THE HASHEMITE KINGDOM OF JORDAN

TELECOMMUNICATIONS REGULATORY COMMISSION

Review of Dedicated Capacity Markets in Jordan

April 2010

In this document confidential data have either been omitted or ranges are reported in brackets [….] without affecting the analysis and the conclusions.

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I. Introduction

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, 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 a comprehensive strategy for creating conditions for effective competition and in achieving a more efficient and effective framework of regulation, the TRC will adopt a series of regulatory measures as elements of a new comprehensive market review process. The methodological approach, the legal basis and the timing of this process have been set out in detail in the *White Paper on Market Review Process* (the "*White Paper*").[1]

The present consultation on the TRC's review of dedicated capacity markets is the third of a series of four public consultations. The TRC has already launched two public consultations on broadband and mobile markets and, following the Public Consultation on dedicated capacity ("DC") markets, the TRC will launch the final Public Consultation on fixed narrowband markets.

1. Objective, Scope and Structure of the Consultation Process

This Public Consultation document presents the TRC's preliminary findings on the review of DC markets and provides its conclusions on whether existing *ex ante* obligations applied with respect to these markets should be maintained, revised or abandoned, and/or whether or not new *ex ante* obligations should be introduced.

The Public Consultation document sets forth the TRC's rationale as to why the provision of DC services must be considered for the imposition of *ex ante* regulation, and provides a set of proposals on the appropriate scope of *ex ante* regulatory measures. It does so by defining the relevant markets susceptible to *ex ante* regulation, identifying any dominant position or positions which might exist on these markets, and determining appropriate *ex ante* regulatory measures that target the particular competition problems identified in the review. Following the principles and conceptual approach laid out in the *White Paper*, the TRC's focus is to remedy the competition problems as far as possible on the relevant wholesale markets before addressing any remaining problems at the retail level.

The TRC notes that the Consultation document, besides retail DC services, also covers Virtual Private Networks ("VPN") and Frame Relay. *First*, the TRC needs to

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

assess whether these services are substitutes for retail DC services or whether they form a separate retail market. *Second*, wholesale DC services are an important input for the provision of both retail DC and VPNs & Frame Relay, so that remedies for wholesale DC services should be selected with a view to promote competition with regard to both retail markets.

It is important to note that the present market review has a forward-looking horizon of three (3) years, at the end of which the TRC will assess the need to revisit the market definitions, dominance designations and the *ex ante* obligations imposed, and will update them accordingly. The remedies proposed here will have to be implemented by the TRC as soon as possible so as to allow enough time for the TRC to evaluate their effectiveness.

This Public Consultation document is structured as follows:

Chapter II provides an overview of the **current industry structure for the provision of DC, VPNs and Frame Relay**. The *Chapter* considers the network infrastructure deployed and the retail and wholesale services available. It should be noted that, while this *Chapter* provides important background information, the actual relevant regulatory analysis is contained in the subsequent *Chapters*.

Chapter III sets forth the TRC's **rationale** on why it considers retail DC markets and retail VPN & Frame Relay markets as being appropriate for the potential application of *ex ante* regulation. The *Chapter* starts with a definition of the relevant markets for retail services and applies an initial three-criteria test to the relevant markets, based on the assumption that there is an absence of any *ex ante* regulation of dominant operator(s) at the retail and wholesale levels. The test reveals significant competition problems and demonstrates that some form of *ex ante* regulation, at least at the wholesale level, is likely to be required.

Chapter IV develops the TRC's approach with regard to **wholesale DC services**. The *Chapter* defines the relevant wholesale markets (identified respectively as terminating and trunk segments of wholesale DC services), applies the three-criteria test to the defined markets, and identifies Jordan Telecommunications Company (Orange Fixed) as a dominant operator. Based on an assessment of the potential competition problems related to the dominant position of Orange Fixed, it proposes the introduction of appropriate *ex ante* remedies.

Chapter V addresses the question of whether the markets for **retail DC and retail VPN & Frame Relay services** should also be regulated. This issue is reviewed on the assumption that the *ex ante* regulation of wholesale DC is in place (as set out in the previous *Chapters*). Using the market definition proposed for the retail level set forth in *Chapter III*, the TRC applies a final three-criteria test to the retail markets, although with all wholesale remedies in place. The TRC concludes that, even with *ex ante* regulation at wholesale level implemented, there is still a need for further regulation at the retail level for low bandwidth DC. This *Chapter* identifies Jordan Telecommunications Company (Orange Fixed) as a dominant operator on the retail markets for low bandwidth DC. Based on an assessment of the potential competition problems related to the dominant position of Orange Fixed, the TRC proposes a

number of *ex ante* remedies. In contrast, it is the TRC's prelimary view that high bandwidth retail DC and retail VPN & Frame Relay services should not be regulated.

2. THE PUBLIC CONSULTATION PROCESS

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 of publication**. During that period, the TRC welcomes written comments on any of the issues raised in the Public Consultation document.

Interested parties are invited to respond to the Consultation Questions. It would facilitate the TRC's task of analysing responses if all comments were referenced to the relevant numbers of the Consultation Questions. 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 to include it in a separate annex to their response.

Following the deadline for receiving comments, the TRC will post the comments of all parties on its website subject to confidentiality considerations. 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 series of final Regulatory Decisions to be enacted with respect to the issues of market definition, the designation of dominance and the prescription of *ex ante* obligations, and which will be duly published, associated with an Explanatory Memorandum, comprising an evaluation of the responses of interested parties, the final conclusions drawn by the TRC regarding the outcome of the DC markets review in light of those responses, and the TRC's final conclusions regarding the maintenance, revision or abandonment of existing *ex ante* obligations and/or the introduction of new *ex ante* obligations.

II. The current industry structure for the provision of Dedicated Capacity, VPNs and Frame Relay

Chapter II provides a description of the current structure for the provision of DC, VPNs and Frame Relay. In doing so, it looks at the network infrastructures established (*Section 1*) and the retail and wholesale DC services as well as VPN and Frame Relay services made available (*Section 2* and *Section 3*, respectively). The final part of this *Chapter* summarizes the present state of the provision of DC services, VPNs and Frame Relay in Jordan (*Section 4*).

1. NETWORK INFRASTRUCTURE

The provision of DC services in Jordan is primarily based on the access and core network infrastructure of Orange Fixed and, to a small extent, on the access and core network infrastructure of Other Licensed Operators ("OLOs"). Orange Fixed, with its legacy PSTN network, is the only operator with a quasi-ubiquitous network infrastructure across Jordan.

Overall, there are three types of **local access networks** in Jordan. The first is based on the legacy copper PSTN infrastructure of Orange Fixed, whereas the second and the third are greenfield networks of OLOs based on Fixed Wireless Access ("FWA") and Fibre-to-the-Home ("FTTH"). The type of technology or network used for the provision of DC is not a critical factor, as long as the main functional characteristics of DC services are fulfilled across technologies.[2]

Insofar as the **core network infrastructure** is concerned, apart from its PSTN network, Orange Fixed operates an ATM data network which aggregates broadband traffic. The TRC understands that Orange Fixed is replacing its ATM backbone with Ethernet GB. Orange Fixed also operates a national IP backbone, as well as international connections. In contrast, OLOs until recently had very limited core network infrastructure, with all of them being collocated at Orange Fixed's data centre at Hashem/Amman, where they have installed their equipment.

However, the MoICT is rolling out a national broadband network in cooperation with NEPCO (National Electrical Power Company) in the context of its National Broadband program.[3] OLOs can lease dark fibre or cabling pipes of the NBN from the MoICT. Recently, Batelco, VTel and Damamax have made agreements with the MoICT for the utilisation of the National Broadband Network infrastructure (in the

[2] See *Section* 1.1 of *Chapter* III.

[3] The scope of this network is the connection of Universities, schools, government entities and medical entities.

case of Batelco) and for the use of cabling pipes (in the case of VTel and Damamax).[4]

2. DEDICATED CAPACITY PROVIDED TO END-USERS (RETAIL SERVICES)

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. Currently, DC services in Jordan mainly refer to leased lines. A retail leased line is typically used by business users to connect offices sites or to access the Internet. The end user determines the nature and mix of services carried over a leased line.

DC services are differentiated by bandwidth and length. For the provision of retail DC services to business customers aiming to connect their premises at a number of different locations, the ubiquity of the network will also play an important role. Moreover, users of DC require a certain level of guarantee regarding network availability, performance and security. When discussing possible functional substitutes for DC, it is important to take into account the quality level and availability of the product.

From 2005 until 2008, OLOs offering retail DC services included Batelco Jordan, Sama Telecom, MEC (Middle East Communications Cooperation) and Te Data Jordan. In 2008, Orange Fixed provided above 90% of retail DC services, in terms of number of circuits (Table 1). The shares of other operators have remained very low. In 2009, some new operators such as Damamax and Zain data started offering DC services.

[4] MoICT website, http://www.moict.gov.jo/en_index.aspx.

Table 1: Shares of total number of DC circuits (2005-2008, at year end)

	Total number of DC circuits			
	2005	**2006**	**2007**	**2008**
All operators	3,154	3,483	3,393	3,628 - 3,777
	Share of total number of DC circuits			
	2005	**2006**	**2007**	**2008**
Orange Fixed	*Numbers omitted*			
Others				

Note: One operator (Batelco) could not provide the number of DC circuits supplied to end-users for the years from 2005 until 2007. This data has been estimated based on the number of circuits that Orange Fixed supplied to this operator for resale. For the year 2008, while data is available from Batelco, the circuits provided by Orange Fixed to Batelco for resale differs. For this reason, the volumes and shares in Table 1 are indicated with a lower and upper limit. There may be several reasons for the data not being completely identical: Batelco provides several lower bandwidth circuits based on a higher bandwidth circuit provided by Orange Fixed and the data from Batelco includes circuits based on its own infrastructure.

Source: Responses to TRC data questionnaire.

Table 2: Total revenue of DC circuits (2005-2008)

	Total revenue of DC circuits (MJD)			
	2005	**2006**	**2007**	**2008**
All operators	14.7	14,4	12,3	16,3

Note: The revenues from 2005 until 2007 are likely to be underestimated as one operator (Batelco) was unable to provide data for these years, but taking into consideration the small share in terms of number of circuits, the deviation from the actual total revenue is assumed to be low.

Source: Responses to TRC data questionnaire.

3. VPN AND FRAME RELAY SERVICES PROVIDED TO END-USERS (RETAIL SERVICES)

VPNs & Frame Relay are services which are typically considered as potential substitutes for retail DC services, and which are related to the provision of wholesale DC services, given that OLOs use DC connections to provide VPNs & Frame Relay at the retail level. VPNs are supported by a number of technologies such as Frame Relay, Internet Protocols and MPLS. Currently, the OLOs offering VPNs and Frame Relay in Jordan include Batelco, Vtel, Damamax. Based on the information on their website cyberia, TeData, Sama Telecom and Zain data also offer VPN services. However, until 2008, only two of them provided services to end users. In 2008, Orange Fixed and Orange Internet had a combined share of above 50% of VPN services, based on the number of connections provided. In the same year Orange Fixed and Orange Internet had a combined share of above 50 % of Frame Relay services, based on the number of connections provided as well as in terms of

revenues. The TRC notes that, for the purpose of market reviews, it regards Orange Internet and Orange Fixed to be part of a single economic entity.[5]

Table 3: Shares of the provision of Frame Relay (2005-2008)

	Shares for Frame Relay			
	2005	**2006**	**2007**	**2008**
Based on number of connections (at year end)				
Orange Fixed and Orange Internet	*Numbers omitted*			
Others				
Based on revenues				
Orange Fixed and Orange Internet	n/a	n/a	n/a	*Numbers omitted*
Others	n/a	n/a	n/a	

Note: One operator (Batelco) has not delivered data for the years from 2005 until 2007. This data has been estimated with data delivered by Orange Fixed on the number of access lines provided to Batelco for resale.

Source: Operator responses to TRC data questionnaire

4. DEDICATED CAPACITY SERVICES PROVIDED TO OPERATORS (WHOLESALE SERVICES)

It should be noted that the difference between wholesale and retail DC lies in the character of providers and purchasers, and the way in which the service is bought, sold and used, rather than on the technical characteristics of the product. Consequently, there are no technical differences between a retail and wholesale DC circuit.

Wholesale DC services are always provided to other licensees, which purchase them for the purpose of ultimately providing a retail service. A wholesale DC circuit may be used as an input to the provision of retail DC services, or it may be used as an input to provide other retail telecommunications services, such as fixed and mobile services, broadband services and VPNs and Frame Relay. Finally, wholesale DC services are relevant in relation to the provision of interconnection; *e.g.*, wholesale DC services may be used by OLOs to replace interconnection services (mainly transit services in the core network). Some wholesale DC services are used as links for the purpose of interconnection.

[5] Where individual operators are affiliated with one another by reason of common ownership, such operators shall be deemed to constitute a single economic entity for the purposes of the market review process, as they will by necessary implication be adopting a common course of strategic commercial behaviour in relation to the relevant market in question.

