive barriers to rolling out their own dark fibre networks (with limited exceptions in relation to mainline ducts and associated manholes in certain areas which the MCMC proposes to address as described in Chapter 17 above). Accordingly, the MCMC does not consider there to be a strong enough economic basis for imposing access regulation in respect of dark fibre in the core network. Nevertheless, the MCMC invites stakeholder views on whether they face barriers either to accessing existing dark fibre services or to rolling out their own dark fibre services.
- 18.17 On a more general policy basis, the MCMC held in its Assessment of Dominance that declaring a particular access provider dominant in the market for wholesale access to dark fibre may result in reduced incentives to invest in dark fibre.¹⁴³ Similarly, the MCMC considers that including a dark fibre access service in the Access List may hinder investment in dark fibre in Malaysia.
- 18.18 Finally, while the MCMC appreciates that dark fibre backhaul is regulated in some jurisdictions, such as Austria, Norway, Germany and Sweden, overseas regulatory settings are not necessarily applicable to the Malaysian context unless there are clear similarities between the state of competition in the relevant markets in those jurisdictions and the state of competition in the relevant markets in Malaysia.

¹⁴¹ Assessment of Dominance PI Report, Errata <[http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Errata-PI-Report-on-Dominance-081014\(Latest\).pdf](http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Errata-PI-Report-on-Dominance-081014(Latest).pdf)>.

¹⁴² Assessment of Dominance PI Report, p. 114.

¹⁴³ Assessment of Dominance PI Report, Errata <[http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Errata-PI-Report-on-Dominance-081014\(Latest\).pdf](http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Errata-PI-Report-on-Dominance-081014(Latest).pdf)>.

MCMC Preliminary Views

18.19 MCMC does not propose to regulate dark fibre access in the core network by way of the Access List.

Questions

Question 71: Do you acquire access to dark fibre as an access seeker or supply access to dark fibre as an access provider?

Question 72: Are you experiencing any difficulty in acquiring or supplying access to dark fibre? If not, why not? (Please provide details).

Question 73: What similarities (in terms of state of competition or other factors) exist between jurisdictions that regulate dark fibre in the core network and Malaysia?

19 Access to Layer 3 HSBB Network services

Introduction

19.1 Access to Layer 3 HSBB Network Services is relevant to the national market for wholesale access to fixed broadband and data services, discussed at paragraphs 12.1 to 12.6 of this PI Paper. The Access List currently contains two services that are relevant to this market:

- (a) the HSBB Network Service with QoS, discussed at paragraphs 12.35 to 12.58 above; and
- (b) the HSBB Network Service without QoS, which the MCMC is considering removing from the Access List, discussed at paragraphs 12.59 to 12.87 above.

19.2 In practice, access seekers have been acquiring layer 3 services commercially on the HSBB Network, including where they are unable to access regulated layer 2 services. The layer 3 services are a set of commercial constructs offered by TM.

19.3 As discussed briefly in Chapter 12, the ladder of investment contemplates access seekers being able to acquire a wholesale service which requires minimum investment to begin competing for retail customers. As operators begin to build up a customer base and associated economies of scale in serving the customer base, access regulation should then encourage successively greater investment from access seekers. However, setting the first 'rung' of the ladder too high may fail to facilitate the initial competition by access seekers, which is necessary before access seekers can engage in deeper competition.

19.4 Given that access seekers are currently only acquiring layer 3 services commercially on the HSBB Network, it is the MCMC's preliminary view that any access regulation must focus first on facilitating competition at layer 3 and providing a path to competition at layer 2 over time. Consequently, in this Chapter 19 the MCMC considers the inclusion of a Layer 3 HSBB Network Service in the Access List.

19.5 The scope of the Layer 3 HSBB Network Service would be similar to the scope of the (Layer 2) HSBB Network Service with QoS, with one difference: the Layer 3 HSBB Network Service would be provided to a POI which could be located either at an access provider network location or an access seeker network location. The following diagram illustrates the scope of the proposed Layer 3 HSBB Network Service with the POI, in this illustration, at an access provider network location:

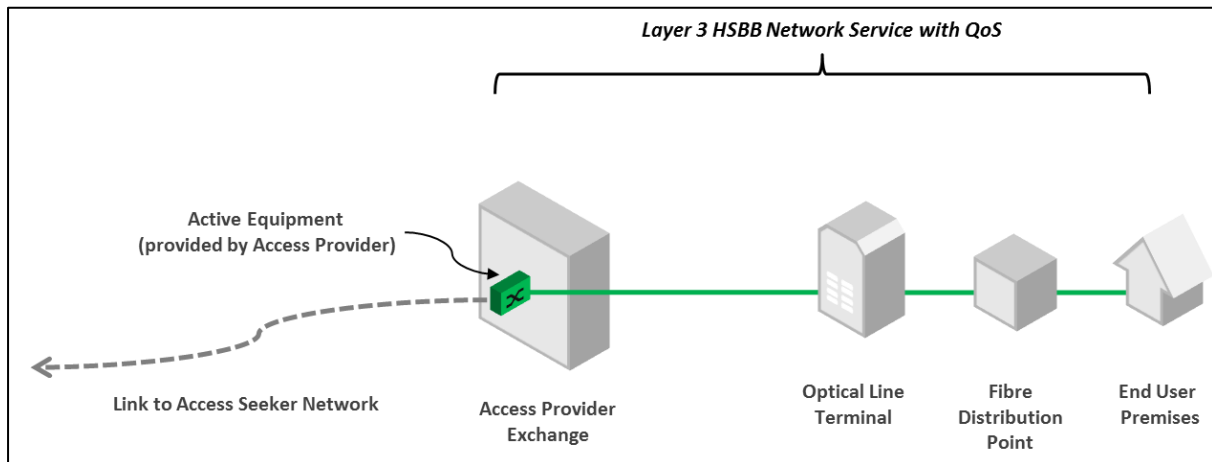


Figure 23 – Scope of Layer 3 HSBB Network Service

19.6 As explained in paragraphs 12.35 to 12.58 above, the MCMC proposes to rename the existing HSBB Network Service with QoS as the “Layer 2 HSBB Network Service with QoS” in order to avoid ambiguity with the proposed Layer 3 HSBB Network Service.

19.7 This chapter discusses the MCMC’s rationale for listing a Layer 3 HSBB Network Service. The proposed service description of the Layer 3 HSBB Network Service is contained in paragraph 19.22 below.

Submissions Received

19.8 A number of operators submitted that the MCMC should add a Layer 3 HSBB Network Service to the Access List or otherwise made submissions in favour of outcomes which would be furthered by the addition of a Layer 3 HSBB Network Service. In particular:

- (a) Celcom requested that the MCMC amend the Access List to cover all of TM’s HSBB Network services; and
- (b) Maxis requested that the HSBB Network Services in the Access List be expanded to cover both layer 2 and layer 3 services.

MCMC Assessment

19.9 As noted in paragraphs 19.1 to 19.7 above, regulation of a Layer 3 HSBB Network Service must be carefully considered from a policy perspective. Any new regulation must be for the long-term benefit of end users. The MCMC considers that the addition of a Layer 3 HSBB Network Service to the Access List would be for the long-term benefit of end users for two core reasons: to facilitate competition in the supply of downstream HSBB Network-based

retail services and to encourage infrastructure investment. Each of these matters is examined below.

- 19.10 TM is the monopoly provider of wholesale access to services on the HSBB Network. Without competition or the prospect of likely competition for the supply of such wholesale services, TM has little or no commercial incentive to provide wholesale access on equitable and non-discriminatory terms to access seekers who would compete with TM at the retail level. Without equitable and non-discriminatory access, there is unlikely to be effective competition for the supply of downstream retail services on the HSBB Network. As demonstrated by access seekers' submissions summarised in paragraph 19.8 and in Chapter 12, the fact that TM is supplying commercial HSBB Network services at layer 3 is not an answer to this concern, as TM has no commercial incentive to ensure that the prices, features and terms of such services are reasonable, including reflecting the needs of wholesale customers.
- 19.11 By including a Layer 3 HSBB Network Service in the Access List, the MCMC will have an opportunity to consider whether the prices, features and terms on which such services are supplied require regulation, including through the MSA and MSAP to facilitate competition in downstream services, thereby leading to service innovation and price improvements for end users.
- 19.12 Consistent with the ladder of investment, regulating a Layer 3 HSBB Network Service can also lead to infrastructure investment by access seekers, which is also to the long-term benefit of end users. As access seekers with equitable and non-discriminatory access to a Layer 3 HSBB Network Service build up a downstream customer base, they will have commercial incentives to increase investment in their network infrastructure, moving into the acquisition of Layer 2 services to reduce costs and increase service differentiation, supported by the economies of scale of a large customer base, ultimately resulting in increased choice and lower costs for end users. Indeed, the MCMC intends to only regulate a Layer 3 HSBB Network Service in a manner which facilitates access providers and access seekers moving to the supply and acquisition of the (Layer 2) HSBB Network Service with QoS or commercial layer 2 services over time.
- 19.13 The MCMC proposes to facilitate such a transition over time through two means. First, by ensuring that the terms and prices for regulated access to the Layer 3 HSBB Network Service and the (Layer 2) HSBB Network Service with QoS are considered holistically during future MSA and MSAP reviews. Second, by including a mechanism for targeted removal of regulated access to the Layer 3 HSBB Network Service in the Access List as discussed in Part A (Background) of this PI Paper.
- 19.14 Expanding on the first point: regulating a Layer 3 HSBB Network Service and a (Layer 2) HSBB Network Service with QoS holistically will allow the MCMC to ensure any regulated terms and conditions incentivise supply of services lower in the network stack, in accordance with the ladder of investment.

- 19.15 Regarding the second point in paragraph 19.13, as discussed in Part A, the MCMC proposes to include an incentive-based approach in the Access List under which regulation of the Layer 3 HSBB Network Service is removed on an area-by-area basis as the MCMC sees evidence of layer 2 services being provided by way of the (Layer 2) HSBB Network Service with QoS.
- 19.16 However, the MCMC recognises that at any point in time, different operators will be in different positions, and any removal of Access List regulation of a layer 3 service must reflect the fact that some access seekers will be in a better position to acquire layer 2 services than others. Consequently, the MCMC proposes to remove regulation of the Layer 3 HSBB Network Service only if it is likely that there will be competition for the supply of such Layer 2 services in the absence of regulation.
- 19.17 In particular, the MCMC proposes a two-step test for determining whether a particular area is sufficiently competitive in respect of the supply of the (Layer 2) HSBB Network Service with QoS, and therefore appropriate to exclude that location from the scope of the Layer 3 HSBB Network Service:
- (a) if there are three or more independent operators providing the (Layer 2) HSBB Network Service with QoS in a particular area, the MCMC will form a preliminary view that there is sufficient competition in that area and therefore a case exists for removing Layer 3 regulation (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and
 - (b) this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of (Layer 2) HSBB Network Service with QoS in a particular area.
- 19.18 The MCMC is interested in obtaining stakeholder views about what asymmetric bit rates, classes of service and contention ratios should be prescribed in the description of the Layer 3 HSBB Network Service. The MCMC considers that the service description should require the access provider to offer both symmetric services (where upstream and downstream bit rates are equal) and asymmetric services (where the downstream bit rate is higher than the upstream bit rate).
- 19.19 Within the retail market for fixed broadband and data, there is particular user demand for asymmetric services, due to the fact that most users (particularly at the consumer level) download significantly more data than they upload in the normal course of their broadband use. Accordingly, to enable access seekers to effectively compete in the retail market, it is crucial that access seekers have the option of purchasing Layer 3 HSBB Network Service with asymmetric bit rates. However, the MCMC is interested in identifying more precisely whether there is demand for asymmetric bit rates from access seekers and what asymmetric bit rates access seekers require and access providers are able to provide.

19.20 Access seekers have also noted a desire for control of contention ratios, which is a key factor in service differentiation and allows an operator to construct economically efficient services. The MCMC is interested in understanding the contention ratios that different access seekers wish to acquire and access providers are able to provide.

MCMC Preliminary Views

19.21 The MCMC's preliminary view is that a new Layer 3 HSBB Network Service be listed in the Access List together with a mechanism to remove regulation of the service on an area-by-area basis where there is sufficient evidence of the supply of the (Layer 2) HSBB Network service in the given area, as described above.

19.22 The MCMC proposes the following description for the Layer 3 HSBB Network Service, together with definitional changes:

New Definition

"End user" means an ultimate retail Customer of an Operator.

