

THE HASHEMITE KINGDOM OF JORDAN



TELECOMMUNICATIONS REGULATORY COMMISSION

**Public Consultation:
Review of Dedicated
Capacity (Leased Lines)
Markets
in Jordan**

Public version

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Executive Summary

The TRC undertakes reviews of the telecommunications markets in order to support conditions for effective competition through designing and implementing an effective system of ex ante regulation. The first round of reviews began in 2009. This Public Consultation document on the Dedicated Capacity markets is part of the second round of reviews, initiated in 2018. The reviews seek to define relevant markets, assess whether any operator or operators have Significant Market Power (SMP) and, where appropriate, define appropriate remedies to address competition problems. The TRC is publishing three parallel Public Consultations dealing, respectively, with (i) the fixed markets; (ii) the mobile markets; and (iii) the market for dedicated capacity. This is the public consultation document for the market for **dedicated capacity**.

Market context

Since the time of the last reviews, the overall use of retail dedicated capacity (leased lines) has increased. There has been a pronounced shift towards the use of modern Ethernet leased lines, away from traditional legacy leased lines, and this migration is likely to continue. There is also a continuing demand for higher capacity circuits. Orange Fixed (and its affiliates) is the only operator offering traditional leased lines. Several operators have built significant market share supplying Ethernet.

Market definition

The TRC proposes to define the following retail and wholesale fixed markets:

- Retail Market for Traditional Interface (TI) leased lines
- Retail Market for Modern Interface (MI) leased lines
- Wholesale Market for TI trunk segments of leased lines
- Wholesale Market for MI trunk segments of leased lines
- Wholesale Market for TI terminating segments of leased lines
- Wholesale Market for MI terminating segments of leased lines

The TRC's preliminary assessment is that all of the above markets are susceptible to ex ante regulation, with the exception of the wholesale and retail markets for MI leased lines.

Competition Assessment and preliminary SMP designation

The TRC has assessed separately each of the wholesale markets and the retail market in terms of existing competition, potential competition, and any countervailing buyer power. Its preliminary findings are that Orange Fixed has SMP on the markets for wholesale TI trunk segments; wholesale TI terminating segments; and retail TI leased lines.

Proposed remedies

The TRC proposes remedies for each of the wholesale and retail markets where an operator has SMP. Remedies are based on an analysis of specific competition problems in each market, and on the experience of implementing previous remedies.

In the **wholesale market for TI trunk segments** and the **wholesale market for TI terminating segments**, proposed remedies include the following:

Access upon reasonable request: Orange Fixed must meet reasonable access requests. It must negotiate in good faith and conclude agreements in a fair, reasonable and timely manner.

Non-discrimination: Orange Fixed may not discriminate, but offer equivalent conditions, prices and quality in equivalent circumstances, and must demonstrate compliance by providing an annual Statement of Compliance to the TRC.

Transparency: Reference Offers should be kept up-to-date. Key Performance Indicators (KPIs) will be required to demonstrate compliance with other obligations.

Accounting separation: Orange Fixed will be required to provide relevant accounting information as may be specified by the TRC from time to time.

Cost accounting and price control: Orange Fixed must maintain a suitable forward-looking cost accounting system and cost-based prices.

In the **retail market for TI leased lines**, remedies include:

Non-discrimination: Orange Fixed may not discriminate, but offer equivalent conditions, prices and quality in equivalent circumstances.

Transparency: Orange Fixed must publish its terms and conditions, and to offer service level agreements (SLAs).

Accounting separation: Orange Fixed must provide relevant accounting information as may be specified by the TRC from time to time.

Cost accounting and price control: Orange Fixed must maintain a suitable forward-looking cost accounting system, and will be subject to a safeguard price cap, so that retail prices cannot increase in real terms.

I. Introduction

1.1 OVERVIEW

Promoting competition is one of the major roles of the Telecommunications Regulatory Commission (“TRC”), whose primary aim is to ensure the provision of a variety of high quality telecommunications services at competitive prices. Since the liberalisation of the Jordanian telecommunications market in 1995, the TRC has sought to perform this role through its adoption of a combination of remedies which facilitate market entry, especially in the form of mandated network access and interconnection obligations.

In furtherance of its twin goals of creating a comprehensive strategy for creating conditions for effective competition and in achieving a more efficient and effective system of regulation, in 2012, the TRC undertook reviews of the telecommunications markets. These reviews sought to define relevant markets, assess whether any operator or operators had Significant Market Power (SMP), and, where justified, define appropriate remedies to address competition problems.

In 2018, the TRC initiated a second round of market reviews. This began by considering change since the time of the last reviews, including any changes in customers’ behavior, in suppliers’ provision, and in technology. A comprehensive data request was issued to all operators, and the TRC met with operators in order to take account of their experiences in the market, and their future plans. The TRC also analysed lessons learned in implementing remedies put in place following the first round of reviews. The TRC thanks operators for their cooperation.

The second round of market reviews has considered all markets in parallel, and the TRC is now initiating three parallel public consultations on the fixed markets; mobile markets; and dedicated capacity.

This is the Public Consultation document on the markets for dedicated capacity. The outcome of the previous round of reviews of the dedicated capacity markets is summarised in below.

Group of markets	Markets	Susceptible to ex-ante regulation?	Dominant operator
Dedicated capacity (DC) markets	Retail market for local and national DC services up to/including 2 Mbps	Yes	Orange Fixed
	Retail market for local and national DC services above 2 Mbps	No	
	Retail market for international DC services up to/including 2 Mbps	Yes	Orange Fixed
	Retail market for international DC services above 2 Mbps	No	
	Retail market for the provision of VPNs & Frame Relay;	No	
	Wholesale market for terminating segments of DC above 2 Mbps	Yes	Orange Fixed
	Wholesale market for terminating segments of DC up to/including 2 Mbps	Yes	Orange Fixed
	Wholesale market for trunk segments of DC	Yes	Orange Fixed

Exhibit I.1 Relevant dedicated capacity (DC) markets and dominant service providers identified in the last market review [Source: TRC]

1.2 LEGAL AND REGULATORY BACKGROUND

The legal and regulatory context for undertaking market reviews and publishing and implementing Decisions is set out in full in Annex 2. The specific methodological approach to market reviews, and the legal basis and the timing of the market review process were set out in the TRC’s *White Paper on Market Review Process* (the “**White Paper**”).¹

The principles and guidelines established in the White Paper have been also followed in this second round of reviews.

1.3 OBJECTIVES AND SCOPE OF THE CONSULTATION

This Public Consultation document presents the TRC’s preliminary findings on the review of dedicated capacity markets and provides its conclusions on whether existing

¹ TRC, White Paper on Market Review Process, released 14th May 2009.

ex ante obligations on these markets should be maintained, revised or withdrawn, and/or whether or not new *ex ante* obligations should be introduced.

The document first sets out the TRC's analysis of developments in the market since the time of the last reviews. Following the principles set out in the White Paper, the analysis defines relevant markets, and assesses their susceptibility to *ex ante* regulation. An examination of competition conditions is then undertaken in those markets deemed susceptible to *ex ante* regulation, in order to determine whether any operators are dominant i.e. have Significant Market Power (SMP). Where there is an SMP finding, the TRC proposes appropriate remedies.

1.4 STRUCTURE OF THE CONSULTATION

The Public Consultation document on dedicated capacity markets is structured as follows:

Section 2 provides an overview of developments in leased line services. The overview considers the structure of the leased line market, and assesses key trends. The assessment includes a forward-looking view of likely developments over the next 2-3 years.

Section 3 sets out the TRC's preliminary views on the definition of retail and wholesale leased line markets. The methodology used in market definition is explained and applied.

Section 4 considers whether the defined relevant markets are susceptible to *ex ante* regulation. This section includes an explanation of the three criteria test.

Section 5 assesses conditions of competition in those markets found to be susceptible to *ex ante* regulation. Section 5 sets out the TRC's preliminary conclusions on operators with SMP.

Section 6 proposes remedies that should be applied in markets where there is an SMP operator. The discussion includes a consideration of competition problems, and how these may best be addressed.

1.5 RESPONSES TO PUBLIC CONSULTATION

Following the publication of this Public Consultation document, interested parties are invited to provide comments and observations to the TRC **within a period of 30 days**

from its date of publication. During that period, the TRC will welcome written comments on any of the issues raised in the Public Consultation document.

Interested parties should note that it would facilitate the TRC's task of analysing responses if all comments refer to the relevant numbers of the Consultation Questions (see *Annex 1*). The TRC also appreciates that some of the issues raised in the Public Consultation document might require that respondents provide confidential information in support of their comments. Respondents are therefore requested to clearly identify any such confidential material and, if possible, include it in a separate annex to their response. The TRC will treat such information as strictly confidential.

Following the deadline for receiving comments, the TRC will post the (non-confidential) comments of all parties on its web site. Interested parties will have an additional **10 days** in which to provide input on any issues that are raised in the comments of other parties.

The TRC will complete this Consultation process by publishing a Consultation Report, which will contain an evaluation of the responses of interested parties, the final conclusions drawn by the TRC regarding the outcome of the dedicated capacity market review in light of those responses, and the TRC's final conclusions regarding the maintenance, revision or withdrawal of existing *ex ante* obligations and/or the introduction of new *ex ante* obligations.

Upon completion of the Public Consultation process, a series of final regulatory Decisions of the TRC will be enacted with respect to the issues of market definition, the designation of dominance and the prescription of *ex ante* obligations, and will be duly published.

II. Developments in Dedicated Capacity (DC) services

2.1 MARKET STRUCTURE

Dedicated capacity (DC) refers to the supply of dedicated transmission capacity between fixed locations, through fixed or, potentially, wireless connections, and is commonly referred to as leased line ('**LL(s)**') services. LL services include guaranteed high quality service levels, symmetric upload and download speeds, and guaranteed availability.

Typically, retail LL services are used by organisations in both private and public sectors to support a wide variety of ICT applications. This may include access to the internet, private voice and data networks, cloud based services, backup and disaster recovery, remote monitoring and telemetry applications. Retail LL services are also used to build Virtual Private Networks ('**VPNs**') that allow organisations to link business sites together, including data centres, so that offices can exchange data and access corporate applications². This also allows retail organisations to offer a range of services to business and retail consumers via the internet or data networks.

Wholesale DC connections may consist of terminating segments and/or a trunk segment. As stated by the TRC, *"the boundary between trunk and terminating segments is defined to be at the operator's DC serving exchange. Thus, a terminating segment of wholesale DC refers to the segment between an end point of the network and the DC serving exchange. The trunk segment of wholesale DC refers to the segment between two DC serving exchanges."*³

Retail and wholesale DC services differ by length (corresponding to local, national and international DC), by technology, and by bandwidth.⁴

² VPNs are not always constructed from leased lines. They may be underpinned by alternative core network provided by a telco, notably by ADSL or fibre broadband.

³ According to the "Regulatory Decision on the Dedicated Capacity Markets Reviews", 21 December 2010, for Orange Fixed, given that in most cases, the DC serving exchange is collocated in local exchange premises, the boundary between terminating and trunk segments in the Orange Fixed network is at the local exchange premises.

⁴ Telecommunications Regulatory Commission, Regulatory Decision on the Dedicated Capacity Markets Reviews, 21 December 2010.

There are eight operators offering services in the retail DC market. These are:

- Orange Fixed;
- V-tel;
- Orange Data;
- Zain;
- Damamax;
- Batelco;
- Mada
- Al-Nayj⁵

The main providers of wholesale leased lines are Orange Fixed, V-tel, Damamax and Batelco. Orange Fixed provides both wholesale terminating and wholesale trunk segments to other operators, whilst V-Tel provides a small number of wholesale terminating segments to other operators. Batelco provides trunk segments to another operator.⁶

2.2 OVERALL TRENDS

In order to fully assess the evolution of the market, the TRC has examined trends in:

- Volume of retail and wholesale DC services;
- Domestic and international services; and
- Services of different bandwidths.

⁵ Al Nayi entered market in 2017 and has low market share [× N.O] to date. Further, they have not reported information in a disaggregated manner. Hence it is not included in further analyses in this section.

⁶ Batelco has stated in its response to the data request that it is only providing transmission capacity to Umniah.

Volume of DC services

In 2017, there were a total of 12,998 retail leased lines in Jordan, up by over 80% from 7,215 in 2015, as shown in Exhibit II.1 below:

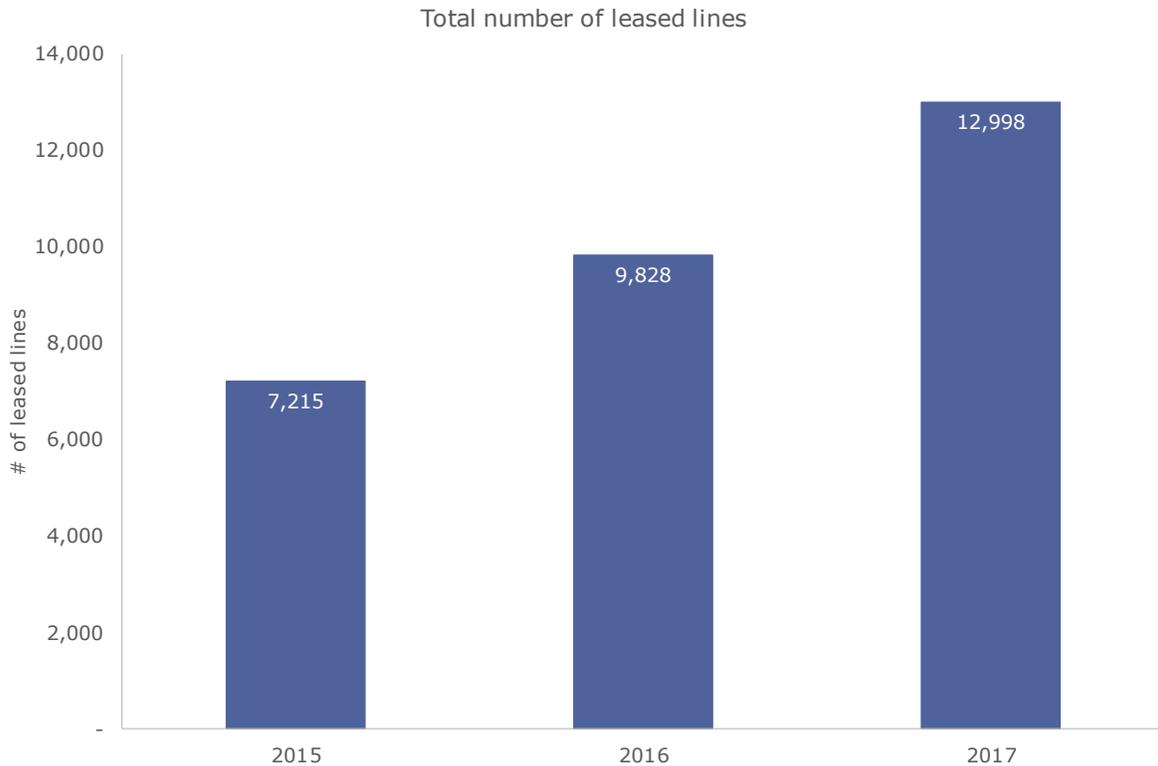


Exhibit II.1 Number of leased lines (retail) [Source: Responses to data request]

Six of the eight retail operators use only their own network to deliver the services (Orange Fixed, Zain, Damamax, Batelco, Mada, Al-Nayi); one uses own infrastructure plus a small number of lines provided using a wholesale input from another operator (V-Tel), with one (Orange Data) relying solely on wholesale inputs (from Orange Fixed).

Based on the data collected for this review, Exhibit II.2 below shows that the total volume of wholesale leased lines has decreased over the last three years, and that a large majority of wholesale leased lines are provided over Ethernet rather than traditional technologies.