Currently, there is a limited offer of wholesale DC services in Jordan, and most of these fall into the category of wholesale DC for the purpose of interconnection. Orange Fixed is the main provider of wholesale DC to other operators. Recently, two new operators[6] started providing competing wholesale DC services. Wholesale DC services provided by Orange Fixed include:[7]

- *The Transmission Link Service, which is "a service where JT provides transport link capacities to other licensees for the implementation of Interconnection and/or the provision of the service. For the avoidance of doubt, JT transmission Link Service will be provided to interconnect equipment of the same Licensee or different Licensees and it cannot be provided to the premises of a Licensee's end user*."
- The Data Interconnection Link Service, which is "*a service where JT provides dedicated bi-directional capacity over a circuit between JT's Network and the Network of the Licensee for the provision of data services.*"
- The SDH Bandwidth Service, which is "*a service where JT provides the Licensee with network capacity between two nodes on the JT SDH network*."
- Wholesale access lines for the provision of IPVPNs and Frame Relay.

The current wholesale DC services of Orange Fixed provide the necessary circuits for interconnection, and allow OLOs to purchase leased lines to connect network nodes and build a backbone network (trunk segments). Further, there is a wholesale product based on access lines which allows OLOs to provide IPVPN and Frame Relay services at the retail level. Aside from this, OLOs use retail leased lines offered with discount tariffs to provide DC at the retail level. This product can be regarded as a wholesale offer, however it is not regulated by the TRC as an interconnection service.

5. NUMBER OF CIRCUITS, REVENUES AND PRICING

With the exception of the year 2007, the number of circuits provided at retail level has increased each year between 2005 and 2008. Revenues, however, decreased from 2005 to 2007. From 2005 to 2006, revenues decreased, although the number of circuits increased in the same period. In 2008, both the number of circuits and revenues increased (refer to Table 4).

[6] These operators are VTel and Damamax.

[7] See "Jordan Telecom Reference Interconnect Offer", "Service Level Offer" and "Service Schedules" of Orange, December 2003.

Table 4: Number of retail DC circuits and revenues from the provision of retail DC services (2005-2008)

	2005	2006	2007	2008
Number of retail DC circuits (at year end)	3,154	3,483	3,393	3,628 - 3,777
Revenues from retail DC services (MJD)	14.7	14.4	12.3	16.3

Note: One operator (Batelco) has not delivered data for the years from 2005 until 2007. This data has been calculated with data delivered by Orange Fixed on the number of circuits provided to Batelco for resale. The revenues from 2005 until 2007 have been higher than indicated here as Batelco Jordan was not able to provide data for these years, but taking into consideration the small share in terms of number of circuits of alternative operators, the deviation from the actual total revenue is assumed to be low.

Source: Responses to TRC data questionnaire.

DC services are differentiated by reference to bandwidth and length. Currently, the retail DC services provided by Orange Fixed are leased lines. Orange Fixed differentiates its leased line offers in terms of local, national and international leased lines. Local leased lines refer to leased lines within the same governorate. National leased lines refer to connections from one governorate to another, and have four categories depending on the distance between the governorates. The price of a leased line consists of an access fee and a monthly rental fee. International leased lines refer to leased lines where one termination point is outside the territory of Jordan.

At the wholesale level, Orange Fixed has provided trunk segments and the numbers of circuits and revenues have been increasing from 2005 until 2008 (refer to Table 5). The number of circuits of trunk segments includes trunk segments provided for the purpose of interconnection, as well as SDH bandwidth.

Table 5: Number of wholesale trunk segments of DC and revenues from the provision of wholesale trunk segments of DC (2005-2008)

	2005	2006	2007	2008
Number of trunk segments (at year end)	1,526	6,594	7,850	8,507
Revenues (MJD)	2.8	4.5	6.0	9.1

Source: Responses to TRC data questionnaire.

III. Retail Dedicated Capacity and Retail VPN & Frame Relay Services (in the absence of any *ex ante* regulation)

As a first step in its market review exercise, the TRC considers the state of competition at the retail level for DC and for VPN & Frame Relay services. This exercise is carried out with a three year forward-looking perspective under the hypothetical assumption that there exists no *ex ante* regulation at both the retail and related wholesale levels. This initial step is required to allow the TRC to be able to form an initial view on whether the retail market is characterised by competition problems that warrant further scrutiny, or whether any related upstream wholesale markets (and perhaps also the retail market itself) may have to be identified and considered for the purposes of *ex ante* regulation.

The first step involves the conduct of two distinct exercises. *First*, the TRC defines the relevant retail markets for DC and VPN & Frame Relay services (*Section 1*). *Second*, it carries out an assessment of the likely competition problems that could arise in the absence of any *ex ante* regulation being imposed (*Section 2*). Based on this initial analysis, the TRC concludes that some form of *ex ante* regulation is likely to be required, and its details are further elaborated upon in *Chapters IV and V*.

1. MARKET DEFINITION

As explained in the *White Paper*, in accordance with international best practice, the relevant product markets are to be defined through the interaction of two different dimensions of market definition, namely: (1) the definition of the relevant product/service market; and (2) the definition of the relevant geographic market.

The definition of relevant **product** market involves the examination of the degree of substitutability of the products or services under consideration. Products which are substitutes from a demand or supply point of view are part of the same relevant product market.

The definition of the relevant **geographic** market is based on an assessment of whether the conditions of competition are similar or sufficiently homogeneous across the national territory. Generally speaking, a relevant geographic market comprises an area in which the operators concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous, and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different.

This *Section* comprises the TRC's analysis of:

- the functional characteristics of DC circuits (*Section 1.1*);
- whether there exist separate markets for low and high bandwidth DC services (*Section 1.2*);

- whether the relevant product market also includes xDSL broadband access (*Section 1.3*);

- whether local, national and international DC belong to the same market (Section 1.4); and

- whether DC services, VPNs and Frame Relay services belong to the same relevant market as DC *(Section 1.5)*;

- whether the relevant geographic scope of the markets for DC is national, or whether the geographic market definition should be drawn more narrowly and sub-national markets be identified (*Section 1.6*).

1.1 Functional Characteristics of Dedicated Capacity Circuits

The main functional characteristics of DC services are:

- point-to-point connectivity between network termination points (switching or routing not controlled by the end user);

- transparency;

- dedicated capacity (*i.e., the* absence of 'on-demand' switching or routing functionality controlled by the end user).

Point-to-point connectivity

DC services only include services which provide capacity between two points – such as conventional leased lines and other virtual permanent connections, where the paths of such connections are defined at the time of provisioning, rather than on an *ad hoc* basis in response to end user demand. For example, a service that allows the end user to direct that data be carried to a number of different locations, on demand, would not fall within the ”dedicated capacity” concept.

Transparency

DC services are characterised by transparent transmission capacity, *i.e*., DC circuits entail the offer of transparent transmission capacity between network termination points as a separate service and do not include on-demand switching. A transmission path is “transparent” when it allows the transmission of information without any modification on the form or content of the transmitted information (*e.g*., no error detection/correction).

Dedicated capacity

DC services are referred to as “dedicated” capacity connections, meaning that the capacity can be used by each individual end user, and is available (in its entirety) for

their sole use, when they require it. However, it is also possible to use more sophisticated network management techniques to ensure that, when an end user wishes to use capacity, the appropriate bandwidth is available, without having to leave that bandwidth idle in the periods during which the end user does not need it. However, it should be noted that such management techniques are less effective with respect to the terminating segments of services. It should be noted that it is not relevant on which type of technology the provision of DC is based, as long as the main functional characteristics are fulfilled and customers regard the products in question as substitutes.

Currently, the provision of DC services in Jordan consists of leased lines and is differentiated by reference to bandwidth and length. Whether managed services based on DC circuits form part of the same relevant market as DC services will be discussed below in the context of VPNs and Frame Relay products. The provision of leased lines starts with the lowest bandwidth of 64 kbps and goes up to and beyond 155 Mbps.

Orange Fixed offers local, national and international leased lines. Local leased lines refer to circuits within the same governorate, while national leased lines have their ends in different governorates. National leased lines are further differentiated in zones 1 to 4, depending on which governorates are connected by a leased line. International leased lines refer to leased lines where one termination point is outside the territory of Jordan.

Orange Fixed is replacing its ATM network with Ethernet GB so that, in future market reviews, it may become necessary to discuss the extent to which Ethernet will be regarded as a substitute for DC by consumers. From a functional perspective, Ethernet is not completely identical to DC, so that the impact on DC markets will depend on the type of Ethernet products which will be introduced in the market, and their pricing. For the timeframe of this market review, it is not yet possible to assess the competitive impact of Ethernet on DC markets. The TRC will carefully monitor the future development of retail DC markets, and will review the market definition in its next market review if appropriate.

1.2 THERE ARE SEPARATE MARKETS FOR LOW AND HIGH BANDWIDTH DEDICATED CAPACITY

DC services in Jordan currently range from 64 kb/s to 155 Mb/s and above. Chain substitutability between leased lines of different bandwidths would support the definition of a single relevant product market that includes both low and high bandwidths of DC services. In terms of functionality, for example, multiples of low bandwidth circuits can be regarded as substitutes for high bandwidth DC circuits. Pricing also plays an important role when assessing whether there is a chain of substitution between DC circuits of different bandwidths (see Table 6).

Table 6: Retail leased lines monthly rental prices of Orange Fixed (2010)

Speed	Leased lines monthly rental prices (JD)				
	Local	National Z1	National Z2	National Z3	National Z4
64K	104	110	141	191	281
128K	116	125	189	299	479
256K	148	188	302	501	860
512K	212	312	490	889	1607
1M	346	517	798	1595	3030
2M	564	644	1151	2646	5537

Note: The installation fee for all types of circuits and bandwidths is 700 JD.

Source: Orange Fixed website (http://business.orange.jo/leased_line.php).

The retail prices of Orange Fixed suggest that, on the **demand-side,** in some cases, it can be expected that customers switch to a higher bandwidths in cases of a price increase. However, it seems unlikely that customers would replace high bandwidth leased lines by multiples of low bandwidth leased lines circuits, as this solution would be a considerably more expensive option. It also seems unlikely that an operator buying leased lines above 2 Mbps would regard multiples of 64 kbps as a substitute. It should be noted that the number of circuits of leased lines above 2 Mbps sold on the market is still low and that the demand for high bandwidth leased lines is still developing. Competitive conditions also seem to be different, on the one hand, between leased lines up to and including 2 Mbps, and leased lines above 2 Mbps, on the other. The price structure and characteristics of the network infrastructure used to provide high bandwidth leased lines would support the view that there is a break in the chain of substitution between lower bandwidth leased lines (up to and including 2 Mbps) and higher bandwidth leased lines (above 2 Mbps).

Supply-side substitution between leased lines of varying bandwidth would mean that suppliers of high bandwidth leased lines (above 2 Mbps) could switch to supplying low bandwidth leased lines (and *vice versa*) with immediate effect, at low cost, on a sufficient scale and where it is reasonably probable that such substitution would take place in practice in response to small price changes. In principle, the cost of supplying DC is not dependent on the bandwidth supplied. This would mean that a supplier of DC with low bandwidth would be able to supply DC of high bandwidth, and *vice versa*, within a short timeframe. However, when DC services are supplied over copper, there are limits to switching to higher bandwidth leased lines which are imposed by the underlying infrastructure used. A supplier of DC over copper, for example, would have to replace copper with fibre, even though he may continue to use the same underlying duct or pole infrastructure. Suppliers of high bandwidth DC technically could provide low bandwidth DC but, in view of the high investment necessary for high bandwidth DC (usually based on fibre networks), there is little economic incentive in doing so. OLOs also have the disadvantage of lacking network ubiquity. As a result, an analysis of supply-side substitution supports the conclusion that DC should be differentiated between low and high bandwidth DC, with the break occurring at 2 Mbps.

Further, **conditions of competition** are very similar across the various speeds up to and including 2 Mbps. For bandwidths above 2 Mbps, on a forward-looking basis, it seems likely that the competitive conditions will be different from those experienced for low bandwidth leased lines.

1.3 THE PRODUCT MARKET DOES NOT INCLUDE XDSL BROADBAND ACCESS

Some business customers use DC to access the Internet with high data rates. The TRC, however, takes the view that xDSL broadband Internet access does not form part of the same product market as DC services.

First, xDSL broadband Internet access is not a demand substitute for DC, as xDSL is generally a contended service (*i.e*., a fixed amount of capacity in the network is shared amongst end-users), while DC circuits offer dedicated capacity between end points. In addition, technologies used to support DC services generally have a higher cost than xDSL. The combination of DC and a higher cost technology results in the cost, and thus price, of DC being higher than for xDSL access. The price difference is so high that xDSL broadband Internet access is unlikely to fall within the same product market as DC services.

Second, xDSL is also not a supply substitute for DC. Transforming xDSL connections in DC circuits would not be feasible within a short period of time of up to one year, and would be associated with considerable switching costs.