Layer 3 HSBB Network Service

- (a) *The Layer 3 HSBB Network Service is an access and transmission Facility and/or Service for the provision of Layer 3 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at an End user's premises and a POI at a network location on the Access Provider's network or Access Seeker's Point of Presence, where in respect of the service:*
- (i) *the customer equipment is directly connected to an Access Provider's High Speed Broadband Network;*
 - (ii) *the Access Seeker selects the bit rate; and*
 - (iii) *the Access Seeker selects the Class of Service ("COS").*
- (b) *The Layer 3 HSBB Network Service with QoS includes shared splitting services, interfaces to operational support systems and network information.*
- (c) *Nothing in this service description is intended to limit:*
- (i) *the number of concurrent Layer 3 HSBB Network Services acquired by an Access Seeker from an Access Provider associated with a single Customer;*
 - (ii) *concurrent acquisition of the Layer 3 HSBB Network Service and other HSBB Network Services by an Access Seeker from an Access Provider associated with a single Customer; or*
 - (iii) *the number of HSBB Network Services by a single Access Seeker (nor permit an Access Provider to require an Access Seeker to acquire any minimum or maximum number of HSBB Network Services as a condition of an Access Provider supplying the Layer 3 HSBB Network Service).*
- (d) *The Layer 3 HSBB Network Service shall be supplied to the Access Seeker as follows:*

- (i) at pre-defined speeds which are capable of providing the bit rates specified below, as selected by the Access Seeker:

Symmetric bit rates
4 Mbps to 30 Mbps inclusive, in increments of 1 Mbps
32 Mbps
50 Mbps
60 Mbps
100 Mbps

Asymmetric bit rates	
Downstream	Upstream
[To be determined]	[To be determined]

- (ii) in accordance with the following classes (each a "CoS"), as selected by the Access Seeker, with traffic in each CoS prioritised as set out below in the case of congestion:

Class of Service	Traffic Priority
Business Internet	1
Video on Demand, Voice	2
IPTV	3
Consumer Internet	4

- (iii) at pre-defined contention ratios, including at least the following, as selected by the Access Seeker:

Contention ratios
1:10
[Other contention ratios to be determined]

19.23 The MCMC proposes the following mechanism for removal of regulated access of the Layer 3 HSBB Network Service on an area-by-area basis and invites comments from the operators on the mechanism:

- (1) If an Access Provider submits to the MCMC:
- (a) a proposal to remove one or more areas from the scope of the Layer 3 HSBB Network Service;
 - (b) commercial terms of supply, including prices, that the Access Provider proposes to offer for the Layer 3 HSBB Network Service should it be de-regulated;
 - (c) an Access Reference Document published by the Access Provider for the Layer 2 HSBB Network Service with QoS; and
 - (d) evidence that three or more independent Access Providers are offering the Layer 2 HSBB Network Service with QoS in the identified area(s),

the MCMC will conduct a two-step test as follows:

- (e) if there are three or more independent operators providing Layer 2 HSBB Network Service with QoS in the identified area(s), the MCMC will form a preliminary view that there is sufficient competition at that location (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and*
 - (f) this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of Layer 2 HSBB Network Service with QoS at that location.*
- (2) Upon satisfaction that the proposal satisfies the two-step test, the MCMC will conduct a Public Inquiry on whether to remove the Layer 3 HSBB Network Service (in the identified area(s)) from the Access List.*
 - (3) Any Operator may object to the potential removal of the Layer 3 HSBB Network Service from the Access List by providing evidence on the lack of competition in the supply of Layer 2 HSBB Network Service with QoS in the identified area(s), including number of independent providers, barriers to entry, pricing and countervailing buyer power, during the Public Inquiry.*
 - (4) If the MCMC receives an objection with the evidence specified in paragraph (3) within the deadline set out in the Public Inquiry, it may extend the Public Inquiry to conduct such further inquiries as it considers necessary, including by gathering information from Operators.*
 - (5) Following the completion of the Public Inquiry, including any extended Public Inquiry, where applicable, the MCMC shall publish a Public Inquiry Report setting out its findings.*

Questions

Question 74: Do you acquire HSBB Network services at layer 3 as an access seeker or supply HSBB Network services at layer 3 as an access provider?

Question 75: Should a new Layer 3 HSBB Network Service be listed in the Access List?

Question 76: What is your view of the description of the Layer 3 HSBB Network Service proposed by the MCMC in paragraph 19.22?

Question 77: Should the Layer 3 HSBB Network Service include a requirement to supply asymmetric bit rates? If you are an access provider, what asymmetric bit rates are you capable of providing? If you are an access seeker, what asymmetric bit rates do you require to provide retail services?

Question 78: Do you agree with the classes of service proposed by the MCMC in the Layer 3 HSBB Network Service description? If not, what alternative or additional classes of service should be included in the service description?

Question 79: Is the level of generality at which the MCMC proposes to define the classes of service sufficient? If not, what specific metrics should be included within the classes of service?

Question 80: Should additional contention ratios beyond a 1:10 contention ratio apply to the Layer 3 HSBB Network Service? If so, what contention ratios should be included and (as an access seeker) why do you require these contention ratios?

Question 81: Should the Access List include a mechanism for responsive removal of the Layer 3 HSBB Network Service? Please provide reasons.

Question 82: If the Access List includes a mechanism for responsive removal of the Layer 3 HSBB Network Service, should the mechanism set out above apply? Please describe any alternative mechanism you would propose (including comments on how the mechanism complies with the CMA).

Question 83: If the Access List does include a mechanism for responsive removal of the Layer 3 HSBB Network Service, do you think it is likely that more than one access seeker of the (Layer 2) HSBB Network Service with QoS or equivalent commercial services will begin competing to supply Layer 3 HSBB Network services over time?

Question 84: If a Layer 3 HSBB Network Service is included in the Access List, should the MCMC continue regulating any (Layer 2) HSBB Network service?

20 Access to End-to-End Transmission Services

Introduction

20.1 Access to end-to-end transmission services is relevant to the following wholesale transmission services markets discussed in Chapter 13 of this PI Paper:

- (a) the national market for wholesale inter-exchange transmission and the market for wholesale inter-exchange transmission between Peninsular Malaysia and East Malaysia, discussed at paragraphs 13.4 to 13.13;
- (b) individual wholesale markets for transmission to a submarine cable landing station or satellite earth station, discussed at paragraphs 13.14 to 13.20 above; and
- (c) a national market for broadcasting transmission to towers, discussed at paragraphs 13.21 to 13.27 above.

20.2 The Access List currently contains two services that are relevant to the above markets:

- (a) the Transmission Service, which comprises transmission only between two POIs on the access provider's network (e.g. access provider exchanges); and
- (b) the Wholesale Local Leased Circuit Service, which comprises transmission between an access provider POI and an end user premises or access seeker POP.

- 20.3 In practice, access seekers have been acquiring end-to-end transmission between customer locations and/or access seeker POPs. This is a commercial construct.
- 20.4 There may be commercial rationales for access seekers to seek access to transmission services on an end-to-end basis rather than acquiring access to transmission on a network-segment basis and constructing their own end-to-end transmission products. However, access regulation must be concerned with removing bottlenecks which prevent operators from competing at every layer of the network stack to permit maximum competition for the long-term benefit of end users. Access regulation must also be concerned with encouraging infrastructure investment where it is economically feasible, as such investment itself removes bottlenecks.
- 20.5 Therefore, there must be a persuasive policy rationale for the MCMC to consider regulating end-to-end transmission as acquired by access seekers in practice. One strong argument for such regulation is that:
- (a) acquiring the regulated Transmission Service and Wholesale Local Leased Circuit Service currently included in the Access List requires an access seeker and access provider to establish a POI at or near each point on the access provider's network which constitutes an end point for one of these services; and
 - (b) amongst the difficulties access seekers have faced in acquiring these regulated transmission services is an inability in some cases to acquire the regulated Network Co-Location Service necessary to establish a POI at or near the access provider's network in an economic manner.
- 20.6 Given these difficulties, the MCMC proposes to list an additional End-to-End Transmission Service in the Access List alongside the Transmission Service and the Wholesale Local Leased Circuit Service. The End-to-End Transmission Service would provide wholesale access to transmission links between two end user locations, two access seeker POPs or an end user location and an access seeker POP without the need for an access seeker to interconnect with an access provider's network at a POI.
- 20.7 As can be seen in Figure 24 – Scope of Transmission Service and Wholesale Local Leased Circuit Service and Figure 25 – Scope of proposed End-to-End Transmission Service below, the End-to-End Transmission Service would be the functional equivalent of an access seeker acquiring a Transmission Service for transmission between two POIs and a Wholesale Local Leased Circuit Service between the end of each POI and an end user premises or an access seeker POP.

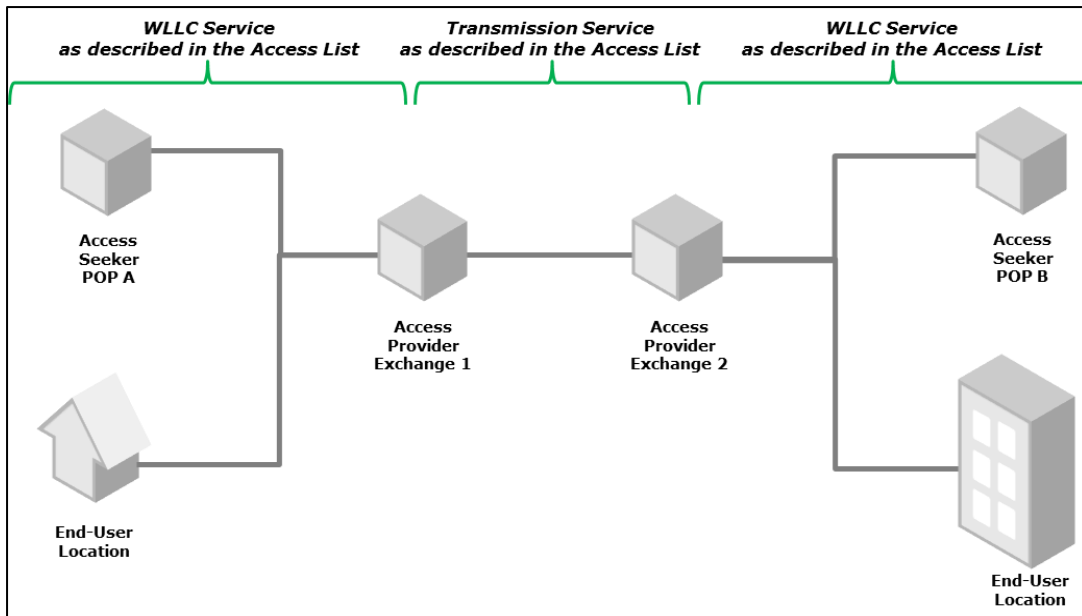


Figure 24 – Scope of Transmission Service and Wholesale Local Leased Circuit Service

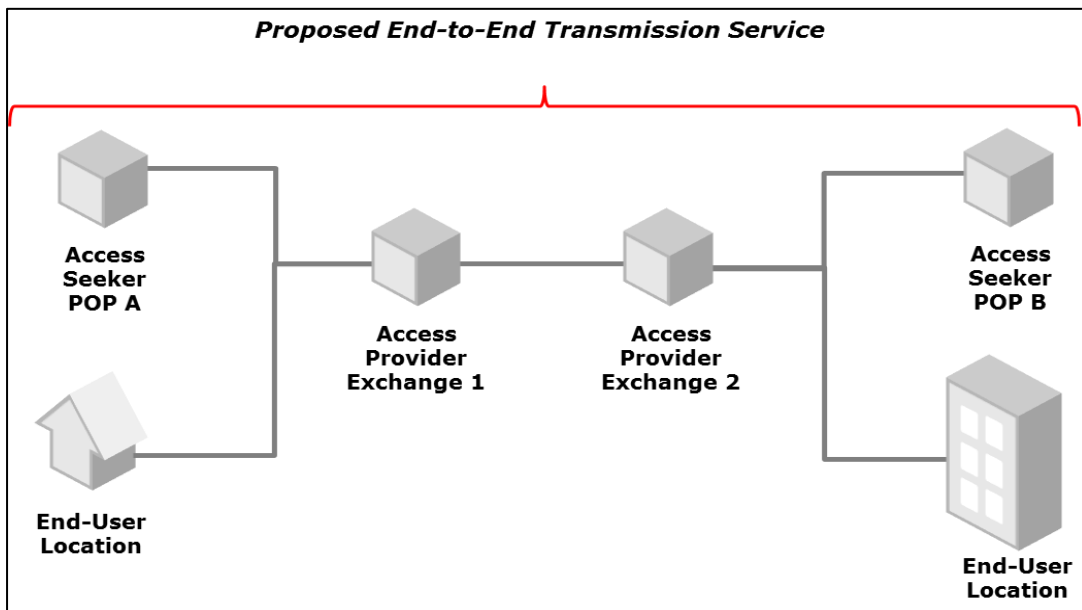


Figure 25 – Scope of proposed End-to-End Transmission Service

20.8 As explained in paragraphs 13.64 to 13.69 above, the MCMC proposes to rename the Transmission Service as the “Trunk Transmission Service” in order to avoid ambiguity with the proposed End-to-End Transmission Service.

20.9 This chapter discusses the MCMC’s rationale for listing an End-to-End Transmission Service. The wording of the proposed End-to-End Transmission Service is contained in paragraph 20.21 below.

Submissions Received

20.10 Maxis submitted that the MCMC should redefine the scope of the Transmission Service to include all network elements, including ports and tails.

20.11 While no other stakeholders have specifically commented on or requested the addition of an End-to-End Transmission Service, several stakeholders have outlined barriers to accessing the Transmission Service and Wholesale Local Leased Circuit Service or have made complaints relating to these services which are relevant to the MCMC's proposal to include a new End-to-End Transmission Service in the Access List.

20.12 In particular:

(a) Celcom submitted that it is facing a significant problem with the Transmission Service due to the implementation of MSAP 2012. Celcom submitted that its concern is not with the price *per se* but with the abusive conduct of access providers who apply a different pricing structure to the service. Celcom submitted that the access provider (TM) has made changes to its service offering since the MSAP 2012 was implemented. Celcom's submission explained that, prior to 1 March 2013, TM offered an end-to-end transmission service, but after that point TM claimed that the transmission service is in two parts – one trunk segment connected to two tail segments, each supplied with a port. According to Celcom, TM then claimed that the MCMC's regulated pricing in MSAP 2012 only applied to the trunk segment. Celcom claimed that TM used this rationale to charge access seekers for the port and tail segment separately, and that TM also increased the relevant installation charge. By Celcom's analysis, there should be a reduction of about 70% of the wholesale leased line rental cost, however due to TM's changed pricing structure, there has been an increase in cost so that charges are now five times those specified in the MSAP 2012. Celcom submitted that the Transmission Service should be regulated nationwide without exemption to any route, and without separation into segments. Celcom also submitted that the service description should be technology neutral.