		2015	2016	2017
Analog leased lines		-	-	-
Traditional digital leased lines	PDH technology	-	-	-
	SDH technology	3,192	3,130	148
Ethernet leased lines		6,130	6,178	6,197
Others		-	-	-
Total		9,322	9,308	6,345

Exhibit II.2 Wholesale leased lines [Source: Responses to data request]

Domestic and international leased lines

Retail DC services differ by length (corresponding to local, national and international DC), among other features. As Exhibit II.3 below shows, the majority of leased lines (by number of active lines) are local, followed by national and international. In 2017, the number of active local lines accounted for around 97.9% of total active leased lines⁷, with national accounting for 2.0% and international for just 0.08%.

	2015	2016	2017
Local	94.1%	96.3%	97.9%
National	5.7%	3.6%	2.0%
International	0.15%	0.13%	0.08%

Exhibit II.3 Local, national and international active leased lines as a proportion of total⁸ active leased lines

Services of different bandwidths

For retail leased lines, Exhibit II.4 below shows that the mix of technologies/speeds has been fairly consistent, with an overall reduction in lower speed circuits and a rising share of Ethernet leased lines. The use of legacy leased lines is increasingly

⁷ Local + national + international.

⁸ Local + national + international.

concentrated on the use of E1, while Ethernet leased lines now account for around half of all retail leased lines.

Leased Lines by speed - % share	2015	2016	2017
64 kbps	1.87%	1.35%	0.98%
128 kbps	1.73%	1.16%	0.90%
256 kbps	2.43%	2.27%	1.35%
512 kbps	3.04%	1.78%	2.37%
1024 kbps	5.10%	4.78%	9.16%
E1	22.33%	21.64%	33.57%
E3	0.17%	9.37%	0.26%
DS3	0.03%	0.09%	1.24%
STM-1	0.26%	0.32%	0.22%
STM-4	0.03%	0.04%	0.03%
STM-16	-	-	0.01%
Fast Ethernet	42.69%	40.14%	36.16%
Gigabit Ethernet	13.10%	11.89%	10.32%
10 Gigabit Ethernet	0.01%	0.02%	0.01%
LL Circuit	2.59%	1.94%	1.18%
Local LL 9600 pt to pt 1 pair	4.14%	2.86%	1.99%
Other	0.49%	0.34%	0.25%

Exhibit II.4 Leased lines share of total active leased lines by speed

The trend away from legacy leased lines towards Ethernet in the wholesale market is more pronounced. Exhibit II.5 shows the proportion of active wholesale terminating segments of leased lines by technology, showing that, over time, the share of Fast Ethernet has increased and the share of E1 has dropped. This picture indicates that migration from low speed leased lines to high speed for termination services has accelerated in 2017.

	Termination leased lines by speed		
	2015	2016	2017
64 kbps	0.2%	0.2%	2.2%
128 kbps	-	-	-
256 kbps	0.3%	0.4%	3.7%
512 kbps	0.1%	0.1%	0.7%
1024 kbps	0.3%	0.3%	3.0%
E1	94.1%	93.6%	23.1%
E3	-	-	-
DS3	1.5%	1.1%	7.5%
STM-1	0.4%	0.4%	10.4%
STM-4	-	-	-
STM-16	-	-	-
Fast Ethernet	3.1%	4.0%	49.3%
Gigabit Ethernet	-	-	-
10 Gigabit Ethernet	-	-	-
LL Circuit	-	-	-
Local LL 9600 pt to pt 1 pair	-	-	-
Other	-	-	-

Exhibit II.5 Proportion of active wholesale termination lines by speed⁹ [Source: Responses to data request]

The assessment of trends in the volume of trunk circuits also shows a shift towards Ethernet. The TRC notes that, in this market, high capacity Ethernet circuits have been used to replace multiple lower capacity circuits, so an analysis of volume by number of circuits can be misleading.

2.3 TRENDS IN MARKET SHARE

The total number of retail DC lines by operator and the changes over the past three years are shown in Exhibit II.6 below. In 2017, Batelco has the largest number of active leased lines being provided, followed by Zain and Orange Fixed respectively.

⁹ Damamax is not included as it did not provide information disaggregated by speed.

[Graph omitted]

Exhibit II.6 Number of active lines by operator¹⁰ [Source: Responses to data request]

The market shares based on volume of circuits of each of these players in the retail DC market are as follows:

	2015	2016	2017
Orange Fixed	Numbers omitted ((no)[no	no
V-tel	no	no	no
Orange Data	no	no	no
Zain	no	no	no
Damamax	no	no	no
Batelco	no	no	no
Mada	no	no	no

**Exhibit II.7 Retail leased lines market shares by number of active retail leased lines¹¹
[Source: Responses to data request]**

¹⁰ Orange Data is providing the retail DC service using wholesale lines from Orange Fixed. Al Nayi is not considered in this analysis, as mentioned in footnote 5

¹¹ Al Nayi is not considered in this analysis, as mentioned in footnote 5

The market shares based on revenue for each of these players in the retail DC market are as follows:

	2015	2016	2017
Orange Fixed	no	no	no
V-tel	no	no	no
Orange Data	no	no	no
Zain	no	no	no
Damamax	no	no	no
Batelco	no	no	no

Exhibit II.8 Retail leased lines market shares by revenue of active retail leased lines¹²
[Source: Responses to data request]

Taking both volume and revenue data into account, the overall retail leased line market has three operators (Orange, Zain and Batelco) with significant market shares, and a further five operators with market presence.

The TRC has assessed market shares by volume and revenue in the wholesale market, and has considered trunk and terminating segments separately, as shown in Exhibit II.9 below.

	Wholesale terminating segments		Wholesale trunk segments	
	By number of active lines	By revenues	By number of active lines	By revenues
Orange Fixed	no	no	no	no
V-Tel	no	no	no	no
Batelco	no	no	no	no

Exhibit II.9 Operator market shares for wholesale dedicated capacity services (2017)¹³
[Source: Responses to data request]

¹² The revenue figures do not include Mada and Al Nayi (as mentioned in footnote 5) due to unavailability.

Since 2015, V-Tel has shown a strong increase in its market share of wholesale terminating segments at the expense of Orange. Batelco has increased its share of the wholesale trunk market, also at the expense of Orange.

2.4 FORWARD-LOOKING DEVELOPMENTS

As set out in the White Paper, the market review should be forward-looking, and should take into account not just the current status and recent trends of telecommunications services in Jordan, but also likely future developments which could impact on the market and on the conditions of competition.

The use of retail dedicated capacity has increased since the time of the last review, particularly as regards demand for Ethernet leased lines. The TRC expects that new demand for legacy leased lines will be very limited, and that the next few years will see a continuing technical migration from legacy to Ethernet leased line products.

Since the time of the last reviews, there are now more operators active in the market. Without exception, market entry and expansion is in the provision of Ethernet services – no operator other than Orange is providing legacy leased lines services.

The TRC notes also that the majority of retail leased lines are provided by operators over their own infrastructure, rather than by purchasing a wholesale input. This means that the wholesale market (excluding self-supply) is very small.

III. Definition of Retail and Wholesale Leased Line Markets

3.1 METHODOLOGY FOR MARKET DEFINITION

The purpose of market definition is to identify the products and services that make up a telecoms market, with a view to assessing, in a systematic way, the competitive

[Footnote continued from previous page]

¹³ Damamax is not included as it did not provide information disaggregated by terminating/trunk segments.

constraints faced by operators. The eventual aim of market definition is to enable the identification of any operator potentially holding SMP (Significant Market Power or dominance). This requires establishing whether any actual and potential competitors are capable of constraining such an operator's behaviour by preventing it from behaving, within the defined market, to an appreciable extent independently of effective competitive pressure, i.e. independently of competitors, customers and ultimately consumers. The market definition exercise does this by considering the products and services available, and assessing the extent to which products and services can be substituted for each other.

The definition of the relevant market is the prerequisite for assessing whether a particular market is characterised by effective competition or should be subject to *ex ante* regulation.

The starting point for the identification of markets susceptible to *ex ante* regulation is the definition of retail markets. Retail markets are considered to be markets where products and services are bought from operators by end users – users could be, for example, businesses, consumers, or government services. Retail markets should be distinguished from wholesale markets, in which telecom products and services are bought by telecom operators or licensees from each other.

In addition to taking into account recently observed trends, the approach to market definition should also consider forward-looking developments, extending to any reasonably likely developments within a 3-year timeframe.

The list of markets identified in the last round of market reviews is a good starting point, and the TRC has considered all the markets represented on that list. However, it is important too to consider how change (particularly technological change) is impacting on the structure of telecoms markets. The TRC has therefore covered all the functions of the currently regulated markets, but has framed these markets in a context which does not depend on legacy markets, but rather on current and future structures.

Once retail markets have been defined, the assessment can then consider wholesale markets that are upstream to those retail markets, i.e., markets for the provision of wholesale access to facilities, products and services necessary to provide services in the (downstream) retail markets concerned.

The first step in the market definition process is to identify constraints on price-setting behaviour arising from demand-side and supply-side substitution.

- **Demand-side substitution** relates to the ability and will of consumers to replace the service offered in the relevant market with other available services. Suitable

services will be considered substitutes to the extent that they can provide similar functionalities or can satisfy consumer needs to the same extent as the relevant service. The key issue here is to determine whether the price of a potential substitute service is effectively constraining the price of the relevant service.

- **Supply-side substitution** relates to the ability of one or more operators not yet offering the relevant service to promptly switch to production of the service in question (or of a substitute). Supply-side substitution can occur in the form of production substitution, when an operator shifts the use of existing assets from the production of a given product to the production of the relevant one, or production extension, when the existing production facilities are used for the supply of the current products as well as the relevant one.

When examining substitutability, it is common practice to apply the '**hypothetical monopolist test**'¹⁴. In line with international best practice and Section 3.1 of the White Paper, the TRC has implemented a demand-side substitutability analysis by initially considering a narrowly defined service that is representative of the relevant market and by subsequently extending the market's boundaries, including relevant demand-side substitutes. The hypothetical monopolist test is also used for the purpose of identifying constraints on the price-setting behaviour arising from supply-side substitution.

If products are considered to be sufficiently close substitutes from a demand or supply side perspective, then they can be considered to fall within the same market. It should be noted, however, that hypothetical supply-side substitution is not sufficient, on its own, for the purposes of market definition; it is supply-side substitution that should be relied upon as the primary criterion.

Geographical segmentation: Market definition also considers the geographic scope of markets, i.e., the extent to which these can be considered to comprise the whole national territory or whether there are different areas, within that territory, which exhibit significantly different conditions of competition, sufficient to justify the definition of distinct local or regional geographic markets. The geographic market(s) should thus be

¹⁴ The main principle underlying the hypothetical monopolist test is that a market should be defined as a service (or a group of services) such that a hypothetical, profit-maximizing firm, not subject to price regulation, which was the only present and future seller of that service (or group of services) could profitably impose a small but significant and non-transitory increase in price (SSNIP) above prevailing or likely future levels. The hypothetical monopolist test looks for the smallest group of services and the smallest geographic area in relation to which a telecommunications service provider can impose and profitably maintain a small but significant non-transitory increase in price. In most cases, a 5% price increase would be considered significant and a period of one year or less would be considered transitory.

defined taking into account the intensity and likelihood of dissimilar conditions of competition in different areas within Jordan. Within any single geographic market, the conditions of competition should be homogenous.

The next sections set out the TRC's preliminary views on the definition of retail and wholesale leased line markets.

3.2 MARKET DEFINITION IN THE PREVIOUS REVIEWS

In the previous round of market reviews, the TRC defined four retail DC markets:

- the market for local and national retail DC services up to and including 2 Mbps in Jordan,
- the market for local and national retail DC services above 2 Mbps in Jordan,
- the market for international retail DC services with up to and including 2 Mbps in Jordan, and
- the market for international retail DC services above 2 Mbps in Jordan.

The wholesale markets that were defined as addressing these retail markets were:

- the wholesale market for terminating segments above 2 Mbps
- the wholesale market for terminating segments up to and including 2 Mbps
- the wholesale market for trunk segments

Since the previous round of market reviews, the key change in the leased line market has been the take-up of Ethernet and consequent decline in the use of legacy leased lines. In 2017, retail leased lines provided over Ethernet accounted for over 82% of all active retail leased lines (by volume share).¹⁵ However, the TRC notes that there remains a significant installed base of legacy leased lines.

¹⁵ Share of Ethernet (Modern Interface) in all active retail leased lines (own operator and other operator) based on interface mapping by technology type (Modern Interface Ethernet vs Traditional Interface) = $10,416/12,735=0.82$.

The TRC has considered the implications of this change. The significance is not to do with the capacity of the circuit (and indeed there may be an overlap in speeds available over a traditional interface leased line and a modern interface leased line), but rather with the technology itself. Broadly, there is a differentiation between:

- **Traditional interface (TI) leased lines**, which are legacy leased lines with analogue or digital interfaces. At the time of the last review, this type of leased line was the most common in Jordan. Analogue leased lines would commonly be used for voice transmission, with some low-bandwidth data transmission. Digital legacy leased lines would be based on TDM technical transmission standards, which would include PDH and SDH.
- **Modern interface (MI) leased lines**, which are digital, using a modern interface that is generally more suitable for the transmission of IP data, and more cost-effective for delivering high bandwidth services than legacy circuits. Ethernet is the most common technology, and is usually available in bandwidths from 10 Mbit/s to 100 Gbit/s, with the most common in Jordan being ‘Fast Ethernet’.¹⁶ The use of 1 Gbit/s Ethernet circuits is increasing. MI leased lines would also include technologies such as Wavelength Division Multiplexing (WDM), which is used for very high bandwidth requirements (for example for data centres or backhaul).

The Exhibit III.1 below shows that, in Jordan, traditional interface (TI) leased line volumes (i.e. analogue, PDH and SDH) are declining and modern interface (MI) Ethernet leased lines are increasing.

		Total		
		2015	2016	2017
Analogue leased lines		260	258	256
Traditional digital leased lines	PDH technology	30	173	179
	SDH technology	1,840	1,782	1,544
Ethernet leased lines		4,477	7,127	10,645
Others		594	633	506

Exhibit III.1 Leased lines by technology (volumes) [Source: Responses to data request]

¹⁶ Leased lines provided over “Fast Ethernet” represent a growing share of active leased lines with a share of 34.84%. Together, “Fast Ethernet”, “Gigabit Ethernet” and “10 Gigabit Ethernet” account for 45.39% of all active retail leased lines.

3.3 RETAIL LEASED LINES PRODUCT MARKET DEFINITION

It is noted that most retail purchasers of leased lines do not buy LL on a standalone basis, but will most often buy various applications and services (for example, SIP voice, data storage, VPNs) alongside the connectivity. However, the focus for the purposes of this market review is on the connectivity, because it is the local access part of the circuit where competition problems are most likely to arise, and where barriers to entry are potentially highest.

Given the increase in Ethernet leased lines and the decrease in traditional interface leased lines, the TRC takes retail leased lines provided over Ethernet as the focal product.

In order to determine the boundaries of the retail leased line market, the TRC will consider potential demand and supply side substitutability with other products and services, in particular:

- Whether traditional interface and modern interface leased lines belong to the same product market;
- Whether there is a bandwidth split or whether leased lines at all speeds should be considered to be part of the same retail market;
- Whether p2p wireless leased lines belong to the same market as fixed leased lines;
- Whether dark fibre belongs to the same market as leased lines;
- Whether vpns belong to the same market as leased lines; and
- Whether there is a separate market for local, national and international retail dc services.

Are traditional interface (TI) leased lines part of the same market as modern interface (MI) leased lines?

Demand side substitution

Both TI and MI leased lines share functional characteristics in offering a dedicated symmetric connection with low contention, jitter and latency, and high level Service Level Agreements (SLAs). In spite of the functional similarities, it would be unlikely that a user of MI leased lines would switch to TI leased lines in response to a SSNIP in the price of MI leased lines.