1.4 THE PRODUCT MARKET INCLUDES LOCAL AND NATIONAL DEDICATED CAPACITY SERVICES, BUT INTERNATIONAL DEDICATED CAPACITY SERVICES ARE IN SEPARATE MARKETS

On the **demand side,** customers purchasing local DC circuits would not switch to a national or international DC circuit in the case of a small but significant permanent price increase by a hypothetical monopolist, and *vice versa*. However, a **supply side substitution** approach suggests that local and national DC circuits fall within the same relevant product market, as an operator providing national DC can easily switch to the provision of local DC, and *vice versa*.

In contrast, an operator providing international DC would have to incur significant costs if he wanted to switch to the provision of national or local DC. If an operator only providing international DC wanted to provide national and local DC, it would require different and additional key network inputs (at the core and access network levels). In addition, such an operator would need to incur marketing and sales costs in order to build up a customer base for local and national DC circuits. Therefore, it is unlikely that supply side substitution would occur within a short timeframe. Also, it is important to note that international DC is often provided as part of a broader contract by global carriers (covering many routes) under different conditions of supply and with different pricing patterns.

1.5 DEDICATED CAPACITY, VPNS AND FRAME RELAY ARE IN SEPARATE MARKETS

Virtual Private Networks (VPNs) differ from DC services that are constructed using point-to-point dedicated links. While DC links tend to be used exclusively by one customer (*i.e*., are 'dedicated' to that customer), VPNs utilise technology which allows multiple users to share network resources/links. VPNs can connect to a core using dedicated links, or can be routed through the Internet instead of using DC. In Jordan, from a technical point of view, VPNs are supported by a number of technologies such as Frame Relay, Internet Protocols and MPLS.

Frame Relay, which is one of the technologies used to provide VPN services, is not configured to provide a service equivalent to DC. Originally, it was designed for use across Integrated Services Digital Network (ISDN) interfaces. Today, it is also used over a variety of other network interfaces. Frame Relay is not considered to have the same functional characteristics as a DC circuit, other than in those cases where Frame Relay is based on DC circuits. In this latter case, Frame Relay services are comparable to DC services in terms of their reliability, performance and security characteristics. However, when Frame Relay is based on DC circuits, the competitive constraint in the case of a price increase by a hypothetical monopolist is limited by the fact that such VPNs use DC services as an input, and provide an added value to this DC service, which would typically be reflected in higher prices.

In the case of VPNs routed through the Internet (IP VPNs), users connect to the VPN using DSL, dial-up or wireless connections, with data traffic being conveyed across an Internet core on a "best efforts" basis. IP VPNs cannot guarantee performance and are less secure than DC services. Business-critical data is treated in the same way as other applications. Time-sensitive traffic such as voice and video can be affected by relatively high rates of latency (delay), which makes these VPNs less suited for these applications.

By contrast, VPNs based on DC circuits use DC connections. Consequently, they are generally superior to IP VPNs and Frame Relay (when they are not based on DC circuits) when it comes to parameters such as reliability, performance and security. The fact that some security-conscious organisations such as banks are willing to use IP VPN for the purpose of online banking implies that it is possible to balance security risk against cost in respect of certain applications. However, even though the VPN traffic is encrypted, business customers needing to rely on a certain level of performance and security are unlikely to trust a system over which the number and identity of third parties handling their data are unknown and will prefer DC services (such as leased lines). Users of VPNs based on DC links can be reasonably sure that traffic will only transit through trusted networks (either through the network operator's core or the networks of third parties with whom the network operator has a robust contractual relationship). At least in terms of functionality, VPNs making use of dedicated connections and corresponding traffic prioritisation in the core are more likely to be viewed by end-users as providing a service equivalent to a DC end-to-end service. However, when assessing whether VPNs based on DC can be regarded as a demand-side substitute, the competitive constraint in the case of a price increase by a hypothetical monopolist is limited by the fact that such VPNs use

DC services as an input, and provide an added value to this DC service, which typically would be reflected in higher prices.

These considerations therefore indicate that, on the **demand-side**, in terms of functionality, DC services and VPNs are broadly used for the same purposes, but that IP VPNs do not provide the same quality of service or security guarantees. In contrast, VPNs based on DC can provide a level of service that is much closer to that provided by DC networks; however, as they use DC circuits as an input, they cannot impose a competitive pricing constraint on DC services.

On the supply-side, in order to supply DC services, VPN suppliers would need their own network or be able to purchase the necessary wholesale services. Operators with leased line networks that are used to provide VPNs could, in principal, easily switch to providing dedicated leased lines. However, it is likely that VPN suppliers with existing networks are also likely to provide DC and would therefore not constitute an additional constraint. In the absence of alternative network infrastructure which enables alternative operators to provide DC, it would be necessary to build access (and backhaul) networks. This form of supply-side substitution is unlikely to occur in response to a small but significant permanent price increase for DC services, because the wholesale access network requires significant sunk costs and time to build. If current VPN suppliers use wholesale leased lines to allow them to supply retail leased lines and/or VPNs, VPN services would not provide a competitive constraint on a hypothetical supplier of wholesale leased lines, as the hypothetical monopolist would be providing the input for the VPNs and an increase of leased lines prices would also lead to an increase in price for VPNs based on leased lines. The overall conclusion is that, in the absence of wholesale regulation, existing suppliers of VPNs would not be able to constrain the activities of a hypothetical DC monopolist through **supply side substitution**.

Because of the lack of demand and supply side substitution characteristics, the TRC arrives at the preliminary conclusion that DC services fall within a product market that is separate from VPNs and Frame Relay. Concerning VPNs and Frame Relay the TRC takes the preliminary view that they can be regarded as being in the same product market. On the demand-side, the price of VPNs is likely to constrain the price setting behaviour for of Frame Relay in case of a SSNIP. On the supply-side, OLOs having the necessary inputs for the provision of VPNs could switch to the provision of Frame Relay and vice-versa. As a result, the TRC arrives at the preliminary conclusion that VPNs and Frame Relay belong to the same market which will in the following be referred to as the market for VPNs & Frame Relay.

1.6 THE GEOGRAPHIC MARKETS ARE NATIONAL

The TRC's view is that the geographic scope of the five retail product markets considered is national, namely:

- 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,
- the market for international retail DC services above 2 Mbps in Jordan,
- the market for VPNs & Frame Relay.

This view is based primarily on the fact that Orange Fixed and the main alternative operators which it faces on the five relevant product markets offer their services on the same commercial conditions on a national basis. The product characteristics of DC and VPNs & Frame Relay require the existence of a national presence, as business customers demanding these services usually require geographic ubiquity of service. Moreover, when they expand and develop new affiliates and customers, the operator must connect these affiliates and customers at whichever location the company may choose, which can be anywhere in an urban or rural areas of Jordan.

The TRC also notes that there are similar competitive conditions in the provision of retail DC services and VPNs & Frame Relay throughout Jordan given that OLOs play a negligible role in providing such services. This situation is unlikely to change in the absence of wholesale regulation.

1.7 CONCLUSION

Based on its analysis of demand and supply side factors, the TRC arrives at the preliminary conclusion that there are four relevant markets for the provision of retail DC services, and one separate relevant market for the provision of VPN & Frame Relay services. The relevant retail markets are:

- 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,
- the market for international retail DC services above 2 Mbps in Jordan,
- the market for VPNs & Frame Relay in Jordan.

Consultation question:

Q1: Do you agree with the TRC's preliminary conclusions regarding the product and geographic definition of the relevant markets for retail DC and VPNs & Frame Relay?

2. APPLICATION OF 3-CRITERIA TEST

As explained in the *White Paper*, having defined the retail markets, the next analytical step for the TRC is to apply a threshold three-criteria test, on the assumption that no *ex ante* regulation is currently in place, neither on the retail market nor on related wholesale markets. Under this assumption, competition can be expected only, or predominantly, to occur between fully vertically integrated operators providing DC and VPNs & Frame Relay services. The three-criteria test allows the TRC to identify whether competition between such vertically integrated operators can be expected to be effective or whether some form of *ex ante* regulation at retail and/or wholesale levels must be considered.

The three criteria that must be cumulatively fulfilled to justify the consideration of *ex ante* regulation are the following: presence of high and persistent barriers to entry (*Section 2.1*); absence of dynamic trend towards effective competition over the relevant timeframe of this market review (*Section 2.2*); and the insufficiency of *ex post* intervention alone to address the relevant competition concerns at issue (*Section 2.3*).

2.1 HIGH AND PERSISTENT BARRIERS TO ENTRY (1ST CRITERION)

a) The four retail DC markets

All four retail markets for DC services are 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.

The TRC notes that, in the longer run, entry barriers may become lower for the provision of high bandwidth DC services, as the business case for these services is focused on a limited number of larger business customers and is characterised by higher revenues. In relation to the present market review, the TRC does not believe this already to be the case.

For international DC services, entry barriers for global carriers are lower insofar as the international part of DC services is concerned, because they may benefit from international network infrastructure. However, they will still have to overcome the entry barriers related to the access and core network infrastructure in Jordan.

Aside from economies of scale, scope and density that act as barriers to entry, further entry barriers arise from the following:

- Orange Fixed controls a network infrastructure which is not easy to replicate. The TRC notes, however, that at core network level barriers to entry to

replicate Orange Fixed backbone network are likely to be lower.[8] Nevertheless, the TRC also notes that, in relation to retail DC services, even if at core network level investment has taken place, OLOs will still depend on the access network infrastructure of Orange Fixed so that self-built core network infrastructure alone will not remove the barriers to entry in retail DC markets.

- Orange Fixed benefits from a quasi-ubiquitous network and is capable of serving multi-site businesses. Nation-wide coverage is important when competing for contracts from large business customers and public administrations, which have multiple sites in Amman, combined with peripheral sites located throughout the country (*e.g*., factories, bank branches, and so forth).

- Orange Fixed benefits from nationwide marketing and brand recognition, leading to lower marketing and sales costs per customer.

High and persistent barriers to entry largely protect Orange Fixed from new entry. In the absence of any *ex ante* regulation, competitors would likely be limited to a small number of operators providing retail DC services.

b) The market for VPNs & Frame Relay

Similar to the situation which characterises retail DC markets, the market for VPNs & Frame Relay is also characterised by structural barriers to entry such as strong economies of scale, scope and density in access and core networks, combined with sunk costs.

For VPNs & Frame Relay, however, the barriers to entry are mitigated by the fact that operators can use other wholesale products such as wholesale broadband access to provide VPNs and Frame Relay, although this also means that the service quality suffers (*i.e*., when they do not use DC circuits).

Aside from economies of scale, scope and density that act as barriers to entry, further entry barriers arise from additional factors, such as:

- Orange Fixed controls a network infrastructure which is difficult to replicate. As mentioned in the context of retail DC, OLOs depend on the access network infrastructure of Orange Fixed so that self-built core network infrastructure alone will not remove the barriers to entry in the market for VPNs & Frame Relay.

[8] In particular, the possibility to use dark fibre and cable pipes of the National Broadband Network of the MoITC my have the effect of lowering entry barriers over time.

- Orange Fixed benefits from a quasi-ubiquitous network and is capable of serving multi-site businesses.

- Orange Fixed benefits from nationwide marketing capabilities and brand recognition, which leads to lower marketing and sales costs per customer.

In the absence of any *ex ante* regulation, competitors would therefore be likely to be limited to a small number of operators providing VPNs and Frame Relay.

2.2 LACK OF A DYNAMIC TREND TOWARDS COMPETITION (2ND CRITERION)

a) *The four retail DC markets*

The TRC has identified no structural evidence that the four markets for retail DC services could tend towards a competitive outcome over the lifetime of this market review. As it is assumed at this stage of the analysis that wholesale or resale products are unlikely to be provided in a fully unregulated environment, DC circuits that OLOs purchased from Orange Fixed and resold to end users are attributed to Orange Fixed and are reflected in the market share of Orange Fixed. Under this assumption, Orange Fixed would have above 90% market share in the **low bandwidth local and national DC market** (based on number of circuits). For the **high bandwidth local and national DC market**, Orange Fixed would have a lower market share, which however is still well above 50% (again based on number of circuits) (Table 7). It should be taken into account that the total number of circuits in this market was very low (only 9 circuits in 2008), which means that small changes (*e.g*., one customer switching its provider) would have a strong impact on the market data. The market data must therefore be assessed in the light of the barriers to entry discussed above.

While as a result of data availability, the TRC could not evaluate a full 4-year time period for local/national low-bandwidth and high-bandwidth markets separately, the TRC could estimate the aggregates for both markets that show that Orange Fixed had consistently a share of [above 90%] of all local/national DC circuits over the whole period (Table 8).

International DC has only been provided for **lower bandwidths**, so that there are no market shares for high bandwidth international DC services. For **low bandwidth international DC circuits**, Orange Fixed had a market share of 100% (Table 7).

