

The Hashemite Kingdom of Jordan
TELECOMMUNICATIONS REGULATORY COMMISSION



**EXPLANATORY MEMORANDUM
FOR CHARGES FOR
FIXED INTERCONNECTION SERVICES
BASED ON TSLRIC+ MODELS**

Implementation of TSLRIC+ for fixed services

Summary

This document sets out details of the TRC's pricing decision in relation to the implementation of TSLRIC+ pricing for the relevant regulated services of fixed operators in Jordan. The purpose of this document is to give the operators an understanding of how the TRC has implemented TSLRIC+ pricing in conjunction with the release of the efficient operator models.

Accompanying this Explanatory Note is a redacted version of the efficient operator model.

Fixed termination and origination rates 2018–2021

The table below sets out the fixed termination and origination rates that will apply in the period 2018–2021.

National Call Termination

Rate per minute (fils)	2018	2019	2020	2021
Blended	7.2	5.8	4.4	3.0

Non-Geographic Call Origination Service

Rate per minute (fils)	2018	2019	2020	2021
Blended	7.0	7.0	7.0	7.0

Timing of the implementation

The Interconnection charges set out in the Pricing Decision shall apply from 1st 2018. TRC will monitor market conditions and, if justified by changes in market conditions, may update the forecasts and key assumptions in the LRIC models to provide a further check on interconnection tariffs.

Implementation of glide paths

The approach adopted by the TRC when setting the new regulated charges is described below:

1. When the new charges were considered to be close to the previous ones and/or the regulated services under consideration were not material under the current market situation, a fixed charge has been set for the 2018–2021 period, which is extracted as the average of the efficient operator model's results for that period.
2. When the new charges were considered not to be close to the previous ones and the regulated services under consideration were material under the current market situation, a glide path has been defined so as to smooth the impact on the market of the Decision.
3. In the case that the market review situation or the regulation justifies it, TRC may make a revision of rates when needed.

Symmetrical rates

The TRC Decision 17-5/2009 stated that one set of rates for fixed services will be implemented. These rates will apply to all licensed fixed operators in Jordan. The rates described in this note are calculated from the TSLRIC+ fixed efficient-operator model.

Other services

The TRC efficient-operator model calculates rates for all regulated fixed services. The proposed prices for all fixed services are shown in Annex 3.

Efficient operator model

In line with TRC Decision 17-5/2009, the TRC has constructed a model of an efficient fixed operator with the size and scope of Orange Fixed.

Annex 1- Efficient Operator Model

Introduction

Since 2005, the Telecommunications Regulatory Commission (hereinafter, 'TRC') has shown its motivations to adopt a "*Total Service Long-Run Incremental Cost Plus*" (hereinafter, 'TSLRIC+') as the preferred mechanism for wholesale price setting in the Kingdom.

In September 2009, the TRC published its "*Regulatory decision on the principles to be used in the construction of TSLRIC+ models for the costs of interconnection Services*", which was later followed by the submission of the Hybrid TSLRIC+ models in June 2011. As a result of that process, the TRC published its regulated wholesale charges in the two decisions presented below:

- Regulatory decision on charges for fixed interconnection services based on TSLRIC+ models
- Regulatory decision on charges for mobile interconnection services based on TSLRIC+ models

Having reached the end of the period reflected in the previous regulatory decisions (2014), the TRC decided back in 2015 to start a new wholesale price setting process to update the applicable charges. The industry was informed in early 2016 of the initiation of this process and was welcomed to participate throughout the process at different stages such as:

- Data gathering process
- 1st and 2nd public consultations on the Hybrid TSLRIC+ Models

As part of this process, the TRC has updated its Hybrid TSLRIC+ models on the grounds of the methodology that was established in September 2009 to recognise the latest technological developments that have taken place in the market (e.g. introduction of IMS-IP networks, massive take-up of 3G and 4G services, growth in fixed and mobile data traffic).

TRC received data from the Jordan Telecommunications Company ("Orange Fixed"). This enabled the TRC to build TSLRIC+ models of Orange Fixed and an efficient fixed operator of the scale and scope of Orange Fixed. Then TRC engaged in extensive consultation with Orange Fixed during the construction of these models and has carefully considered the issues raised by the operator during the two consultation rounds that took place. Orange Fixed has been provided progressively with two releases of the fixed models and has been able to review in detail the data and calculations used in the model. At each stage the TRC provided Orange Fixed with a written response to all the comments received. These models were accompanied by manuals that described their technical algorithms as well as their overall rationale. Orange Fixed was also given the opportunity to comment on the manual during the consultation periods.

Since the development of the TRC's Hybrid TSLRIC+ models in 2010, the Jordanian telecom markets have undergone significant changes which need to be recognised to correctly assess the results of the updated TSLRIC+ models. The following sections describe the main evolutions of the telecom sector since 2010 and which have been implemented in the updated models, as well as some specific considerations which are of particular importance for the TSLRIC+ pricing.

Technological improvements in fixed networks

Specifically, since 2010, significant developments have gone underway in terms of the technological solutions available for the provision of fixed telecom services, with some of the most notorious being:

1. Introduction of fibre to the home (FTTH) access solutions
2. Availability of high capacity Ethernet-based transmission links
3. Implementation of IMS network solutions
4. Introduction of other new services (local loop unbundling, dedicated capacity, collocation services)

The implementation of IMS network solutions is the technological change that has affected more heavily the network cost base of the operators. Actually, as inferred from TRC's Hybrid TSLRIC+ model, the migration from TDM-based to IP-based networks has contributed to a 13% decrease of network costs, as illustrative represented in the exhibit below:

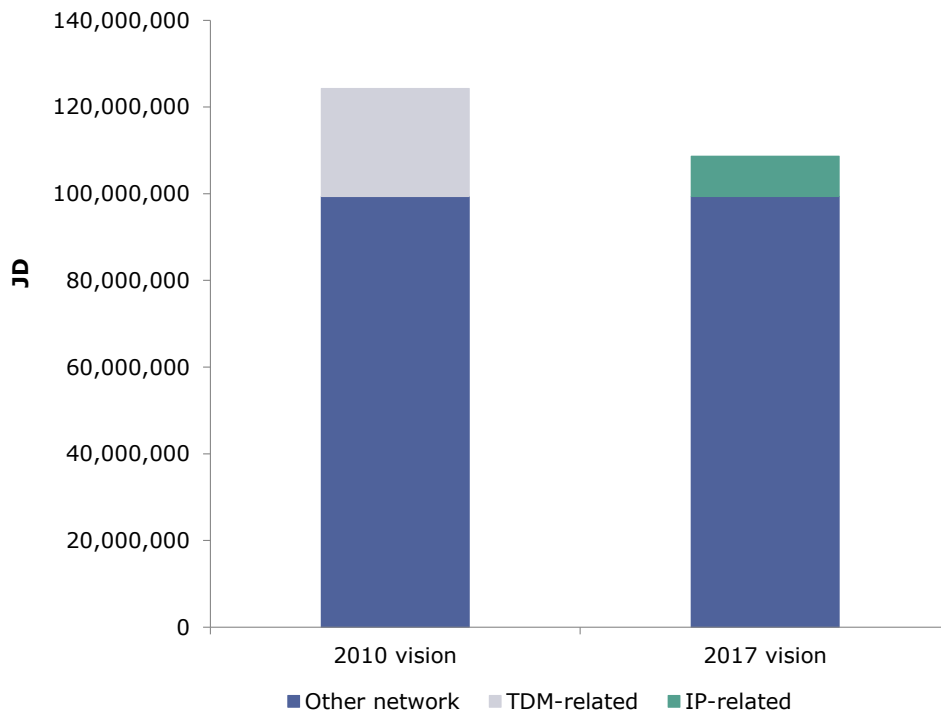


Exhibit 1: Cost differentials between TDM and IP based networks [Source: TRC]

This decrease is more accentuated if the variation in costs of only the TDM/IP network elements is assessed, which results in the latter being 63% cheaper than the former. Given that these costs are specially related to the transmission network, it would be expected that the costs of the services which make an extensive use of this network section (e.g. voice, broadband, leased lines) would fall when compared with the charges set back in 2010.

Traffic Evolution

The fixed market has also experienced an increase in terms of demand, especially in broadband services.

When assessing the evolution of broadband services between 2010 and 2017, and as graphically outlined below, not only a yearly 2% increase in the number of broadband lines is registered, but also a 34.6% increase in the average broadband speed:

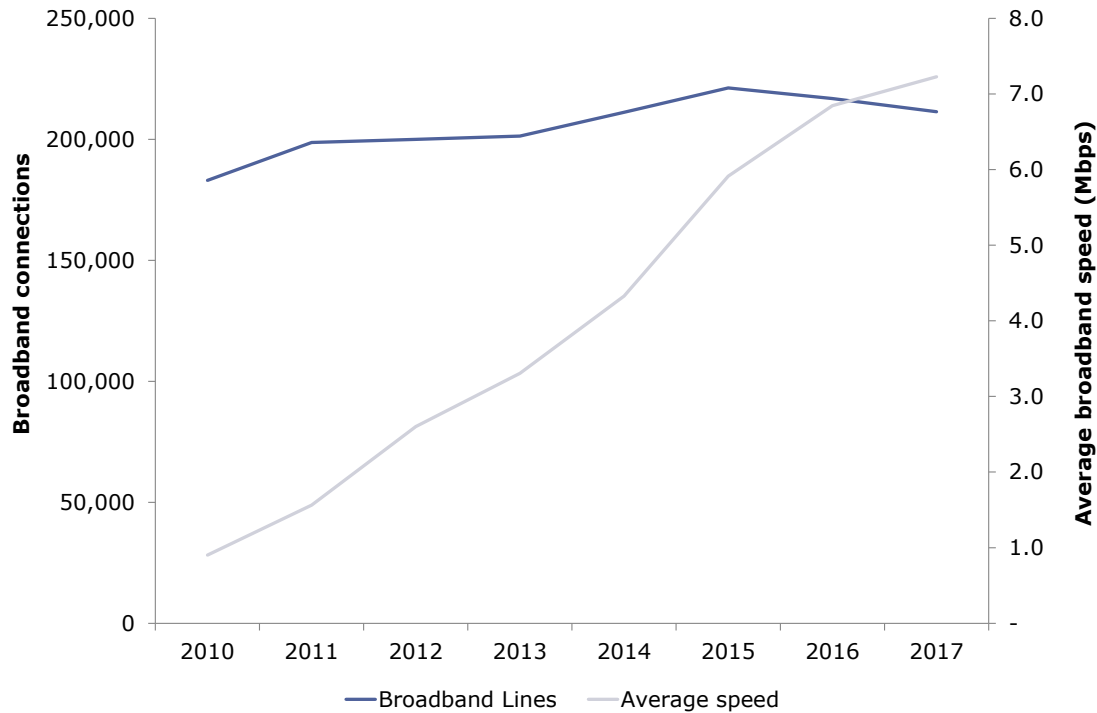


Exhibit 2: Evolution of fixed broadband lines and average speed [Source: TRC]

The above increase in the overall demand of broadband services will result in larger economies of scale for the incumbent operator, which would result in a decrease of the unit cost of fixed telecom services when compared with the previous 2010 situation.

At the same time, as a result of the economies of scope of telecommunications networks, the increase in the broadband demand will not only result in a likely decrease of the unit costs of broadband services, but also in the reduction of the unit costs of other services (e.g. voice, leased lines) due to the higher utilisation of the network's capacity.

Migration from TDM to NGN network

The TRC highlights that the efficient operator must consider the most cost-effective solutions that are widely implemented in fixed telecom networks, as defined in its 2009 principles, which state that Modern Equivalent Assets need to be considered in the model. This approach is also shared by multiple NRAs (e.g. Spain, France, UK). As a result of the Modern Equivalent Asset (MEA) methodology defined in the TSLRIC+ modelling principles, an important difference between the efficient operator model and Orange Fixed model relates to the migration from TDM network to NGN network.

Time-division multiplexing (TDM) is a traditional technique which consists of transmitting multiple data streams in a single signal, by separating the signal into many segments,

each having a very short duration. TDM is being rapidly replaced by new Ethernet technologies, which allow the delivery of communication sessions over the Internet Protocol (IP) and where transmission occurs as IP packets over a packet-switched network.

In the case of the Orange Fixed model, given that the objective is to evaluate the operational realities of the operator, it has been modelled taking into account the current status of its network. That includes the level at which its network is currently migrated to NGN as well as the business plans for this migration in the upcoming years.

On the other hand, the efficient operator considers the most cost-effective solutions that are widely implemented in fixed telecom networks as the MEA of the old TDM technologies. Consistently, instead of relying in the current TDM to IP migration status from Orange Fixed, it adopts a fully all-IP NGN based network to provide its services.

This creates differences particularly in those services which make an extensive usage of the transmission network (e.g. voice).