Firstly, TI leased lines are generally more expensive than MI leased lines. The TRC notes that it is difficult to find reliable and verifiable retail leased line pricing, because pricing is often bespoke and not published. To overcome this problem, in other jurisdictions¹⁷ the regulator has taken a cost-oriented wholesale price as the basis for calculating an imputed retail price. In most cases, an MI leased line was around half the annual rental price of a TI leased line. The price differential in favour of MI leased lines was therefore considerably more than a SSNIP of 5-10% in the price of MI leased lines.

To apply this analysis in Jordan, the TRC has estimated retail prices based on Orange Fixed regulated wholesale prices¹⁸. For example, the wholesale rental price for an E1 (2 Mbit/s) circuit is 44.2 JD/month. A Fast Ethernet circuit (100 Mbit/s) costs 815.6 JD/month. To receive equivalent capacity as Fast Ethernet, the legacy E1 leased lines customer would need to pay 2,210 JD/month. Consistent with price differentials for MI and TI elsewhere, we see that the price differences are well in excess of the level of a SSNIP of 5-10%.

While TI leased lines are still being ordered by end users, the general migration to Ethernet suggests that there is asymmetric substitution, in that end users are switching from TDM to Ethernet based leased lines, but not the reverse. The TRC notes also that TDM-based Customer Premises Equipment (CPE) is now reaching obsolescence and is no longer being manufactured. This would also affect the likelihood of a user switching from MI to TI leased lines.

Supply side substitution

Supply side substitution would entail a supplier of Ethernet leased lines switching to provide TI leased lines in response to a SSNIP in the price of TI leased lines. Absent

¹⁷ For example, Ofcom in the UK and ComReg in Ireland use this approach.

¹⁸ 2018 prices, published in 'TRC Regulatory Decision on charges for Fixed Interconnection services based on TSLRIC+ models', 15 October 2017.

regulation, it is unlikely that a wholesale leased lines product would be made available, and so a supplier would need to offer leased lines over its own infrastructure.

Given the general trend of migration to Ethernet, it would be unlikely that any provider of only MI leased lines would switch to supply TI leased lines, given the required investment costs for such an expansion in a market that is declining.

Conclusion

TI leased lines are not an effective substitute for MI leased lines, and do not form part of the same product market.

Are all bandwidths for TI and MI leased lines in the same markets?

Demand side

As noted above, the functions of all leased lines are similar, which would suggest that an end user would find that it could substitute a higher bandwidth leased line with multiples of lower bandwidth circuits. This would suggest that, in terms of functionality, there is close demand side substitutability across the range of products. However, while it may be technically and functionally feasible, it would not always be economic for a customer seeking a high capacity leased line to buy multiples of lower bandwidth leased lines. There is a much wider range of speeds for leased lines in the market available now than at the time of the previous market review, and while substitution is unlikely between the bottom of the range and the top, it is possible that there is a chain of substitution along the product range.

The data which has been collected indicates that users are steadily increasing their demand for bandwidth. It is expected that a significant proportion of customers will upgrade to a higher capacity product during the lifetime of this review, and that this is the case for TI and MI products (although TI customers may well choose to migrate to MI rather than to higher capacity TI). This would be likely to strengthen the existing demand side interactions and pricing interdependence between different products. Any reduction in the price differential between higher and lower capacity products could bring forward the migration which would occur in any event.

The previous review found that there was a break in the chain of substitution at 2 Mbps, based on the pricing structure and the characteristics of the market. The TRC's view is

that the evidence seen no longer indicates a break within the TI market¹⁹, and that all bandwidths of leased line fall within the same product market.

In the case of the MI market, the TRC considers that all bandwidths should be included within the same product market. While there are a limited number of MI products, the functionality, usage and pricing would indicate that there is a chain of substitution amongst all MI products. This would include, for example, xWDM products. The TRC notes that it does not need to be the case that the capacities and prices multiply exactly –it would not be expected for example that 10 X 1Gbit/s circuits would cost the same as one 10 Gbit/s circuit – but rather that there is a broad continuum in pricing.

Supply side substitution

A supplier of TI or MI leased lines would be able to offer leased lines of all bandwidths over the relevant technology.

Conclusion

TI leased lines of all bandwidths are part of the same TI product market, and MI leased lines of all bandwidths are part of the same (separate) MI product market.

Would business broadband services belong to the same market as leased lines?

Demand side

In terms of functionality, there is some overlap in some product characteristics between the higher specification of business broadband services and the lower specification of leased lines.²⁰ In addition, businesses can use leased lines or broadband connectivity to construct VPNs.

¹⁹ For example, based on observed wholesale pricing (which provides a proxy for the lower bound of retail pricing) an E1 TI circuit (2 Mbit/s) is priced at monthly rental 14.7 JD (over 3 km), while an E3 TI circuit (34 Mbit/s) is priced at 196.7 JD. The E3 circuit is normally considered to be a multiple of 16 times the E1, so although the E3 price is less than 16 times the E1 price, the pricing is broadly consistent. The calculation is based on wholesale monthly rental prices for leased lines trunk and terminating services, taken from TRC, “Regulatory Decision on Charges for Fixed Interconnection Services Based on TSLRIC+ Models”, Board of Commissioners Decision No. 8-12/2017, issued on 15/10/2017.

²⁰ For example, we note Umniah is offering a premium broadband service which is similar to leased line services in term of prices and SLA:

[Footnote continued on next page]

However, there are very specific functional characteristics associated with leased lines that differentiate them from broadband services including dedicated capacity, and low or no contention. There are also other service features associated with leased lines, such as higher levels of security and higher SLAs. Where these features are valued by potential customers, it is unlikely that a broadband service will be a close substitute for a leased line.

The TRC has estimated retail prices based on the data collected on retail revenues and number of retail leased lines. This indicates that, for example, a retail “Gigabit ethernet” (100Mbps) leased line terminating segment starts at around 2,481 JD/month.²¹ This is compared to the most expensive business-broadband offer provided over fibre being around 150 JD/Month (for 300 Mbps).²² Therefore, even if the estimate was to be scaled up on a price per megabyte, there is a significant difference in price.

For TI leased lines and some lower bandwidth MI leased lines, broadband may be comparable in terms of speed to retail leased lines, but specific quality issues may be important for a sizeable portion of customers.

For all of these reasons, the TRC considers that broadband services do not fall within the same product market as retail leased lines.

Supply side

It is not likely that a supplier of broadband services would switch to provide leased lines in response to a SSNIP in the price of either TI or MI leased lines. Absent regulation, it is likely that there would be no wholesale product available, and a broadband supplier that was not already offering leased lines would need to invest in infrastructure in order to offer a leased line service.

[Footnote continued from previous page]

<https://www.umniah.com/en/products/business/connectivity/premium-broadband/premium-broadband-microwave-20plus/>

²¹ Based on Orange Fixed estimated retail price calculated by dividing Gigabit Ethernet retail leased lines monthly revenue by total number of Gigabit Ethernet retail leased lines.

²² For example, the VTEL FIBER products (which do not differentiate between residential and business offers) lists its 300 Mbps fibre service at 150JD/Month. See: http://www.vtel.jo/user_site/site/View_Article.aspx?type=2&ID=672

Conclusions

Broadband services should not be included in either the market for TI leased lines or the market for MI leased lines.

Are point-to-point (P2P) wireless leased lines in the same market as fixed leased lines?

At present, all service providers use their FWBA and 4G network to provide leased line services. Therefore, the TRC has considered if wireless leased lines should be in the same market as fixed leased lines.

Demand side substitution

As P2P radio link based retail LLs are used to provide uncontended, symmetric, high quality access similar to wired based retail LLs there is no discernible difference in their intended use at a retail level. Users are therefore likely to find a wireless leased line to be a good functional substitute for both TI and MI fixed leased lines. However, this may not be the case for fixed leased lines at higher bandwidths, where wireless leased lines may not be an effective substitute.

There may be some limitation in the ability of wireless leased lines to act as a substitute due to congestion and/or spectrum scarcity. There may also be limitation for leased lines provided over long distances, where wireless LLs would have to do multi-hops.

Initial assessment indicates that the pricing of wireless retail leased lines is comparable to that of fixed retail leased lines.

Supply side substitution

A provider currently supplying only fixed retail leased lines may not be able to readily switch to provide wireless leased lines without incurring additional costs. The supply of wireless leased lines requires access to spectrum. However, all service providers of FWBA and 4G networks provide leased lines and, in most cases, now have a fibre network in place which could potentially be used to provide some fixed leased line services.

Conclusion

Due to demand side substitutability, wireless leased lines fall within the same product market as fixed leased lines.

Is dark fibre in the same market as leased lines?

Demand side substitution

Leased lines of any bandwidth and interface can be provided over dark fibre. However, to enable LL connections, users would need to provide additional inputs and operational resources, because dark fibre is provided as an unmanaged service and requires the operation of a physical infrastructure. Therefore, dark fibre is not a functional substitute for a retail leased line.

Supply side substitution

The TRC considers it unlikely that a supplier of dark fibre not currently offering TI or MI retail leased lines would enter the leased lines market in response to a SSNIP in leased lines, given the functional differences in the products and the requirement for investment on the part of the supplier.

Conclusions

Dark fibre should not be included in the same market as retail leased lines.

Are VPNs in the same market as retail leased lines?

In the previous market review, TRC defined a separate retail market for the provision of VPNs & Frame Relay: *“The retail market for VPNs & Frame Relay is a market separate from retail DC markets. It comprises VPNs, which are networks that provide remote offices or individual users with secure access to their organisation's network. The market also comprises Frame Relay, which is a packet switched data service enabling data transmission for intermittent traffic between end points of a network”.*

The TRC recognises that retail leased lines are often (but not always) purchased as part of a bundle, which could include various services, such as internet access and voice services, and could also include the supply of a VPN. As such, leased lines are one of the access paths over which a VPN may be constructed. They are therefore not functionally equivalent.

In addition, in the TRC's view, as a private network, a VPN would not normally be considered as a dedicated capacity service, but rather as a managed or value added service. This means that, as well as not being a substitute for a leased line, VPNs would not be considered as a market for the purposes of this review.

Is there a separate market for each of local, national and international retail DC services?

Demand side

At a high level, local, national and international leased lines cannot be demand side substitutes because a customer who wants a circuit between, for example, two locations within Jordan will not find a circuit between a location in Jordan and an international location to be a functional substitute.

Supply side

A supplier providing domestic retail leased lines in Jordan could readily switch to provide international leased lines. This is evident in the market now, because all operators currently offering domestic leased lines are also able to offer international leased lines. The TRC recognises that there are differences at the wholesale level – for example, an operator cannot offer an international leased line using only its own infrastructure as it would need to buy wholesale inputs in another jurisdiction to complete the circuit – but these differences are not relevant at the retail level.

Conclusion

There is a market for retail leased lines that originate in Jordan. The market is not further differentiated according to the destination of the circuit. Therefore, local, national and international retail leased lines sold in Jordan fall within the same market.

Summary of conclusions on leased lines

- TI leased lines are not an effective substitute for MI leased lines, and do not form part of the same product market;
- TI leased lines of all bandwidths belong to the same product market for TI products;
- MI leased lines of all bandwidths belong to the same product markets for MI products;
- Broadband services should not be included in either the market for TI leased lines or the market for MI leased lines;
- Wireless leased lines fall within the same product market as fixed leased lines;
- Dark fibre should not be included in the same market as retail leased lines;
- VPNs are not part of the same product market as leased lines;

- All retail leased lines sold in Jordan fall within either the TI market or the MI market, irrespective of their destination.

3.4 RETAIL LEASED LINES GEOGRAPHIC MARKET DEFINITION

The TRC has considered any geographic variation in entry conditions and availability of TI or MI services. Absent regulation obliging the provision of wholesale leased line services, an operator would need to build its own network to offer retail leased lines. It can be noted that, in Jordan, even in the presence of ex ante regulation, there is limited demand for wholesale MI leased lines, and that operators tend to offer MI services on their own infrastructure. In order to realise economies of scale, scope and density, and compete with the incumbent’s ubiquitous (copper) network, investment would tend to be in areas where there is a concentration of leased line customers, all (or virtually all) of whom are non-residential customers. The TRC expects that no alternative operator would enter the market to offer TI leased lines, and so to some extent the advantage of a ubiquitous copper network may be diluted. All operators are likely to invest in the most concentrated business areas. However, it is unlikely that specific geographic areas can be defined that have stable boundaries, within which the conditions of competition differ significantly from neighbouring areas.

The TRC’s preliminary assessment is that no operator in Jordan differentiates its retail leased line products on the basis of geography; in other words, there is no geographic differentiation in terms of functionality or pricing. This applies to the provision of both TI and MI services.

Therefore, the geographic market for all retail leased lines markets is Jordan.

3.5 SUMMARY OF RETAIL PRODUCT AND GEOGRAPHIC MARKET DEFINITIONS

Product market	Geographic market
Retail market for TI leased lines	national
Retail market for MI leased lines	national

Q1 Do you agree with the TRC’s preliminary conclusions regarding the relevant product and geographic market definitions for retail leased line services?

3.6 WHOLESALE LEASED LINE PRODUCT MARKET DEFINITION

Telecom operators may supply wholesale leased lines to each other, either on a commercial basis or as a regulated service. A wholesale leased line is technically similar to a retail leased line, and the difference between wholesale and retail offerings is primarily to do with pricing, where a wholesale sale to another operator will be at a lower price than a retail sale to an end user. An operator purchasing wholesale leased lines may use them as components to provide a retail service to end user organisations, or to build or supplement its own network (for example for backhaul).

Wholesale leased lines may be used by operators to connect to international gateways. For the avoidance of doubt, the provision of leased lines within Jordan includes provision up to and including international gateways. There cannot be a gap between the end of the wholesale leased lines product and the international gateway – a wholesale leased line service must allow the purchaser to access international connectivity.

For regulatory purposes, there is usually a distinction between leased lines provided over different parts of the network. The previous market review distinguished between trunk segments and terminating segments, on the basis that there are different competitive conditions associated with supplying trunk segments over core network capacity and supplying terminating segments in the access network.

A terminating segment will usually link an end-user's site to the purchasing operator's network node. This will allow the purchasing operator to build an end-to-end service using a combination of wholesale inputs and its own network. A terminating segment can also be provided as backhaul between a local access node and the purchasing operator's own core network.

A trunk segment will typically be a leased line carried over aggregated links between major network nodes. Trunk segments will connect, for example, main urban centres characterised by concentrated demand for leased lines and high volumes of traffic between them.