Table 7: Market shares in the provision of retail DC services, based on number of circuits (2005-2008, at year end) if resale products are attributed to Orange Fixed

	Share of number of retail DC circuits			
	2005	**2006**	**2007**	**2008**
Local and national retail DC circuits up to and including 2 Mbps				
Orange Fixed	n/a	n/a	n/a	*Numbers omitted*
Others	n/a	n/a	n/a	
Local and national retail DC circuits above 2 Mbps				
Orange Fixed	-	n/a	n/a	*Numbers omitted*
Others	-	n/a	n/a	
International retail DC circuits up to and including 2 Mbps				
Orange Fixed	n/a	n/a	n/a	100%
Others	n/a	n/a	n/a	0%
International retail DC circuits above 2 Mbps				
Orange Fixed	- [1)]	- [1)]	- [1)]	- [1)]
Others	- [1)]	- [1)]	- [1)]	- [1)]

Note 1): International retail DC circuits above 2 Mbps were not provided.

Source: Operator responses to TRC data questionnaire.

Table 8: Shares in the provision of retail DC services, based on number of circuits (2005-2008, at year end) if resale products are attributed to Orange Fixed

	Share of number of retail DC circuits			
	2005	**2006**	**2007**	**2008**
Local and national retail DC circuits				
Orange Fixed	*Numbers omitted*			
Others				
International retail DC circuits [1)]				
Orange Fixed	100%	100%	100%	100%
Others	0%	0%	0%	0%

Note 1): International retail DC circuits above 2 Mbps were not provided.

Source: Operator responses to TRC data questionnaire.

Finally, the TRC has also not identified **any disruptive technological developments** that would be likely to orientate the markets for DC towards effective competition within the relevant timeframe for this market review.

The TRC therefore arrives at the preliminary conclusion that, in the absence of the *ex ante* regulation of wholesale DC markets, the four retail DC markets identified are unlikely to move towards effective competition over the lifetime of the present market review.

b) The market for VPNs & Frame Relay

For **VPNs & Frame Relay** the combined market share of Orange Fixed and Orange Internet was above 50% in 2008. Consistent with its previous practice, the TRC regards Orange Internet and Orange Fixed to form part of a single economic entity.[9] The TRC notes that, currently, most of the VPN & Frame Relay services offered by OLOs at retail level are based on Frame Relay services purchased from Orange Fixed, which OLOs resell to end users. The VPN services of OLOs are also based on wholesale access lines purchased from Orange Fixed. Since the three-criteria test is carried out under the assumption of a fully unregulated environment, VPNs & Frame Relay of OLOs that have been provided on the basis of wholesale or resale products purchased from Orange Fixed are attributed to latter. Under this assumption, the market share of OLOs was [below 10%] in 2008. The TRC cannot identify any factors which, in the absence of any *ex ante* regulation, could drive the market for VPNs & Frame Relay towards effective competition over the lifetime of the market review.

Finally, the TRC has also identified **no disruptive technological developments** that could move the market for VPNs & Frame Relay towards effective competition within the relevant timeframe.

The TRC arrives at the preliminary conclusion that, in the absence of the *ex ante* regulation of wholesale DC markets, the market for VPNs & Frame Relay is unlikely to move towards effective competition over the lifetime of the present market review.

2.3 INSUFFICIENCY OF *EX POST* INTERVENTION ALONE (3RD CRITERION)

a) The four retail DC markets

The TRC believes that the markets for DC services are also characterised by the insufficiency of *ex post* intervention alone. In the absence of any *ex ante* regulation, Orange Fixed is unlikely to provide access to wholesale services upon reasonable request (such as wholesale terminating segments). Even where it would provide access, there are economic incentives in existence which suggest that it might discriminate against access seekers *vis-à-vis* its own affiliated retail arm and/or charge excessive wholesale prices. Such competition problems are difficult to address through *ex post* interventions alone, given that the *ex post* application of competition rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention required under the prevailing circumstances. *Ex post* intervention would also not be able to safeguard the necessary extensive monitoring required to ensure compliance with wholesale obligations. Finally, because

[9] Please see footnote 3.

competition can only develop through new entry and investment, there is a particular need for long-term legal certainty with regard to wholesale remedies, which cannot be ensured by *ex post* intervention on a case-by-case basis. What is clearly needed under such circumstances is a predictable set of *ex ante* regulations targeted at the competition problems identified.

b) The market for VPNs & Frame Relay

The TRC believes that the market for VPNs & Frame Relay is also characterised by the insufficiency of *ex post* intervention alone. In the absence of any *ex ante* regulation, Orange Fixed is unlikely to provide access to wholesale services (required for the provision of VPNs & Frame Relay) upon reasonable request (such as wholesale terminating segments). Even where it would provide such access, it might discriminate against access seekers and/or charge excessive wholesale prices. Such competition problems are difficult to address through *ex post* interventions alone. *Ex post* intervention would also not be able to safeguard the necessary extensive monitoring. Finally, as for the market for retail DC services, there is need for legal certainty in the form of a predictable set of *ex ante* regulations targeted at the competition problems identified.

2.4 CONCLUSION

The TRC preliminarily concludes that, in the absence of any *ex ante* regulation, the **three criteria are cumulatively fulfilled** for all four retail DC markets as well as for the market for VPNs & Frame Relay. The markets are each characterised by high and permanent barriers to entry, there is no dynamic trend towards effective competition behind those entry barriers, and *ex post* intervention alone is insufficient to deal with the competition problems at issue.

Consideration must therefore be given to the imposition of *ex ante* regulation. For the purpose of designing appropriate *ex ante* remedies, the TRC analyses first the provision of DC at wholesale level. This involves, for each relevant wholesale market, the definition of its boundaries, the application of the three-criteria test (to identify whether the market is susceptible to *ex ante* regulation), the assessment of dominance (to designate the dominant operator), and the selection of remedies (to address the competition problems related to dominance).

Consultation question:

Q2: Do you agree with the TRC's preliminary conclusions that the three criteria are fulfilled for the four relevant markets for retail DC services and for the relevant market for VPNs & Frame Relay, in the absence of any *ex ante* regulation at the wholesale and retail levels?

IV. Wholesale Dedicated Capacity (in the absence of any *ex ante* Regulation)

As competition based on end-to-end networks is unlikely to be effective, the TRC's next step is to assess whether access to wholesale DC can intensify competition sufficiently. The TRC considers *ex ante* regulation of wholesale DC first, because it represents the most upstream market. This follows the principle laid out in the TRC's *White Paper* that remedies on more upstream markets should be exhausted first, prior to remedies on downstream markets (including retail markets) being considered.

Although, at the retail level, VPNs & Frame Relay belong to a product market that is separate from retail DC services, they use the same wholesale inputs, namely wholesale DC services.[10] As a consequence, there is no need to define separate wholesale DC markets for the purpose of providing retail DC, on the one hand, and for the purpose of providing VPNs & Frame Relay, on the other. The TRC notes that wholesale DC services are also used for building and extending networks. There is thus no need to further differentiate wholesale markets on the basis of the purpose for which wholesale DC services are used.

For the market for wholesale DC, the TRC carries out the following assessments: *first*, it defines the boundaries of the relevant product and geographic markets (*Section 1*); *second*, it applies the three-criteria test to those markets, assuming the absence of any *ex ante* regulation (*Section 2*); *third*, it analyses the effectiveness of competition in the relevant wholesale markets and assesses the existence of dominance (*Section 3*); and *fourth*, it selects appropriate remedies targeting the competition problems related to dominance found to exist in the provision of wholesale DC (*Section 4*).

1. MARKET DEFINITION

This section defines the boundaries of the relevant market for the provision of wholesale DC. In particular, it addresses the following issues:

- the characteristics of wholesale DC (*Section 1.1*);
- the delineation of terminating and trunk segments of wholesale DC (*Section 1.2*);
- how to deal with international DC (*Section 1.3*);
- whether there are separate markets for low and high bandwidth DC (*Section 1.4*);

[10] VPNs & Frame Relay could also use other wholesale inputs, such as wholesale broadband access, not dealt with in this Consultation Document.

- whether trunk segments of all bandwidths are in one single market (*Section 1.5*);

- the geographic scope of the markets (*Section 1.6*).

1.1 CHARACTERISTICS OF WHOLESALE DEDICATED CAPACITY

A wholesale DC service may be used as an input to the provision of retail DC services and VPNs & Frame Relay services as well as other retail services, such as fixed and mobile services. It should be noted that the difference between wholesale and retail DC services lies in the patterns of supply and demand, and the way in which the services are bought, sold and used, rather than with respect to their technical content. Consequently, there may be no technical difference between DC at the retail and wholesale levels. DC, which is sold in the wholesale market, is always sold to another network operator, for the purpose of ultimately providing a retail service.

Wholesale DC services may be provided over different types of networks and technologies, e.g. over fibre, copper or wireless networks. Since the market definition of wholesale DC markets is based on demand and supply substitutability, the markets defined will comprise wholesale DC services based on all technologies used in Jordan.

1.2 DELINEATION OF TERMINATING AND TRUNK SEGMENTS OF WHOLESALE DEDICATED CAPACITY

The definition of separate markets for terminating and trunk segments of wholesale DC results from (potentially) different competitive conditions in their respective provisioning. The economics of supplying core network capacity are different from supplying dedicated capacity in the access network. Core network investment relates to the servicing of areas of dense and concentrated traffic, whereas the access network involves connecting individual end-users. The access network, therefore, typically entails the transfer of thinner volumes of traffic on a more disaggregated basis over a more widespread network. By contrast, network density and scale economies in the core network can generally be achieved more rapidly or at lower levels of investment than in the access network, due to the aggregation or concentration of traffic.

The cut-off point between trunk and terminating segments should exist where there is a distinct break point identified in the economics of demand for, or supply of, wholesale DC, reflecting the different competitive conditions in the provision of terminating and trunk segments. The TRC takes the view that it is most appropriate to identify the boundary between terminating and trunk segments of DC by reference to the underlying network hierarchy. Networks are characterised by a hierarchical structure in which local connections (and traffic) are aggregated regionally and, ultimately, inter-regionally. The boundary between trunk and terminating segments would lie at the operator's DC serving exchange, due to the high sunk costs entailed

in network build-out below the serving switch. Taking this into account, and based on the difference in the economics of supplying core and access capacity, the TRC proposes that terminating segments of wholesale DC refer to the segment between an end point of the network and a local exchange. Currently, all operators are collocated at the Hashem data center and cannot roll-out networks for interconnection at the local level. Therefore, when prescribing remedies, it will be important to ensure that, until operators expand their networks to the local level (or in case the economics of supplying network capacity are such that OLOs have no incentive in investing in network infrastructure for the interconnection at the local level), OLOs are not denied access to terminating segments at the transit level.

It should be noted that trunk and terminating segments are not functional substitutes, and cannot therefore be considered to be effective demand substitutes. Each fulfils a specific need, and trunk and terminating segments are typically used as complementary products. A wholesale customer would be unlikely to switch from one product to the other in response to a small but significant price increase, given that each relate to different parts of the network and demand is driven by the wholesale customer's own network requirements.

1.3 How to Deal With International DC Services

Wholesale international DC services are made up of a terminating and a trunk segment located in Jordan, as well as at least one trunk and a terminating segment outside Jordan. Terminating segments that are respectively inside and outside Jordan are neither demand nor supply substitutes. The same proposition holds true for trunk segments inside and outside Jordan; the segments necessary for a wholesale international DC circuit are complementary to each other. Local, national, and international DC services all use the same building blocks.

While a local or a national DC circuit is fully defined by reference to relevant terminating and trunk segments located on Jordanian territory, an international DC circuit would also comprise terminating and trunk segments located in other jurisdictions. The TRC takes the preliminary view that the present market review should be limited to the provision of terminating and trunk segments located in Jordan.

1.4 Separate Markets for Low and High Bandwidth Terminating Segments of Wholesale Dedicated Capacity

The demand for wholesale terminating segments is derived from retail demand for both leased lines and for a range of other retail services. Further, in relation to terminating segments, such capacity can rarely be aggregated at the wholesale level, since terminating segments, by definition, have one end that is specific to a particular end user location. As such, it appears that, on the **demand side,** wholesale demand for terminating segments might be specific to particular bandwidths.

Supply-side substitution between DC of varying bandwidth would mean that suppliers of high bandwidth terminating segments (above 2 Mbps) could switch to supplying low bandwidth terminating segments (and *vice versa*) with immediate effect, at low cost, on a sufficient scale and where it is reasonably probable that such substitution would take place in practice in response to small price changes. In principle, the cost of supplying a terminating segment is not dependent on the bandwidth supplied. This would mean that a supplier of terminating segments with low bandwidth would be able to supply terminating segments of high bandwidth, and *vice-versa*, within a short timeframe. However, when terminating segments are supplied over copper, there is a constraint in switching to higher bandwidth terminating segments imposed by the underlying infrastructure. A supplier of terminating segments of leased lines over copper would have to replace copper with fibre, even though he would use the same underlying duct or pole infrastructure.

Therefore, the TRC has reached the preliminary conclusion that a supplier which supplied low bandwidth terminating segments would not be able to supply terminating segments of high bandwidth capacities in response to a small but significant price increase, and that suppliers of high bandwidth terminating segments of DC could technically provide low bandwidth terminating segments of DC; however, in view of the high levels of investment necessary for high bandwidth terminating segments (usually based on fibre networks), there is little economic incentive to do so. As a result, supply-side substitution supports the conclusion that the terminating segments of DC should be differentiated between low and high bandwidth DC, with the breakpoint being at 2 Mbps.