Overcapacity factors

Another main difference between the efficient operator model and Orange Fixed model relates to dimensioning overcapacity. This parameter refers to the security margin between maximum expected traffic and the capacity installed. In this context, more aggressive figures (less overcapacity considered) have been assumed for the efficient operator to reflect the better efficiency levels that it could reach.

Pricing of some access services

A particular pricing methodology has been implemented in the Hybrid TSLRIC+ model for the pricing of some access services, namely:

- Local Loop Unbundling
- Shared Local Loop Unbundling
- Access part of Naked Bitstream services

These access services make an extensive use of the physical access infrastructure and access cables. The CCA valuation of these assets, given that the prices of civil infrastructure elements have increased by over 100% in the last years, results in a GBV which is higher than that registered in Orange Fixed's financial statements.

In order to avoid those artificially increased costs, two options have been implemented in the model: the HCA option and the cumulated depreciation option.

The HCA option allows to consider the historical cost of the access-related assets instead of revaluating them to current cost. It is designed to avoid this artificial increase in these cases and to ensure a complete alignment with Orange Fixed's cost base, as requested by the TRC's principles issued in 2009. That is, when the HCA option is selected, the costs of these assets will match the figures registered in Orange Fixed's FAR.

The cumulated depreciation option offers the possibility to consider the cumulated depreciation of assets instead of considering the assets as new. This option is also aimed at ensuring that the costs generated by the Hybrid TSLRIC+ Model are aligned with those registered in Orange Fixed's FAR, as could be crosschecked by comparing the model's outputs with its FAR, which is necessary to comply with the requirements set out in the TRC's principles issued in 2009.

These options have been used only for the costing of the services mentioned above. All other services are based on the fixed efficient operator model without considering HCA and cumulated depreciation. Concerning the access part of Naked Bitstream services, it has been taken equal to the LLU cost, which is a common practice in the international domain (e.g. Spain). The cost of the transmission part of these services is the same as for Bitstream provided along with a PSTN line and its calculation does not consider HCA and cumulated depreciation.

Annex 2 - Overview of the comments received from operators during the Public Consultation

Two consultation rounds have taken place with Jordanian telecom operators to receive their feedback on the design, algorithms and results of the models, with the objective to maximise the consistency of the models. Specifically, the two public consultation rounds that were carried out are described below:

- Consultation round 1 (from December 1st 2016 to January 26th 2017) was aimed at obtaining operators' feedback on the inputs and algorithms of the models
- Consultation round 2 (from February 23rd 2017 to March 23rd 2017) was aimed at obtaining operators' feedback on the outputs of the models.

The table below summarizes the main comments received and the related actions taken by the TRC. It must be noted that comments are presented confidentially.

Comment received from the operator	Action taken by the TRC
An operator notes that there is a high number of combinations associated with the methodological options implemented in the Control Panel of the fixed model, where apart from the depreciation approach, two additional options for the consideration of HCA costs and cumulated depreciation have been implemented. The operator would like to know which is the combination that the TRC expects to use for the setting of the new wholesale charges.	It was clarified to the operator that HCA and cumulated depreciation were considered for the determination of the costs of the LLU and that CCA (without considering cumulated depreciation) was used for the determination of the costs of all the other services.
An operator indicates that the cost trend used in the models for buildings and lands is not aligned with the Jordanian market.	The cost trends were updated in the model based on the additional information provided by the operator.
An operator highlights that the efficient operator is modelled assuming a 100% NGN network, while the model for the specific operator is modelled assuming a progressive migration from its TDM legacy network to a NGN network. The operator is concerned that the costs related to its legacy network (CAPEX and related OPEX) are ignored in the efficient model.	TRC clarified that the efficient operator must consider the most cost-effective solutions that are widely implemented in fixed telecom networks, as defined in its 2009 principles, which state that Modern Equivalent Assets need to be considered in the efficient model. This is also in line with the Long-Run perspective adopted in this kind of models. The TRC also notes that the implementation of a glidepath for the interconnection charges diminishes the effect of such considerations.
An operator indicates that the costing figures related to collocation and infrastructure sharing in the governorate of Aqaba are underestimated and should be reviewed.	The costs of collocation and infrastructure in Aqaba were reviewed in light of the comments received and modified in the model.

Comment received from the operator	Action taken by the TRC
An operator indicates that the costing figures related to electricity should be subject to a 15% mark-up to cope for meters reading overheads, redundant equipment for electricity, generators, fuel, etc.	Based on the operator’s comment, an overhead factor of 15% was added in the models for the relevant services.
An operator indicates that the calculations used for the costing of services related to the Tie Cables connecting the MDF and the HDF ignore many costs incurred by the operator.	The calculations for the relevant services were adjusted based on the operator’s contribution.
An operator outlines that installation costs for some services are underestimated.	The contributions raised by the operator on the installation costs were not deemed appropriate as they were out of a reasonable range (e.g. ~200 JDs for the installation of access services) and no solid evidences were provided to justify the suggested rates.
An operator notes that the model is designed to cost some retail services. However, the model does neither compute nor consider any retail cost in the assessment of retail services costs. This leads to some retail services having the same unit costs as the wholesale service they rely on.	TRC clarified that retail costs were not to be included in the Hybrid TSLRIC+ model, given that it deals only with network-related costs.
An operator asks the TRC to remove unregulated services from the scope of the model since it considers that such model should not be used to compute the costs of unregulated services (including both retail and wholesale services).	<p>The model needs to include all the services, independent on whether they are regulated or not, as required in TRC’s principles (TSLRIC+: Total Service LRIC+). At the same time, this is essential to ensure a proper cost allocation exercise.</p> <p>Irrespective of the above, only the relevant services are regulated by the TRC and their results are presented in Annex 3 of this document.</p>
An operator does not accept the costs produced by the model for directory services. It notes that this service is outsourced to a third party and that the regulated cost for the service should be at least equal to the cash out amount incurred by the operator.	<p>TRC clarifies that the contract with a third party does not need to properly represent the costs of an efficient operator, which is the aim of the model.</p> <p>Based on the above, the TRC has kept the usage of the outcome produced by the model.</p>

Annex 3- Pricing of fixed services:

Voice Interconnect Link Service

Category	Charge	Rate Unit	2018	2019	2020	2021
Installation Charges	2 Mbps port installation	JD	6.8	6.8	6.8	6.8
Rental charges	2Mbps port rental charge per month	JD/month	4.1	4.1	4.1	4.1
Installation Charges	Fast Ethernet port installation	JD	6.8	6.8	6.8	6.8
Rental Charges	Fast Ethernet port rental charge per month	JD/month	11.4	11.4	11.4	11.4
Installation Charges	Gigabit Ethernet port installation	JD	6.8	6.8	6.8	6.8
Rental Charges	Gigabit Ethernet port rental charge per month	JD/month	13.3	13.3	13.3	13.3
Installation Charges	10 Giga Ethernet port installation	JD	6.8	6.8	6.8	6.8
Rental Charges	10 Giga Ethernet port rental charge per month	JD/month	23.2	23.2	23.2	23.2

The charges for Trunk Segment and Terminating Segment Services will be applicable for the links installation and rental charges.