(b) Maxis explained that initially the incumbent operator offered a service similar to what was previously known as the Domestic Network Transmission Service. However, after the MSAP 2012 was implemented, Maxis claimed that the incumbent operator has included additional segmentation of ports and tails in the Transmission Service definition and has also increased the total distance of the existing circuit by 20-30% (at Maxis' estimate). By Maxis' calculation this has caused a significant increase in cost, rather than the projected cost saving to access seekers.

Maxis submitted that there are on-going disputes between operators on the scope of the Transmission Service, and almost all

operators are of the opinion that ports and tails are included in the scope of the service. Maxis claimed that this was also the earlier industry understanding. Maxis submitted that pricing should be regulated and implemented according to the Public Inquiry Report on Access Pricing dated 14 December 2012.

- (c) REDtone submitted that it acquires the Transmission Service for voice interconnection domestically and does not agree with the port and tail charges imposed by TM, as they had not been previously discussed and exceeded the prices set out in the MSAP.
- (d) TM submitted that it continues to provide the same service for the same purpose that it did prior to the 2009 amendment to the Access List.
- (e) TIME submitted that since the MSAP revision in 2012, TM has redefined its Transmission Service to only include the trunk segment. TIME's submission is that this is inconsistent with their practice prior to the latest revision to the MSAP. TIME believed the change is due to the loss of revenue that TM experienced when the price for services was reduced by the MSAP. TIME recommended that the MCMC study the types of transmission services required by access seekers and compare the results with industry practices.

20.13 All submissions received in relation to the Transmission Service are summarised at paragraphs 13.30 to 13.51 above.

20.14 All submissions received in relation to the Wholesale Local Leased Circuit Service are summarised at paragraphs 13.81 to 13.91 above.

MCMC Assessment

20.15 As noted in paragraphs 20.4 and 20.5 above, regulation of an End-to-End Transmission Service must be carefully considered from a policy perspective. The MCMC intends to only regulate End-to-End Transmission in a manner which facilitates access providers and access seekers moving to the supply and acquisition of the (Trunk) Transmission Service and Wholesale Local Leased Circuit Service over time.

20.16 The MCMC proposes to facilitate such a transition over time through two means. First, by ensuring that the terms and prices for regulated access to End-to-End Transmission Services on one hand and (Trunk) Transmission Services and Wholesale Local Leased Circuit Services on the other hand are considered holistically during future MSA and MSAP reviews. Second, by including a mechanism for targeted removal of regulated access to the End-to-End Transmission Service in the Access List as discussed in Part A (Background) of this PI Paper.

20.17 Firstly, regulating an End-to-End Transmission Service, the (Trunk) Transmission Service and Wholesale Local Leased Circuit Service holistically will allow the MCMC to ensure any regulated terms and conditions

incentivise supply of disaggregated services, in accordance with the ladder of investment theory.

- 20.18 Regarding the second point in paragraph 20.16, as discussed in Part A, the MCMC proposes to include an incentive-based approach in the Access List under which regulation of the End-to-End Transmission Service is removed on a route-by-route basis as the MCMC sees evidence of trunk and tail transmission being separately supplied (by means of the (Trunk) Transmission Service and Wholesale Local Leased Circuit Service).
- 20.19 The MCMC proposes a two-step test for determining whether a particular route is sufficiently competitive in respect of the supply of (Trunk) Transmission Services and Wholesale Local Leased Circuit Services, and therefore appropriate to exclude that location from the scope of the End-to-End Transmission Service:
- (a) if there are three or more independent operators providing (Trunk) Transmission Services and Wholesale Local Leased Circuit Services on a particular route, the MCMC will form a preliminary view that there is sufficient competition on that route and therefore a case exists for removing regulation of the End-to-End Transmission Service (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and
 - (b) this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of (Trunk) Transmission Services and Wholesale Local Leased Circuit Services on a particular route.

MCMC Preliminary Views

- 20.20 The MCMC's preliminary view is that a new End-to-End Transmission Service be included in the Access List together with a mechanism to remove regulation of the service on a route-by-route basis where there is sufficient evidence of the supply of separate trunk and tail transmission on a given route, as described above.
- 20.21 The MCMC proposes the following description for the End-to-End Transmission Service (which includes references to the End user as the MCMC proposes to define as set out in paragraph 19.22 above):

End-to-End Transmission Service

- (a) *The End-to-End Transmission Service is a Facility and/or Service for the carriage of communications between:*
 - (i) *two End user locations;*
 - (ii) *between two Access Seeker Points of Presence; or*
 - (iii) *between one End user location and one Access Seeker Point of Presence,*

via such network interfaces at such transmission rates as may be agreed between the Access Provider and the Access Seeker on a permanent or virtual basis.

- (b) Network interfaces may use any technology as may be agreed between the Access Provider and the Access Seeker.*
- (c) The functionalities of the Transmission Service include:
 - (i) transmission and switching (whether packet or circuit);*
 - (ii) the signalling required to support the technology or to provide a service;*
 - (iii) termination at either end by a port, router, network termination unit, switch, submarine cable landing centre or earth station; and*
 - (iv) a digital protocol (including Internet Protocols).**
- (d) An End user location or Access Seeker Point of Presence in paragraph (a) may include submarine cable or satellite link between Sabah and Sarawak and Peninsular Malaysia, submarine cable landing centre or an earth station.*
- (e) The End-to-End Transmission Service may be for the carriage of communications which comprise a content applications service.*
- (f) An Access Seeker for the End-to-End Transmission Service includes (but is not limited to) a network facilities provider or network service provider which is only authorised to provide limited (e.g. in the last mile) network facilities or network services, but wishes to acquire the End-to-End Transmission Service in order to connect its limited network facilities or network services.*
- (g) For the avoidance of doubt the End-to-End Transmission Service comprises but is not limited to the Facilities and/or Services specified in the Trunk Transmission Service and the Wholesale Local Leased Circuit Service.*

20.22 The MCMC proposes the following mechanism for removal of regulated access of end-to-end transmission on a route-by-route basis and invites comments from the operators on the mechanism:

- (1) If an Access Provider submits to the MCMC:
 - (a) a proposal to remove one or more routes from the scope of the End-to-End Transmission Service;*
 - (b) commercial terms of supply, including prices, that the Access Provider proposes to offer for the End-to-End Transmission Service should it be de-regulated;*
 - (c) an Access Reference Document published by the Access Provider for the Trunk Transmission Service and the Wholesale Local Leased Circuit Service over the identified route(s); and*
 - (d) evidence that three or more independent Access Providers are offering the Trunk Transmission Service and the Wholesale Local Leased Circuit Service over the identified route(s),**

the MCMC will conduct a two-step test as follows:

- (e) *if there are three or more independent operators providing (Trunk) Transmission Services and Wholesale Local Leased Circuit Services over the identified route, the MCMC will form a preliminary view that there is sufficient competition over that route (operators under common control and operators determined by the MCMC to be collectively dominant in a relevant market would not be considered independent); and*
 - (f) *this preliminary view can be varied by broader evidence of competition or lack thereof, including evidence of barriers to entry, pricing and countervailing buyer power for the supply of (Trunk) Transmission Services and Wholesale Local Leased Circuit Services over the identified route.*
- (2) *Upon satisfaction that the proposal satisfies the two-step test, the MCMC will conduct a Public Inquiry on whether to remove the End-to-End Transmission Service (over the identified route(s)) from the Access List.*
 - (3) *Any Operator may object to the potential removal of the End-to-End Transmission Service from the Access List by providing evidence on the lack of competition in the supply of the (Trunk) Transmission Services and Wholesale Local Leased Circuit Services on the identified route(s), including number of independent providers, barriers to entry, pricing and countervailing buyer power, during the Public Inquiry.*
 - (4) *If the MCMC receives an objection with the evidence specified in paragraph (3) within the deadline set out in the Public Inquiry, it may extend the Public Inquiry to conduct such further inquiries as it considers necessary, including by gathering information from Operators.*
 - (5) *Following the completion of the Public Inquiry, including any extended Public Inquiry, where applicable, the MCMC shall publish a Public Inquiry Report setting out its findings.*

Questions

Question 85: Do you acquire end-to-end transmission services as an access seeker or supply end-to-end transmissions services an access provider?

Question 86: Should a new End-to-End Transmission Service be listed in the Access List?

Question 87: What is your view of the description of the End-to-End Transmission Service proposed by the MCMC in paragraph 20.21?

Question 88: Should the Access List include a mechanism for responsive removal of the End-to-End Transmission Service? Please provide reasons.

Question 89: If the Access List includes a mechanism for responsive removal of the End-to-End Transmission Service, should the mechanism set out above apply? Please describe any alternative mechanism you would propose (including comments on how the mechanism complies with the CMA).

Question 90: Do you agree that routes where there are three or more independent providers of (Trunk) Transmission Services and Wholesale Local Leased Circuit Services, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the End-to-End Transmission Service?

Question 91: If the regulated access to the Wholesale Local Leased Circuit Service is removed in relation to a particular location (as discussed in paragraphs 13.93 to 13.98), should regulation of the End-to-End Transmission Service on routes to and from that location also be removed? Please provide reasoning for your answer.

21 Access to Radio Access Network (RAN) Sharing

Introduction

- 21.1 Radio access network (**RAN**) sharing refers to the joint use of active equipment in the mobile access network by two or more mobile network operators (**MNOs**). More specifically, RAN sharing involves the joint use of:
- (a) antennas that transmit and receive radio signals to/from end user devices – these are typically installed on towers, mastheads, rooftop spaces or within buildings;
 - (b) BTSs, which receive signals from the antenna – these are typically located at the base of a tower or within an in-building equipment room in the case of in-building mobile systems;
 - (c) BSCs, each of which is connected to several BTSs; and
 - (d) transmission links between each BTS and the relevant BSC, which are typically fixed-line or microwave links.
- 21.2 Parties that engage in RAN sharing use a single mobile access network while maintaining separate core networks.
- 21.3 RAN sharing involves a deeper form of sharing than access to passive infrastructure such as towers, mastheads and rooftop space, where MNOs maintain separate active equipment.
- 21.4 RAN sharing may be accompanied by spectrum pooling, where two or more operators agree to jointly use the same spectrum frequency range. Nevertheless, spectrum pooling is not essential to RAN sharing and is not typically conceived of as a component of RAN sharing. Operators that share active infrastructure such as BTSs and BSCs, as well as passive infrastructure such as towers, may still use their own spectrum ranges to transmit signals from the antenna to the end user device.
- 21.5 Access to RAN sharing is not currently regulated under the Access List. The Infrastructure Sharing, discussed in paragraphs 11.25 to 11.54 above, only regulates access to passive infrastructure, such as towers, mastheads and rooftop space, which allows operators to deploy their own active equipment in the mobile access network.

Submissions Received

- 21.6 Altel submitted that RAN sharing promotes spectrum efficiency and allows operators to benefit from lower capital expenditure, since investment in two separate access networks can be avoided. Altel submitted that RAN sharing

should be added to the Access List in order to encourage RAN sharing efforts in Malaysia and to ensure that the incumbent allows new players to reach parity in terms of coverage and services.

- 21.7 Packet One also submitted that the possibility of software or radio sharing will promote entrance by new players that can lead to a more lively and innovative industry which benefits consumers at large.
- 21.8 U Mobile submitted that the MCMC should consider reviewing whether there is a need to include RAN sharing in the Access List.
- 21.9 YTL submitted that the MCMC should consider regulating access to the RAN to overcome scarcity of spectrum. YTL submitted that access to the RAN will allow operators to gain access to spectrum that they do not possess, in order to address QoS issues.

MCMC Assessment

- 21.10 The MCMC acknowledges stakeholders' submissions requesting for regulated access to RAN sharing and recognises that RAN sharing can promote efficiency and lower capital costs for MNOs. In addition to the stakeholder submissions, the MCMC also recognises that:
 - (a) RAN sharing can lead to improved network coverage and/or lower costs for end users (due to the lower capital costs associated with the RAN); and
 - (b) RAN sharing is an increasingly widespread trend globally, including in Malaysia.
- 21.11 Nevertheless, the MCMC does not consider it appropriate to regulate RAN sharing by way of the Access List.
- 21.12 RAN sharing requires a high degree of joint coordination, planning and investment by participating MNOs, especially where spectrum pooling is also involved. Accordingly, RAN sharing is not well suited to an "access provider-access seeker" model, where one operator (the access provider) is exclusively responsible for rolling out the infrastructure required to supply the service and coordinating the operation of the service, while the other operator (the access seeker) merely acquires the service in exchange for a fee. This asymmetric relationship between the access provider and access seeker is not suited to the joint control and planning that is required in order to effectively implement RAN sharing.
- 21.13 Where RAN sharing has been implemented globally, it has typically been effected through commercial arrangements that involve the participating MNOs creating a joint venture company to operate the access network elements (while the core network elements remain operated by the MNOs individually). For example:
 - (a) in Denmark, Telia and Telenor agreed in 2012 to form a joint venture company to jointly own, control and develop their RAN

infrastructure and spectrum resources across all mobile network technologies (GSM, 3G, LTE, etc);¹⁴⁴ and

- (b) in the UK, O2 and Vodafone agreed in 2012 to form a joint venture company to jointly manage their active and passive infrastructure in the access network, with each operator retaining their own spectrum allocations and core networks.¹⁴⁵

21.14 A joint venture model allows the participating MNOs to jointly plan and manage the operation of the RAN elements. This is not workable under a model where one operator is an “access seeker” on another operator’s RAN.

21.15 In light of this, the MCMC considers that including RAN sharing in the Access List is not an appropriate regulatory response to the specific dynamics of RAN sharing. Indeed, the MCMC is also not aware of any other jurisdiction globally that imposes ex-ante access obligations in respect of RAN sharing.