1.5 TRUNK SEGMENTS OF ALL BANDWIDTHS ARE PART OF A SINGLE MARKET

Trunk segments are part of an operator's core network, and are used to carry aggregated traffic. Nevertheless, it appears that wholesale demand for trunk segments might be specific to particular bandwidths. On the supply-side, however, there are strong indicators supporting the definition of one single market for trunk segments of all bandwidths. A supplier who currently supplies high bandwidth trunk segments could switch to supply lower bandwidth trunk segments reasonably quickly in response to a small but significant price increase, and *vice versa*. This is because a supplier with an established core transmission network finds it relatively easy to supply a range of bandwidths over that network. The ability of suppliers to act in this way is supported by the tendency to aggregate capacity on the core network so that, in practice, the supplier is already carrying a range of bandwidths. An existing supplier of trunk capacity would respond to a lasting price increase for a particular bandwidth by switching supply to that bandwidth.

1.6 THE GEOGRAPHIC MARKETS ARE NATIONAL

The competitive conditions relevant for the three relevant markets for the provision of low and high bandwidth terminating segments and trunk segments of wholesale DC are uniform throughout the national territory, and the TRC does not expect this to

change during the lifetime of the present market review. Orange Fixed is the only operator with a nationwide copper-based access network, while fibre local access networks are *de minimis*, and the existing FBWA networks are less suitable for the provision of DC services. This is unlikely to change in the near future. There is also little alternative core network infrastructure in addition to the core network infrastructure of Orange Fixed.

OLOs may invest in specific routes on which both existing and potential traffic flows are sufficiently great, so as to justify the sinking of the costs of constructing alternative infrastructure. However, even where OLOs make such investments, they will still compete with Orange Fixed's national offer. As a result, the investments of OLOs are unlikely to result in different competitive conditions for the provision of trunk segments in certain regions or on certain routes. OLOs will still depend on the trunk segments of DC on a nation-wide basis. Orange Fixed will continue to have a high market share in the provision of wholesale DC on all three relevant markets throughout Jordan. Thus, the TRC takes the view that the geographic scope of the three relevant markets for low and high bandwidth terminating and trunk segments is national in scope.

1.7 CONCLUSION

The TRC arrives at the preliminary conclusion that there are three relevant wholesale DC markets, namely:

- the market for wholesale terminating segments of DC up to and including 2 Mbps in Jordan;
- the market for wholesale terminating segments of DC above 2 Mbps in Jordan; and
- the market for wholesale trunk segments of DC in Jordan.

Consultation question:

Q3: Do you agree with the TRC's preliminary conclusions regarding the product and geographic definition of the three relevant markets for low and high bandwidth terminating and trunk segments of wholesale DC?

2. APPLICATION OF THREE-CRITERIA TEST

The TRC has applied the three-criteria test to the markets for wholesale terminating and trunk segments of DC to identify whether these markets should be considered susceptible to *ex ante* regulation. The TRC has carried out this test under the assumption that no *ex ante* regulation (in relation to wholesale DC) is in place. The three criteria which must cumulatively be fulfilled to render a market susceptible to *ex*

ante regulation are the following: the presence of high and persistent barriers to entry (*Section 2.1*); the lack of a dynamic trend towards a competitive outcome (*Section 2.2*); and the insufficiency of *ex post* intervention alone to deal with the competition problems at issue (*Section 2.3*).

2.1 HIGH AND PERSISTENT BARRIERS TO ENTRY (1ST CRITERION)

The three relevant markets for low and high bandwidth terminating segments and trunk segments of wholesale DC are characterised by the existence of strong economies of scale, scope and density. These factors, in combination with the sunk costs involved, create a major structural barrier to entry. Orange Fixed thus benefits from a quasi-ubiquitous network, which is difficult to replicate.

The TRC recognises that, over the longer run, entry barriers for the provision of high bandwidth terminating segments might be lowered, as international experience shows, but this is unlikely to occur in Jordan already over the lifetime of the present market review.

The market for trunk segments, when compared to the terminating segments of DC, has potentially lower barriers to entry. Investment of OLOs in core network infrastructure has taken place to some extent. However, OLOs interested in supplying trunk segments to third parties have the disadvantage of not being able to offer them in a bundle with terminating segments. Further, the provision of trunk segments of DC to third parties is also linked to economies of scale, as the costs of equipment at local exchanges or third party sites do not increase significantly with increases in capacity.

The TRC thus concludes that the three relevant markets for low and high bandwidth terminating and trunk segments of wholesale DC fulfil the first criterion of the three-criteria test.

2.2 LACK OF A DYNAMIC TREND TOWARDS COMPETITION (2ND CRITERION)

Given the very high market shares of Orange Fixed in terminating and trunk segments (100% and [between 70-80%] respectively in 2008), occurring behind high barriers to entry, the three wholesale markets cannot be expected to tend towards a more competitive outcome over the lifetime of this market review. The TRC also cannot identify any disruptive technological changes that could render these markets effectively competitive in the absence of wholesale regulation.

2.3 INSUFFICIENCY OF *EX POST* INTERVENTION ALONE (3RD CRITERION)

The potential competition problems identified in relation to the three relevant product markets for low and high bandwidth terminating and trunk segments of wholesale DC

are such that they will require *ex ante* intervention. Orange Fixed is unlikely to provide access to all forms of wholesale DC reasonably required by OLOs. If Orange Fixed were mandated to provide terminating and trunk segments of wholesale DC, it would have an economic incentive to discriminate between access seekers vis-à-vis its own retail arm and/or charge excessive wholesale prices. Such competition problems are difficult to address under *ex post* intervention alone, given that the *ex post* application of competition rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention. With *ex post* intervention, it would also be difficult to ensure the necessary extensive monitoring of Orange's compliance with remedies. The TRC therefore preliminarily concludes that the 3rd criterion – the insufficiency of *ex post* intervention alone – has also been fulfilled.

2.4 CONCLUSION

The three relevant product markets for low and high bandwidth terminating and trunk segments of wholesale DC each clearly fulfil the three-criteria test. The TRC therefore draws the preliminary conclusion that the markets are susceptible to *ex ante* regulation.

Consultation question:

Q4: Do you agree with the TRC's preliminary conclusions that the three criteria are fulfilled for the three markets for low and high bandwidth terminating and trunk segments of wholesale DC and that these markets are thus susceptible to *ex ante* regulation?

3. ASSESSMENT OF DOMINANCE

Given that the three relevant markets for low and high bandwidth terminating and trunk segments of wholesale DC are markets susceptible to *ex ante* regulation, the TRC assesses whether these markets are also characterised by the lack of effective competition (*i.e*., the existence of dominance) and whether Orange Fixed has "*such a sufficient impact on the market that it can control and affect the activity of the relevant market*", as is stipulated in Article 8(a) of the *Competition Safeguards*. The two relevant markets for low and high bandwidth terminating segments of wholesale DC will be discussed in *section 3.1,* and the discussion on the market for trunk segments of wholesale DC will follow in *section 3.2*.

When assessing dominance on a wholesale market, the TRC looks predominantly at the (a) market shares of operators, (b) the existence of barriers to entry and related criteria such as the control of essential facilities (*i.e*., facilities that competitors rely upon for participating in the relevant market), the presence of substantial economies of scale and scope in the provision of wholesale DC, the degree of vertical

integration (including relationships with affiliated licensees), as well as (c) the possible existence of countervailing buyer power in the hands of access seekers, which might be able to constrain the supply-side market power of Orange Fixed.

3.1 MARKETS FOR LOW AND HIGH BANDWIDTH TERMINATING SEGMENTS

a) Market shares

In 2008, Orange Fixed was the only provider of low and high bandwidth terminating segments of wholesale DC. Orange Fixed, therefore had a market share of 100% in in this year in the markets of wholesale low and high bandwidth terminating segments. Recently, two new operators entered the market and started to provide terminating segments of wholesale DC.

The market volume of wholesale terminating segments in 2008 can be estimated based on the retail IPVPN and Frame Relay connections provided by OLOs which use access lines of Orange Fixed as wholesale inputs. In addition, OLOs have purchased retail leased lines from Orange Fixed to provide themselves retail leased lines to end users, which include terminating segments. The market share of Orange Fixed is well in excess of 50%, which is the threshold for the presumption of dominance established by Article 8(b) of the *Competition Safeguards*.

b) High barriers to entry

The high market shares of Orange Fixed in the provision of low and high bandwidth terminating segments respectively is protected by **high barriers to entry**. 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. The presence of barriers to entry is a major criterion in the *Competition Safeguards* (Article 8(c), Number 14).

Barriers to entry are rendered even higher by virtue of the existence of additional criteria included in Article 8(c) of the *Competition Safeguards*: Orange Fixed's control of essential facilities (*i.e*., facilities that competitors rely upon for participating in the relevant market (Criterion Number 2); the presence of substantial economies of scale and scope in the provision of terminating segments (Criterion Number 9); the existence of vertical integration, including relationships with affiliated licensees (Criterion Number 10); and the absence of competitors and potential competition in the market (Criterion Number 12).

First, the provision of terminating segments is based on an **essential facility** (*Competition Safeguards*, Article 8(c), Criterion Number 2), namely, the control of a nationwide ubiquitous local access network. This local access network is, to a substantial extent, the legacy of Jordan Telecom's former exclusive rights and has been largely rolled out to a substantial degree under conditions of monopoly protection.

Second, there exist substantial **economies of scale, scope and density** in the provision of terminating segments (*Competition Safeguards,* Article 8(c) Criterion Number 9) which, in combination with the high share of sunk costs involved, render it unrealistic that an OLO could replicate the Orange Fixed access network except in very few geographic areas characterised by a high level of density of business customers. In principle, FBWA networks can be economically rolled out on a wider geographic scale. However, BFWA networks are point-to-multipoint networks and are not suitable for DC circuits.

Third, Orange Fixed, considering its relationship with affiliated licensees, is a **fully vertically integrated entity** (*Competition Safeguards*, Article 8(c), Criterion Number 10) that controls the whole value chain of telecommunications services, and is active on all relevant (wholesale and retail) markets across that value chain. Orange Fixed thus enjoys a level of efficiency advantages and a variety of strategic options available to it which its competitors cannot have at their disposal.

Fourth, given the existence of high barriers to entry, hardly any other operator will be in a position to enter the market for wholesale terminating segments. In consequence, there is likely to be an almost complete **lack of actual and potential competition** (thus satisfying the *Competition Safeguards*, Article 8(c), Criterion Number 12).

c) Absence of countervailing bargaining power

The market power of Orange Fixed in the provision of terminating segments of wholesale DC is not constrained by any countervailing buyer power on the part of access seekers (criterion listed in Article 8(c), Number 6, in the *Competition Safeguards*). Orange Fixed provides one-way access in a monopoly situation, where access seekers cannot react or retaliate if Orange Fixed denies access to terminating segments, discriminates against external access seekers or charges excessive wholesale prices. Clearly, OLOs cannot exercise any countervailing buyer power to constrain the supply-side market power of Orange Fixed.

d) Conclusion

The TRC adopts the preliminary conclusion that **Orange Fixed enjoys a dominant position** in the two relevant markets for wholesale low and high bandwidth terminating segments of DC. Above all, this conclusion is based on the conclusion that Orange Fixed is likely to preserve a very high market share for low and high bandwidth terminating segments above 90%, the existence of very high barriers to entry to the market and the lack of countervailing buyer power on the part of access seekers. The TRC, therefore, is of the view that it would be appropriate to designate Orange Fixed as a dominant operator in accordance with Article 8(a) of the *Competition Safeguards* and to impose appropriate *ex ante* obligations on that dominant operator.

Consultation question:

Q5: Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position on the two markets for low and high bandwidth terminating segments of wholesale DC?

3.2 THE MARKET FOR TRUNK SEGMENTS OF WHOLESALE DC

a) Market shares

Trunk segments are currently mainly provided for the purpose of interconnection and as SDH bandwidth. Orange Fixed is the main provider of trunk segments in the market and, based on number of circuits and revenues, in 2008 held a market share of [between 70-80%], having accounted for 100% of the trunk segments from 2005 until 2007 (see Table 9). The market share is well in excess of 50%, namely, the threshold for the presumption of dominance established under Article 8(b) of the *Competition Safeguards*.