Collocation and infrastructure sharing service

Governorate	Item	Unit	Rate Unit	2018	2019	2020	2021
Amman	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	8.2	8.2	8.2	8.2
		Reservation		8.2	8.2	8.2	8.2
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	216.5	216.5	216.5	216.5
		Reservation		216.5	216.5	216.5	216.5
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	125.9	125.9	125.9	125.9
		Reservation		125.9	125.9	125.9	125.9
Irbid	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.1	5.1	5.1	5.1
		Reservation		5.1	5.1	5.1	5.1
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	135.2	135.2	135.2	135.2
		Reservation		135.2	135.2	135.2	135.2
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	78.7	78.7	78.7	78.7
		Reservation		78.7	78.7	78.7	78.7

Governorate	Item	Unit	Rate Unit	2018	2019	2020	2021
Ajloun	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.0	5.0	5.0	5.0
		Reservation		5.0	5.0	5.0	5.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	132.3	132.3	132.3	132.3
		Reservation		132.3	132.3	132.3	132.3
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	77.0	77.0	77.0	77.0
		Reservation		77.0	77.0	77.0	77.0
Jerash	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.6	5.6	5.6	5.6
		Reservation		5.6	5.6	5.6	5.6
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	146.9	146.9	146.9	146.9
		Reservation		146.9	146.9	146.9	146.9
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	85.5	85.5	85.5	85.5
		Reservation		85.5	85.5	85.5	85.5
Mafraq	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.0	5.0	5.0	5.0
		Reservation		5.0	5.0	5.0	5.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	132.3	132.3	132.3	132.3
		Reservation		132.3	132.3	132.3	132.3
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	77.0	77.0	77.0	77.0
		Reservation		77.0	77.0	77.0	77.0

Governorate	Item	Unit	Rate Unit	2018	2019	2020	2021
Balqa	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	6.0	6.0	6.0	6.0
		Reservation		6.0	6.0	6.0	6.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	156.9	156.9	156.9	156.9
		Reservation		156.9	156.9	156.9	156.9
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	91.3	91.3	91.3	91.3
		Reservation		91.3	91.3	91.3	91.3
Azraqah	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.7	5.7	5.7	5.7
		Reservation		5.7	5.7	5.7	5.7
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	150.6	150.6	150.6	150.6
		Reservation		150.6	150.6	150.6	150.6
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	87.6	87.6	87.6	87.6
		Reservation		87.6	87.6	87.6	87.6
Madaba	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.4	5.4	5.4	5.4
		Reservation		5.4	5.4	5.4	5.4
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	142.7	142.7	142.7	142.7
		Reservation		142.7	142.7	142.7	142.7
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	83.0	83.0	83.0	83.0
		Reservation		83.0	83.0	83.0	83.0
Karak	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.0	5.0	5.0	5.0
		Reservation		5.0	5.0	5.0	5.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	132.3	132.3	132.3	132.3
		Reservation		132.3	132.3	132.3	132.3
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	77.0	77.0	77.0	77.0
		Reservation		77.0	77.0	77.0	77.0
Tafileh	19-inch rack space in shared supplied	RU1	JD/unit/month	5.0	5.0	5.0	5.0

Governorate	Item	Unit	Rate Unit	2018	2019	2020	2021
	cabinet (standard 60x90x200)						
		Reservation		5.0	5.0	5.0	5.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	132.3	132.3	132.3	132.3
		Reservation		132.3	132.3	132.3	132.3
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	77.0	77.0	77.0	77.0
	Reservation		77.0	77.0	77.0	77.0	
Ma'an	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	5.0	5.0	5.0	5.0
		Reservation		5.0	5.0	5.0	5.0
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	132.3	132.3	132.3	132.3
		Reservation		132.3	132.3	132.3	132.3
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	77.0	77.0	77.0	77.0
	Reservation		77.0	77.0	77.0	77.0	
Aqaba	19-inch rack space in shared supplied cabinet (standard 60x90x200)	RU1	JD/unit/month	6.6	6.6	6.6	6.6
		Reservation		6.6	6.6	6.6	6.6
	Cabinet space for standard 60x90x200 cabinet in shared room	Cabinet space	JD/unit/month	174.2	174.2	174.2	174.2
		Reservation		174.2	174.2	174.2	174.2
	Secure room for exclusive use of the Licensee	Sqm	JD/unit/month	101.4	101.4	101.4	101.4
	Reservation		101.4	101.4	101.4	101.4	

The following prices are standard for all sites:

Additional facilities	Unit	Rate Unit	2018	2019	2020	2021
Power supply	1 Amp	JD/unit/month	49.7	49.7	49.7	49.7
Cabinet rental (standard 60x90x200)	Cabinet	JD/unit/month	30.8	30.8	30.8	30.8
Intra-building Link	per link up to 100 metre	JD/unit/month	3.5	3.5	3.5	3.5

Voice Interconnect Link Extension

	Rate Unit	2018	2019	2020	2021
2 Mbps port installation	JD	6.8	6.8	6.8	6.8
2 Mbps exchange port rental charge per month/port	JD/port/month	4.1	4.1	4.1	4.1
Fast Ethernet port installation	JD	6.8	6.8	6.8	6.8
Fast Ethernet exchange port rental charge per month/port	JD/port/month	11.4	11.4	11.4	11.4
Gigabit Ethernet port installation	JD	6.8	6.8	6.8	6.8
Gigabit Ethernet exchange port rental charge per month/port	JD/port/month	13.3	13.3	13.3	13.3
10 Giga Ethernet port installation	JD	6.8	6.8	6.8	6.8
10 Giga Ethernet exchange port rental charge per month/port	JD/port/month	23.2	23.2	23.2	23.2

The charges for Trunk Segment and Terminating Segment Services will be applicable for the links installation and rental charges.

