Jordan Mini-Case Study 2003

Dispute Resolution and Consensus Building in Interconnection

International Telecommunication Union

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This is one of five mini case studies on interconnection dispute resolution undertaken by ITU. Further information can be found on the web site at http://www.itu.int/ITU-D/treg.

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I. Introduction to the Market, Regulatory Regime and Interconnection

Jordan has a population of about 5.3 million and a GDP of about JD 6.6 billion (JD 1.00 = US$ 1.41). It has nearly 675,000 fixed lines, a teledensity of about 12.7%, and about 1,220,000 mobile subscribers, a penetration rate of about 22.9%.

Jordan's telecommunications sector has been undergoing a staged pace of liberalization since its Telecommunications Law (the "Law") was enacted in 1995 and amended in 2002[1]. The Law established the Telecommunications Regulatory Commission (the "TRC") as the regulatory body for the telecommunications sector. Incumbent operator Jordan Telecom was initially partially privatized in 2000. The commencement of mobile services under a license issued to private operator Fastlink in 1995 introduced interconnection as a regulatory matter. The entry into the mobile services market in 2000 by MobileCom, a subsidiary of Jordan Telecom, has increased the focus on interconnection regulation. Jordan Telecom is scheduled to lose its monopoly over fixed line services at the end of 2004 and Fastlink and MobileCom's duopoly is scheduled to end at the end of 2003. New entrants requiring interconnection with Jordan Telecom's network – and the networks of the mobile operators – are expected to make interconnection a crucial priority for liberalization.

The TRC has taken initiatives in 2002 and 2003 which offer interesting insights into the development of interconnection regulation and dispute resolution which will be of interest to other countries whose telecommunications sectors are in the process of liberalization and which are developing dispute resolution processes. Given the importance to dispute resolution of the presence in the regulatory environment of consultative and consensus building processes, this case study describes the consultative process initiated by the TRC for interconnection, the TRC's resulting decision on interconnection as well as the TRC's subsequent interconnection dispute process.

Notable in particular is the clarity and transparency of the TRC's public statements on interconnection, including an Explanatory Memorandum in support of the Decisions of the TRC concerning interconnection charges and related retail prices, dated June 2003 (the "Explanatory Memorandum")[2] and its Interconnection Disputes Process, dated July 2003 (the "Interconnection Disputes Process")[3], both of which are particularly commendable reading. They are Annexes 1 and 2, respectively, to this case study.

The TRC is responsible under the Law for regulating interconnection, although the primary tool for such regulation is the interconnection provision in each of the licenses of Jordan Telecom, Fastlink and MobileCom. Jordan's fixed and GSM license agreements are attached as Annexes 3 and 4, respectively, with this case study. These set forth the core regulatory principles of interconnection, which must be provided:

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1 Available from the TRC's website at: http://www.trc.jo/Static_English/telecommunications1.shtm

2 Available from the TRC's website at: http://www.trc.jo/Static_English/New Stuff/TRC Decision 300603 Final.pdf

3 Available from the TRC's website at: http://www.trc.jo/static_english/new stuff/interconnection disputes process.pdf

"in a timely fashion on terms, conditions (including technical standards and specifications) and 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. In this context, cost-based rates means rates comprised of the long run incremental costs of providing interconnection plus a reasonable share of the common costs of the Licensee's operations." (License Article 6.2.1.3)[4]

That the licenses themselves already enshrine the principle of using long run incremental costs (LRIC) as the basis for setting rates is in itself interesting since this sets this choice over other approaches, such as fully allocated costs (FAC), for the full period of the licenses. These license provisions, however, only really became developed substantially as the TRC turned its regulatory focus to interconnection in 2002.

II. Consultative Forum for Interconnection

The TRC approved guidelines on interconnection (the "Interconnection Guidelines")[5] in November 2002, which are attached with this case study as Annex 5. In some detail, the Interconnection Guidelines address operators' joint interconnection committees, the provision of interconnection services, technical aspects of interconnection, and commercial aspects such as charges, payments and billing.

Upon issuing the Interconnection Guidelines, the TRC launched a consultative process with sector participants with the purpose of implementing the Interconnection Guidelines, which permitted an implementation period of twelve months. The TRC established an Interconnect Steering Committee (the "ISC"), chaired by the Chairperson and CEO of the TRC and included participants from Jordan Telecom, Fastlink and MobileCom, other licensed operators and the TRC to oversee implementation of the Interconnection Guidelines. The ISC established working groups for: the designation of licensees which would be subject to the Interconnection Guidelines; producing cost and charge methodologies for fixed and mobile networks; reviewing changes to existing licenses; commercial and technical terms of reference interconnection offers ("RIOs"); and legal aspects of RIOs.

The ISC established a plan to set cost-based charges by the end of June 2003 and in December 2002 issued guidance papers to operators as to cost allocation in fixed and mobile networks (see annexes 6 and 7). The ISC's process was conducted in the context of an on-going interconnection dispute between Jordan Telecom and Fastlink in 2002 and 2003.

III. The June 2003 Decision on Interconnection

As it became apparent that the ISC's working groups were not proceeding in a manner that gave the TRC confidence in meeting the timetable for establishing cost-based interconnection charges, the ISC in March 2003 began contemplating the interim use of benchmarking charges from July 1, 2003 should cost-based charges not be established by then. Consequently, the TRC commenced an international benchmarking exercise, using 16 (unidentified) countries whose interconnection rates were set on the basis of cost-based methodologies. These international benchmark charges were then translated to apply to Jordan, taking into account Jordanian labor costs, for example, resulting in the TRC's own benchmark model results.

When the TRC was not satisfied by the cost models provided by Jordan Telecom, Fastlink and MobileCom – the TRC stated that they were provided late and contained inappropriate cost

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4 Fixed License Agreement available from the TRC's website at http://www.trc.jo/Static_English/doc/Fixed%20Lic1.pdf Jordan Telecommunications Company Public Mobile Telephone (Cellular) License Agreement available from the TRC's website at http://www.trc.jo/Static_English/doc/Mobile%20GSM.doc

5 Available from the TRC's website at: http://www.trc.jo/Static_English/doc/Interconnection Guidelines Final.doc

allocations and assumptions – the benchmarking exercise became the basis for the TRC's decision on June 30, 2003 (the "June Decision"). The June Decision set the domestic and international mobile call termination rates, Jordan Telecom's fixed network termination rate and the discount from Jordan Telecom's retail tariff for international transit rates charged by Jordan Telecom. The box below from the June Decision's Explanatory Memorandum summarizes its conclusions on interconnection charges:

Table 1. Benchmark, Model and Approved Interconnection Charges

Service	Pre 1st July 2003	International Benchmark charges	TRC Benchmark Model Results	Operators Cost Model Results	TRC Decision 1st July 2003
Fixed Termination	25 fils/min peak 20 fils/min off peak	6.5-11 fils/min peak 3-6.5 fils/min off peak	11.5-13 fils/min blended (unique peak and off-peak rate)	CONFIDENTIAL	15.8 fils/min blended
Mobile Termination – Fastlink	120 fils/min peak 95 fils/min off peak	40-134 off peak 78-197 fils/min peak	45-69 fils/min blended	CONFIDENTIAL	70 fils/min
Mobile Termination – MobileCom	70 fils/min peak and off peak	40-134 off peak 78-197 fils/min peak	45-69 fils/min blended	CONFIDENTIAL	70 fils/min
Mobile to Mobile	70 fils/min peak and off peak	78-197 fils/min peak	45-69 fils/min blended	CONFIDENTIAL	70 fils/min
International Transit	5% discount on JT retail rates by route and time of day on a per minute basis	Varies by route-transit and settlement rates are not broken out	5-12 fils/min plus international settlement rate	CONFIDENTIAL	9% discount on JT retail rates by route and time of day on a per second basis
International Incoming	Mobile termination rate	Mobile termination rates	Fixed termination – 11.5-13 fils/min blended Mobile termination – 45-69 fils/min blended	CONFIDENTIAL	Mobile termination rate (70 fils/minute)

Note: (1 fil = U.S. 1.41 cents).

There are a few interesting features worth noting about the June Decision. It was clearly an interim decision, choosing to use international benchmarks applied to the Jordanian operators rather than those operators' own models which, as previously mentioned, the TRC viewed as deficient. The benchmarking exercise was enhanced by TRC's recent substantial institution building, particularly in terms of its human resources. Its experience in conducting the benchmarking exercise likely equips it with the tools to scrutinize operators' cost models on an ongoing basis with the benefit of comparative international indicators. This is likely to improve the TRC's overall decision making in interconnection and could reduce the likelihood of disputes in the sector.

The June Decision was also interim in the sense that it did not result in an adjustment to mobile termination charges and mobile-to-mobile rates even though they were slightly above the TRC's own benchmark results. Further, although reduced, Jordan Telecom's international transit rates remained set by a discount to retail pricing rather than a benchmarked cost-based approach. As is common in countries in early stages of liberalization, Jordan Telecom's international transit rates are substantially above costs since they subsidize low local and national retail prices, access charge deficits and Internet access as a result of historical telecommunications policy and Jordan's existing ambitious Information Society policy. Thus the TRC's decision took advantage of the implementation timetable to allow Jordan Telecom more time in the overall price rebalancing exercise that will likely become inevitable with the introduction of full competition at the end of 2004.

The June Decision, then, illustrated the tensions in the relationship between interconnection and retail pricing in the overall liberalization process. In this context, it is particularly interesting that the TRC conducted a revenue sensitivity analysis of the interconnection rates using different assumptions about growth in subscribers and traffic. The willingness of the TRC to engage with the issue of how regulation will affect the financial viability of operators should be interesting to regulators and policy makers worldwide given the weak financial condition of the telecommunications sector. The TRC's willingness to use, and publish in the Explanatory Memorandum, its revenue impact model scenarios is a significant illustration of a promising regulatory environment.

IV. Interconnection Disputes Process

A second recent development in the Jordanian telecommunications sector has been the adoption in July 2003 of the Interconnection Dispute Process, which sets forth how disputes between operators over interconnection agreements shall be handled. The dispute regime has several notable features, highlighted below, that are likely to produce higher quality decision-making, more efficient processes and a dispute resolution regime which gives substantial responsibility to the parties themselves.

The Interconnection Dispute Process applies to any dispute or difference arising among licensees relating to or arising out of an interconnection agreement. It is thus not so much a resource to support new entrants struggling to negotiate a fair agreement (this is a matter dealt with by the requirement that interconnection agreements be approved by the TRC) as a mechanism addressing the execution and interpretation of interconnection agreements.

The process develops an emphasis on negotiation and mediation present in the Law, which makes the TRC Chairperson and CEO responsible for "drawing up guidelines for negotiations between the parties or disputants in the dispute, and …propos[ing] a solution himself or by means of a mediator or persons appointed for this purpose..." (Law, Article 60) Thus, the Interconnection Dispute Process builds in a requirement that the parties attempt a good faith negotiated solution before bringing the dispute to the TRC and indicates that the TRC will first confirm that there is indeed a genuine dispute and that the parties have sought to resolve the matter commercially (Articles 1.1 and 5.2). Indeed, the Interconnection Dispute Process imposes a timetable requiring that the disputants meet for such negotiations within ten working days of written notice of the dispute and allow at least twenty working days for such negotiations. Such measures may assist in resolving disputes before becoming caught up in the time-and resource-consuming tangle of formal proceedings.

The process gives responsibility for the dispute to the parties in several key ways. The parties may choose to utilize an arbitration process instead of referring the dispute to the TRC. This enables parties to engage experts familiar with the sector other than the TRC, which may not have the same speed of response or confidentiality, or judges in the courts, who may be less familiar with technical and other sector-specific issues. The Interconnection Dispute Process is, moreover, without prejudice of the rights of licensees to pursue remedies in court. There will likely be scope for clarifying

While parties disputing a commercial agreement generally have the right to go to arbitration, the TRC's emphasis on arbitration as an alternative mechanism raises interesting questions about the relationship of an arbitrator's jurisdiction and the TRC's regulatory jurisdiction. Recently enacted arbitration legislation in Jordan will make arbitrators' decisions enforceable in Jordanian courts and, where parties adopt the arbitration route, it remains to be seen how TRC regulatory policy will be treated by arbitrators in reaching awards and by courts in reviewing such arbitral awards. The option of arbitration and a consequent demand for arbitrators with expertise in the telecommunications sector could lead to developing resources – e.g., panels of experts – that could become more widely available on a regional basis.

Where the parties choose to have the TRC adjudicate the dispute, the TRC may use experts and charge the parties for the costs of the professional services used. With the costs covered by the parties, the TRC will be able to engage the level of expertise necessary to ensure high quality decision-making, further improving its overall level of regulation. The ability to engage and rely on experts, together with an efficient (fifteen working days) internal review process pursuant to which objections to a decision are reviewed by the TRC's Board of Commissioners (Law, Article 6.2), will likely reduce the scope of judicial review should the TRC's final decision be challenged in court.

Since the TRC's costs will be covered by the parties, dispute resolution is not a "free public good"; the charging regime thus reduces operators' incentives to make frivolous use of regulatory dispute resolution as a strategic tool. Although the Interconnection Dispute Process does not establish how such costs will be allocated among disputants, it is possible that the TRC would follow the approach of courts in allocating costs to the losing party, or otherwise reflecting the TRC's view of the merits.

With the disputants free to choose their process and bear the costs, the TRC is effectively creating the conditions for a market in dispute resolution with enough flexibility to suit various conditions, giving parties control over optimal processes while ensuring that enforceable regulatory adjudication remains available.

ANNEX 1

Explanatory Memorandum in support of the Decisions of the TRC concerning interconnection charges and related retail prices, dated June 2003

http://www.trc.jo/Static_English/New Stuff/TRC Decision 300603 Final.pdf

Explanatory Memorandum in support of the Decisions of the Telecommunications Regulatory Commission concerning interconnection charges and related retail prices, June 2003

Telecommunications Regulatory Commission

Ref: TRC Decisions 300603 Final.doc

Explanatory Memorandum supporting the Decisions of the Telecommunications Regulatory Commission concerning interconnection rates charges and related retail prices, June 2003

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Explanatory Memorandum in support of the Decisions of the Telecommunications Regulatory Commission concerning interconnection rates charges and related retail prices, June 2003

1. Introduction

On the 30th June 2003 the Board of the Telecommunications Regulatory Commission (TRC) issued a Decision on interconnection rates. This document sets out the factors and arguments which underpinned the Decision taken by Board. The paper is structured in the following sections:

Section 2 – The Decision made by the Board on the 30th July 2003

Section 3 – The requirements for interconnection

Section 4 – The legal and regulatory framework

Section 5 – Details of the approach taken to the Decisions of TRC

Section 6 – Justification of the Decisions

Section 7 – Summary of interconnection charges

Section 8 – Impact of TRC Decisions

Section 9 – Setting rates on the 1st July 2003

Section 10 – Next Steps

Section 11 – Conclusion

It is noted that whilst these Decisions are primarily concerned with interconnection, certain related retail price matters have also been addressed.

2. TRC Decisions on Interconnection

Pursuant to its responsibilities and powers the TRC Board made the following decisions in relation to interconnection matters:

2.1 TRC Board Decisions – 30th June 2003

On June 30th 2003 the TRC Board made the following Decision.

The Board resolves that the following interconnection rates, basis of charging, and retail rates will apply from the 1st July 2003:

Interconnection Rates

1. *The mobile call termination rate shall be 70 fils per minute*
2. *Jordan Telecom's call termination rate on the fixed network shall be 15.8 fils per minute.*
3. *JT is obliged, in according to the Interconnection Guidelines, to offer International Transit Services originating from mobile phones to the receiving international networks in the receiving countries*
4. *Outgoing international transit rates charged by Jordan Telecom shall be 9% below the Jordan Telecom retail tariff.*
5. *Termination rates of international calls terminating in Mobile Networks should equal termination rates of national origin terminating in Mobile Networks.*
6. *Outgoing international transit rates shall be available to mobile, pre-paid card platform and payphone operators.*

Basis of charging

7. *All interconnection rates between operators shall be based on per second billing from 1 July 2003.*

Retail rates

8. *The fixed to mobile retail tariff will be 93 fils per minute (blended).*
9. *The outgoing international retail tariffs charged by mobile operators shall be greater than or equal to the corresponding Jordan Telecom retail tariffs until 1/1/2005.*
10. *Jordan Telecom will continue to provide national peering to ISPs free of charges.*
11. *Current charges shall remain until January 1, 2004. A further review with the operators in the sector will be undertaken and charges will be adjusted in accordance with the conclusions reached in compliance with Interconnection Guidelines*

2.2 TRC Board Decisions – 26th June 2003

The Board decisions made on the 30th June 2003 built on those made at the Board meeting of the 26th June 2003:

1. *TRC will study the need to adjust the current system of regulating international tariffs.*
2. *The same costing methodology will be used for 2004 costing.*
3. *Retail rates should be decoupled from Interconnection rates for Fixed to Mobile calls.*
4. *By 1st of October 2003, all licensed telecommunications operators should publish interconnection agreements that are approved by TRC*
5. *Interconnection rates offered by JT to ISP's shall not exceed current rates.*

3. The Requirement for interconnection

Interconnection is a vital component in the delivery and availability of telecommunications services in Jordan. Without interconnection there would be island networks, with customers of one network unable to communicate with customers on other networks.

The establishment of an interconnection regime under which public telecommunications operators have an obligation and right to interconnect with each other is the bedrock of a competitive telecommunications environment.

In Jordan, the legal and regulatory environment for interconnection is provided by:

- The Telecommunications Law;
- The Interconnection Guidelines;
- TRC instructions and decisions ;
- The Licences of the PTOs;

The key players in the establishment and operation of an interconnection regime are the TRC and Public Telecommunications Operators and Service Providers.

Due to the duopoly in mobile services and the monopoly in fixed services, it is highly unlikely that the market would produce a fair and competitive interconnection regime; hence the intervention of TRC is crucial.

4. The legal and regulatory regime

4.1 The Telecommunications Law

(a) The overarching requirement

In regulating interconnection, as in other regulatory areas, the TRC has overriding obligations laid upon it in Article 6(a) of the Law thus:

> *"To regulate telecommunications and information technology services in the Kingdom in accordance with the established general policy so as to ensure the provision of high quality telecommunications and information technology services to users at just, reasonable and affordable prices: and by so doing, to make possible the optimal performance of the telecommunications and information technology sectors."*

(b) Specific Requirements

Article 6 (j) requires TRC to:

> *"To regulate access to telecommunications networks and conditions of interconnection in accordance with instructions issued by the Commission for this purpose and to approve the interconnection agreements mentioned in paragraph (e) of Article 29 of this Law."*

Article 29(e) requires that:

> *"The TRC includes in its licensing arrangements the licensees undertaking to enter into interconnection agreements with other licensees in accordance with paragraph (j) of Article 6 of this Law; in addition, to prepare and publish the conditions required to connect and use any equipment or device to his network, provided that such conditions are in agreement with the instructions or decisions by the Commission in this regard."*

(c) General Powers

Under Article 12(a) (2) TRC has the power:

> *"To prepare programs and issue instructions and decisions, and to take the necessary actions in this regard."*

The interconnection regime is not fully developed within the Law. The exposition of the interconnection regime is further set out in other legal and regulatory documents.

4.2 The Interconnection Guidelines

The Interconnection Guidelines were approved by the Board on the 25th November 2002, after a 6-month process of review and consultation with the Telecommunications licensees.

Extracts from The Interconnection Guidelines:

Article 1

> *"These Guidelines form part of the 'Guidance on Interconnection' issued by the Telecommunications Regulatory Commission (TRC) in accordance with*

condition 6.1.1 in the PSTN and Public Mobile Telephone Service Licences which states:

> *"The Licensee acknowledges that interconnection between the Licensee's network and other licensed telecommunications networks in Jordan, is governed by Section 29(e) of the Telecommunications Law, the provisions of this Article 6 and comparable provisions in the licenses of other network operators and any Guidance on Interconnection issued by the TRC from time to time, or as may be amended or replaced from time to time."*

Article 2

"The Chairperson of TRC will take The Guidelines into account in applying the relevant conditions in Licences, and give reasons if the Interconnection Guidelines are departed from. The Chairperson retains the right to depart from the Interconnection Guidelines where the circumstances justify such action subject to clause 3."

Article 3

"The Guidelines will be subject to review and may be amended following consultation with interested parties in the light of experience of their operation, of development in telecommunications markets and of any changes to Jordanian national law."

Article 13

"The TRC understands that implementation of The Guidelines will necessitate Licensees to undertake a number of changes to their systems, processes and contractual arrangements. The TRC will consult with affected parties to agree a schedule for compliance with The Guidelines within twelve (12) months from publication. These may include the agreement of interim arrangements ahead of full implementation."

4.3 PTO Licences

There are several articles in PTO licences, which are relevant to the establishment of the interconnection regime. The following articles are relevant to the setting of interconnection charges:

Article 4.2.1:

"The licensee shall comply with all laws of the Kingdom of Jordan applicable to the service and its operations, including the Telecommunications Law, all decisions rules and instructions of the TRC and, all policies of the government of Jordan. For greater certainty the licensee acknowledges that the TRC is in the process of establishing a general regime for the regulation of the telecommunications sector. The licensee will be subject to that regime when it comes into force to the extent that it applies to the licensee's services."

Article 6.1.1:

> *"The licensee acknowledges that interconnection is governed by…any guidance on interconnection issued by the TRC from time to time, all as may be amended or replaced from time to time."*

Article 6.1.2:

> *"The Licensee will act fairly and without discrimination in accordance with applicable law and the terms of this License Agreement in all business dealings with other Public Telecommunications Service Providers and shall co-operate with other Public Telecommunications Service Providers to facilitate the provision of telecommunications services to all users throughout Jordan and so as to optimize the use of common facilities in the location of network facilities."*

Article 6.2.1.3:

> *"The Licensee shall agree to provide interconnection in a timely fashion on terms, conditions (including technical standards and specifications) and 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. In this context, cost-based rates means rates comprised of the long run incremental costs of providing interconnection plus a reasonable share of the common costs of the Licensee's operations;"*

Thus licences provide for TRC intervention in interconnection and the licensees acknowledge the role the TRC has to play, in particular in establishing a cost based regime.

4.4 Designation of Licensees

The Interconnection Guidelines call for the Designation of Public Telecommunications Licensees.

Article 4

> *"The Guidelines apply to all Licensees designated by the TRC unless expressly stated otherwise. The TRC will determine which Licensees are required to produce and publish a RIO[1]. Such a determination shall be made known to affected parties following due consultation. The criteria and timescales for designation will be defined in a separate TRC document. A Licensee so determined is referred to, within The Guidelines, as a 'Designated Licensee'."*

TRC undertook an extensive consultation exercise with JT, Fastlink and MobileCom based on the paper headed 'Consultation Document re Designation of Public Telecommunication Operators/Service Providers for the purposes of the Interconnection Guidelines in the Hashemite Kingdom of Jordan'.

On the 6th March 2003 the TRC announced its Decisions on Designation:

> "Jordan Telecom, being a monopolist in the fixed service, Jordan Telecom is Designated with respect to:

[1] Reference Interconnection Offer (RIO)

- Fixed services and network markets;
- Leased lines market;
- National market for interconnection

and the terms of the Interconnection Guidelines shall apply to it.

Drawing on the information supplied by JT, Fastlink and MobileCom, and taking into account market shares and benefits of size TRC determines that:

Fastlink is Designated in the national market for call termination and the terms of the Interconnection Guidelines shall apply to it.

MobileCom is not Designated."

The Interconnection Guidelines require Designated Licensees to produce a RIO and comply with the conditions as set out in the Interconnection Guidelines.

4.5 Interconnection Steering Committee

In order to assist TRC in arriving at its Decisions an Interconnection Steering Committee (ISC) was established. The minutes of the ISC represent the views of the various members and include joint agreements by the operators on the way forward.

This matter is dealt with more fully in Section 5 below: but it is important to state, as part of the regulatory framework an extract of the formal minutes of the ISC meeting on the 6th March 2003 thus:

> *"The current implementation program is set to agree cost based charges by the end of June. If at the beginning of June it appears that the current program will not be met, TRC will issue a set of benchmark charges for interconnection services listed above. These charges will come into force together with per second billing on the 1st of July"*

4.6 Overview of TRC's authority in the matter of interconnection

The TRC is justified in its Decisions on the 30th June based upon the following arguments, namely:

(a) The Law

Article 6(a) requires TRC to make possible the optimal performance of the telecommunication and information technology sectors (this is an overriding obligation which TRC exercised in its Decisions on 30th June).

Article 6(j) allows TRC to regulate interconnection. (TRC exercised its responsibility on July 1st).

Article 12(a) allows TRC to regulate the sector through issuing instructions and decisions (TRC issued a Decision on 30th June).

Article 29(e) provides that licensees should set conditions which are in agreement with the instructions or decisions of TRC (instructions and decisions were issued on 1st July).

(b) The Interconnection Guidelines

Article 1 states that the guidelines form part of the guidance on interconnection (guidance was issued on 1st July by way of the TRC Decision).

Article 13 states that "these may include the agreement of interim arrangements ahead of full implementation" (there was agreement as to these interim arrangements as set out in the minutes of the ISC of 6th March).

Article 298 refers to cost based charges in particular LRIC charges. The Article states, "However in the short term TRC wishes to see interconnection charges which better reflect the costs incurred by designated licensees in providing interconnection services. This could initially be based on a fully allocated costing methodology (FAC)… This Article allows for other solutions beside FAC. (TRC exercised its power under this clause on 1st July).

(c) Licences

Article 4.2.1 of the PTO licences require licensees to obey the decisions, rules and instructions of TRC. Licenses further acknowledge that TRC is establishing a new regulatory regime to which they will be subject (on 30th June a TRC Decisions heralded the establishment of a new interconnection regime).

Article 6.1.1 of the PTO licences state that the licensee will adhere to Articles 29(e) and 6 and *"any guidance on interconnection issued by TRC from time to time"* (TRC issued guidance by way of its Decisions on 30th June).

(d) The Meetings of ISC

In the meeting of March 6th a minute was agreed by all parties: "the current implementation program is set to agree cost based charges by the end of June. If at the beginning of June it appears that the current program will not be met, TRC will issue a set of benchmark charges for interconnection services listed above. These charges will come into force together with per second billing on the 1st of July". (These minutes were agreed by the parties with no disagreement recorded).

(e) Statements of the Chairperson of TRC

The Chairperson of TRC has repeated the 1st of July deadline for arriving at cost based or benchmark charges on a number of occasions without dissent from any party.

5. Approach taken in arriving at the TRC Decisions of the 30th June 2003

5.1 Background

The Interconnection Guidelines were approved by the TRC Board on the 25th November 2002, after a 6-month process of review and consultation with the Telecommunications licensees.

The TRC Board in the decision dated 25/11/2002 authorized the CEO to take the necessary procedures and actions for implementing the interconnection guidelines.

In December, due to a number of requests from the Fastlink, JT and MobileCom, in relation to interconnection rates, the CEO requested that the parties arrive at a set of interim rates pending the completion of the work required to arrive at cost based rates.

However even with the TRC intervention, the parties were not able to reach interim arrangements. Fastlink argued in December 2002 that it would be able to complete its cost models within 90 days to enable the TRC to set cost based rates.

A detailed program of work was established and agreed by all parties. The work program was to be undertaken in the Working Groups, which reported an Interconnection Steering Committee (ISC). The parties agreed to set cost based charges by the end of June 2003.

The minutes of the ISC represent joint agreements by the operators as to the way forward in the implementation program. The TRC board adopted the implementation program.

5.2 Working Groups

Upon issuing the Interconnection Guidelines in November 2002 the TRC established an Interconnect Steering Committee (ISC) chaired by the Chairperson and CEO of the TRC. Participants in the ISC were drawn from JT, Fastlink, MobileCom, TRC and other licensed operators.

The Interconnection Steering Committee (ISC) oversaw all work leading to the full implementation of the Interconnection Guidelines as issued on the 27th November 2002. The ISC had the responsibility to:

- Agree the actions required to fully implement the Interconnection Guidelines and seek TRC approval;
- Approve the Terms of Reference for the working groups;
- Co-ordinate the work of the working groups;
- Appoint the chairs and members of the working groups;
- Agree the work plans and targets of the working groups;
- Monitor the progress of the working groups against the agreed targets.

The working groups that were established as a consequence were:

Working Group	Responsibility	Interconnection Guidelines References	Chairman
Designation of Licensees WG (DLWG)	Produce the criteria whereby decisions as to which licensees will be designated will be taken.	Art 4 – Designation of Licensees Section 1 of Guidelines	Mamoun Balqar
Costing Methodology WG (CMWG)	Produce the methodologies for calculating the interconnection costs in both fixed and mobile networks. Defining the costing models to be used to calculate fixed and mobile interconnection charges.	Art 296 – costing methodology Section 7 of Guidelines	Fadi Kawar
Licences WG (LWG)	For determining the changes required to existing operator licences.		Mamoun Balqar
Interconnect Commercial WG (ICWG)	Debating and Agreeing the Commercial sections of the mobile and fixed licensee reference Interconnection Offers (RIOs).	Sections 3 & 4 of The Guidelines	Muwaffaq Abu Aqola
Interconnect Technical WG (ITWG)	Debating and Agreeing the Technical sections of the mobile and fixed licensee RIOs.	Sections 5 & 6 of Guidelines	Ahmad M Obeidat
Interconnect Legal WG (ILWG)	Debating and Agreeing the legal aspects of the RIOs.	Section 8, 9 & 10	Mohammed Khasawneh

The first ISC on the 18th December 2002 approved the Terms of Reference for the ISC and its Working Groups. Chairmen were duly elected. In accordance with Article 13 of the Interconnection Guidelines the TRC consulted with the affected parties to agree a schedule for compliance with the Interconnection Guidelines. The Interconnection Guidelines permitted (12) months from publication for implementation. It was agreed at the ISC on 18th December 2002 that the work of the ISC

> *"..should be finished as soon as possible and certainly by the end of June 2003."*

Three months after the approval of the Interconnection Guidelines the RIOs and Cost Allocation Models were not progressing in a manner, which gave the TRC, the confidence that the RIOs and cost based charges would be available from the operators by the 1st July 2003. Given this concern the TRC introduced the concept of using Benchmark rates as an interim measure pending the availability of cost based figures from the cost allocation models.

The formal minutes of the ISC meeting on the 6th March 2003 recorded:

> *"The current implementation program is set to agree cost based charges by the end of June. If at the beginning of June it appears that the current program will not be met, TRC will issue a set of bench mark charges for interconnection services listed above. These charges will come into force together with per second billing on the 1st of July"*

The Decisions made by the TRC on the 30th June 2003 followed extensive discussions with Fastlink, JT and MobileCom pursuant to procedures contained in the TRC's Interconnection Guidelines, which were adopted by Decision of the TRC Board in November of 2002.

5.3 Cost models and information from operators

In order for the operators to provide cost based interconnection rates, cost allocation models were required to be developed by the operators. The TRC produced two guidance papers[2] concerning the costs allocation assumptions, which the operators are required to follow in developing their models.

In the event prior to the 1st July 2003 all three operators, JT, Fastlink and MobileCom provided cost models. Whilst TRC could not fully endorse these models, TRC acknowledges that the operators have made significant progress towards reaching authentic cost models.

TRC used the un-audited information supplied by the models from the three operators as one of the indicators in arriving at its Decision. The model outputs were drawn on in the arguments set out in Section 6 below.

5.4 International Benchmark charges

The TRC undertook a review of interconnection evaluation rates in 16 countries which were considered to have set charges based on an evaluation of costs.

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[2] "**Consultation Document re Cost allocation in Fixed networks for the purposes of the Interconnection Guidelines in the Hashemite Kingdom of Jordan" December 2002**

"Consultation Document re Cost allocation in mobile networks for the purposes of the Interconnection Guidelines in the Hashemite Kingdom of Jordan" December 2002

In summary the key findings were that cost based rates were in the following ranges:

- Fixed line Single Tandem termination: between 6.5 and 11 fils/minute peak and between 3 and 6.5 fils/minute off-peak
- Fixed line Local termination: 4 to 10 fils/minute peak and 2 to 5 fils/minute off peak
- International Transit: international rates charged to the other operators by the operator with the international relationship vary per route. Transit charges and international settlement rates are not broken out. The international settlement rates are negotiated on a bi lateral basis and are generally not cost based.
- International incoming calls: the mobile operator receives the national termination rate from the operator with the international relationships. The fixed line operators with the international relationships are increasingly receiving different international termination rates for calls to fixed and mobile destinations.

Progress on moving towards cost-based rates for mobile termination is less advanced. The rates, which obtained in 2002 in the 16 countries reviewed ranged widely:

- Mobile termination: 78 fils to 197 fils peak
- Mobile termination: 40 fils to 134 fils off peak

The lowest off peak rate has been taken from the results of the UK Competition Commission's work on mobile termination rates. The lowest mobile peak rate is offered by Telia.

5.5 Benchmark fixed model

The TRC developed a bottom-up model of the JT network using international benchmark prices for equipment and operational costs (using local labour rates).

In summary the key findings were that cost based rates were in the following ranges:

- Fixed line Single Tandem termination: 11.5 to 13 fils/minute blended (depending on traffic levels)
- Fixed line Local termination: 8 to 9.5 fils/minute
- International Transit: 5 to 12 fils/minute plus the settlement rate

5.6 Benchmark mobile model

The TRC, as documented in the ISC minutes of the 6th March 2003, completed a benchmarking exercise. This work included the development of a mobile network costing model for Jordan with costs for equipment and labour being drawn from international pricing and local labour rates. The model was dimensioned for both Fastlink and MobileCom.

In summary the key findings were that cost based Mobile termination rates were in the following range:

- 45 to 69 fils/minute blended, depending on traffic.

5.7 TRC Revenue impact Model

The TRC recognised that in arriving at new interconnection rates it was important to understand the effects any rate change may have on the revenues of operators and the bills paid by customers. For this reason a revenue impact model was developed which assisted the TRC in understanding the dynamics and sensitivity of changes in interconnection rates.

The revenue impact model takes account of such factors as:

- Impact of JT introducing per second billing;
- Interconnection terminating and originating traffic for national and international calls between JT, FL and MC;
- Average interconnection charges per minute;
- Average JT international retail prices;
- Average receipts for incoming international calls to mobile operators;
- Predicted rates of change in mobile and fixed customers;
- Predicted growth rates for fixed-to-mobile calls, mobile-to-fixed calls, and international calls;
- Predicted impact on traffic due to customer growth rates as well as changes in interconnection rates and fixed to mobile retail rates;

The TRC has run the model with different scenarios of traffic and interconnection charges. Using the charges decided by the TRC Board, estimates of the revenue impacts on each party have been made, based upon a range of growth rate assumptions around a base case.

The revenue impact model is by its very nature approximate as it is not possible to predict accurately the impact that changes will have on the companies' or customers' behaviour.

The findings of TRC are set out below in Section 9.

5.8 Decision

Taking the inputs from the above models and benchmarks and weighing them so as to arrive at a reasonable outcome for operators and customers the TRC has arrived at Decisions which are fully justifiable.

6. Justification for TRC Decision

The Decisions have used as a base the following key principles:

- Non discrimination;
- Cost based charges;
- Overriding interest of the consumer;
- Optimal performance of the telecommunications and information technology sectors;
- Promotion of fair competition.

The following sections provide the rationale for the Decisions on interconnection rates, related retail prices and future policies, made by the TRC Board on the 26th and 30th June 2003.

6.1 Mobile Termination Rate

6.1.1 Decision of the TRC

The mobile call termination rate shall be 70 fils per minute.

Note: This will apply for incoming calls irrespective of origination.

6.1.2 Rationale for the Decision

Fastlink Cost Model

The Fastlink Cost Allocation Model was not fully available to the TRC until 17 June 2003 when the password was supplied enabling the TRC to access the model.

TRC established that costs were being incorrectly allocated to the interconnection termination costs including:

- Costs associated with retail activities, handset subsidies, dealer incentives and bad debt:
- Treatment of revenue share (10% of revenue);
- Circular references and possible formula errors;
- Lack of justification for allocation factors;
- Conversion factors.

Further discussions are required with Fastlink to agree the correct cost allocations and for TRC to complete the audit of the model. TRC has agreed with Fastlink that this activity would be completed by 15th August 2003.

MobileCom Cost Model

The MobileCom Cost Allocation Model was initially sent to TRC on 16 June but the password to unlock it was not provided until 24 June 2003. TRC was concerned about a number of assumptions.

MobileCom recently reduced its mobile termination rate offered to JT (1st April 2003) from 120 fils per minute peak/95 fils per minute off peak to 70 fils per minute at all times.

The issues identified within the model included:

- Use of Gross Book Value of assets
- Uplift of capital asset values
- WACC

TRC has agreed to work with MobileCom to clarify their issues and complete the audit of the model. This is not an Interconnection Guideline issue but one of meeting a licence condition.

International Benchmark Charges

The Benchmark charges have indicated that the mobile termination rate varies from 78 to 197 fils/minute peak and 40 fils/min to 134 fils/min off peak. These rates are paid to the mobile operators independent of whether the call originates from within the country or from an international destination.

TRC Benchmark Model

The Benchmark work indicated that the call termination rate would be in the region of between 45 and 69 fils per minute depending on coverage offered, traffic volume, prices paid for network equipment, WACC rate, etc. Because of Fastlink's greater economies of scale, it is not unreasonable to expect that the cost based tariff for Fastlink will be lower than for MobileCom.

TRC considers it important to hold further discussions with the companies so as to clarify the assumptions and identify any areas of difference.

Decision

The late submission of the cost models, lack of documentation and password protection prevented TRC from fully evaluating the models before the 1st July 2003. Further the issues surrounding the mobile model also meant it would be unsafe to take the figures indicated in their models.

The issue of tariff gradients are seen as important to encourage a more efficient use of infrastructure. However MobileCom has been using a flat rate of 70 fils/min. The TRC took the decision to adopt the 70 fils/min rate flat rate but to hold discussions with JT, Fastlink and MobileCom before the 30th Sept. to agree a traffic gradient for fixed and mobile termination for reintroduction on the 1st January 2004.

In summary a cost based rate of 70 fils/min was set for five key reasons:

- It is in the mid range of charges drawn from the cost models of the companies.
- It is the level currently being charged by Fastlink to MobileCom (and vice versa) for terminating mobile calls.
- It is the level that MobileCom has recently reduced its rate for terminating calls from the JT network.
- By setting this level means that Fastlink brings it in line with its licence condition in the provision of non-discriminatory rates. (Art. 6.1.2)
- As there is uncertainty on all models it was concluded that taking this approach was reasonable pending bottoming out the issues on the cost based models of JT, FL and MC.

Next steps

Over the next six weeks the TRC will work with Fastlink and MobileCom to clear up the issues with the models and determine a new cost based mobile termination rate for each company. Prior to the end of September, TRC will agree a tariff gradient for mobile rates. The new rates will be introduced on the 1st January 2004

6.2 Fixed line termination

6.2.1 Decision of the TRC

Jordan Telecom's call termination rate on the fixed network shall be 15.8 fils per minute.

Note: This is a blended rate as indicated in the presentation on the 1st July 2003 to the operators.

6.2.2 Rationale for the Decision

JT Cost Model

The JT Cost Allocation Model, although apparently functionally sound, contained what TRC believed to be incorrect allocations and assumptions. These included:

- Inclusion of and level of access deficit contribution;
- Use of Gross Book Value (GBV) rather than Net Book Value (NBV) for assets;
- Inclusion of bad debt and delayed payment financing charges;
- Treatment of Government revenue share (5%).

The JT model was originally provided to the TRC prior to the 1st July deadline. The actual value of Single Tandem costs will depend upon the final agreement to the issues that TRC has with the JT assumptions.

The TRC was concerned that the issues surrounding the JT model meant it would be unsafe to take the figures, as indicated in their model, at face value.

International Benchmark charges

The international benchmark charges vary from 6.5 fils/min to 11 fils/min peak and 3 fils/min to 6.5 fils/min off peak.