The previous market review defined the boundary between trunk and terminating segments as the *“operator's DC serving exchange. Thus, a terminating segment of wholesale DC refers to the segment between an end point of the network and the DC serving exchange. The trunk segment of wholesale DC refers to the segment between two DC serving exchanges.”*

Exhibit III.2 below gives an illustration of the boundaries between trunk and terminating segments of wholesale leased lines:

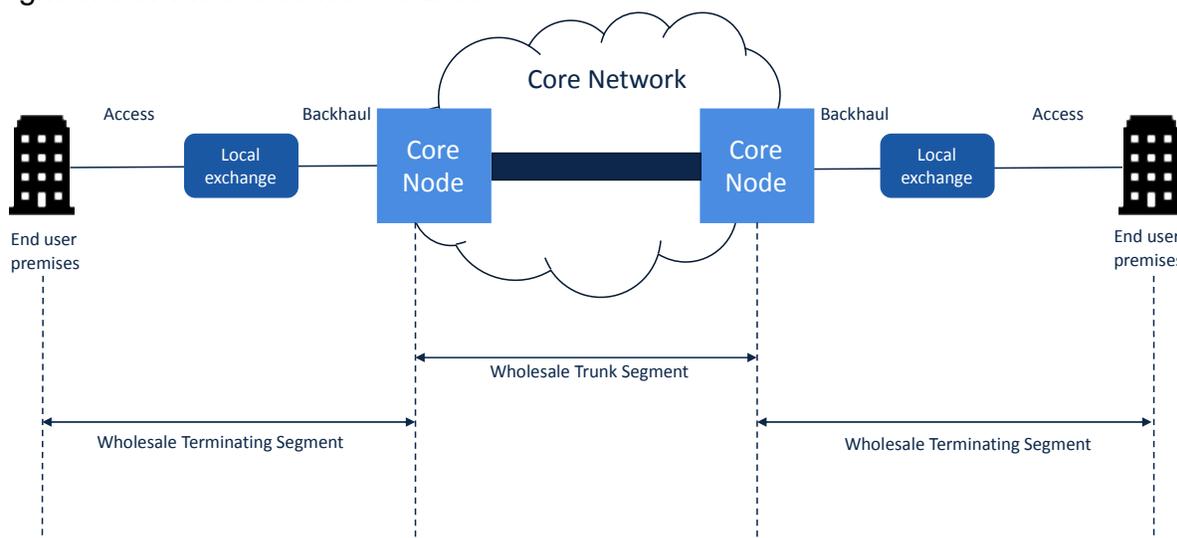


Exhibit III.2 Wholesale trunk and terminating segments [Source: DotEcon-Axon]

In the previous review, three wholesale DC services markets were found to be susceptible to ex ante regulation:

- Wholesale market for terminating segments of DC above 2 Mbps
- Wholesale market for terminating segments of DC up to/including 2 Mbps
- Wholesale market for trunk segments of DC

The TRC maintains that trunk and terminating segments of wholesale leased lines should be considered separately. They are not demand or supply side substitutes, and may often be purchased together. There remain significant differences between the supply of a wholesale connection to an end user over the access network, and the supply of a wholesale connection over the core network between major population centres.

In the discussion of the retail leased lines markets, it was noted that there have been significant changes in the markets since the time of the last review. Changes include the move away from traditional interface (TI) leased lines towards Ethernet (MI) leased lines, and the TRC expects that, although there remains an installed base of TI services, the use of TI will continue to decline. The TRC also noted that a local/national/international distinction was less relevant, and found that there was a single market for retail leased lines sold in Jordan.

The question of indirect constraint is less relevant in the wholesale leased lines markets than it is in other (particularly fixed) markets. This is because the main distinction between wholesale and retail is that one is sold to another operator and one is sold to

an end user – there is no distinction in the product, only in the price and terms and conditions. If an operator is vertically-integrated and already using its own inputs to supply retail leased lines, it would already be considered as a direct constraint.

The TRC proposed, in the retail market definition, that the focal product for retail leased lines was Ethernet MI leased lines. Consequently, the focal product for the wholesale market is wholesale MI leased lines.

In considering the wholesale market for leased lines, the TRC has considered the following:

- Are wholesale TI leased lines part of the same market as MI leased lines?
- Are all bandwidths of leased line part of the same market?
- Are wireless leased lines part of the same market as fixed leased lines?
- Are wholesale broadband products part of the same market as leased lines?
- Is dark fibre part of the same market as leased lines?

Are wholesale TI leased lines part the same market as MI leased lines?

Demand side substitution

The general migration from TI to MI services at the retail level is mirrored at the wholesale level. While there may still be some purchase of wholesale TI leased lines, the overall trend is that wholesale purchasers replace TI circuits with MI circuits, which suggests that substitution is asymmetric. This is particularly the case with trunk segments. A purchaser of wholesale MI leased lines would not be likely to find wholesale TI to be a good substitute.

Supply side substitution

Because of the need for significant upfront investment, an operator currently supplying MI leased lines would not be likely to switch to supply TI leased lines. In addition, any potential switch would be limited as the purchase of TI leased lines is in decline, and TDM equipment is approaching obsolescence.

Conclusion

TI wholesale leased lines do not belong to the same market as MI wholesale leased lines. This means that the market for trunk segments and the market for terminating

segments of wholesale leased lines must further distinguish between TI and MI leased lines.

Are all bandwidths of leased line part of the same market?

Demand side substitution

The TRC's view is that the wholesale market mirrors the retail market, in that there is a functional substitutability between different bandwidths of leased line. Clearly, wholesale customers have varied demands for bandwidth, and this could in principle be met by a single service or by multiples of lower bandwidth services. This suggests demand-side substitutability along a chain of substitution, and would apply to trunk and terminating segments of TI and MI leased lines.

Supply side substitution

On the supply side, the physical network infrastructure of buildings, trenches, fibre and ducts is a prerequisite to the provision of wholesale leased lines, and the construction of such a network requires considerable time and resources. However, once built, infrastructure can be used to provide leased lines of all bandwidths and interfaces, as these are determined at the connection to the end user.

Conclusion

All bandwidths of TI and MI leased lines fall within the same markets for trunk and terminating segments of leased lines.

Are wireless leased lines part of the same market as fixed leased lines?

Demand side substitution

Developments in wireless technologies mean that wireless leased lines can provide bandwidths up to 1Gbit/s. In Jordan, most wireless leased lines are provided over operators' 4G or FWBA networks that offer speeds below the 1Gbit/s level and examples elsewhere also suggest that most wireless leased lines are sold at speeds below this level.²³

²³ For example, ESBT in Ireland is up to 300 Mb/s.

As noted in the retail market definition, wired and wireless leased lines share similar product characteristics and similar pricing, and this is mirrored at the wholesale level. A purchaser of wired leased lines who does not seek the higher capacities of circuit will find a wireless leased line to be a good substitute, subject to availability.

The TRC notes that Mobile Network Operators are large customers of both wired and wireless leased lines required to provide backhaul, and wireless circuits may be preferred in remote locations where wired infrastructure is not available and where the traffic load on backhaul may be lower compared to more densely populated areas.

Supply side substitution

The main differences between wireless and wired leased lines is that the provision of wireless leased lines needs access to radio spectrum and line-of-sight between wireless service end points. Congestion can also be an issue, as the same frequency band cannot be used by two links in the same geographic area. This means that a purchaser of wholesale wired leased lines might find that there were constraints on the substitutability of a wireless leased line.

Conclusion

The TRC notes that regulators in some jurisdictions have found that supply side constraints indicate that wireless leased lines should not be in the same market as wired leased lines. However, other regulators have found the opposite, principally because a relatively low population density and topography appropriate to establishing good sightlines can mitigate the problems caused by spectrum scarcity and congestion. The TRC's view is that, in Jordan, wireless leased lines should form part of the same market as fixed leased lines.

This applies both to trunk and terminating segments of wholesale TI leased lines, and to trunk and terminating segments of wholesale MI leased lines.

Are wholesale broadband products part of the same market as leased lines?

Demand side substitution

The assessment of the retail market proposed that broadband services would not be a sufficiently effective substitute for either retail TI leased lines or retail MI leased lines, as there are significant differences in terms of functionality, pricing and use of these

services. The TRC's view is that these same distinctions apply at the wholesale level, and wholesale broadband services are not a good substitute for wholesale leased lines.

Supply side substitution

Our view is that a supplier of wholesale broadband services not currently supplying wholesale leased lines would not be able to readily switch to supply wholesale leased lines without incurring significant upfront costs.

Conclusion

Wholesale broadband services are not part of the same market as wholesale TI or MI leased lines.

Is dark fibre part of the same market as leased lines?

Demand side substitution

It is unlikely that a purchaser of wholesale leased lines would find dark fibre to be a good substitute. Although dark fibre can be used to provide capacity at all bandwidths, there are substantial fixed costs associated with using dark fibre to provide an active leased line product because a purchaser would need a network of switched electronic equipment in locations appropriate for aggregating customer traffic. There would also be additional costs associated with switching from the provision of an active product (i.e. leased lines) to a passive product (i.e. dark fibre).

Supply side substitution

There is limited supply of dark fibre in Jordan, and its use is likely to be niche.

Conclusion

Dark fibre does not belong to the same product market as wholesale TI or wholesale MI leased lines.

Summary of conclusions on the relevant product market

- There are separate markets for each of trunk and terminating segments of wholesale leased lines

- TI and MI leased lines belong to a separate product market
- Wireless leased lines belong to the same market as wired leased lines
- All bandwidths of leased line fall within the same market
- Wholesale broadband products are not part of the same market as wholesale leased lines
- Dark fibre does not belong to the same product market as wholesale leased lines.

3.7 WHOLESALE LEASED LINES GEOGRAPHIC MARKET DEFINITION

There is no geographic differentiation in products or pricing across Jordan. All operators employ uniform national pricing for wholesale TI and MI leased lines.

The TRC would expect that the conditions of competition for terminating segments would be different in geographic areas where there is a concentration of business customers, because alternative operators would be more likely to invest in such areas and benefit from economies of scale and density. So, for example, a business park would typically have a greater concentration of retail customers for leased lines and be more attractive for a wholesale supplier (who might be selling wholesale leased lines or self-supplying). Such areas are also more likely to have fibre roll-out, so alternative operators would be likely to already have infrastructure.

The TRC has considered the extent to which 'exclusive' agreements set up by property developers or other commercial interests could lead to a finding of sub-national geographic markets. The TRC's understanding is that exclusive agreements have been entered into by most of the licensed operators, but that there is no standard form for these agreements. In general, the agreement would grant one operator the right to provide access services to retail customers within a specified area, and customers would be obliged to purchase access services from that operator. A retail customer who wanted to purchase services from a different operator would need their preferred operator to negotiate access from the exclusively contracted operator.

The exclusive agreement would usually have been entered into following a competitive tender amongst operators. The contract between the property developer/owner and the telecom operator would be 'exclusive' in the sense that the property/developer owner would not contract directly with another operator. However, the contracted operator would be free to engage in commercial agreements with any other operators or service providers. In practice, this is likely to mean that the contracted operator would have an

influence over the prices and terms and conditions for services provided by other operators within the exclusive area, through the terms of access it grants.

However, there are potential competition problems arising from an operator being able to set terms and conditions and prices for wholesale access to the area where they have an exclusive contract. These problems should not arise if the contracted operator is subject to ex ante SMP obligations imposed on a national market, because the obligations are no different within the exclusive area and outside it. For a contracted operator who does not have ex ante SMP obligations, the setting of excessive prices or unreasonably discriminatory practices may be a competition problem – it is not the existence of an exclusive agreement that is the issue, but the behaviour of the operator. This would suggest that defining sub-national markets may be less effective in addressing the issue than considering the use of competition powers.

The definition of a geographic market requires the identification of stable and persistent boundaries, within which the conditions of competition are appreciably different from those in neighbouring areas. Exclusive contracts are by their nature transitory – agreements can be renegotiated, often have stipulated end dates and so on. In this context, it is difficult to argue that stable and persistent boundaries can be identified. In the retail market, a customer would not be barred from purchasing services from an operator other than the contracted operator, but may not be able to secure desirable terms and conditions. However, there will be some indirect constraint on retail prices because it would not be in the property developer's interest for retail prices to be higher in its exclusive area than in other areas. In other words, although the property developer is granting an operator 'exclusive' rights, it is not likely to accept that end users are charged a premium as a consequence of this.

Therefore, the TRC concludes that the existence of exclusive arrangements do not define the boundaries of sub-national geographic retail markets because the arrangements are transitory, and do not give rise to appreciably different conditions of competition. The TRC's preliminary view is that the outcome of exclusive arrangements would be reflected in the market shares of operators, and would be considered further in the competition assessment. It is recognised that additional issues arise in the wholesale market, and these are addressed in the consideration of the wholesale access market.

In considering the geographic dimension of the market for trunk segments, the TRC recognises that some trunk routes are more likely to attract investment from alternative

operators than others, and that generally, the routes with the most traffic are the most appealing. However, the TRC view is that it is not necessary to go to the extreme of defining route-by-route markets for trunk segments, and that there is sufficient similarity in competitive conditions across all trunk routes to warrant the definition of a single geographic market.

3.8 SUMMARY OF WHOLESALE PRODUCT AND GEOGRAPHIC MARKET DEFINITIONS

Product market	Geographic market
Wholesale market for TI trunk segments	national
Wholesale market for MI trunk segments	national
Wholesale market for TI terminating segments	national
Wholesale market for MI terminating segments	national

Q2 Do you agree with the TRC’s preliminary conclusions regarding the relevant product and geographic market definitions for wholesale leased line services?

IV. Markets susceptible to ex ante regulation

4.1 APPROACH

Market definition is not an end in itself. It is a prerequisite for assessing whether a market is subject to effective competition. The next step of the review is to assess each of the defined markets to determine whether there is likely to be a requirement for ex ante regulation (i.e. intervention to address structural, and not just behavioural problems).

Such an assessment will require the application of the “three criteria test” (3CT), in which the TRC considers whether any of the defined markets exhibit the following features:

- High and non-transitory entry barriers e.g. due to sunk costs, economies of scale;
- Not tending towards effective competition; and
- Adequacy of competition law – insufficiency of ex post intervention.

The three criteria must be met cumulatively, i.e. all three of them must be satisfied for a conclusion to be reached that the market is susceptible to ex ante regulation. Therefore, failure to meet any one of these criteria will necessarily lead to the conclusion that the market is **not** a candidate market for ex ante regulation.

This section considers in turn each of the defined wholesale and retail leased line markets. An overview of the analysis is provided in a summary table, supported by reasoning in the subsequent text. Note that the three criteria test examines a *market*. Although the test considers whether there is, or is likely to be, effective competition in the market, this is not the same as assessing an individual operator’s market power. The assessment of market power is carried out in Section V, for those markets identified as being susceptible to ex ante regulation.

The analysis below starts with an assessment of the wholesale leased line markets and then assesses the downstream retail markets.

4.2 A WHOLESALE MARKET FOR TRADITIONAL INTERFACE (TI) TERMINATING SEGMENTS OF LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is susceptible to ex ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none"> • Incumbent has legacy advantage because of economies of scale and sunk costs 	<ul style="list-style-type: none"> • Orange Fixed is a significant player with [§<no>] share of the TI terminating segments market. • Legacy service – no alternative investment expected 	<ul style="list-style-type: none"> • Refusal to supply or discriminatory pricing could have damaging consequences for access seekers

High and persistent barriers to entry

Control over infrastructure is an essential pre-requisite for offering wholesale leased line services. Entry into the market requires significant levels of investment, largely in the

form of sunk costs (i.e., costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

The incumbent has a legacy advantage because of economies of scale and sunk costs. These factors raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of the terminating segments of wholesale leased lines.

Lack of a trend towards competition

Orange Fixed is the predominant provider of wholesale terminating segments in the TI market, with a market share of close to [§<no] (it is noted that V-Tel provides a small number of TI leased lines in this market, with a market share of less than 1%). Given that TI services are legacy services, the TRC expects that any new entrant seeking to provide wholesale terminating leased lines will do so using MI technology. Therefore, the market is not likely to tend towards effective competition over the period of this review.

Insufficiency of ex-post intervention alone

Given Orange Fixed's role in the market, refusal to supply or discriminatory pricing could have damaging consequences for access seekers. The ex post application of competition law rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention. Therefore, the TRC considers that ex post competition law intervention may not be sufficient to address all market failures and abuse of dominant position that may be observed in the absence of ex ante regulation.

Conclusion

The TRC's preliminary conclusion is that the market for wholesale traditional interface (TI) terminating segments of leased lines meets each of the three criteria and is therefore susceptible to ex ante regulation.

4.3 A WHOLESALE MARKET FOR TRADITIONAL INTERFACE (TI) TRUNK SEGMENTS OF LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none"> Incumbent has legacy advantage because of economies of scale and sunk costs On sufficient thick/major routes where there is strong demand for additional capacity, any asymmetry between incumbents and entrants may be reduced (unless incumbents have installed large amounts of spare, currently unused capacity). 	<ul style="list-style-type: none"> Orange Fixed is a significant player with close to [Xno] share of the TI terminating segments market. Legacy service – no alternative investment expected 	<ul style="list-style-type: none"> As a key input, refusal to supply or discriminatory pricing could have damaging consequences for those seeking wholesale access ...