National Call Termination

Charging Level		Rate Unit	2018	2019	2020	2021
Blended		Fils/min	7.2	5.8	4.4	3.0

Call Transit

Charging Level		Rate Unit	2018	2019	2020	2021
Transit		Fils/min	1.3	1.3	1.3	1.3

Non-Geographic Call Origination Service

Charging Level		Rate Unit	2018	2019	2020	2021
Blended		Fils/min	7.0	7.0	7.0	7.0

Emergency Service

Charging Level		Rate Unit	2018	2019	2020	2021
Blended		Fils/min	3.0	3.0	3.0	3.0

International Access Service

Charging Level		Rate Unit	2018	2019	2020	2021
Blended		Fils/min	3.2	3.2	3.2	3.2

SDH Bandwidth Service

The charges for Trunk Segment and Terminating Segment Services will be applicable for the links installation and rental charges.

International IP Capacity

		Rate Unit	2018	2019	2020	2021
Set up charge		JD	394.8	394.8	394.8	394.8
Rental charge	Capacity rental charge per Mbps per month	JD/Mbps/month	3.2	3.2	3.2	3.2

Data Interconnect Link

		Rate Unit	2018	2019	2020	2021
Installation charge	Data Port installation	JD	6.8	6.8	6.8	6.8
Rental charge	Data Port rental charge per month	JD/month	4.1	4.1	4.1	4.1

The charges for Trunk Segment and Terminating Segment Services will be applicable for the links installation and rental charges.

Dial-Up IP Traffic Collection

		Rate Unit	2018	2019	2020	2021
Rental charge	Port rental charge per month	JD/month	0.8	0.8	0.8	0.8

Broadband IP Traffic Collection

		Rate Unit	2018	2019	2020	2021
	Monthly charges per Mbps	JD/month	21.2	21.2	21.2	21.2

Permanent Data Traffic Collection

		Speed (kbps)	Rate Unit	2018	2019	2020	2021
Monthly rental charges	Port rental monthly charges/speed	64	JD/month	5.4	5.4	5.4	5.4
		128	JD/month	6.7	6.7	6.7	6.7
		256	JD/month	6.8	6.8	6.8	6.8
		512	JD/month	7.1	7.1	7.1	7.1
		1024	JD/month	7.7	7.7	7.7	7.7
		2048	JD/month	8.9	8.9	8.9	8.9

ADSL/VDSL local Bitstream services

		Speed	Rate Unit	2018	2019	2020	2021
Installation charge			JD	42.1	42.1	42.1	42.1
Monthly rental charges	ADSL/VDSL Bitstream (local), without modem		JD/month	0.36	0.36	0.36	0.36
	ADSL Bitstream (local), with modem		JD/month	1.87	1.87	1.87	1.87
	VDSL Bitstream (local), with modem		JD/month	3.06	3.06	3.06	3.06

ADSL/VDSL regional Bitstream services

		Speed	Rate Unit	2018	2019	2020	2021
Installation charge			JD	42.1	42.1	42.1	42.1
Monthly rental charges	ADSL/VDSL Bitstream (regional), with modem	128 kb/s	JD/month	1.88	1.88	1.88	1.88
		256 kb/s	JD/month	1.89	1.89	1.89	1.89
		512 kb/s	JD/month	1.92	1.92	1.92	1.92
		1 Mb/s	JD/month	1.98	1.98	1.98	1.98
		2 Mb/s	JD/month	2.11	2.11	2.11	2.11
		4 Mb/s	JD/month	2.35	2.35	2.35	2.35
		6 Mb/s	JD/month	2.59	2.59	2.59	2.59
		8 Mb/s	JD/month	2.84	2.84	2.84	2.84
		16 Mb/s	JD/month	3.81	3.81	3.81	3.81
		24 Mb/s	JD/month	4.79	4.79	4.79	4.79
	40 Mb/s	JD/month	7.92	7.92	7.92	7.92	
	80 Mb/s	JD/month	12.80	12.80	12.80	12.80	
	ADSL/VDSL Bitstream (regional), without modem	128 kb/s	JD/month	0.37	0.37	0.37	0.37
		256 kb/s	JD/month	0.39	0.39	0.39	0.39
		512 kb/s	JD/month	0.42	0.42	0.42	0.42
		1 Mb/s	JD/month	0.48	0.48	0.48	0.48
		2 Mb/s	JD/month	0.60	0.60	0.60	0.60
		4 Mb/s	JD/month	0.84	0.84	0.84	0.84
		6 Mb/s	JD/month	1.09	1.09	1.09	1.09
		8 Mb/s	JD/month	1.33	1.33	1.33	1.33
16 Mb/s		JD/month	2.31	2.31	2.31	2.31	
24 Mb/s		JD/month	3.28	3.28	3.28	3.28	
40 Mb/s	JD/month	5.23	5.23	5.23	5.23		
80 Mb/s	JD/month	10.10	10.10	10.10	10.10		

ADSL/VDSL national IPstream services

		Speed	Rate Unit	2018	2019	2020	2021
Installation charge			JD	42.1	42.1	42.1	42.1
Monthly rental charges	ADSL/VDSL IPstream (national), with modem	128 kb/s	JD/month	2.70	2.70	2.70	2.70
		256 kb/s	JD/month	2.72	2.72	2.72	2.72
		512 kb/s	JD/month	2.75	2.75	2.75	2.75
		1 Mb/s	JD/month	2.83	2.83	2.83	2.83
		2 Mb/s	JD/month	2.97	2.97	2.97	2.97
		4 Mb/s	JD/month	3.27	3.27	3.27	3.27

		Speed	Rate Unit	2018	2019	2020	2021
		6 Mb/s	JD/month	3.56	3.56	3.56	3.56
		8 Mb/s	JD/month	3.85	3.85	3.85	3.85
		16 Mb/s	JD/month	5.03	5.03	5.03	5.03
		24 Mb/s	JD/month	6.20	6.20	6.20	6.20
		40 Mb/s	JD/month	9.73	9.73	9.73	9.73
		80 Mb/s	JD/month	15.59	15.59	15.59	15.59
	ADSL/VDSL IPstream (national), without modem	128 kb/s	JD/month	1.19	1.19	1.19	1.19
		256 kb/s	JD/month	1.21	1.21	1.21	1.21
		512 kb/s	JD/month	1.25	1.25	1.25	1.25
		1 Mb/s	JD/month	1.32	1.32	1.32	1.32
		2 Mb/s	JD/month	1.47	1.47	1.47	1.47
		4 Mb/s	JD/month	1.76	1.76	1.76	1.76
		6 Mb/s	JD/month	2.05	2.05	2.05	2.05
		8 Mb/s	JD/month	2.35	2.35	2.35	2.35
		16 Mb/s	JD/month	3.52	3.52	3.52	3.52
		24 Mb/s	JD/month	4.69	4.69	4.69	4.69
		40 Mb/s	JD/month	7.04	7.04	7.04	7.04
		80 Mb/s	JD/month	12.90	12.90	12.90	12.90