TRC Benchmark model

The TRC Benchmark model for the JT network has indicated that fixed line Single Tandem interconnection ranges from 11.5 fils/minute to 13 fils/minute blended depending on traffic levels.

Decision

The TRC decided to set the cost based rate at an interim level of 15.8 fils/minute. The level of 15.8 fils/minute (blended) was set by the TRC for three reasons:

- It is in the mid range indicated by the JT model;
- Taking a mid point approximation was the same approach taken with the mobile rate;
- As there is uncertainty on all models it was concluded taking this approach was reasonable pending bottoming out the issues on the cost based models of JT, FL and MC.

Next Steps

6. JT to propose a tariff gradient to be used based upon the 15.8 fils/min blended rate. This should be the same as the long distance JT fixed retail tariff gradient.

Before the 30th September TRC will work with JT to agree the assumptions used in the JT Cost Model and set revised cost based termination rates. The new rates will be introduced on the 1st January 2004.

In the same period the JT model (s) will be completed in order to set rates for other interconnection services, which will be backdated to the 1st July 2003.

6.3 International transit charge

6.3.1 Decision of the TRC

Outgoing international transit rates charged by Jordan Telecom shall be 9 % below the Jordan Telecom retail tariff.

6.3.2 Rationale for the Decision

Definition

The Interconnection Guidelines state:

> *Article 67*
>
> *"A call transit service is defined as a service where a Licensee receives voice band calls from one Licensee and routes them to the network of a different Licensee. The Licensee providing the call transit service does not originate or terminate the call within its own network."*
>
> *Article 68*
>
> *"This service may be separated into two categories:*
>
> > a. *National call transit; a call transit service between Licensees within Jordan.*
> >
> > b. *International call transit; a call transit service provided to Licensees to transit their international calls to network operators in other countries."*

Current situation

For International transit (Article 68 (b)) the charge includes an element, which is agreed not purely on a cost basis but is agreed as an international settlement rate either on a bi-lateral basis or within a region (e.g. Arab League). The transit charge is made up of two elements:

- The cost of providing the service from the point of interconnection with the Jordan Operator e.g. Fastlink through the international gateway to the half way point on the international circuit to the foreign operator.

- The agreed international settlement.

Before the 1st July 2003 JT charged the mobile operators a fee per minute on outgoing international traffic based upon 5% discount on the JT published international retail charges, paid on a per minute basis. (Memorandum of Understanding between Jordan Telecom and Fastlink, signed on 21/12/1999).

Information from JT indicates that on average JT is receiving the same amount for incoming international traffic as it is paying for outgoing traffic.

JT Cost Model

Extensive discussions with JT in relation to the cost allocation model showed that per minute costs associated with international transit services which are under the control of JT are high due to a combination of:

- Investment decisions made which appear are more social/political rather than sound business decisions;
- The number of direct international relationships JT maintains;
- The stated need to maintain access to the Arab Sat network;
- The level of international accounting rates currently agreed.

In addition, the cost modelling exercise has resulted in highlighting:

- A substantial deficit being carried by JT in the access network (Line connection and rental income for the lines less the cost of running the local access from the customer to and including the line circuit);
- A deficit in the costs of delivering calls to the ISPs;
- A deficit in the costs of providing national and international data circuits to ISPs;
- Potentially a deficit in delivering inbound international calls to Fastlink.

Furthermore, JT's revenues and margins have been eroded by:

- Reduction in retail revenues earned by JT in outbound international traffic;
- Progressive migration of international terminating traffic to the mobile networks.

JT recognises that in order to be competitive in the international market after 1st January 2005 it has to take action to improve efficiency and cut the costs of handling international traffic.

Further JT recognises that it has to take action to remove the identified deficits in the services. JT is in the progress of:

- **Rebalancing tariffs**. The TRC approved changes to the retail rates in the March 2003. No further retail changes are expected until the first Quarter of 2004.
- **Increase efficiency**. JT has over the past two years reduced staff from a combination of:
    - voluntary redundancy schemes and
    - retirements and
    - people leaving for other jobs.

The TRC acknowledges the manner in which JT is increasing efficiency in a socially responsible manner and does not want to upset this approach. JT plans to complete this process by 31st December 2004 when they lose their monopoly in fixed and international services.

International Benchmark charges

The review of other operator's rates for outgoing international charges resulted in revealing that operators published a list of wholesale prices by destination and time of day. The rates are a summation of the international settlement rates plus the transit costs of the operators. It was not feasible easily to obtain the information to break out the charges and determine the transit charges.

TRC Benchmark model

The efficient international transit rate costs associated with carrying the call to the half circuit point is estimated to be in the region of 5 to 12 fils/minute in addition to the accounting rate settlement agreed with the international correspondent carries. It was clear to the TRC that JT is a long way from achieving this efficient cost base due to the points raised above.

Decision

The TRC took the decision to set the international outgoing charge to other operators at 9% reduction on the JT retail charge for five reasons:

- JT's actual costs are currently significantly higher than international best practice;

- The profit on international outgoing is subsidising the access deficit and deficit on ISP calls;

- JT should be allowed to bring down the international rates in a phased approach in order to complete tariff rebalancing and improve efficiency. By January 2005 the TRC expects that JT will be offering cost based rates on a competitive basis.

- When added to the effective reduction in payments due to the introduction of per second billing, the overall % discount on the current average retail rate is in the order of 23%.

- JT to propose a discount scheme, based on total volume of interconnect traffic or interconnect expenditure by an interconnecting operator, and which may incorporate route specific discounts. TRC expect to receive the JT proposal by the 15th August. This scheme shall provide discounts, which in total are equal to or exceed 9 % below the Jordan Telecom retail tariff for the same destination and time of day.

The objective of the Decision is to:

- Enable JT to cover the current costs of the international business and make a contribution towards the access deficit;

- Enable JT to promote routes where there is spare capacity and share the resulting increased margins.

This approach provides a phased adjustment space for JT but progressive reductions are needed over the coming 18 months through to reaching cost based rates for international services by 1 January 2005.

6.4 Per second billing

6.4.1 Decision of the TRC

All interconnection rates between operators shall be based on per second billing from 1 July 2003.

6.4.2 Rationale for the Decision

TRC decided that all interconnected calls should be billed on a per second basis for the following reasons:

- To fall in line with national interconnected calls;

- It is the standard international best practice for international traffic;

- To meet with the article 308 of the Interconnection Guidelines.

JT has in fact been charging the mobile operators on a per minute basis for outgoing international calls. This has the effect of increasing the margin that JT keeps on outgoing international calls from the mobile operators.

The introduction of per second charging will reduce the receipts by JT from other operators and hence the margin made by JT by between 14% and 15%. The uncertainty arises due to the fact that the TRC is not in possession of the distribution of call lengths and the average call holding time of outgoing international calls.

6.5 Fixed to mobile retail rate

6.5.1 Decision of the TRC

The fixed to mobile tariffs will be 93 fils per minute (blended).

Note: The fixed to mobile retail tariff will therefore be decoupled from interconnection rates. Any further changes to fixed-to-mobile retail rates must be agreed with the TRC with one month's notice.

6.5.2 Rationale for the Decision

The fixed to mobile retail rate has been separately identified and set at 93 fils blended for the following reasons:

- Fixed to mobile retail services should not be regulated as at present by interconnection regulation but by retail price regulation as JT is dominant in the provision of fixed to mobile retail service;

- Following decoupling for the purpose of certainty TRC considers it necessary at this point to set a retail charge for this service;

- It is equivalent to the current fixed to mobile rate for calls to MobileCom. The TRC accepts the current retail tariff gradient for such calls.

- The customer will gain, by a reduction in the retail rate from fixed to Fastlink from 132 fils per minute to 93 fils per minute blended.

Retail rates for monopoly voice services are currently regulated through an RPI – X formula on a basket of service tariffs.

A retail price regulatory review will be undertaken by the TRC to assess the need for modifying the current retail price regulation.

6.6 Outgoing international retail tariffs charged by mobile operators

6.6.1 Decision of the TRC

The outgoing international retail tariffs charged by mobile operators shall be greater than or equal to the corresponding Jordan Telecom retail tariffs until 1/1/2005.

6.6.2 Rationale for the Decision

The decrease in outgoing interconnect charges paid by the mobile operators provides an opportunity to undercut the retail prices charged by JT. JT's international outgoing retail tariff is regulated in the tariff basket. International traffic is a monopoly of JT through to the 1st January 2005. Through to 1st January 2005 international retail rates charged by JT are expected to reduce as the prices of other services in the basket increase and JT increases its efficiency;

The TRC has taken the decision to prevent undercutting of the JT international retail prices by the mobile operators to prevent a spiralling down of international tariffs and a loss of ability for JT to manage the rebalancing and funding of the deficit on customer access and services to ISPs.

Pre paid platform operators and payphone operators do not have such a restriction. This provides for an opportunity for these operators to promote international services.

6.7 Prices for International IP Communications Services

6.7.1 Decision of the TRC

Interconnection rates offered by JT to ISP's shall not exceed current rates.

6.7.2 Rationale for the Decision

The cost model of JT indicates that JT has a relatively high unit-cost ATM network because it is under-utilised. The objective is to encourage an increase in traffic to reduce the unit costs. Any increase in cost to the customer or ISP will discourage rather than encourage the required increase in traffic.

The TRC will work with JT to keep the cost of internet access to customers at a reasonable level to encourage the use of internet, therefore the utilization of JT data network. At present JT provides national peering free of charge and has agreed not to charge for this services through to the end of 2004.

7. Summary of interconnect charges

The Table below summarises the rates from the different sources:

Service	Pre 1st July 2003	International Benchmark charges	TRC Benchmark Model Results	Operators Cost Model Results	TRC Decision 1st July 2003
Fixed Termination	25 fils/min peak 20 fils/min off peak	6.5 – 11 fils/min peak 3 – 6.5 fils/min off peak	11.5 – 13 fils/min blended	CONFIDENTIAL	15.8 fils/min blended
Mobile Termination – Fastlink	120 fils/min peak 95 fils/min off peak	40 - 134 off peak 78 –197 fils/min peak	45 – 69 fils/min blended	CONFIDENTIAL	70 fils/min
Mobile Termination - MobileCom	70 fils/min peak and off peak	40 - 134 off peak 78 –197 fils/min peak	45 – 69 fils/min blended	CONFIDENTIAL	70 fils/min
Mobile to Mobile	70 fils/min peak and off peak	78 –197 fils/min peak	45 – 69 fils/min blended	CONFIDENTIAL	70 fils/min
International Transit	5% discount on JT retail rates by route and time of day on a per minute basis	Varies by route - transit and settlement rates are not broken out	5 – 12 fils/min plus international settlement rate	CONFIDENTIAL	9% discount on JT retail rates by route and time of day on a per second basis
International Incoming	Mobile termination rate	Mobile termination rates	Fixed termination - 11.5 – 13 fils/min blended Mobile termination - 45 – 69 fils/min blended	CONFIDENTIAL	Mobile termination rate (70 fils/minute)

The above table indicates outcomes which TRC contends are reasonable and justifiable at this time. The figures derived from the cost models of the operators are confidential.

8. Impact of TRC Decision

The move from the existing interconnection rates to cost based interconnection rates will provide incentives to the sector to improve performance. Expected effects will include:

- Reduction of margin on fixed to mobile retail customer tariffs;
- Pressure on JT progressively to improve efficiency;
- Pressure on Fastlink to remove the subsidy of on-net retail prices by interconnection charges.

The impact should be placed in context with the actual turnover and profitability of the companies

When considering the financial impact of the Decisions of the TRC with all growth rate scenarios (See Appendix A) it can be said that:

- JT receipts reduce the most due primarily to the reduction international in revenues. The reduction predicted for the coming 12 months is estimated to be less than 3% of its total 2002 revenue. TRC notes that, of the three companies, JT, having originated as a state-run monopoly, still has significant opportunities to improve its efficiency.
- Fastlink receipts do not reduce as much as JT primarily due to the reduced mobile termination rate. The reduction predicted for the coming 12 months is estimated to be less than 1% of its 2002 annual revenues. Fastlink is a relatively new company compared to JT however there will inevitably be opportunities for efficiency gains due to the fact that during the time they have been in business the primary focus would have been on business growth.
- MobileCom gains in revenue due to the net reduction in outpayments to JT and the fact that they had already reduced their mobile termination rate to 70 fils prior to the 1st July 2003. The gain predicted for the coming 12 months is estimated to be in excess of 3% of its 2002 annual revenues.
- Customers are predicted to have a net gain equal to approx 2% of the three companies' 2002 annual revenues taken together.

9. Setting rates on the 1st July 2003

The TRC, Fastlink, JT and MobileCom agreed that the new rates would apply from the 1st July 2003 at the ISC on the 6th March 2003.

> *"The current implementation program is set to agree cost based charges by the end of June. If at the beginning of June it appears that the current program will not be met, TRC will issue a set of bench mark charges for interconnection services listed above. These charges will come into force together with per second billing on the 1st of July"*

At the time the TRC recognised that for operational reasons it may take some time to implement and hence recognised that the rates would come into force on the 1st July but be backdated to take account of any operational issues.

The TRC recognised that in addressing changes to the interconnection rates it was desirable that the changes should be made at the same time to both mobile and fixed termination rates. This is indicated in the minutes of the ISC meeting on the 6th March 2003:

> *"There was a discussion concerning the agreement of Interconnect Agreements based on the RIOs and the timings thereof. It is the intention of the TRC that new IAs be agreed as soon as possible after the 1st July. The cost-based rates will be backdated to the 1st of July in order to mitigate any delays in signing IAs.*

The 1st July 2003 is the date agreed by all parties for the implementation of the new interconnection rates.

10. Next Steps

In order to further advance the interconnection regime TRC announced at the 1st July 2003, ISC meeting a series of measure:

10.1 Completion of RIOs

The RIOs of Fastlink and JT will be completed for publication on the 1st August

It is important that the RIOs are accurate. Rather than meet the original date of 1st July the TRC will give the Designated Operators a further fixed period of one month to complete their RIOs.

10.2 Completion of Cost Models

The models provided to TRC, prior to the 1st July 2003, had not reached the required level of completeness.

The cost models of Fastlink, MobileCom & Jordan Telecom will be complete and based charges agreed for interconnection services by the 1st October 2003 for implementation on 1st January 2004. However International transit services will not reach cost base until 1st January 2005.

The cost models of Fastlink, JT and MobileCom are required to be robust and to fully meet the TRC's guidelines on Cost Allocation. The cost models should also cover all interconnection services to be provided by the respective operators in accordance with the terms of their licenses, interconnection guidelines and the demand for their services.

Further charging rates have yet to be set for other interconnection services such as:

- Transmission link services
- Interconnection link services
- Co-location and facility sharing services
- Operator services
- Advanced call services

Rates for these services will be agreed by the 15th August 2003 for back dating to the 1st July 2003.

The costing work will continue to arrive at new rates for all interconnection services by the 1st October 2003 for implementation on the 1st January 2004.

TRC recognises the need for JT to progressively rebalance its retail tariffs and increase efficiency. For this reason TRC accepts that the international interconnection charges will not reach cost base until 31st December 2004.

10.3 Further review

A further review will be undertaken in the 2nd quarter of 2004 for implementation on the 1st July 2004 when new rates will be set based on FAC calculations using 2003 data.

TRC recognises that the industry requires a period of stability. Maintaining the Cost Allocation Methodology over two financial years will assist the industry in financial planning.

11. Conclusions

In setting the 1st July rates, the TRC had to balance the interests of all the parties taking into consideration such factors as:

- Optimal performance of the telecommunications and information technology sectors". (Article 6(a) Telecom Law);
- Outstanding issues surrounding the costing models of JT, Fastlink and MobileCom;
- Ensuring licensees are meeting their licence requirement for non-discrimination;
- Ensuring licensees progressively move towards meeting their licence condition of providing cost based tariffs;

The TRC will continue to work with the Licensees to progressively implement the interconnection Guidelines through to full implementation by the 31st December 2004.

- End of paper –

Appendix A – Scenarios for Revenue Impact Model

Base case assumptions (2H2003-1H2004 compared with 2002):

- 2% growth in fixed lines and traffic
- 5% growth in mobile customers with 5% growth in mobile traffic
- International: 5% growth in traffic
- JT to FL: 20% growth in interconnection traffic due to reduced retail rate (132 to 93 fils/minute)
- JT to MobileCom: 10% growth in interconnection traffic due to reduced retail rate
- FL to JT: 5% growth in interconnection traffic due to reduced termination rate
- MC to JT: 5% growth in interconnection traffic due to reduced termination rate

Low growth assumptions (2H2003-1H2004 compared with 2002):

- 2% growth in fixed lines and traffic, and 5% growth in mobile customers with 5% overall growth in total mobile traffic.
- JT to FL: 5% growth in fixed to mobile traffic due to lower fixed to mobile charges
- JT to MobileCom: 5% growth in fixed to mobile traffic due to lower fixed to mobile charges
- FL to JT: 2% growth in interconnection traffic due to a predicted lowering of mobile to fixed call charges.
- MobileCom to JT 2% growth in interconnection traffic due to a predicted lowering of mobile to fixed call charges.

High growth rate assumptions (2H2003-1H2004 compared with 2002):

- 2% growth in fixed lines and traffic, and 5% growth in mobile customers with 5% overall growth in total mobile traffic.
- JT to FL: 25% growth in fixed to mobile traffic due to lower fixed to mobile charges
- JT to MobileCom: 20% growth in fixed to mobile traffic due to lower fixed to mobile charges
- FL to JT: 10% growth in interconnection traffic due to a predicted lowering of mobile to fixed call charges.
- MobileCom to JT: 10% growth in interconnection traffic due to a predicted lowering of mobile to fixed call charges.

ANNEX 2

Interconnection Disputes Process, dated July 2003

http://www.trc.jo/static_english/new stuff/interconnection disputes process.pdf

Telecommunications Regulatory Commission

Interconnection Disputes Process

1. Scope of disputes:

1.1 In the event of any dispute or difference arising between or among the licensees relating to or arising out of an interconnection agreement, including the implementation, execution, interpretation, rectification, termination or cancellation of the agreement, the licensees shall meet within 10 (ten) working days of written notice of the dispute or difference from one licensees to the other (or such longer time as mutually agreed by the licensees in writing to negotiate in good faith in an effort to settle such dispute or difference, and if the dispute or difference is not resolved to the licensees satisfaction within 20 (twenty) working days of the meeting (or such longer time as mutually agreed by the licensees in writing), the licensees shall proceed as follows:

2. Disputes Resolution Mechanisms:

2.1 Without prejudice to the rights of the licensees to go to the courts, such dispute or difference shall be referred to the TRC in accordance with article 60/b of the telecommunication law no. 13 of 1995 and it's amendments for determination if either or both parties so request, or in the alternative if both parties agree then the matter may proceed to arbitration.

3. Making a Request to the TRC:

3.1 Without prejudice to the rights of the TRC to exercise its power to resolve any complaints within the authority given to it by the telecommunication law, if a licensee refers the disputes to the TRC for resolution the designated commissioner shall propose a solution himself/herself or by mean of experts appointed by the said commissioner for this purpose and shall request to receive the following:

- ? a full explanation of the dispute;
- ? a clear list of all the issues which are in dispute;
- ? proposed remedies ie: state exactly what it is you want the TRC to do;
- ? a short chronology of events;
- ? details of the parties concerned and copies of the relevant parts of an existing agreement, where applicable;
- ? the views of all parties;
- ? reasons why a settlement can not be reached commercially;
- ? copies of all relevant correspondence, notes of meetings etc between the parties, and any other relevant data (cost and technical information) or supporting evidence;

3.2 The request for resolution should be made in writing to:

Chief of the Board/Chief Executive Officer
Telecommunication Regulatory Commission
Attention of:

Address ………………………………..

3.3 The disputant licensee should ensure that it is clear whom TRC should contact to discuss the details of the dispute.

3.4 TRC will need to disclose to the other party to the dispute that it has been asked to intervene in the dispute and, in order to settle the matter effectively, to disclose the representations and views put forward. Accordingly, the request for a dispute resolution should be accompanied by non confidential version of the request which TRC can send straight away, with an additional evidence, to the other party for comment and their views.

4. Expenses:

4.1 TRC will charge the disputants for the cost of actual resources consumed in terms number and cost per man hours per class of profession for resolving the dispute.

5. TRC Procedures:

5.1 TRC aims to record all interconnection dispute resolution requests on the day of receipt and to acknowledge them within five working days from the date of receipt of a request.

5.2 TRC will, first, confirm with the parties involved that there is a genuine dispute, that the parties have sought to resolve matter commercially and what the precise matter on which agreement cannot be reached.

5.3 TRC will request any further relevant information from parties in dispute, and after all the necessary information is received, TRC will then aim to make its decision within two months from the date of receipt the required information and prepare an explanatory document, explaining the reasons for its decision.

5.4 If during the dispute proceedings, the parties settle the dispute, the TRC shall terminate the proceedings and, if requested by the parties, record the settlement in the form of an a ward on agreed terms.

6. Objection:

6.1 The decision rendered by the designated commissioner shall be implemented immediately upon issuance.

6.2 Objections to the decision will be permitted before the Board of Commissioners within thirty days of the date of issuance, otherwise the decision will be considered final.

6.3 The Board of Commissioners shall issue its decision regarding the objection within a period of fifteen working days of receipt thereof unless a longer period is deemed necessary by the Board, in such case the disputants will be informed.

7. Challenging Decision:

7.1 Each party have the right to challenge the decision rendered by the board of Commissioners of the TRC before the competent court.

8. Each party will continue to fulfill its lawful obligations during the pendency of a dispute or any dispute resolution, and shall keep their networks connected for the provision and conveyance of calls between their respective networks. No Party shall disconnect the other party's network without the prior approval of the TRC and any party seeking to bring about such disconnection may make representations to the TRC, the TRC shall give due consideration to the matter and may seek representations from the other party prior to making any determination regarding the disconnection of the said net works.

ANNEX 3

Fixed License Agreement

http://www.trc.jo/Static_English/doc/Fixed%20Lic1.pdf

THE HASHEMITE KINGDOM OF JORDAN

TELECOMMUNICATIONS REGULATORY COMMISSION

LICENSE AGREEMENT

Issued at Amman,

THIS LICENSE AGREEMENT made the

BETWEEN:

TELECOMMUNICATIONS
REGULATORY COMMISSION (TRC) of
the Hashemite Kingdom of Jordan

OF THE FIRST PART

- and -

a Jordanian company, established under the *Companies Law* (Law No. 1 of 1989) and registered at the Ministry of Trade and Industry under the number on,("the Licensee")

OF THE SECOND PART

WITNESSES THAT WHEREAS:

A. In accordance with the *Telecommunications Law*, as defined herein, the TRC has been established as an independent regulator and the legal successor to the Telecommunications Corporation in all matters relating to the regulation of the telecommunications sector in Jordan;

C. Also in accordance with the *Telecommunications Law* and certain decrees and decisions of the Council of Ministers, the Licensee has been established as operator of telecommunications networks and services in Jordan; and

D. As contemplated by the *Telecommunications Law*, the Licensee and the TRC now wish to record the terms and conditions upon which the Licensee is entitled to be Licensed to install, operate and manage telecommunications networks and services in Jordan,

NOW, THEREFORE, the TRC and the Licensee agree as follows:

ARTICLE 1 - INTERPRETATION

1.1 Definitions

In this License Agreement, unless the subject matter or context otherwise requires, the following capitalised terms shall have the following meanings:

1.1.1 "Affiliate" means, in relation to any one Person, any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person.

1.1.2 "Basic Public Telephone Service" means the telecommunications services comprising technical features which are the minimum necessary to allow the establishing of a telephony channel capable of allowing customers to make and receive local, national and international calls supporting speech, facsimile and data communications.

1.1.3 "Control" means the ownership of more than fifty percent (50%) of the voting interests in the subject Person and/or the ability to control in fact the business and affairs of the subject Person, whether by ownership, contract or otherwise.

1.1.4 "Customer" means any Person who has indicated willingness to the Licensee to receive Services from the Licensee on the Licensee's terms and conditions, or has entered into a contract with the Licensee for the provision of such Services.

1.1.5 "Enhanced Services" means enhanced or value added telecommunications data services that act on the format, content, code or protocol of information in order to provide the user with additional or different information or that involve subscriber interaction with stored information including, computer and data processing services, data information and exchange services, credit card verification services and Internet services, other than transmission services to or over the Internet. However, services such as credit or debit card services or directory assistance services that involve limited subscriber interaction with stored information to assist in the set up, billing or use of Basic Public Telephone Service shall not be considered Enhanced Services.

1.1.6 "Effective Date" means.

1.1.7 "Frequencies" means the radio frequencies allocated to the Licensee for exclusive use in the operation of the Services as specified in Appendix 2, as amended or modified in accordance with the terms hereof.

1.1.8 “License Agreement” means this license agreement and all appendices attached hereto, as amended or modified in accordance with the terms hereof.

1.1.9 “Network Termination Point” means a connection and testing point at which a circuit provided by a Public Telecommunications Service Provider may be connected to telecommunications equipment provided by a subscriber on its premises or interconnected with the telecommunications network equipment of another Public Telecommunications Service Provider.

1.1.10 “Operating License” means the public telecommunications operating license issued to the Licensee pursuant to Section 2.1.1, as amended or modified in accordance with the terms hereof.

1.1.11 “Paging” means non-speech one-way personal selective calling with alert, without message or with defined message such as numeric or alpha-numeric.

1.1.12 “Person” means any individual, company, corporation, partnership, joint venture, consortium, government or governmental entity.

1.1.13 “Public Switched Voice Service” means the provision of fixed voice telephone service to the public regardless of the technology used.

1.1.14 “PTTN” means the public telecommunications transport network in Jordan, now existing and as it may be modified or expanded, consisting of all telecommunications transmission facilities, including any wire, cable, radio, satellite, optical or other electromagnetic systems used for the transmission and switching of intelligence for members of the public for compensation, that are located wholly or partly in Jordan. In particular, it includes:

1.1.14.1 fixed local exchange telecommunications networks;

1.1.14.2 national (long distance) networks; and

1.1.14.3 international networks connecting Jordan with other places in the world.

1.1.15 “Public Telecommunications Service Provider” means any Person licensed or otherwise legally authorized to operate in Jordan a Public Telecommunications Network, as defined in the *Telecommunications Law*.

1.1.16 "Services" means Public Switched Voice Service and other fixed telecommunications services which fall within one or more of the following categories:

1.1.16.1 telecommunications services, other than Enhanced Services, that transport intelligence (including data, video and multimedia) in electronic form between Network Termination Points, including services that utilise such applications as frame relay, packet switching, asynchronous transfer mode (ATM) switching and ISDN and transmission services to or over the Internet;

1.1.16.2 leased circuit services;

1.1.16.3 telex, facsimile and similar recorded message services; and

1.1.16.4 credit or debit card services and directory assistance services that involve limited subscriber interactionn with stored information to assist in the set up, billing or use of Public Switched Voice Service.

1.1.17 "Spectrum License" means the spectrum license issued to the Licensee pursuant to Section 2.2, as amended or modified in accordance with the terms hereof.

1.1.18 "*Telecommunications Law*" means the *Telecommunications Law* (Law No. 13 of 1995) of Jordan.

1.2 Appendices

The following Appendices annexed hereto form part of this License Agreement and are subject to all the terms and conditions set out herein:

Appendix 1 - Operating License
Appendix 2 - Spectrum License
Appendix 3 - License Fees
Appendix 4 - USO and Service Coverage and Quality
Appendix 5 - Price Regulation
Appendix 6 - Limitations on Exclusivity
Appendix 7 - Spectrum Management License Fees

ARTICLE 2 - LICENSES

2.1 Grant of Licenses

2.1.1 In accordance with the *Telecommunications Law* and upon and subject to the terms and conditions set out herein, the TRC hereby grants to the Licensee:

2.1.1.1 the Operating License to install, operate and manage the Services, in the form set out in Appendix 1; and

2.1.1.2 the Spectrum License to use the Frequencies in the operation of the Services, in the form set out in Appendix 2.

2.1.2 The Operating License granted hereunder authorizes the Licensee to install, operate and manage only the Services specified therein and does not authorize the Licensee to install, operate or manage any other public telecommunications service in Jordan. For greater certainty:

2.1.2.1 except as provided in Section 2.2.3, nothing herein authorises the Licensee to install, operate or manage any mobile telecommunications service;

2.1.2.2 the Operating License does authorise the Licensee to own and operate telecommunications facilities forming part of the PTTN and used in connection with the Services; and

2.1.2.3 the Licensee is authorized to engage in such other activities as may be reasonably necessary to the provision of the Services in accordance with applicable laws and this License Agreement.

2.1.3 The Spectrum License authorizes the use of the Frequencies by the Licensee only for the purposes specified therein. The Licensee is not authorized to use the Frequencies for any other purpose.

2.2 Additional Licenses

2.2.1 The TRC agrees that, subject to compliance with the *Telecommunications Law*, the Licensee shall be entitled to install, operate and manage any other telecommunications services licensed under a class license approach by the TRC, provided the Licensee meets the applicable class criteria established by the TRC and agrees to be bound by the terms of the applicable class license.

2.2.2 The TRC shall not unduly discriminate against or grant undue preferences to any similarly situated Public Telecommunications Service Providers, including the Licensee, in the establishment of class license criteria or in the tendering of new operating or spectrum licenses under the *Telecommunications Law*.

2.3 Effective Date and License Terms

The Operating License and the Spectrum License shall come into force on the Effective Date and, subject to Article 8, shall continue in full force and effect until the expiration of the respective license terms specified therein.

2.4 Exclusivity

2.4.1 Subject only to Section 2.5 and Appendix 6, until The Licensee acknowledges that it shall have no rights of exclusivity in respect of any telecommunications service except as expressly provided for herein.

2.4.2 The TRC may not, during the period that the Licensee has the exclusive authority to operate telecommunications services pursuant to Section 2.4.1, grant licenses to other Persons to commence the operation of such telecommunications services prior to the expiry of such period of exclusive authority. For greater certainty, the TRC may issue a license in respect of such telecommunications services prior to the expiry of such period of exclusive authority, provided that no telecommunications service is in fact operated under such a license until after expiry of the period of exclusivity.

2.4.3 The TRC shall, subject to Section 2.5, use reasonable best efforts to ensure that the Licensee obtains the full benefit of the exclusivity rights specified in this Section 2.4 through the enforcement of this License Agreement and licenses issued to other Public Telecommunications Service Providers by TRC.

2.5 Limitation on Exclusivity - Migration Proposals

The exclusive rights granted in the preceding Section 2.4 are subject to.

2.6 Ownership of Facilities

For greater certainty, nothing in this License Agreement grants to the Licensee or any other Person any ownership or other right or interest in or any right to acquire any ownership or other right or interest in any telecommunications or other facilities owned by any Jordanian government entity, including fibre optic facilities, microwave facilities and satellite earth stations, which now or in the future provide telecommunications services or facilities to the Licensee or any other Public Telecommunications Service Provider.

ARTICLE 3 - FEES

3.1 Operating License Fee

The Licensee shall pay to the TRC an annual Operating License fee in an amount intended to represent the Licensee's proportionate share of the reasonable budgeted annual costs of the TRC incurred in regulatory operations related to the Services and the PTTN, other than radio spectrum management costs. This fee will be payable annually in advance on the dates and in the amounts determined in accordance with Appendix 3.

3.2 Spectrum License Fee

In addition to the fees payable in respect of the Operating License under Section 3.1, the Licensee shall pay to the TRC Spectrum License fees in accordance with the TRC's Spectrum Fees Schedule (Appendix 7), as amended from time to time. Spectrum fees shall be reduced accordingly if the Licensee returns unused spectrum to the TRC for reallocation.

ARTICLE 4 - GENERAL CONDITIONS OF LICENSE

4.1 General

The Licensee shall ensure that it complies with each of the terms and conditions of this License Agreement at all times during the term of the Operating License and the Spectrum License. The Licensee acknowledges that failure to comply with any of such terms and conditions may constitute grounds for termination of this License Agreement, revocation of the Operating License or Spectrum License or the imposition of fines or penalties in accordance with the *Telecommunications Law* and the terms hereof.

4.2 Eligibility

The Licensee shall be a Jordanian company established and in good standing under the *Companies Law* of Jordan, as the same may be amended or replaced from time to time.

4.3 Ownership and Control

4.3.1 The Licensee shall not Control or own, directly or indirectly, any ownership interest in any other Public Telecommunications Service Provider which is licensed to provide any of the Services in Jordan, provided however that no breach of this license condition will result from the ownership, directly or indirectly, by the Licensee of less than ten percent (10%) of the shares of a public company, which owns, directly or indirectly, any ownership interest in a Public Telecommunications Service Provider which is licensed to provide any of the Services in Jordan.

4.3.2 No Person shall Control or own, directly or indirectly, any ownership interest in the Licensee if such Person Controls or owns, directly or indirectly, any ownership interest in any other Public Telecommunications Service Provider which is licensed to provide any of the Services in Jordan, provided however that no breach of this license condition will result from the ownership, directly or indirectly, by any such Person of less than (10%) of the shares of a public company, which owns, directly or indirectly, any ownership interest in the Licensee or any other Public Telecommunications Service Provider.

4.3.3 Any change in Control of the Licensee shall require the prior written approval of the TRC.

4.4 Standard of Conduct

The Licensee shall not use or knowingly permit the use of its Services for any purpose that violates applicable law. The Licensee shall endeavour to take all action within its control to ensure that its Services are not used for any such purposes. The Licensee shall include this same provision precluding the use of its Services for illegal purposes in its contracts with its Customers.

4.5 Roll-Out and Coverage

The Licensee shall roll out the Services and provide and maintain Service coverage in accordance with the requirements set out in Appendix 4.

4.6 Service Obligation

4.6.1 In all areas required to be served in accordance with the requirements of Appendix 4, the Licensee shall provide Basic Public Telephone Service to any Person wishing to obtain it and willing to pay the Licensee's published prices and abide by other generally applicable terms and conditions established by the Licensee in accordance with this License Agreement.

4.6.2 Except as otherwise permitted by the *Telecommunications Law* or this License Agreement, the Licensee shall comply with Article 29(h) of the *Telecommunications Law* and shall not discriminate unduly in the provision of any of the Services or in the charging of its rates for any of the Services between similarly situated Customers or groups of Customers or grant any undue preferences between them, provided that nothing herein shall prevent the Licensee from engaging in marketing practices, such as the offering of promotional discounts, to the extent such practices do not constitute undue preferences or undue discrimination.

4.6.3 Notwithstanding Section 4.6.2, to meet national security requirements or for occupational, social or humanitarian reasons, the Licensee may propose discriminatory or preferential service offerings that fall within the exceptions provided for in Article 29(h) of the *Telecommunications Law*. Any such proposals shall be made in writing to the TRC which shall then determine whether such proposed discriminatory or preferential offerings are due and lawful. The Licensee shall not implement any such proposal without the prior written approval of the TRC, which shall not unreasonably be withheld or delayed. The cost to the

Licensee of providing exceptional service offerings in accordance with Article 29(h) of the *Telecommunications Law* shall not exceed two percent (2%) of the gross revenues of the Licensee in the fiscal year during which such exceptional service offerings are provided.

4.7 Price Regulation

The prices, which the Licensee may charge its customers in connection with the Services, will be subject to regulation by the TRC as set out in Appendix 5.

4.8 Specifications

All telecommunications facilities and equipment installed by the Licensee in its networks after the Effective Date shall be new when first installed in the Licensee's network in Jordan and shall comprise state-of-the-art technology that complies with internationally recognised standards.

4.9 Equipment

Terminal equipment used by the Licensee or provided by the Licensee to its subscribers must be type approved by the TRC. The Licensee shall permit its subscribers to purchase or lease TRC type approved terminal equipment to be used with its network from the Licensee or any third party. Except as provided for in this Section 4.9, this License contains no restriction on the ability of the Licensee to sell, lease or maintain any telecommunications apparatus, including customer premises equipment, which will be connected to the PTTN for the provision of Public Switched Voice Service.

4.10 Frequencies

4.10.1 The Licensee acknowledges that other countries may authorize or permit the use of their radio frequencies in a manner that interferes with the Licensee's use of the Frequencies and that it is the responsibility of the Licensee to report such interference as soon as practicable, in order that the TRC may take measures to counter such interference. The Licensee shall use the Frequencies in compliance with all national, regional intergovernmental and international arrangements in effect that are designed to reduce radio interference among service providers. The TRC shall defend the rights of the Licensee under the Spectrum License in accordance with the ITU Regulations and the *Telecommunications Law*.

4.10.2 The Licensee may apply to the TRC for the right to use additional frequencies in connection with the Services. The TRC may license additional frequencies to the licensee pursuant to the Spectrum License, subject to availability and based on demonstrated existing or reasonable projected subscriber demand and an assessment of whether or not the Frequencies are being utilized efficiently. At all times, the Licensee shall implement all commercially reasonable measures to optimize the efficiency and effectiveness of its use of the Frequencies.

4.10.3 The TRC may, in order to comply with international spectrum co-ordination requirements, ITU-R assignments or reassignments, or generally in the course of regulating the radio spectrum in the best interests of Jordan, reassign radio frequencies used by the Licensee or require the Licensee to surrender its rights in respect of radio frequencies which are not reasonably required for the operation of the applicable Service. In such cases the TRC and the Licensee shall consult with each other before any such action is taken and the TRC shall provide the Licensee with adequate time and, where applicable, assign appropriate alternative frequencies or take such other reasonable action as may be necessary, to permit the Licensee to carry on its business without unreasonable costs or disruptions.

4.10.4 The Licensee shall obtain site specific approvals from the TRC in respect of each of its radio transmission sites. The TRC shall issue such approvals as soon as reasonably possible after the Effective Date in respect of each of the Licensee's radio transmission sites in operation on the Effective Date. The Licensee shall comply at all times with all applicable construction and other permit requirements and standards applicable to its business under Jordanian law and ITU standards.

4.11 Books and Records

4.11.1 The Licensee shall at all times keep at its principal place of business within Jordan, all proper books and records accurate and up-to-date in accordance with Jordanian generally accepted accounting principles (GAAP) and good business practices. All financial information submitted by the Licensee to the TRC for any purpose shall be prepared and presented in accordance with GAAP or as the TRC shall direct, provided that such direction does not result in any unreasonable additional costs being incurred by the Licensee.

4.11.2 The TRC shall have reasonable access during normal business hours to the books and records of the Licensee in accordance with the *Telecommunications Law*.

4.12 Annual Reports

As soon as possible, within four (4) months of the end of each fiscal year of the Licensee, the Licensee shall file with the TRC seven (7) copies of an annual report, annual audited consolidated financial statements and, if applicable, separate financial statements for the Services and any other telecommunications services operated by the Licensee, audited where available. This annual report shall include detailed information in respect of the following:

4.12.1 the roll-out or upgrading of the Services achieved during the past fiscal year, including a detailed report on the Licensee's compliance with Appendix 4 and

Section 4.6 and all other applicable universal service, coverage and quality of service obligations;

4.12.2 an explanation of the reason for any shortfall in compliance with the obligations referred to in Section 4.12.1, together with an estimate of when the shortfall will be remedied. If the shortfall is alleged to be caused by a third party, the Licensee shall include any relevant documentation reasonably obtainable from that third party;

4.12.3 an estimate of the roll-out or upgrading anticipated for the Services for the next fiscal year;

4.12.4 the number of subscribers for the Services at the beginning and end of the fiscal year covered by the report;

4.12.5 all material instances in which, so far as the Licensee is aware, the Licensee's obligations under any provisions of this License Agreement have not been met, together with an explanation for such failure; and

4.12.6 any other information reasonably deemed relevant by the Licensee or reasonably requested by the TRC in writing.

4.13 Submission of Reports

Any information or reports provided to the TRC pursuant to this License Agreement shall be in either or both the English language or the Arabic language and signed by a senior officer of the Licensee who shall certify, so far as the Licensee is aware, the completeness and accuracy of the report or information. In the event of any inconsistency between an Arabic language document and an English language document, the Arabic language text shall prevail.