High and persistent barriers to entry

Control over infrastructure is an essential pre-requisite for offering wholesale leased line services. Entry into the market requires significant levels of investment, largely in the form of sunk costs (i.e., costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

The incumbent has legacy advantage because of economies of scale and sunk costs. These factors raise significant barriers to entry for any operator considering roll-out of a new local access or core network capable of supporting the provision of a wholesale leased lines segment.

Where there is strong demand for additional capacity on particular routes, the barriers to entry may be lower as the large fixed costs of investment can be shared over a larger volume of output.

Lack of a trend towards competition

Orange Fixed is the predominant provider of wholesale trunk segments in the TI market. Orange Fixed therefore has close to a [Xno] market share in this market. Given that TI services are legacy, the TRC expects that any new entrant seeking to provide wholesale trunk leased lines will do so using MI technology. Therefore, the TRC does not expect the market to tend towards effective competition over the period of this review.

Insufficiency of ex post intervention alone

Given that Orange Fixed is the only supplier of this wholesale service, refusal to supply or discriminatory pricing could have damaging consequences for access seekers. The ex post application of competition law rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention. Therefore, the TRC considers that ex post competition law intervention may not be sufficient to address all market failures and abuse of dominant position that may be observed in the absence of ex ante regulation.

Conclusion

The TRC's preliminary conclusion is that the market for wholesale traditional interface (TI) trunk segments of leased lines meets each of the three criteria and is therefore susceptible to ex ante regulation.

4.4 A WHOLESALE MARKET FOR MODERN INTERFACE (MI) TERMINATING SEGMENTS OF LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is not susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none">• Market characterised by economies of scale and sunk costs.• provision of terminating segments depends on access infrastructure close to end user – advantage of ubiquitous network	<ul style="list-style-type: none">• Barriers to entry have been largely overcome• Orange Fixed has a small number of MI terminating leased lines but only around [Xno] of the market in 2017.• Alternative operators self-supplying, and offering wholesale terminating segments absent regulatory obligations.	<ul style="list-style-type: none">• refusal to supply or discriminatory pricing could have damaging consequences for those seeking wholesale access

High and persistent barriers to entry

Control over infrastructure is an essential pre-requisite for offering wholesale leased line services. Entry into the market requires significant levels of investment, largely in the

form of sunk costs (costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

The market is characterized by economies of scale, scope, and density and high sunk costs. These factors raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of wholesale leased lines terminating segments.

Lack of a trend towards competition

The TRC notes the overall shift in the market away from the use of wholesale inputs towards self-supply of terminating segments on own infrastructure. However, such a move is necessarily limited to those areas where there is alternative infrastructure, because the provision of terminating segments involves the connection to an end user, and that generally favours operators who have control of ubiquitous access networks. This is because the control of an access network reduces the costs involved in connecting to the end user.

In the TRC's view, the direction of development in the market suggests that there will be more competition over the lifetime of this review, but limited to areas where there is alternative infrastructure roll-out.

The market for the commercial supply (i.e. not including self-supply) of wholesale terminating segments of MI leased lines is very small. V-tel and Orange Fixed both offer wholesale services, suggesting that barriers to entry have largely been overcome, particularly because V-Tel is not subject to a regulatory obligation to offer wholesale services. In addition, several operators self-supply wholesale inputs to offer retail services.

Insufficiency of ex post intervention alone

As the second criterion is not met, the TRC does not need to consider in detail the sufficiency of competition law. However, for completeness, given the number of operators in the retail market, and the decreasing level of wholesale demand, the TRC considers that competition law would be sufficient to address any emerging competition problems.

Conclusion

The TRC's preliminary conclusion is that the market for wholesale modern interface (MI) terminating segments of leased lines does not meet all of the three criteria. This market is therefore not susceptible to ex ante regulation.

4.5 A WHOLESALE MARKET FOR MODERN INTERFACE (MI) TRUNK SEGMENTS OF LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is not susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none"> • On sufficiently thick/major routes where there is strong demand for additional capacity it is expected that any asymmetry may be reduced (unless incumbents have installed large amounts of spare, currently unused capacity, e.g. dark fibre)... 	<ul style="list-style-type: none"> • Barriers to entry have been largely overcome • Alternative operators self-supplying, and offering wholesale terminating segments absent regulatory obligations • Orange Fixed has a small number of MI trunk leased lines but less than [xno] of the market in 2017. 	<ul style="list-style-type: none"> • refusal to supply or discriminatory pricing could have damaging consequences for those seeking wholesale access

High and persistent barriers to entry

Control over infrastructure is an essential pre-requisite for offering wholesale leased line services. Entry into the market requires significant levels of investment, largely in the form of sunk costs (costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

The market is characterised by economies of scale, scope, and density and sunk costs. These factors raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of a wholesale leased lines trunk segments.

Where there is strong demand for additional capacity, the barriers to entry may be lower as the large fixed costs of investment can be shared over a large volume of output.

Lack of a trend towards competition

The TRC notes the overall shift in the market away from the use of wholesale inputs towards self-supply of trunk segments on own infrastructure. In the TRC's view, the

direction of development in the market suggests that there will be more competition over the lifetime of this review, but limited to areas where there is alternative infrastructure roll-out.

The market for the supply of wholesale trunk segments of MI leased lines is fairly static. Batelco and Orange Fixed both offer wholesale services, suggesting that barriers to entry have largely been overcome, particularly because Batelco is not subject to a regulatory obligation to offer wholesale services. In addition, several operators self-supply wholesale inputs to offer retail services.

Insufficiency of ex-post intervention alone

As the second criterion is not met, the TRC does not need to consider in detail the sufficiency of competition law. However, for completeness, given the number of operators in the retail market, and the decreasing level of wholesale demand, the TRC considers that competition law would be sufficient to address any emerging competition problems.

Conclusion

The TRC’s preliminary conclusion is that the market for wholesale modern interface (MI) trunk segments of leased lines does not meet all of the three criteria. Therefore, this market is not susceptible to ex ante regulation.

4.6 A RETAIL MARKET FOR TRADITIONAL INTERFACE (TI) LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none"> • Entry into the market through building own infrastructure requires significant levels of investment and large sunk costs • Entry could take place through wholesale access 	<ul style="list-style-type: none"> • Orange Fixed and Orange Data are the main providers of retail domestic TI leased lines ([<no] and [<no] volume share in 2017) • Very small number of domestic TI lines sold by 	<ul style="list-style-type: none"> • If wholesale regulation is not effective, competition issues would be endemic.

<p>remedies if in place and if effective</p> <ul style="list-style-type: none"> • However, the share of retail leased lines provided using wholesale inputs is relatively small (and for TI it is only Orange Data using Orange Fixed inputs) 	<p>V-Tel [§<no] volume share in 2017)</p> <ul style="list-style-type: none"> • Legacy services – do not expect much new investment by others 	
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High and persistent barriers to entry

The retail market for TI leased line services is characterised by the presence of strong economies of scale, scope and density in access and core networks. These factors, in combination with sunk costs, create a major structural barrier to entry.

Whilst operators wishing to provide retail leased line services could use wholesale leased line services as inputs (rather than rolling out their own network), the TRC notes that very few operators have adopted this approach. For retail TI services, only Orange Data are relying on “another operator’s network” to provide these services.

Lack of a trend towards competition

Orange Fixed is the main operator providing retail TI leased line on its own network and Orange Data is the other main provider providing these services (based on wholesale leased line inputs from Orange Fixed). In 2017, Orange Fixed provides [§<no] of domestic TI retail leased lines by volume and Orange Data provides [§<no]. As Orange Fixed and Orange Data are considered to be a single economic entity, this gives a combined market share of close to [§<no]. A very small number of domestic TI lines is sold by V-Tel [§<no] (volume share in 2017)]

The TRC considers these services to be legacy services and would not expect there to be any significant interest in new entry. However, if there was effective ex ante regulation at a wholesale level, it would be expected that this would significantly reduce the need for retail regulation. At present, Orange has a virtual monopoly in this market, which is likely to persist.

Therefore, this market is unlikely to see a trend towards competition.

Insufficiency of ex post intervention alone

Ex post intervention in the retail leased lines markets is not likely to be sufficient, because the market is characterised by structural problems associated with the

ownership of a ubiquitous access network which is better addressed by ex ante regulation.

Conclusion

The TRC’s preliminary conclusion is that the retail market for TI leased lines services meets all of the three criteria and so this market is susceptible to ex-ante regulation.

4.7 A RETAIL MARKET FOR MODERN INTERFACE (MI) LEASED LINES

For the reasons described below, the TRC provisionally concludes that this market is not susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none"> • Entry into the market through building own infrastructure requires significant levels of investment and large sunk costs • Entry could take place through wholesale access remedies if in place and if effective • Share of retail leased lines provided using wholesale inputs is relatively small • Only V-Tel using “other operator’s network” to provide a small number of “Fast Ethernet” retail leased lines. 	<ul style="list-style-type: none"> • Orange Fixed, V-Tel, Orange Data, Damamax, Zain, Batelco and Mada are providing MI Leased Lines, with Orange Fixed’s share declining (slightly) in the last three years. • In 2017 [Orange Fixed (no), V-Tel (no), Orange Data (no), Damamax (no), Zain (no), Batelco (no), and Mada (no)] 	

High and persistent barriers to entry

The retail market for MI leased line services is characterised by the presence of strong economies of scale, scope and density in access and core networks. These factors, in combination with sunk costs, create a major structural barrier to entry.

It might be that the barriers to entry are slightly lower given that the provision of very high bandwidth services (provided over MI) might be focused on a limited number of larger business customers for which high revenues can be obtained, thus making the investment case more attractive. However, the costs of entry are still high and investment will be sunk if the firm is not successful and is forced out of the market.

Lack of a trend towards competition

There are currently six operators providing retail MI leased lines in the domestic market. Whilst Zain and Batelco are the largest, it would be expected for there to be a competitive constraint on them given the number of operators competing in this market. The TRC considers that this market manifests a trend towards competition.

Insufficiency of ex post intervention alone

The developing structure of the market, and the proposed regulation of the wholesale market suggests that ex post intervention should be sufficient to address any anti-competitive issues in the retail domestic market for MI leased lines.

Conclusion

The TRC's preliminary conclusion is that the retail market for MI leased lines services does not meet all of the three criteria and so this market *is not* susceptible to ex-ante regulation.

4.8 SUMMARY OF THREE CRITERIA ASSESSMENTS

Market	Susceptible to ex ante regulation?
Wholesale market for TI trunk segments	yes
Wholesale market for MI trunk segments	no
Wholesale market for TI terminating segments	yes
Wholesale market for MI terminating segments	no

Retail market for TI leased lines	yes
Retail market for MI leased lines	no

Q3 Do you agree with the TRC’s preliminary conclusions regarding the wholesale leased line markets found to be susceptible to ex ante regulation?

Q4 Do you agree with the TRC’s preliminary conclusions regarding the retail leased line markets found to be susceptible to ex ante regulation?

V. Competition assessment

5.1 INTRODUCTION

The leased line markets found to be susceptible to ex ante regulation are those for:

- Wholesale market for TI trunk segments,
- Wholesale market for TI terminating segments, and
- Retail market for TI leased lines

The conditions of competition in each of these markets are assessed in this section, with a view to determining if any operator or operators have SMP. The White Paper describes this analytical step as follows:

“identify whether there exists any operator or operators on that relevant market which, by their market power, effectively distort the dynamics of competition in that relevant market. The classic measurement of market power in a relevant product market that is used in a regulatory context is that of dominance (or SMP). A finding that an operator or operators holds individual or collective dominance in any given relevant product market is based on the understanding that the relevant market in question may not be effectively competitive”

The retail market for MI leased lines, and the wholesale markets for the trunk and terminating segments of MI leased lines were found not to be susceptible to ex ante regulation for the reasons discussed in section IV. Therefore, these defined markets will not be considered further in the analysis.

5.2 APPROACH TO COMPETITION ASSESSMENT

The purpose of competition assessment is to identify whether there is an operator (or operators) with dominance (or Significant Market Power (SMP)). In this context, dominance/SMP means “*the power to behave to an appreciable extent independently of its competitors, its customers and ultimately of consumers*” [White Paper].

The approach to competition assessment entails an analysis of the level of competition in each relevant market, examining how effectively competitive forces are at work. The assessment draws on quantitative and qualitative data available within TRC and collected specifically for this Project. Dominance can be individual or collective. The assessment considers:

- **Existing competition**
- **Potential competition**
- **Countervailing buyer power**

These three elements of the assessment will now be discussed in more detail.

In assessing **existing competition** in a market, the TRC considers the number of firms competing in the market, measures of concentration and market shares.

The number of firms in the market gives a first indication of the number of competing participants. For example, where there is a single firm in the market, this would indicate a lack of competition (notwithstanding the need to still consider other measures such as the extent to which there are or are not barriers to entry or expansion).

However, the number of firms alone does not provide much indication of competitiveness. For example, there may be many firms, but they may be of different size and have largely different market shares. Therefore, it may be appropriate to look at measures of concentration such as the sum of market shares of the biggest X firms, or the Herfindahl-Hirschman Index of market concentration (HHI) (i.e., the sum of the squares of individual market shares such that firms with a higher market share are given more weight). The closer a market is to a monopoly, the higher the market's concentration (and the lower its competition). If, for example, there were only one firm in an industry, that firm would have 100% market share, and the Herfindahl-Hirschman Index (HHI) would equal 10,000. A market with an HHI of less than 2000 is unlikely to raise any cause for concern.

Current market shares and changes over time are considered in order to provide an indication of the dynamics of the relevant market. As noted in the White Paper, market shares are often used “*as a proxy for market power*” and “*very large market shares are in themselves, other than in exceptional circumstances, evidence of the existence of a dominant position*”

Whilst the relationship between market shares and market power is not precise in practice, the TRC’s Instructions on Competition Safeguards in the Telecommunications Sector define a market share of 25% as an initial indicator of dominance (requiring further evidence for confirmation of dominance), and a market share above 50% as presumptive of dominance. However, even where there is a presumption of dominance, the Instructions on Competition Safeguards note that this can be overcome by consideration of evidence establishing that the Licensee does not have the ability to control and affect the activity of the market (Article 8 b)1).

It is important to understand why high market shares in a particular market may (or may not) be indicative of market power by considering other factors that may constrain a large operator’s behaviour. The consideration of the **potential for competition in the market** includes, for example, barriers to entry and expansion, factors such as the existence of essential facilities, economies of scope/scale, vertical integration, network effects, technological advantages, and access to capital markets.

Possible barriers to entry and expansion in the market will affect an alternative operators’ ability to respond to changes in the dominant operator’s prices (or volumes). For example, as noted in the White Paper: “*Where **barriers to expansion** are low, the ability of a competitor to take advantage of an anti-competitive price increase or restriction of output by another is greatly increased*” and “[w]here **barriers to entry** are low, the likelihood will be greater of a competitor having the ability to take advantage of an anti-competitive price increase or restriction of output by an incumbent, who would therefore not be in a position to act with impunity or to act to an appreciable extent independently of its competitors.”

Barriers to entry may be legal, technical or regulatory. They are also affected by the degree of economies of scale, scope and density associated with the provision of services in the market concerned, the level of any sunk costs, and the extent to which control of infrastructure is easily replicated. Where relevant, each of these elements is considered in the assessment.