ADSL/VDSL local Naked Bitstream services

		Speed	Rate Unit	2018	2019	2020	2021
Installation charge			JD	42.1	42.1	42.1	42.1
Monthly rental charges	ADSL/VDSL Naked Bitstream (local), without modem		JD/month	6.05	6.05	6.05	6.05
	ADSL Naked Bitstream (local), with modem		JD/month	7.56	7.56	7.56	7.56
	VDSL Naked Bitstream (local), with modem		JD/month	8.75	8.75	8.75	8.75

ADSL/VDSL regional Naked Bitstream services

		Speed	Rate Unit	2018	2019	2020	2021
Installation charge			JD	42.1	42.1	42.1	42.1
Monthly rental charges	ADSL/VDSL Naked Bitstream (regional), with modem	128 kb/s	JD/month	7.57	7.57	7.57	7.57
		256 kb/s	JD/month	7.58	7.58	7.58	7.58
		512 kb/s	JD/month	7.61	7.61	7.61	7.61
		1 Mb/s	JD/month	7.68	7.68	7.68	7.68
		2 Mb/s	JD/month	7.80	7.80	7.80	7.80
		4 Mb/s	JD/month	8.04	8.04	8.04	8.04
		6 Mb/s	JD/month	8.28	8.28	8.28	8.28

		Speed	Rate Unit	2018	2019	2020	2021
		8 Mb/s	JD/month	8.53	8.53	8.53	8.53
		16 Mb/s	JD/month	9.50	9.50	9.50	9.50
		24 Mb/s	JD/month	10.48	10.48	10.48	10.48
		40 Mb/s	JD/month	13.62	13.62	13.62	13.62
		80 Mb/s	JD/month	18.49	18.49	18.49	18.49
	ADSL/VDSL Naked Bitstream (regional), without modem	128 kb/s	JD/month	6.06	6.06	6.06	6.06
		256 kb/s	JD/month	6.08	6.08	6.08	6.08
		512 kb/s	JD/month	6.11	6.11	6.11	6.11
		1 Mb/s	JD/month	6.17	6.17	6.17	6.17
		2 Mb/s	JD/month	6.29	6.29	6.29	6.29
		4 Mb/s	JD/month	6.54	6.54	6.54	6.54
		6 Mb/s	JD/month	6.78	6.78	6.78	6.78
		8 Mb/s	JD/month	7.02	7.02	7.02	7.02
		16 Mb/s	JD/month	8.00	8.00	8.00	8.00
		24 Mb/s	JD/month	8.97	8.97	8.97	8.97
		40 Mb/s	JD/month	10.92	10.92	10.92	10.92
		80 Mb/s	JD/month	15.80	15.80	15.80	15.80

ADSL/VDSL national Naked IPstream services

		Speed	Rate Unit	2018	2019	2020	2021	
Installation charge			JD	42.1	42.1	42.1	42.1	
Monthly rental charges	ADSL/VDSL Naked IPstream (national), with modem	128 kb/s	JD/month	8.39	8.39	8.39	8.39	
		256 kb/s	JD/month	8.41	8.41	8.41	8.41	
		512 kb/s	JD/month	8.45	8.45	8.45	8.45	
		1 Mb/s	JD/month	8.52	8.52	8.52	8.52	
		2 Mb/s	JD/month	8.67	8.67	8.67	8.67	
		4 Mb/s	JD/month	8.96	8.96	8.96	8.96	
		6 Mb/s	JD/month	9.25	9.25	9.25	9.25	
		8 Mb/s	JD/month	9.55	9.55	9.55	9.55	
		16 Mb/s	JD/month	10.72	10.72	10.72	10.72	
		24 Mb/s	JD/month	11.89	11.89	11.89	11.89	
		40 Mb/s	JD/month	15.42	15.42	15.42	15.42	
		80 Mb/s	JD/month	21.29	21.29	21.29	21.29	
			ADSL/VDSL Naked IPstream (national), without modem	128 kb/s	JD/month	6.89	6.89	6.89
		256 kb/s		JD/month	6.90	6.90	6.90	6.90
	512 kb/s	JD/month		6.94	6.94	6.94	6.94	

		Speed	Rate Unit	2018	2019	2020	2021
		1 Mb/s	JD/month	7.01	7.01	7.01	7.01
		2 Mb/s	JD/month	7.16	7.16	7.16	7.16
		4 Mb/s	JD/month	7.45	7.45	7.45	7.45
		6 Mb/s	JD/month	7.75	7.75	7.75	7.75
		8 Mb/s	JD/month	8.04	8.04	8.04	8.04
		16 Mb/s	JD/month	9.21	9.21	9.21	9.21
		24 Mb/s	JD/month	10.39	10.39	10.39	10.39
		40 Mb/s	JD/month	12.73	12.73	12.73	12.73
		80 Mb/s	JD/month	18.59	18.59	18.59	18.59

Third-Party Carrier Selection and Preselection Call Origination Service

	Rate Unit	2018	2019	2020	2021
Third party call origination (single transit)	Fils/min	7.0	7.0	7.0	7.0
Third party call origination (double transit)	Fils/min	7.2	7.2	7.2	7.2

Carrier Selection Traffic Origination Service

	Rate Unit	2018	2019	2020	2021
Call origination / Minute	Fils/min	7.0	7.0	7.0	7.0
CAC setup	JD	4.5	4.5	4.5	4.5
CAC modification	JD	4.5	4.5	4.5	4.5
CAC cancellation	JD	4.5	4.5	4.5	4.5

Carrier Preselection Traffic Origination Service

	Rate Unit	2018	2019	2020	2021
Call origination / Minute	Fils/min	9.2	9.2	9.2	9.2
CAC setup	JD	4.5	4.5	4.5	4.5
CAC modification	JD	4.5	4.5	4.5	4.5
CAC cancellation	JD	4.5	4.5	4.5	4.5