21.16 Altel and YTL specifically suggest that RAN sharing promotes spectrum efficiency and can be used to overcome scarcity of spectrum. If Altel and YTL’s submissions are that RAN sharing (in the sense of access to RAN elements) be used as a means of facilitating or encouraging spectrum sharing, the MCMC notes that spectrum pooling is technically distinct from RAN sharing and that RAN sharing arrangements often do not include spectrum pooling.

21.17 Alternatively, if Altel and YTL’s submissions are that access to spectrum be specifically regulated through the Access List (alongside RAN sharing), the MCMC considers that access regulation is not the appropriate vehicle for dealing with spectrum planning and scarcity issues. The MCMC already has a spectrum management function under Chapter 1 of Part VII of the CMA, which is distinct from the MCMC’s access regulation function. Spectrum is currently managed in Malaysia through the *Spectrum Plan 2012*,¹⁴⁶ spectrum assignments and other spectrum management instruments. Including access to spectrum as a regulated service in the Access List would be unworkable and would conflict with the existing spectrum management regime overseen by the MCMC.

MCMC Preliminary Views

21.18 The MCMC’s preliminary view is that access to RAN sharing (or access to spectrum) should not be listed in the Access List.

Questions

Question 92: Do you engage in RAN sharing?

Question 93: Are you experiencing any difficulty in engaging in RAN sharing? (Please provide details).

¹⁴⁴ http://ec.europa.eu/competition/ecn/brief/02_2012/dk_mobile.pdf

¹⁴⁵ <http://www.telecompaper.com/news/vodafone-o2-to-set-up-uk-network-sharing-joint-venture--877702>

¹⁴⁶ MCMC, Spectrum Plan 2012 <http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Spectrum_Plan_Final_2012.pdf>.

Question 94: What specific RAN sharing service do you suggest should be included in the Access List? What particular elements will the access provider supply and the access seeker acquire under such a service? (Please provide details).

22 Access to MVNO Services

Introduction

- 22.1 A MVNO is an operator which acquires wholesale mobile telephony services from a MNO and resells them to end users. At the wholesale level, MVNO services refer to a collection of access services that a MNO provides to another operator (the MVNO) to allow them to provide downstream mobile services to retail customers. These MVNO access services exist within the wholesale market for mobile telephony services defined by the MCMC in its Market Definition Analysis.¹⁴⁷ MVNOs then use the wholesale services to compete with MNOs at the retail level of the mobile telephony services market.
- 22.2 There is a significant degree of variation in the types and extent of MVNO services that can be provided. For example, under a “B-Brand” or “reseller” MVNO arrangement, the access seeker (MVNO) acquires almost all elements necessary to deliver retail mobile services from the access provider (MNO), including access to the RAN, core network, voice, SMS and value-added services, billing system and customer support system. The only components that the MVNO provides itself (and are thereby a point of differentiation with the MNO) are marketing and distribution.
- 22.3 At the other end of the spectrum, a “full MVNO” arrangement involves the MVNO acquiring only RAN access and spectrum from the MNO, while providing its own core network, voice and value-added services, billing and customer support systems, marketing and distribution.
- 22.4 Figure 26 – Models for MVNO arrangements illustrates the range of different models of MVNO arrangements that are common globally and the different elements provided by the MNO and MVNO, respectively, under each model.

¹⁴⁷ Market Definition Analysis, p. 64 [2.45]-[2.47].

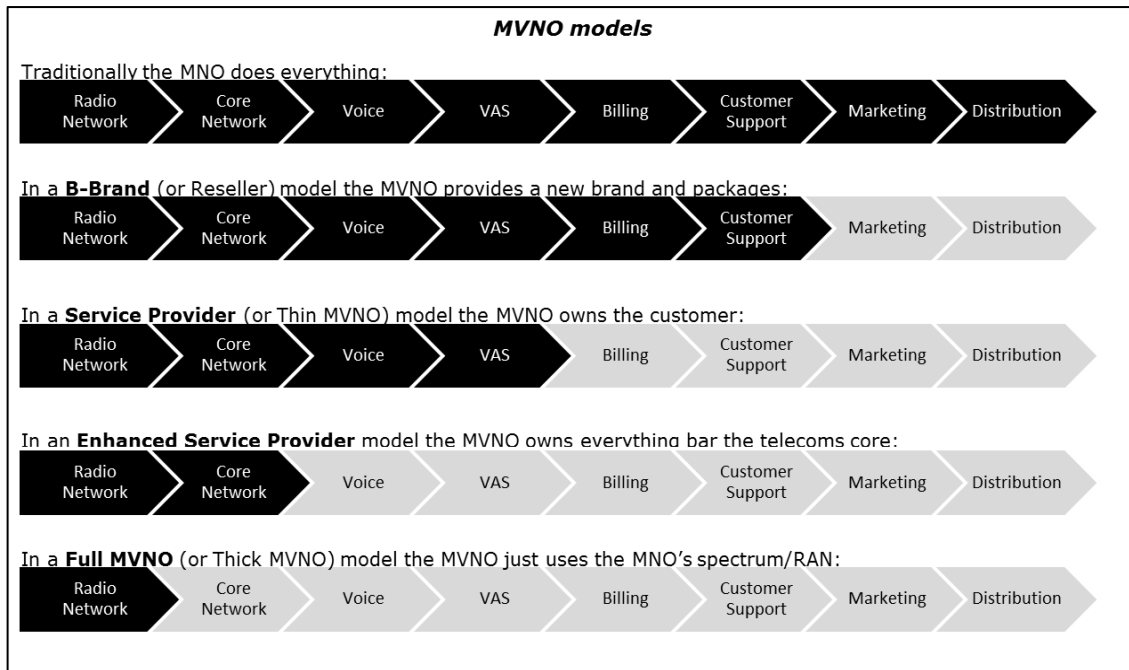


Figure 26 – Models for MVNO arrangements

- 22.5 A full MVNO arrangement has similarities to a RAN sharing arrangement, in that both arrangements involve two operators sharing usage of the same assets (the RAN and potentially spectrum), while retaining separate ownership of all other network elements and ancillary services (such as the core network, billing systems, etc).
- 22.6 However, a full MVNO arrangement differs from a RAN sharing arrangement in terms of ownership model. Under a full MVNO arrangement, one party (the MNO) retains full ownership of the RAN and spectrum and merely provides the MVNO with access to its network. Conversely, as explained at paragraphs 21.12 to 21.14 above, RAN sharing typically involves two MNOs jointly managing the shared assets, typically through a joint venture company.
- 22.7 The Access List does not currently include access to any form of MVNO services (whether in the form of “full MVNO” arrangements or other arrangements) as a regulated facility or service.

Submissions Received

- 22.8 Packet One submitted that MVNO access should be added to the Access List, as this is an ‘ideal arrangement’ in a geographic environment that does not need multiple similar infrastructures and will reduce duplication in investment.
- 22.9 TM submitted that the MCMC should mandate MVNO access in order to ensure the continued competitiveness of the Malaysian market as it transitions to 4G/LTE services. TM noted that it has previously submitted that the mobile telephony market in Malaysia is oligopolistic in nature, and reiterated that it still believes this is the case. TM submitted that in this market, MNOs have an incentive to refuse MVNO access to their networks,

particularly in rural or underserved areas where customers have less choice as to which provider they use. TM believed that suitable radio frequency spectrum is a bottleneck service and constitutes a significant barrier to entry for potential new wireless network operators.

- 22.10 TM suggested that the approach adopted by the Norwegian regulator of imposing an obligation to meet all 'reasonable requests' for access to wholesale services including voice, SMS and data, backed if necessary by other obligations including transparency, non-discrimination, price regulation and a prohibition on delay tactics, should be implemented in Malaysia. TM explained that a mandated MVNO access model provides significant benefits to consumers and will result in greater competition. TM also provided evidence that international regulators (including Japan, China, Saudi Arabia, Thailand and the EU), who were once 'hands-off' in terms of MVNO regulation, are now tending to facilitate and/or mandate MVNOs in order to promote competition. TM submitted that in each of the markets it mentioned, governments and regulators have taken action to either encourage the entry of MVNOs or mandated access through regulation or licensing requirements.

MCMC Assessment

- 22.11 The MCMC appreciates stakeholders' views regarding the possibility of listing MVNO services in the Access List. However, the MCMC notes that none of the stakeholders who have made such submissions specify precisely what MVNO services they are requesting should be added to the Access List. As explained in paragraphs 22.1 to 22.4 above, there is a range of different services which an MNO can provide to an MVNO, ranging from RAN and spectrum access to core network access to access to ancillary services such as billing and customer support.
- 22.12 The MCMC invites stakeholder submissions about the specific types of MVNO services that should be included in the Access List, as well as an explanation of why such services are bottleneck facilities and/or why listing them in the Access List would be in the long-term benefit of end users in Malaysia.
- 22.13 In response to TM's submission that MNOs have an incentive to refuse access to MVNOs, the MCMC notes that, in its Assessment of Dominance, it found that no single operator had a dominant position in the wholesale mobile telephony market. The MCMC determined that there was a level of competition between MNOs to partner with MVNOs in order to target particular customer segments and to gain a new wholesale revenue stream.¹⁴⁸ However, as the MCMC has previously noted, the total market share of MVNOs in the retail mobile telephony market is relatively small.¹⁴⁹ This may indicate that, while there are incentives for MNOs to partner with MVNOs in order to better compete with other MNOs, the incentives are not sufficiently strong to spur meaningful competition in the wholesale market for access to mobile telephony services.

¹⁴⁸ Assessment of Dominance PI Paper, p. 60 [3.43]-[3.45].

¹⁴⁹ Assessment of Dominance PI Paper, p. 60.

- 22.14 In relation to spectrum access specifically, which TM suggests is a bottleneck facility, the MCMC invites stakeholders to submit more detailed evidence of barriers they have faced to accessing spectrum through MVNO arrangements.

MCMC Preliminary Views

- 22.15 The MCMC's preliminary view is that the arguments for and against regulating access to an MVNO service is finely balanced. The MCMC invites further submissions from operators on how regulated access to a particular MVNO service would promote the long-term benefit of end users.

Questions

Question 95: Do you acquire MVNO services as an access seeker or MVNO services as an access provider?

Question 96: Are you experiencing any difficulty in acquiring or supplying MVNO services? If not, why not? (Please provide details).

Question 97: What specific MVNO services do you suggest should be included in the Access List? Why should such services be listed in the Access List? (Please identify specific access services and provide details).

23 Access to Domestic Roaming

Introduction

- 23.1 Domestic roaming, also known as "national roaming", refers to an MNO or MVNO using the RAN of another MNO or MVNO to supply retail mobile telephony services (or services of a particular type) in locations where the first MNO or MVNO does not have its own coverage (or coverage of a particular type of service). Such a service addresses economic barriers to rolling out mobile networks in regions that are sparsely populated or where an operator only has a small subscriber base.
- 23.2 Access to domestic roaming falls within the wholesale mobile telephony services market. Wholesale domestic roaming services are similar to MVNO services, in that both services involve an operator (the access seeker) acquiring access to the RAN of another operator (the access provider). However, in the MVNO services context, the access seeker tends to not own a RAN anywhere in the country, relying exclusively on wholesale RAN access from another party. Conversely, in the domestic roaming context, the access seeker will generally be a full MNO in one or more parts of the country, owning its own RAN and spectrum, and will only seek RAN access in certain geographical areas to expand its network coverage.
- 23.3 The Access List no longer regulates access to domestic roaming since 1 January 2011. Prior to this date, a 3G-2G Domestic Inter-Operator Roaming

Service was listed in the Access List and was described in the following manner:¹⁵⁰

(10) 3G-2G Domestic Inter-Operator Roaming Service

- (a) *The 3G-2G Inter-Operator Roaming Service is a Service that enables a Customer of a 3G Operator or a 3G Mobile Virtual Network Operator to initiate, receive or otherwise utilise applications on the 2G Mobile Network of the 2G Operator, where:*
- (i) *the Access Provider is the relevant 2G Operator; and*
 - (ii) *the Access Seeker is the relevant 3G Operator or a 3G Mobile Virtual Network Operator.*
- (b) *The functionalities of the 3G-2G Inter-Operator Roaming Service include the ability of the 3G Customer to initiate and receive voice calls, but are otherwise limited to the applications that the Access Provider provides to its own Customers on its 2G Mobile Network which supports Any-to-Any Connectivity.*

23.4 This 3G-2G Domestic Inter-Operator Roaming Service only covered domestic roaming where the access seeker operated a 3G network (either as an MNO or MVNO) and was seeking access to a 2G network in areas where its own 3G network had no coverage. The regulated service did not include 3G-3G domestic roaming, nor 2G-2G domestic roaming, nor access to mobile data services.¹⁵¹

23.5 The 3G-2G Domestic Inter-Operator Roaming Service was first listed in the Access List in 2005. In the 2009 variation to the Access List, the MCMC decided to maintain the service but with a sunset date of 1 January 2011.¹⁵²

23.6 The MCMC's 2008 Access List Review explained that the reason for sunsetting this service was a concern with ensuring that 3G spectrum holders retain an incentive to invest in their own infrastructure rather than relying on 2G roaming.¹⁵³ In its 2008 Access List Review, the MCMC also suggested that the 3G-2G Domestic Inter-Operator Roaming Service may no longer be necessary since 3G spectrum holders are required under the terms of their spectrum assignment to construct national networks (and therefore do not need to rely on 2G domestic roaming):

Considering that spectrum holders are required to construct national networks and the fact that U Mobile [at that time the most recent entrant into the MNO market] has concluded its roaming arrangements, the case for the long-term retention of this as a regulated service appears less convincing. The [MCMC] therefore proposes a sunset date of 1 January 2011

¹⁵⁰ Commission Determination on Access List, Determination No. 1 of 2005, paragraph 6(10).