The final element that may mitigate a dominant operator's high market share is the existence of **Countervailing Buyer Power**, where the operator's customers at the wholesale or retail level have an ability to influence the behaviour of dominant operators by, for example, threatening not to buy from them. The extent to which this constraint can be exercised by a customer will depend on its size or commercial significance, and/or its ability to switch quickly to competing suppliers thus rendering its threats credible. The White Paper states that "*A purchaser's ability to exercise its countervailing bargaining power will depend upon the existence of a number of factors, such as:*

- *its size and commercial significance to its suppliers;*
- *the presence of alternative suppliers and/or its ability to sponsor upstream market entry/ expansion (through purchasing commitments);*
- *the absence of switching costs;*
- *the credibility of the purchaser's threat;*
- *the extent to which it can impose costs on suppliers (by, for example, delaying purchases); and, as a related factor; and*
- *its incentive to exercise its purchasing power."*

Where relevant, it may be necessary to consider **additional evidence** to supplement the above analysis. Other types of evidence could include price rivalry, or excessive profitability. In addition to the factors above (all of which may be relevant when seeking to identify individual dominance), in some cases, there may scope for **collective dominance**. This would be the case where two or more firms can sustain prices above (and output below) the competitive level through adopting a "*coherent system of coordinated behaviour reinforced by implicit threats*" [White Paper]. This would be a form of tacit collusion, which is more likely to occur under certain market conditions including those listed below:

- The undertakings must be able to know and monitor each other's behaviour;
- Tacit collusion must be sustainable over time, with a long-term incentive not to depart from common policy;
- A credible deterrence mechanism must exist to "discipline" any firm that seeks to diverge from the collusive outcome;
- There must be no external constraints through foreseeable reaction of customers and/or competitors.

A finding of collective dominance requires a complex analysis and cannot be based solely on superficial evidence such as occasional price reductions by competitors in the same market or past behaviour of collusion. Instead, such a finding requires a more robust confirmation that all of the above four conditions are met and will continue to be met over the review period, thus pointing to a high risk of future coordination.

In summary, the approach to competition assessment involves a thorough analysis of current and potential conditions of competition. The White Paper notes a range of factors that may be relevant – not all factors will be relevant in all markets, and some factors will be more significant than others. The TRC’s assessment identifies those factors that are most important in each of the markets considered. The conclusion of the competition assessment is the designation of any operator or operators that are found to have SMP in the market in question.

5.3 WHOLESALE TRADITIONAL INTERFACE (TI) TRUNK SEGMENTS OF LEASED LINES

Existing competition

In 2017, Orange Fixed had close to [no] market share in the supply of TI trunk segments, and this has been consistent for the last three years.

Potential competition

The high market share of Orange Fixed in the provision of wholesale TI Trunk segments is protected by **high barriers to entry** (see Competition Safeguards, Article 8(c), Impact Factor 14).

There exist substantial **economies of scale, scope and density** in the access network which, in combination with the high share of sunk costs involved, make it unrealistic that an OLO could replicate the Orange network (see Competition Safeguards, Article 8(c), Impact Factor 9).

Given the existence of high barriers to entry, in addition to the fact that these are services provided over legacy technology which no other operator will likely be willing to invest in (Competition Safeguards, Article 8(c), Impact Factor Number 5), it is highly unlikely that any other operator will enter the market for wholesale TI trunk segments of leased lines. Therefore, there will be a lack of actual and potential competition (thus satisfying Competition Safeguards, Article 8(c), Impact Factor 12).

Countervailing buying power:

The largest customer of Orange Fixed’s wholesale broadband service is Orange Data, and no other customer purchases a significantly high volume of wholesale broadband

services to allow it to exercise countervailing buyer power (Competition Safeguards, Article 8(c), Impact Factors 6 and 10).

SMP Preliminary Conclusion

Orange Fixed is the dominant operator in the market for wholesale Traditional Interface (TI) trunk segments of leased lines.

5.4 WHOLESALE TRADITIONAL INTERFACE (TI) TERMINATING SEGMENTS OF LEASED LINES

Existing competition

In 2017, Orange Fixed had close to [X%] market share in the supply of wholesale TI terminating segments of leased lines, and this has been consistent for the last three years.

Potential competition

The high market share of Orange Fixed in the provision of wholesale TI terminating segments is protected by **high barriers to entry** (see Competition Safeguards, Article 8(c), Impact Factor Number 14).

There exist substantial **economies of scale, scope and density** in the access network which, in combination with the high share of sunk costs involved, make it unrealistic that another potential entrant could replicate the Orange network (see Competition Safeguards, Article 8(c), Criterion Number 9).

Given the existence of high barriers to entry, in addition to the fact that these are services provided over legacy technology, which no other operator will likely be willing to invest in (Competition Safeguards, Article 8(c), Impact Factor 5), it is highly unlikely that any other operator will enter the market for wholesale TI terminating segments of leased lines. Therefore, there will be a lack of actual and potential competition (thus satisfying the *Competition Safeguards*, Article 8(c), Impact Factor 12).

Countervailing buying power:

The largest customer of Orange Fixed's wholesale broadband service is Orange Data, and no other customer purchases a significantly high volume of wholesale broadband

services to allow it to exercise countervailing buyer power (Competition Safeguards, Article 8(c), Impact Factors 6 and 10).

SMP Preliminary Conclusion

Orange Fixed is the dominant operator in the market for wholesale Traditional Interface (TI) terminating segments of leased lines.

5.5 RETAIL TRADITIONAL INTERFACE (TI) LEASED LINES

Existing competition

From 2015 to 2017, there were three operators providing retail (TI) leased lines: Orange Fixed, V-Tel and Orange Data. The exhibit below shows the market shares of operators (by volume of leased lines), and it is clear that V-Tel's share is negligible.

Technology Interface	Orange Fixed			V-Tel			Orange Data		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
TI	[X]no	no	no	no	no	no	no	no	no

Exhibit V.1 Market shares of operators by volume of leased lines [Source: Responses to data request]

Combining Orange Fixed and Orange Data figures, the single economic entity of Orange holds a market share of close to [X]no in 2017, consistent with its position across the period. Orange's market share is thus well in excess of 50%, the threshold prescribed under Article 8(b) of the Competition Safeguards as presumptive of dominance.

Potential competition

The position of Orange Fixed in the provision of TI retail leased line services is protected by **high barriers to entry** (see Competition Safeguards, Article 8(c), Impact Factor 14).

Orange also has a legacy advantage of a ubiquitous network (see Competition Safeguards, Article 8(c), Impact Factor 3).

Traditional interface technologies are a declining market, with products coming to end of life, being replaced by the preferred Modern Interface (MI) leased lines, which are provided over an Ethernet connection. For this reason (in addition to the high barriers to

entry) the TRC considers it unlikely to see market entrance in provision of TI circuits (see Competition Safeguards, Article 8(c), Impact Factor 5). Therefore, there will be a lack of actual and potential competition (thus satisfying the Competition Safeguards, Article 8(c), Impact Factor 12).

Countervailing buying power:

It is unlikely that any purchaser of retail TI leased lines would be able to exercise sufficient countervailing buyer power to constrain the market power of Orange (see Article 8(c), Impact Factors 6 and 10 of the Competition Safeguards).

SMP Preliminary Conclusion

Orange Fixed²⁴ is the dominant operator in the market for retail Traditional Interface (TI) leased lines.

5.6 SUMMARY OF SMP FINDINGS

Relevant Market	SMP Operator
A wholesale market for Traditional Interface (TI) trunk segments of leased lines	Orange Fixed
A wholesale market for Traditional Interface (TI) terminating segments of leased lines	Orange Fixed
A retail market for Traditional Interface (TI) leased lines	Orange Fixed

Exhibit V.2 Summary of SMP findings

For the avoidance of doubt, any reference to Orange Fixed for present purposes also extends to any **existing or future affiliates of Orange Fixed** that (i) form a single economic entity with Orange Fixed, by reason of common ownership or control, and (ii) offer, directly or indirectly, any TI leased lines services that make use of any network elements or facilities of Orange Fixed.

²⁴ Orange Fixed and Orange Data, which together constitute a single economic entity, enjoy a dominant position in the retail TI leased line market

Q5 Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale TI trunk segments of leased lines?

Q6 Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale TI terminating segments of leased lines?

Q7 Do you agree with the TRC's preliminary competition assessment and SMP designations on the market retail TI leased lines?

VI. Proposed remedies

6.1 APPROACH

As noted in the White Paper, remedies should be targeted at competition problems likely to exist in the absence of ex ante regulation. This means that it is not necessary to catalogue examples of actual abuse of market power, nor to provide exhaustive examples of potential abuses. If an operator has been identified with SMP, then it has the ability and incentive to engage in exploitative and exclusionary behaviour to the detriment of competition and particularly of end users.

In general, different types of competition problem may arise, involving conduct by an SMP operator that is aimed at:

- Exploiting customers by virtue of its SMP position;
- Leveraging market power into adjacent vertically or horizontally related markets with a view to foreclosing competitors in downstream and/or upstream markets;
- Excluding or delaying investment or market entry.

The Competition Safeguards list various types of abuse of a dominant position, which broadly fall within this categorisation.

Exploitative practices could include behaviours such as excessive pricing, or inefficiency or inertia in the market, where by virtue of a lack of effective competitive pressure, an SMP operator may be insulated from the need to innovate, and to improve its efficiency and quality of service. This may limit the development of new technologies or delay investment.

Leverage can be vertical and/or horizontal, and allows the SMP operator to transfer its market power from one market to another. This enables the SMP operator to strengthen its position in the related market, and potentially also reinforce its position in the market in question. Examples of leverage include denial of access to a downstream competitor; quality discrimination; exploiting information asymmetries; and unwarranted withdrawal of access already granted; and margin squeeze.

Exclusionary practices would deter or delay network investment and market entry, and could include predatory pricing; refusal to supply access; and raising customer switching costs.

An SMP operator would, in the absence of regulation, be able to engage in a range of practices that would distort or even remove competition from the market.

This section considers remedies that are appropriate for the wholesale and retail leased lines markets in which the TRC has found, on a preliminary basis, that operators have SMP. The analysis covers the following:

- Description of remedies put in place following the last market review
- Identification of issues that have arisen since then
- Proposed remedies.

6.2 WHOLESALE TRADITIONAL INTERFACE (TI) TRUNK AND TERMINATING SEGMENTS OF LEASED LINES

Review of existing remedies

Access

- Access to terminating and trunk segments of wholesale dedicated capacity on reasonable request, including access to associated facilities and services;
- Specific obligation to grant access to technical interfaces, protocols or key

technologies;

- Obligation not to withdraw access without TRC approval; and
- Obligation to permit migrations between access options.

Transparency

- Obligation to publish a Reference Offer (RO), subject to a consultation process and approval by TRC. Content of RO specified in Annex;
- Publication of specified information, including technical specifications; QoS indicators, KPIs, prices

Non-discrimination

- For all access-related inputs, provisioning and service management times to be obtained within same timeframe as Orange's own retail arm;
- Obligation on Orange to monitor compliance via KPIs and a Wholesale Customer Relations Management (WCRM) system;
- Obligation to provide SLAs with compensation for failure to meet terms;
- Obligation to charge same prices to access seekers as to own retail arm.

Accounting separation

- Obligation to provide separated accounts, with certain annual financial statements and relevant supporting information. Further public consultation to follow, prior to implementation, on accounting rules and reporting formats.

Cost accounting and price control

- Cost-based prices for wholesale terminating and trunk segments and associated facilities and services. The appropriate cost standard applied to be that of forward looking long-run incremental costs (FW-LRIC);
- Establishment of a suitable top-down cost accounting system, based on rules and formats specified by the TRC.

Issues in implementation of existing remedies

There has been **limited take-up of wholesale TI trunk and terminating segments of leased lines** by any operators other than Orange Fixed's own downstream operation. TI leased lines are generally legacy products, and the TRC would expect to see their use decline. However, there have also been issues in implementation. The TRC notes that Orange has failed to provide the services as set out in the previous market review. For

example, terminating segments have not always been provided as a wholesale product, and there have been issues concerning Orange Fixed bundling trunk and terminating segments and refusing to supply one without the other.

Absent regulation, an SMP operator could create a 'ransom strip' between its wholesale leased lines product and international gateways. This means that the SMP operator could leave a gap between its wholesale leased lines service and connectivity to international capacity, and could deny access and/or price excessively to bridge this gap. The potential for such a competition problem has been recognised in the definition of the wholesale leased lines markets, which includes dedicated capacity up to and including international gateways. This means that traffic for international destinations would be carried to the point of handover to international carriers.

A **Reference Offer** was provided by Orange Fixed, but has not been approved by the TRC.

Although there is an obligation stating that Orange Fixed is to produce separated accounts, and refers to further consultation on rules and reporting formats, Orange Fixed has not provided the required accounting information to the TRC.

Given the structure and decline of the market, the TRC proposes that the focus of ex ante regulation in the wholesale leased lines markets should be on **designing measures to protect retail customers in the installed base of TI leased lines**, rather than encouraging new market entry. Both volume and revenue associated with TI leased lines have been declining over the last three years, and it is unlikely that there will be significant new sales of TI circuits. However, while this is a market in decline, and is generally addressed by Orange Fixed's self-supply, there is an installed base of retail customers who may well choose to continue to use TI leased lines. There is a risk that Orange Fixed could excessively price wholesale trunk and terminating segments of leased lines, and that these prices could be passed through to retail customers.

Proposed remedies

Access

The scope of the access obligation should require that Orange Fixed should provide **access, upon reasonable request, to all products and associated facilities that fall within the market for trunk segments of wholesale TI leased lines and the market for terminating segments of wholesale TI leased lines**. As separate markets have been defined for trunk and terminating segments, it follows that access should be provided (upon reasonable request) to products falling within each of these markets.

This means that Orange Fixed would be obliged to supply a terminating segment or a trunk segment as required, without tying the products together.

The boundary between trunk and terminating segments is at the core network node, as shown earlier in Section III.3.6.

The access obligation should also make clear that the assumption is that access requests will be reasonable and must thus be accepted. The onus will be on the SMP operator (Orange Fixed) to justify refusal of an access request, as unreasonable, and not on the access seeker to justify acceptance. Annex 3 provides an indicative outline of the steps involved in dealing with an access request.

The TRC proposes that the current obligation that Orange Fixed should provide the capability for other operators to migrate between access options should be maintained.

The TRC also proposes that the current obligation that Orange Fixed should grant open access to technical interfaces, protocols or other key technologies should be maintained.

The TRC further proposes that **additional conditions** should be attached to the access obligation, including the following:

- Orange Fixed should be required to negotiate in good faith with access seekers.
- Orange Fixed should consider and conclude access requests in a way that is fair, reasonable and timely.
- Orange Fixed should not withdraw access to any product or associated facility without the prior approval of the TRC. For the avoidance of doubt, this also applies to the withdrawal of a product or the ceasing of service provision in a particular geographic area.

Non-discrimination

The current obligation is limited to potential discrimination in terms of provisioning time and service management. The TRC proposes that a broader obligation should be introduced that will first of all set out the behaviour that is to be prohibited, and secondly deal with additional forms of discrimination including quality of service provided, and information supplied.

The TRC proposes that a non-discrimination obligation should apply to all products and associated facilities in the market for trunk segments of wholesale TI leased lines, and the market for terminating segments of wholesale TI leased lines. The obligation should make clear that Orange Fixed is not to unduly discriminate between operators and/or

between operators and its own downstream operations in terms of, for example, provisioning times and service management.

Having considered how the SMP operator will demonstrate that it is not discriminating, the TRC proposes that all SMP operators should be required to provide an annual Statement of Compliance with their non-discrimination obligations, to be signed by an appropriate signatory within the organisation. The TRC would expect to specify the content of a Statement of Compliance, and an example of the type of information required is provided in Annex 4. A demonstration of non-discrimination could entail information about product/service performance (for example, in the form of regularly updated KPIs). For this reason, the non-discrimination obligation would be supported by transparency and accounting obligations, and these are discussed further below.

Taking into consideration the absence of a Wholesale Customer Relations Management system to date, the TRC proposes that the matter can be adequately covered in the minimum required content of any Reference Offers.

Transparency:

Transparency requirement should support the access obligation and the non-discrimination obligations as set out above. This would mean that transparency obligations will apply to all products and associated facilities in the market for trunk segments and the market for terminating segments of wholesale TI leased lines.

More specifically, the transparency requirement means that **Orange Fixed should maintain a Reference Offer for any product or service it provides within the defined markets.** The Reference Offer should include the technical specifications of products offered; terms and conditions of supply; and a price list. An indicative list of the minimum requirements to be addressed in a RO is provided in Annex 5.