0800XXXXXX Pre-Paid Internet Dial-Up Access Service

	Rate Unit	2018	2019	2020	2021
Call origination / Minute	Fils/min	1.9	1.9	1.9	1.9

International FLAG Connection Service

Cross-connection Bandwidth Capacity		Rate Unit	2018	2019	2020	2021	
Installation charges (Installation charges for accessing FLAG)	E1	JD	394.8	394.8	394.8	394.8	
	E3 or DS3	JD	394.8	394.8	394.8	394.8	
	STM-1	JD	394.8	394.8	394.8	394.8	
	STM-4	JD	394.8	394.8	394.8	394.8	
	STM-16	JD	394.8	394.8	394.8	394.8	
	STM-64	JD	394.8	394.8	394.8	394.8	
	Fast Ethernet	JD	394.8	394.8	394.8	394.8	
	Gigabit Ethernet	JD	394.8	394.8	394.8	394.8	
	10 Giga Ethernet	JD	394.8	394.8	394.8	394.8	
Rental charges (Monthly rental charges to access FLAG)	E1	Monthly rental with collocation	JD/month	237.5	237.5	237.5	237.5
	E3 or DS3	Monthly rental with collocation	JD/month	891.8	891.8	891.8	891.8
	STM-1	Monthly rental with collocation	JD/month	1,739.0	1,739.0	1,739.0	1,739.0
	STM-4	Monthly rental with collocation	JD/month	3,601.3	3,601.3	3,601.3	3,601.3
	STM-16	Monthly rental with collocation	JD/month	7,576.1	7,576.1	7,576.1	7,576.1
	STM-64	Monthly rental with collocation	JD/month	16,199.8	16,199.8	16,199.8	16,199.8
	Fast Ethernet	Monthly rental with collocation	JD/month	1,426.7	1,426.7	1,426.7	1,426.7
	Gigabit Ethernet	Monthly rental with collocation	JD/month	4,633.4	4,633.4	4,633.4	4,633.4
	10 Giga Ethernet	Monthly rental with collocation	JD/month	16,241.7	16,241.7	16,241.7	16,241.7
	E1	Monthly rental without collocation	JD/month	136.1	136.1	136.1	136.1
	E3 or DS3	Monthly rental without collocation	JD/month	689.1	689.1	689.1	689.1
	STM-1	Monthly rental without collocation	JD/month	1,536.3	1,536.3	1,536.3	1,536.3
	STM-4	Monthly rental without collocation	JD/month	3,398.6	3,398.6	3,398.6	3,398.6
	STM-16	Monthly rental without collocation	JD/month	7,373.4	7,373.4	7,373.4	7,373.4
	STM-64	Monthly rental without collocation	JD/month	15,997.1	15,997.1	15,997.1	15,997.1
	Fast Ethernet	Monthly rental without collocation	JD/month	1,224.0	1,224.0	1,224.0	1,224.0
	Gigabit Ethernet	Monthly rental without collocation	JD/month	4,430.7	4,430.7	4,430.7	4,430.7
	10 Giga Ethernet	Monthly rental without collocation	JD/month	16,039.0	16,039.0	16,039.0	16,039.0

Wholesale Trunk Segment Service

Category	Charge	Speed	Rate Unit	2018	2019	2020	2021
Installation charges	Trunk Segment of Leased Line		JD	394.8	394.8	394.8	394.8
Rental charges	Z0 (from 0 up to 16 km)	64 kbps	JD/month	0.6	0.6	0.6	0.6
		128 kbps	JD/month	0.9	0.9	0.9	0.9
		256 kbps	JD/month	1.7	1.7	1.7	1.7
		512 kbps	JD/month	3.1	3.1	3.1	3.1

Category	Charge	Speed	Rate Unit	2018	2019	2020	2021
		1024 kbps	JD/month	6.0	6.0	6.0	6.0
		E1	JD/month	11.8	11.8	11.8	11.8
		E3	JD/month	91.7	91.7	91.7	91.7
		DS3	JD/month	118.6	118.6	118.6	118.6
		STM-1	JD/month	439.0	439.0	439.0	439.0
		STM-4	JD/month	1,508.6	1,508.6	1,508.6	1,508.6
		STM-16	JD/month	5,682.9	5,682.9	5,682.9	5,682.9
		Fast Ethernet	JD/month	259.8	259.8	259.8	259.8
		Gigabit Ethernet	JD/month	2,440.4	2,440.4	2,440.4	2,440.4
		10 Giga Ethernet	JD/month	24,390.3	24,390.3	24,390.3	24,390.3
	Z1 (from 16 up to 40 km)	64 kbps	JD/month	1.5	1.5	1.5	1.5
		128 kbps	JD/month	2.5	2.5	2.5	2.5
		256 kbps	JD/month	4.4	4.4	4.4	4.4
		512 kbps	JD/month	8.2	8.2	8.2	8.2
		1024 kbps	JD/month	15.8	15.8	15.8	15.8
		E1	JD/month	31.0	31.0	31.0	31.0
		E3	JD/month	240.5	240.5	240.5	240.5
		DS3	JD/month	311.1	311.1	311.1	311.1
		STM-1	JD/month	1,151.8	1,151.8	1,151.8	1,151.8
		STM-4	JD/month	3,958.3	3,958.3	3,958.3	3,958.3
		STM-16	JD/month	14,910.9	14,910.9	14,910.9	14,910.9
		Fast Ethernet	JD/month	681.8	681.8	681.8	681.8
		Gigabit Ethernet	JD/month	6,403.2	6,403.2	6,403.2	6,403.2
	10 Giga Ethernet	JD/month	63,995.5	63,995.5	63,995.5	63,995.5	
	Z2 (from 40 up to 80 km)	64 kbps	JD/month	4.0	4.0	4.0	4.0
		128 kbps	JD/month	6.5	6.5	6.5	6.5
		256 kbps	JD/month	11.6	11.6	11.6	11.6
		512 kbps	JD/month	21.7	21.7	21.7	21.7
		1024 kbps	JD/month	41.9	41.9	41.9	41.9
		E1	JD/month	82.3	82.3	82.3	82.3
		E3	JD/month	637.5	637.5	637.5	637.5
		DS3	JD/month	824.5	824.5	824.5	824.5
		STM-1	JD/month	3,052.6	3,052.6	3,052.6	3,052.6
STM-4		JD/month	10,490.8	10,490.8	10,490.8	10,490.8	
STM-16	JD/month	39,518.8	39,518.8	39,518.8	39,518.8		
Fast Ethernet	JD/month	1,806.9	1,806.9	1,806.9	1,806.9		