4.14 Other Information

The Licensee shall furnish to the TRC such further or other information as required, periodically and from time to time, for the purpose of exercising the functions assigned to it under the *Telecommunications Law*. Such information shall be furnished at the time and in the format requested by the TRC in writing. In making these requests, the TRC shall ensure that, the Licensee shall not be required to furnish information which would not normally be available to it.

4.15 Confidentiality

All information furnished by the Licensee to the TRC and marked "confidential" shall be held in confidence by the TRC. Such information may be released by the TRC to the extent it is or becomes publicly available through no fault of the TRC or to the extent its release is required by any applicable law or order, provided that the TRC gives the Licensee prior notice of that release. This requirement of confidentiality shall survive any termination or expiry of this License Agreement or revocation of the Operating License or Spectrum License. The Licensee acknowledges that confidentiality will not apply to any information supplied to the TRC regarding the Licensee's compliance with its obligations hereunder, including the obligations set out in Appendix 4, which information shall be made public by the TRC.

4.16 Access to Licensee Premises

The TRC shall have access to all premises of Licensee in accordance with the *Telecommunications Law*.

4.17 Co-operation with TRC

4.17.1 The Licensee shall at all times co-operate with the TRC and its authorized representatives in the exercise of the functions assigned to the TRC under the *Telecommunications Law* and shall make its facilities available for the implementation of judicial, administrative and security orders relevant to the tracing of telecommunications transmissions, as specified in such orders.

4.17.2 The Licensee acknowledges that the TRC is in the process of establishing a general regime for the regulation of the telecommunications sector in accordance with the *Telecommunications Law*. The Licensee will be subject to that regime in respect of the Services when it comes into force to the same extent it applies to all Public Telecommunications Service Providers licensed to provide the Services. Without limiting any rights or powers of the TRC hereunder or under applicable law, the TRC agrees to establish and comply with open, fair and transparent practices and procedures in the exercise of its regulatory operations and, in particular, agrees, except in emergency situations and subject to its obligations of confidentiality, to issue all its rules, decisions and instructions publicly and in writing following appropriate consultation with interested parties.

4.18 Use of Jordanian Resources

Subject to applicable law and international obligations of Jordan, the Licensee shall maximize the use of Jordanian human and material resources in the installation, operation and management of the Services to the extent reasonably possible in the circumstances and provided that such resources are available.

4.19 Anti-Competitive Practices

The Licensee will not, alone or together with others, engage in or continue or knowingly acquiesce in any anti-competitive practices and, in particular, the Licensee shall:

4.19.1 not engage in anti-competitive cross-subsidization;

4.19.2 not abuse its dominant position;

4.19.3 not enter into exclusive arrangements with third parties for the location of its facilities that are required to provide any of the Services;

4.19.4 not enter into any agreements, arrangements or undertakings with any Person, including any supplier of services that compete with any of the Services and which have as their objective or effect the fixing of prices or any other restraint on competition;

4.19.5 not engage in any anti-competitive tied or linked sales practices; provided that the Licensee may bundle services so long as the bundled services are also available separately;

4.19.6 not use information obtained from competitors if the objective or effect of such use is anti-competitive; and

4.19.7make available to other Public Telecommunications Service Providers on a timely basis technical information about essential facilities and other commercially relevant information that is necessary for them to provide service.

4.20 Segregation of Services

The Licensee shall operate the Services covered by the Operating License, taken together, and the telecommunications services covered by each additional operating license issued or delivered to it in the future, in each case taken together, through operating divisions or Affiliates and shall maintain fully separate books of account and other business records for each such division or Affiliate. The Licensee shall file with the TRC with its annual report a detailed report on all charges, transfers and other relations between its divisions or Affiliates that are subject to the terms and conditions of this or any other license agreement entered into with the TRC in the future. However, the operating divisions and Affiliates of the Licensee shall be permitted for commercial efficiency to share operating systems and personnel (for example, billing, customer care, marketing), provided that the Licensee maintains separate books of account and other business records in accordance with Section 4.11. At the reasonable request of TRC, the Licensee shall transfer the business of any such division into an Affiliate, provided that the TRC shall allow the Licensee a reasonable time, not exceeding one (1) year, to effect such transfer.

4.21 Compliance with Law

The Licensee shall comply with all laws of the Kingdom of Jordan applicable to the Service and its operations, including the *Telecommunications Law*, all decisions, rules and instructions of the TRC and, all policies of the Government of Jordan. For greater certainty, the Licensee acknowledges that the TRC is in the process of establishing a general regime for the regulation of the telecommunication sector. The Licensee will be subject to that regime when it comes into force to the extent it applies to the Licensees' services.

ARTICLE 5 - RELATIONS WITH CUSTOMERS

5.1 Customer Complaints

The Licensee shall maintain adequate trained personnel to receive and respond promptly to complaints from its Customers. The Licensee shall take all commercially reasonable action to promptly remedy and avoid the recurrence of the cause of all Customer complaints which relate to the quality, availability or delivery of the Services. The Licensee shall also take all commercially reasonable actions necessary to guarantee that amounts due to customers are paid in full if the Operating License is revoked.

5.2 Customer Contract

Except to the extent the TRC exempts the Licensee from the requirements of this Section 5.2, the relationship between the Licensee and the Customers of the Services shall be governed by the terms of a Customer contract which incorporates standard terms and conditions approved in accordance with this Article 5. The Licensee shall not offer the Services otherwise than pursuant to a Customer contract which incorporates approved standard terms and conditions, without the prior written consent of the TRC.

5.3 Content of Terms and Conditions

5.3.1 The standard Customer contract terms and conditions referred to in Section 5.2 shall include, at a minimum, provisions approved by the TRC in respect of the following matters:

5.3.1.1 deposits and alternative methods of providing security for payment where reasonably required, provided that in no circumstances may such deposits or security exceed the charges reasonably anticipated to be incurred by the Customer within a three (3) month period;

5.3.1.2 confidentiality of Customer information;

5.3.1.3 refunds or other rebates for service problems or over billing;

5.3.1.4 payment terms, including any applicable interest or administration charges;

5.3.1.5 minimum contract period;

5.3.1.6 Customer and Licensee rights of termination; and

5.3.1.7 method of settlement of Customer complaints or other disputes, including provision for appeal to the TRC in the event that a dispute cannot be resolved by the parties.

5.4 Approval of Terms and Conditions

5.4.1 The Licensee shall file with the TRC for approval a proposed draft form of standard terms and conditions as required by Section 5.2. Within sixty (60) days of receipt of a draft, TRC shall either approve the draft by notice in writing to the Licensee, or advise the Licensee in writing that the draft is not approved. If the TRC does not advise the Licensee that a proposed draft is not approved within the said sixty (60) day period, the draft shall be deemed to be approved as filed.

5.4.2 If the TRC does not approve a draft submitted under Section 5.4.1, it shall provide a detailed, written explanation of the reasons for such non-approval sufficient to permit the Licensee to revise the draft in a manner which would be approved by the TRC. The Licensee may then file an amended draft for approval and Section 5.4.1 shall again apply. The TRC shall approve such draft unless it is inconsistent with the *Telecommunications Law* or other laws, this License Agreement or other directives or rules of the TRC.

5.4.3 When a form of standard terms and conditions is approved they shall be incorporated by the Licensee in all contracts between the Licensee and its Customers in respect of the Services until such time as amended standard terms and conditions are approved by the TRC under this Article 5. Nothing in any agreement between the Licensee and a Customer shall contradict or modify the applicable standard terms and conditions.

5.5 Availability of Standard Terms and Conditions

A copy of the approved standard terms and conditions shall be provided to any interested party upon request and, after the Effective Date, to any new Customer prior to commencement of service to, or receipt of any payment or deposit from, such Customer. All provisions of any Customer contract shall be typed and provided to each Customer in the Customer's choice of Arabic or English.

5.6 Amendment to Customer Contracts

5.6.1 Approved standard terms and conditions may be amended with the approval of the TRC at the request of the Licensee. Any requests for amendments by the Licensee shall be made by filing an amended draft with the TRC. The provisions of Sections 5.4 and 5.5 shall govern the approval of any such amendment.

5.6.2 Any amendment to a Customer contract shall come into force thirty (30) days after announcement in the media or by delivery of a written copy of such amendment to the applicable Customer, unless that Customer objects to such amendment to the TRC or the Licensee in writing before the expiry of that thirty (30) day period.

5.6.3 In the event that a Customer objects to an amendment to a Customer contract within thirty (30) days after announcement in the media or by delivery of a written copy of such amendment to such Customer, Licensee may continue to serve such Customer according to the terms and conditions under the pre-existing Customer contract. The continuation of Service on such terms and conditions shall not be a breach of the *Telecommunications Law* or other laws, this License Agreement or any directive or rule of the TRC.

5.7 Customer Invoices

5.7.1 All Customer invoices rendered by the Licensee in respect of the Services shall be timely, clear, concise, typed in the Customer's choice of Arabic or English and easy to understand.

5.7.2 All Licensee invoices shall describe in such details as is reasonably possible all charges for the current billing period and the due date for payment. Any Licensee invoices in respect of any outstanding balance and related interest or administration charges, if any, shall also contain in such details as is reasonably possible all amounts payable and the due date for payment.

5.8 Provision of Ancillary Services

5.8.1 The Licensee shall provide a Directory Information Service (DIS) which:

5.8.1.1 based on the information available to the Licensee, includes an up-to-date electronic database of all numbers for the customers of the Licensee and the Customers of all other Public Telecommunications Service Providers that provide such information to the Licensee;

5.8.1.2 is available to all the Licensee's customers and used by the Licensee's DIS operators to provide information to telephone users;

5.8.1.3 includes the provision of paper telephone directories that are available to the general public, subject to a reasonable charge approved by the TRC;

5.8.1.4 protects the privacy of all individuals that request in writing unlisted telephone numbers, addresses, names or other personal information;

5.8.1.5 is made available to other Public Telecommunications Service Providers on terms and conditions to be approved by the TRC in accordance with the applicable terms and conditions of the licenses of those other Public Telecommunications Service Providers;

5.8.1.6 complies with other reasonable requirements imposed by the TRC in accordance with the *Telecommunications Law* and which shall be generally consistent with the types of DIS services provided in comparable countries; and

5.8.1.7 is priced to the Licensee's Customers at rates approved by the TRC which recover the costs of DIS service after taking into account directory advertising revenues.

5.8.2 The Licensee shall provide access to Jordanian government emergency services. This access service shall:

5.8.2.1 provide direct operator assistance or automatic connections to local police, fire and ambulance assistance by means of a simple telephone number with operator standby assistance available in case of automated systems failure;

5.8.2.2 be provided free of charge to all the Licensee's customers;

5.8.2.3 be made available to other Public Telecommunications Service Providers on terms and conditions to be approved by the TRC, based on principles of competitive neutrality and in accordance with the applicable terms and conditions of the licenses of those other Public Telecommunications Service Providers, and

5.8.2.4 comply with other requirements imposed by the TRC in accordance with the *Telecommunications Law* and which shall be generally consistent with the types of emergency services provided in comparable countries.

5.8.3 The Licensee shall, within one year of the Effective Date, provide to the TRC a plan outlining specific detailed plans to improve access to the Services by users with disabilities. Such plans shall consider the feasibility of installing telecommunications devices for the deaf and other access mechanisms that are available in other countries to facilitate access by disabled users. The plans shall propose a reasonable level of investment and expenditure on access mechanisms relative to the expenditures of other countries. TRC shall review the plans and encourage consultations between the Licensee and representatives of disabled users in order to develop the best possible approach to improving access consistent with the financial constraints of the Licensee and the socio-economic development levels of Jordan. At the end of these consultations, the TRC shall approve, and the Licensee shall implement the approved plan.

5.9 Code of Practice for Consumer Affairs

5.9.1 The Licensee shall prepare and publish a Code of Practice for Consumer Affairs approved by the TRC, giving guidance to the Licensee's Customers and employees in respect of any disputes and complaints relating to the provision by the Licensee of the Services.

5.9.2 The Licensee shall prepare an initial draft of the Code of Practice and submit it for review by the TRC within 6 months of the Effective Date.

5.9.3 The Code of Practice on Consumer Affairs shall contain guidelines on the following issues:

5.9.3.1 complaints;

5.9.3.2 dispute settlement;

5.9.3.3 location of Customer service departments;

5.9.3.4 Customer invoices and billing arrangements;

5.9.3.5 quality of service performance targets;

5.9.3.6 provision of ancillary services;

5.9.3.7 other matters dealt with in the terms and conditions of service of the Customer contract referred to earlier in this Article 5; and

5.9.3.8 guide lines on service termination.

5.9.4 After approval of the Code of Practice by the TRC, the Licensee shall report to the TRC on an annual basis (within one month of the end of the Licensee's accounting period) on the performance of the Licensee in meeting the guidelines set in the Code of Practice, and on the progress made in implementing the guidelines.

5.9.5 In the event of a dispute relating to the Code of Practice remaining unresolved between the parties in dispute, the TRC shall determine the issues between the parties.

ARTICLE 6 - RELATIONS WITH OTHER OPERATORS

6.1 Interconnection with Other License Holders

6.1.1 The Licensee acknowledges that interconnection between the Licensee's network and the networks of other Public Telecommunications Service Providers is governed by Section 29(e) of the *Telecommunications Law*, the provisions of this Article 6 and comparable provisions in the licenses of other network operators and any *Guidance on Interconnection* issued by the TRC from time to time, all as may be amended or replaced from time to time.

6.1.2 The Licensee will act fairly and without discrimination in accordance with applicable law and the terms of this License Agreement in all business dealings with other Public Telecommunications Service Providers and shall co-operate with other Public Telecommunications Service Providers to facilitate the provision of telecommunications services to all users throughout Jordan and so as to optimise the use of common facilities in the location of network facilities.

6.1.3 The Licensee shall exercise its reasonable best efforts to provide other Public Telecommunications Service Providers in Jordan with leased circuit services and other PTTN services, including international services, that they require without undue delay. If the Licensee does not provide such services promptly and at reasonable rates, the other licensed telecommunications service providers may procure the services from alternative facilities providers authorised by the TRC, in compliance with the Law, or self-provision them in accordance with Section 2.5 and Appendix 6.

6.1.4 The TRC shall exercise reasonable best efforts to cause other Public Telecommunications Service Providers to act fairly and without unfair discrimination or preference in accordance with applicable law and applicable terms of license in all business dealings with the Licensee, including interconnection.

6.1.5 All interconnection obligations of the Licensee shall be interpreted and enforced by the TRC so as to ensure that so far as is reasonably possible in the circumstances they are competitively neutral and non-discriminatory.

6.2 Principles of Interconnection

6.2.1 The Licensee shall interconnect its network with all other Public Telecommunications Service Providers in Jordan for purposes of providing their lawful services. Subject to Section 6.1, in negotiating interconnection and other arrangements with other licensed Public Telecommunications Service Providers, the Licensee shall agree to:

6.2.1.1 provide interconnection at any technically feasible point in the network;

6.2.1.2 provide interconnection under non-discriminatory terms, conditions (including technical standards and specifications) and rates and of a quality no less favourable than that provided for its own like services or for like services provided to non-Affiliated service suppliers or for its Affiliates;

6.2.1.3 provide interconnection in a timely fashion on terms, conditions (including technical standards and specifications) and 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. In this context, cost-based rates means rates comprised of the long run incremental costs of providing interconnection plus a reasonable share of the common costs of the Licensee's operations;

6.2.1.4 provide interconnection upon request, at points in addition to the Network Termination Points offered to the majority of users, subject to the terms of a written agreement between the Licensee and the party requesting interconnection and at charges that reflect the cost of construction of necessary additional facilities;

6.2.1.5 lease to such other service providers on a non-discriminatory basis, facilities (rooms, towers, ducts, cable etc.) under the control of the Licensee and required for use by such others;

6.2.1.6 allow access to such facilities by such other license holders, upon request, for the purposes of installation, maintenance and repair;

6.2.1.7 provide reasonable notice to such other service providers about any network design, roll-out or upgrade plans or changes which may be expected to affect the arrangements between the parties;

6.2.1.8 take steps to protect such other service providers' systems from interference or other harm caused by the facilities and equipment used by the Licensee; and

6.2.1.6 not enter into any arrangements for access to any service or facility that would preclude the operator of that service or facility or another service provider from entering into similar arrangements with the operator of that service or facility.

6.2.2 The procedures applicable for interconnection to the Licensee's network shall be made publicly available.

6.2.3 The Licensee will make publicly available either its interconnection agreements or reference interconnection offers.

6.2.4 The Licensee shall be entitled to require, as a condition of entering into any interconnection agreement, that:

6.2.4.1 current generally accepted international engineering principles and practices in the telecommunications sector are adhered to in the provision of any interconnection services;

6.2.4.2 due account is taken of the needs of the Licensee's Customers and the needs of other Public Telecommunications Service Providers and private network operators, both current and future, that have made or make requests to interconnect with the Licensee's network;

6.2.4.3 it is not required to interconnect its network if doing so would unduly risk causing damage to the Licensee's property, or the death of, or personal injury to, any person employed or engaged in the Licensee's business.

6.3 Failure to Agree

If the Licensee is unable to reach agreement with another Public Telecommunications Service Provider on the terms and conditions of interconnection or other arrangements within one month after the first request in writing for interconnection by either party, either party may by notice in writing request that the TRC adjudicate between them. The TRC's decision on all matters in dispute shall be binding on both parties.

6.4 Approval Required

All interconnection or other agreements between the Licensee and any other Public Telecommunications Service Provider or private network operator shall be filed for approval with the TRC. The Licensee shall not give effect to any such agreement until it has been approved by the TRC. The TRC shall be deemed to have approved any such agreement thirty (30) days after it is filed unless it gives written notice of disapproval to the Licensee prior to the expiry of that thirty (30) day period.

ARTICLE 7 - NUMBERING PLAN

7.1 Purpose

For the purposes of this Article 7, numbering is used to identify Network Termination Points of the public switched telecommunications network. These Network Termination Points may be connected to apparatus on a customer's premises, interconnected with networks run by other Public Telecommunications Service Providers, or used to access various telecommunications services.

7.2 Numbering Plan

The Licensee acknowledges that TRC has the primary responsibility for administration of the Jordanian numbering plan in accordance with applicable law.

7.3 Administration

Administration of the numbering plan shall be carried out by TRC in accordance with published rules and procedures, prepared in consultation with interested parties, and cover the following matters:

7.3.1 Identification of licensed operators, service providers and any other parties who may be eligible to apply for an allocation of numbering capacity;

7.3.2 Details of the supporting information that is to be provided with each application for a reservation or for an allocation of numbering capacity;

7.3.3 The criteria to be used by TRC in the assessment of applications for numbering capacity, including target response times, recognizing the importance of non-discrimination and confidentiality in a competitive environment;

7.3.4 The consultation procedures to be followed by TRC where an existing allocation is to be withdrawn or a proposed allocation might create problems for network operators or end users;

7.3.5 Publication of information on the current status of all national destination codes and associated number blocks, including designations and announcements of reservations and allocations;

7.3.6 Publications of annual reports on utilization of capacity; and

7.3.7 Arrangements for periodic review of the plan to ensure that lack of availability of numbering capacity never constrains future development of telecommunications systems and services in Jordan.

7.4 Number Allocation

7.4.1 TRC will allocate blocks of numbers to the Licensee and to other Public Telecommunications Service Providers, who will in turn allocate individual numbers to Customers, Attachment 2 to Appendix 4, maintaining suitable records of utilization of numbering capacity. The Licensee and other Public Telecommunications Service Providers will be required to reprogram or re-engineer their networks to convey calls to numbers in a newly allocated block, either directly to Customers on the same network or via points of interconnection with other operators' networks.

7.4.2 All allocations of numbers shall be made under non-discriminatory terms and conditions by the TRC upon request by the Licensee and other Public Telecommunications Service Providers for services they reasonably anticipate providing in the foreseeable future.

7.5 Calling Line Identity

The Licensee shall co-operate with other Public Telecommunications Service Providers to allow telephone numbers to be associated with an outgoing call to convey the Calling Line Identity (CLI).

7.6 Ownership

The blocks of numbers allocated by TRC, and the individual numbers allocated by network operators, are to be regarded as part of a national resource so that ownership is not transferred when an allocation is made. However, an allocation conveys an ongoing right of use and an expectation of a reasonable notice period should it be necessary to withdraw or to change allocated numbers.

7.7 Number Portability

The Licensee shall co-operate with other network operators in the specification and development of number portability to allow replacement service without a change of number. Subsequent implementation of number portability is to be subject to operational practicability, commercial viability and the development needs of the Kingdom.

7.8 Carrier Selection

The Licensee shall co-operate with other network operators in the specification and development of carrier selection to allow a choice of routing. The choice of method(s) and subsequent implementation is to be dependent on Customer demand, operational practicability, commercial viability and the development needs of the Kingdom.

ARTICLE 8 - MODIFICATION, RENEWAL AND TERMINATION

8.1 Modification

8.1.1 Subject to Section 8.3, this License Agreement and the Operating License and the Spectrum License may be amended or modified only in accordance with the provisions of the *Telecommunications Law*, provided however that no modification or amendment to the following provisions of this License Agreement may be made without the prior written agreement of the Licensee:

8.1.1.1 Sections 2.4, 2.5, and Article 8 of this License Agreement;

8.1.1.2 The term of the Operating License or the Spectrum License;

8.1.1.3 Section 2 of Appendix 3 hereto; and

8.1.1.4 Appendices 5 and 6 hereto.

8.1.2 Subject to Section 8.3, Article 6 and Appendix 4 hereto shall not be modified or amended during the exclusivity period specified in Section 2.4 hereof without the prior written agreement of the Licensee.

8.2 Termination

Before the expiry of their respective terms, this License Agreement may be terminated and the Operating License and Spectrum License may be revoked only in the event of a material breach by the Licensee and in accordance with Section 8.3. For this purpose a material breach means any act or omission or series of acts or omissions which constitute grounds for the revocation of a license under the *Telecommunication Law* and which (i) seriously jeopardize the provision of an adequate level of the Services at reasonable prices to a significant group of customers in Jordan, or (ii) seriously impairs the ability of the TRC to perform its lawful functions in a reasonable manner.

8.3 Procedure

8.3.1 The TRC shall not amend, modify, revoke or terminate this License Agreement or the Operating License or the Spectrum License without first giving the Licensee notice in writing clearly setting out in detail the basis for such proposed action and giving the Licensee a reasonable opportunity of no less than thirty (30) days to show cause why such action should not be taken or to correct the alleged material breach. If the Licensee shows cause, or corrects the alleged material breach, to the satisfaction of the TRC, the TRC shall allow the Licensee sufficient time, as is reasonable in the circumstances, to remedy any breach that gave rise to the notice and which remains outstanding.

8.3.2 If this License Agreement is terminated and the Operating License and the Spectrum License are revoked by the TRC in accordance with this Article 8 ،(i) the TRC may grant to the Licensee a discretionary extension of the Licensee's authority to operate the Basic Public Telephone Service for up to one (1) year so as to permit the Licensee to wind up its operations, and (ii) the Licensee shall sell or cause to be sold to any Person designated in writing for this purpose by the TRC all of the telecommunications network assets owned by the Licensee or its Affiliates and used in the operation of the Services (excluding, for greater certainty, the benefit of this License Agreement and the Licenses issued pursuant hereto) for an aggregate purchase price equal to the fair market value of such assets. If the person designated by the TRC pursuant to the previous sentence and the Licensee do not agree on the fair market value of the assets within ninety (90) days, then such fair market value amount shall be determined by an arbitration committee according to the Jordan Arbitration Law. The Licensee shall be obligated to complete such a transaction of purchase and sale prior to the expiry of the one (1) year period referred to above by delivery of title to the said assets free and clear of any liens, charges or any other rights of others against delivery of the purchase price in immediately available funds. If the TRC does not designate a purchaser of the Licensee's assets within one (1) year after the License Agreement is terminated, the Licensee may sell such assets to a third party of its choosing.

8.4 Prohibition

If this License Agreement is terminated under this Article 8, except for the Government of Jordan, no Person who Controlled the Licensee at the time of the major default shall be entitled to apply for a license to install, operate or manage a Public Telecommunications Network in Jordan, alone or with others, before the lapse of five years following the date upon which such termination becomes effective.

ARTICLE 9 - GENERAL

9.1 Notice

Any notice or other communication to be given by the TRC or the Licensee to the other in connection with this License Agreement shall be given in writing by personal delivery in Amman to the following address:

To TRC:

Telecommunications Regulatory Commission
7th Circle
Amman

Attention: Director General

To the Licensee:

Jordan Telecommunications Company
Tower Building
3rd Circle
Amman

Attention: Director General

9.2 Law

This License Agreement shall be governed by the laws of Jordan.

9.3 Assignment

This License Agreement and the Operating License and the Spectrum License are personal to the Licensee and may not be sold, assigned or pledged as security without the prior written consent of the TRC. The TRC will consent to the assignment of the Operating License and Spectrum License to an Affiliate of the Licensee provided that (i) such Affiliate becomes a party to this License Agreement and agrees to fulfill and perform all of the obligations of the Licensee, and (ii) no such assignment shall relieve the Licensee of any of its obligations hereunder.

9.4 Interpretation

The use of headings herein and the division hereof into Articles and Sections is for the convenience of reference only and shall not affect the construction or interpretation hereof. References herein to Articles, Sections and Appendices are to Articles, Sections and Appendices hereof, unless expressly provided for to the contrary. The terms “hereof”, “herein” and similar expressions refer to this License Agreement in its entirety unless expressly provided for to the contrary.

9.5 Amendment and Waiver

This License Agreement may not be amended, modified or supplemented without the prior written consent of the TRC. No waiver of any breach of any provision of this License Agreement shall be effective or binding unless made in writing and, unless otherwise specified, any such waiver shall be limited to the specific breach waived.

9.6 Adherence to Terms of Licensing

9.6.1 The Director General of the TRC shall monitor the Licensee's adherence to this License Agreement and shall take appropriate measures to oblige the Licensee to comply with this License Agreement, the *Telecommunications Law*, regulations, the rules, instructions and decisions of the TRC and the policies approved by the Council of Ministers. Any decision of the Director General in exercising these responsibilities shall be final and binding on the Licensee unless and until it is overruled by the Board of Directors of the TRC.

9.6.2 Except for Section 8.3.4, nothing herein is intended to limit in any way any rights of appeal or review which the Licensee may have available to it under the laws of Jordan.

9.6.3 Without limiting any other right or remedy available to the TRC at law, if the Licensee fails to comply with:

9.6.3.1 any of its material obligations under the *Telecommunications Law*;

9.6.3.2 any of its material obligations hereunder; or

9.6.3.3 any of its material obligations under any rules, decisions or instructions of the TRC,

the Licensee shall be subject to a fine payable to the TRC in an amount not to exceed two hundred thousand Jordanian Dinars (JD 200,000) in respect of each such compliance failure. The amount of any sanction imposed pursuant to this Section 9.6.3 shall be determined with reference to the severity of Licensee's non-compliance.

9.6.4 Without limiting any other right or remedy available to the TRC at Law, if the Licensee fails to make payment on any amount of fee, fine or penalty to the TRC pursuant hereto, interest shall accrue and be payable monthly in arrears on the outstanding amount, including accrued interest, at the rate of 9% per annum.

IN WITNESS WHEREOF the parties hereto have executed this agreement.

TELECOMMUNICATIONS REGULATORY COMMISSION

by: ____

Chairman

by: ____

Chairman

APPENDIX 1

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

TRC OPERATING LICENSE – No.

WHEREAS as contemplated by the *Telecommunications Law* (the "Licensee") and the Telecommunications Regulatory Commission ("TRC") have entered into a contract of an administrative nature pursuant to which an Operating License is granted to the Licensee;

NOW THEREFORE this Operating License confirms that the Licensee is licensed to install, operate and manage the Services, upon and subject to the terms and conditions of the License Agreement between the TRC and the Licensee dated .

Subject to renewal or revocation in accordance with applicable law and the above-referenced License Agreement, the term of this License is for a period of twenty-five (25) years, beginning on the Effective Date and terminating on , provided however that the term of this License shall automatically be renewed and extended following the expiry of the initial twenty-five (25) year term unless and until the TRC gives ten (10) years written notice of termination.

Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

Issued at Amman, this .

TELECOMMUNICATIONS REGULATORY COMMISSION

per: ______________________________

Director General

APPENDIX 2

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

TRC SPECTRUM LICENSE – No.

WHEREAS as contemplated by the *Telecommunications Law* (the "Licensee") and the Telecommunications Regulatory Commission ("TRC") have entered into a contract of an administrative nature pursuant to which a Spectrum License is granted to the Licensee;

NOW THEREFORE this Spectrum License confirms that the Licensee is licensed to use the frequencies listed in Attachment 1 to this Spectrum License on an exclusive basis in the operation of the Services in Jordan, upon and subject to the terms and conditions of the License Agreement between the TRC and the Licensee dated.

Subject to renewal or revocation in accordance with applicable law and the above-referenced License Agreement, the term of this License shall be the same as TRC Operating License No.

Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

Issued at Amman, the.

TELECOMMUNICATIONS REGULATORY COMMISSION

per: ______________________________

Director General

ATTACHMENT I
TO
TRC SPECTRUM LICENSE No.

(See attached)

APPENDIX 3

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

LICENSE FEES

1. General

This Appendix 3 forms part of the License Agreement dated between the Telecommunications Regulatory Commission ("TRC") and ("the Licensee") and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

2. Operating License Fees

2.1 Subject to Section 2.4 of this Appendix 3, the amount of the Operating License fees for first year of the Licensee's operations shall be . This amount shall be paid to the TRC on or before the Effective Date.

2.2 Subject to Section 2.4 of this Appendix 3, the Operating License fee for subsequent years shall be paid to the TRC on or before the applicable anniversary of the Effective Date. The amount of the Operating License fee for subsequent years shall be determined by the TRC and published by public notice at least 30 days prior to the date payments are due.

2.3 Changes in the Operating License fee made under the preceding Section of this Appendix 3, shall be made based on actual changes in the TRC's budgeted costs of regulatory operations (excluding spectrum management costs) and a fair allocation of those costs among all Public Telecommunications Service Providers. Subject to Section 2.4 of this Appendix 3, the TRC shall act without discrimination for or against the Licensee with respect to any fees charged to the Licensee and shall not charge the Licensee any fees in respect of the Services that it does not impose on all licensed operators of such services in Jordan.

2.4 In no event shall the Operating License fee payable hereunder by the Licensee in any fiscal year be greater than one percent (1%) of the aggregate gross revenues of the Licensee from the operation of the Services in that year.

APPENDIX 4

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

USO AND SERVICE COVERAGE AND QUALITY

1. General

This Appendix 4 forms part of the License Agreement dated between the Telecommunications Regulatory Commission ("TRC") and ("the Licensee") and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

2. Universal Service Obligation

2.1 The Licensee shall no later than , provide at its prevailing standard connection and other rates Basic Public Telephone Service to any Person requesting such service in all municipalities and populated areas recognized by the Minister of Municipalities and Environment of Jordan that have a population of or more permanent inhabitants as determined by the census of .

2.2 After the Licensee shall provide at its prevailing standard connection and other rates Basic Public Telephone Service to any Person requesting such service in all municipalities and populated areas recognized by the Minister of Municipalities and Environment of Jordan or its successor that have a population of or more permanent inhabitants as determined from time to time by the Department of Statistics, or its successor.

2.3 After , outside of the municipalities and populated areas referred to in Section 2.2 of this Appendix 4 the Licensee shall provide Basic Public Telephone Service to any Person requesting such service at its prevailing standard connection and other rates, provided however that in such circumstances the Licensee shall be permitted to recover from such customer the full incremental cost of connection over and above the average cost of connection of the Licensee if and to the extent such cost exceeds the Licensee's average cost of man hours work plus JD.

2.4 In the absence of subscriber demand for line connections, the Licensee may satisfy its service coverage obligations under Sections 2.1 and 2.2 by provisioning access lines for use by licensed national public payphone operators. Nothing in this Appendix 4 shall require the Licensee to provide Basic Public Telephone Service to any Person who is unwilling to pay the Licensee's published prices and abide by the other generally applicable terms and conditions established by the Licensee in accordance with this License Agreement.

2.5 The Licensee shall comply with any regulatory directives that may be established by the TRC to ensure that the universal service obligations (USO) established under this Appendix 4 are administered in a transparent, non-discriminatory and competitively neutral manner, and are not more burdensome than necessary for the kind of universal service required in Jordan. The TRC may require separate accounting of the costs of the USO and may permit or require the Licensee to provide an opportunity to the other service providers to implement the USO upon payment of a subsidy from the Licensee that is similar to the internal subsidy that would otherwise have been paid for the Licensee's performance of the USO.

2.6 Except as expressly contemplated in Section 2.3 of this Appendix 4, until such time as a competitor to any part of the Licensee's Public Switched Voice Service has begun operations pursuant to a license issued by the TRC, the entire cost of the USO of the Licensee as provided for in this Appendix 4 shall be paid for by the Licensee. The TRC shall establish a regime for the sharing of USO costs before the start of operations of any Public Switched Voice Service in competition with the Licensee.

3. Quality of Service Standards

3.1 The Licensee shall operate the Services so as to meet the quality of service and performance standards set out in Attachment 1 to this Appendix 4. After the year , the Licensee shall at all times continue to meet or exceed the quality of service and performance standards set out in Attachment 1 to the Appendix 4 in respect of the year . In addition, after the year , the Licensee shall meet such higher and additional quality of service and performance standards as the TRC may establish after consultation with the Licensee, provided that such standards shall be comparable with international standards.

3.2 The service quality indicators for shall be considered benchmarks only, which the Licensee shall use reasonable best efforts to meet.

3.3 If within one (1) year after the Effective Date the TRC determines that the information presupposed in calculating the quality of service targets set forth in this Appendix 4 was substantially inaccurate, the Licensee and the TRC shall in good faith agree to a proportionate change to the targets for the relevant year and all years thereafter, as applicable. Such a determination by the TRC may be based on evidence from the Licensee which demonstrates the substantial inaccuracy of such information.

4. Force Majeure

4.1 The Licensee shall be excused, on a day-to-day basis, from compliance with this Appendix 4 to the extent it is unable to comply due to faults attributable to another public or private telecommunications service provider or due to other forces beyond its reasonable control.

4.2 If at any time the Licensee is, or projects that it will be, unable to comply with the requirements of this Appendix 4 because of faults alleged to be attributable to another public or private telecommunications service provider in Jordan or because of other forces beyond its reasonable control, the Licensee shall forthwith advise the TRC and, where applicable, the other telecommunications service provider, of the facts and circumstances giving rise to such inability to comply.

4.3 The Licensee shall take any commercially reasonable action necessary to correct any faults or overcome or avoid any other facts or circumstances so as to re-establish compliance with this Appendix 4 as soon as reasonably possible.

ATTACHMENT I
TO
APPENDIX 4

(See attached)

ATTACHMENT 2
TO
APPENDIX 4

(See attached)

APPENDIX 5

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION
PRICE REGULATION

1. General
This Appendix 5 forms part of the License Agreement dated between the Telecommunications Regulatory Commission and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

2. Application
   (a) Prices, which the Licensee may charge customers for the Services, shall be regulated in accordance with the *Telecommunications Law.* Until the regulation of such prices shall be in accordance with Council of Ministers , such prices shall be regulated in such manner as the Council of Ministers may determine in accordance with the *Telecommunications Law.*

   (b) The Licensee may apply to the TRC to review the value of the X factor in the price cap formula set in this Appendix, and to establish a new value of X for a period of 5 years, taking into account the following:

      (i) evidence of productivity increases experienced in the telecommunications sector in Jordan and other countries;

      (ii) a comparison of the Licensee's tariffs with those of other telecommunications operators in like circumstances in the Middle East;

      (iii) the extent of competition in the telecommunications sector; and

      (iv) the need for further investment by the Licensee in network infrastructure.

3. Price Cap
In accordance with the above referenced Council of Ministers Decree, until , the prices of the Services which fall within the Basket of Services, as defined in Attachment 1 to this Appendix 5, shall be fixed by the TRC in accordance with a price cap method that shall comply with the following principles:

   (a) The price cap method shall apply to a Basket of Services consisting of the Services listed in Attachment 1 to this Appendix 5.

(b) The Licensee may apply in writing to TRC to change the prices for one or more of the Services within the Basket of Services. The proposed effective date for such price changes shall be no earlier than 30 days from the date the application is filed. The price changes set out in such an application shall be approved and fixed by TRC no later than 14 days after the filing date of the application, if the price changes comply with the price cap method. The price changes set out in such an application shall only be disapproved by the TRC if the calculations contain mathematical errors or the prices violate the *Telecommunications Laws* or the price cap method in a material respect.

(c) Annual price changes for the Basket of Services shall not exceed the amounts determined for that year in accordance with the formula:

P(current year) = P(past year) + P(past year) x (CPI - X)

where:

P	is the price of the Basket of Services (determined in accordance with a revenue weighted index approved by TRC that is consistent with good international regulatory practice calculated on the basis of revenues shown in the latest available accounts of the Licensee at the time of the TRC review of the proposed price changes)
CPI	is the most recently published increase in the Jordanian Consumer Price Index, and
X	is %.

(d) For the purpose of determining compliance with the price cap method in 1999, the base price of the Basket of Services shall be based on the prices listed in Attachment 1 to this Appendix 5.

(e) No price increase for an individual service which is included within the Basket of Services shall exceed % annually unless such an increase has received the prior written approval of the Council of Ministers. Evidence of such approval shall be filed as part of the application of the Licensee to TRC to approve and fix the price change.

4. Other Services

In accordance with the above-noted Decree of the Council of Ministers, the prices of Services provided by the Licensee that are not included in the Basket of Services may be adjusted by the Licensee in accordance with guidelines issued or approved by TRC based on the prices listed in Attachment 2 to this Appendix 5.

5. <u>Procedures</u>

The details of the price cap method and other price regulation to be implemented in accordance with this Appendix 5 shall be approved by TRC after consultation with the Licensee and other interested parties. TRC shall establish and comply with open, fair and transparent practices and procedures in the implementation and application of price regulation of the Licensee.

6. <u>Tariff Review</u>

If during any fiscal year of the Licensee, the effect of this License Agreement, the *Telecommunications Law*, any other legislation or regulations applicable to the Licensee has or is reasonably likely to have a materially adverse impact on the Licensee or on the Licensee's ability to fulfill its obligations under this License Agreement (a "Material Change"), the Licensee may request by notice to the TRC that the TRC, or the TRC may by notice to the Licensee, review this Appendix 5. The TRC shall notify the Licensee within 10 (ten) days after the notice by or to the Licensee whether it determines that there has been a Material Change. If the TRC determines that there has been a Material Change, it shall institute a review of this Appendix 5. If a review is instituted, the results of the review shall be published and delivered to the Licensee together with the TRC's proposals and modifications (if any) not later than 20 (twenty) days after its determination. A period of 20 (twenty) days from the date of the publication shall be allowed for interested parties, including the Licensee, to respond to the TRC in writing. Following receipt and due consideration of the written responses, the TRC shall issue its decision with respect to any modifications to this Appendix 5 within a period of 20 (twenty) days after the receipt of those responses. The modifications (if any) shall reflect a reasonable balancing of the requirements of the *Telecommunications Law*, interests of the Licensee's customers, the Licensee and the shareholders of the Licensee and shall not prevent the Licensee from earning revenues sufficient for it to meet its obligations under this License Agreement and, provided that the Licensee demonstrates that it is operated in a reasonably efficient manner, due consideration shall be given to the overall financial condition of the Licensee and the reasonable expectations of its shareholders. The modifications shall become effective in the fiscal year immediately following the publication of the TRC's decision. The TRC shall be entitled to appoint an independent, internationally recognised expert (whose reasonable fees shall be met by the Licensee) for the purposes of this Section 6.

ATTACHMENT I
TO
APPENDIX 5

(See attached)

ATTACHMENT 2
TO
APPENDIX 5

(See attached)

APPENDIX 6

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

LIMITATIONS ON EXCLUSIVITY

1. General

This Appendix 6 forms part of the License Agreement dated between the Telecommunications Regulatory Commission and and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said License Agreement.