There should be an obligation that Reference Offers should be kept up-to-date. ROs will be subject to TRC approval.

A transparency obligation would require Orange Fixed to provide information to the TRC on a set of Key Performance Indicators (KPIs). The purpose of the KPIs will be to demonstrate that Orange is compliant with its access and non-discrimination obligations. KPIs will be required to measure two key aspects. The first aspect is the treatment of orders initiated by other operators and the SMP operator's own downstream arm. The second aspect is the service supplied by the SMP operator, and in particular any difference in the treatment of faults and repairs. Examples include:

- Ordering and supply of services: this could include actual time taken to connect a service; average time to connect to a service; quality of supply could be measured by number of faults reported within 28 days of connection.
- Maintenance: measures could include time taken to repair any faults; overall number of faults (fault incidence);

- Migration: KPIs can include the time required to migrate between different services or products.

The TRC notes that, in order to demonstrate that wholesale inputs are being provided on a non-discriminatory basis, it would also be necessary to consider the retail equivalents of those inputs which the SMP operator self-supplies, or supplies to its own retail arm or affiliates.

The content of the set of KPIs will be further specified by the TRC.

The current obligation that the SMP operator has to make available and keep up to date an **SLA** for each product should be maintained for any wholesale products provided to another operator upon the latter's request or any other reasons. SLAs are subject to TRC approval. The requirement that Orange Fixed has to provide appropriate compensation in the event of non-compliance with the agreed service levels should also be maintained.

Transparency remedies should be developed to provide clarity on the **process for introducing new products** to the market. The TRC recognises that it is unlikely that new products will be developed in this market. However, for consistency with the approach in other markets, the TRC proposes that Orange Fixed should notify operators at least 6 months prior to the launch of a new wholesale product. The notification should include technical specifications and proposed prices. Orange Fixed should provide an additional 1 month's notice to the TRC (i.e. the TRC should be notified 7 months prior to the launch of a new wholesale product). This additional month is to allow the TRC to verify that Orange Fixed's proposals comply with their regulatory requirements. As there is likely to be variance in the level of detail associated with different products, the TRC should be able to vary the time required for its initial assessment, and the time required for Orange Fixed to notify other operators.

The transparency obligation should also set out a mechanism for dealing with **changes to existing products**. The TRC proposes that operators should be informed 3 months prior to changes coming into effect, and that an additional 1 month's notice should be provided to the TRC (i.e., the TRC would be notified 4 months before changes come into effect).

Accounting separation:

An obligation that Orange Fixed should produce separated accounts was imposed in the last market review, and additional documentation has been produced by the TRC. However, no separated accounts have been submitted.

The TRC notes that financial and accounting information is required to ensure that SMP operators are complying with their regulatory obligations. The TRC proposes that, rather than imposing an overall obligation to produce separated accounts, it will take the opportunity of identifying the specific accounting or financial information required to be sure that the SMP operators meet all of the obligations imposed. This is a less onerous obligation than the production of separated accounts and should also allow the TRC to be more focused on financial and accounting information that will be directly relevant for assessing compliance.

The TRC thus proposes that there should be an obligation, applying to all products and associated facilities in the market for trunk segments of TI leased lines and in the market for terminating segments of TI leased lines, for Orange Fixed to provide **relevant accounting information as specified by the TRC**. The detailed specification of the relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

Cost accounting and price control:

Orange Fixed should continue to maintain a suitable top-down cost accounting system, as specified by the TRC.

The current obligation to maintain appropriate **cost-based prices** should be retained and should apply to all products and associated facilities in the market for trunk segments of wholesale TI leased lines and in the market for terminating segments of wholesale TI leased lines. A cost-based pricing approach aims to mimic the prices that would pertain in a competitive market, while allowing the SMP operator to recover reasonably incurred costs (including a return on capital employed). The appropriate cost standard should continue to be forward-looking long-run incremental costs (FW-LRIC).

Q8 Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the wholesale market for TI trunk segments of leased lines?
--

Q9 Do you agree with the TRC’s preliminary assessment of competition problems and appropriate remedies in the wholesale market for TI terminating segments of leased lines?

6.3 RETAIL TRADITIONAL INTERFACE (TI) LEASED LINES

Review of existing remedies

Non-discrimination

- Equivalent provisioning times and service management times for all users
- SLAs with compensation for non-compliance

Transparency

- Publication of specified information, including technical specifications, prices, KPIs

Accounting separation

- Obligation to provide separated accounts for “all DC services together”, with certain annual financial statements and relevant supporting information. Further public consultation to follow, prior to implementation, on accounting rules and reporting formats

Cost accounting and price control

- Cost based pricing based on Fully Allocated Costs (FAC);
- Establishment of a suitable top-down cost accounting system based on rules and formats specified by the TRC.

Issues in implementation of existing remedies:

Retail customers have **little (or no) choice of supplier for TI leased lines**. In the TRC’s view, even the presence of effective wholesale regulation would not increase the likelihood of market entry, because TI technologies are coming to the end of their life, and any operator offering retail leased lines would not want to invest in the infrastructure required to offer TI circuits. This can be seen already in the market, where several operators offer MI leased lines over their own infrastructure and using wholesale inputs, but do not offer TI leased lines.

Although the volume and revenue associated with retail TI leased lines is declining, this is not a rapid decline, and there remains an installed base of retail customers. Even where the price of wholesale TI leased lines is cost oriented, there is a **risk of excessive retail pricing**. While some customers would be likely to switch to MI leased lines if the price of TI leased lines increased, as has been shown in the market definition, **the products are not effective substitutes** and it is not likely that sufficient numbers would switch to render a price increase in TI leased lines unprofitable. Competition cannot therefore be relied on to constrain the pricing of retail TI leased lines.

Following the last market review, **separated accounting information has not been provided by Orange**. KPIs have not been published.

Proposed remedies

Non-discrimination

The TRC proposes that a non-discrimination obligation should oblige Orange Fixed²⁵ not to discriminate unduly between retail customers, without objective reason, for which Orange Fixed will bear the burden of proof.

The non-discrimination obligation should be broader in scope than the current obligation, which refers only to the timing of provision and service management, and should refer also to quality of service, information provided and price.

Transparency

The TRC proposes that Orange Fixed should be required to publish and keep up-to-date information on its website information which can be specified by the TRC. The current obligation should be maintained that it should make available information on technical specifications, Quality of Service information such as KPIs, and tariffs.

The TRC proposes that the current obligation should be maintained that Orange Fixed should offer SLAs to its retail customers, with appropriate compensation for failing to meet agreed service levels.

²⁵ Note that all references to Orange Fixed apply also to its affiliates in a single economic entity

Accounting separation

It is proposed that Orange Fixed should be obliged to produce specific relevant accounting information as required by the TRC. The detail of information required would follow in further TRC documentation.

Price control

Although wholesale regulation (via a cost orientation obligation) addresses the need to ensure that the pricing of wholesale TI leased lines is not excessive, there remains a risk that Orange Fixed could set its retail prices at an excessively high level. Orange Fixed and Orange Data together have close to 100% market share of the retail TI market. Given the lack of expectation of significant market entry, there is unlikely to be a constraint exercised by competing operators, and there is little need to consider measures to encourage the entry or expansion of other operators.

The TRC has considered a solution that is proportionate and imposes the least burden on TRC and on Orange. There is no need for a margin squeeze obligation because there is no need to protect a margin for competing operators – the focus is simply on ensuring no excessive retail pricing.

The simplest way of meeting this aim would be to impose a safeguard cap. This could be a cap which establishes that the bill for the retail customer should not increase in real terms – for example a Retail Price Index (RPI)-0% cap. Should Orange wish to increase retail prices, it should provide the TRC with a justification for this, and any increase would be subject to TRC approval.

Assessing compliance with the imposition of a safeguard price cap could involve requiring Orange Fixed to certify that retail prices have not increased. The TRC could require Orange to report annually on volume of retail TI circuits sold, and revenue, and to confirm that prices have not increased. Additionally, Orange could be required to submit a sample of contracts and invoices to the TRC, showing that retail prices have not increased, and that it is compliant with its price control obligation.

Q10 Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the retail market for TI leased lines?
--

Annex 1: Consultation questions

1. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail leased line services?
2. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale leased line services?
3. Do you agree with the TRC's preliminary conclusions regarding the wholesale leased line markets found to be susceptible to ex ante regulation?
4. Do you agree with the TRC's preliminary conclusions regarding the retail leased line markets found to be susceptible to ex ante regulation?
5. Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale TI trunk segments of leased lines?
6. Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale TI terminating segments of leased lines?
7. Do you agree with the TRC's preliminary competition assessment and SMP designations on the market retail TI leased lines?
8. Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the wholesale market for TI trunk segments of leased lines?
9. Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the wholesale market for TI terminating segments of leased lines?
10. Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the retail market for TI leased lines?

Annex 2: Legal and regulatory context

TELECOMMUNICATIONS LAW

The main legislative text governing the telecommunications sector in Jordan is the **Telecommunications Law no. (13) of 1995 and its amendments**, as amended (hereinafter, 'the Law'). Its provisions provide a general legal basis for the TRC's power and duty to stimulate competition through reliance on, and regulation of, market forces in a manner that prevents anti-competitive conduct and abuses of a dominant position. Article 6 (e) mandates the TRC to:

"stimulate competition in the telecommunications and information technology sectors, relying on market forces, and so regulating them as to ensure the effective provision to telecommunications and information technology services and to ensure that its regulation is sufficient and effective to forbid or curtail illegal competitive practices or prevent any person with a dominant position in the market from abusing his position, and to take all necessary actions in this regard."

Article 6 (o) specifies that the TRC is obliged to:

" ... re-assess the need for the adjustment of the level of regulation of any Telecommunication Services, or a specific type or a group thereof, taking into consideration competition factors and any other reasons, and to escalate the same to the Board for approval".

Article 12 (a) provides for the authority to:

"7. ...establish the bases for determining rates and rents for Telecommunications Services offered to Beneficiaries by Licensees, in line with the state of competition in offering of services and service levels, and monitor the compliance of Licensees as may be necessary.

8. ...set the rates and rents of Telecommunications Services offered to beneficiaries in the case where competition is absent or weak because of the dominance."

The Telecommunications Law does not provide a separate definition of "dominance" or "dominant position". It should be noted, however, that **Article 2 of the Competition Law (Law 33 of 2004)** defines "dominant position" as a condition in which an enterprise is able to control and affect the activity of the market.

The TRC's tasks in relation to market reviews and ex ante regulation of operators with dominance or significant market power were further endorsed by the **Statement of Government Policy on the ICT & Postal Sectors 2012 ('Government Policy Statement')**, which required TRC to

“continue to conduct reviews of relevant telecommunications markets and sub-markets, as it may deem to be necessary and appropriate for the mitigation of the effects of dominance and for the protection of competition and consumers and to reflect more recent data and market conditions for this purpose. Continuing such reviews will be particularly important because of changing technology and market conditions likely to be brought about by convergence..”

In particular, Section 3.1 of the Government Policy Statement defines effective competition, and sets out the steps that Government considers necessary to create the conditions for effective competition. Section 3.2 of the Government Policy Statement then sets objectives for the TRC in mitigating the effects of dominance. Of relevance for this project are measures to reduce barriers to entry; the creation of the possibility of new market entry; enhancing internet access; and maintaining a culture of regulatory compliance.

COMPETITION SAFEGUARDS

Based on this regulatory and policy framework, further details on the required competition analysis in the telecommunications sector and its implications on an ex ante and an ex post basis were set out in the TRC’s **2006 Instructions on Competition Safeguards in the Telecommunications Sector** (hereinafter, ‘the Competition Safeguards’). As regards dominance, and in line with the definition used in the Competition Law, Article 8(a) of the Competition Safeguards provides that *“a Licensee shall be deemed dominant in a relevant market when it has such a sufficient impact on the market that it can control and affect the activity of the relevant market.”*

Pursuant to Article 6(a) of the Competition Safeguards, the TRC must define relevant product markets on a case-by-case basis, but rely on the following four product market definitions as a starting point:

- Fixed public telecommunications network and services;
- Mobile public telecommunications network and services;
- Leased lines; and
- Interconnection.

The Competition Safeguards’ provisions on ex ante analysis and regulation are largely inspired by the EU ex ante regulation model, with some adjustments to the Jordanian circumstances. These include, for example, certain rebuttable presumptions that can simplify the associated regulatory tasks and reduce uncertainty.

Accordingly, the remaining provisions of Article 6 link the definition of product markets to demand-side substitutability and the state of the relevant products' and services' development in Jordan and allow the TRC to consider economic analytic techniques such as the "hypothetical monopolist test". They also introduce a rebuttable presumption that the relevant geographic market for all telecommunications services will be deemed to cover Jordan.

On the basis of the resulting market shares and 14 other "impact factors" set out in Article 8(c) of the Competition Safeguards, the TRC must establish whether one or more licensed telecommunications operator(s) in the market(s) concerned is dominant, i.e., "has such a sufficient impact on the market that it can control and affect the activity of the relevant market". There is a rebuttable presumption that a licensee with a market share of 50% or more is dominant in the market concerned, whereas one with less than 25% is not. A licensee with a market share of at least 25% and less than 50% shall be subject to classification as dominant if there is evidence to show that it has the ability to control and affect the activity of the market. The designation of dominance under these criteria can be used for the purposes of both ex ante regulation and the evaluation of alleged anticompetitive conduct on an ex post basis (Article 8 of the Competition Safeguards).

The remainder of the Competition Safeguards deal in more detail with various forms of abuses of a dominant position (Articles 9 to 18), collusion (Article 19) and acquisitions or transfers of interests in licensed telecommunications operators susceptible to "lessen substantially competition or to tend to create a monopoly" (Article 20). This represents the ex post elements of the Competition Safeguards.

The White Paper (discussed below) provides more details on the market review process for ex ante intervention.

WHITE PAPER

A systematic market review process based on this legal background started with the adoption of a White Paper on the Market Review Process, dated May 2009 (hereinafter, 'the White Paper'). This outlined the methodology and steps to be undertaken by the TRC in achieving its goal of carrying out the first round of market reviews to reassess the scope of existing ex ante obligations imposed earlier on licensed telecommunications operators under the previous regulatory framework.

The White Paper provides more detailed guidance and clarity on the successive steps involved in telecoms market reviews, namely:

- Identification of candidate markets, based on the advanced modified greenfield approach;

- Definition of relevant markets, based on short-run substitutability analysis;
- Assessment of their susceptibility to ex ante regulation taking into account factors such as barriers to entry and expansion and longer-run competitive dynamics and sufficiency of ex-post intervention
- Analysis of the effectiveness of competition and identification of dominant operators; and
- Selection of appropriate ex ante obligations to deal with the specific competition problems or market failures identified and likely to exist in the absence of ex ante regulation.

In various respects, the White Paper signifies a closer alignment with the EU ex ante regulation model. For instance, although it is not based on a concept of “significant market power”, distinct from “dominance” in a more traditional competition law context, it does clarify that ex ante and ex post analyses, while based on a similar methodology, may produce different results owing to their different policy perspectives (e.g., ex ante product definitions may sometimes be broader than ex post definitions), especially as regards any appropriate remedies.

As regards the relationship between “dominance” and “significant market power” (SMP), it should be clarified that the afore-mentioned definition of “dominance” under the Jordanian competition law and the Competition Safeguards is broad enough to include SMP in all cases. Accordingly, the term “significant market power” (SMP) used in the White Paper and the TRC’s market analyses, which is inspired by international best practice, is effectively identical, under Jordanian law, to the term “dominance”. At most, it can be considered narrower in some cases, as the identification of SMP operators for the purposes of ex ante regulation tends to follow stricter or additional (telecoms-specific) criteria, in addition to those relied on to define “dominance” in general, under Jordanian law. It therefore follows that if an operator is considered to hold “significant market power” in a specified telecommunications market for ex ante regulation purposes, that same operator is by definition and a fortiori, also “dominant” in that market, and hence subject to any regulation that may be imposed on dominant operators under the Telecommunications Law.