Table 9: Market shares in the provision of trunk segments of wholesale DC services, based on number of circuits and revenues (2005-2008)

	Share of trunk segments of wholesale DC			
	2005	**2006**	**2007**	**2008**
Based on number of circuits (at year end)				
Orange Fixed	100%	100%	100%	*Numbers omitted*
Others	0%	0%	0%	
Based on revenues				
Orange Fixed	100%	100%	100%	*Numbers omitted*
Others	0%	0%	0%	

Source: Operator responses to TRC data questionnaire.

b) High barriers to entry

The position of Orange Fixed in the provision of trunk segments is protected by **high barriers to entry**. There exist substantial economies of scale and scope in the core network. OLOs have invested in alternative core network infrastructure and the national broadband network of the MoITC very likely will provide incentives for the further roll-out of backbone networks by OLOs. However, OLOs supplying trunk segments to third parties have the disadvantage of not being able to offer these in a bundle with terminating segments. Further, the provision of trunk segments of DC to third parties is also associated with economies of scale, as the costs of equipment at local exchanges or third party sites do not increase significantly with increases in capacity. The presence of barriers to entry is a major criterion in the *Competition Safeguards* (Article 8(c), Criterion Number 14).

Barriers to entry are rendered even higher by virtue of the existence of the additional criteria listed in Article 8(c) of the *Competition Safeguard*. Orange Fixed, considering its relationship with affiliated licensees, the fact that it is a **fully vertically integrated entity** (*Competition Safeguards*, Article 8(c), Criterion Number 10) that controls the whole value chain of telecommunications services, and is active on all relevant (wholesale and retail) markets across the value chain.

c) Absence of countervailing bargaining power

The market power of Orange Fixed in the provision of trunk segments is not constrained by any countervailing buyer power on the part of access seekers (criterion listed in Article 8(c), Criterion Number 6 in the *Competition Safeguards*). In particular, when OLOs need both terminating and trunk segments of DC, Orange Fixed is the only operator being capable of offering terminating and trunk segments in a bundle, which means that OLOs cannot exercise any countervailing buyer power to constrain the supply-side market power of Orange Fixed.

d) Conclusion

The TRC adopts the preliminary conclusion that **Orange Fixed enjoys a dominant position** in the market for trunk segments of wholesale DC. Above all, this conclusion is based on the finding that Orange Fixed is the main provider of trunk segments, with [between 70-80%] market share, on the existence of high barriers to entry and the lack of countervailing buyer power on the part of access seekers. The TRC is therefore of the preliminary opinion to designate Orange Fixed as a dominant operator in accordance with Article 8(a) of the *Competition Safeguards* and to impose appropriate *ex ante* obligations on that dominant operator.

Consultation question:

Q6: Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position on the market for wholesale trunk segments of DC?

4. APPROPRIATE REMEDIES

The TRC bases its proposal for appropriate remedies on a prior assessment of the potential competition problems related to the dominant position of Orange Fixed on the markets for terminating and trunk segments of wholesale DC (*Section 4.1*). There is a broad set of available remedies (*Section 4.2*) which the TRC believes should all be implemented in this case, given the importance of the competition problems identified in its market review (*Section 4.3*).

4.1 POTENTIAL COMPETITION PROBLEMS RELATED TO DOMINANCE

The dominant position of Orange Fixed gives rise to a number of significant potential competition problems likely to emerge if *ex ante* regulation is not imposed.

First, absent *ex ante* regulation, Orange Fixed is **unlikely to provide access** to terminating and trunk segments of wholesale DC and this is unlikely to alter over the lifetime of the market review if access obligations are not imposed.

Second, even if Orange Fixed provided terminating and trunk segments of wholesale DC, it has incentives to **discriminate** against external access seekers and in favour of its own downstream operations. Non-price discrimination could take the form of giving preferential treatment for the requirements of its internal operations when establishing access conditions (*e.g*., in relation to co-location), providing a lower quality of service to access seekers (*e.g*., delaying tactics in the processing of orders, discrimination regarding delivery times, *etc*.), undue requirements relating to financial terms (*e.g*., with regard to deposits, bank guarantees), and so forth. In the qualitative responses delaying tactics have been an issue raised by OLOs. Price discrimination would occur if Orange Fixed charged wholesale prices to access seekers that are higher than the prices for their retail arms. A price discrimination practice could accompany a margin squeeze strategy, for example, where the margin between the retail price for DC and the wholesale price for (end-to-end) DC would not allow an efficient competitor to profitably compete against Orange Fixed.

Third, absent the imposition of an *ex ante* price control, Orange Fixed is likely to set **excessive (*i.e.*, above-cost) charges** for terminating and trunk segments of wholesale DC services. In the qualitative responses to the TRC's data questionnaire, OLOs complained that Orange Fixed sets prices at a prohibitive level, thus using excessive charges to prevent OLOs from entering the retail DC markets.

Consultation question:

Q7: Do you agree with the TRC's preliminary conclusions that the potential competition problems related to the dominant position of Orange Fixed include the denial of access to wholesale terminating and trunk segments of DC, discrimination and excessive wholesale charges?

4.2 AVAILABLE REMEDIES

Remedies available to address the competition problems identified include primary and secondary (supporting) remedies. Possible primary remedies that could be imposed on Orange Fixed include the provision of access upon a reasonable request, non-discrimination in the offering of price and non-price terms, and price

controls. Each of these remedies and their associated supporting remedies are described in the discussion that follows.

First, an obligation to provide **access on reasonable request** can be imposed to remedy Orange Fixed's refusal to provide terminating and trunk segments of wholesale DC. The obligation to provide terminating and trunk segments of wholesale DC (including associated facilities and services) can be supported by a transparency remedy (including the publication of a Reference Offer).

Second, an obligation of **non-discrimination** can address the likely discriminatory provision of terminating and trunk segments of wholesale DC, the vertical leveraging of market power into retail DC markets, and margin squeezes. The obligation not to discriminate in terms of price can be supported by an obligation to provide accounting separation for Orange Fixed's wholesale business of providing wholesale DC.

Third, an obligation of **price control** can prevent the incumbent operator from charging excessive prices for terminating and trunk segments of wholesale DC (and associated facilities and services). The price control obligation can be supported by an obligation of cost accounting, based on regulatory accounting rules defined by the TRC.

4.3 CURRENT REMEDIES

Under the terms of the Jordan Telecom (Orange Fixed) License Agreement and the provisions of Section 29(e) of the *Telecommunications Law*, Orange Fixed is **required to offer Interconnection Services** to other Licensees. Orange Fixed has been designated under the *Interconnection Guidelines*, dated 14th October 2002, and was requested to issue a **Reference Interconnection Offer**. As wholesale DC services for the purpose of interconnection were considered to fall within the characterisation of "interconnection" services, they were required to be included in the Reference Interconnection Offer provided by Orange Fixed.

According to the *Interconnection Instructions,* Orange Fixed is required to provide transport services. Transport services refer to the provision by a Licensee to other Licensees, of **transport capacities for the implementation of Interconnection and /or for the provision of service**. This shall include **leased line circuits** used by Licensees between their own premises and international circuits, but shall not include leased lines between a Licensee and its users. Transport Services may be provided using any appropriate technology, including both fixed and wireless systems. (paragraphs 69-71 of the *Interconnection Instructions*).

Further, Orange Fixed must set cost-oriented prices: *„All Licensees' Interconnection charges shall be cost based rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the interconnecting party does not pay for Network components or facilities that it does not require for the service to be provided, it being understood that no unreasonable and unrecoverable costs will be imposed on the Licensee in connection with any unbundling"* (Paragraph 268 of the *Interconnection Instructions*).

A number of non-discrimination provisions are in place by virtue of the general stipulations included in the License Agreement and the Reference Interconnection Offer, which also apply to wholesale DC for the purpose of interconnection. These include, among others, the requirement to negotiate Service Level Agreements with OLOs.

4.4 PROPOSED REMEDIES

The TRC, taking into account the major importance of wholesale DC for creating competition in retail DC in particular, and retail telecommunications markets in general, and the potential competition problems identified in the provision of terminating and trunk segments of wholesale DC, believes that a comprehensive set of primary and secondary remedies is required. These include:

- Orange Fixed should be subject to an obligation to provide **access** to terminating and trunk segments of wholesale DC (and associated facilities and services) upon reasonable request, supported by an obligation of transparency, which would include the obligation to publish a Reference Offer. The TRC believes that these remedies are indispensable in order to address the potential denial of access to terminating and trunk segments of wholesale DC.

- Orange Fixed should be subject to an obligation of **non-discrimination**, supported by an obligation of accounting separation. These remedies are necessary to target any discrimination between the internal and external provision of DC in price and non-price terms, the vertical leveraging of market power from the wholesale market into retail DC markets, and margin squeezes.

- Orange Fixed should be subject to an obligation of **price control** for its terminating and trunk segments (and associated facilities and services), supported by an obligation of cost accounting. These obligations are necessary to target excessive wholesale charges.

The TRC believes that such a comprehensive set of remedies is reasonable and proportionate, for the following reasons:

First, in the absence of any *ex ante* regulation at wholesale level, competition in retail DC services would only emerge between operators with self-built network infrastructure. It is highly unlikely that competition would be effective, given the advantages enjoyed by Orange Fixed in terms of network coverage, scope of services offered and customer base. This has been demonstrated by applying a three-criteria test to the markets for retail DC and VPNs & Frame Relay (*Chapter III, Section 2*).

Second, imposing the *ex ante* regulation of terminating and trunk segments of wholesale DC before considering retail regulation follows the principle that remedies on more upstream markets should be exhausted first, before remedies on more downstream markets are considered.

Third, the remedies proposed by the TRC in relation to terminating and trunk segments of wholesale DC are based on, and target, the competition problems identified. Without the primary remedies proposed by the TRC (access, non-discrimination and price control), these competition problems could not be addressed.

Fourth, the remedies represent the necessary minimum to address the competition problems identified. Given the limited amount of competition currently achieved, and the likely problems in effectively implementing the primary remedies, the secondary remedies proposed (transparency/Reference Offer, accounting separation and cost accounting) are clearly indispensable to support the effective implementation of the primary remedies proposed.

The obligation to provide access to terminating and trunk segments implies a broader obligation than the access obligation included in the *Interconnection Instructions.* The *Interconnection Instructions* include leased lines for the purpose of interconnection and exclude wholesale DC which connects to the end user. The proposed access remedy also covers wholesale DC services necessary for offering retail DC services, as well as other telecommunications services to the end user. Transparency, non-discrimination, price controls and cost accounting obligations are already part of the current remedies, but will now apply to a broader set of wholesale DC services.

The remedies proposed are described in more detail in the discussion which follows.

a) Access to low and high bandwidth terminating segments and to trunk segments of wholesale dedicated capacity

The TRC proposes that Orange Fixed should offer access to low and high bandwidth terminating and to trunk segments of wholesale DC upon reasonable request. The access obligation should comprise the following:

- Orange Fixed should offer access to terminating and trunk segments of wholesale DC at local and transit level wherever technically feasible.
- Orange Fixed should grant open access to technical interfaces, protocols, or other key technologies that are indispensable for the interoperability of services or virtual network services.
- Orange Fixed should offer access to associated facilities and services necessary to ensure effective access to wholesale DC.
- Orange Fixed should not withdraw access to terminating and trunk segments of wholesale DC (including associated services and facilities) already granted.
- Orange Fixed should provide migration between access options, *e.g.*, between access at local and transit level.

b) Transparency, including publication of a Reference Offer

In order to create certainty about the access offer and to inform all access seekers about its details, the TRC believes it is necessary to support the access remedy with a transparency obligation. The transparency obligation would have the following two dimensions:

First, Orange Fixed should publish terms and conditions and prices for terminating and trunk segments in a **Reference Offer**[11], which will be subject to prior public consultation, amendment and approval by the TRC. *Annex 2* contains a minimum list of items that should be addressed in this Reference Offer. The procedures for approval, modification and publication of the Reference Offer will be further specified by the TRC after the adoption of the proposed measures.

Second, Orange Fixed should provide **specified information** (subject to confidentiality restrictions) on a website that includes matters such as technical specifications of wholesale DC services, the terms and conditions for supply and use, wholesale prices and Quality of Service information (*e.g.*, Key Performance Indicators, KPIs). The provision of specified information and the procedures of access to this information (in particular, KPI information) by way of public or Intranet access will be further specified by the TRC after the adoption of the proposed measures.

c) Non-discrimination

The TRC also takes the view that Orange Fixed should offer access on non-discriminatory terms. In other words, Orange Fixed should offer equivalent conditions, terms and prices in equivalent circumstances. The obligation of non-discrimination should comprise the following:

First, terminating and trunk segments of wholesale DC services and related information must be provided to alternative operators on the basis of quality standards which are at least equivalent to those provided to Orange's retail arm (including its subsidiaries and affiliates undertakings).

Second, Orange Fixed should ensure that access seekers can obtain the relevant inputs within the same timeframe as Orange Fixed's own retail arm (non-discrimination in terms of **provisioning times**).

Third, Orange Fixed should process requests for information, operation and maintenance by the access seeker within the same timeframe as equivalent requests made by its own retail arm (*i.e.*, non-discrimination in terms of **service management**).

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11 Although it would include relevant provisions of the Interconnection Instructions, this would be a separate Reference Offer covering only wholesale DC services, .