APPENDIX 7

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

SCHEDULE OF SPECTRUM MANAGEMENT LICENSE FEES

(See attached)

ANNEX 4

Jordan Telecommunications Company Public Mobile Telephone (Cellular) License Agreement)

http://www.trc.jo/Static_English/doc/Mobile%20GSM.doc

THE HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

JORDAN TELECOMMUNICATIONS COMPANY

AMENDED AND RESTATED
PUBLIC MOBILE TELEPHONE (CELLULAR) LICENSE AGREEMENT

Issued at Amman, January

PUBLIC MOBILE TELEPHONE (CELLULAR) LICENSE AGREEMENT

THIS AMENDED AND RESTATED LICENSE AGREEMENT made the day of

BETWEEN:

TELECOMMUNICATIONS REGULATORY COMMISSION
of the Hashemite Kingdom of Jordan ("TRC")

OF THE FIRST PART

and

a Jordanian company established under the *Companies Law* (Law No. 1 of 1989) and registered at the Ministry of Trade and Industry under the number on (the "Licensee")

OF THE SECOND PART

WITNESSES THAT WHEREAS:

A. The Telecommunications Corporation (TCC) was entitled to establish, operate and regulate all kinds of telecommunications networks and services in Jordan in accordance with Law No. 29 of 1971;

B. In accordance with the *Telecommunications Law*, as defined herein, the TRC has been established as an independent regulator and the legal successor to the Telecommunications Corporation in all matters relating to the regulation of the telecommunications sector in Jordan;

3rd. Also in accordance with the *Telecommunications Law* and certain decrees and decisions of the Council of Ministers, the Licensee has been established as the legal successor to all of the rights and obligations of the Telecommunications Corporation in its capacity as operator of telecommunications networks and services in Jordan;

4th. As contemplated by Articles 87 and 88 of the Telecommunications Law, the Licensee and the TRC entered into a License Agreement dated which recorded the terms and conditions upon which the Licensee is entitled to be Licensed to install, operate and manage Public Mobile Telephone (cellular) Services in Jordan;

5th. Pursuant to article 7 of the License agreement and in accordance with the Telecommunications Law the TRC and Licensee have agreed to amend and restate this License agreement as set out below with effect as of 23 January 2000; and

6th. The Licensee has paid to the TRC a License Acquisition Fee in the amount of xxxxxx Million Jordanian Dinars (JD xxxxxxxx);

NOW, THEREFORE, TRC and the Licensee agree as follows:

ARTICLE 1 - INTERPRETATION

1.1 Definitions

In this License Agreement, unless the subject matter or context otherwise requires, the following capitalized terms shall have the following meanings:

1.1.1 "Affiliate" means, in relation to any one Person, any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person.

1.1.2 "Control" means the ownership of more than fifty percent (50%) of the voting interests in the subject Person and/or the ability to control in fact the business and affairs of the subject Person, whether by ownership, contract or otherwise.

1.1.3 "Customer" means any Person who has indicated willingness to the Licensee to receive Services from the Licensee on the Licensee's terms and conditions, or has entered into a contract with the Licensee for the provision of such Services.

1.1.4 "Effective Date" means.

1.1.5 "Frequencies" means the radio frequencies allocated to the Licensee for use in the operation of the Service as specified in Appendix 2, as amended or modified in accordance with the terms hereof.

1.1.6 "License Agreement" means this amended and restated license agreement and all appendices attached hereto, as amended, modified or supplemented in accordance with Section 7.1 or Section 8.5.

1.1.7 "Operating License" means the public telecommunications operating license issued to the Licensee in respect of the Service under Section 2.1 and attached as

Appendix 1 hereto, as amended, modified or supplemented in accordance with the terms hereof.

1.1.8 "Person" means any individual, company, corporation, partnership, joint venture, consortium, government or governmental entity.

1.1.9 "Public Telecommunications Service Provider" means any Person licensed to operate a Public Telecommunications Network, as defined in the *Telecommunications Law.*

1.1.10 "Public Mobile Telephone (Cellular) Service" means a public Radiocommunication service composed of multiple cells of Radiocommunication transceivers, configured so as to permit full mobility of customer terminals (radio stations), with hand-off between adjacent cells and frequency re-use throughout the various cells, and that permits a customer to conduct two-way communications on a fully duplexed basis between the customer's radio station and other similar radio stations, as well as with any apparatus, station or service connected to the Public Switched Telephone Network (PSTN) in Jordan.

1.1.11 "Radiocommunication" means the transmission, emission or reception of signs, signals, writing, images, sounds or intelligence of any nature by means of electromagnetic waves of frequencies lower than 3,000 GHz propagated in space without artificial guide.

1.1.12 "Service" means a Public Mobile Telephone (Cellular) Service operated in the 900 MHz frequency band in accordance with the GSM 900 standard as approved by the European Telecommunications Standards Institute (ETSI), from time to time.

1.1.13 "Spectrum License" means the spectrum license issued to the Licensee pursuant to Section 2.1 and attached as Appendix 2 hereto, as amended, modified or supplemented in accordance with the terms hereof.

1.1.14 "Telecommunications" means any transmission, emission or reception of signs, signals, writing images, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

1.1.15 "Telecommunications Facilities" means any transmission facility or other facility, apparatus or other thing that is used or is capable of being used for Telecommunications or for any operation directly connected with Telecommunications.

1.1.16 "Telecommunications Law" means the Telecommunications Law (Law No. 13 of 1995) of Jordan

1.2 Appendices

The following Appendices annexed hereto form part of this License Agreement and are subject to all the terms and conditions set out herein:

Appendix 1	-	Operating License
Appendix 2	-	Spectrum License
Appendix 3	-	Operating License Fees
Appendix 4	-	Service Roll Out, Coverage and Quality
Appendix 5	-	Schedule of Spectrum License Fees

ARTICLE 2 - LICENSE

2.1 Grant of License

2.1.1 In accordance with the *Telecommunications Law* and upon and subject to the terms and conditions set out herein, the TRC hereby grants to the Licensee:

2.1.1.1 the Operating License to install, operate and manage the Service in the form set out in Appendix 1; and

2.1.1.2 the Spectrum License to use the Frequencies in the operation of the Service, in the form set out in Appendix 2.

2.1.2 The Operating License authorizes the Licensee to install, operate and manage the Service only and does not authorize the Licensee to install, operate or manage any other public or private telecommunications service in Jordan, including any fixed telecommunications service.

2.1.3 This License Agreement authorizes the Licensee to construct and operate all telecommunications apparatus or facilities that are used to provide the Service in accordance with this License Agreement. Such apparatus and facilities include transmission links. Transmission links are Radiocommunication and other Telecommunications Facilities such as fibre optic cables used to link the facilities (radio based station sites, switches, etc.) of the Licensee with each other or with the facilities of another Public Telecommunications Service Provider. However, radio based transmission links shall not be used except pursuant to a spectrum license issued by the TRC. The TRC cannot guarantee that suitable radio frequencies will be available for all transmission links, but will use best efforts to make suitable frequencies available upon request. The Licensee may supply its own telecommunications links by leasing transmission capacity from another Public Telecommunications Service Provider or sharing such capacity with it.

2.1.4 The Operating License does not authorize the Licensee to provide international Telecommunications Services, except by means of the services of an international Public Telecommunications Service Provider licensed to provide international services by the TRC.

2.1.5 The Spectrum License authorizes the use of the Frequencies by the Licensee in the operation of the Service only. The Licensee is not authorized to use the Frequencies for any other purpose.

2.2 Effective Date

The Operating License and the Spectrum License shall take effect and this License Agreement shall come into full force and effect, on the Effective Date.

2.3 Term

Subject to Article 7, the Operating License and the Spectrum License shall continue in full force and effect until the expiration of the respective license terms specified in Appendix 1 or Appendix 2, as the case may be.

2.4 Exclusivity

2.4.1 The TRC and the Licensee acknowledge that, in accordance with Council of Ministers Decree Number 11A-3-1-9412 of October 20, 1997, only two Public Mobile Telephone (Cellular) Services will be licensed to operate in Jordan before January 1, 2004; namely the Licensee and Jordan Mobile Telephone Services Company, which was licensed pursuant to a License Agreement dated 30 October, 1994. The Licensee acknowledges that it has received no assurance that no other licensees will be permitted to begin operation of Public Mobile Telephone (Cellular) Services after that date.

2.4.2 During the period of exclusivity provided for in Section 2.4.1, the TRC may not grant licenses to other Persons to commence the operation of such telecommunications services prior to the expiry of such period. Licenses may be granted to other Persons authorizing the installation and testing of Public Mobile Telephone (Cellular) Service networks and other facilities prior to the expiry of such period of exclusivity, provided that no Public Mobile Telephone (Cellular) Service is in fact operated under such a license until after expiry of the period of exclusivity. For greater certainty, the TRC may issue a license in respect of such telecommunications services prior to the expiry of such period of exclusive authority, provided that no telecommunications service is in fact operated under such a license until after expiry of the period of exclusivity.

2.4.3 The TRC shall use reasonable best efforts to ensure that the Licensee obtains the full benefit of the exclusivity rights specified in this Section 2.4 through the enforcement of this License Agreement and licenses issued to other Public Telecommunications Service Providers by TRC.

2.5 License Parity

To the extent required to ensure fair competition, all future licenses issued by the TRC authorizing the operation of a Service in Jordan will contain terms and conditions equivalent to those applicable to the Licensee and in accordance with the Telecommunications Law.

ARTICLE 3 - FEES

3.1 Operating License Fee

The Licensee shall pay to TRC an annual Operating License fee in an amount intended to represent the Licensee's proportionate share of the budgeted annual costs of TRC incurred in regulatory operations related to the Service, excluding radio spectrum management costs. This fee will be payable annually on quarterly basis on the dates and in the amounts determined in accordance with Appendix 3.

3.2 Spectrum License Fee

3.2.1 In addition to the fees payable in respect of the Operating License under Section 3.1, the Licensee shall pay to the TRC Spectrum License Fee in an amount of JD 21000 / 1MHz pair for (5+5) MHz until;

3.2.2 The Licensee shall pay Spectrum License Fee for the additional (5+5) MHz, in accordance with the fees determined by the TRC as in Appendix 5 which will apply until; and

An annual frequency fee of JD 1000 / allocated MW bearer (hop).

3.2.3 After the Licensee shall pay Spectrum License Fee in accordance with the fees determined by TRC and applicable to all similar Licensees.

3.3 Revenue Share

The Licensee shall pay to the TRC annually in arrears on each anniversary of the Effective Date 10% of his operational revenues from its Public Mobile Telephone Service (cellular), calculated and payable as stipulated in 3.4, and as amended, modified or replaced by TRC.

3.4 Operating Revenue

The operational revenues shall be net of Service Tax and calculated after the deduction of the balance amounts due to other interconnected Public Telecommunications Service Providers in respect of interconnecting traffic between the Licensee and these operators and in accordance with the following formula:

Operating Revenue = A + (B - C), where

A: Total annual sales of cellular services to the Licensee's subscribers.

B: The annual aggregate receivables from other interconnected Public Telecommunications Service Providers for the traffic originated from their subscribers and destined to subscribers in the Licensee's network.

C: The annual aggregate payables by the Licensee to other interconnected Public Telecommunications Service Providers for the traffic originating from the Licensee's network to the subscribers of the other Public Telecommunications Service Providers.

ARTICLE 4 - CONDITIONS OF LICENSE

4.1 General

The Licensee shall ensure that it complies with each of the terms and conditions set out in this License Agreement at all times during the term of the Operating License and the Spectrum License. The Licensee acknowledges that failure to comply with any such terms or conditions may constitute grounds for termination of this License Agreement, revocation of the Operating License or Spectrum License or the imposition of fines or penalties in accordance with the *Telecommunications Law* and the terms hereof.

4.2 Eligibility

The Licensee shall be a Jordanian company established and in good standing under the *Companies Law*, as the same may be amended or replaced from time to time.

4.3 Ownership and Control

4.3.1 The Licensee shall not Control or own, directly or indirectly, any ownership interest in any other Public Telecommunications Service Provider which is licensed to provide the Service in Jordan, provided however that no breach of this license condition will result from the ownership, directly or indirectly, by the Licensee of less than ten percent (10%) of the shares of a public company which owns, directly or indirectly, any ownership interest in a Public Telecommunications Service Provider which is licensed to provide the Service in Jordan.

4.3.2 No Person shall Control or own, directly or indirectly, any ownership interest in the Licensee if such Person Controls or owns, directly or indirectly, any ownership interest in any other Public Telecommunications Service Provider which is licensed to provide Public Mobile Telephone (Cellular) Service in Jordan, provided however that no breach of this license condition will result from the ownership, directly or indirectly, by any such Person of less than (10%) of the shares of a public company, which owns, directly or indirectly, any ownership interest in the Licensee or any other Public Telecommunications Service Provider.

4.3.3 Any change in Control of the Licensee shall require the prior written approval of the TRC.

4.4 Standard of Conduct

The Licensee shall not use or knowingly permit the use of its Service for any purpose that violates applicable law. The Licensee shall endeavour to take all action within its control to ensure that its Service is not used for any such purposes. The Licensee shall include this same provision precluding the use of its Service for illegal purposes in its contracts with its Customers.

4.5 Service Roll-Out, Coverage and Quality

The Licensee shall roll out the Service and provide and maintain service coverage and quality in accordance with the requirements set out in Appendix 4.

4.6 Service Obligation

4.6.1 In all areas required to be served, the Licensee shall provide its Services to any Person wishing to obtain them and willing to pay the Licensee's published prices and abide by other generally applicable terms and conditions established by the Licensee in accordance with this License Agreement.

4.6.2 Except as otherwise permitted by the *Telecommunications Law* or this License Agreement, the Licensee shall comply with Section 29(h) of the *Telecommunications Law* and shall not unduly discriminate in the provision of its Service or in the charging of its rates for its Service between similarly situated Customers or groups of Customers or grant any undue preferences between them, provided that nothing herein shall prevent the Licensee from engaging in marketing practices, such as the offering of free or subsidized handsets, or promotional or volume discounts, to the extent such practices do not constitute undue preferences or undue discrimination.

4.6.3 Notwithstanding Section 4.6.2, to meet national security requirements, the Licensee may propose discriminatory or preferential service offerings that fall within the exceptions provided for in Article 29(h) of the *Telecommunications Law*. Any such proposals shall be made in writing to the TRC which shall then determine whether such proposed discriminatory or preferential offerings are due and lawful. The Licensee shall not implement any such proposal without the prior written approval of the TRC. The cost to the Licensee of providing exceptional service offerings in accordance with Article 29(h) of the *Telecommunications Law* shall not exceed two percent (2%) of the gross revenues of the Licensee in the fiscal year during which such exceptional service offerings are provided.

4.7 Price Regulation

The prices which the Licensee may charge its Customers in connection with the Service are subject to regulation by the TRC on the basis determined by the TRC in accordance with the *Telecommunications Law* following consultation with the Licensee and other interested parties.

4.8 Specifications

The Licensee shall install, operate and manage the Service in accordance with the specifications for GSM 900 as approved by the European Telecommunications Standards Institute (ETSI) from time to time. For greater certainty, the Licensee is authorized to install and operate in connection with its Service any equipment or other facilities necessary to offer additional features, upgrades or enhancements to its Service, provided such equipment or other facilities and such additional features, upgrades or enhancements are compatible with the GSM standard as approved by ETSI.

4.9 Equipment

Terminal equipment used by the Licensee or provided by the Licensee to its Customers must be type approved by TRC. The Licensee shall permit its Customers to purchase or lease TRC type approved terminal equipment from the Licensee or any third party.

4.10 Frequencies

4.10.1 The Licensee acknowledges that other countries may authorize or permit the use of their radio frequencies in a manner that interferes with the Licensee's use of the Frequencies and that it is the responsibility of Licensee to report such interference as soon as practicable, in order that the TRC may take measures to deal with such interference. Licensee shall use the Frequencies in compliance with all regional inter-governmental arrangements in effect that are designed to reduce radio interference among service providers. TRC shall defend the rights of the Licensee under the Spectrum License in accordance with the *Telecommunications Law*.

4.10.2 The Licensee may apply to the TRC for the right to use additional frequencies in connection with the Service. The TRC may license additional frequencies to the Licensee pursuant to the Spectrum License subject to availability and based on demonstrated existing or reasonable projected subscriber demand and an assessment of whether or not the Frequencies are being utilized efficiently. At all times the Licensee shall implement all commercially reasonable measures to optimize the efficiency and effectiveness of its use of the Frequencies.

4.10.3 The TRC may, in order to comply with international spectrum coordination requirements, ITU-R assignments or reassignments, or generally in the course of regulating the radio spectrum in the best interests of Jordan, reassign radio frequencies used by the Licensee or require the Licensee to surrender its rights in respect of radio frequencies which are not required for the operation of the Service. In such cases, the TRC and the Licensee shall consult with each other before any such action is taken and the TRC shall provide the Licensee with adequate time and, where applicable, assign appropriate alternative frequencies, to permit the Licensee to carry on its business without unreasonable costs or disruptions.

4.10.4 The Licensee shall obtain approvals from the TRC in respect of each of its radio transmission sites. The TRC shall make a decision in respect of any such approvals as soon as possible, but in any event within 30 days, after receipt of an application by the Licensee, setting out the geographic location co-ordinates, radiated power, frequency assignments and any other specifications deemed necessary by the TRC. The Licensee shall comply at all times with all applicable construction and other permit requirements and standards applicable to its business under Jordanian law.

4.11 Books of Account

4.11.1 The Licensee shall at all times keep at its principal place of business within Jordan, all proper books of account accurate and up-to-date in accordance with Jordanian generally accepted accounting principles (GAAP) and good business practices. All financial information submitted by the Licensee to the TRC for any purpose shall be prepared and presented in accordance with GAAP or as the TRC shall direct, provided that such direction does not result in any unreasonable additional costs being incurred by the Licensee.

4.11.2 On request, the TRC shall have access during normal business hours to the books and records of the Licensee in accordance with the *Telecommunications Law*.

4.12 Annual Reports

Within four (4) months of the end of each fiscal year of the Licensee, the Licensee shall file with the TRC seven (7) copies of the annual report and annual financial statements (audited when available). This annual report shall include detailed information in respect of the following:

4.12.1 the roll-out or upgrading of the Service achieved during the past fiscal year;

4.12.2 an explanation of the reason for any shortfall in the required or anticipated roll-out or upgrading, together with an estimate of when the shortfall will be remedied. If the shortfall is alleged to be caused by a third party, the Licensee shall include any relevant documentation reasonably obtainable from that third party;

4.12.3 all material instances in which, as far as the Licensee is aware, the Licensee's obligations under any provisions of this License Agreement have not been met, together with an explanation for such failure;

4.12.4 a list of all types of terminal equipment, including handsets, used by the Licensee in providing the Service together with TRC type approval references; and

4.12.5 any other information deemed relevant by the Licensee or requested by TRC in writing.

4.13 Submission of Reports

Any information or reports provided to TRC pursuant to this License Agreement shall be in either or both the Arabic language or the English language and signed by a senior officer of the Licensee who shall certify, so far as the Licensee is aware, the completeness and accuracy of the report or information. In the event of any inconsistency between an Arabic language document and an English language document, the Arabic language text shall prevail.

4.14 Other Information

The Licensee shall furnish to TRC such further or other information as required periodically and from time to time for the purpose of exercising the functions assigned to it under the *Telecommunications Law*. Such information shall be furnished at the time and in the format reasonably requested by TRC in writing. In making these requests, the TRC shall ensure that no undue burden is placed on the Licensee in furnishing that information and, in particular, the Licensee shall not be required to furnish information which would not normally be available to it.

4.15 Confidentiality

4.15.1 All information furnished by the Licensee to TRC and marked "confidential" shall be held in confidence by TRC. Such information may be released by TRC to the extent it becomes publicly available through no fault of TRC or to the extent its release is required by any applicable law or order, provided that the TRC gives the Licensee prior notice of that release. This requirement of confidentiality shall survive any termination or expiry of this License Agreement or revocation of the Operating License or the Spectrum License. The Licensee acknowledges that confidentiality will not apply to any information supplied to the TRC regarding the Licensee's compliance with its obligations hereunder including the obligations set out in Appendix 4, which information shall be made public by the TRC.

4.15.2 TRC will endeavour to ensure that documents for which confidential treatment is requested are treated confidentially. Nothing in this Section 4.15.2 shall limit the availability of any remedy otherwise available to the Licensee under Jordanian law and which the Licensee may seek from any private party that receives or uses confidential information as the result of a failure of TRC to protect that information.

4.16 Access to Licensee Premises

The TRC shall have access to all premises of the Licensee in accordance with the *Telecommunications Law*.

4.17 Co-operation with TRC

4.17.1 The Licensee shall at all times co-operate with TRC and its authorized representatives in the exercise of the functions assigned to TRC under the *Telecommunications Law* and shall make its facilities available for the implementation of judicial, security and administrative orders relevant to the tracing of telecommunications transmissions as specified in such orders.

4.17.2 The Licensee acknowledges that the TRC is in the process of establishing a general regime for the regulation of the telecommunications sector in accordance with the *Telecommunications Law*. The Licensee will be subject to that regime in respect of the Service as and when it comes into force to the same extent it applies to all Public Telecommunications Service Providers licensed to provide the Service. Without limiting any rights or powers of the TRC hereunder or under applicable law, the TRC agrees to establish and comply with open, fair and transparent practices and procedures in the exercise of its regulatory operations and, in particular, agrees, except in emergency situations and subject to its obligations of confidentiality, to issue all its rules, decisions and instructions publicly and in writing following appropriate consultation with interested parties.

4.18 Use of Jordanian Resources

Subject to applicable law and international obligations of Jordan, the Licensee shall maximize the use of Jordanian human and material resources in the installation, operation and management of the Services to the extent reasonably possible in the circumstances and provided that such resources are available.

4.19 Anti-Competitive Practices

The Licensee will not alone or together with others, engage in or continue or knowingly acquiesce in any anti-competitive practices and, in particular, the Licensee shall:

4.19.1 not engage in any anti-competitive cross-subsidization;

4.19.2 not engage in the abuse of its dominant position, if any;

4.19.3 not enter into any exclusive arrangements with third parties for the location of its facilities that are acquired to provide the Service;

4.19.4 not enter into any agreements, arrangements or undertakings with any Person, including any supplier of services that compete with the Service which have as their objective or effect the fixing of prices or any other restraint on competition;

4.19.5 not engage in any anti-competitive tied or linked sales practices, provided that the Licensee may bundle services so long as the bundled services are also available separately;

4.19.6 not use information obtained from competitors if the object or effect of such use is anti-competitive; and

4.19.7 Cooperate with other Licensees in order to facilitate the provision of public telecommunications services.

4.20 Segregation of Services

The TRC may issue decisions or instructions directing the Licensee to operate the Service through an affiliated company, established under the Companies Law (the "Cellular Company"). The purpose of such decisions or instructions shall be to segregate the Service from other services provided by the Licensee, and to ensure that the Licensee does not engage in anti-competitive practices of the type described in Section 4.19. The TRC shall monitor compliance with the decisions or instructions, and may issue such further decisions or instructions as it considers necessary to achieve compliance with Section 4.19. If the TRC considers it appropriate, it may instruct the Licensee to transfer the License to the Cellular Company pursuant to Article 47 of the Telecommunications Law. The Licensee shall comply with all decisions or instructions issued pursuant to this Article.

4.21 Compliance with Law

The Licensee shall comply with all laws of the Kingdom of Jordan applicable to its operations, including the *Telecommunications Law*, all decisions, rules and instructions of the TRC issued in accordance with Law and all policies of the Government of Jordan. Notwithstanding the foregoing, the TRC shall not impose any regulatory requirements on the Licensee where such action would constitute a breach of this Agreement.

ARTICLE 5 - RELATIONS WITH CUSTOMERS

5.1 Customers Relations

The Licensee shall maintain adequate trained personnel to receive and respond promptly to complaints from Customers. The Licensee shall take all commercially reasonable action to promptly remedy and avoid the recurrence of the cause of all Customer complaints which relate to the quality, availability or delivery of its Service. The Licensee shall also take all commercially reasonable actions necessary to guarantee that amounts due to Customers are paid in full if the Operating License is revoked.

5.2 Customer Contract

Except to the extent the TRC exempts the Licensee from the requirements of this Section 5.2, the relationship between the Licensee and the Customers of the Services shall be governed by the terms of a Customer contract which incorporates standard terms and conditions approved in accordance with this Article 5. The Licensee shall not offer the Service otherwise than pursuant to a Customer contract which incorporates approved standard terms and conditions, without the prior written consent of the TRC.

5.3 Content of Terms and Conditions

5.3.1 The standard Customer contract terms and conditions referred to in Section 5.2 shall include, at a minimum, provisions approved by the TRC in respect of the following matters:

5.3.1.1 deposits and alternative methods of providing security for payment where reasonably required, provided that in no circumstances may such deposits or security exceed the charges reasonably anticipated to be incurred by the Customer within a three (3) month period;

5.3.1.2 confidentiality of Customer information;

5.3.1.3 refunds or other rebates for service problems or over billing;

5.3.1.4 payment terms, including any applicable interest or administrative charges;

5.3.1.5 Customer and Licensee rights of termination; and

5.3.1.6 method of settlement of Customer complaints or other disputes, including provision for appeal to the TRC and the courts in the event that a dispute cannot be resolved by the parties.

5.4 Approval of Terms and Conditions

5.4.1 The Licensee shall file with the TRC for approval a proposed draft form of standard terms and conditions as required by Section 5.2. Within sixty (60) days of receipt of a draft TRC shall either approve the draft by notice in writing to the Licensee or advise the Licensee in writing that the draft is not approved. If the TRC does not advise the Licensee that a proposed draft is not approved within the said sixty (60) day period, the draft shall be deemed to be approved as filed.

5.4.2 If the TRC does not approve a draft submitted under Section 5.4.1, it shall provide a detailed written explanation of the reasons for such non-approval sufficient to permit the Licensee to revise the draft in a manner, which would be approved by the TRC. The Licensee may then file an amended draft for approval and Section 5.4.1 shall again apply.

5.4.3 When a form of standard terms and conditions is approved they shall be incorporated by the Licensee in all contracts between the Licensee and its Customers in respect of the Services until such time as amended standard terms and conditions are approved by the TRC under this Article 5. Nothing in any agreement between the Licensee and a Customer shall contradict or modify the applicable standard terms and conditions.

5.5 Availability of Standard Terms and Conditions

A copy of the approved standard terms and conditions shall be provided to any interested party upon request and, after the Effective Date, to any new Customer prior to commencement of service to, or receipt of any payment or deposit from, such customer. All provisions of any customer contract shall be typed and provided to each Customer in the Customer's choice of Arabic or English.

5.6 Amendment to Customer Contracts

5.6.1 Approved standard terms and conditions may be amended with the approval of the TRC at the request of the Licensee. Any requests for amendments by the Licensee shall be made by filing an amended draft with the TRC. The provisions of Section 5.4 shall govern the approval of any such amendment.

5.6.2 Any amendment to a Customer contract shall come into force thirty (30) days after the earlier of announcement in the media or delivery of a written copy of such amendment to the applicable Customer, unless that Customer objects to such amendment to the TRC or the Licensee in writing before the expiry of that thirty (30) day period.

5.7 Customer Invoices

5.7.1 All Customer invoices rendered by the Licensee in respect of the Services shall be timely, clear, concise, typed in the customer's choice of Arabic or English and easy to understand.

5.7.2 The Licensee shall make available to all Customers full details of their Customer bill should the Customer request this service in advance and pay the applicable fees.

5.8 Provision of Ancillary Services

5.8.1 The Licensee shall provide directory assistance services (including, at least, name and telephone number) to its Customers. This directory assistance service shall include information concerning the Licensee's Customers and, based on the information available to the Licensee, the Customers of other Public Telecommunications Service Providers in Jordan. The Licensee shall cooperate with other Public Telecommunications Service Providers in Jordan so that they may have convenient access to information concerning the Licensee's Customers for inclusion as party of their own directory assistance services. The Licensee shall use any such customer information obtained from other Public Telecommunications Service Providers only for the purpose of offering directory services and for no other purpose. The Licensee shall not be required to disclose Customer information to a competitor or to otherwise cooperate in the provision of directory services with that competitor in accordance with this Section 5.8.1 unless equivalent obligations are also imposed on that competitor.

5.8.2 The Licensee shall implement free three digit calling for police, ambulance and other emergency purposes in accordance with requirements established by the TRC from time to time. The Licensee shall cooperate with emergency organizations in the efficient and prompt handling of emergency calls.

ARTICLE 6 - RELATIONS WITH OTHER OPERATORS

6.1 Interconnection with Other License Holders

6.1.1 The Licensee acknowledges that interconnection between the Licensee's network and other licensed telecommunications networks in Jordan, is governed by Section 29(e) of the *Telecommunications Law*, the provisions of this Article 6 and comparable provisions in the licenses of other network operators and any *Guidance on Interconnection* issued by the TRC from time to time, all as may be amended or replaced from time to time.

6.1.2 The Licensee will act fairly and without discrimination in accordance with applicable law and the terms of this License Agreement in all business dealings with other Public Telecommunications Service Providers and shall co-operate with other Public Telecommunications Service Providers to facilitate the provision of telecommunications services to all users throughout Jordan and so as to optimize the use of common facilities in the location of network facilities.

6.1.3 Without limiting the generality of the previous section, all dealings between the Licensee's operating division or Affiliate which operates the Service and the other divisions or Affiliates of the Licensee shall be carried out on a basis which does not discriminate unduly against other operators of Public Mobile Telephone (Cellular) Services, or place such other operators in an unjustly disadvantageous position.

6.1.4 TRC will endeavour to cause other Public Telecommunications Service Providers to act fairly and without discrimination in accordance with applicable law and applicable terms of license in all business dealings with the Licensee, including interconnection.

6.1.5 All interconnection obligations of the Licensee shall be interpreted and enforced by the TRC so as to ensure that so far as is reasonably possible in the circumstances they are competitively neutral and non-discriminatory.

6.2 Principles of Negotiation

6.2.1 The Licensee shall interconnect its network with all Public Telecommunications Service Providers in Jordan who request interconnection for purposes of providing their lawful services. Subject to Section 6.1, in negotiating interconnection and other arrangements with other licensed Public Telecommunications Service Providers, the Licensee shall agree to:

6.2.1.1 provide interconnection at any technically feasible point in the network, subject to operational practicability and commercial viability;

6.2.1.2 provide interconnection under non-discriminatory terms, conditions (including technical standards and specifications) and rates and of a quality no less favourable than that provided for its own like services or for like services provided to other affiliated or non-affiliated service providers;

6.2.1.3 provide interconnection in a timely fashion on terms, conditions (including technical standards and specifications) and 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;

6.2.1.4 lease to such other service providers, on a non-discriminatory basis, facilities (rooms, towers, ducts, cable etc.) under the control of the Licensee and required for use by such others, it being understood that the Licensee shall not be required to construct new facilities for lease to such other service providers hereunder;

6.2.1.5 allow access to such facilities by such other license holders, upon request, for the purposes of installation, maintenance and repair;

6.2.1.6 provide reasonable notice to such other license holders about any network design, roll-out or up grade plans or changes which may be expected to affect the arrangements between the parties;

6.2.1.7 take steps to protect such other license holders' systems from interference or other harm caused by the facilities and equipment used by the Licensee; and

6.2.1.8 not enter into any arrangements for access to any Service or facility that would preclude the operator of that Service or facility or another license holder from entering into similar arrangements with the operator of that Service or facility.

6.2.2 The procedures applicable for interconnection to the Licensee’s network shall be made publicly available.

6.2.3 The Licensee will make publicly available either its interconnection agreements or reference interconnection offers.

6.2.4 The Licensee shall be entitled to require, as a condition of entering into any interconnection agreement, that:

6.2.4.1 current generally accepted international engineering principles and practices in the telecommunications sector are adhered to in the provision of any interconnection services;

6.2.4.2 due account is taken of the needs of the Licensee’s Customers and the needs of other Public Telecommunications Service Providers and private network operators, both current and future, that have made or make requests to interconnect with the Licensee’s network;

6.2.4.3 it is not required to interconnect its network if doing so would unreasonably risk causing damage to the Licensee’s property, or the death of, or personal injury to, any person employed or engaged in the Licensee’s business.

6.3 Failure to Agree

If the Licensee is unable to reach agreement with another Public Telecommunications Service Provider on the terms and conditions of interconnection or other arrangements within one month after the first request in writing for interconnection by either party, the Licensee may, by notice in writing, request that TRC adjudicate between them. TRC's decision on all matters in dispute shall be binding on both parties.

6.4 Approval Required

All interconnection or other agreements between the Licensee and any other Person licensed or otherwise permitted to provide public or private telecommunications Licensed Service in Jordan shall be filed for approval with TRC. The Licensee shall not give effect to any such agreement until it has been approved TRC. TRC shall be deemed to have approved any such agreement thirty (30) days after it is filed unless it gives written notice of disapproval to the Licensee prior to the expiry of that thirty (30) day period.

6.5 Roaming

The Licensee shall cooperate, subject to operational practicability and commercial viability, with other licensed providers of the Service to establish and maintain technical and billing arrangements to permit its customers to use their wireless terminal equipment in the service areas of such other service providers, and *vice versa*. The Licensee shall comply with all directives of TRC to promote the establishment and maintenance of such roaming capabilities. However, entering into domestic roaming agreements with other licensees shall be subject to the mutual agreement of the parties concerned; such agreements shall be deposited with the TRC for approval. The obligations of the Licensee under this Section 6.5 shall be interpreted by the TRC so as to ensure that so far as is reasonably possible in the circumstances, they are competitively neutral and non-discriminatory. The Licensee shall participate in relevant international associations that have as their objective the facilitation of roaming by customers of the Licensee and by customers of operators of Public Mobile Telephone (Cellular) Services in other countries that are compatible with the Service.

6.6 Numbering Plan

6.6.1 TRC will allocate a unique three-digit network prefix and corresponding blocks of numbers to the Licensee. The Licensee will in turn allocate individual numbers to Customers and maintain suitable records of utilization of numbering capacity. The Licensee and other Public Telecommunications Service Providers will be required to reprogram or re-engineer their networks to convey calls to numbers in a newly allocated block, either directly to customers on the same network or via points of interconnection with other operators' networks.

6.6.2 All allocations of numbers shall be made under non-discriminatory terms and conditions by the TRC upon request by the Licensee and other Public Telecommunications Service Providers for services they reasonably anticipate providing in the foreseeable future.

6.6.3 The blocks of numbers allocated by TRC, and the individual numbers allocated by network operators, are to be regarded as part of a national resource so that ownership is not transferred when an allocation is made. However, an allocation conveys an ongoing right of use and an expectation of a reasonable notice period should it be necessary to withdraw or to change allocated numbers.

6.6.4 The Licensee shall co-operate with other Public Telecommunications Service Providers to allow telephone numbers to be associated with an outgoing call to convey the Calling Line Identity (CLI), as and when CLI service becomes operationally practicable and commercially viable in Jordan.

6.6.5 The Licensee shall co-operate with other network operators in the specification and development of number portability to allow replacement service without a change of number. Subsequent implementation of number portability is to be subject to operational practicability, commercial viability, and the development needs of Jordan.

6.6.6 The Licensee shall co-operate with other network operators in the specification and development of carrier selection to allow a choice of routing. The choice of method(s) and subsequent implementation is to be dependent on Customer demand, operational practicability, commercial viability, and the development needs of Jordan.

ARTICLE 7 - MODIFICATION, RENEWAL AND TERMINATION

7.1 Modification

This License Agreement and the License may be modified in accordance with the provisions of the *Telecommunications Law*, provided however that no modification or amendment to the following provisions of this License Agreement may be made without the prior written agreement of the Licensee:

7.1.1 Sections 2.4 and 3.3 and Article 8 of this License Agreement;

7.1.2 the term of the Operating License or the Spectrum License; and

7.1.3 Section 2 of Appendix 3 hereto; and

7.1.4 Appendix 4 hereto.

7.2 Renewal

7.2.1 Terms of renewal shall be subject to negotiations. Such negotiations will be called for by either party two years before May 8, 2014.

7.2.2 The License shall always be renewed if the Licensee has operated successfully and in accordance with the laws and the License and if there are no reasons to refuse the renewal after successful negotiations.

7.3 Termination

Before the expiry of their respective terms, this License Agreement may be terminated and the Operating License and Spectrum License may be revoked only in the event of a material breach by the Licensee and in accordance with Section 7.4. For this purpose a material breach means any act or omission or series of acts or omissions which constitute grounds for the revocation of a license under the *Telecommunication Law* and which (I) seriously jeopardize the provision of an adequate level of the Service at reasonable prices to a significant group of customers in Jordan, or (ii) seriously impairs the ability of the TRC to perform its lawful functions in a reasonable manner.

7.4 Termination Procedure

TRC shall not amend, modify, revoke or terminate this License Agreement or the Operating License or the Spectrum License without first giving the Licensee notice in writing setting out the basis for such proposed action and giving the Licensee an opportunity of no less than thirty (30) days to show cause why such action should not be taken or to correct the alleged material breach the License Agreement should not be terminated and the Operating License or the Spectrum License revoked. If the Licensee shows cause, or corrects the alleged material breach to the satisfaction of TRC, TRC shall allow the Licensee sufficient time, as is reasonable in the circumstances, to remedy any breach that gave rise to the notice and which remains outstanding.

7.5 Prohibition

If the License Agreement is terminated, no Person who Controls the Licensee or owns, directly or indirectly, any ownership interest in the Licensee, shall be entitled to apply for a license to install, operate or manage a Public Telecommunications Network in Jordan, alone or with others, before the lapse of five years following the date upon which such termination becomes effective.

ARTICLE 8 - GENERAL

8.1 Notice

Any notice or other communication to be given TRC or the Licensee to the other in connection with this License Agreement shall be given in writing by personal delivery in Amman to the following addresses. TRC or the Licensee may change the address for the giving of notice by notice to the other party given in accordance with this Section 8.1

To TRC:

Telecommunications Regulatory Commission
7th Circle
Amman

Attention: Director General

To the Licensee:

Jordan Telecommunications Company
Tower Building
3rd Circle
Amman

Attention: Director General

8.2 Law

This License Agreement shall be governed by the laws of Jordan.

8.3 Assignment

This License Agreement and the Operating License and the Spectrum License are personal to the Licensee and may not be sold, assigned or pledged as security, in whole or in part, without the prior written consent of TRC. The TRC will consent to the assignment of the Operating License and the Spectrum License to an affiliate of the Licensee provided that: (i) such affiliate becomes a party to this License Agreement and agrees to fulfil and perform all of the obligations of the Licensee, (ii) the Licensee has control over the formation of the Board of Directors of the affiliate, and (iii) no such assignment shall relieve the Licensee of any of its obligations hereunder.

8.4 Interpretation

The use of headings herein and the division hereof into Articles and Sections is for the convenience of reference only and shall not affect the construction or interpretation hereof. References herein to Articles, Sections and Appendices are to Articles, Sections and Appendices hereof, unless expressly provided for to the contrary. The terms “hereof”, “herein” and similar expressions refer to this License Agreement in its entirety, unless expressly provided for to the contrary.

8.5 Amendment and Waiver

This License Agreement may not be amended, modified or supplemented without the prior written consent of TRC. No waiver of any breach of any provision of this License Agreement shall be effective or binding unless made in writing and, unless otherwise specified, any such waiver shall be limited to the specific breach waived.

8.6 Adherence to Terms of Licensing

8.6.1 The Director General of the TRC shall monitor the Licensee’s adherence to this License Agreement and shall take appropriate measures to oblige the Licensee to comply with this License Agreement, the *Telecommunications Law*, regulations, the rules, instructions and decisions of the TRC and the policies approved by the Council of Ministers. Any decision of the Director General in exercising these responsibilities shall be final and binding on the Licensee unless and until it is overruled by the Board of Directors of the TRC.

8.6.2 Nothing herein is intended to limit in any way any rights of appeal or review which the Licensee may have available to it under the laws of Jordan.