Regarding the definition of markets, the TRC also concluded that, on balance, it would be more appropriate to adopt a “modified greenfield” approach for the identification of markets susceptible to ex ante regulation. Under this approach, a regulator must examine whether, in the absence of a regulatory intervention upstream (at the wholesale level), there is a risk of consumer harm on the downstream retail market(s) due to a lack of competition. The ex-ante regulation of a retail market can thus be

considered necessary only if the regulation of the upstream wholesale market(s) is insufficient.

The White Paper distinguishes between primary and secondary remedies, with the latter supporting the implementation of primary remedies and justified only in connection with the imposition of the relevant primary remedy. The distinction is illustrated in Exhibit VI.1 below:

Primary remedy	Associated secondary remedies
Wholesale Markets	
Obligation to provide access on reasonable request	Obligation to publish terms and conditions in a transparent manner, e.g., as a Reference Offer
Obligation to offer access on non-discriminatory terms and conditions	Obligation of accounting separation, KPIs and SLAs in Reference Offers, and (potentially) vertical separation
Obligation of price control	Obligation of cost accounting
Retail Markets	
Carrier (pre-) selection	
Unbundling of retail services	
Non-discrimination	Accounting separation
Price controls (price caps, cost-based prices)	Cost accounting

Exhibit VI.1 Primary and secondary remedies identified in the White Paper [Source: White Paper]

In the White Paper, the TRC confirmed its intention to run market reviews for four sets of markets, which were different from the more generic categories listed in Article 6(a) of the Competition Safeguards.

Following the White Paper, TRC issued, after four public consultations with the industry, a number of regulatory decisions that resulted in the definition and ex ante regulation of a total of 10 wholesale and 4 retail markets subject to ex ante regulation, with different appropriate ex ante remedies per market. Those decisions are the following:

- Regulatory decision on the fixed broadband markets review (July 2010).
- Regulatory decision on the fixed narrowband markets review (November 2011).
- Regulatory decision on the mobile markets review (December 2010).

- Regulatory decision on the dedicated capacity markets review (December 2010).

An overview of the above-mentioned milestones is summarised in Exhibit VI.2 below.

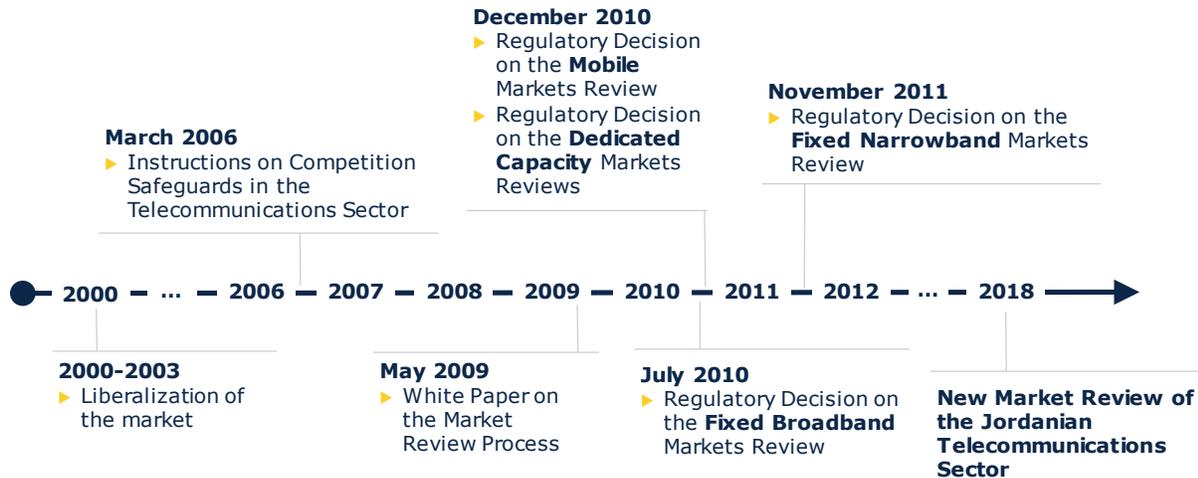


Exhibit VI.2 Main milestones of the background context of this Project [Source: Axon Consulting and DotEcon]

Following the publication of decisions on the first round market reviews, TRC has issued a number of supplementary decisions that need to be taken into account in this Project, namely:

- Accounting Separation Instructions (November 2012).
- Decision on the Reference Offer for Wholesale Broadband Access (September 2013).
- Decision on the Reference Interconnection Offer for Call Termination in Mobile Networks (September 2013).
- Instructions on the top-down fully allocated cost accounting system (December 2014).
- Instructions on Long Run Incremental top-down cost accounting system (December 2014).
- Approval of Jordan Telecom Reference Unbundling Offer (April 2017).
- Decision on charges for mobile interconnection services based on TSLRIC+ models (October 2017).
- Decision on charges for fixed interconnection services based on TSLRIC+ models (October 2017).

Annex 3: Access Requests

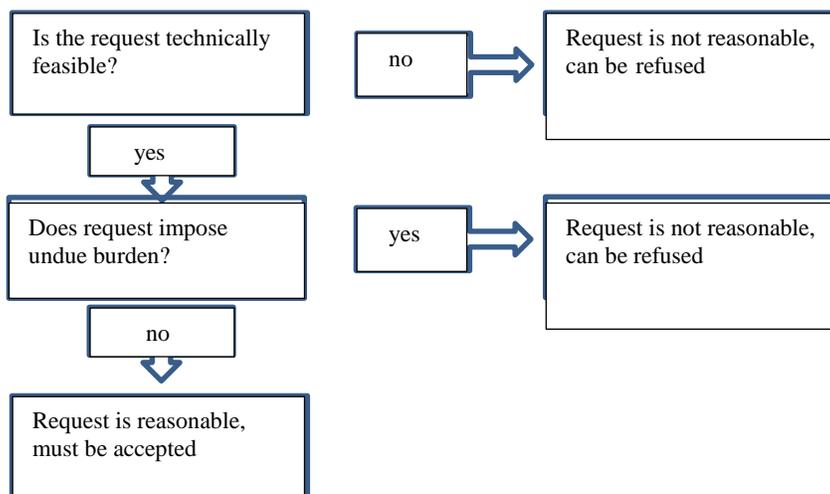
The purpose of this Annex is to elaborate on the issues that may arise in the implementation of a reasonable access request. The TRC expects to continue to further specify how access requests are to be treated as part of the implementation of eventual Decisions following the market reviews. This Annex therefore constitutes initial guidance.

According to the White Paper,

'The obligation to provide access on reasonable request obliges a dominant operator to offer access to certain elements of its network to alternative operators enables the latter to compete on retail markets or downstream wholesale markets'²⁶.

The approach proposed in the consultation is that the imposition of an access obligation on an SMP operator would oblige the operator to meet *all* reasonable requests for access, unless it can demonstrate that it is not technically or economically feasible to do so. The qualification is required because it would not be proportionate to oblige an operator to meet requests which are not technically and/or economically viable.

The key steps in assessing whether an access request is reasonable are shown below.



²⁶ White Paper, Section 5.1

The first test is that the subject of the request must be technically feasible, and must not threaten network integrity. The request must be for a product or associated facility that is actually in the SMP operator's power to provide. The assessment of technical viability could include considering the nature of the type of interconnection and access involved, and/or the capacity available.

The second test is the burden which the request would impose on the SMP operator. For an access request to be considered reasonable, the request needs to provide evidence of sufficient demand to cover development costs or a willingness of the requesting operator to accept a level of risk. The initial investment by the SMP operator should be taken into account.

As a general principle, the SMP operator should reasonably expect a fair return on any necessary investments it has made which are associated with the supply of the product at a price the requesting operator is willing to pay. This could mean, for example, that where the SMP operator would incur significant development costs in supplying a product for which the demand is uncertain, the requesting operator should take on an appropriate level of risk, perhaps by committing to a level of demand at a price which would justify investment, or by the specification of a pricing structure based on forecast demand.

A properly functioning product development process is important for the introduction and expansion of wholesale products. Uncertainty with regard to the content timing of product introduction or changes creates uncertainty in the market, and can also increase costs for all players. The TRC is aware that previous attempts to encourage wholesale products have been beset by a lack of transparency and by undue delays.

The TRC considers that the following steps should form part of the process for making and responding to an access request.

- Access request for a new product, or a change to an existing product, in a market where an operator has an obligation to provide access upon reasonable request. The access request can come from a licensee and/or from the SMP operator's own downstream operation or affiliates.
- Confirmation in writing from the SMP operator that an access request has been received
- Initial assessment by the SMP operator on whether or not the access request falls within its scope
- Identification by the SMP operator of information needed from the applicant to enable it to carry out the technical feasibility test, and to assess the level of

burden that meeting the request would entail. This requires safeguarding commercially sensitive information, and eliminating any frivolous applications.

- Confirmation from the SMP operator to the applicant whether or not the access request is accepted. If not, full reasons must be given for the refusal.
- Provision by the SMP operator of detailed description of the relevant product to be developed. (This will form part of the Reference Offer)
- Indicative timetable for development up to product launch
- Indicative pricing

The TRC notes that the access request and treatment of the request is a negotiation between two operators, and the TRC's involvement is limited to any instances of dispute at any stage in the process. The TRC will also consider attaching time limits to each stage of the process of making and responding to an access request, should the process not be carried out in a timely manner.

Annex 4: Statement of compliance

As part of any non-discrimination obligations imposed on an ex ante basis, an SMP operator should submit to the TRC a written annual Statement of Compliance (SoC). Such a requirement is considered proportionate and justified to ensure effective monitoring and enforcement of SMP operators' ex ante regulatory obligations, given the potential for any non-compliance to impact ultimately on competition in downstream or adjacent markets.

The purpose of this Annex is to describe, in general terms, the information to be provided in the SoC. The TRC expects to specify in more detail and as a model text the required minimum content of this SoC, as part of the implementation of ex ante remedies put in place on the adoption of the relevant Decisions.

In particular, the Statement of Compliance should adequately demonstrate the SMP operator's compliance with its ex ante regulatory obligations on non-discrimination, with respect to both price and non-price components.

The SoC must be signed by an authorized person within the SMP Operator. It should include information reasonably required for the TRC to understand the review and verification process followed, and to satisfy itself that the SMP operator complies with its relevant regulatory obligations.

Therefore, the SoC must include, at a minimum:

- A full and true written statement, signed by a person of appropriate qualifications and authority within the SMP operator, confirming that the signatory is responsible for securing the SMP operator's compliance with its regulatory and legal non-discrimination obligations, and that, to the best of its knowledge, the SMP Operator is in compliance with these obligations;
- A brief and summary description of the information relied upon and the process followed by the signatory in order to substantiate and provide the above statement. The purpose of the description is to demonstrate the kinds of information available on which the signatories can base their conclusions. Information would be available to the TRC upon request, sufficient to allow the TRC, or any third party appointed by TRC (such as an auditor or consultant), to confirm that the SMP operator has not discriminated on price or non-price elements of the services provided to its downstream operator and any other licensed operators.

For all services supplied in each market where the operator has an ex ante obligation of non-discrimination, such information must cover at least the following categories of activities during the year:

- Price of products and services offered to operators, and to the SMP operator's downstream operation or affiliates. For example, the SMP operator could refer to its Reference Offer and confirm that these prices have been applied to all purchasers.
- Report on Key Performance Indicators (KPIs). The TRC will further specify required KPI details as part of the implementation of the market review Decisions. KPIs will be required to measure two key aspects. The first is the treatment of orders initiated by other operators and the SMP operator's own downstream arm. The second aspect is the service supplied by the SMP operator, and in particular any difference in the treatment of faults and repairs. Examples include:
 - Ordering and supply of services: this could include actual time taken to connect a service; average time to connect to a service; quality of supply could be measured by number of faults reported within 28 days of connection.
 - Maintenance: measures could include time taken to repair any faults; overall number of faults (fault incidence);
 - Migration: KPIs can include the time required to migrate between different services or products.
- The TRC notes that, in order to demonstrate that wholesale inputs are being provided on a non-discriminatory basis, it would also be necessary to consider the retail equivalents of those inputs which the SMP operator self-supplies, or supplies to its own retail arm or affiliates.
- Other categories, as reasonably required by TRC from time to time.

Statements of Compliance will be kept updated by the SMP operator as required to reflect material changes to the documentation.

In all cases, SoC and associated updates should include Version Control information, including a Revision History in order to allow the reader of the SoC to easily identify changes and the date of their introduction.

Annex 5: Minimum list of items to be addressed in a Reference Offer for wholesale terminating and trunk segments of dedicated capacity

The following minimum list of items should be addressed in the Reference Offer:

1. Conditions for access
 - Network elements to which access is offered covering in particular the following elements:
 - access to terminating segments of wholesale DC
 - access to trunk segments of wholesale DC
 - Locations of physical access sites, including conditions of availability (geographic proximity to certain network infrastructure, technical matters that must be satisfied, e.g. by alternative operators; where conditions of availability differ from one type of DC circuit to another)
 - Ordering, migration, provisioning and fault repair procedures, usage restrictions
 - Technical conditions related to access to terminating and trunk segments of wholesale DC, including configuration conditions (technical issues that must prevail if DC services are to be available at certain locations)
2. Information systems
 - Conditions for access to the designated Licensee's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing
3. Supply conditions
 - Lead time for responding to requests for supply of services and facilities; fault resolution, procedures to return to a normal level of service, and quality of service parameters
 - Standard contract terms, including, where appropriate, compensation provided for failure to meet lead times
 - Prices or pricing formulae for each feature, function and facility listed above
4. Service Level Agreement for the offered services (for ordering and fault resolution)

Annex 6: Glossary

Alternative operator: A competitor of Orange Fixed and/or Orange Internet.

Associated facilities: The facilities associated with the provision of access to the unbundled local loop and wholesale broadband access, notably collocation, cable connections and relevant information technology systems.

Associated services can include secure access, power, lighting, ventilation, heating, cooling, and alarms such as smoke and fire detection.

Backhaul: Connection from the first access node (for example, the local exchange) to the core network.

Broadband: A service or connection which is capable of supporting always-on services, which provide the end user with high data transmission speeds.

Collocation: The provision of physical space and technical facilities necessary to accommodate and connect the relevant equipment of an alternative operator seeking access.

Dedicated capacity: DC services refer to the provision of dedicated symmetric capacity between two fixed points linked by a fixed, permanent telecommunications connection. The capacity can be reserved or shared through the associated network, depending on the nature of the particular DC service.

FWBA: Fixed wireless broadband access. A wireless local access technology for delivering Fixed Broadband Services.

Frame Relay: A packet switched data service enabling data transmission. for intermittent traffic between End Points of a network.

FTTH: Fibre-to-the-home. A fibre based local access technology for delivering broadband services.

Designated Licensee: Licensee that has been designated by TRC as being dominant in a market susceptible to *ex ante* regulation.

Retail dedicated capacity: The provision of dedicated capacity to end-users, usually business customers.

Terminating segment of wholesale dedicated capacity: Refers to the segment between an end point of the network and the DC serving exchange.

Trunk segment of wholesale dedicated capacity: Refers to the segment between two DC serving exchanges.

Virtual Private Network (VPN): A network that provides remote offices or individual users with secure access to their organisation's network. A VPN uses public telecommunication infrastructure, such as the Internet.

Wholesale customer relations management (WCRM) system: An electronic system for managing an operator's interactions with wholesale customers. It involves using technology to organize, automate, and synchronize business processes - principally wholesale activities, and dealing with fault reports. Access to the WCRM system allows a regulator to monitor compliance with the non-discrimination obligation.

Wholesale dedicated capacity: The provision of dedicated capacity to alternative operators.