Fourth, Orange Fixed should closely monitor compliance with the non-discrimination obligation and provide the relevant information about it to the OLOs and to the TRC. The relevant information should also include regular updates on **Key Performance Indicators** (KPIs) relevant for the provision of terminating and trunk segments of wholesale DC. For the purpose of facilitating the information transfer to OLOs and to the TRC, Orange Fixed should implement, or update, its **Wholesale Customer Relations Management** ("WCRM") system.

Fifth, Orange should offer **Service Level Agreements** ("SLAs") relevant to the provision of terminating and trunk segments of wholesale DC, with appropriate compensation in case of non-compliance with the agreed service levels.

Seventh, to ensure non-discrimination in terms of prices, Orange Fixed should charge the **same prices** for terminating and trunk segments of wholesale DC to access seekers as it implicitly charges to its own retail arm when used for retail DC services.

The procedures for ensuring that the non-discrimination obligation is satisfied, particularly in relation to quality of service parameters, will be further specified by the TRC after the adoption of the proposed measures.

d) Accounting Separation

The TRC proposes to support the non-discrimination obligation in relation to prices by the imposition of an accounting separation obligation. Orange Fixed should provide separate accounts for each of the regulated wholesale markets, i.e., for terminating segments of wholesale DC up to/including 2 Mbit/s, terminating segments of wholesale DC above 2 Mbit/s, and for trunk segments of wholesale DC in order to reflect the performance of the provision of terminating and trunk segments of wholesale DC as if they had been operated as separate businesses. To this end, Orange Fixed should prepare the following financial information on an annual basis:

First, Orange Fixed should provide financial statements for low and high-bandwidth terminating segments and trunk segments of wholesale DC services. These should comprise a **profit and loss (P&L) statement** and a **mean capital employed (MCE) statement**.

Second, Orange Fixed should provide all relevant **supporting information**. This includes: the consolidation of P&L and MCE statements, and a reconciliation with statutory accounts or other sources of costing information; a description of the costing methodologies (including reference to cost base and standards, allocation and valuation methodologies, identification and treatment of indirect costs); non-discrimination notes (detailed transfer charges); a description of accounting policies and regulatory accounting principles; and other supplementary schedules as required.

The TRC will subject the accounting rules and reporting formats for all services subjected to an obligation of accounting separation to prior Public Consultation after the adoption of the proposed measures.

e) Price control based on cost orientation

The TRC also believes that a price control remedy is appropriate in the circumstances. Orange Fixed should have an obligation to charge cost oriented prices for both low and high bandwidth terminating and trunk segments of DC and associated facilities and services. In other words, it should be obliged to set prices that reflect the economic costs of the provision of low and high bandwidth terminating and trunk segments of DC. When wholesale charges are based on economic cost, they do not distort the so-called "build or buy" decision which OLOs will be making. OLOs will be encouraged to use wholesale DC if and only if it is economically desirable to do so. Cost oriented charges also maintain incentives for incumbents to invest in network roll-out or to upgrade or extend existing facilities when new technology becomes available. A cost oriented approach will also not discourage OLOs from investing in their own network infrastructure, as long as OLOs can build up networks at a cost that is less than the (cost-oriented) price of wholesale DC. The price control approach proposed by the TRC is therefore clearly efficiency-driven.

The appropriate standard applied for cost orientation should be based on **forward looking long-run incremental costs** ("FW-LRIC"). The full specification of the remedy and the procedures for the approval and publication of the cost oriented prices for terminating and trunk segments of DC (and associated facilities and services) will be developed by the TRC as part of the remedy implementation exercise.

f) Cost Accounting

The TRC proposes to support the price control obligation by a cost accounting obligation for terminating and trunk segments of wholesale DC. In order to identify costs, Orange Fixed should establish a suitable top-down cost accounting system based on accounting rules and reporting formats which the TRC has specified. The TRC proposes to use **Current Cost** as the cost base.

The content and form which accounting rules, reporting formats, and other related measures might take, will be subject to a Public Consultation prior to their implementation.

Consultation question:

Q8: Do you agree with the TRC's preliminary conclusions about the appropriate remedies to be imposed on Orange Fixed to address the competition problems identified?

V. Retail DC and VPNs & Frame Relay (with *Ex ante* Regulation of Low and High Bandwidth Terminating and of Trunk Segments of Wholesale Dedicated Capacity in Place)

The TRC carries out a final assessment of the retail markets for DC and VPNs & Frame Relay on the assumption that there is no *ex ante* regulation in place at the retail level, but there exists *ex ante* regulation of the three relevant markets for low and high bandwidth terminating and trunk segments of wholesale DC. This is a different set of assumptions than those used in *Chapter III* for the initial analysis of the retail markets. The TRC, however, believes that the revised set of assumptions about *ex ante* regulation at the wholesale level does not alter the definition of the relevant retail market.

1. APPLICATION OF 3-CRITERIA TEST

The TRC applies a final "three-criteria test" to the retail markets for DC and the retail market for VPNs & Frame Relay, under the assumption that there exists *ex ante* regulation of the markets for wholesale DC, but no *ex ante* regulation at the retail level. The application of this final three-criteria test allows the TRC to identify whether such competition can be expected to be effective or whether the four retail DC markets identified and/or the market for VPNs & Frame Relay should also be considered as being appropriate markets which should be targeted by some form of *ex ante* regulation.

1.1 HIGH AND PERSISTENT BARRIERS TO ENTRY (1ST CRITERION)

a) The four retail DC markets

With the *ex ante* regulation of wholesale DC in place, the barriers to enter the markets for retail DC will be lowered. The implementation of wholesale remedies is likely to decrease economies of scale, scope and density as barriers to entry. The TRC notes that, because of resale, the retail markets for **local and national DC services above 2 Mbit/s** have already witnessed some market entry of OLOs. The TRC believes that the proposed regulation of wholesale DC services will further reduce barriers to entry and, thus, the first criterion is no longer fulfilled for this market.

Up to 2008, there have been no transactions in retail **international DC services above 2 Mbit/s**. The TRC expects this market, once it emerges, to exhibit similar features as the market for local and national DC above 2 Mbit/s, and that it will not fulfil the first criterion of the three-criteria test.

The TRC believes that the situation is still different with regard to the two retail markets for **local/national and international DC services up to including 2 Mbit/s**, where barriers to entry seem to persist. There are also barriers, which are less addressable by wholesale regulation, *e.g.*, established nation-wide marketing and brand recognition and switching costs related to long-term wholesale contracts, up-front connection fees, the time/effort required to switch, possible service interruption, *etc*. OLOs also have little scope for price and quality differentiation, as retail DC is functionally identical to the wholesale DC they may purchase from Orange Fixed. Therefore, the TRC arrives at the preliminary conclusion that the first criterion is still fulfilled for the two markets for retail DC services up/to and including 2 Mbit/s.

b) The market for VPNs & Frame Relay

With regard to the market for **VPNs & Frame Relay,** the market entry of several OLOs in 2008 suggests that regulation at the wholesale level has already lowered the existing barriers to entry. There has been a regulated wholesale product available to provide those services; this has meant that it was already possible for OLOs to enter the market. Operators providing VPNs can also use wholesale broadband access in order to compete at the retail level. In addition, OLOs have more scope for price and quality differentiation in the case of VPNs as managed services have an added value to the wholesale product. In consequence, the TRC preliminary concludes that the first criterion is not fulfilled for the market for VPNS & Frame Relay.

1.2 LACK OF A DYNAMIC TREND TOWARDS COMPETITION (2ND CRITERION)

a) The four retail DC markets

The TRC expects that, for retail **low bandwidth local/national and international DC**, the market shares of Orange Fixed will decrease to some extent in the future, but not so significantly that these markets can be considered to tend towards a competitive outcome over the lifetime of this market review. The respective market share of Orange Fixed in 2008 was above 90% for low bandwidth local/national DC, and 100% for low bandwidth international DC, and it is unlikely that, within the scope of this market review, these market shares will decrease to a level which can be regarded as reflecting effective competition.[12]

[12] The market shares were calculated based on the number of circuits, because not all operators were able to provide revenues differentiated by bandwidth and by local/national and international. Given the high market share of Orange Fixed in terms of number of circuits, it is unlikely that revenues based figures would result in different conclusions.

In relation to the retail markets for **high bandwidth local/national and international DC**, the TRC considers the situation to be different. The market shares for OLOs based on self-built infrastructure in 2008 have been considerably higher than for low bandwidth retail DC and, if resold circuits are taken into account, are above 50%. Further, the small number of high bandwidth DC circuits provided in the market suggest that this is still an emerging market which (with ex ante regulation of wholesale DC in place) has the potential to be more competitive than the low bandwidth retail DC markets. A market for high bandwidth international DC did not yet exist in 2008. The TRC, as noted, believes that this market will prospectively be characterised by similar features as the market for high bandwidth local/national DC.

As a result, the TRC arrives at the preliminary conclusion that the second criterion is fulfilled for low bandwidth retail DC markets but that it is not fulfilled for high bandwidth retail DC markets.

b) The market for VPNs & Frame Relay

With regard to VPNs & Frame Relay, the market shares of [well over 40%] of the OLOs (including retail services based on wholesale offers of Orange Fixed), and the new entry of several OLOs, makes it likely that the market will tend towards competition over the lifetime of the market review. As a result, the TRC arrives at the preliminary conclusion that the second criterion is not fulfilled.

1.3 INSUFFICIENCY OF *EX POST* INTERVENTION ALONE (3RD CRITERION)

a) The four retail DC markets

The TRC believes that the two relevant **retail markets for low bandwidth DC** are also characterised by the insufficiency of *ex post* intervention. In the absence of any *ex ante* regulation, a dominant operator might engage in entry deterrence practices to erect, or reinforce, barriers to entry to protect its dominant position against potential, or actual, entrants. For example, Orange Fixed might seek to raise customers' switching costs in the retail DC markets. This could take the form of contractual terms that seek to raise costs for new entrants.

Market power potentially enables dominant undertaking to sustain prices which are higher than would otherwise prevail in a competitive market (anti-competitive behaviour). Rather than being reflected in supra-normal profits, market power could also be evidenced in a lack of investment, excessive costs, and/or quality-of-service levels lower than would otherwise be expected to occur in a competitive market. Such competition problems are difficult to address through *ex post* interventions alone, given that the *ex post* application of competition rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention required under the prevailing circumstances.

In contrast, the TRC is of the opinion that, for the two **retail markets for high bandwidth DC**, any remaining competition problems that may arise can be addressed by *ex post* intervention alone.

b) The market for VPNs & Frame Relay

Similar to the retail markets high bandwidth DC, the TRC believes that, in the **retail market for VPNs & Frame Relay**, any competition problems that may still exist can be addressed by *ex post* intervention alone.

1.4 CONCLUSION

The TRC preliminarily concludes that the three criteria are cumulatively fulfilled only for the following two **retail DC markets**, even with the *ex ante* regulation of terminating and trunk segments of wholesale DC being in place, namely:

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

The markets are characterised by high and persistent barriers to entry, there is no dynamic trend towards effective competition identified to exist within the timeframe of this review, and *ex post* intervention alone is insufficient to deal with the competition problems at issue. Consideration must therefore be given to the imposition of *ex ante* regulation.

In contrast, the TRC arrives at the preliminary conclusion that the three-criteria test is not fulfilled for the **two high bandwidth retail DC markets** and the **market for VPNs & Frame Relay**, and that these markets are therefore not susceptible to *ex ante* regulation. The TRC will carefully monitor the future development of these markets, as they will further develop and market volumes will increase.

Consultation questions:

Q9: Do you agree with the TRC's preliminary conclusions that, even with the *ex ante* regulation of terminating and trunk segments of wholesale DC in place, the three criteria are fulfilled for the two relevant markets for retail low bandwidth DC services?

Q10: Do you agree with the TRC's preliminary conclusions that, with the *ex ante* regulation of terminating and trunk segments of wholesale DC in place, the three-criteria test is not fulfilled for the two retail high bandwidth DC markets and the market for VPNs & Frame Relay?

2. ASSESSMENT OF DOMINANCE

As the **retail markets for high bandwidth local/national DC, high bandwidth international DC** and **Frame Relay & VPNs** are not considered to be susceptible to *ex ante* regulation, there is no need to carry out an assessment of dominance for these markets.

Given that the two **retail markets for low bandwidth DC** are markets susceptible to *ex ante* regulation, the TRC assesses whether these markets are also characterised by dominance and whether Orange Fixed has "*such a sufficient impact on the market that it can control and affect the activity of the relevant* market", as is stipulated in Article 8(a) of the *Competition Safeguards*. When assessing dominance, the TRC looks at market shares (*Section 2.1*), barriers to entry and related criteria, and the presence of competitors and potential competition in the market (*Section 2.2*).

2.1 MARKET SHARES

From 2005 until 2008, Orange Fixed had market shares of above 90% in local/national DC and a share of 100% in international DC (both up to/including 2Mbit/s). The TRC expects that, the very high market shares of Orange Fixed will decrease to some extent over the lifetime of the market review, but not so significantly that the markets for retail DC will be characterised by effective competition. The market shares are likely to remain well in excess of 50%, the threshold prescribed under Article 8(b) of the *Competition Safeguards* as leading to a presumption of dominance. Considering that there exist barriers to entry in the markets which are difficult to address by wholesale remedies, the TRC does not think that the market shares of Orange Fixed will decrease to a level which is compatible with a state of effective competition.