8.6.3 Without limiting any other right or remedy available to the TRC at law, if the Licensee fails to comply with:

8.6.3.1 any of its material obligations under the *Telecommunications Law*;

8.6.3.2 any of its material obligations hereunder; or

8.6.3.3 any of its material obligations under any rules, decisions or instructions of the TRC,

the Licensee shall be subject to a maximum fine payable to the TRC in an amount not to exceed two hundred thousand Jordanian Dinars (JD 200,000) in respect of each such compliance failure. The amount of any sanction imposed pursuant to this Section 8.6.3 shall be determined with reference to the severity of Licensee's non-compliance.

8.6.4 Without limiting any other right or remedy available to the TRC at law, if the Licensee fails to make payment of any amount of fee, fine or penalty to the TRC pursuant hereto, interest shall accrue and be payable monthly in arrears on the outstanding amount, including accrued interest, at the rate of 9% per annum.

8.7 Language

As of the Effective Date only an English language version of this License Agreement has been signed. The parties intend however to prepare and sign an Arabic language version of this License Agreement within six months from the Effective Date. Unless and until both the TRC and the Licensee sign an Arabic language version this English language version shall be the only official version of this License Agreement. After both parties sign an Arabic language version of this License Agreement, both the Arabic language version and the English language version shall be official versions of this License Agreement.

IN WITNESS WHEREOF the parties hereto have executed this agreement.

TELECOMMUNICATIONS REGULATORY COMMISSION

by:

Chairman

Xxxxxxx Company

by: ________________________

Chairman

APPENDIX 1

HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

TRC OPERATING LICENSE - No. 2 1999

WHEREAS in accordance with the *Telecommunications Law* the Telecommunications Regulatory Commission ("TRC") is authorized to issue to (the "Licensee") a license to install, operate and manage the Service;

AND WHEREAS the Licensee and TRC have entered into a contract of an administrative nature pursuant to which such license is issued;

NOW THEREFORE, this License confirms as follows:

1. The Licensee is licensed to operate the Service in Jordan upon and subject to the terms and conditions of the Amended and Restated License Agreement between TRC and the Licensee dated.

2. Subject to renewal or revocation in accordance with applicable law and the above-referenced License Agreement, the term of this license is for a period of fifteen (15) years, beginning on the Effective Date and terminating on.

3. Capitalized terms used herein but not defined shall have the meanings ascribed thereto in the said Amended and Restated License Agreement.

Issued at Amman, this day of.

TELECOMMUNICATIONS REGULATORY COMMISSION

Per:

Director General

APPENDIX 2

HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

TRC SPECTRUM LICENSE

WHEREAS in accordance with the *Telecommunications Law* the Telecommunications Regulatory Commission ("TRC") is authorized to issue to (the "Licensee") a license for the use of spectrum in the operation of the Service;

NOW THEREFORE, this Spectrum License confirms as follows:

1. The Licensee is licensed to use the following frequencies on an exclusive basis to install, operate and manage the Service in Jordan upon and subject to the terms and conditions of the Amended and Restated License Agreement between the Telecommunications Regulatory Commission and the Licensee dated

   xxx- xxx MHz
   xxx- xxx MHz

2. Subject to renewal or revocation in accordance with applicable law and the above-referenced Amended and Restated License Agreement, the term of this License is for a period beginning on the Effective Date and terminating on.

3. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said Amended and Restated License Agreement.

Issued at Amman, this

TELECOMMUNICATIONS REGULATORY COMMISSION

per:

Director General

APPENDIX 3

HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

OPERATING LICENSE FEES

1. General

This Appendix 3 forms part of the License Agreement dated the Telecommunications Regulatory Commission ("TRC") and (the "Licensee") and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said Amended and Restated License Agreement.

2. Operating License Fee

2.1 The amount of the Operating License Fee for the first year starting from the Effective Date shall be one hundred thousand Jordanian Dinars (JD100, 000).

2.2 For subsequent years the increase in the Operating License Fee, if any, shall represent the Licensee's proportional share of the budgeted annual operating expenses of the TRC, plus amortized amounts of the capital expenditure, incurred by TRC in regulatory operations related to the Service, excluding radio spectrum management costs.

2.3 The said proportionate share shall be in accordance with the following formula:

Gross Revenue of the Licensee over the Gross Revenue of all the Public Telecommunications Service Provider. In the context, Gross Revenue shall be net of Revenue Share and Frequency Fee.

2.4 The Operating License Fee as prescribed herein shall be paid to the TRC on annual quarterly instalments.

2.5 The Operating License fee shall not exceed one percent (1%) of the Gross Revenue of the Licensee as defined in Section 2.3 of this Appendix.

APPENDIX 4

HASHEMITE KINGDOM OF JORDAN

TELECOMMUNICATIONS REGULATORY COMMISSION

SERVICE ROLL-OUT, COVERAGE AND QUALITY

1. General

This Appendix 4 forms part of the between the Telecommunications Regulatory Commission ("TRC") and (the "Licensee") and is subject to the terms and conditions thereof. Capitalized terms used in this Appendix but not defined shall have the meanings ascribed thereto in the said Amended and Restated License Agreement.

2. Roll-out and Coverage

The Licensee shall roll out its Service so as to establish and maintain Service coverage (as required by Section 3 of this Appendix 4) as follows:

Phase I coverage of the central area of Jordan (as shown on the map which is Attachment 1 to this Appendix 4) no later than the first anniversary of the Effective Date;

Phase II coverage of the northern area and the southern area of Jordan (as shown on the map which is Attachment 2 to this Appendix 4) no later than the third anniversary of the Effective Date;

Phase III coverage of the highways connecting the central area to the northern area and the southern area of Jordan no later than the fourth anniversary of the Effective Date;

3. Quality of Service

3.1 In all areas required to be served in accordance with Section 2 of this Appendix 4 the Licensee shall ensure compliance with the following quality of service targets:

1.	Average time required for connection following receipt of a complete application for the Service	less than 1 week
2.	Percentage of Calls failed during busy hour	less than 2%
3.	Reported faults (customer complaints due to network fault) per 100 Customers per year	less than 20
4.	Percentage of reported faults cleared within 24 hours	more than 70%
5.	Number of billing complaints per 100 Customers per year	less than 0.5

3.2 The grade of service of the network should be according to the GSM specifications. Any ETSI modifications or new revisions should be binding upon both parties and achieved within a reasonable time period after any change.

APPENDIX 5

HASHEMITE KINGDOM OF JORDAN
TELECOMMUNICATIONS REGULATORY COMMISSION

SCHEDULE OF SPECTRUM LICENSE FEES

(Please see attached)

SCHEDULE OF SPECTRUM LICENSE FEES

License Type	Annual Fee JD
Aeronautical	
Aircraft with a maximum take-off weight of not more than 3,200kg	30
Aircraft with a maximum take-off weight of more than 3,200 kg but not more than 14,000 kg	250
Aircraft with a maximum take-off weight of more than 14,000 kg	550
Fixed Services	
Bi-directional links	
Bandwidth:-	Per link
Less than 50 kHz	250
50 kHz to less than 7 MHz	450
7 MHz to less than 14 MHz	700
14 MHz to less than 100 MHz	900
100 MHz to less than 200 MHz	1000
200 MHz to less than 300 MHz	1100
More than 300 MHz	1200
One way links are charged at 75% of Bi-directional links	
Frequency Bands above 30 GHz are charged at 50% of above Fees	
Scanning Telemetry link	40 per station
Amateur Radio	15 per person
Land Mobile Radio	

Private Mobile Radio (PMR):- For each 12.5KHz national channel For each 25KHz national channel For each 5KHz national channel For other channels:- Up to 10 mobiles 11 to 25 mobiles 26 to 60 mobiles 61 to 100 mobiles 101 to 200 mobiles Common base Station Operator	 3000 6000 1500 100 per channel 250 per channel 500 per channel 1000 per channel 1500 per channel 500 for each channel allocated for use by that base station
<u>*Land Mobile Radio*</u> Personal Communications Network (PCN):- On issue of the license On each subsequent annual renewal up to 5 years National Public Telephone Network (Cellular):- On issue of the license On each subsequent annual renewal up to 5 years National Public Data Network:- On issue of the license On each subsequent annual renewal up to 5 years	 5000 Per r.f. channel An additional 1000 5000 Per r.f. channel An additional 1000 1000 Per r.f. channel An additional 1000
Satellite Services Permanent Earth Station Stations with a bandwidth not exceeding 100 kHz operating to one satellite Stations with a bandwidth greater than 100 kHz but not exceeding 1 MHz operating to one satellite Stations with a bandwidth greater than 1 MHz operating to one satellite Receive only earth stations are charged at 75% of bi-	 500 per station plus 250 for each additional satellite 2500 per station plus 500 for each additional satellite 5000 per station plus 500 for each additional satellite 4000 per station

directional stations Transportable Earth Station Very Small Aperture Terminal (VSAT)	1500
Services Ancilliary to Broadcasting and programme making Low power video links Radio microphone (Stage use) Sound links for mobile units Talk back and sound links for fixed sites (e.g. studio)	 150 60 150 100
Maritime Maritime Business Radio (for communications on the ship owners business)) Maritime Business Radio (Base station only) Maritime radio (Navigational Aid and Radar) Port Operations Radio (e.g. Harbour Master) Ship Radio (commercial, e.g. crew communications, ship to ship and ship to shore) Ship Radio (Pleasure craft)	 180 for each base station using one channel plus 180 for each additional channel 100 for each base station using one channel plus 100 for each additional channel 40 for each navigational aid or radar using one channel plus 40 for each additional channel 100 for each base station using one channel plus 100 for each additional channel 50 25
Paging Local communications (e.g. Hospital paging service) City Wide Area Paging (excluding links) Nation Wide Area Paging	1000 for each base station 2000 for each base station 2000 for each base station

ANNEX 5

Interconnection Guidelines

http://www.trc.jo/Static_English/doc/Interconnection Guidelines Final.doc

INTERCONNECTION GUIDELINES
Final

14 OCTOBER 2002

Approved by the TRC Board of Commissioners on 25 of NOVEMBER 2002

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Telecommunications Regulatory Commission
P.O. Box 850967
Amman 11185

Jordan
Tel:06 586 2020
Fax:06 586 3643
Email:interconnection@trc.gov.jo

1 Purpose and scope of guidelines

1.1 Background

1. These Guidelines form part of the 'Guidance on Interconnection' issued by the Telecommunications Regulatory Commission (TRC) in accordance with condition 6.1.1 in the PSTN and Public Mobile Telephone Service Licences which states:

> *"The Licensee acknowledges that interconnection between the Licensee's network and other licensed telecommunications networks in Jordan, is governed by Section 29(e) of the Telecommunications Law, the provisions of this Article 6 and comparable provisions in the licenses of other network operators and any Guidance on Interconnection issued by the TRC from time to time, or as may be amended or replaced from time to time."*

2. The Chairperson of TRC will take The Guidelines into account in applying the relevant conditions in Licences, and give reasons if The Guidelines are departed from. The Chairperson retains the right to depart from the Guidelines where the circumstances justify such action subject to clause 3. .
3. The Guidelines will be subject to review and may be amended following consultation with interested parties in the light of experience of their operation, of development in telecommunications markets and of any changes to Jordanian national law.

1.2 Scope

4. The Guidelines apply to all Licensees designated by the TRC unless expressly stated otherwise. The TRC will determine which Licensees are required to produce and publish a RIO. Such a determination shall be made known to affected parties following due consultation. The criteria and timescales for designation will be defined in a separate TRC document. A Licensee so determined is referred to, within The Guidelines, as a 'Designated Licensee'.
5. The Guidelines do not apply to operators of Private Telecommunications Networks or to Users. Such operators shall be entitled to 'connection' services but not 'interconnection'. Connection services are outside the scope of The Guidelines.
6. The Guidelines do not set rates for interconnection services including call conveyance. However, The Guidelines (Section 7) do set out the methodology by which rates shall be determined and the framework under which a move towards cost based interconnection rates should take place.
7. Many of The Guidelines concern the development and publication of a Reference Interconnection Offer (RIO) by Designated Licensees.
8. A Reference Interconnection Offer (RIO) is a publicly available document published by a Designated Licensee defining a standard set of technical and commercial terms (See Annex A) by which the Designated Licensee[1] offers interconnection services to other Licensees. It forms the basis of a transparent offer by the Designated Licensee to contract with another party through a standard interconnection agreement.
9. The publication of a RIO will

a. Ensure transparency by defining the interconnection services offered by the publisher of the RIO, the applicable rates for such services and the applicable conditions of use.

b. Limit the scope of negotiations between Licensees thus ensuring that interconnection is offered on non-discriminatory terms.

c. Advise new entrants what services are offered by certain Designated Licensees and the costs and lead-times for the provision of such services, thus facilitating further investment in the Jordanian market for telecommunications services.

10. All new RIOs shall be subject to consultation and determination by the TRC prior to publication. Consultation will be managed by TRC and TRC determination shall be completed within 90 days from the submission to the TRC of the draft RIO.

11. The publication of a RIO by a Designated Licensee does not remove the need for individual interconnection agreements to be signed between themselves and interconnecting Licensees. These interconnection agreements shall reflect the technical and commercial aspects of the RIO together with all necessary contractual conditions. Interconnect Agreements shall be submitted to the TRC for approval and shall be considered to be approved if no comments are provided by the TRC within 30 days of submission.

12. Designated Licensees shall update their RIOs periodically to reflect changes in the telecommunications sector, including the introduction of new services and the use of new technology. All updates are subject to consultation and approval by the TRC prior to publication. (See clause 11)

13. The TRC understands that implementation of The Guidelines will necessitate Licensees to undertake a number of changes to their systems, processes and contractual arrangements.. The TRC will consult with affected parties to agree a schedule for compliance with The Guidelines within twelve (12) months from publication. These may include the agreement of interim arrangements ahead of full implementation.

1.3 Interpretation

14. Individual guidelines containing the word ‘shall’ are mandatory requirements and are binding on the Designated Licensees as explicitly expressed.

15. Individual guidelines containing the word ‘should’ are recommendations to Licensees but are not mandatory.

16. Individual guidelines containing the word ‘may’ are permissions to Licensees.

1.4 Purpose of The Guidelines

17. The principal purpose of The Guidelines is to clarify the arrangements for interconnection and provision of services between Licensees.

18. The Guidelines provide a formal process for dealing with interconnection disputes.

19. The Guidelines assist in ensuring that all Licensees are treated fairly and in a non-discriminatory manner.

20. The Guidelines have been drafted with the introduction of full competition in the telecommunications sector in Jordan in mind. That is to say the fixed line communications sector after 1st January 2005 (and the mobile sector after 1st January 2004.) Nonetheless the Guidelines apply equally to the sector prior to 1st January 2005.

21. The Guidelines aim to encourage good practice by Licensees and to promote the provision of high Quality of Service to Users, through technical and economic efficiency.

22. A further aim of The Guidelines is to clearly express the policy of TRC with respect to the interconnection of Public Telecommunications Networks in Jordan.

1.5 Structure of The Guidelines

23. The Guidelines are structured along the lines of a typical Reference Interconnection Offer and comprise:

    a. Definitions

    b. Management

    c. Interconnection services

    d. Technical

    e. Processes

    f. Commercial

24. The headings in The Guidelines should be used by Designated Licensees for the development of their RIOs. Annex A provides a sample contents list for a RIO.

25. The application of The Guidelines to Licensees is explained in each case. There are also references to the Telecommunications Law and Licences throughout.

2 Definitions

26. Pursuant to Article 12, paragraph (a), sub-paragraph 15 of the Telecommunications Law of 1995 as amended, the Board has been empowered to define the technical terms used in the telecommunications sector and the meanings assigned to them. Such terms will be published in the Official Gazette.

27. In the event of conflict or ambiguity between the terms defined herein and the terms defined in the Licence or in the Telecommunications Law then the following order of precedence shall apply:

    a. The Telecommunications Law

    b. The Guidelines

    c. The Licence

28. For the purposes of use in The Guidelines, the following terms will have the ascribed meanings:

    a. **'The Guidelines'** means these interconnection guidelines which may be revised from time to time.

    b. **'Licensee'** means legal person granted a Licence by the TRC pursuant to the Telecommunications Law and the terms Licence or Licences shall be construed accordingly.

    c. **'Designated Licensee'** means a Licensee which TRC has determined shall publish a RIO.

    d. **'The Telecommunications Law'** means the Telecommunications Law of 1995 **'**and applying the doctrine of implied repeal this shall be read as – Law No 13 of 1995 and its amendments..

    e. **'Public Network Operator'** means a Licensee being the holder of either a Public Switched Telephone Network Licence or a Public Mobile Telephone Licence.

    f. **'The Board'** means the Board of Commissioners of the TRC.

    g. **'TRC'** means the Telecommunications Regulatory Commission.

    h. **'The Chairperson'** means the Chairperson of the TRC.

    i. **'A User Choice Call'** means a call originated by a User that chooses a different Licensee from the one the User is directly connected to, to convey the call to its destination.

    Acknowledging the fact that the Telecommunications Law, in its original Arabic form does not contain a formal definition of "Connection" or "Interconnection", but uses the word "Rabt" (meaning the act of tying together) to mean both connection and interconnection as may be applicable to the context therein, the following definitions shall be applicable for the purposes of The Guidelines:

    j. **'Connection'** means the physical linking of Telecommunications Terminal Equipment and/or Private Telecommunications Networks to Public Telecommunications Networks in order to allow Users of the Private Telecommunications Network or the Users of the Telecommunications Terminal Equipment to communicate with Users of a Public Telecommunications Network or Users of the same or another Private Telecommunications Network or to access services provided on a Public Telecommunications Network as appropriate.

    k. **'Interconnection'** means the physical linking of the Telecommunications Systems in order to allow the Users of one Telecommunications Systems to communicate with Users of the same or another Telecommunications Systems or to access services provided by another Licensee.

l. **'Interconnect Billing Reconciliation Process'** means the process of two interconnected Licensees analysing the differences between their respective calculations of an interconnect bill from one party to the other and attempting to reach a settlement.

m. **'Person'** means any individual, company, corporation, partnership, joint venture, consortium, government or governmental entity.

n. **'Public Telecommunications Network'** means a telecommunications system or a group of telecommunications systems for the offering of Public Telecommunications Services to Users pursuant to the provision of the law.

o. **'Private Telecommunications Network'** means the telecommunications system operated for the benefit of a single person or a single group of persons under common ownership to serve their own needs.

p. **'Public Telecommunications Service Provider'** means any Person licensed or otherwise legally authorised to operate in Jordan a Public Telecommunications Network, as defined in the Telecommunications Law.

q. **'Public Telecommunications Services'** means a telecommunications service provided for compensation to the general public or any category thereof, in accordance with the law.

r. **'Telecommunications System'** means any transmission or switching device or other device or instrument used to convey, receive or transmit Telecommunications signals for the purpose of providing Public Telecommunications Services.

s. **'User'** means a person who makes use of Public Telecommunications Services using telecommunications means.

3 Management of interconnection

3.1 Account management

29. Licensees offering interconnection services should provide a Technical Account Manager and a Commercial Account Manager to deal with other Licensees seeking to use or using their services, to coordinate communication on interconnection matters.

30. Designated Licensees shall agree to meetings with an interconnected Licensee (Designated or otherwise) within five (5) working days of meetings being formally requested by that Licensee.

3.2 Joint technical committee

31. Interconnected Licensees should establish a joint technical committee.

32. The joint technical committee should be a forum for discussion and agreement on technical, operational, planning, billing and service aspects. The committee should be authorised to take decisions.

33. The composition of the joint technical committee should be agreed between the licensees and may be amended from time to time as appropriate. However, it should consist of equal representatives from both Licensees, and should include technical and commercial staff.

34. The joint technical committee should meet on a regular basis with the meetings planned in advance. There should be an agreed agenda, much of which could be standard. The agenda should include the following items:

    a. Need for new Points of Interconnect
    b. Analysis of traffic levels
    c. Analysis of service quality
    d. Discussion of capacity requirements
    e. Discussion and analysis of faults during the period since the previous meeting
    f. Discussion of billing processes
    g. Provision of relevant information and discussion of changes to either network or to the service

35. The TRC may attend the meetings of such committees if it so desires.

3.3 Provision of information between licensees

3.3.1 General network information

36. Designated Licensees offering interconnection services shall provide information about their network and services to Licensees entitled to use these services. Information provided shall be limited to that which is relevant and sufficient, in order that the Licensee using the services can conduct network planning, financial planning and subsequently operate their network.

37. All information provided between Licensees shall be subject to the confidentiality rules defined in the RIO and Interconnect Agreements, and shall only be used for the purposes for which it is provided.

38. Where there is a Licence requirement for Licensees to deal with other Licensees on a non-discriminatory basis, this shall include the provision of information. A Licensee shall provide the same level of information to all other Licensees entitled to similar interconnection services.

39. In order to fulfil the requirement stated above, for information to be provided on a non-discriminatory basis, designated Licensees should publish a standard set of information, possibly within annexes to their RIOs, rather than supply this specific information on demand.

40. Designated Licensees shall define the rules for routing traffic in normal and abnormal situations in a non-discriminatory manner including dealing with overflow, congestion and network management.

41. In the event of a fault or Major Service Failure, Licensees shall share as much information as is appropriate to resolve the problem and restore service. Licensees shall share as much information as is necessary to enable interconnecting licensees to provide information and services to their customers on an equal and non-discriminatory basis with respect to their own directly connected customers.

3.3.2 Planned changes to networks

42. Article 6.2.1.6 in the Public Mobile Telephone Service Licences and Article 6.2.1.7 in the PSTN Licence of JT, requires these Licensees to:

> *'provide reasonable notice to such other license holders about any network design, roll-out or up grade plans or changes which may be expected to affect the arrangements between the parties'*

43. Interconnected Licensees shall inform each other about all plans and changes which may have an effect on their arrangements. Sufficient time shall be given to allow for Licensees to make necessary adjustments to their systems and networks and ensure continuous service. Unless otherwise agreed this shall be at least one (1) calendar month in advance. Such changes may include:

    a. Changes to physical network, e.g. exchange closure or re-location.

    b. Upgrade of electrical/signalling specification.

    c. Changes to the numbering.

44. Licensees shall notify the other Licensee of any significant changes made in the network that may affect the conveyance of calls and /or the quality of the calls. The changing Licensee should pay the costs of the other Licensee where their alterations cause the other Licensee to change its system to continue to convey calls. Exceptions to this would be in the case where the change is agreed or where the alteration is part of a planned upgrade programme.

3.3.3 Records of interconnect links

45. Designated Licensees shall maintain a database of the interconnect links between their networks and those of other Licensees. This database should contain all relevant information including:

    a. A-end exchange – name, location, manufacturer, software release

    b. B-end exchange – name, location, manufacturer, software release

    c. Transmission path – direction designation, type

    d. Capacity

    e. Associated signalling link(s)

46. This database, although simple, will be useful for both Licensees in agreeing the state of the interconnection between them. The information contained therein shall also be provided periodically to the TRC upon request.

4 Interconnection services

4.1 Overview

47. This Section defines the categories of interconnection service and states guidelines for the provision of the services.

48. Interconnection services are provided by Designated Licensees to other Licensees.

49. There are different categories of interconnection services and each is described within this Section. These are:

Call conveyance services	Services which involve the carriage of voice band calls over an interconnect route between Telecommunications Systems.
Transmission link services	The provision by a Designated Licensee to other Licensees of network capacity links within the Designated Licensee's Telecommunications System.
Interconnection link services	The provision of an interconnect link capacity between the Telecommunications Systems of Licensees.
Data interconnection services	Interconnection services which involve the carriage of packet-switched data between data networks.
Collocation and facilities sharing	The provision by a Designated Licensee of space in its premises or the use of part of its physical infrastructure, such as masts or towers, to other Licensees.
Operator services	The provision of Operator services, for example directory enquiries and emergency services, operated by a Designated Licensee to other Licensees.
Advanced call services	Associated with call conveyance services but with value-added, advanced features such as CLI, Ring Back When Free, Divert on Busy.

50. Designated Licensees shall be required to update the RIO before the introduction of a new interconnection service.

51. Where a new service available to Users requires either changes to the RIO or the introduction of a new interconnect service such changes to the RIO shall accompany the launch of the new User service by the Designated Licensee. Suitable time shall be given to allow for Licensees to make necessary adjustments to their systems and networks and ensure access to the new service. Unless otherwise agreed this shall be at least one (1) calendar month in advance.

52. Designated Licensees shall be required to obtain the approval of the TRC before withdrawing an interconnection service.

53. Designated Licensees shall fully define their interconnection services and charges, including technical and commercial conditions, within their RIOs. (Section 7)

54. Other interconnection services which may be applicable in a future liberalised telecommunications sector include Number Portability and Local Loop Unbundling.

4.2 Call conveyance services

4.2.1 Overview

55. Call conveyance services shall be defined as those services that involve a Designated Licensee conveying (carrying) basic voice band calls on its network (fixed or mobile) originating from, or terminating in, the Telecommunications System of another Licensee or foreign Public Network Operator.

56. Call conveyance services are used by Licensees (in accordance with their Licenses) with any of the following licence types:

    a. Public Switched Telephone Network (PSTN)

    b. Public Mobile Networks

    c. Public Payphone

    d. Telephone Pre-Paid Calling Service

    e. Paging

    f. Datacommunications

    g. Trunking

    h. Global mobile satellite services and VSAT, after the end of 2004.

57. There are a number of different call conveyance services applicable to the current telecommunications sector in Jordan:

    a. Call termination

    b. Call transit

    c. Call origination including carrier selection and carrier pre-selection

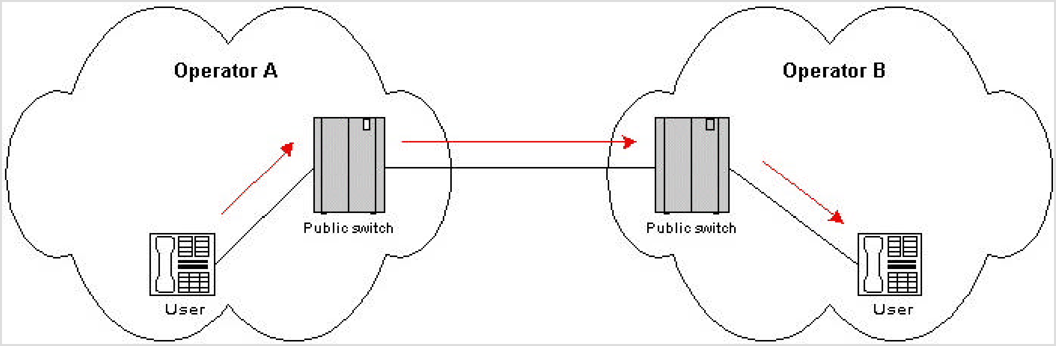
    d. Intelligent Network calls (Non-geographic calls using Number Translation Services)

4.2.2 Call termination service

4.2.2.1 Service definition

58. A call termination service shall be defined as a service where a Licensee receives voice band calls from an interconnected Licensee, and then terminates (or completes) the calls within its own Public Telecommunications Network. An example is shown below.

Call termination



Operator B is providing a Call Termination Service to Operator A. In the example above, the call originates in the network of Operator A and terminates in the network of Operator B. However, the call does not need necessarily to have originated in the network of Operator A.

4.2.2.2 Requirement to provide service

59. Designated Licensees shall be required to offer a call termination service to all other Licensees.

4.2.2.3 Categories of call termination

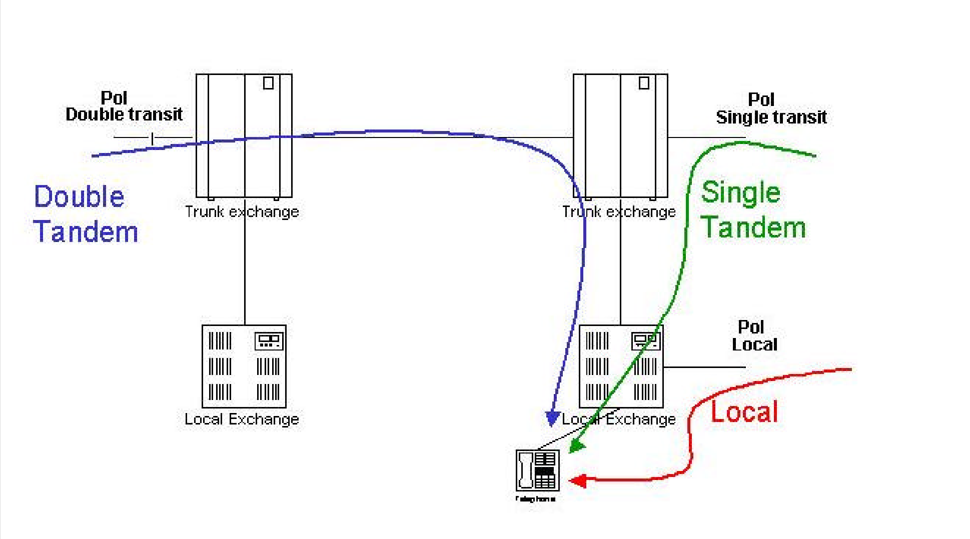
60. There are typically three categories of the call termination service provided on fixed voice networks:

   a. Local call termination: where the calls are delivered on an interconnect link to the local exchange to which the end-User is directly connected.

   b. Single Tandem call termination: where the calls are delivered on an interconnect link to a Tandem (or Transit) exchange which has a direct link to the local exchange to which the end User is directly connected.

c. Double Tandem call termination: where the calls are delivered on an interconnect link to a Tandem (or Transit) exchange which does not have a link to the local exchange to which the end User is directly connected. The

Categories of call termination service



call must be routed over (at least) two Tandem exchanges before being sent to the local exchange.

61. Article 6.2.1.1 of both the PSTN and Public Mobile Telephone Licenses, requires those Licensees to:

> *'provide interconnection at any technically feasible point in the network, subject to operational practicability and commercial viability'*

62. Article 6.2.1.3 of both the PSTN and Public Mobile Telephone Licences, requires those Licensees to:

> *'provide interconnection in a timely fashion on terms, conditions (including technical standards and specifications) and 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'*

63. The TRC notes that the network architectures of fixed and mobile networks are fundamentally different. When routing a call to a fixed network, it can be known where the end User is located, i.e. on which local exchange. When routing a call to a mobile network, it is not known where the end User is located at any point in time, i.e. on which MSC. There is no concept of a local exchange within mobile networks, although there may be exchanges used as Tandems.

64. Therefore the application of licence conditions 6.2.1.1 and 6.2.1.3 will vary between the PSTN and Public Mobile Telephone Licensees with regard to the provision of a call termination service.

65. Designated Licensees with a PSTN License shall offer a Local and a Single Tandem call termination service. The TRC recognises that a Double Tandem call termination service is not applicable in Jordan at the present time.

66. Provision of a local call termination service will require Licensees using the service, to interconnect to local exchanges within the network of the PSTN Licensee offering the service.

4.2.3 Call transit service

4.2.3.1 Service definition

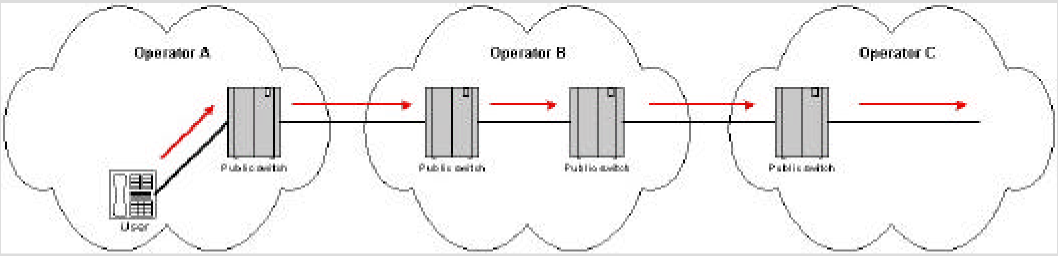
67. A call transit service is defined as a service where a Licensee receives voice band calls from one Licensee and routes them to the network of a different Licensee. The Licensee providing the call transit service does not originate or terminate the call within its own network.

68. This service may be separated into two categories:

    a. National call transit; a call transit service between Licensees within Jordan.

    b. International call transit; a call transit service provided to Licensees to transit their international calls to network operators in other countries.

Call transit



Operator B is providing a Call Transit Service to Operator A. The call originates in the network of Operator A which routes it over an interconnect link to Operator B. Operator B switches the call (in the example above, they switch it twice) and routes the call to another operator (in this case Operator C). Operator C may terminate the call on its network or transit the call to another network.

4.2.3.2 Requirement to provide service

69. The PSTN Licensee (JT) currently has the exclusive right to provide an international call transit service until the end of 2004 and shall provide this service to all Licensees.

70. The PSTN Licensee (JT) shall provide a national call transit service to all Licensees.

71. Other Licensees may provide a national call transit service.

4.2.4 Call origination service

4.2.4.1 Service definition

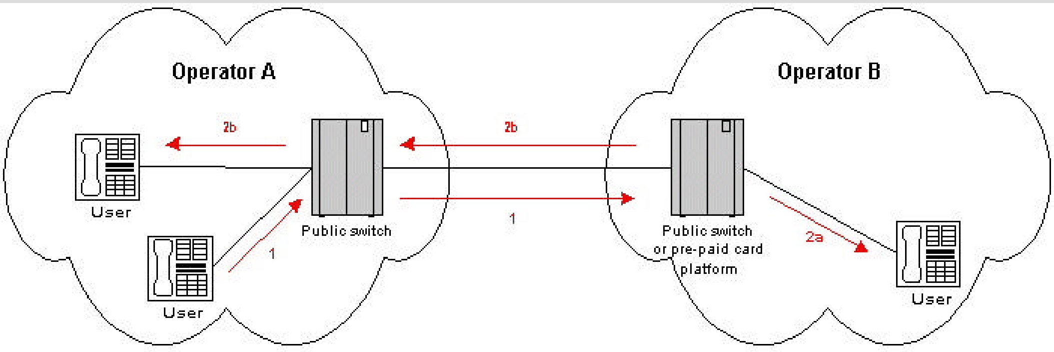
72. A call origination service is defined as a service provided for a User Choice Call. Thus one Licensee provides calls to an interconnected Licensee, and the originating Licensee does not charge the calling User a retail tariff, but instead charges the other Licensee at an interconnection rate for originating the call. The call could be for any destination and will not necessarily terminate on the network of the Licensee who receives the call.

73. There are typically two categories of the call origination service:

    a. Carrier selection; the calling User (or the Customer Terminal Equipment) inserts a prefix in front of the number that they are dialling.

    b. Carrier Pre-Selection; the originating Public Network Operator has been instructed by the User which Public Network Operator should manage their service and calls are routed to that Licensee automatically with no requirement for the dialling User to enter a prefix or non-geographic number. This is sometimes referred to as 'equal access'.

Call origination



Operator A is providing a call origination service to Operator B. The call originates in the network of Operator A which routes the call over an interconnect link to Operator B. Operator B may validate the call on a public exchange or pre-paid card platform and then route the call on for termination in their own network (2a) or to another network, e.g. Operator A (2b).

4.2.4.2 Requirement to provide service

74. Designated Licensees offering PSTN services shall be required to provide a call origination service to all other Licensees.

4.2.5 Intelligent Network call origination

4.2.5.1 Service definition

75. An intelligent network call origination service is defined as a service where the User dials a non-geographic number to a fixed terminating point on another Licensee's network and is charged a fixed fee irrespective of the distance between the originating and terminating User. In some instances this charge to the originating User might be zero.

76. The intelligent network call origination service (sometimes called Number Translation Services) typically covers:

i. “Auto Freefone” services where the caller pays nothing for the call but the terminating User pays.

ii. Local Fee Call services where the originating User pays a local retail call tariff. The terminating User often pays a retail tariff for the service.

iii. National Fee Call services where the originating User pays a national retail tariff.

iv. Premium Rate Services where the originating User pays a retail rate above the standard retail call tariff and receives some additional content. The terminating Licensee often pays a portion of the revenue to the content provider.

4.2.5.2 Requirement to provide service

77. Designated Licensees shall provide an intelligent network call origination service to all other Licensees.

4.3 Transmission link services

4.3.1 Service definition

78. Transmission link services are defined as services where a Designated Licensee provides fixed capacity between two fixed points over its network to other Licensees.

79. 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.

80. Transmission link services may be provided using any appropriate technology including both fixed and wireless systems.

4.3.2 Requirement to provide service

81. The PSTN Licensee (JT) shall be required to provide transmission link services to all Licensees.

82. Article 2.1.3 of the Public Mobile Telephone Licences permits the Licensees to self-provision transmission links, with the requirement that ‘*any radio based transmission links shall not be used except pursuant to a spectrum license issued by the TRC*’. This article also permits Licensees to lease transmission capacity from another Licensee or share capacity with it, subject to the permission of the TRC.

83. Article 2.1.3 of the Datacommunications Services Licence requires a Licensee to ‘*operate its Service using only Transmission Facilities provided by JTC or other Public Telecommunications Service Providers if any, licensed or otherwise authorised to provide such services in Jordan*’.

4.4 Interconnect link services

4.4.1 Service definition

84. Interconnect link services are defined as services where a Licensee provides one or more links over which traffic between its network and the network of another Licensee flows. Each end of an interconnect link is terminated on the network of a different Licensee.

85. Interconnect link services may be provided using any appropriate technology including both fixed and wireless systems.

4.4.1.1 Requirement to provide service

86. The PSTN Licensee (JT) shall provide interconnect link services to all Licensees.

87. Public Mobile Telephone Licensees shall provide interconnect link services in accordance with their Licences for the provision of Transmission Link services.

4.4.2 Data interconnection services

4.4.2.1 Service definition

88. Data interconnection services are defined as services which involve the carriage of packet-switched data between data networks. The termination of dial-up internet calls within the voice band is a call conveyance service.

89. These services may include:

   a. Packet Switching, Frame Relay and ATM services including those using IP Protocols

   b. Data leased lines

   c. International internet capacity

4.4.2.2 Requirement to provide service

90. The PSTN Licensee (JT) has the exclusive right to provide data interconnection services and shall do so for all Datacommunications Licensees until the end of the exclusivity period for JT which expires on the 1st January 2005.

4.5 Collocation and facilities sharing services

4.5.1 Service definition

91. Collocation and facilities sharing services shall be defined as services where one Licensee provides space in their premises and facilities to another Licensee in order for them to install their own network equipment. The facilities provided may include electrical power, air-conditioning and security, cable ducts and space on antenna masts or towers.

4.5.2 Requirement to provide service

92. Designated Licensees shall offer collocation and facilities sharing services. Other Licensees may offer collocation and facilities sharing services.

93. Article 6.2.1.4 in the Fixed Public and Public Mobile Telephone Licences requires the Licensees to:

> *'lease to such other service providers, on a non-discriminatory basis, facilities (rooms, towers, ducts, cable etc.) under the control of the Licensee and required for use by such others, it being understood that the Licensee shall not be required to construct new facilities for lease to such other service providers hereunder'*

4.6 Operator services

4.6.1 Operator assistance

94. Designated Licensees shall offer Operator Assistance services to other Licensees.
95. All Licensees may establish their own operator assistance services but Designated Licensees shall enable other Licensees to offer relevant Operator Assistance Services via their network.

4.6.2 Emergency services

96. Designated Licensees shall provide connection to the Public Emergency Services to other Licensees.
97. Although this service is currently provided free of charge, the tariffs may be changed according to the stipulations of the Designated Licensee' Licence agreement and with the approval of the TRC.
98. Licensees shall cooperate to achieve a technical solution that provides prioritised capacity to connect to public emergency services.

4.6.3 Directory enquiries

99. Designated Licensees shall provide Directory Enquiry services to other Licensees.
100. Although this service is currently provided free of charge, the tariffs may be changed according to the stipulations of the Designated Licensee' Licence agreement and with the approval of the TRC.