¹⁵¹ 2008 Access List Review PI Report, p. 63.

¹⁵² Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009, paragraph 3. Paragraph 5(1)(ii) of the Commission Determination on Access List, Determination No. 1 of 2005 (as varied by Determination No. 1 of 2009), states that paragraph 6(10), which contains the 3G-2G Domestic Inter-Operator Roaming Service, "shall be in force until 1 January 2011".

¹⁵³ 2008 Access List Review PI Report, p. 63.

*after which time the service will cease to have effect.*¹⁵⁴

- 23.7 Accordingly, the 3G-2G Domestic Inter-Operator Roaming Service is no longer in force and there remains no other regulation of domestic roaming in the Access List.

Submissions Received

- 23.8 Altel submitted that access to domestic roaming on the 2G and 3G networks of incumbents is essential for LTE operators like Altel, because it ensures efficient coverage nationwide. Altel submitted that the Domestic Roaming Service should be re-inserted into the Access List especially for new entrants offering single services on a unique network.
- 23.9 Packet One submitted that Domestic Roaming should be added to the Access List, as it is an 'ideal arrangement' in a geographic area that does not need multiple similar infrastructures and will reduce duplication in investment.
- 23.10 TM submitted that Domestic Roaming Services should be re-introduced to the Access List after they were removed in 2009. This is because TM is of the opinion that domestic roaming makes good policy sense and avoids network duplication in remote and regional areas where it may only be economically feasible for one infrastructure provider to be present. TM cited statements from the ITU that for competition reasons, LTE and 4G services require the right to provide MVNO services over existing 2G and 3G networks. TM also detailed domestic roaming arrangements in selected markets overseas, including the EU, Indonesia, New Zealand, Thailand and the United States.

MCMC Assessment

- 23.11 The MCMC does not consider that there is a rationale either for re-introducing the 3G-2G Domestic Inter-Operator Roaming Service, or for listing a broader domestic roaming service in the Access List.
- 23.12 The MCMC acknowledges that one of the benefits of domestic roaming is that it encourages efficient use of existing infrastructure and reduces duplication of networks. However, the same rationale is likely to provide a commercial incentive for operators to share infrastructure through roaming arrangements even in the absence of regulation, where it is in both parties' interests to do so.
- 23.13 The MCMC considers that the reasons for imposing a sunset date in relation to the 3G-2G Domestic Inter-Operator Roaming Service, summarised in paragraphs 23.6 above, continue to apply. Moreover, these reasons also apply more broadly to domestic roaming in Malaysia.
- 23.14 Given that MNOs are already obliged to roll out national networks by virtue of their apparatus / spectrum assignments, it is unclear what the

¹⁵⁴ 2008 Access List Review PI Report, p. 63. See also 2008 Access List Review PI Paper, p. 102.

competitive benefit of a regulated domestic roaming service would be. Moreover, the MCMC is concerned about the impact that a regulated domestic roaming service would have on infrastructure investment by MNOs, and therefore on the potential for facilities-based competition in the mobile telephony market.

23.15 The MCMC is interested in obtaining further stakeholder views about the impact that a regulated domestic roaming service would have on infrastructure investment by operators, on any-to-any-connectivity and on end users' access to mobile telephony and data services, particularly LTE services.

MCMC Preliminary Views

23.16 The MCMC's preliminary view is that access to domestic roaming should not be regulated by way of the Access List.

Questions

Question 98: Do you acquire domestic roaming services as an access seeker or supply domestic roaming services as an access provider?

Question 99: Are you experiencing any difficulty in acquiring or supplying domestic roaming services? If not, why not? (Please provide details).

Question 100: Do you support reintroducing the 3G-2G Domestic Inter-Operator Roaming Service or another, different domestic roaming service in the Access List? If yes, why? (Please provide details).

Question 101: How would a regulated domestic roaming service affect infrastructure investment by operators which would be access seekers for such a service?

Question 102: To what extent is a domestic roaming service necessary to enable any-to-any connectivity?

Question 103: How would allowing roaming on 3G and 2G networks increase end users' access to LTE data services (or in the case of roaming on to 2G networks, increase access to 3G data services)?

Question 104: Where it is efficient for operators to enter into domestic roaming arrangements rather than rolling out their own infrastructure, what would prevent operators from doing so commercially?

24 Access to Internet Interconnection (including MyIX)

Introduction

24.1 As discussed in the MCMC's Market Definition Analysis, access to Internet interconnection forms part of a distinct market for wholesale Internet

interconnection.¹⁵⁵ This market comprises two main types of IP interconnection arrangements:

- (a) **Peering arrangements**, which are facilitated by Internet Service Providers (**ISPs**) connecting at Internet Exchange Points (**IXPs**) or at other POIs. An IXP is a central place where multiple ISPs voluntarily agree to interconnect their respective networks. By participating in an IXP, ISPs are typically able to exchange traffic without having to buy transit from an upstream provider. This appears to be the most common form of Internet interconnection in Malaysia.¹⁵⁶
- (b) **Transit arrangements**, where one ISP pays another ISP for providing full connectivity to the Internet for upstream and downstream transmission of traffic, including the carriage of traffic to third parties.

24.2 Internet interconnection is essential to ensuring that ISPs can provide end-to-end connectivity to their end users, allowing them to connect fully to the Internet (including to end users and/or websites connected to other ISPs).

24.3 The wholesale Internet interconnection market is distinct from:

- (a) the market for wholesale fixed broadband and data services, discussed in Chapter 12, which includes transmission rather than interconnection services; and
- (b) the interconnect link markets, discussed in Chapter 14, which include access to interconnection in a telephony context and not for Internet purposes.¹⁵⁷

24.4 Since the late 2000s, a significant amount of Internet interconnection in Malaysia is facilitated by the Malaysia Internet Exchange (**MyIX**), which provides a central space for domestic peering between all major service providers. However, Internet interconnection, via either peering or transit arrangements, can also take place at a POI different to MyIX, which is owned either by an ISP or by a third party.

24.5 Since 1 January 2011, the Access List no longer regulates wholesale Internet interconnection. Prior to this, an Internet Interconnection Service was listed in the Access List, which was described in the following manner:

(21) Internet Interconnection Service

The Internet Interconnection Service is a Facility and/or Service for the carriage of data in digital form between one or more POI at a BGR of an Access Provider's network and the IP addresses directly connected to the Access Provider's network.

24.6 "BGR" was defined in the Access List in the following manner:

¹⁵⁵ Market Definition Analysis, p. 109.

¹⁵⁶ Market Definition Analysis, p. 106.

¹⁵⁷ Assessment of Dominance PI Paper, p. 144.

"BGR" or "Border Gateway Router" means a router designed for the interconnection of two autonomous systems.

- 24.7 The Internet Interconnection Service was first listed in the Access List in 2005. In the 2009 variation to the Access List, the MCMC decided to maintain the Internet Interconnection Service but with a sunset date of 1 January 2011.¹⁵⁸ Accordingly, from 1 January 2011 onwards, the Internet Interconnection Service is no longer regulated via the Access List.
- 24.8 In the 2008 Access List Review, the MCMC stated that the Internet Interconnection Service was originally included in the Access List due to significant problems faced by certain operators seeking Internet interconnection, including highly inefficient routing arrangements which effectively forced traffic out of Malaysia.¹⁵⁹
- 24.9 However, in the 2008 Access List Review, the MCMC recognised the ongoing positive collaboration between MyIX, the industry in general and the MCMC in addressing what was once a serious problem in the industry. Accordingly, the MCMC decided that regulation should be removed from 1 January 2011 onwards.¹⁶⁰
- 24.10 In its Assessment of Dominance, the MCMC found that no operator was dominant in the market for wholesale Internet interconnection.¹⁶¹ The MCMC considered that MyIX had a "moderating influence" on the wholesale Internet interconnection market, by facilitating interconnection between ISPs of various sizes and preventing the artificial inflation of costs by larger ISPs.¹⁶² The MCMC also noted that barriers to entry in the market were relatively low, given that it was possible for ISPs to find alternative or substitute routes if interconnection was prevented on a particular operator's network.¹⁶³

Submissions Received

- 24.11 Altel submitted that it acquires services provided by MyIX for the carriage of domestic Internet traffic to other providers. Altel submitted that the MyIX service has enabled Altel to offer end users a cheaper product. Altel also submitted that it does not foresee any impediments to access to this service.
- 24.12 Celcom submitted that it acquires domestic peering across all ISPs and local content providers, and has not experienced any impediment to access since the Internet Interconnection Service was removed from the Access List. Celcom submitted that in its view the MyIX service is now fully operational and robust.

¹⁵⁸ Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009, paragraph 3. Paragraph 5(1)(ii) of the Commission Determination on Access List, Determination No. 1 of 2005 (as varied by Determination No. 1 of 2009), states that paragraph 6(21), which contains the Internet Interconnection Service, "shall be in force until 1 January 2011".

¹⁵⁹ 2008 Access List Review PI Report, p. 129.

¹⁶⁰ 2008 Access List Review PI Report, p. 129.

¹⁶¹ Assessment of Dominance PI Report, p. 108.

¹⁶² Assessment of Dominance PI Paper, p. 145.

¹⁶³ Assessment of Dominance PI Paper, p. 145.

- 24.13 DiGi submitted that MyIX is a vital link among operators for the exchange of domestic Internet traffic which avoids the otherwise impractical alternative of directing traffic via international exchanges like Hong Kong, Japan and Singapore. DiGi also submitted that the Internet Interconnection Service is no longer required now that MyIX is established.
- 24.14 Jaring submitted that it was one of the three founding members of MyIX.
- 24.15 Konsortium Rangkaian Serantau submitted that MyIX is very important for future access and interconnection services, and that its role needs to be constantly and proactively reviewed as currently MyIX is only a local peering facility, but a number of global service providers are being invited to participate in MyIX by interconnecting with local ISPs. Konsortium Rangkaian Serantau submitted that interconnection and access by global providers must be fair to local ISPs who have invested in this service. Konsortium Rangkaian Serantau is of the opinion that the MCMC should continue to actively participate in the running and management of MyIX to reduce the risk that larger players steamroll decisions by smaller participants.
- 24.16 Maxis submitted that it subscribes to MyIX services and has not experienced any impediments to access so far. Maxis submitted that access is an issue for selected large OTT content players like Google, rather than with Malaysian licensees. Maxis is of the view that these large content players can practice selective peering, which means that 'not [all] small ISPs' can connect directly to them.
- 24.17 An operator submitted that it does not currently acquire services from MyIX but is in the midst of considering whether traditional direct Internet access or peering using MyIX best suits its business. The operator submitted that it has not experienced any impediments to accessing this service.
- 24.18 Packet One submitted that it uses port and bandwidth MyIX services and requested that the MCMC reinsert the service into the Access List. Packet One also submitted that MyIX should be a POI for the purposes of inter-operator interconnection.
- 24.19 TM submitted that MyIX is working well and there are currently no material issues related to accessing MyIX. TM also submitted that globally, most countries do not regulate peering services that work well and are commercially driven. TM is of the opinion that if the MCMC wishes to regulate Internet exchange services there would need to be compelling competition policy and legal reasons which TM does not believe are present at this time. TM cited an example from Poland to support this point, explaining that in Poland, the national regulator tried to regulate the markets for Internet traffic exchanges but the European Commission overruled this decision as Polish ISPs are also able to interconnect indirectly via other operators, meaning sufficient competitive services are already present.
- 24.20 TIME submitted that MyIX services are essential to the provisioning of its broadband services. TIME also submitted that it is of the opinion that having

three MyIX centers in the central region is a waste of national resources, as all operators currently have network presence in Menara Aik Hua since AIMS adopts an open policy of allowing any operator to locate their equipment at the AIMS data center.

MCMC Assessment

- 24.21 The MCMC does not consider that there is a rationale for re-listing an Internet Interconnection Service in the Access List or otherwise regulating wholesale Internet interconnection by way of the Access List.
- 24.22 The majority of stakeholders have not experienced impediments accessing Internet interconnection and have submitted that MyIX is working well to facilitate Internet interconnection in Malaysia. There appears to be broad-based support among stakeholders that re-regulation of wholesale Internet interconnection is not necessary at this time.
- 24.23 In relation to Packet One's submission that the MCMC re-list the Internet Interconnection Service, the MCMC notes that Packet One has not provided any details in support of its proposal. The MCMC is interested in obtaining further details about any impediments that Packet One (or any other operators) faces with current interconnection arrangements at MyIX or more broadly.
- 24.24 Finally, in relation to Packet One's submission that MyIX should be a POI for the purposes of inter-operator interconnection, the MCMC notes that this issue has already been considered in the 2008 Access List Review. In order to facilitate interconnection between networks, MyIX was specified as an example of a POI, and this amendment was reflected in the definition of POI in the Access List.¹⁶⁴

MCMC Preliminary Views

- 24.25 The MCMC's preliminary view is that wholesale Internet interconnection should not be regulated by way of the Access List. However, the MCMC invites further submissions on any specific issues which operators are facing with acquiring or supplying access to Internet interconnection services which suggest that an Internet Interconnection Service should be added to the Access List.

Questions

Question 105: Do you acquire wholesale Internet interconnection services as an access seeker or supply wholesale Internet interconnection services as an access provider?

Question 106: Are you experiencing any difficulty in acquiring or supplying wholesale Internet interconnection services? If not, why not? (Please provide details).

¹⁶⁴ 2008 Access List Review PI Paper, p. 247 and Commission Determination on Access List, Determination No. 1 of 2005 as varied by Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No. 1 of 2009, paragraph 2(l).

Question 107: Do you support reintroducing the Internet Interconnection Service in the Access List? If yes, why? (Please provide details).