2.2 HIGH BARRIERS TO ENTRY

The dominant position of Orange Fixed in the provision of low bandwidth retail DC services is protected by **high barriers to entry,** where it is only economies of scale and scope that can be addressed by wholesale remedies. Other barriers to entry include nation-wide marketing capabilities and brand recognition, and switching costs (long contractual periods, an upfront connection fee, the time/effort required to switch, possible service interruption, *etc*.). The TRC also notes that the use of wholesale DC allows OLOs only a limited scope for price and quality differentiation on retail DC markets, given that retail DC services are functionally identical with wholesale DC services. The presence of barriers to entry is a major criterion in the *Competition Safeguards* (Article 8(c), Criterion Number 14).

2.3 COUNTERVAILING BUYER POWER

The TRC also has no evidence of sufficient countervailing buyer power of business customers that could constrain the market power or Orange Fixed (see Article 8(c), Criterion Number 6 of the *Competition Safeguards*).

2.4 CONCLUSION

The TRC adopts the preliminary conclusion that **Orange Fixed enjoys a dominant position** in the following markets for retail DC:

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

This conclusion is based on the finding of high market shares, high barriers to entry and a lack of countervailing buyer power. The TRC, therefore, is of the opinion that it should designate Orange Fixed as a dominant operator in accordance with Article 8(a) of the *Competition Safeguards* and to impose appropriate *ex ante* obligations on that dominant operator.

Consultation question:

Q11 Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position in the retail markets for low bandwidth local/national DC and **low bandwidth international DC?**

3. APPROPRIATE REMEDIES

3.1 POTENTIAL COMPETITION PROBLEMS RELATED TO DOMINANCE

The following competition problems related to dominance are likely to occur in the markets for low bandwidth retail DC services in the absence of *ex ante* regulation:

- Orange Fixed might **discriminate** between customers of retail DC services, *e.g.*, by providing lower prices and a better quality of service and terms and conditions to a few large business customers that might otherwise benefit from the offerings of OLOs.
- Orange Fixed might offer retail DC services at **excessive prices,** thus exploiting the overall lack of alternative offerings available to customers.

Consultation question:

Q12: Do you agree with the TRC's preliminary conclusions that the potential competition problems related to the dominant position of Orange Fixed in the retail markets for low bandwidth local/national DC and **low bandwidth international DC include discriminatory practices and the imposition of excessive retail tariffs?**

3.2 AVAILABLE REMEDIES

The types of remedies that are available to address the competition problems identified include primary and secondary (supporting) remedies. Possible primary remedies that can be imposed on Orange Fixed include non-discrimination in price and non-price terms, and price controls. A supporting remedy to non-discrimination would be a transparency obligation regarding terms and conditions. Price control measures may be combined with a cost accounting and/or an accounting separation obligation.

3.3 CURRENT RETAIL REMEDIES

Orange Fixed has the obligation to provide retail DC services under a "*Code of Practice for customers affairs and the employees of the company*", which defines the services provided by Orange Fixed and which includes quality of service and other terms and conditions related to the fixed retail services provided by Orange Fixed.[13]

Further, the TRC has approved the terms and conditions for the provision of point-to-point and end-to-end leased lines, defining the terms under which Orange Fixed supplies the Customer with leased lines (*General Conditions of Service, 12 September 2002*).[14]

The Licence provisions include an obligation to provide retail leased lines on non-discriminatory terms and to ensure that the pricing schemes offered by the Licensee to Customers are fully transparent, and shall be published in advance of becoming effective in the manner prescribed by the TRC (Article 3 of the Public Telecommunications Individual License). According to the Individual License provisions,

[13] The obligation to provide retail DC services under a Code of Practice is covered by the licence provisions (Schedule C of the Individual License). The Code of Practice is in the process of being approved by the TRC.

[14] Schedule C of the license specifies that the standard terms and conditions of the customer contract between a Licensee and a customer are subject to approval by the TRC.

the Licensee shall not alone or together with others, engage in or continue or knowingly acquiesce in any anti-competitive practices.[15]

The retail prices of Orange Fixed for DC services, VPNs and Frame Relay are subject to the prior approval of the TRC.

3.4 PROPOSED REMEDIES

As the **retail markets for high bandwidth local/national DC, high bandwidth international DC** and **Frame Relay & VPNs** are not susceptible to *ex ante* regulation, the TRC does not consider any remedies for these markets. Its preliminary view is that any existing *ex ante* obligations relevant for retail high bandwidth DC should be abandoned.

In turn, as the **retail markets for low bandwidth local/national DC** and **low bandwidth international DC** are susceptible to ex ante regulation and characterised by dominance, the TRC is required to impose and maintain appropriate remedies that can cope with the competition problems likely to exist.

The TRC believes that the following set of primary and secondary remedies is required in the circumstances. These include:

- Orange Fixed should be subject to an obligation of **non-discrimination**, supported by an obligation of transparency. These remedies are necessary to target any discrimination between customers of retail DC services in price and non-price terms.

- Orange should be subject to an accounting separation obligation.

- Orange Fixed should be subject to an obligation of **price control** for its retail DC services, supported by an obligation of cost accounting. These obligations are necessary to target excessive retail tariffs.

The TRC believes that such a set of remedies is both reasonable and proportionate because the remedies are based on, and target, the competition problems related to the dominant position of Orange Fixed in the two relevant markets for low bandwidth retail DC. The competition problems identified are comprised of potential discriminatory practices and excessive (or even predatory) prices. The proposed remedies are necessary to address the identified competition problems, and will be described in further detail below.

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15 Public Individual Telecommunications License, Schedule D.

(1) Non-discrimination

The TRC takes the view that Orange Fixed should offer retail DC services on non-discriminatory terms. In other words, Orange Fixed should offer equivalent conditions, terms and prices in equivalent circumstances.

Orange Fixed should ensure that end users can obtain the DC services within the same timeframe as other end users in equivalent circumstances (non-discrimination in terms of **provisioning times**).

Orange Fixed should process requests for information, operation and maintenance by the end user as fast as equivalent requests by other end users (non-discrimination in terms of **service management**).

Orange should offer **Service Level Agreements** ("SLAs") relevant for the provision of retail DC, with appropriate compensation in case of non-compliance with the agreed service levels.

The procedures for ensuring that the non-discrimination obligation is satisfied, particularly in relation to quality of service parameters, will be further specified by the TRC after the adoption of the proposed measures.

In order to ensure transparency about terms and conditions offered to different customers, Orange Fixed should specify publish certain information. The information should include the physical and technical characteristics, as well as the detailed technical and performance specifications, which apply at the network termination point. The information on tariffs should include the initial connection charges, the periodic rental charges, and other charges. Where tariffs are differentiated, this must be indicated.

The TRC believes that Orange Fixed should also publish the terms and conditions regarding its offering for retail DC services. The information on the supply conditions shall include at least the following elements:

- Information concerning the *ordering procedure*.
- The *typical delivery period*, namely, the typical delivery period in which 95% of all DC services of the same type have been placed through to customers.[16]
- The *contractual periods*, which include the period which is in general laid down in the contract and the minimum contractual period which the user is obliged to accept.

[16] The typical delivery period will be established on the basis of the actual delivery periods of DC during a recent time interval of reasonable duration. The calculation must not include cases where late delivery periods were requested by users.

- The *typical repair time*, which is the period that runs from the time when a failure message has been sent up to the moment in which a reasonably high percentage, *i.e.* conform with best practices, of all DC services of the same type have been re-established. Where different classes of quality of repair are offered for the same type of DC services, the different typical repair times shall be published.

- Any *refund procedure*.

(2) Separate accounting

The TRC proposes to impose an accounting separation obligation on all retail DC markets as a whole. Orange Fixed should provide a separate account for all retail DC services in order to reflect the performance of the provision of retail DC services. To this end, Orange Fixed should prepare the following financial information on an annual basis:

First, Orange Fixed should provide financial statements for retail DC. These should comprise a **profit and loss (P&L) statement** and a **mean capital employed (MCE) statement**.

Second, Orange Fixed should provide all relevant **supporting information.** This includes: the consolidation of P&L and MCE statements and a reconciliation with statutory accounts or other source of costing information; a description of the costing methodologies (including reference to cost base and standards, allocation and valuation methodologies, identification and treatment of indirect costs); non-discrimination notes (detailed transfer charges); a description of accounting policies and regulatory accounting principles; and other supplementary schedules as required.

The TRC will subject the accounting rules and reporting formats for all services subjected to an obligation of accounting separation to prior Public Consultation after the adoption of the proposed measures.

(3) Price Control

The TRC also believes that a price control remedy is appropriate in the circumstances. Orange Fixed should have an obligation to charge cost oriented prices for retail DC services; in other words, it should be obliged to set prices that reflect the economic costs of the provision of retail DC services.

The TRC believes that the appropriate standard applied for cost orientation should be based on **fully allocated costs (FAC)**. The full specification of the remedy and the procedures for the approval and publication of the cost oriented prices for retail

DC services will be developed by the TRC as part of the remedy implementation exercise.

(4) Cost Accounting

The TRC proposes to support the price control obligation by a cost accounting obligation. In order to identify costs, Orange Fixed should establish a suitable top-down cost accounting system based on accounting rules and reporting formats specified by the TRC. The TRC proposes to use **Current Cost** as the cost base.

Accounting rules, reporting formats and other related issues will be subject to a Public Consultation prior to their implementation.

3.5 CONCLUSION

The TRC arrives at the preliminary conclusion that a number of remedies are required to deal with the competition problems related to dominance in the two markets for low bandwidth retail DC services. These include non-discrimination, transparency, accounting separation, price control and cost accounting.

Consultation question:

Q13: Do you agree with the TRC's preliminary conclusions about the appropriate remedies to be imposed on Orange Fixed in the retail markets for low bandwidth local/national DC and low bandwidth international DC to address the competition problems identified?

ANNEXES

Annex 1: Consultation Questions

Markets for Retail Dedicated Capacity and retail VPN & Frame Relay Services (in the absence of any ex ante regulation)

Q1. Do you agree with the TRC's preliminary conclusions regarding the product and geographic definition of the relevant markets for retail DC and VPNs & Frame Relay?

Q2. Do you agree with the TRC's preliminary conclusions that the three criteria are fulfilled for the four relevant markets for retail DC services and for the relevant market for VPNs & Frame Relay, in the absence of any *ex ante* regulation at the wholesale and retail levels?

Markets for Wholesale Dedicated Capacity (in the absence of any ex ante regulation)

Q3. Do you agree with the TRC's preliminary conclusions regarding the product and geographic definition of the three relevant markets for low and high bandwidth terminating and trunk segments of wholesale DC?

Q4. Do you agree with the TRC's preliminary conclusions that the three criteria are fulfilled for the three markets for low and high bandwidth terminating and trunk segments of wholesale DC and that these markets are thus susceptible to *ex ante* regulation?

Q5. Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position on the two markets for low and high bandwidth terminating segments of wholesale DC?

Q6. Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position on the market for wholesale trunk segments of DC?

Q7. Do you agree with the TRC's preliminary conclusions that the potential competition problems related to the dominant position of Orange Fixed include the denial of access to wholesale terminating and trunk segments of DC, discrimination and excessive wholesale charges?

Q8. Do you agree with the TRC's preliminary conclusions about the appropriate remedies to be imposed on Orange Fixed to address the competition problems identified?

Markets for Retail Dedicated Capacity, VPN and Frame Relay Services (with ex ante regulation of rerminating and rrunk segments of wholesale dedicated capacity in place)

Q9. Do you agree with the TRC's preliminary conclusions that, even with the *ex ante* regulation of terminating and trunk segments of wholesale DC in place, the three criteria are fulfilled for the two relevant markets for low bandwidth retail DC services?

Q10. Do you agree with the TRC's preliminary conclusions that, with the *ex ante* regulation of terminating and trunk segments of wholesale DC in place, the three-criteria test is not fulfilled for the two high bandwidth retail DC markets and the market for VPNs & Frame Relay?

Q11. Do you agree with the TRC's preliminary conclusions that Orange Fixed has a dominant position in the retail markets for low bandwidth local/national DC and low bandwidth international DC??

Q12. Do you agree with the TRC's preliminary conclusions that the potential competition problems related to the dominant position of Orange Fixed in the retail markets for low bandwidth local/national DC and low bandwidth international DC include discriminatory practices and the imposition of excessive retail tariffs?

Q13. Do you agree with the TRC's preliminary conclusions about the appropriate remedies to be imposed on Orange Fixed in the retail markets for low bandwidth local/national DC and low bandwidth international DC to address the competition problems identified?

Annex 2: Minimum List of Items to be addressed in a Reference Offer for Terminating and Trunk Segments of Wholesale Dedicated Capacity

The following constitutes the minimum list of items to be included in the Reference Offer of Orange Fixed for terminating and trunk segments of wholesale DC:

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 operator'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)