4.7 Advanced call services

4.7.1 Service definition

101. Advanced call services shall be defined as value-added services associated with call conveyance services. Examples of such services are:
    a. Calling line identification presentation (CLIP)
    b. Calling line identification restriction (CLIR)
    c. Connected line identification presentation (COLP)
    d. Connected line identification restriction (COLR)
    e. Call transfer
    f. User-to-user signalling
    g. Call notification (or call waiting)
    h. Ring-back on busy
    i. Three-way call

4.7.2 Requirement to provide service

102. TRC recognises that not all these facilities are compatible between fixed and mobile networks but wishes to ensure that, where technically feasible, there is feature transparency for the benefit of Users throughout Jordan.

103. Licensees shall cooperate to achieve feature transparency between interconnected networks of advanced services.

5 Technical aspects

5.1 Introduction

104. This section deals primarily with the interconnection of switched networks designed for the conveyance of voice calls and data calls within the voice bandwidth (dial-up internet access for example).

105. Other forms of interconnection including interconnection to data services and Public Payphone Operators will require supplementary technical aspects which should be included in the RIOs of Designated Licensees.

5.2 Interconnection of public exchanges

106. The Guidelines for the interconnection of public exchanges are applicable only to Licensees using public exchanges, including MSCs to offer call conveyance services as defined in Section 4.2 of The Guidelines.

107. Designated Licensees offering switched interconnection shall provide other Licensees with details of their exchanges that are available for interconnection. Designated Licensees shall provide this information within their RIOs. The information should include, but not be limited to:

    a. Name of exchange
    b. Location (geographic address)
    c. Function (International/Tandem/Local)
    d. Manufacturer
    e. Model (Hardware/Software)

108. To reduce the requirement to update the main body of the RIO in response to network developments, Designated Licensees should maintain details of these exchanges within an annexes to their RIOs which may be available in an up-to-date electronic form.

109. Designated Licensees shall produce a list of exchange hardware and software configurations that they accept for interconnection to their network and define this within their RIOs.

110. Licensees with either a PSTN or Public Mobile Telephone Service Licence have an obligation contained in Article 6.2.1.1 of their Licences to provide interconnection '*at any technically feasible point in the network, subject to operational practicability and commercial viability'*. The TRC considers that all public exchanges fulfil the above criteria as points for interconnection. Designated Licensees operating such public exchanges shall offer interconnection capability at all of their exchanges.

111. The TRC accepts that fulfilment of the requirement to provide interconnection at all exchanges, may require Licensees to make modifications to their network architecture, routing and billing arrangements and that this process will take time and may involve additional costs.

5.2.1 Rules for interconnect links between public exchanges

5.2.1.1 General

112. Licensees providing switched interconnection services may specify technical rules to be followed by other Licensees using these services.

113. Examples of technical switched interconnection rules include (but are not limited to):

   a. Minimum number of interconnect links

   b. Maximum interconnect link capacity

   c. Requirements to interconnect to specific exchanges

   d. Signalling requirements

114. Designated Licensees shall define any technical interconnection rules within their RIOs.

115. Technical interconnection rules shall not prevent the introduction and development of competition nor shall they represent an unreasonable obstacle to interconnection.

116. Designated Licensees may define a set of rules for handling calls routed incorrectly to one of its exchanges within their RIOs. The TRC consider it reasonable for Licensees to reject calls routed erroneously to a local exchange if the called User is not hosted on that exchange.

5.2.1.2 Number of interconnect links

117. In order to protect the interconnection service resilience (i.e availability of sufficient capacity to meet QoS targets), Designated Licensees may require other Licensees to interconnect to more than one of their public exchanges and to specify particular exchanges or levels of switching. Any such minimum requirements shall be justified by reasonable engineering principles to provide network resilience. Licensees shall not define a maximum limit on the number of interconnect links to any other Licensee.

118. In any instance where it might be considered necessary to constrain capacity on either a temporary or permanent basis, the TRC should be consulted immediately and before any constraints would come into force.

5.2.1.3 Link direction

119. Designated Licensees providing interconnection at public exchanges shall enable Licensees using their service, to designate interconnect links as being either uni-directional in either direction, or bi-directional (both-way).

120. Licensees providing interconnection of public exchanges may also encourage the use of uni-directional routes segregated by traffic type. Such an approach can protect certain traffic streams against congestion caused by others and it is possible to provide differing Grades of Service to particular traffic streams. It is also much simpler to manage from a commercial and accounting perspective.

5.2.1.4 Link capacity

121. Designated Licensees shall offer interconnection, to the voice networks of other Licensees, in multiples of 2 Mbps (2048 kbps) E1 transmission links.

122. Licensees providing interconnection of public exchanges may define a minimum and maximum capacity for any interconnect link.

123. Licensees should not place excessive reliance on any particular interconnect link as this may endanger interconnection service resilience. Licensees should endeavour to spread interconnection traffic over a number of diverse interconnect links.

124. Designated Licensees providing switched interconnection should enable Licensees using their service to designate a uni-directional outgoing interconnect from the Licensee's network as being either 'fully-provisioned' or 'high-usage'. This designation may be made either before an interconnect link is brought into service, or at some point during its operation. A fully-provisioned link should be dimensioned such that congestion is rare. A high-usage link may be dimensioned such that a reasonable degree of congestion (or blocking) is expected.

125. Licensees shall publish a target grade of service for each outgoing fully-provisioned interconnect link during the link busy hour. This takes the form of a blocking probability according to the Erlang B calculations.

126. Licensees should provision capacity on fully-provisioned interconnect links so that the congestion remains within the agreed grade of service value during normal busy hour periods.

127. In addition to the grade of service value, Licensees may agree on a utilisation factor for fully-provisioned interconnect links. The utilisation factor is the percentage occupancy of the interconnect link that the parties aim to keep the traffic below. If the utilisation of an interconnect link regularly exceeds the defined utilisation factor, such utilisation should trigger a re-routing of traffic away from that link as part of a re-balancing exercise and/or an increase in the capacity on that link.

128. If a Licensee using switching interconnection services has designated an interconnect link as being high-usage such designation shall be in conjunction with planned overflow via fully-provisioned interconnect links.

129. The TRC notes that some incumbent operators discourage the practice of using routes in this way from both a technical and commercial standpoint. However, high-usage routes are widely employed and may be very efficient.

5.3 Transmission interconnection

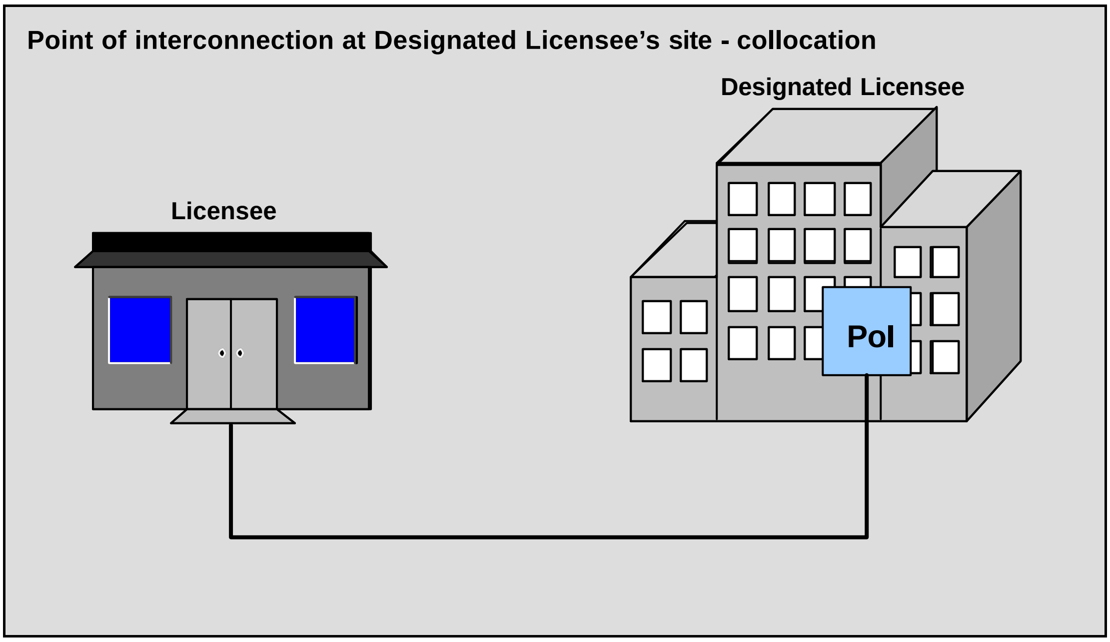
130. This Section concerns the technical aspects of the transmission (transport) used to interconnect the networks of Licensees in order to provide interconnection services.

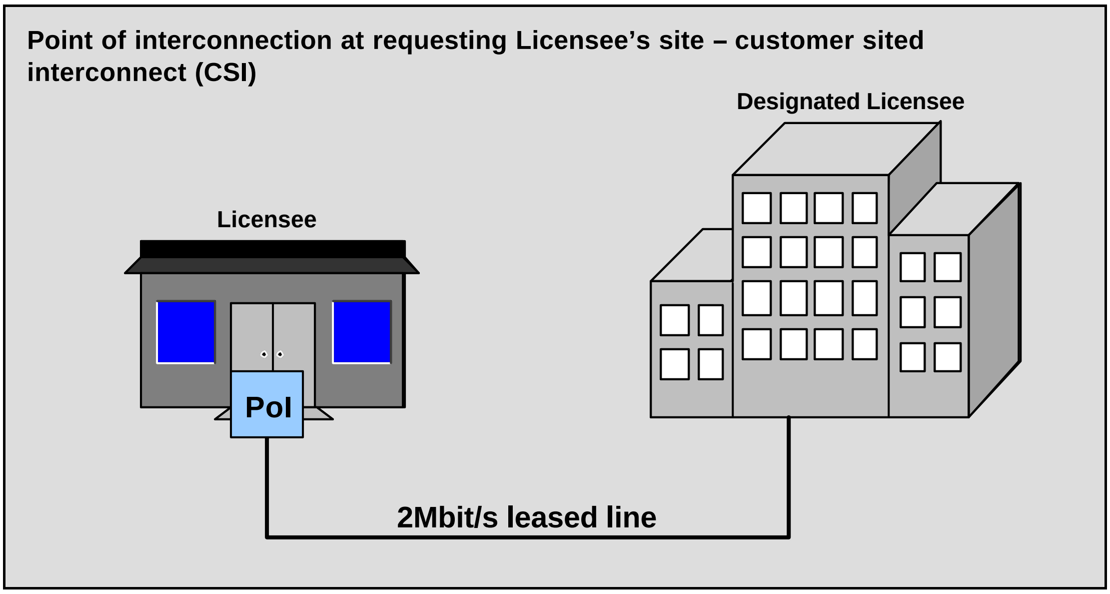
5.3.1.1 Point of Interconnect

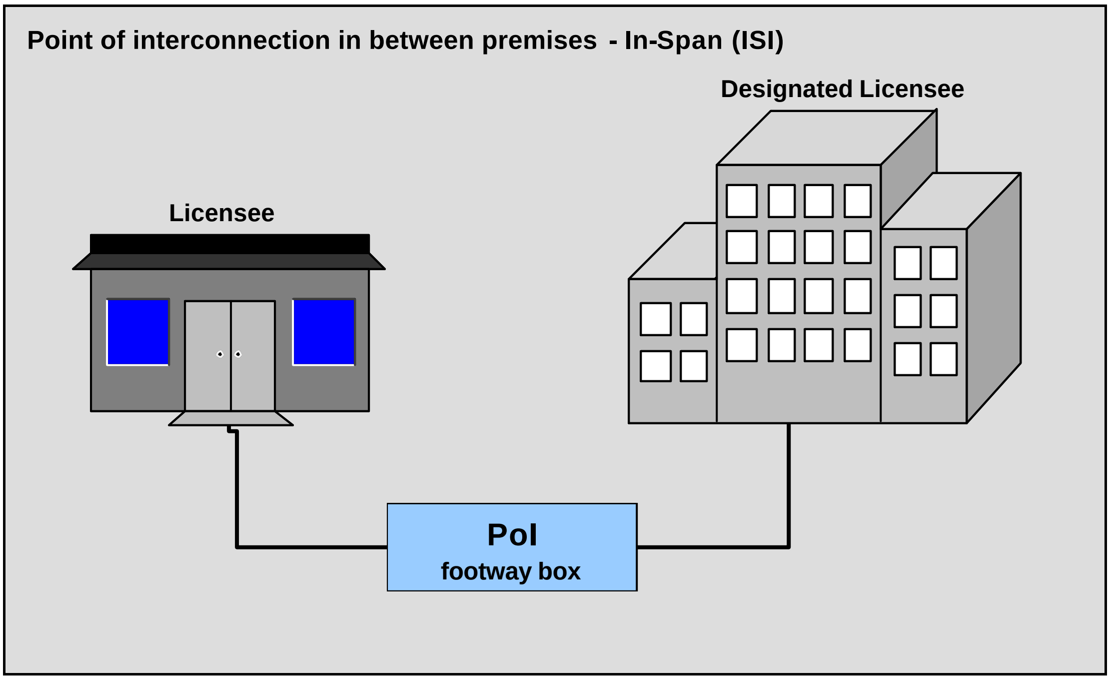
131. The Point of Interconnection of a transmission interconnect shall be defined as the boundary between the networks of interconnected Licensees and is located at some point on the transmission interconnect link.

132. The Point of Interconnection may be located at the premises of the Designated Licensee (collocation) within the premises of the Licensee (customer sited interconnect), or at a point in between their respective premises (In-span Interconnect). See diagrams below.

133. In the case of the Point of Interconnection at the premises of either Licensee, the exact Point of Interconnection shall be defined as the line side of the digital (2 Mbps) distribution frame. The Licensee owning the premises shall provide the digital distribution frame as the physical interconnection point where the other Licensee can terminate its transmission systems.


Point of interconnection at Designated Licensee's site - collocation
Designated Licensee
Licensee
PoI


Point of interconnection at requesting Licensee's site – customer sited interconnect (CSI)
Designated Licensee
Licensee
PoI
2Mbit/s leased line



134. Designated Licensees shall fully define the transmission options that Licensees interconnecting to them may use within their RIOs.

135. Licensees shall be responsible for provisioning, operating and maintaining the transmission interconnect up to the point of interconnection. They shall be considered as owning any transmission equipment and infrastructure up to the point of interconnection.

136. Licensees shall be responsible for the traffic carried over their own network up to (for outgoing traffic) or from (for incoming traffic) the point of interconnection. Licensees shall not be responsible for the traffic carried over the other's network.

137. Designated Licensees shall offer the option of placing the point of interconnect at their own premises, at the premises of the Licensees using their service(s) or in between, as an in-span interconnect. The commercial arrangements and provisioning, operations and maintenance processes shall be dependent on the location of the point of interconnection.

138. The Guidelines for the site access to the premises of a Designated Licensee where a point of interconnection is located are contained in Section 6.4.1.

5.3.2 Interconnect extension circuits

139. Designated Licensees shall enable Licensees to whom they are providing a service, to lease interconnection transmission links from the point of interconnection to other points in their network in order to enable switching interconnection to a greater number of exchanges.

5.3.3 Transmission technologies

140. Licensees shall support the use of any appropriate transmission technologies for interconnect links. Technologies could include wireless, fibre-optic cable and SDH transmission with an appropriate range of ring capacities. The TRC discourages the use of Plesio-Synchronous transmission technologies on interconnect links.

141. Licensees should consider the resilience of transmission routes including redundancy, diverse routing, path protection, separation, diversity and ring architectures.

142. Where appropriate, Licensees should provide diverse cable entry points to buildings where a Point of Interconnection is located.

5.4 Interconnection of signalling networks

143. Licensees shall support the ITU Signalling System Number 7, Integrated Services User Part (ISUP) for interconnection signalling.

144. JT shall provide leased circuits routed via the JT's international gateway exchanges to any Signalling Transfer Point outside of Jordan to interconnect with international operators to facilitate roaming with their networks.

145. JT shall provide, to the mobile network operators, the use of SS7 signalling via its international switching centres to international operators for the transit of incoming and outgoing roaming messages with foreign mobile operators.

146. The utilisation of SS7 links shall be maintained within the ITU guidelines:

    a. Critical load per SS7 link: 0.36 Erlangs.

    b. Maximum load per SS7 link: 0.44 Erlangs.

147. Designated Licensees shall specify the signalling configuration to be used on interconnect links within their RIOs.

148. Licensees providing interconnection, shall notify interconnected Licensees of any modification in the adopted ITU signalling system 6 months in advance.

5.5 Interface standards and technical requirements

149. Licensees shall adhere, as far as possible, to the appropriate ITU and ETSI technical standards related to interconnection interfaces.

150. Appropriate ITU-T technical standards may include but are not limited to:

    a. G.111 Loudness Ratings in an International Connection

    b. G.113 Transmission Impairments

    c. G.121 Loudness Ratings of National Systems

    d. G.122 Influence of National Systems of Stability, Talker Echo and Listener Echo In International Connections

    e. G.123 Circuit Noise in National Circuits

    f. G.131 Stability and Echo

    g. G.151 General Performance Objectives Applicable to all Modern International and National Extension Circuits

    h. G.165 Echo Cancellers

    i. G.473 Interconnect of a Maritime Mobile Satellite System with the International Automatic Switched Telephone Service Transmission Aspects

    j. G.703 Physical/ Electrical Characteristics of Hierarchical Digital Exchanges

    k. G.704 Synchronous Frame Structures used at Primary and Secondary Hierarchical Levels

    l. G.706 Frame Alignment and Cyclic Redundancy Check (CRC) Procedures Relating to Basic Frame Structures Defined in Rec. G704

m. G.711 Pulse Code Modulation (PCM) of Voice Frequencies

n. G.712 Performance Characteristics of PCM Channels between 4-wire Interfaces at Voice Frequencies

o. G.811 International Connections Terminating on Synchronous Network Nodes

p. G.812 Section 2.2.3 (Holdover Operation)

q. G821 Error Performance of an International Digital Connection forming part of an Integrated Services Digital Network

r. G.823 The Control of Jitter and Wander within Digital Networks which are based on the 2048 kbit/s Hierarchy

s. G.826 Error Performance Parameters and Objectives for International Constant Bit Rate Digital Paths At or Above the Primary Rate

t. G.921 Digital Sections Based on the 2048kbit/s Hierarchy

u. O.151 Error Performance Measuring Equipment for Digital Systems at the Primary Bit Rate and above

v. O.152 Timing Jitter Measuring Equipment for Digital Systems

w. P.11 Effect of Transmission Impairments

x. P.16 Subjective effects of Direct Crosstalk; Thresholds of Audibility and Intelligibility

y. P.76 Determination of Loudness rating; Fundamental principles

z. Q.522 Section 2.12 Bit Patterns Generated by the Exchange in Idle Channel Time Slots

aa. Q.551 Transmission Characteristics of Digital Exchanges

bb. Q.554 Transmission Characteristics at Digital Interfaces of a Digital Exchange

cc. Q.700 Introduction to ITU-T Signalling System No.7

dd. Q.701 Functional Description of the Message Transfer Part (MTP) of Signalling System No.7

ee. Q.702 Signalling Data Link

ff. Q.703 Signalling System No.7 - Signalling Link

gg. Q.704 Signalling System No.7 - Signalling Network Functions and Messages

hh. Q.705 Signalling System No.7 - Signalling Network Structure

ii. Q.706 Signalling System No.7 - Message Transfer Part Signalling Performance

jj. Q.707 Testing and Maintenance

kk. Q.767 Application of the ISDN User Part of ITU-T Signalling System No.7 for International ISDN Interconnections

ll. Q.780 Signalling System No.7 Test Specification General Description

mm. Q.781 Signalling System No.7 - MTP Level 2 Test Specification

nn. Q.782 Signalling System No.7 - MTP Level 3 Test Specification

oo. Q.784 ISUP Basic Call Test Specification

pp. Q.785 ISUP Protocol Test Specification for Supplementary Services

151. Appropriate ETSI technical standards may include but are not limited to:

a. ETS 300 008 Integrated Services Digital Network (ISDN); ITU-T Signalling System No.7; Message Transfer Part (MTP) to Support International Interconnection

b. ETS 300 121 Integrated Services Digital Network (ISDN); Application of the ISDN User Part (ISUP) of ITU-T Signalling System No.7 for International Interconnection (ISUP Version 1)

c. ETS 300 132 Power Supply Interface at the Input to Telecommunications Equipment

d. ETS 300 019 1-3 Environmental Conditions & Environmental Tests for Telecommunications Equipment, Part I-3: Classification of Environmental Conditions - Stationary Use at Weather-Protected Locations

e. ETS 300 246 ONP Technical Requirements: 2048kbit/s Digital Unstructured Leased Line (D2048U) Interface Presentation

f. ETS 300 247 ONP Technical Requirements: 2048kbit/s Digital Unstructured Leased Line (D2048U) Connection Characteristics

g. ETS 300 248 ONP Technical Requirements: 2048kbit/s Digital Unstructured Leased Line (D2048U) Terminal Equipment Interface

h. ETS 300 303 Integrated Services Digital Network (ISDN); ISDN - Global Systems for Mobile Communications (GSM) Public Land Mobile Network (PLMN) Interface

i. ETS 300 386-1 Public Telecommunications Network Equipment EMC Requirements Part 1: Product Family Overview, Compliance Criteria and Test Levels

152. Designated Licensees offering interconnection services shall state the technical standards used for interconnection, within their RIOs.

153. Licensees offering interconnection services shall provide reasonable notice to interconnected licensees of any modifications to the technical standards related to interconnection interfaces.

154. Licensees offering interconnection services shall collaborate with interconnected licensees to overcome any technical problems.

155. Licensees should synchronise their networks from time slots on E1 interconnect links to JT as JT currently has the only caesium synchronisation clock in Jordan.

5.6 Numbering

156. Designated PSTN Licensees shall provide details of the number ranges which are hosted on each of their local exchanges. Licensees using the service shall then route calls to those number ranges directly on the interconnect link to the local exchange.

157. Designated Mobile Licensees shall provide, upon request, details of active number ranges to other Licensees and to the TRC.

5.7 Quality of Service

158. Designated Licensees providing call conveyance services shall do so with the same quality of service as for calls carried wholly on their own networks. This is required under Article 6.2.1.2 of the Licences which requires Licensees to convey interconnection calls at '*a quality no less favourable than that provided for its own like services*'.

159. Licensees shall work jointly to ensure the overall quality of the calls which are made via an interconnection point and their own networks. Licensees shall adopt general principles regarding standards, techniques and methods in order to guarantee the quality on telecommunication networks and in services, as stipulated in ITU and ETSI recommendations as listed in Section 5.5 of The Guidelines.

160. Licensees shall have the capability to define a target Grade of Service for each interconnect link between their network and other Licensees' networks described in more detail in Section 6.1.3.4 on interconnect link capacity provisioning processes.

161. Designated Licensees shall be capable of monitoring all interconnect links at all times and shall, at all times, be able to report on the actual Grade of Service. This is discussed further in Section 6.2.2.2.

162. Designated Licensees shall define a number of Quality of Service measures that they shall provide to and expect from, interconnected Licensees within their RIOs. These QoS measures shall be included in the Interconnect Agreement as Service Level Agreements (SLA).

163. The Quality of Service measures shall include the Grade of Service during busy hour (blocking probability), either applied to individual interconnect links, or across all interconnect links, and may include the following:

    a. Answer-Seize Ratio

    b. Transmission delay as defined in ITU-T Recommendation G.114

    c. Transmission loss (loudness) as defined in ITU-T Recommendation P.76

    d. Noise and distortion as defined in ITU-T Recommendations Q.551-554, G.123, G.232, G.712 and P.11

    e. Echo and loss of stability as defined in ITU-T Recommendation G.122

    f. Cross-talk as defined in ITU-T Recommendation P.16

6 Interconnection processes

6.1 Interconnect provisioning processes

6.1.1 Definition

164. Interconnect provisioning processes are defined as those processes that are used to enable one Licensee to establish interconnection to other Licensees and to modify the physical interconnection. These processes shall be categorised as either planning, formal request for service or implementation processes.

165. The planning processes shall include:

    a. Planning of new points of interconnection
    b. Changes to interconnect link capacity
    c. Changes to the transmission capacity
    d. Changes to the signalling network
    e. Changes to call routing
    f. New numbering blocks
    g. All processes for requesting services

166. The implementation processes shall include:

    a. All civil engineering work
    b. Construction
    c. Installation
    d. Testing
    e. Commissioning

167. Designated Licensees providing interconnection services shall fully define the interconnect provisioning processes to be used by Licensees taking interconnection services from them within their RIOs.

6.1.2 Lead-times

168. The provisioning processes of Designated Licensees shall include defined lead-time requirements and information exchange requirements for specific provisioning activities. For example, the lead-time to establish a new transmission interconnect will be longer than adding capacity to an existing interconnect link.

169. Article 6.2.1.3 of the Public Mobile Telephone Service and Fixed Public Licenses requires the Licensees to '*provide interconnection in a timely fashion*'. This requirement implies that any published lead-times shall be reasonable and it should be possible for Designated Licensees to justify these to the TRC.

170. When defining lead-times, Designated Licensees should aim to be as realistic as possible and provide sufficient time to overcome unforeseen implementation difficulties.

171. Designated Licensees shall provide lead-times to other Licensees that are comparable with internal provisioning time-scales.

172. Lead-times may, for example, be given for the following:

    a. Connection of a new Licensee exchange or other network equipment

b. Implementation of a new transmission interconnect

c. Implementation of a new interconnect link

d. Provision of additional capacity on an existing interconnect link

e. Removal of capacity on an existing interconnect link

f. Removal of an interconnect link

g. Routing changes within the Licensee's network to interconnects to the interconnected licensee

173. Any proposed changes to lead-times of Designated Licensees shall be subject to the approval of the TRC and shall be justified by the Designated Licensee.

6.1.3 Planning processes

6.1.3.1 Interconnection of a new public exchange

174. Licensees shall define procedures to be followed by other Licensees wishing to interconnect a new public exchange to their network.

175. Designated Licensees should define any such processes within their RIOs.

176. The procedures are likely to be more detailed in the event that the new exchange model, hardware build or software build is not one that has previously been interconnected to the Designated Licensees network.

177. Licensees should consider developing an 'Exchange questionnaire' to be completed by Licensees wishing to interconnect new exchanges to their network.

178. The TRC shall have the responsibility of assigning the SS7 Point Code(s) to new exchanges of Licensees.

6.1.3.2 Transmission interconnection

179. Designated Licensees offering transmission interconnection services shall define a planning process for new transmission interconnects within their RIOs. This shall describe the processes to be followed by Licensees when planning new transmission interconnects.

180. The TRC encourages Licensees to share, on lease basis terms and conditions agreed between both parties, the use of existing cable ducts owned by any other Licensee.

181. Planning of transmission interconnections, including civil engineering works shall be the responsibility of the Licensee providing the transmission. However, both Licensees should collaborate in such planning exercises. In the case of in-span interconnection as described in Section 5.3.1.1, the planning shall be considered to be a joint responsibility.

6.1.3.3 Planning of interconnect links

6.1.3.3.1 Planning of new links

182. Designated Licensees offering interconnection should define a formal process for the establishment of a new interconnect link within their RIOs. This process may then be supported by electronic forms attached to the RIO.

183. New interconnect links should normally be requested by the Licensee that plans to use the interconnection services provided by the other Licensee.

184. The information that a Licensee providing interconnection requires from a Licensee requesting a new link may include the following:

a. Licensee A exchange

b. Licensee B exchange
c. Transmission path(s)
d. Initial capacity
e. Link direction (Incoming/Outgoing/Both-way)
f. Link configuration - Fully-provisioned/High-Usage
g. Utilisation Factor
h. Grade of Service
i. Purpose of link

6.1.3.3.2 Removal of interconnect links

185. Designated Licensees offering interconnection should define a formal process for the removal of an existing interconnect link within their RIOs. Such processes may then be supported by electronic forms attached to the RIOs.

186. Such a process should include agreement on how to migrate traffic off the link which is to be removed.

187. Licensees offering interconnection may define a minimum period for which an interconnect link will be operational, especially if they have had to incur costs in establishing an interconnection link.

6.1.3.4 Capacity planning on interconnect links

6.1.3.4.1 Interconnect traffic forecasts

188. Licensees offering interconnection may require Licensees using these interconnection services to provide forecasts of traffic over each interconnect link between their networks.

189. Traffic forecasts should be given in terms of Erlangs during the peak and off-peak ‘Busy Hours’ for a period of not more than 2 years in advance. The forecast may then, for example, be updated every quarter.

190. Designated Licensees which choose to require traffic forecasts, shall explicitly define the exact requirements in the RIOs. Furthermore, it is recommended that the process should be managed by electronic forms to be used by the Licensee providing the traffic forecasts.

191. Licensees providing traffic forecasts shall make such forecasts as accurate as possible. However, it is clearly understood that forecasting traffic is extremely difficult. Licensees shall not be penalised for any inaccuracy in their traffic forecasts.

192. Licensees providing interconnection services shall have the right to refer Licensees using the service to the TRC if traffic forecasts are either not provided or are believed not to have been provided in good faith.

6.1.3.4.2 Interconnect capacity forecasts

193. Licensees offering interconnection may require interconnected Licensees using their interconnection services to provi de forecasts of capacity requirements over each interconnect link between their networks.

194. These forecasts should be given in terms of E1s for a period of not more than 2 years in advance. This forecast may then, for example, be updated every quarter.

195. Licensees may require capacity forecasts without requiring traffic forecasts as described above in Section 6.1.2. However, if both capacity forecasts and traffic forecasts are required, the capacity forecasts should be based on the traffic forecasts and the design Grade of Service.

196. On interconnect links designated as being fully-provisioned, both Licensees shall provision, in advance, sufficient capacity to achieve the target Grade of Service.

197. Licensees may define a set of rules linking forecasts of required capacity to the capacity orders. For example, Licensees may require interconnected Licensees to order capacity within a certain percentage of their forecast capacity within 6 months.

6.1.3.4.3 Reactive capacity planning

198. Given it is the aim of interconnected Licensees to maintain the target Grade of Service, the process described in this Section should be applied even if the pro-active planning processes outlined in Sections 6.1.2 and 6.1.3.4.2 are being used, in the case that the capacity requirements have been under-forecasted.

199. Both interconnected Licensees shall measure traffic regularly on all interconnect links as described in Section 6.2.2. Both Licensees will be able to identify congestion and shall act to prevent it.

200. A period of the specified Utilisation Factor or Grade of Service being breached on a particular interconnect link shall not automatically trigger an increase of capacity on that interconnect link but should trigger a review of the network routing and interconnection capacity by both Licensees.

201. Licensees shall take all reasonable steps to prevent congestion through the 're-balancing' of interconnection traffic. This means that either or both Licensees shall adapt the exchange routing in order to re-direct traffic away from a congested interconnect link onto an interconnect link(s) with adequate spare capacity. Such a re-balancing process should be coordinated, in advance, between both Licensees.

202. If one or both Licensees considers that it is necessary to increase the capacity on one or more interconnect links in order to avoid or remove congestion, they shall have the right to call a meeting between the two Licensees.

203. A meeting shall be held within 5 working days of it being called by either Licensee. The Licensee calling the meeting shall inform the TRC and may invite a representative of the TRC to attend the meeting.

204. At such meetings, both interconnected Licensees shall present their traffic measurements to each other.

205. The traffic measurements provided shall be as comprehensive as possible and should cover at least a seven day period with the traffic profile over each day, in 15 minute intervals.

206. Both Licensees should be able to reach agreement on the requirement for an increase in interconnection capacity and on the details of the number of E1 links and the type of interconnect links.

207. If agreement cannot be reached during this meeting, either Licensee shall have the right to ask the TRC to intervene and make a determination on the requirement for additional capacity.

6.1.3.5 Transmission link services planning

208. Designated Licensees offering transmission link services shall define a formal process for the planning of such services, within their RIO. This process may be supported by electronic forms attached to the RIO.

209. The definition shall include the charges, provisioning, operations and maintenance processes and an SLA for the quality of the service. The SLA shall include delivery and repair performance criteria and penalty payments for failure to meet the service levels.

210. Designated Licensees offering transmission link services shall use identical processes to provide such services to all Licensees.

6.1.4 Collocation and facilities sharing processes

211. Designated Licensees shall cooperate in all aspects of providing collocation and facilities sharing services. Adoption of such practices aids economic, environmental and social benefits.

212. Designated Licensees shall maintain a list of their sites where collocation space is available and should include an indication of how much space is available on a long-term basis. This list shall be made available to other Licensees and the TRC.

213. Designated Licensees shall publish their space allocation policies within their RIOs. This may be based on a simple first-come, first-served principle but should take into account the following factors:

    a. Amount of space required

    b. Urgency of requirement

    c. Alternative options available to the requesting Licensee and the cost of these options

214. Licensees should maintain a list of facilities that they are prepared to share and the prices that they will charge others for doing so.

215. In circumstances where a Designated Licensee rejects a Licensee's request for collocation space on the grounds of insufficient space, the Designated Licensee should propose an alternative solution. In case of dispute, the TRC shall make a determination.

6.1.5 Request for service processes

216. Designated Licensees offering interconnection services shall define clear request for service processes to be followed by Licensees when requesting services. These processes shall be defined within their RIOs.

217. The request for service process should be supported by forms contained within, or attached, to the RIO.

218. As discussed above in section 6.1.2, the defined request for service process shall include lead-times. When requesting an interconnection service, the Licensee shall have a clear understanding of the maximum time that they could reasonably expect to wait.

219. Designated Licensees offering an interconnection service may stipulate that all, or some, types of request for service are binding on the Licensee placing the request for service. Any such stipulations shall be fully defined within their RIOs. Any such stipulations shall be reasonable and should reflect the costs that the Licensee has incurred in responding to a request for service. Reasonable flexibility should be permitted, especially in the early stages of a request for service.

220. Designated Licensees offering an interconnection service shall define the formats upon which requests for service will be accepted, e.g. letter, emailed attachment, fax, etc., within its RIO and within individual Interconnect Agreements, as appropriate.

221. The request for service should contain the date when the capacity is required. In some cases, this may simply be stated as 'as soon as possible'.

222. Designated Licensees shall respond to any request for service within 5 working days stating whether the request for service is to be accepted or rejected.

223. Designated Licensees rejecting an request for service, in whole or in part, shall respond, in writing to the Licensee, giving them the reasons for this rejection. This letter shall also be copied to the TRC.

224. In the event of a Designated Licensee rejecting a request for service, in whole or in part, the requesting Licensee shall have the right to refer the matter to the TRC. The TRC shall then investigate with the cooperation of both Licensees and may make a determination on the subject.

225. Designated Licensees accepting a request for service, shall provide, within 15 working days of the request for service being received, a date by which the request for service will be implemented. This date shall be within the published lead-times, from the receipt of the request for service, as described in Section 6.1.2.

226. Licensees should consider the urgency of the requirement in deciding the capacity provision date. If the request for service is for interconnection capacity and is required to overcome congestion, Licensees should make every effort to expedite the provision of this capacity.

227. Designated Licensees providing interconnection services shall implement a documented process for tracking the progress of capacity orders. The requesting Licensee and the TRC shall have the right to request a progress report within 3 working days at any time following the notification of the delivery date.

6.1.6 Implementation

228. Licensees offering interconnection services should have detailed internal implementation procedures to ensure that the services are provided in a timely manner and that the resulting services fulfil quality requirements.

229. In the case where both Licensees are involved in the implementation process, they should work constructively and in a cooperative manner. In such situations, there should be a pre-agreed schedule of testing which is defined in the RIO of the Designated Licensee offering the service.

230. There shall be a formal sign-off procedure for both the offering Licensee and the requesting Licensee to agree that the service has been provided.

6.2 Interconnection operations processes

6.2.1 General principles

231. Interconnection operations processes are defined as those processes that are used to enable interconnected Licensees to operate interconnection services.

232. The operations processes shall include:

   a. Network Traffic Management

   b. Quality measurement

   c. Traffic controls

   d. Routing management

   e. Fault reporting and resolution

233. Designated Licensees offering interconnection services shall define the procedures used between themselves and Licensees using their services, to operate the interconnection services.

234. Designated Licensees shall define the interconnection operations processes within their RIOs.

235. Licensees with a PSTN or Public Mobile Telephone Service Licence have an obligation to maintain and operate their networks to a targeted Quality of Service as defined in Appendix 4 of their Licences and to report on their performance against these targets.

6.2.2 Network traffic management

6.2.2.1 General

236. Network Traffic Management (NTM) is defined as the real-time surveillance and control of traffic flow on a telecommunications network. Its aims are to maximise the effective use of available capacity for call completion and to maintain an acceptable Grade and Quality of Service for Users of all Licensees.

237. Designated Licensees should establish Network Management Centres (NMCs) to monitor and control the flow and routing of traffic to maximise the effective use of available capacity.

238. Designated Licensees should provide 24-hour contacts for dealing with NTM queries and problems and should recognise the necessity for co-operation to achieve efficient NTM relating to the traffic routes linking their respective networks.

239. Licensees shall notify other Licensees in a timely manner when major problems occur which are likely to affect interconnected traffic.

240. Licensees should communicate as necessary to achieve a co-ordinated NTM effort.

241. The TRC recognises that congestion can be created in one network, and have an impact on a competitor's network due to network interconnection. If steps are taken in the affected network to reduce the impact of excessive traffic, typically by call-gapping, it is conceivable that another network operator may have cause to complain that its ability to carry revenue-earning traffic is restricted. If no action is taken the affected network could fail. Effective network traffic management actually maximises the effective (i.e. revenue-generating) call capacity of the network. The TRC therefore expects that:

    a. Designated Licensees shall document what congestion protection measures will be used (for example: call gapping, alternative routeing and priority techniques) and in what circumstances. Any such documentation should be made available to other Licensees with a legitimate interest;

    b. Designated Licensees shall also document what measures will be used to ensure the priority of emergency services traffic (currently 190), particularly during congestion periods; and

    c. Signalling links shall be dimensioned to avoid congestion and will in general have much lower occupancy than traffic links. The lower occupancy is important to minimise the risk of losing signalling messages and the need to reduce signalling latency. The number of signalling links should be established for normal and failure conditions.

6.2.2.2 Traffic and Quality of Service measurement

242. Interconnected Licensees shall both be responsible for measuring and monitoring the traffic and Quality of Service on the interconnect links between their networks, and shall be able to do so at all times in ‘real-time’ or as close to it as possible.

243. Designated Licensees shall be responsible for measuring and monitoring the traffic and Quality of Service within their networks and shall be able to do so at all times in ‘real-time’ or as close to it as possible.

244. Designated Licensees shall ensure that they have adequate traffic and Quality of Service measurement systems, trained staff, procedures and any required resources in order to fulfil these two requirements.

245. Designated Licensees shall provide traffic and Quality of Service measurements to the TRC upon their request, pursuant to Article 4.14 of the Public Mobile Telephone Service and PSTN Licences or Article 4.7 of the Data Communications Licences.

246. Licensees should provide NTM information relevant to an existing or perceived problem to other Licensees on request. Under no circumstances shall Licensees be required to provide commercially sensitive information, nor shall the information supplied be used for any other purpose than NTM.

6.2.2.3 Traffic controls

247. There are two main types of traffic control; 'Expansive', typically re-routes, and 'Protective', typically call-gapping:

   a. A re-route control may mean that the traffic affected will be carried over a Licensee's network for a greater distance than normally expected before being offered to the interconnected Licensee's network. Providing contractual agreement has been reached, re-routes may be 'set-up' in data at all interconnect units. The NMC will activate and remove the re-route option for each incident.

   b. Overflow from the primary route(s) should only be to pre-designated interconnect alternative routes. These calls would normally be given a lower priority than primary routed calls but the same priority as calls alternatively routed within the original network.

248. Protective controls prevent switching units being put in jeopardy due to excessive call attempts, problems and overloads in the other Licensee's network. The protective call-gapping control should mean that traffic destined for the interconnected Licensee's network may be restricted by the application of the control which would normally be applied on the receipt of a formal request.

249. Licensees may request a control from Designated Licensees in instances where it is necessary to reduce the traffic offered to the Licensee's network. Designated Licensees shall define the availability of such controls and degrees of selectivity and possible speed of implementation within their RIOs.