25 Access to Content Delivery Networks (CDN)

Introduction

25.1 A Content Delivery Network (CDN) is a series of related servers that deliver content to end users via the Internet. CDNs are typically used by media companies to store content closer to end users than the 'origin' server from which the content is first hosted. The servers that form part of the CDN are configured to allow end user requests for hosted content to be accessed from the most 'available' server in the network rather than the 'origin' server from which the content is requested.

25.2 Access to CDNs is not currently regulated in the Access List.

Submissions Received

25.3 An Operator submitted that CDNs should be added to the Access List.

MCMC Assessment

25.4 The MCMC does not consider that there is sufficient economic evidence for listing a CDN Service in the Access List or otherwise regulating CDNs in Malaysia.

25.5 Globally, the supply of CDN services is generally competitive. An operator has not provided any specific rationale for why access to CDNs should be regulated by way of the Access List. The MCMC also notes that no other stakeholders have requested access to CDNs in their submissions.

25.6 The MCMC invites stakeholders to provide further information about CDN services and the state of competition in relation to CDN services. The MCMC is interested in knowing what access providers exist in Malaysia for such a service, which operators acquire access to CDNs and what their experiences have been in this regard, as well as what the benefits of listing CDN services in the Access List would be.

25.7 The MCMC is also not aware of any other jurisdiction that impose access regulation in respect of CDNs. The MCMC is interested in obtaining any information from stakeholders about international regulatory responses to CDN access.

MCMC Preliminary Views

25.8 Subject to any additional information received from stakeholders in response to this PI Paper, the MCMC's preliminary view is that access to CDNs should not be regulated by way of the Access List.

Questions

Question 108: Do you acquire CDN services as an access seeker or supply CDN services as an access provider?

Question 109: Are you experiencing any difficulty in acquiring or supplying CDN services? If not, why not? (Please provide details).

Question 110: Should CDN services be listed in the Access List? What are the benefits or disadvantages that would result from listing CDN services in the Access List?

Question 111: If CDN services were listed in the Access List, what form should this take? Please provide details of a proposed service description.

Question 112: Are you aware of any overseas jurisdiction that regulates access to CDN services? (Please provide details).

26 Access to Digital Multimedia Terminals (DMT)

Introduction

- 26.1 Digital Multimedia Terminals (DMTs) refer to set-top boxes and other equipment that allows end users to receive content. They are located within the end user premises and are typically supplied to end users by content distributors, such as pay-TV providers.
- 26.2 The Access List does not currently contain any facility or service that regulates access to DMTs. However, a DMT access service could theoretically require a supplier of DMTs to allow other content providers and distributors to access and configure its DMTs so that they can receive other content distributors' content also. In effect, a DMT access service would transform DMTs into open-access terminals that could be used to access content delivered by a range of content distributions from a single device.

Submissions Received

- 26.3 Media Prima submitted that access to DMTs should be added to the Access List. Media Prima explained that in its opinion this is important for consolidating in-home equipment used for receiving content in Malaysia. Media Prima also submitted that unrestricted control of DMTs may result in access to illegal and subversive portals and provision of service providers which are unrestricted and not controlled by Malaysian law and regulations.

MCMC Assessment

- 26.4 The MCMC does not believe that it is appropriate to impose access regulation in relation to DMTs.
- 26.5 According to section 128(3) of the CMA, network facilities located solely on the customer side of the "network boundary" cannot be regulated under the Access List. Section 128(2) of the CMA defines the first equipment socket in a private residence as being the network boundary point, unless the customer and the network facilities provider have agreed on a different

network boundary point. Given that they are connected directly to end user equipment such as television sets, DMTs are on the end user side of the first equipment socket within an end user premises. Accordingly, DMTs are on the customer side of the network boundary and are therefore beyond the scope of access regulation.

- 26.6 Furthermore, unlike fixed access network facilities, the barriers to distributing competing DMTs are not generally significant, and many end users have multiple DMTs in their homes, including some open access terminals which are not tied to particular content distribution services and devices such as personal computers, which can act as open access terminals, if properly configured. On this basis, the MCMC does not perceive DMTs to be a bottleneck facility.
- 26.7 The MCMC also considers that the long-term benefit of the end user is more likely to be served by unimpeded market-based competition for the provision of in-home equipment for digital media consumption than by regulation. For example, in September 2010, Singapore's IDA and Media Development Authority (**MDA**) began working on a project to create a single media delivery platform that multiple IP-based video providers could use to supply content to end users, eliminating a barrier to multi-provider content delivery. However, Singapore abandoned this project for a variety of reasons, including the limitations it would likely impose on service innovation.¹⁶⁵
- 26.8 With respect to Media Prima's submission that unrestricted control of DMTs may result in access to illegal and subversive content, the MCMC notes that this current inquiry, and the Access List more generally, is only concerned with access regulation and not with other forms of regulation, such as content standards. The MCMC notes that media content standards are enforced through existing regulatory frameworks and the Access List is not the appropriate instrument for addressing such concerns.

MCMC Preliminary Views

- 26.9 The MCMC's preliminary view is that access to DMTs should not be regulated by way of the Access List.

Questions

Question 113: Should access to DMTs be regulated through listing in the Access List? What are the benefits or disadvantages that would result from listing a DMT access service in the Access List?

Question 114: If access to DMTs were listed in the Access List, what form should this take?

¹⁶⁵ IDA and MDA, 'Results of the Next Generation Interactive Multimedia Applications and Services Platform Operator Request For Proposal' (Press Release, 28 May 2012), available at http://www.ida.gov.sg/images/content/Infrastructure/nbn/images/pdf/NIMSCo_RFP_MediaStatement.pdf.

Question 115: Are you aware of any overseas jurisdiction that regulates access to DMTs? (Please provide details).

27 Access to Content Channel Sharing

Introduction

- 27.1 Content Channel Sharing is a facility or service which TM has proposed that the MCMC should add to the Access List. TM described the service as a regime which would provide for regulated access to channels carrying exclusive content. In substance, the MCMC understands TM's proposal to be akin to a must-offer obligation on acquirers of exclusive content.
- 27.2 As described by TM, Content Channel Sharing would apply to the communications facility or service of a television channel which could arguably be described as a bottleneck facility. The facility or service would allow an access seeker to acquire the channel at a wholesale level and resupply it (possibly bundled with other channels) to end users. TM's rationale for this service is described below.

Submissions Received

- 27.3 TM submitted that it has been required by some FTA broadcasters to block certain content so that TM's retail IPTV customers cannot access the content. TM submitted that these blackouts are the result of content rights owners exerting a level of control over broadcasters. TM also alleged that its competitors are offering long-term content contracts to FTA broadcasters in exchange for a promise from FTA broadcasters that they will block certain content from being distributed on alternative platforms, such as, TM's IPTV platform.
- 27.4 TM submitted that these blackout arrangements are:
- (a) contrary to the Government's aspirations of ensuring content of national significance is made available to all;
 - (b) contrary to the rights of viewers to access FTA content in a non-discriminatory manner;
 - (c) inconsistent with rights awarded by other content providers; and
 - (d) anti-competitive, constituting an abuse of market power.
- 27.5 As a result, TM requested a range of measures including:
- (a) a review of the *Ministerial Determination on Sports Events of National Significance (Determination No. 1 of 2012)* to ensure availability of such content across all technology platforms to all households;
 - (b) the inclusion of each channel carrying exclusive content in the Access List; and

- (c) new measures governing ownership of exclusive content for transmission via FTA channels.

27.6 In support of its proposal to list a Content Channel Sharing Service in the Access List, TM cited the existence of various content exclusivity remedies in other jurisdictions, including Ofcom's regulation of Sky's sports content in the UK, a number of European Commission directives related to conditional access systems, general competition and audio-visual media services, Singapore's cross-carriage rules and Thailand's must-carry and must-have rules for sports.

MCMC Assessment

27.7 In the Market Definition Analysis, the MCMC has described the supply and production chain in respect of content and related markets in some detail.¹⁶⁶ In that context, the MCMC found there to be separate national wholesale markets for the acquisition of premium content and the acquisition of ordinary (non-premium and long form) content.¹⁶⁷

27.8 The MCMC has previously noted that acquisition of premium content by wholesale customers on an exclusive basis has been an area of growing concern in several other jurisdictions including the UK, Singapore and Australia.¹⁶⁸ However, the problem which TM has raised in its submission is the power of content licensors to set the terms of content acquisition by FTA broadcasters. This is a dynamic which has previously been recognised by the MCMC in its PI Paper on the Assessment of Dominance:¹⁶⁹

The MCMC notes that exclusivity is often imposed by content providers to attract a premium for their content and that content acquirers sometimes have little or no influence over content rights providers in this respect. Nevertheless, it is also true to say that exclusive access to content when combined with higher degrees of purchasing power and long-term, enduring relationships, continues to have a significant effect on behaviour within the content acquisition market in Malaysia.

27.9 In other jurisdictions, competition remedies to address exclusive acquisition of premium content have generally focused on the dominance and/or vertical integration of wholesale acquirers of content, particularly subscription television providers. In response to TM's references to international precedents for the proposed Content Channel Sharing Service, the MCMC notes that it is not aware of any regulatory regime internationally which imposes regulated access to content acquired exclusively by FTA broadcasters in order to remedy the upstream licensing practices of content licensors.

¹⁶⁶ Market Definition Analysis, pp. 77-89.

¹⁶⁷ Market Definition Analysis, p. 89.

¹⁶⁸ Assessment of Dominance PI Paper, p. 130.

¹⁶⁹ Assessment of Dominance PI Paper, p. 130.

- 27.10 Notably, in the international examples cited by TM, international regulators have regulated access to specific premium content such as the Barclays Premier League content in Singapore or to packages of premium content, such as Sky Sports 1 and 2 in the UK. The MCMC is not aware of access to a mix of premium content and ordinary content being regulated. That is likely because, in most jurisdictions, as in Malaysia, the wholesale market for acquisition of ordinary content is relatively competitive.
- 27.11 In addition to the economic and policy considerations discussed above, there may be jurisdictional issues with regulating a Content Channel Sharing Service. Neither FTA broadcasters nor content providers are Network Facilities Providers or Network Service Providers and therefore cannot be access providers. Consequently, it is unclear which operators would be subject to the SAOs in respect of a Content Channel Sharing Service targeted at FTA broadcast content.

MCMC Preliminary Views

- 27.12 The MCMC considers that it requires further submissions from operators about a number of issues in order to properly assess TM's proposal that the MCMC add a Content Channel Sharing Service to the Access List. In particular, the MCMC invites further submissions on:
- (a) whether the proposal regarding the Content Channel Sharing Service is best described as a must-offer obligation on acquirers of exclusive content;
 - (b) the jurisdictional issues noted above;
 - (c) the justification for regulating a mix of premium content and ordinary content;
 - (d) the bottleneck nature of particular content to which an operator seeks regulated wholesale access; or
 - (e) international precedents for regulation of the type of facilities or services which would be regulated under the proposed Content Channel Sharing Service.

Questions

Question 116: If the MCMC were to include a Content Channel Sharing Service in the Access List, which operators do you consider would have an obligation to supply the facility or service included in the description of the Content Channel Sharing Service?

Question 117: If the MCMC were to include a Content Channel Sharing Service in the Access List, should the facility or service be limited to exclusively licensed premium content, or should it extend to exclusively licensed ordinary content (or non-exclusively licensed premium or ordinary content)? Please provide details considering that the wholesale market for ordinary content acquisition is relatively competitive and considering the long-term benefit of end users.

Question 118: If the MCMC were to include a Content Channel Sharing Service in the Access List, what would the likely effect be on the markets for FTA, Pay-TV and OTT broadcasting services?

Question 119: If the MCMC were to include a Content Channel Sharing Service in the Access List, what would the likely effect be on the wholesale markets for premium and ordinary content acquisition?

28 Access to Metro-E and other local managed data facilities and services

Introduction

28.1 Metro-E exists in the national market for local managed data services.¹⁷⁰ While local leased circuits are an input to local managed data services, the MCMC has found that local leased circuits are not a substitute for local managed data services such as Metro-E for two reasons. Firstly, end users acquire a local managed data service to obtain a highly managed product, and secondly, suppliers of a managed data service cannot easily move into the supply of local leased circuits.¹⁷¹

Submissions Received

28.2 YTL submitted that the MCMC should consider including a Metro-E facility or service in the Access List on the basis that currently service providers charge high prices for that service on a 'take it or leave it' basis.

MCMC Assessment

28.3 The MCMC notes that it has found that TM is dominant in the market for local managed data services, partly due to its dominance in the upstream wholesale national market for tail transmission.¹⁷²

28.4 Notwithstanding this finding of dominance, the MCMC also noted that there is no or only a small pricing differential between the wholesale and retail levels for the supply of domestic managed data services, supporting the definition of a single national retail market for the provision of local managed data services. This fact may indicate that, given there is a single retail market, there is limited scope for the regulation of a wholesale product, given the long-term benefit to end users from competition on price or service differentiation would be limited.

MCMC Preliminary Views

28.5 Given the limited information available to the MCMC on the value of regulating wholesale access to facilities and services in the national market for local managed data services, the MCMC seeks further feedback from operators.

¹⁷⁰ Market Definition Analysis, p. 47.

¹⁷¹ Market Definition Analysis, pp. 45-46.

¹⁷² Assessment on Dominance, p. 79.

Questions

Question 120: Is there a need for regulated wholesale access to a facility or service in the national market for local managed data services? If so, what wholesale products would be covered by the service description and why?

Question 121: If the MCMC were to regulate wholesale access to a facility or service in the national market for local managed data services, what service or price differentiation might arise from access seekers having such regulated access? Please support your submission with evidence, including from other jurisdictions, if available.