Category	Charge	Speed	Rate Unit	2018	2019	2020	2021
		Gigabit Ethernet	JD/month	16,970.6	16,970.6	16,970.6	16,970.6
		10 Giga Ethernet	JD/month	169,609.7	169,609.7	169,609.7	169,609.7
	Z3 (from 80 up to 150 km)	64 kbps	JD/month	8.3	8.3	8.3	8.3
		128 kbps	JD/month	13.5	13.5	13.5	13.5
		256 kbps	JD/month	24.0	24.0	24.0	24.0
		512 kbps	JD/month	44.9	44.9	44.9	44.9
		1024 kbps	JD/month	86.7	86.7	86.7	86.7
		E1	JD/month	170.4	170.4	170.4	170.4
		E3	JD/month	1,319.7	1,319.7	1,319.7	1,319.7
		DS3	JD/month	1,707.0	1,707.0	1,707.0	1,707.0
		STM-1	JD/month	6,319.5	6,319.5	6,319.5	6,319.5
		STM-4	JD/month	21,718.5	21,718.5	21,718.5	21,718.5
		STM-16	JD/month	81,813.6	81,813.6	81,813.6	81,813.6
		Fast Ethernet	JD/month	3,740.7	3,740.7	3,740.7	3,740.7
		Gigabit Ethernet	JD/month	35,133.3	35,133.3	35,133.3	35,133.3
		10 Giga Ethernet	JD/month	351,133.9	351,133.9	351,133.9	351,133.9
	Z4 (more than 150 km)	64 kbps	JD/month	14.9	14.9	14.9	14.9
		128 kbps	JD/month	24.3	24.3	24.3	24.3
		256 kbps	JD/month	43.1	43.1	43.1	43.1
		512 kbps	JD/month	80.8	80.8	80.8	80.8
		1024 kbps	JD/month	156.0	156.0	156.0	156.0
		E1	JD/month	306.5	306.5	306.5	306.5
		E3	JD/month	2,374.1	2,374.1	2,374.1	2,374.1
		DS3	JD/month	3,070.8	3,070.8	3,070.8	3,070.8
		STM-1	JD/month	11,368.5	11,368.5	11,368.5	11,368.5
		STM-4	JD/month	39,070.5	39,070.5	39,070.5	39,070.5
		STM-16	JD/month	147,178.4	147,178.4	147,178.4	147,178.4
		Fast Ethernet	JD/month	6,729.4	6,729.4	6,729.4	6,729.4
Gigabit Ethernet		JD/month	63,203.0	63,203.0	63,203.0	63,203.0	
10 Giga Ethernet		JD/month	631,671.4	631,671.4	631,671.4	631,671.4	

Wholesale Terminating Segment Service

Category	Charge	Speed	Rate Unit	2018	2019	2020	2021
Installation charges	Terminating Segment of Leased Line		JD	43.2	43.2	43.2	43.2
Rental charges	Per link (from 0 up to 3 km)	64 kbps	JD/month	18.7	18.7	18.7	18.7
		128 kbps	JD/month	19.6	19.6	19.6	19.6

Category	Charge	Speed	Rate Unit	2018	2019	2020	2021
		256 kbps	JD/month	21.2	21.2	21.2	21.2
		512 kbps	JD/month	24.5	24.5	24.5	24.5
		1024 kbps	JD/month	31.1	31.1	31.1	31.1
		E1	JD/month	44.2	44.2	44.2	44.2
		E3	JD/month	590.1	590.1	590.1	590.1
		DS3	JD/month	627.1	627.1	627.1	627.1
		STM-1	JD/month	1,093.2	1,093.2	1,093.2	1,093.2
		STM-4	JD/month	2,349.3	2,349.3	2,349.3	2,349.3
		STM-16	JD/month	7,106.7	7,106.7	7,106.7	7,106.7
		Fast Ethernet	JD/month	815.6	815.6	815.6	815.6
		Gigabit Ethernet	JD/month	3,156.0	3,156.0	3,156.0	3,156.0
		10 Giga Ethernet	JD/month	26,919.1	26,919.1	26,919.1	26,919.1
		Per km (> 3 km)	64 kbps	JD/month	6.2	6.2	6.2
	128 kbps		JD/month	6.5	6.5	6.5	6.5
	256 kbps		JD/month	7.1	7.1	7.1	7.1
	512 kbps		JD/month	8.2	8.2	8.2	8.2
	1024 kbps		JD/month	10.4	10.4	10.4	10.4
	E1		JD/month	14.7	14.7	14.7	14.7
	E3		JD/month	196.7	196.7	196.7	196.7
	DS3		JD/month	209.0	209.0	209.0	209.0
	STM-1		JD/month	364.4	364.4	364.4	364.4
	STM-4		JD/month	783.1	783.1	783.1	783.1
	STM-16		JD/month	2,368.9	2,368.9	2,368.9	2,368.9
	Fast Ethernet		JD/month	271.9	271.9	271.9	271.9
	Gigabit Ethernet		JD/month	1,052.0	1,052.0	1,052.0	1,052.0
	10 Giga Ethernet		JD/month	8,973.0	8,973.0	8,973.0	8,973.0

Duct and Dark Fibre sharing:

	Rate Unit	2018	2019	2020	2021
Installation (per meter)	JD/m	0.6	0.6	0.6	0.6
1 pair of dark fibre monthly rental / 1 metre	JD/m/month	0.3	0.3	0.3	0.3
Duct monthly rental / 1 metre	JD/m/month	0.2	0.2	0.2	0.2

National Directory Enquiries

		Rate Unit	2018	2019	2020	2021
Charging Level	Blended	Fils/min	32.3	32.3	32.3	32.3

Operator Assistance (including Call Connection Services)

		Rate Unit	2018	2019	2020	2021
Charging Level	Blended	Fils/min	32.3	32.3	32.3	32.3

Local Loop Unbundled Service

		Rate Unit	2018	2019	2020	2021
Installation charge	Full Local Loop Unbundled Service	JD	43.2	43.2	43.2	43.2
Installation charge	Shared Local Loop Unbundled Service	JD	43.2	43.2	43.2	43.2
Rental charge	Full Local Loop Unbundled Service	JD/month	5.7	5.7	5.7	5.7
Rental charge	Shared Loop Unbundled Service	JD/month	1.2	1.2	1.2	1.2

International Call Transit

		Rate Unit	2018	2019	2020	2021
Charging Level	Blended	Fils/min	1.5	1.5	1.5	1.5

Tie cable to connect MDF and HDF

		Rate Unit	2018	2019	2020	2021
Installation charge	Per meter (100 pairs)	JD	12.7	12.7	12.7	12.7
Rental charge	Per meter (100 pairs)	JD/month	0.6	0.6	0.6	0.6

Billing and Collection Service

		Rate Unit	2018	2019	2020	2021
Billing and Collection	Billing and Collection Service	JD/bill	0.9	0.9	0.9	0.9

Wood poles sharing

		Rate Unit	2018	2019	2020	2021
Rental charge	Per pole	JD/month	1.1	1.1	1.1	1.1