250. Licensees may implement controls within their own networks in response to perceived problems detected in another Licensee's networks. When such action is taken they should advise the other Licensees of the scope, cause, impact and likely duration of the problem. Advice of removal of the control should also be given.

251. If a Licensee considers that the use of NTM controls by another Licensee is acting to the detriment of its own network's performance, both Licensees should consult on the matter.

6.2.2.4 Routing management

252. Licensees shall manage the routing of outgoing calls up to the Point of Interconnection and incoming calls from the Point of Interconnection to their destination.

253. Licensees shall make every effort to ensure that calls are routed to the other Licensees' networks, using overflows to alternative routing paths if necessary.

254. Licensees shall be able to require interconnected Licensees to deliver incoming traffic to their networks on specific interconnect links and to request the use of proportional routing and other routing techniques.

255. When an interconnect link has been defined as being High Usage, the interconnect link(s) where calls will overflow should be defined.

256. Licensees should consider the formal agreement of routing plans between themselves and other interconnected Licensees. This could also include an agreed change process (referred to in the UK as 'Data Management Amendments').

257. Licensees shall pass onto other Licensees, the full CLI and CLIR for all calls, to the extent that the CLI and CLIR are available.

258. Licensees should agree advanced contingency routing plans to be used to alleviate different levels of NTM problems.

6.2.2.5 Mass call events

259. A ‘Mass Call Event’ is defined as a planned period of high call volumes to a specific set of destinations, e.g. a ‘phone-in’ to a ‘telethon’ type of event.

260. Licensees should establish procedures to coordinate Mass Call Events with their large Users who may host them.

261. Licensees with a User planning a Mass Call Event shall provide interconnected Licensees with reasonable advance notice. Such procedures shall be described in the RIO or Interconnect Agreement and may be accompanied by a form containing the relevant details.

262. Licensees should cooperate to ensure that, either additional capacity is provided on a temporary basis, or that routing controls are applied in order to maintain the service.

6.2.3 Fault management

6.2.3.1 Contact points

263. Designated Licensees shall be required to provide 24-hour contact points for fault reporting (24-hours a day, 7 days a week and all days a year). All initial contacts on faults affecting the other Licensee shall be between each Licensee’s nominated contact points.

264. Arrangements should be made for direct person-to-person connection between fault resolution functions of all interconnected Licensees.

6.2.3.2 Fault detection

265. Licensees detecting a possible fault which may affect interconnection services shall inform interconnected Licensees immediately (within 15 minutes). This shall be done whether or not it is believed that the fault is within the detecting Licensee’s network.

266. The Licensee that detects a possible fault shall process the fault report internally before requesting the assistance of interconnected Licensees in providing diagnostic support. Licensees shall make every effort to determine whether the fault is genuine and to identify the location of the fault.

267. Licensees should request an interconnected Licensee to process a fault, only when they are sure that the fault does not lie within their own network and is not their responsibility.

268. Following a fault report, interconnected Licensees shall agree ownership of the fault. The fault owner shall then assume responsibility for restoration including possible roll back to initial configuration when fault comes from a change and the eventual report back of service restoration.

6.2.3.3 Fault processing

269. A Licensee shall provide sufficient information to the other Licensees to enable both to carry out diagnostics and then progress the fault to restoration.

270. It is recommended that Licensees implement a fault management system as part of their Operational Support Systems.

271. Licensees should number fault reports in order to facilitate the management of individual faults, especially across two (or more) Licensees.

272. When either Licensee believes that a fault has been cleared, it shall give positive confirmation to the other Licensee immediately.

273. Licensees should prioritise the clearance of faults affecting service over the clearance of faults not affecting service.

274. A fault shall be considered to be cleared when the Licensee that reported the fault, has accepted the fault clearance information or confirms a successful test (e.g. traffic has been restored).

275. Designated Licensees shall include indicative response times, restoration times and procedures for different fault conditions within their RIOs. These shall be subject to the approval of the TRC. The RIO shall also define the escalation procedures for fault management.

6.3 Interconnection maintenance processes

6.3.1 General principles

276. Interconnection maintenance processes are defined as those processes that are used to enable interconnected Licensees to maintain the interconnection and interconnection services.

277. The maintenance processes shall include:

    a. Operational testing

    b. Planned Engineering Works

    c. System protection and safety

278. All Licensees offering interconnection services shall define the procedures used between themselves and the Licensee who uses their services, to maintain the interconnection services.

279. Designated Licensees shall define these processes within their RIOs.

6.3.2 Operational testing

280. Any testing which might affect traffic flows should be scheduled after midnight or during the low traffic period during the weekends and holidays with the prior approval of the joint technical committee of both Licensees.

6.4 Planned Engineering Works

281. Planned Engineering Work is defined as any foreseen work, necessary to be carried out within either Licensee's network, which may affect the interconnect arrangements or standards of performance between the networks, as perceived by the Licensees or their Users.

282. Licensees should provide interconnected Licensees with sufficient advance notice of any Planned Engineering Works. This notice should be at least ten (10) working days in advance.

283. It is further recommended that the notification should contain the following information:

    a. The Licensee's name, address, telephone and fax numbers

    b. Planned work reference number

    c. Date, time and duration of the planned work

    d. Type of planned work

    e. Type of disturbance the planned work will cause

    f. Date and time when the planned work will be completed

g. Any other information which will add value to the advice of interruption

284. Licensees should endeavour to minimise disruption when making tests, expansion or maintenance works. Any activity which might affect the service should be performed after midnight or during weekends and holidays supported with prior approval from the other Licenses.

6.4.1 Site access procedures

285. Site access procedures are defined as the procedures used to arrange and control access by one Licensee to their network equipment collocated in the premises of a different Licensee.

286. Designated Licensees providing collocation space and shared facilities shall define the site access procedures within their RIOs.

287. Designated Licensees providing collocation space should be able to provide access, by prior notice, on a 24 hour, seven days a week basis for planned work, and with no prior notice in the case of unplanned work for service restoration, resulting from network failure.

288. The procedures for planned access may be different according to the purpose of the planned access including:

   a. Delivery and installation of equipment

   b. Software or hardware upgrades

   c. Planned maintenance

289. Site access procedures may include escort arrangements whereby staff of the Licensee owning a site, escorts the staff of the Licensee collocating their equipment at the site. Such procedures should be reasonable and not excessively onerous. The Licensee owning the site shall bear all costs of escort. Where separate entrance and secure areas are provided, site escort may not be required.

290. Licensees using collocation space shall ensure that their technicians (or sub-contractors) have adequate training for working on equipment collocated at a site belonging to another Licensee, and that these staff comply with all reasonable safety and security requirements of the Licensee owning the site.

291. It is the responsibility of each Licensees' member of staff to ensure that they work in a safe environment. The Licensee owning the site shall be prepared to accept any questions or comments regarding safety from Licensees using the site, and to take the appropriate action.

292. Licensees providing collocation space should offer the representative of the licensee using the site, access to on site facilities e.g. facilities, power, lighting, water and toilets.

6.5 System protection and safety

293. Licensees should define their respective obligations to protect each others' networks and define measures to protect the safety all personnel and users.

294. Network integrity is a question of network management and the ability of the network to maintain certain characteristics with regard to performance and reliability. In order to maintain network integrity:

   a. the interfaces between the networks shall conform with recommendations from international standards bodies and/or international standards. Those standards should be open and monitored by the TRC.

   b. compatibility measures should ensure that networks or systems with different levels of performance work together correctly.

c. testing procedures should be carried out before interconnection and possibly after interconnection but before bringing equipment into service. Documentation of validity/conformity and interoperability should be submitted before the system is brought into operation.

d. special national and/or international technical solutions might be introduced for the interconnection of networks. For instance, the signalling networks could be separated by a signalling inter-network between the respective gateways. These solutions may be made available to all potential interconnecting Licensees in a non-discriminatory manner.

e. all testing should be carried out within a reasonable period of time and subject to mutually-agreed principles, so as not to delay interconnection.

295. Licensees shall be responsible for the safety and operation of their own systems.

7 Commercial aspects

7.1 Charges and payments

7.1.1 Principles of charging

296. The methodology for determining cost based rates shall be contained in detail in a separate document published by the TRC. The implementation of this methodology shall be subject to a separate consultation. This section of The Guidelines contains the policies of the TRC in respect to the derivation of cost based charges.
297. Both the PSTN and the Public Mobile Telephone Service Licensees shall offer interconnection charges that have "*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*".
298. It is TRC's policy to move to a charging system based on Long Run Average Incremental Costs. However, TRC recognises that such an approach is not immediately applicable to Jordan and, as in European countries, will take several years to implement. However in the short term TRC wishes to see interconnection charges which better reflect the costs incurred by Designated Licensees in providing the interconnection services. This could initially be based on a Fully Allocated Costing (FAC) methodology which recovers direct costs for the services provided with applicable overheads and a reasonable return on capital employed. The assessment and calculation of costs shall be based on "Cost Causation" principles.
299. Cost based charging shall apply equally to all interconnection services.
300. Designated Licensees shall undertake to fully analyse their costs of providing interconnection services. This shall initially use a Fully-Allocated Costing methodology (FAC) with the results presented to TRC within 6 (six) months of the publication of The Guidelines.
301. Designated Licensees shall cooperate with the TRC in any service costing exercise that the TRC may decide to undertake.
302. Interconnection services include all services as defined in Section 4 of The Guidelines.
303. Designated Licensees shall, following the determination by TRC, give a minimum of 28 (twenty eight) days notice of any changes to interconnection charges including charges for the introduction of any new interconnection services.
304. Designated Licensees shall notify TRC of their intention to introduce new interconnection services in accordance with the terms of their Licenses.
305. Designated Licensees may publish charges on their web site but shall publish the charges as annexes to their RIOs.
306. Designated Licensees shall define any penalties for cancellations of requests for service within their RIOs.

7.1.2 Call conveyance

307. Charges shall only be made for successful calls – those calls receiving an answer signal in the backward direction.
308. The charging unit for all successful calls shall be one second of conversation time.

309. Designated Licensees shall charge all interconnected Licensees the same per-second rates for the same call conveyance services.

310. There shall be no minimum charge for successful calls.

311. Call conveyance charges shall reflect the amount of network infrastructure used in the conveyance of each call. Designated PSTN Licensees must therefore offer different interconnection charges for local, single tandem, double tandem and transit (including international) calls.

312. Mobile licensees shall offer a single charge for call termination based on the average utilisation of network infrastructure by incoming calls in mobile networks.

313. Designated Licensees may offer peak and off peak interconnection rates, providing the overall cost recovery does not exceeded the total average cost of providing the service.

7.1.3 Transmission link costs and charges

314. The costs of transmission links shall be met by the Licensee requesting the service.

315. Charges shall be the same for all requesting Licensees.

316. Minimum contract periods shall not exceed 1 (one) year but discounts should be offered if longer commitments are made.

7.1.4 Interconnection link costs and charges

317. The costs of the interconnection links shall be shared between the Licensees on the basis of the proportion of traffic which each originates on each link. This shall be shared on the basis of traffic volumes measured in call minutes over the preceding 3 months. Bills should be retrospectively adjusted.

318. The costs for the interconnection links shall include the ports on trunk side of exchanges on which they are terminated. This may include the cost of establishing and testing the link and associated equipment.

319. Minimum contract periods shall not exceed 1 (one) year but discounts should be offered if longer commitments are made.

320. Costs shall be separated into circuit set-up costs and ongoing leasing costs.

321. These charges shall be cost based but geographically averaged.

7.1.5 Data interconnection services

322. Data interconnection services shall be charged for through a combination of call conveyance and transmission link charges.

7.1.6 Collocation and facilities sharing services

323. The prices charged by Designated Licensees for the running costs of collocation and facilities sharing services shall be, as far as is practicable, cost based. Leases for the space within buildings should reflect local market values.

7.1.7 Operator services

324. Designated Licensees shall offer operator assistance services at cost based charges.

7.2 Billing

7.2.1 Call conveyance billing

7.2.1.1 General

325. Designated Licensees shall fully define their billing processes within their RIOs. These shall include timescales for:

    a. Billing period (start and end dates)

    b. Delivery of invoice from billing party

    c. Queries related to invoices from billed party

    d. Time to reach a reconciliation agreement

326. Interconnect billing shall be based on call recording in the interconnected exchanges using Call Detail Records (CDR).

327. Licensees on each side of an interconnect shall have the capability to measure the call seconds. If only one of the Licensees has the capability to measure such calls, then their measurements shall be considered to be definitive. If both Licensees have the ability to measure such calls, then the reconciliation process should be contained in the Interconnect Agreement and defined in the RIO of Designated Licensees.

328. For charging and accounting purposes, calls shall be considered in principle to fall entirely within the charge period in which they start, regardless of the fact that they may end in another charge period.

329. The traffic unit used by Designated Licensees for charging and settlement of call conveyance bills shall be one second of Conversation Time. Conversation Time shall be measured according to the relevant ITU standards for R2 and SS7 signalling.

330. Designated Licensees shall define the format of the invoice and the method of transmitting the invoice within their RIOs.

331. Except for disputed amounts being processed in accordance with the billing disputes process, if a party fails to pay five (5) working days after the Due Date (Specified in the RIO) any amount due under the interconnect agreement, the party shall pay automatically interest at the default interest rate (specified in the RIO) on the due amount, as from the due date.

332. The billing party shall store billing data in such format as shall be sufficient to recalculate the amounts due from one party to the other. The billing party shall archive such data for at least two years.

7.2.1.2 Interconnect billing reconciliation

333. Designated Licensees shall define their interconnect billing reconciliation process within their RIOs.

334. Some discrepancy in billing values should be expected. Designated Licensees providing the interconnection service should define a specific percentage difference in both parties calculation of a bill, below which there shall be no Interconnect Billing Reconciliation Process.

335. During an Interconnect Billing Reconciliation Process, Licensees should work together in good faith, taking more frequent measurements and exchanging detailed information if necessary.

336. In the case of unresolved disputes, Licensees should work together in order to improve the accuracy of the bills and the comparison of records shall be made more frequently until the fault is identified and resolved.

337. If the specific reason(s) for billing discrepancies cannot be found, the Licensees should agree on an estimate for the correct value based on either historical data or an average of calculated bills of both parties.

338. Interconnected Licensees should arrange audits of billing records and processes on a quarterly or biannual basis.

8 Disputes process

339. In the event of any dispute or difference arising between or among the Licensees relating to or arising out of an interconnection agreement, including the implementation, execution, interpretation, rectification, termination or cancellation of the agreement, the Licensees shall meet within 10 (ten) working days of written notice of the dispute or difference from one Licensee to the other (or such longer time as mutually agreed by the Licensees in writing) to negotiate in good faith in an effort to settle such dispute or difference, and if the dispute or difference is not resolved to the Licensees' satisfaction within 5 (five) working days of the meeting (or such longer time as mutually agreed by the Licensees in writing), the Licensees shall proceed as follows:

340. Within 2 (two) working days, the dispute or difference shall be referred to a joint committee of the Licensees' respective chief executive officers or alternates appointed by them. The chief executive officers or appointed alternates shall use their best endeavours to settle or resolve the dispute or difference as expeditiously as possible, but in any event within a period 15 (fifteen) working days of the matter being referred to them (or such longer time as mutually agreed by the Licensees in writing);

341. Such dispute or difference shall be referred to the TRC for determination if either or both parties so request or in the alternative if both parties agree then the matter may proceed to arbitration.

342. During any dispute or difference the parties shall keep their networks connected for the provision of services and conveyance of calls between their respective networks. No party shall disconnect the other party's network without the prior approval of the TRC and any party seeking to bring about such disconnection may make representations to the TRC. The TRC shall give due consideration to the matter and may seek representations from the other party prior to making any determination regarding the disconnection of the said networks.

9 Arbitration

343. Notwithstanding the provisions of Section 8 above, the Licensees shall forthwith meet to attempt to settle such dispute or difference and failing such settlement within a period of 10 (ten) working days, the said dispute or difference may be submitted to arbitration by an arbitrator or arbitrators appointed as follows:

344. If the matter in dispute is principally:

    a. a legal matter, an impartial practising lawyer(s) of not less than 10 (ten) years standing;

    b. an accounting matter, an impartial practising chartered accountant(s) of not less than 10 (ten) years standing;

    c. a technical matter, an impartial telecommunications expert of not less than 10 (ten) years standing;

    d. any other matter, an independent person(s) agreed upon between the parties;

    e. If the parties fail to agree on an arbitrator within 10 (ten) working days after the arbitration has been demanded, the arbitrator shall be nominated at the request of either of the parties by the TRC.

345. Any Licensee may request that a dispute or difference in terms of Section 8 be referred to arbitration by giving written notice to that effect to the other Licensee.

346. The arbitration shall be held immediately and with a view to its being completed within 15 (fifteen) working days after it is demanded.

347. The arbitrator shall make an award in respect of the costs of the arbitration having regard to the substantial success of each party in the outcome of the proceedings.

348. The decision of the arbitrator shall be binding on the parties to the arbitration after the expiry of a period of 30 (thirty) working days from the date of the arbitrators ruling and provided that no appeal has been lodged by any party to a competent court as provided for under the Jordanian Arbitration Law.

10 General contract provisions

10.1 General

349. There are a number of legal contractual issues that should be considered by each Licensee and shall be included within the RIOs of Designated Licensees. These should be adapted from international 'best practice' in line with Jordanian law.

10.2 Specific clauses

10.2.1 Provision of information

350. Designated Licensees should include a clause in their RIOs, stating that certain network information will be supplied to interconnected Licensees in order to enable them to plan their networks and interconnection. However, the clause should also state that this information is not to be divulged to third parties.

10.2.2 Service Level Agreement

351. Designated Licensees shall include within their RIOs a statement of the Service Level Agreement which they offer. This shall include, at least, measures for times to provide new services, availability and repair times. The RIO shall contain the details of financial penalties that will be paid to other Licensees if the Designated Licensee fails to meet the commitments defined within the Service Level Agreement.

10.2.3 Duration

352. The Interconnect Agreement shall not have a defined fixed duration. The agreement should be an ongoing one with periodic reviews and opportunities for renegotiation.

10.2.4 Review

353. There shall be a process for re-negotiation of defined issues e.g. changes in law or regulation. This process shall have defined timescales, e.g. minimum times for negotiation, review notices, etc. There shall also be an option to use arbitration to resolve disputes.

10.2.5 Confidentiality

354. Licensees should require other Licensees to sign a confidentiality agreement to protect its information from being divulged to any other party, subsidiary or partner. In particular there will be a need for data protection in respect of User details. However, this will have to enable provision of information to the TRC if required.

10.2.6 Intellectual Property Rights

355. Licensees should ensure that they safeguard their Intellectual Property Rights (IPR). This will include controlled use of its trademarks. However there is still a need to ensure 'open' interfaces between interconnected Licensees.

10.2.7 Liability

356. Licensees need to define events of liability and limits of liability (direct loss), together with any threshold below which claims will not be made.

10.2.8 Additional Provisions

357. There are a number of other contractual issues that must be considered:

   a. Force Majeure

   b. Assignment

   c. Contract variation

   d. Breach of contract

   e. Termination

   f. Governing Law

Annex A: Contents of a RIO

Definitions

Management of interconnection

- Account management
- Joint technical committee
- Provision of information between licensees
- General network information
- Planned changes to networks
- Records of interconnect links

Interconnection services

- Call conveyance services
  - Call termination service
  - Call transit service
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- Transmission link services
- Interconnect link services
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- Operator services
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- Directory enquiries
- Advanced call services

Technical aspects

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- Rules for interconnect links between public exchanges
  - Number of interconnect links
  - Link direction
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- Point of Interconnect
- Interconnect extension circuits
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- Interconnection of signalling networks
- Interface standards and technical requirements
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- Quality of Service

Interconnection processes

<u>ANNEX 6</u>

TRC Guidance Paper to Operators on Cost Allocation in Fixed Networks

Consultation Document re Cost allocation in mobile networks for the purposes of the Interconnection Guidelines in the Hashemite Kingdom of Jordan

Telecommunications Regulatory Commission

Ref: 18th Dec 2002

TRC RP68824

This document has not yet been formally issued by the TRC and has been the subject of discussion between the TRC and operators in Jordan.As such, although the ITU is welcome to use the document for its evaluation and research, the TRC would appreciate the ITU's consideration not to disclose the detailed contents of this document to the public.

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Consultation Document
Cost allocation in mobile networks for
The Interconnection Guidelines in
The Hashemite Kingdom of Jordan

CONTENTS

1 Introduction

The TRC in Jordan has determined in the Interconnection Guidelines that the costs of interconnection services offered by Designated Licenses shall be cost based. This paper presents the issues on which there needs to be agreement in order to issue instructions to the Designated mobile Licensees as to how the costs of interconnection services in mobile networks shall be calculated in Jordan.

The issue of mobile network call termination charges is currently under the spot light in Western Europe where both the European Commission and National Regulatory Authorities take the view that charges do not yet reasonably reflect costs. However few countries have as yet embarked upon a detailed costing analysis in mobile networks with the exception of the UK where a proposal by Oftel to reduce charges was referred to the Competition Authorities almost one year ago. The report of this organisation will be made public in early January 2003 after which other European Regulators are likely to take action.

Whereas cost modelling in fixed networks has a reasonable track record there are fewer precedents to draw on in the mobile sector. There are a number of areas which must be considered by TRC in preparing instructions on how this cost allocation should be undertaken. These include:

- Defining the services offered by mobile networks
- Account separation
- Coverage cost vs capacity cost
- Allocation of network costs
- Identification of and allocation of common cost
- Dealing with non-network costs
    - Handset subsidies
    - Sales and marketing
    - Customer services
    - General overheads
    - Operating license and spectrum license fees
    - Revenue sharing
- Level of return on capital
- Network externalities
- Accounting period and input data
- Other issues

This paper presents these issues in order to promote discussion within the Interconnection Costing Working Group and to assist the TRC to reach conclusions on how cost modelling is to be undertaken in the mobile sector in Jordan.

2 Mobile network services

Mobile network operators offer a wide variety of services to customers but in reality most GSM mobile networks offer 4 services:

- Call origination
- Call termination
- Messaging
- Customer connection

2.1 Call origination

This is the network facility to initiate a call irrespective of destination. This includes the use of 1 radio link to the handset from the base station, the link from the base station to the switch, switching and network transmission equipment, credit checking for pre-paid services and billing for post-paid services and, if the call is not terminated on the network, interconnection equipment.

2.2 Call termination

This is the network facility to enable a call to be answered either by the user of a mobile handset or by an automatic voice mail facility. In all cases it is necessary for the network to attempt to locate the handset before the call can be routed. The destination selected for each call will determine the network equipment which is subsequently used. For calls which are answered by a customer the same network infrastructure will be used as for call origination, a call which is terminated on voice mail will be routed to the voice mail platform, a call which is answered by a customer who is roaming abroad will be routed internationally and a call to a handset which is out of coverage and not making use of voice mail will normally receive a network announcement.

2.3 Messaging

The ability to send and receive text and picture messages using separate switching equipment in conjunction with the network used for call origination and call termination. It includes the basic elements of call origination and call termination and is usually between two mobile handsets.

2.4 Customer connection

Customer connection is the provision of services to customer to enable them to make and receive calls. Unlike in a fixed network the amount of network infrastructure which is dedicated to individual customers is very small. This is the Home Location Register (HLR). The remaining network costs are driven by the number of calls which are made.

With the definitions above the on-net call consists of a call origination and a call termination. From a costing point of view this is the case although this is not normally reflected in a mobile operator’s customer tariff.

2.5 Data services

Many mobile networks now offer data services but they are offered using one or two of the existing voice channels to convey the data to and from the mobile handset. From a costing point of view these data calls can be considered as voice calls of similar duration.

3 Account Separation

In mobile networks the costs of the mobile operator can be reasonably separated into three categories:

- Network
- Non network
- Other

3.1 Network costs

The network costs are the ones that can be directly related to the services and identified through reasonably good cost causation principles. Like all costs of a company they fall into 2 categories, capital and current. The relative sizes of these costs will depend on the investment decisions of the operator and local regulatory restrictions on building network infrastructure or renting services from the incumbent operator.

3.1.1 Capital costs

The capital costs are reflected in the FAC model in the form of the period depreciation charges recorded on the equipment based on the companies accounting depreciation policy.

The network capital account costs include the costs of all the equipment for the base stations and Base Station Controllers (BSC), the Mobile Switching Centres (MSC) and the Short Message Switching Centres (SMSC), Home Locations Registers (HLR)and Visitor Location Registers (VLR), the transmission equipment linking be base stations to the MSCs, the inter MSC equipment and customer and interconnection billing systems. Any capital costs of the sites for the base stations and buildings must also be recognised as well as the interconnection links to other networks.

3.1.2 Depreciation policy

The costs associated with the network equipment in any cost allocation period results from the amount of network equipment in operation and the depreciation policy of the operator i.e. the number of years over which different types of equipment are written down to zero value and the annual profiles which are used such as straight line or sum of the digits. Companies normally use straight-line depreciation although some do make an annual correction to reflect the changes in the purchase price of new equipment. This is known as Current Cost Accounting (CCA).

The unit costs of operators will vary significantly if their depreciation policies are different. It is therefore desirable for the TRC to review the depreciation policy of Designated Licensees to ensure that they are reasonable.

3.1.3 Current account costs

The current account costs include all the day to day running costs of the network including utilities, accommodation rental, electricity, spare parts and transport. The costs of leased lines to interconnect base stations and MSCs would also be included in this category if they are leases.

3.1.4 Labour costs

All labour costs associated with the network activities must be separately identified and allocated to the individual network elements. This must also include an appropriate proportion of the headquarters costs to cover payroll and recruitment of network staff. This should be regarded as common cost. This must be carried out through an analysis of the activities of the individuals who carry out work on the individual parts of the network.

3.2 Spectrum license fees

The spectrum license fees may cover two different categories of network operation; the GSM spectrum between the base stations and the mobile handsets and the spectrum used for any microwave links connecting the base stations to the BSCs and MSCs and between the MSCs. Each of these costs should be associated with the appropriate network element and allocated to services through the routing tables.

3.3 Non Network costs

The non network costs consist of the cost which the company incurs to provide services to customers which are not directly attributed to the running of the network. These include the company overheads including senior management, HR and finance in head office, sales and marketing, customer services, customer billing, handset costs and subsidies, SIM cards and dealer incentives and subsidies.

The non network costs fall into certain categories; those that relate to customer attraction and retention, those that contribute to outgoing calls and those that contribute to inbound calls.

3.4 Other costs

The category of Other Costs is provided in order to cater for any costs and activities which the company is involved in which are not directly related to mobile services. These could include ISP or data services or the operation of an NMT network.

4 Coverage cost vs capacity cost

Unlike fixed telecommunications networks mobile networks do not have significant cost elements which are directly dedicated to customers i.e. the access network. It can be argued that the home location register (HLR) costs could be related to the number of customers supported by the network even though the HRL is also used to determine the routing of calls when they are received. There is also a small amount of cost of the processor time within the MSC to update the HLR with the location of each handset. This cost could be associated with the service of "customers" if such a service were to exist. LRAIC modelling in the UK has suggested that this cost could be in the order of JD1.00 per customer per year.

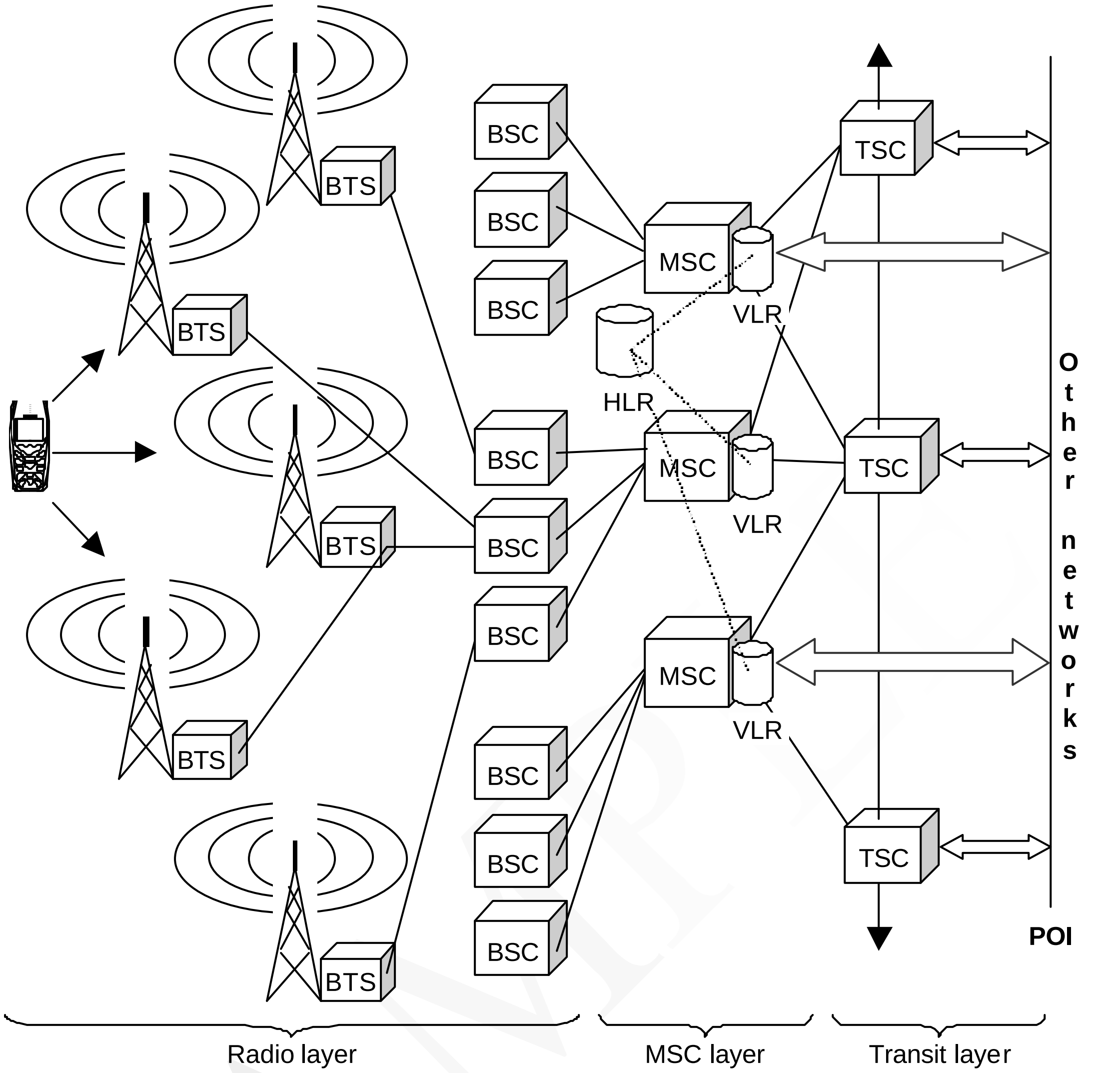
The remaining network costs fall into two categories, those that are related to providing <u>coverage</u> over a geographical area i.e. the opportunity for a customer to make or receive a call and <u>capacity</u> i.e. the ability of the network to support volumes of calls.

Mobile networks being modular are provisioned in units of equipment. A base station consists of modules of 8 communication channels, one of which is normally dedicated to signalling. It is therefore not possible to roll out, or determine the cost of, a mobile network to provide only coverage. All equipment which is in actuality deployed is there to support the making of calls. None of the deployed network equipment is there to support the number of customers connected. It is there to give network capacity to the subscribing customers.

5 Allocation of network costs

The allocation of network costs should be carried out using the principles of cost causation. In most cases the network cost can be allocated in this way. A routing table is used to identify the number of units of use each call type makes of the different network elements. Primarily these are:

- Base station and radio air interface
- Links to BSC
- BSC
- Links BSC to MSC
- MSC
- Links between MSCs
- Interconnection links
- HLR/VLR
- Interconnection billing system/customer billing system
- Pre paid card platform
- Voice mail platform



BTS	Base Transceiver Station	BSC	Base Station Controller
MSC	Mobile Switching Centre	TSC	Transit switching Centre
HLR	Home Location Register	VLR	Visitor Location Register
POI	Point of Interconnection		

A unit cost is determined for each of these network elements by dividing the total cost of the network element by the number of units of use. The 24 hour average unit (per minute) cost for each service is then calculated by multiplying the unit costs for each network element by the number of units used by each service.

The routing tables must be devised for each operator to take account of any differences in which traffic is routed e.g. use of a transit switching layer. The call routing matrix will capture the amount of infrastructure used by out going, incoming and on-net calls.

A key distinguisher between outgoing and incoming calls is that, in the case of outgoing calls the network is able to identify the location of the handset being called through the telephone number and can therefore route the call to the most appropriate point of interconnection and hence out of the mobile network. For calls which will be terminated on the mobile network each call must be treated in turn and a HLR interrogated in order to identify the location of the handset at any point in time. A handset could be logged on to any cell within the network, out of coverage, switched off or roaming abroad. The HLR/VLR maintains this up to date information. It may therefore be justified to allocate the whole cost of the HLR/VLR to the call termination services. These processes result in different amounts of processor time within the MSC being needed to route incoming and outgoing calls.

The customer billing and prepaid card platform is used to record billing information and to perform credit checking for on-net and outgoing calls. The interconnect billing system is used to record data for all interconnection calls.

5.1 Messages

Text and picture messages are provided using a combination of a dedicated SMSC and the transmission and radio infrastructure which is used to carry voice calls. The text messages are normally however carried in the signalling channel of the voice network. The dedicated cost of the SMSC can be easily identified but they must also be allocated a share of the other network costs.

5.2 Quality of service

Mobile networks are built in order to offer a level of quality of service to customers. A normal network design aims to offer 98% call success rate within the radio, transmission and switching elements of the network in the busy hour. A network designed to offer 99% QoS will have a significantly higher cost.

6 Identification of and allocation of common cost

The identification and allocation of common cost has been a contentious issue in mobile network cost allocation. Common cost is defined as that cost which is not related to a single service i.e. it does not vary if a single service is removed. It has therefore been argued that the cost of providing the minimum amount of network equipment is common costs as it cannot be removed if any individual service is withdrawn.

Alternatively it has been argued that the common cost for a mobile network is the cost of acquiring and preparing the base station sites to provide the minimum coverage over the geographical area as determined by any license conditions, plus the network management system.

The importance of the definition of common cost is related to the method selected to allocate it. If an equal proportional mark-up (EPMU) is selected then the definition is less important. If however some form of Ramsey pricing technique is used then the definition and therefore the amount of common cost becomes very important.

6.1 Equal Proportional Mark-up

Equal proportional mark-up (EPMU) involves the allocation of common costs amongst a range of services in proportion to the costs already allocated. These are the direct and joint costs which have been allocated according to the cost causation principles. EPMU therefore spreads the common cost proportionately across the range of services offered. It is therefore desirable to reduce the amount of common cost as much as possible otherwise I will be allocated in accordance with less specific variables.

6.2 Ramsey pricing

Ramsey pricing is a principle of allocating common cost amongst services in accordance with the market demand for each service. It relies on the fact that the tariffs for different services have different elasticities i.e. customers are less aware influenced in their decision to make certain calls by the tariffs than they are for others. Research has indicated that callers from fixed to mobile networks are much less influenced by changes to tariffs than callers from mobile networks and that the elasticity of mobile call termination is much lower than the elasticity of calls from mobile networks. Under Ramsey pricing principles the call termination service will therefore attract much more of a share of the common cost than the mobile network originating calls i.e. mobile to fixed and on-net calls.

To date Ramsey pricing has not been accepted by any regulatory body as a justified method to allocate common costs. Determining the appropriate elasticities of the different tariffs has not been satisfactorily demonstrated despite a number of economic consultancy studies.

7 Dealing with non-network costs

There are a range of non network costs which need to be addressed in terms of whether it is appropriate that they be recovered through call termination charges and, if so, what element of them should be recovered in this way.

7.1 Handset subsidies and dealer incentives

The handset subsidy is offered by network operators in order to attract additional customers to their networks. It is also used as a way of ensuring that customers do not migrate to other networks. It is often offered to customers who accept a post paid contract with a minimum monthly fee for a period of at least 12 months. It is therefore not realistic to recover these cost through the charges for incoming calls to mobile networks. Dealer incentives are also offered in order to encourage additional customers to a particular operator. It is also not realistic to recover these cost through the charges for incoming calls to mobile networks.

7.2 Sales and marketing

The sales and marketing activities of the organisation are geared to attracting customers to take subscriptions to a particular operator or to take a pre paid mobile phone service. It is rare for a mobile operator to invest sales and marketing in promoting the incoming calls service from other networks. Fixed line operators may choose to do this as it involves calls which their customers make. Equally it is unusual for a mobile operator to promote calls to other networks, either fixed or mobile.

7.3 Customer services

Customer services are primarily offered to the users of a mobile network. They offer the facility for the customer to speak to the provider of service in connection with requests about billing, quality of service issues and network and handset performance. Customer services in a mobile network are often accessed through a short code number which cannot be dialled from a fixed or interconnected mobile network. Although some of the services offered may be relevant to incoming calls, the majority are not and, often can not be accessed by the users of the call termination service. It is potentially difficult to make calls to the customer services of a mobile network operator other than from a mobile handset which is connected to that network as short code dialling is normally used.

7.4 General overheads

The general overheads of the company relate to the operation of the senior and general management of the company. The overall level of general overheads will be based on the decisions of the senior management with regard to the salary and benefits for top executives. Other elements including the HR and finance department will constitute the normal day to day running of the company.

There are reasonable arguments that some of the general overheads should be recovered through the charges or incoming calls. However the size of the general overhead can often be related to arbitrary management decisions rather than something which the users of the call termination service have any control and so recovering all of it through the call termination service is difficult to justify.

7.5 Operating license fee

The operating license fee of a mobile operator is an integral part of the cost structure of the company. The license fee may be paid by the operator annually as a current account item or may have been purchased at the start of operations for a fixed fee. In which case the operator may choose to amortise it annually or may regard it as having a value at the end of its period in which case no amortisation is recorded.

7.6 Revenue sharing

The mobile operators currently pay a revenue share the Government of Jordan based on the annual turnover of the company less the interconnection outpayments. This revenue sharing charge is levied on all the services offered by the mobile operators and so, based on cost causation principles, it contributes to the cost of terminating calls.

8 Level of return on capital employed

The return on capital employed (ROCE) is the amount of money which the operator receives in recompense for making the original investment in his network infrastructure. It reflects the element of financial risk which is being taken in relation to other investments which the money could be used for e.g. bank deposit, other share investment etc. The ROCE will vary from industry to industry and also from country to country to reflect financial stability and the ease of attracting financial investment into a market.

9 Network externalities

A network externality is a payment which the caller into a mobile network should make as a contribution towards the ongoing development of the mobile customer base. It recognises that there is additional value from adding further customers to the network who can then be contacted by the existing customer group. In some respects it is also compensation for the fact that the mobile operator has made investment in order to provide the customer base to which the caller wishes to call. Gauging the value of a network externality is difficult but should in some way reflect the level of reasonably incurred non network cost which contributes to the expansion of the customer base as oppose to the retention of customers that could arguably move to another network or a different technology due to price considerations, or for incentivising customers to migrate from another mobile network.

10 Accounting period and input data

In any Fully Allocated Costing (FAC) exercise it is important to ensure that the input data refers to an appropriate time period. It is usual to do an FAC exercise for a 12 month period which is in line with the audited accounts of the company. It is however also possible to carry out an FAC for a shorter period e.g. 3 or 6 months. It is particularly important to ensure that all cost and traffic data is taken account of within the period in question.

In analysing the results of an FAC exercise for regulatory purposes it is most important to consider the situation in which the network operator is in with respect to network investment, customer numbers and traffic volumes. Any operator which is either making significant investment in network infrastructure or which has recently seen significant changes in customer numbers or traffic volumes are not representative of longer term unit costs.

11 Other issues

11.1 Unsuccessful calls

Call termination charges are charged on a per second basis for successful, chargeable calls. Charges are not levied for unsuccessful call attempts. The ratio of successful calls to call attempts will depend upon a number of factors within the control of the mobile operator including:

- Network coverage
- quality of services offered
- availability and charging structure for voice mail
- customer habits
- customer blend between business and personal user

- tariff structures

Where mobile networks offer mail boxes free of charge there will normally be more calls to fixed networks which go unanswered than to mobile networks.