29 Miscellaneous Services

- 29.1 U Mobile submitted that the MCMC should consider generally regulating facilities and services which are currently unregulated. It provided the following list as an example of facilities and services which may benefit from access regulation: Calling Card, Directory Assistance, MERS999/Emergency Services, Information Services, Operator Assistance, Reverse Charging and One Number Services.
- 29.2 The MCMC notes that the examples cited by U Mobile are generally retail services which are provided directly to an end user. As noted in Part A (Background) of this PI Paper, access regulation aims to remove bottlenecks at the wholesale level which prevent operators from competing in downstream markets. The regulation of access to retail services is beyond the scope of access regulation through the Access List. Consequently, the MCMC does not propose to regulate the services identified by U Mobile, at this time.

Question 122: Are there any facilities or services which are currently not in the Access List, to which wholesale access should be regulated under the Access List?

Question 123: Are any of the facilities or services listed above inputs to facilities or services in a downstream market? If so, do they constitute bottleneck facilities, the limited availability of which restricts competition in the downstream market?

Part D Removal of Access List Facilities and Services

30 Access List Facilities and Services to be Removed

Introduction

30.1 The MCMC has considered each service currently included in the Access List in Part B (Review of Access List Services) of this PI Paper. Pursuant to the discussion of each service in Part B, the MCMC only proposes to remove one service which is currently included in the Access List, which is the HSBB Network Service without QoS, discussed in paragraphs 12.59 to 12.87 of this PI Paper. The MCMC has also proposed some modifications to other services. The MCMC has also proposed mechanisms to be included within the Access List for the responsive removal of access regulation for transmission and HSBB Network Services as discussed in Chapters 12, 13, 19 and 20 of this PI Paper.

Submissions Received

30.2 In the information gathering phase, a number of operators advocated removing facilities and services from the Access List which the MCMC does not consider, at this stage, should be removed. For example, TM advocated removing the Transmission Service and the Wholesale Local Leased Circuit Service from the Access List. PPIT (on behalf of its members) advocated removing the Infrastructure Sharing from the Access List. Other operators advocated against access regulation removal. There was no universal consensus for the removal of any particular facility or service from the Access List, in whole or in part. Detailed stakeholders submissions are included in Part B and Part C of this PI Paper, above. However, the MCMC recognises the competing stakeholder views on this topic and has addressed individual submissions in more detail in Part B and Part C of this PI Paper.

MCMC Assessment

30.3 Internationally, there has been a gradual removal of access regulation in a number of jurisdictions on a case-by-case basis. However, access regulation has only been removed internationally in response to evidence of competition in the supply of particular facilities and services, often as a direct result of earlier access regulation. For that reason, removal of access regulation has not been uniform or consistent.

30.4 For example, while Ofcom has deregulated Layer 3 wholesale broadband access services in almost 90% of the UK,¹⁷³ the ACCC has begun regulating wholesale ADSL services in Australia for the first time.¹⁷⁴ The regulatory authority in each country has amended access regulation to reflect the particular state of the market for broadband access services in that country.

¹⁷³ Ofcom, *Review of the wholesale broadband access markets - Statement on market definition, market power determinations and remedies* (26 June 2014) at <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/statement/>.

¹⁷⁴ ACCC, *Wholesale ADSL final access determination 2013* (29 May 2013) at <http://www.accc.gov.au/regulation-infrastructure/communications/fixed-line-services/wholesale-adsl-final-access-determination-fad-2013>.

- 30.5 Similarly, in Malaysia, access regulation should be removed only in response to evidence of competition. Where there is evidence of a lack of adequate competition, the bottleneck characteristics of a particular facility or service is likely to continue to affect the ability for operators to compete in downstream markets and there may be cause to extend access regulation.
- 30.6 Importantly, the fact that access seekers are not acquiring a facility or service is not in itself a reason for removing regulation of access to that facility or service. For example, as evidenced by a number of operators' submissions, access seekers may not be acquiring a particular Access List service because an access provider is hindering access to the service. As noted throughout the PI Paper, in such instances, the access seeker should submit a complaint to the MCMC in accordance with section 69 of the CMA.

MCMC Preliminary Views

- 30.7 Ultimately, access regulation is required in connection with a facility or service supplied by an operator (to other operators or to itself) where it is in the long-term benefit of end users for the facility or service to be made available to other operators at a wholesale level on an equitable and non-discriminatory basis, and otherwise in accordance with the SAOs. As discussed in Part A of this PI Paper, it will usually be to the long-term benefit of end users to regulate wholesale access to a facility or service which is a bottleneck to competition in downstream markets.
- 30.8 The MCMC has applied these criteria to each facility and service currently included in the Access List and its preliminary view is that only the HSBB Network Service without QoS should be removed from the Access List at this time. The MCMC invites submissions regarding its preliminary view. The MCMC requests that in providing submissions, operators have regard to the matters discussed above, and in particular that:
- (a) the central test for retention or removal of a facility or service from the Access List is whether it would be to the long-term benefit of end users to retain or remove the facility or service; and
 - (b) the lack of acquisition or supply of a facility or service is not in itself an argument for removal of the facility or service from the Access List.
- 30.9 The MCMC has proposed the introduction of increased flexibility into the Access List to allow for the removal of access regulation in response to evidence of effective competition, where warranted, as discussed in Chapters 12, 13, 19 and 20 of this PI Paper.

Questions

Question 124: Are there any particular facilities or services in the Access List which you consider should be removed from the Access List? Please provide reasoning and address the reasons which the MCMC has given for retaining the facility or service in Part B.

Question 125: Do you agree with the MCMC's approach to determining which facilities or services should be removed from the Access List? Please provide details of alternative or additional considerations to which you consider the MCMC should have regard, taking into consideration the National Policy Objectives in the CMA.

Annexure 1 Summary of questions

Question 1: Do you acquire the Fixed Network Origination Service as an access seeker or supply the Fixed Network Origination Service as an access provider?

Question 2: Are you experiencing any difficulty in acquiring or supplying the Fixed Network Origination Service? If not, why not? (Please provide details).

Question 3: Should the Fixed Network Origination Service remain in the Access List?

Question 4: Do you have any comments on the proposed clarifications to the service description for the Fixed Network Origination Service?

Question 5: Have you had any difficulty in acquiring the Fixed Network Originating Service as an access seeker on the basis of technology used to implement the service? (Please provide details).

Question 6: Do you acquire the Mobile Network Origination Service as an access seeker or supply the Mobile Network Origination Service as an access provider?

Question 7: Are you experiencing any difficulty in acquiring or supplying the Mobile Network Origination Service? If not, why not? (Please provide details).

Question 8: Do you have any comments on the proposed clarifications to the service description for the Mobile Network Origination Service?

Question 9: Do you acquire the Fixed Network Termination Service as an access seeker or supply the Fixed Network Termination Service as an access provider?

Question 10: Are you experiencing any difficulty in acquiring or supplying the Fixed Network Termination Service? If not, why not? (Please provide details).

Question 11: Do you have any comments on the proposed clarifications to the service description for the Fixed Network Termination Service?

Question 12: Do you acquire the Mobile Network Termination Service as an access seeker or supply the Mobile Network Termination Service as an access provider?

Question 13: Are you experiencing any difficulty in acquiring or supplying the Mobile Network Termination Service? If not, why not? (Please provide details).

Question 14: Do you have any comments on the proposed clarifications to the service description for the Mobile Network Termination Service?

Question 15: Do you acquire the Wholesale Line Rental Service as an access seeker or supply the Wholesale Line Rental Service as an access provider?

Question 16: Are you experiencing any difficulty in acquiring or supplying the Wholesale Line Rental Service? If not, why not? (Please provide details).

Question 17: Have there been any relevant changes in the wholesale fixed telephony services markets that would justify regulating equal access and/or carrier pre-selection alongside the Wholesale Line Rental Service? (Please provide details).

Question 18: Do you acquire the Full Access Service, Line Sharing Service, Sub-loop Service or Bitstream Services as an access seeker or supply the these local access services as an access provider?

Question 19: Are you experiencing any difficulty in acquiring or supplying the Full Access Service, Line Sharing Service, Sub-loop Service or Bitstream Services? If not, why not? (Please provide details).

Question 20: Would it be economical for you to acquire unbundled Layer 1 access to the "last mile" between the OLT or DSLAM and the end user premises in an HSBB Network context, even if this would require you to deploy your own infrastructure at or near the access provider's OLT or DSLAM? (Please provide details).

Question 21: Are you aware of any jurisdiction that regulates unbundled Layer 1 access to the "last mile" between the OLT or DSLAM and the end user premises in the context of next-generation access networks? (Please provide details).

Question 22: As an access seeker, does the Bitstream Service provide any additional functionality which you are not able to obtain through the HSBB Network Service with QoS (as applied to the HSBB Network)?

Question 23: Do you acquire the Infrastructure Sharing as an access seeker or supply the Infrastructure Sharing as an access provider?

Question 24: Are you experiencing any difficulty in acquiring or supplying the Infrastructure Sharing? If not, why not? (Please provide details).

Question 25: Should paragraph (b) of the description of the Infrastructure Sharing be amended to more comprehensively list the elements comprised by the term "associated tower sites"?

Question 26: Do you acquire the Network Co-Location Service as an access seeker or supply the Network Co-Location Service as an access provider?

Question 27: Are you experiencing any difficulty in acquiring or supplying the Network Co-Location Service? If not, why not? (Please provide details).

Question 28: Do you acquire the Digital Subscriber Line Resale Service as an access seeker or supply the Digital Subscriber Line Resale Service as an access provider?

Question 29: Are you experiencing any difficulty in acquiring or supplying the Digital Subscriber Line Resale Service? If not, why not? (Please provide details).

Question 30: Do you acquire the HSBB Network Service with QoS as an access seeker or supply the HSBB Network Service with QoS as an access provider?

Question 31: Are you experiencing any difficulty in acquiring or supplying the HSBB Network Service with QoS? If not, why not? (Please provide details).

Question 32: Could any changes be made to the HSBB Network Service with QoS service description to better facilitate its supply? (Please provide details).

Question 33: If a Layer 3 HSBB Network Service is added to the Access List, should the existing (Layer 2) HSBB Network Service with QoS be retained? Please provide reasons

for your answer, including whether you would provide or acquire the (Layer 2) HSBB Network Service with QoS (as applicable).

Question 34: Do you have any comments on the proposed amendments to the service description for the (Layer 2) HSBB Network Service with QoS?

Question 35: If the (Layer 2) HSBB Network Service with QoS is amended to include new bit rates as proposed above, are there particular bit rates or increments of bit rates at which the service should be supplied? Please provide reasons including your ability to supply at particular bit rates or increments as an access provider, or your business need for particular bit rates or increments as an access seeker.

Question 36: Do you acquire the HSBB Network Service without QoS as an access seeker or supply the HSBB Network Service without QoS as an access provider?

Question 37: Have you experienced difficulty after trying to acquire or supply the HSBB Network Service without QoS? (Please provide details).

Question 38: Do you agree that moving the scope of regulation 'up' the network stack by including the Layer 3 HSBB Network Service in the Access List and removing the (Layer 2) HSBB Network Service without QoS from the Access List will facilitate greater competition in the supply of fixed broadband and data services to end users?

Question 39: Do you support the removal of the HSBB Network Service without QoS from the Access List? If not, why not? (Please provide details).

Question 40: Do you acquire the Transmission Service as an access seeker or supply the Transmission Service as an access provider?

Question 41: Are you experiencing any difficulty in acquiring or supplying the Transmission Service? If not, why not? (Please provide details).

Question 42: Do you agree that routes on which there are three or more independent providers of the Transmission Service, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the Transmission Service?

Question 43: Are there any particular transmission routes that should be removed from the scope of the Transmission Service? Please provide detailed market data that establish the state of competition on those routes, including information relating to market concentration, barriers to entry, pricing and countervailing buyer power.

Question 44: Do you agree with the proposed changes to the service description for the Transmission Service? If not, please provide detailed reasons for why this change would be detrimental to you as an access seeker or an access provider.

Question 45: Do you agree with the proposed approach to removing routes from the scope of the Transmission Service where warranted, through a Public Inquiry process? If not, please provide details of an alternative process.

Question 46: Do you acquire the Wholesale Local Leased Circuit Service as an access seeker or supply the Wholesale Local Leased Circuit Service as an access provider?

Question 47: Are you experiencing any difficulty in acquiring or supplying the Wholesale Local Leased Circuit Service? If not, why not? (Please provide details).

Question 48: Do you agree that locations where there are three or more independent providers of Wholesale Local Leased Circuit Services, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the Wholesale Local Leased Circuit Service?

Question 49: Are there any particular areas or locations that should be removed from the scope of the Wholesale Local Leased Circuit Service? (Please provide details of number of providers at these locations, as well as other factors such as barriers to entry, pricing and countervailing buyer power).

Question 50: What is your view on the changes proposed by the MCMC to the description of the Wholesale Local Leased Circuit Service to allow the service to connect directly to a Trunk Transmission Service at the POI end, instead of only to the access seeker's network by means of an Interconnect Link Service?

Question 51: Do you agree with the proposed approach to removing locations from the scope of the Wholesale Local Leased Circuit Service where warranted, through a Public Inquiry process? If not, please provide details of an alternative process.

Question 52: Do you acquire the Interconnect Link Service as an access seeker or supply the Interconnect Link Service as an access provider?

Question 53: Are you experiencing any difficulty in acquiring or supplying the Interconnect Link Service? If not, why not? (Please provide details).

Question 54: What related or downstream services do you require IP-based interconnection for?

Question 55: Do you acquire or supply IP-based interconnection on a commercial basis? If yes, do you face any barriers in doing so? (Please provide details).

Question 56: How should the description of the Interconnect Link Service be amended to include IP-based interconnection, if at all? What features of IP-based interconnection need to be included in the service description if it is amended?

Question 57: Do you acquire Domestic Connectivity to International Services (Connectivity only) as an access seeker or supply Domestic Connectivity to International Services (Connectivity only) as an access provider?

Question 58: Are you experiencing any difficulty in acquiring or supplying Domestic Connectivity to International Services (Connectivity only)? If not, why not? (Please provide details).

Question 59: Do you acquire the Digital Terrestrial Broadcasting Multiplexing Service as an access seeker or supply the Digital Terrestrial Broadcasting Multiplexing Service as an access provider?

Question 60: Are you experiencing any difficulty in acquiring or supplying the Digital Terrestrial Broadcasting Multiplexing Service? If not, why not? (Please provide details).

Question 61: Can you suggest any refinements to the description of the Digital Terrestrial Broadcasting Multiplexing Service? If so, please provide details and reasons for such refinements. (Please provide details).

Question 62: Do you acquire or supply carrier pre-selection or equal access services on a commercial basis?

Question 63: If you do acquire or supply carrier pre-selection or equal access services on a commercial basis, are they a usable input to your retail or downstream services? Please provide details of any problems using them as an input.

Question 64: If you do not acquire or supply carrier pre-selection or equal access services on a commercial basis, have you tried to acquire or supply those services and faced barriers? Please provide details.

Question 65: Do you consider VoIP to be an acceptable substitute to carrier pre-selection or equal access services? Please provide details with reference to variables like quality and end user preferences.

Question 66: Do you supply VoIP as an alternative to carrier pre-selection or equal access services? If so, please provide details of any challenges with substitution of VoIP services for carrier pre-selection or equal access services.

Question 67: Do you agree that the MCMC should regulate access to duct and manhole infrastructure? If not, please provide reasons.

Question 68: If you agree, do you agree that the scope of the duct and manhole infrastructure which the MCMC proposes to regulate (lead-in ducts and associated manholes nationwide and mainline ducts and associated manholes only in areas where operators have been granted exclusive rights to install telecommunications infrastructure) is the correct scope for access regulation? If not, please provide your proposed alternative scope for regulation and reasons.

Question 69: Do you agree with the MCMC's proposal to regulate access to duct and manhole infrastructure through amendments to the service description for the Infrastructure Sharing? If not, please provide your proposed alternative method for regulating such access and reasons.

Question 70: Do you agree with the specific amendments which the MCMC has proposed to the description to the Infrastructure Sharing? If not, please propose alternative amendments and provide reasoning for your proposal.

Question 71: Do you acquire access to dark fibre as an access seeker or supply access to dark fibre as an access provider?

Question 72: Are you experiencing any difficulty in acquiring or supplying access to dark fibre? If not, why not? (Please provide details).

Question 73: What similarities (in terms of state of competition or other factors) exist between jurisdictions that regulate dark fibre in the core network and Malaysia?

Question 74: Do you acquire HSBB Network services at layer 3 as an access seeker or supply HSBB Network services at layer 3 as an access provider?

Question 75: Should a new Layer 3 HSBB Network Service be listed in the Access List?

Question 76: What is your view of the description of the Layer 3 HSBB Network Service proposed by the MCMC in paragraph 19.22?

Question 77: Should the Layer 3 HSBB Network Service include a requirement to supply asymmetric bit rates? If you are an access provider, what asymmetric bit rates are you capable of providing? If you are an access seeker, what asymmetric bit rates do you require to provide retail services?

Question 78: Do you agree with the classes of service proposed by the MCMC in the Layer 3 HSBB Network Service description? If not, what alternative or additional classes of service should be included in the service description?

Question 79: Is the level of generality at which the MCMC proposes to define the classes of service sufficient? If not, what specific metrics should be included within the classes of service?

Question 80: Should additional contention ratios beyond a 1:10 contention ratio apply to the Layer 3 HSBB Network Service? If so, what contention ratios should be included and (as an access seeker) why do you require these contention ratios?

Question 81: Should the Access List include a mechanism for responsive removal of the Layer 3 HSBB Network Service? Please provide reasons.

Question 82: If the Access List includes a mechanism for responsive removal of the Layer 3 HSBB Network Service, should the mechanism set out above apply? Please describe any alternative mechanism you would propose (including comments on how the mechanism complies with the CMA).

Question 83: If the Access List does include a mechanism for responsive removal of the Layer 3 HSBB Network Service, do you think it is likely that more than one access seeker of the (Layer 2) HSBB Network Service with QoS or equivalent commercial services will begin competing to supply Layer 3 HSBB Network services over time?

Question 84: If a Layer 3 HSBB Network Service is included in the Access List, should the MCMC continue regulating any (Layer 2) HSBB Network service?

Question 85: Do you acquire end-to-end transmission services as an access seeker or supply end-to-end transmissions services an access provider?

Question 86: Should a new End-to-End Transmission Service be listed in the Access List?

Question 87: What is your view of the description of the End-to-End Transmission Service proposed by the MCMC in paragraph 20.21?

Question 88: Should the Access List include a mechanism for responsive removal of the End-to-End Transmission Service? Please provide reasons.

Question 89: If the Access List includes a mechanism for responsive removal of the End-to-End Transmission Service, should the mechanism set out above apply? Please describe any alternative mechanism you would propose (including comments on how the mechanism complies with the CMA).

Question 90: Do you agree that routes where there are three or more independent providers of (Trunk) Transmission Services and Wholesale Local Leased Circuit Services, and where factors such as barriers to entry, pricing and countervailing buyer power do not suggest a lack of sufficient competition, should be removed from the scope of the End-to-End Transmission Service?

Question 91: If the regulated access to the Wholesale Local Leased Circuit Service is removed in relation to a particular location (as discussed in paragraphs 13.93 to 13.98), should regulation of the End-to-End Transmission Service on routes to and from that location also be removed? Please provide reasoning for your answer.

Question 92: Do you engage in RAN sharing?

Question 93: Are you experiencing any difficulty in engaging in RAN sharing? (Please provide details).

Question 94: What specific RAN sharing service do you suggest should be included in the Access List? What particular elements will the access provider supply and the access seeker acquire under such a service? (Please provide details).

Question 95: Do you acquire MVNO services as an access seeker or MVNO services as an access provider?

Question 96: Are you experiencing any difficulty in acquiring or supplying MVNO services? If not, why not? (Please provide details).

Question 97: What specific MVNO services do you suggest should be included in the Access List? Why should such services be listed in the Access List? (Please identify specific access services and provide details).

Question 98: Do you acquire domestic roaming services as an access seeker or supply domestic roaming services as an access provider?

Question 99: Are you experiencing any difficulty in acquiring or supplying domestic roaming services? If not, why not? (Please provide details).

Question 100: Do you support reintroducing the 3G-2G Domestic Inter-Operator Roaming Service or another, different domestic roaming service in the Access List? If yes, why? (Please provide details).

Question 101: How would a regulated domestic roaming service affect infrastructure investment by operators which would be access seekers for such a service?

Question 102: To what extent is a domestic roaming service necessary to enable any-to-any connectivity?

Question 103: How would allowing roaming on 3G and 2G networks increase end users' access to LTE data services (or in the case of roaming on to 2G networks, increase access to 3G data services)?

Question 104: Where it is efficient for operators to enter into domestic roaming arrangements rather than rolling out their own infrastructure, what would prevent operators from doing so commercially?

Question 105: Do you acquire wholesale Internet interconnection services as an access seeker or supply wholesale Internet interconnection services as an access provider?

Question 106: Are you experiencing any difficulty in acquiring or supplying wholesale Internet interconnection services? If not, why not? (Please provide details).

Question 107: Do you support reintroducing the Internet Interconnection Service in the Access List? If yes, why? (Please provide details).

Question 108: Do you acquire CDN services as an access seeker or supply CDN services as an access provider?

Question 109: Are you experiencing any difficulty in acquiring or supplying CDN services? If not, why not? (Please provide details).

Question 110: Should CDN services be listed in the Access List? What are the benefits or disadvantages that would result from listing CDN services in the Access List?

Question 111: If CDN services were listed in the Access List, what form should this take? Please provide details of a proposed service description.

Question 112: Are you aware of any overseas jurisdiction that regulates access to CDN services? (Please provide details).

Question 113: Should access to DMTs be regulated through listing in the Access List? What are the benefits or disadvantages that would result from listing a DMT access service in the Access List?

Question 114: If access to DMTs were listed in the Access List, what form should this take?

Question 115: Are you aware of any overseas jurisdiction that regulates access to DMTs? (Please provide details).

Question 116: If the MCMC were to include a Content Channel Sharing Service in the Access List, which operators do you consider would have an obligation to supply the facility or service included in the description of the Content Channel Sharing Service?

Question 117: If the MCMC were to include a Content Channel Sharing Service in the Access List, should the facility or service be limited to exclusively licensed premium content, or should it extend to exclusively licensed ordinary content (or non-exclusively licensed premium or ordinary content)? Please provide details considering that the wholesale market for ordinary content acquisition is relatively competitive and considering the long-term benefit of end users.

Question 118: If the MCMC were to include a Content Channel Sharing Service in the Access List, what would the likely effect be on the markets for FTA, Pay-TV and OTT broadcasting services?

Question 119: If the MCMC were to include a Content Channel Sharing Service in the Access List, what would the likely effect be on the wholesale markets for premium and ordinary content acquisition?

Question 120: Is there a need for regulated wholesale access to a facility or service in the national market for local managed data services? If so, what wholesale products would be covered by the service description and why?

Question 121: If the MCMC were to regulate wholesale access to a facility or service in the national market for local managed data services, what service or price differentiation might arise from access seekers having such regulated access? Please support your submission with evidence, including from other jurisdictions, if available.

Question 122: Are there any facilities or services which are currently not in the Access List, to which wholesale access should be regulated under the Access List?

Question 123: Are any of the facilities or services listed above inputs to facilities or services in a downstream market? If so, do they constitute bottleneck facilities, the limited availability of which restricts competition in the downstream market?




Question 124: Are there any particular facilities or services in the Access List which you consider should be removed from the Access List? Please provide reasoning and address the reasons which the MCMC has given for retaining the facility or service in Part B.








Question 125: Do you agree with the MCMC's approach to determining which facilities or services should be removed from the Access List? Please provide details of alternative or additional considerations to which you consider the MCMC should have regard, taking into consideration the National Policy Objectives in the CMA.










Annexure 2 Summary of proposed amendments to the Access List




Amendments to Existing Access List facilities and services

Quick guide to amendments

-  Retain service on Access List without any modification.
-  Retain service on Access List with modifications.
-  Remove service from Access List.

Existing Access List service		Proposed amendments	Page reference
Fixed Network Origination Service		Retain the service in the Access List with minor amendments to clarify that the service is technology neutral.	19–20
Mobile Network Origination Service		Retain the service in the Access List with minor amendments to clarify that the service is technology neutral.	22–23
Fixed Network Termination Service		Retain the service in the Access List with minor amendments to clarify that the service is technology neutral.	30
Mobile Network Termination Service		Retain the service in the Access List with minor amendments to clarify that the service is technology neutral.	35
Wholesale Line Rental Service		Retain the service in the Access List without any modification.	42
Full Access Service		Retain the service in the Access List with the following modification. Amend paragraph 5(3) of the Access List to ensure that the Full Access Service does not apply in respect of premises to which the HSBB Network is connected.	56
Line Sharing Service		Retain the service in the Access List with the following modification. Amend paragraph 5(3) of the Access List to ensure that the Line Sharing Service does not apply in respect of premises to which the HSBB Network is connected.	56

Existing Access List service	Proposed amendments	Page reference
Sub-Loop Service	 Retain the service in the Access List with the following modification. Amend paragraph 5(3) of the Access List to ensure that the Sub-Loop Service does not apply in respect of premises to which the HSBB Network is connected.	56
Bitstream Services	 Retain the service in the Access List without any modification.	56
Infrastructure Sharing	 Retain the service in the Access List with potential modifications to clarify the scope of the concept of “associated tower sites”. Expand the scope of the service description to include access to Uncompetitive Duct Infrastructure (lead-in ducts and manholes nationally and mainline ducts and manholes in Greenfields and in areas where operators have been granted exclusive rights to install telecommunications infrastructure).	69, 153
Network Co-Location Service	 Retain the service in the Access List without any modification.	77
Digital Subscriber Line Resale Service	 Retain the service in the Access List without any modification.	83
HSBB Network Service with QoS	 Rename the service to “Layer 2 HSBB Network Service with QoS”. Make consequential amendments to the service description to reflect the introduction of a new Layer 3 HSBB Network Service with QoS.	91–93
HSBB Network Service without QoS	 Remove the service from the Access List.	99
Transmission Service	 Retain the service in the Access List, rename it to “Trunk Transmission Service” and make minor amendments.	114–116
Wholesale Local Leased Circuit Service	 Retain the service in the Access List but exclude certain locations from its scope. Make amendments to the service description to allow the Wholesale Local Leased Circuit Service to	124–124

Existing Access List service	Proposed amendments		Page reference
		connect not only to an Interconnect Link Service at the POI but also directly to a (Trunk) Transmission Service provided by the same provider.	
Interconnect Link Service		Retain the service in the Access List with potential amendments to include IP-based interconnection (based on stakeholder feedback).	131
Domestic Connectivity to International Service (Connectivity only)		Retain the service in the Access List without any modification.	135
Digital Terrestrial Broadcasting Multiplexing Service		Retain the service in the Access List without any modification.	140

Addition of New Access List facilities and services

New Access List service	Page reference
Layer 3 HSBB Network Service	162–164
End-to-End Transmission Service	170–171
<i>Access to Uncompetitive Duct Infrastructure – included within the Infrastructure Sharing (see table above)</i>	153