11.2 Calls to network announcements

Some calls result in a network announcement e.g. the mobile which you are calling is currently switched off. Clearly this results in a cost to the mobile operator but local regulatory controls should determine whether it is reasonable and appropriate for calling customers to be charged for such an announcement. In any cost allocation exercise consideration must be given to the costs of such calls and how they are regarded by the mobile network operator. In some cases they are charged for as successful calls even though voice communications has not been possible for the caller.

11.3 Tariff Gradients

An FAC model will calculate the average 24 hour cost for call termination. However retail charges typically have different prices at different times of day or day of the week in order to manage the demand for access to the network and so limit the amount of traffic during the busiest hour. This is the volume of traffic which determines how much money has to be invested in the network equipment. This pressure encourages ‘peak’ and ‘off peak’ prices – high prices to discourage excessive peak use and low prices to encourage additional off peak traffic. In recent years, most operators in the EU have converged to Daytime, Evening and Weekend prices, albeit with slightly different start and finish times, depending on local culture and commercial needs.

As interconnect uses the same network as the retail traffic described above the same problems of inefficiency as a result of different usage during the day occur. Therefore, some form of differential price by time of day is required on efficiency grounds. An average interconnection price would tend to shift traffic from off peak into peak. Additional peak traffic will lead to a need for increased investment to fund peak time capacity, but with a lower average network utilisation. A time of day gradient encourages efficiency, and an absence of gradients is inefficient.

12 Conclusions

This paper sets out the issues which the TRC wishes to discuss within the Interconnection Costing Working Group (ICWG). TRC invites comments on this first draft by 18 January 2003.

ANNEX 7

TRC Guidance Paper to Operators on Cost Allocation in Mobile Networks

Consultation Document re Cost allocation in Fixed networks for the purposes of the Interconnection Guidelines in the Hashemite Kingdom of Jordan

Telecommunications Regulatory Commission

Ref: 17th Dec 2002

TRC RP68824

This document has not yet been formally issued by the TRC and has been the subject of discussion between the TRC and operators in Jordan.As such, although the ITU is welcome to use the document for its evaluation and research, the TRC would appreciate the ITU's consideration not to disclose the detailed contents of this document to the public.

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Consultation Document
re
Cost allocation in fixed networks for
The Interconnection Guidelines
in
The Hashemite Kingdom of Jordan

CONTENTS

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Costing Methodology Working Group (CMWG)

Outline of Methodology – Fixed Network Interconnect Services

1 Introduction

This draft paper has been prepared for the Costing Methodology Working Group (CMWG) as part of initial discussion on establishing the agreed approach to cost allocation in the fixed network in Jordan.

It is tabled for general discussion by the Working Group and subsequent agreement by the ISC.

2 Purpose

The paper examines what will be necessary to meet the TRC initial requirement for interconnect rates to be based on the Fully Allocated Cost (FAC) approach. It looks at the necessary stages which need to be completed in order to produce the basic inputs to the process for calculating element based interconnect rates.

3 Objectives of CMWG

CMWG has the objective of determining the criteria for calculating cost based tariffs for the interconnection services of Designated Licensees. In particular to agreeing:

- ***appropriate mechanisms to calculate the costs of interconnection charges in fixed networks including the costs of network elements;***
- appropriate mechanisms to calculate the costs of interconnection charges in mobile networks;
- charges for collocation space and facilities;
- mobile & fixed cost allocation models

This paper addresses the first of these objectives.

4 Basic Principles from the Guidelines

The Guidelines for interconnection include the following.

1. Both the PSTN and the Public Mobile Telephone Service Licensees are required to offer interconnection charges that have "*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".

2. It is TRC's policy to move to a charging system based on Long Run Average Incremental Costs. However, TRC recognises that such an approach is not immediately applicable to Jordan and, as in other European countries, will take several years to implement. However in the short term TRC wishes to see interconnection charges which better reflect the costs incurred by Designated Licensees in providing the interconnection services. This could initially be based on a Fully Allocated Costing (FAC) methodology which recovers direct costs for the services provided with applicable overheads and a reasonable cost of capital. The assessment and calculation of costs shall be based on "Cost Causation" principles.
3. Cost orientation shall apply equally to call conveyance, interconnection link services, transmission link services and other facilities. Charges shall be cost-oriented but geographically averaged and, for interconnection link services and transmission link services shall be separated into set-up costs and ongoing leasing costs.
4. Designated Licensees shall undertake to fully analyse their costs of providing interconnection services. This shall initially use a Fully-Allocated Costing methodology (FAC) with the results presented to TRC within 6 (six) months of the publication of The Guidelines.
5. Designated Licensees shall cooperate with the TRC in any service costing exercise that the TRC may decide to undertake.

5 Methodology

5.1 Basic Principles

Calculating FAC information in fixed telecommunications network is a well-established process. Many incumbent operators have either developed their own systems or bought systems from others. The basic principles and methodology are well understood and data inputs fairly uniform.

A Fully Allocated Cost Model is exactly what it says it is. It takes all the costs (Labour, Materials, Depreciation, Finance, Outpayments and Other used in most consolidated accounts) and allocates them to the individual services provided by the fixed operator. For interconnection purposes these costs must then be "unbundled" into the network elements. Collocation costs can also be extracted as a subset of the basic allocation.

5.2 Company Structure

Some operators have a number of subsidiaries carrying out a series of different activities. These often fall into fixed, mobile and other services. It is also common for certain functions such as internal audit, corporate relations etc which are used by the subsidiaries.

For the purposes of determining interconnect rates in accordance with the TRC Interconnection Guidelines the concentration will be on the subsidiary running the fixed network. Any corporate activities shared with other parts of the company will need to be allocated to the different business in some reasonable proportion.

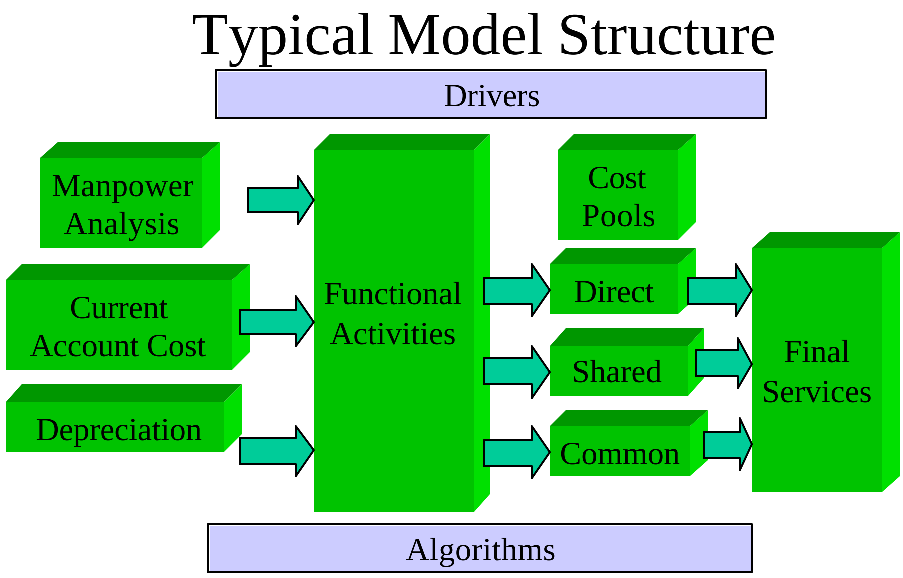
5.3 Concept

This methodology is used in many countries. A Service Costing Model is developed or adapted to local circumstances. The model takes input from a variety of sources and using algorithms and drivers based on "cost causation" principles, produces the costs for the full range of services provided by the Fixed Operator.

Company accounting records are usually organised into Current Account (including wages and salaries) Ledgers and Asset Registers with Depreciation. Manpower deployment is usually sub-divided into different work functions using some form of Activity Based Costing (ABC) system. Drivers such a call volumes and distributions and numbers of connections are needed as part of the allocation process. Algorithms are needed to complete the cost allocation of common platforms, such as the core transmission and switching network, between call types, Leased Lines and Other services such as Frame Relay.

Where every possible the inputs should be reconciled to the audited company accounts through a series of control totals reconciled at each stage of the allocation process.. Some models use future forecasts and current account costing (CCA) for the asset/depreciation elements. These produce a form of "forward looking" costs that do not meet the FAC principles contained in the guidelines and suffer from inaccuracies introduced by the use of forecast traffic rates.

The following represents this basic structure



5.4 *Final Services*

Fixed operators have typically 36 or more services. A typical set will include the following.

Service Type	Description
Line Connections	Business
Line Connections	Residential
Line Connections	ISDN PRI
Line Connections	ISDN Basic Rate
Line Connection	Bit rate service (ADSL)
Line Connections	2 wire analogue leased line
Line Connections	4 wire analogue leased line
Line Connections	Digital leased line of 64 Kbit/s or less
Line Connections	Digital leased line of 2 Mbit/s and above
Line Connections	International Leased Lines
Line Rental	Business
Line Rental	Residential

Line Rental	ISDN PRI
Line Rental	ISDN Basic
Line rental	Bit rate service (ADSL)
Line Rental	2 wire analogue leased line
Line Rental	4 wire analogue leased line
Line Rental	Digital leased line of 64 kbit/s or less
Line Rental	Digital leased line of 2 Mbit/s and above
Line Rental	International Leased Lines
Calls	local
Calls	regional
Calls	national
Calls	outgoing to other mobile networks
Calls	outgoing to other fixed networks
Calls	incoming from other mobile networks
Calls	incoming from other fixed networks
Calls	international (outgoing)
Calls	international (receipts from overseas)
Calls	to directory enquiry (including the cost of the enquiry itself)
Calls	to operator services (including the cost of the services provide by the operator)
Calls	to emergency services (including the cost of operator handling)
Calls	IN/number translation services e.g. “Auto Freephone” and Pre-Paid Card
Other	Telex
Other	Telegraph
Other	X25/ATM/Frame Relay

Cost allocation is a complex process requiring a significant allocation engine.

Is the typical list of services consistent with those offered in Jordan?

5.5 Input Data

5.5.1 Current Account Expenditure (OPEX)

This data is usually contained within a company's general ledger. The input information may not always totally conform to particular information held on some general ledgers. This is likely to be so in the area of materials and some pre-allocation then becomes necessary. The more detailed breakdowns are often contained within accounting systems or at the working level in say, stores records.

The type of information required is shown below.

Category	Description
Employee costs	Salaries and Wages
Employee costs	Social security obligations
Employee costs	Pensions
Employee costs	Bonuses
Employee costs	Welfare costs
Employee costs	Benefits in Kind
Materials	Consumable stores; Local Access
Materials	Consumable stores; Remote Concentrators
Materials	Consumable stores; local switching
Materials	Consumable stores; trunk switching
Materials	Consumable stores; international switching
Materials	Consumable stores; Junction transmission
Materials	Consumable stores; trunk transmission
Materials	Consumable stores; international transmission
Materials	Consumable stores; telex
Materials	Consumable stores; telegraph
Materials	Consumable stores; other
Materials	Cost of customer equipment (CPE) not capitalised
Materials	Shop stock
Materials	Consumables customer Line Terminating Equipment
Materials	Bit rate service (ADSL) consumable stores
Finance	Bank charges
Finance	Interest on Loans
Finance	Losses on sale of securities
Finance	Foreign exchange losses
Finance	Other financial expenses
Finance	Audit fees
Finance	Bad debts
Outpayments	Payments to overseas administrations

Outpayments	Payment to Other Operators (Fixed)
Outpayments	Payments to Other Operators (Mobile)
Outpayments	Payments to premium rate service providers
Outpayments	Payments to audiotext service providers
Outpayments	Payments to International satellite and cable consortia (non capital)
Other expenses	ISP peering payments
Other expenses	Radio spectrum license fees (Core network)
Other expenses	Radio spectrum license fees (Paging)
Other expenses	Operating license for paging
Other expenses	Operating license for ISP
Other expenses	Fees paid to the Telecom National Regulator
Other expenses	Revenue sharing payment to government
Other expenses	Software license fees
Other expenses	Advertising and Promotion
Other expenses	Insurance
Other expenses	Legal Fees
Other expenses	Motor transport facilities and services
Other expenses	Office supplies and services
Other expenses	Postage
Other expenses	Rent and local rates for properties
Other expenses	Stationery
Other expenses	Travelling and subsistence expenses
Other expenses	Training costs
Other expenses	Electricity
Other expenses	Gas
Other expenses	Water and sewage
Other expenses	Cost of subcontracted warehousing & storage
Other expenses	Entertainment cost
Other expenses	External consultant fees
Other expenses	External management, tendering and fees and royalties
Other expenses	External contract costs
Other expenses	Research and development expenses
Other expenses	Communications (fixed, mobile phones, leased lines etc)
Other expenses	Redundancy costs
Other expenses	Extraordinary Items
Depreciation	Depreciation

5.5.2 Depreciation (CAPEX Costs)

The other key cost input is the deprecation of the Capital Equipment. Most operators have extensive Asset Registers showing the capital value of each item of equipment, buildings, duct cable etc.

These need to be related to the network elements to enable the basic interconnect costs to be established. Critical to this is the separation of the access network costs from the core network elements and any retail costs. Only the core network elements contribute to interconnect costs. Paragraph 6 below deals with the Accounting Separation and segregation of costs.

Typical Depreciation elements are shown below.

Description
Overhead Lines (fibre/copper)
Underground Lines (fibre/copper)
Distribution points (cabinets, pillars and pole)
Ducts - local
Radio access antennas and equipment (radio local loop access)
Remote concentrator line cards
Distribution Frames (analogue and digital)
Public payphones
ISDN PRI Exchange ports
ISDN Basic Exchange ports
Customer line cards (analogue ports on digital switches)
Analogue local exchanges
Transmission equipment between remote concentrator and local exchange
Data Network Local equipment / PAD
Digital switching and trunk transmission ports including common control, signalling, power and air conditioning
Junction duct
Junction cables (fibre/copper)
Junction Lines (Fibre)
Junction transmission
Trunk cables (fibre/copper)
Trunk duct
Trunk transmission equipment (radio and cable)
Analogue transit switches
Digital transit switches
Data Network Equipment
Telex

International Switches
International circuits and equipment
Telegraph
Earth station
Sea cables
Operation and Management centres
Network monitoring and maintenance
Power plant, air conditioning and batteries
Network Buildings
Office / administration Buildings
Common shared premises
Billing systems
Computer equipment
Customer support and records system
Management information system
Intangible assets
Telephones, terminal equip ,PBX, customer premises equip - Capitalised
Broadcasting Equipment
Vehicles
Internet servers
Intelligent network platform
Radio paging
Operator centres
Interconnect equipment
Other equipment

The essence of a “top down” LRIC approach would be to use current replacement costs for the assets in the register and enter the new depreciation costs in the model.

5.5.3 Depreciation Periods

There are significant differences in how fixed operators approach depreciation periods. Some use the standard periods laid down by the tax authorities. Others attempt to look at the expected life of each type of asset employed. They examine the physical life of a type of equipment; say local switching and its economic life.

The differing depreciation periods have a significant effect on the operator’s costs. This could be especially important in the area of core switching and transmission costs. However, for the TRC to seek to change the periods for the purpose of the Interconnection Guidelines will limit the extent of reconciliation with the published accounts.

Nevertheless, the TRC should examine the depreciation periods used by the designated licensee.

5.5.4 Manpower Information

Manpower costs are a significant element in both the overall costs of products and services and the allocation process. They are a key driver for some elements. However, in terms of separating the core network costs from the access costs some simple models use manpower throughout to allocate depreciation. This produced distorted results.

Manpower use in the access network is high because of the fault liability inherent in copper delivery systems. On the other hand depreciation is low because of the long life of the largely passive cable, duct and poles employed. On the other hand, switching and transmission equipment has a relatively short life but requires little maintenance and, therefore, little manpower.

The sort of manpower analysis required as a driver to the cost allocation process is given below.

Function	Description
Provision & Installation	Exchange line connection - business analogue
Provision & Installation	Exchange line connection - residential analogue
Provision & Installation	ISDN PRI exchange line
Provision & Installation	ISDN Basic exchange line
Provision & Installation	Bit rate service (ADSL)
Provision & Installation	2 wire analogue PC
Provision & Installation	4 wire analogue PC
Provision & Installation	Digital PC 64 kbit/s or less
Provision & Installation	Digital PC 2Mbit/s and above
Provision & Installation	International private leased circuits (IPLC)
Provision & Installation	Local switching (not capitalised)
Provision & Installation	Trunk/Transit switching (not capitalised)
Provision & Installation	International switching (not capitalised)
Provision & Installation	Remote concentrators (RCU) - access network (not capitalised)
Provision & Installation	Transmission equipment for analogue PC-access network
Provision & Installation	Jumpering
Provision & Installation	Transmission paths RCU to local exchanges
Provision & Installation	Interconnect links to mobile operators
Provision & Installation	Interconnect links to fixed operators

Provision & Installation	Transmission paths between local exchanges - junction network
Provision & Installation	Transmission paths between exchanges - core network
Provision & Installation	International circuits and equipment
Provision & Installation	Data switch/PAD
Provision & Installation	Intelligent network equipment
Provision & Installation	Telex
Provision & Installation	Telegraph
Provision & Installation	ISP
Provision & Installation	Radio Paging
Provision & Installation	Customer premises wiring
Provision & Installation	Removal of network equipment (modernisation)
Operations & Maintenance	Overhead Lines (Fibre/copper) - local access network
Operations & Maintenance	Underground Lines (Fibre/copper) local access network
Operations & Maintenance	Distribution point (cabinets, pillars and pole)
Operations & Maintenance	Ducts local
Operations & Maintenance	Radio access antennas and equipment (radio local loop access)
Operations & Maintenance	ISDN PRI transmission equipment
Operations & Maintenance	ISDN Basic transmission equipment
Operations & Maintenance	Bit rate service (ADSL) equiment
Operations & Maintenance	International private leased circuits (IPLC)
Operations & Maintenance	Transmission equipment for analogue PC-access network
Operations & Maintenance	Transmission equipment for digital PC - access network
Operations & Maintenance	Other transmission - access network
Operations & Maintenance	Remote concentrators (RCU) - access network
Operations & Maintenance	Local exchange analogue
Operations & Maintenance	Local exchange digital
Operations & Maintenance	Junction network - transmission
Operations & Maintenance	Junction network - ducts
Operations & Maintenance	Junction network - cables (fibre/copper)
Operations & Maintenance	Trunk network - transmission
Operations & Maintenance	Trunk network - duct
Operations & Maintenance	Trunk network cables (fibre/copper)
Operations & Maintenance	Trunk/transit switching analogue
Operations & Maintenance	Trunk/transit switching digital
Operations & Maintenance	Data switch/PAD
Operations & Maintenance	Intelligent network equipment

Operations & Maintenance	Network buildings
Operations & Maintenance	Office admin buildings
Operations & Maintenance	Common shared premises
Operations & Maintenance	International switching
Operations & Maintenance	International circuits and equipment
Operations & Maintenance	Power plant and air conditioning
Operations & Maintenance	Vehicles
Operations & Maintenance	Telex equipment
Operations & Maintenance	Telegraph
Operations & Maintenance	ISP
Operations & Maintenance	Paging
Operations & Maintenance	Other activities
Operator services	Chargeable (ticket calls)
Operator services	Directory assistance
Operator services	Emergency (112)
Operator services	General enquiries & fault reporting
Operator services	Supervision and management
Operator services	Other activities
Network Planning & Support	Network contract management (local and national)
Network Planning & Support	Network Planning
Network Planning & Support	Network monitoring and management
Network Planning & Support	Other activities
Logistics & Transport	Procurement
Logistics & Transport	Warehousing and Dispatch (stores)
Logistics & Transport	Transport and Distribution
Logistics & Transport	Workshops and Garages
Logistics & Transport	Other activities
Marketing & Sales	Customer Services
Marketing & Sales	Sales, sales support and order handling
Marketing & Sales	Marketing & Research
Marketing & Sales	Advertising and public relations
Marketing & Sales	Product Management
Marketing & Sales	Telephone Directories
Marketing & Sales	Shops
Marketing & Sales	Other activities
Personnel & Human Resources	Personnel including payroll
Personnel & Human Resources	Training unit/school
Personnel & Human Resources	Catering services
Personnel & Human Resources	Cleaning

Personnel & Human Resources	Health & Safety
Personnel & Human Resources	Other activities
Computing and IT	Computer centre operations and maintenance
Computing and IT	Customer billing support & development
Computing and IT	PC support
Computing and IT	Systems development
Computing and IT	Other activities
Billing & Finance	Billing and customer accounts
Billing & Finance	Accounting services
Billing & Finance	Internal audit
Billing & Finance	Financial services and Treasury
Billing & Finance	Other activities
Research & Development	Product related
Research & Development	General
General Management	Senior management and executive board
General Management	Regional management
General Management	International relations
General Management	Carrier relations - Interconnection
General Management	Legal and regulatory
General Management	Other activities

Some models require detailed personnel time recording systems against a series of project codes. This can be time consuming and expensive. Allocation based on a rough cut by junior management/supervisor can give enough accuracy without a significant impact on the outputs. This is especially so for interconnect rates where the manpower elements are small in relationship to the depreciation.

5.5.5 Drivers and Algorithms

A host of inputs are required to “drive” the allocation process. These include basic size of system information such as number of lines, call minutes, call routing, Leased Lines etc.

Different algorithms are used at each stage of the cost transformation process to define the relationships between individual input costs, costs associated with individual functions and activities and costs associated with multiple and shared functions and activities.

Each algorithm requires a driver in order to function correctly. Typical drivers are given below.

Description

The total revenue from each service during the period.
Number of lines for each service disconnected during the period.
Total number of call minutes of each type by tariff period and by routing
Call routing information.
Number of Leased Lines by speed and type.
Routing of Leased Lines.
The number of new network service connections completed during the period.
The number of faults reported for each service during the period.
The average total number of lines for each service during the period i.e. the total number of installed lines at the beginning of the period plus the total number of installed lines at the end of the period divided by 2.
Asset values.
Occupation of office, network and common shared premises
The number of network construction projects being managed in each area e.g. local, trunk international switching and transmission.
Total number of 2Mbit links installed to other fixed and mobile networks.

Some drivers may be calculated from the input data.

Some algorithms are usually built into the model but the user can set others. They seek for example to weight the use by certain services of a joint and shared cost pool. One such area is the use made of different types of service of the access network costs.

The access network is used by a range of services such as exchange lines, leased lines, data services etc. For example an analogue exchange lines uses a pair of wires in the access network. A 4-wire analogue leased line uses 2 pairs of wires in the access network at each end of the circuit. Thus if an exchange line equals 1 weight a 4-wire analogue leased line will equal 4 and so on for each service that uses the access network.

Another area where such algorithms are required is in the use of the core transmission network. All call types, leased lines and other services such as data network telex etc use this facility. An algorithm which expresses the weighting of each of these services is need to allocate the core transmission costs, including any spare capacity/planning margins.

5.6 Direct, Shared/Joint and Common Costs

Costs fall into 3 classes.

Direct costs are those costs applicable to a single service. An example would include the installation of an exchange line where manpower and some consumable stores would be included.

Shared or Joint costs cover those costs used by some services. An example of this would be a transit/tandem switch costs that cover several call types, or the access network that provides the final link for exchange lines, leased lines and other services.

Finally there are common costs. These are costs spread across all services. These would include say the company's training facility or the Company Board.

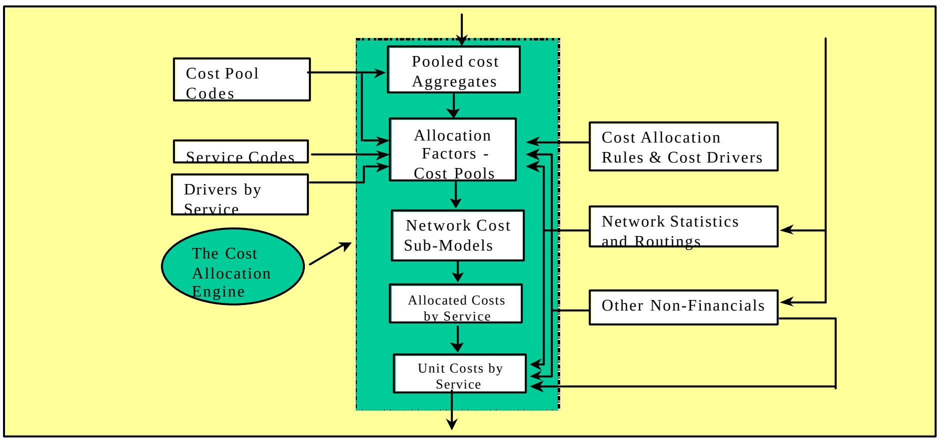
Such shared and common costs are aggregated into cost pools and allocated in accordance with a set of algorithms.

5.7 Allocation Cost Pools

The models need to send direct costs to final service, assemble shared costs in to cost pools and group common costs together. The shared cost pools need to be allocated to final services and the common cost pools likewise.

A typical allocation engine might look like the following.

The Allocation Engine

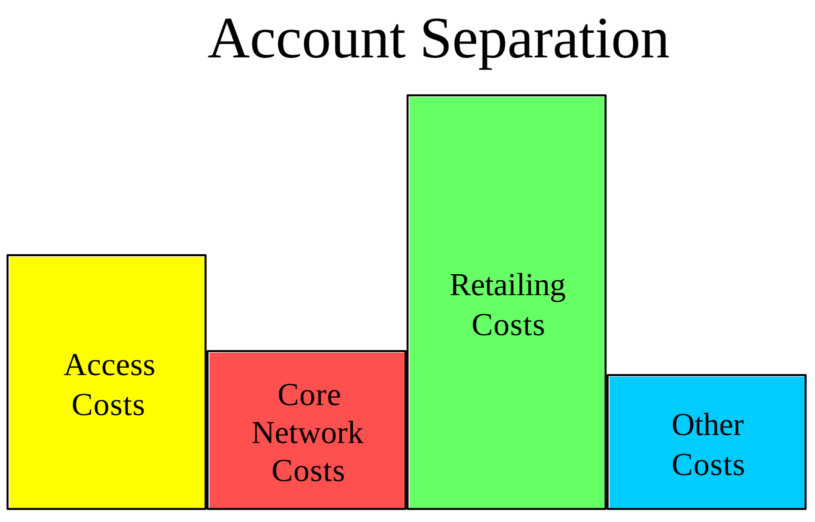


6 Accounting Separation

6.1 Concept

It is now common for designated fixed licensees to be required to produce separate accounts, to audit level, for certain activities. The concept is to produce separate cost information for the access network and the core network and then to transfer charge the use of these facilities to the retail business accounts. This provides transparency to other operators and shows that the designated licensee charges itself appropriately for the network services it provides to itself.

Other activities such as its ISP business are grouped under a further account statement. Details of the leased line business are sometime also separated with transfer charges from access and core to the leased line accounts. A final consolidation is done with the audited accounts of the company.



The following diagram illustrates the concept.

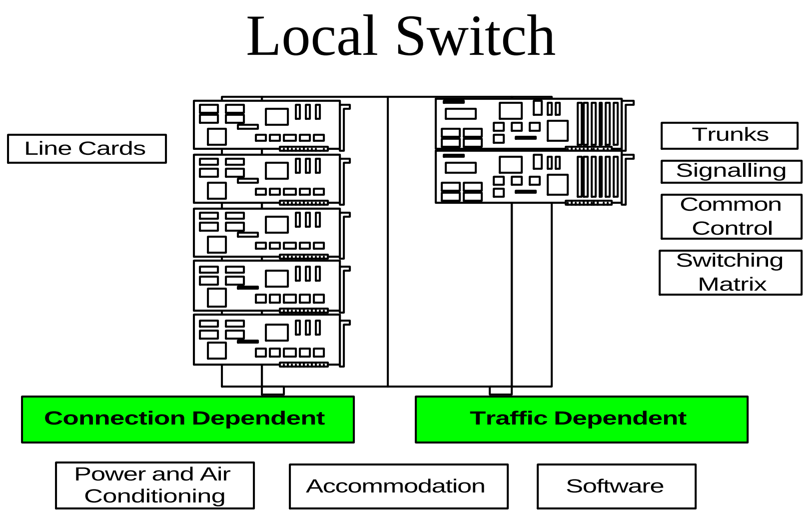
The FAC cost model is often used as the basis of the cost part of these accounts.

The core network costs then form the basis of the calculation of interconnect rates.

Should the designated fixed licensee be required to provide separate accounts?

6.2 Boundaries Between Access and Core

The boundary between access and core is defined by the driver associated with the elements of local switching "caused " by the two activities. Thus the volume of line cards connected to the customer's exchange line are determined by the numbers of customer lines rather than the number of calls made. The traffic volumes drive the core network dimensions. They are known as the connection dependent" and "traffic



dependent" elements of the local switch. The following diagram illustrates this.

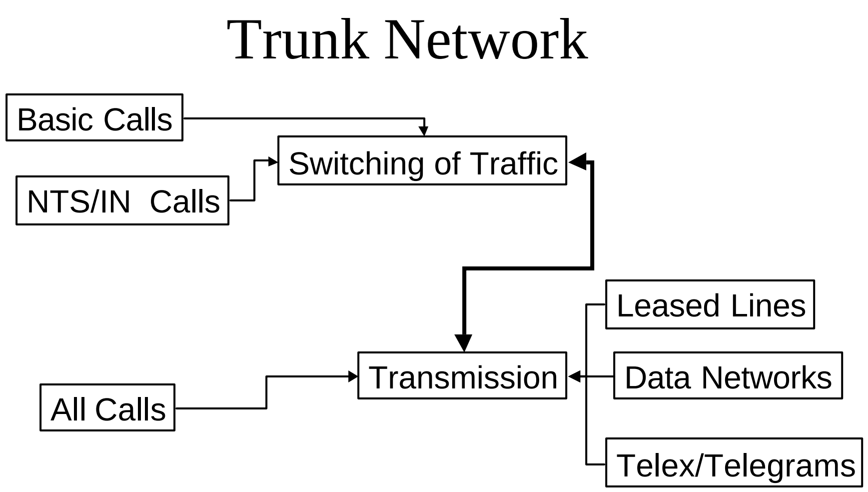
The transit switches are all part of the core network costs. However, the treatment of remote concentrators can be tricky. There are two types of devices that are often called concentrators. One takes customer dependent exchange lines in and concentrates the links to provide traffic dependent capacities into ports on the local switch. The other is a form of pair gain or line extension device.

The latter should not be included in the cost of switching. The traditional forms of remote concentrators need to be divided in terms of cost between access and core and the links to the local switches included in the core network costs.

Should the boundary between access and core be between the connection dependent elements and the traffic dependent elements.

6.3 Core Transmission Network

This is shared between all call types, leased lines and other services. A system is needed to allocate the costs between the differing service types. The following diagram illustrates the core network and its uses.



It is common for the various services using the core transmission network to be weighted in the form of 64 kbit/s or 2 Mbit/s equivalents.

7 Interconnection Rates

7.1 Basic Principles

It is common to extract the call element costs for switching and transmission from the relevant cost pools in the FAC model. These cost pools are made up of a number of differing costs. They include the Opex and Depreciation associated with the elements but can also include a share of general overheads and the actual financing costs.

These issues together with the treatment of interconnect specific costs is considered below.

7.2 General Overheads

The direct costs associated with the network normally include the direct overheads of any manpower employed. This includes their share of payroll, training and recruitment costs. They also include the allocation of shared costs associated with power and accommodation.

Retail costs are quite properly excluded. However, every operator has some general management overheads. These will include the legal and regulatory departments, corporate and shareholder relations, the Management Board etc. The practice where FAC is used is generally for a proportion of these overheads to be added to the network costs.

7.3 Interconnect Specific Costs

These will include the interconnection department, the interconnect billing system and their related direct overheads. It is common practice for these to be added to the core network costs before the final rates are calculated.

7.4 Interconnect Link Costs

These are normally calculated separately and paid for on the basis of use. This is covered by the guidelines. Where the links are provided by the designated licensee to the switch location of the other operator this cost should be derived from the FAC model as part of the Leased Lines costs. The installation and port costs will need to be added.

It is normal for the port costs and any other interconnect specific costs to be exclude from the interconnect rate calculations. This will need to be done if the results are to conform with the Interconnection Guidelines.

7.5 Financial Costs v WACC

An FAC model will normally include all the financing costs of the company including interest and other financial costs. This will then use the actual costs of capital.

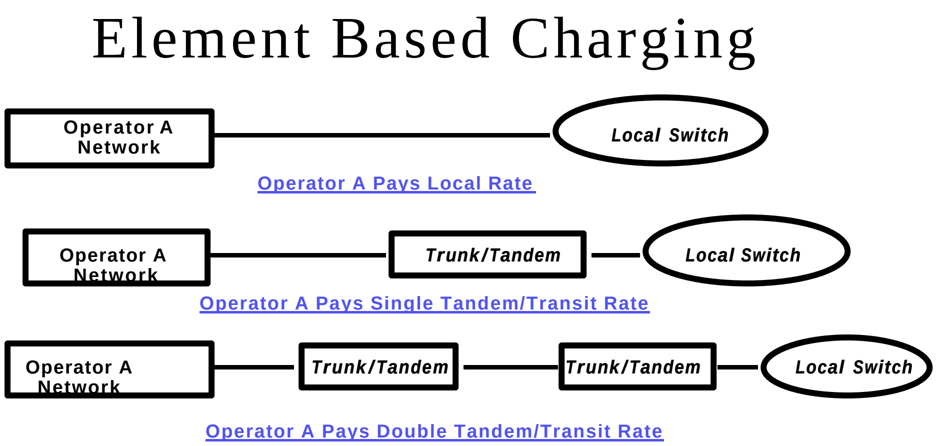
The alternative approach requires such costs to be excluded from the interconnection rate calculations. The model then produces a "capital employed" analysis and a Weighted Average Costs of Capital (WACC) is then calculated and applied to the capital employed cost. The resultant costs are then included in the final calculation.

The problem with producing a WACC instead of using the actual FAC financial cost is the assessment of the "cost of equity".

7.6 The Call Routing Matrix

Different call types use different parts of the core network. A call that commences in a local switch and terminates in a distant local switch can use two elements of local switching, one element of trunk/tandem switching and two elements of core transmission.

The following diagrams show a typical set of network routing elements and Element Based Charging.



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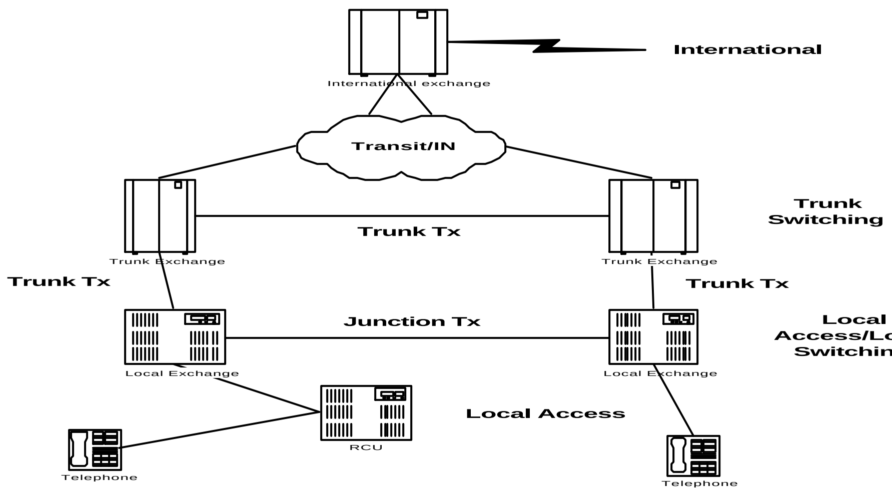
for its evaluation and research, the TRC would appreciate the ITU's consideration not to disclose the detailed contents of this document to the public.

Double Transit/Tandem isn’t currently appropriate in Jordan.

In order to divide the cost of each element by the usage of that element it is necessary to construct a routing table using the following elements.

- Local switching
- Transit switching
- International switching
- Junction Transmission
- Core transmission
- International transmission
- IN switch access cost

A unit cost is determined for each of these network elements by dividing the total cost of the network element by the number of units of use. The unit cost for each service is then calculated by multiplying the unit costs by the number of units used by each



service.

The routing tables must be devised for each operator to take account of any differences in the way traffic is routed. The call routing matrix will capture the amount of infrastructure used by out-going, incoming and own-exchange calls.

This call minute volumes are usually part of the basic FAC allocation process but the call routing matrix is essential for the production of element based charging. This information is sometimes available from call sampling systems built into the switch MIS. However, this is not always the case or in some cases significant off-line processing is required.

It is possible to estimate this information based on the experience of the network planning division. The model can then be run with several estimates of the routings to test sensitivity.

7.7 Output Services

The following is a list of the normal output costs for an element based charging set of interconnect rates.

- Call termination in Local switches
- Local to local transit
- Single transit/tandem
- Double transit/tandem (not applicable in Jordan)
- Local Call origination
- International switching and transmission costs
- Transit costs
- IN Facility charge
- International transit

In many models call origination and call termination whilst separate services are considered to have the same unit costs.

8 Other Issues

8.1 Tariff Gradients

8.1.1 History

Retail charges typically have different prices at different times of day or day of the week. Traditionally much of the early demand in telecommunications was for business use. Networks were designed to cater for the traffic demand at peak times. Typically one hour during the afternoon of the last working day of the week or the first morning of the beginning of the working week was the largest demand period or the busy hour. Residential use was low and networks were lightly utilised in the evening or at weekends when businesses were closed.

In some countries capital shortages in state owned companies resulted in an inability to cater for increasing peak demand. In order to retain revenues while easing the pressure on daytime demand it was necessarily to encourage greater evening and weekend use rather than peak time use.

These pressures gave rise initially to the introduction of 'peak' and 'off peak' prices – high prices to discourage excessive peak use and low prices to encourage additional off peak traffic. Some companies evolved very elaborate time of day arrangements: e.g. France Telecom colour periods, or more simply, BT's different morning, afternoon and evening rates.

In recent years, most operators in the EU have converged to Daytime, Evening and Weekend prices, albeit with slightly different start and finish times, depending on local culture and commercial needs.

8.1.2 Efficiency

Interconnect uses the same network as the retail traffic described above and the same problems of inefficiency as a result of different usage during the day occur. Therefore, some form of differential price by time of day is required on efficiency grounds. An average interconnection price would tend to shift traffic from off peak into peak. Additional peak traffic will led to a need for increased investment to fund peak time capacity, but a lower average network utilisation. A time of day gradient encourages efficiency, and an absence of gradients is inefficient.

8.1.3 Retail prices and margins

If averaged Interconnection rates applied, while keeping the current retail tariff structure, the potential margins on peak traffic would be much higher than for off-peak traffic. Indeed margins at off peak could be very thin or even negative. Averaged rates would not encourage OLO's to attract and stimulate off peak traffic and may make it uneconomic for them to do so, and would result in a less efficient usage of the network. Efficiencies will be lost, as off peak callers will be excluded on price. In most countries as a result of the time of day gradient derived from retail prices the percentile margins available to competitors are more or less the same on all time of day calls of any given call type.

8.2 Two Part Charging

There is some argument that for every call, irrespective of length there is a fixed cost for the establishment of that call. The remaining costs are caused by the length of the call. Strictly applying the principles of cost causation this would be a correct approach.

The basic problem arises because of the difficulty in assessing the level of common control/processor costs associated with call set-up. There is also the problem of ineffective calls. Taken overall the cost of call set up for ineffective calls is small in relationship to the overall per minute cost but on a two part approach could be significant in relationship to the cost of set up of effective calls.

It seems fundamentally wrong for charges to be made for ineffective calls. However, models can be constructed that do produce a two part charging tariff once some estimate of the cost of call set-up is determined.

8.3 Publication of Full FAC Results

As a by-product of the process a full “Financial Results by Service” (FRBS) for all retail products will be available.