

THE HASHEMITE KINGDOM OF JORDAN



TELECOMMUNICATIONS REGULATORY COMMISSION

Interconnection Instructions

**Issued by TRC Board Decision No.(2-1/2005) Dated (5/1/2005)
And amended by TRC Board Decision No.(18-11/2010)
Dated(15/6/2010)**

Table of Contents

1	Purpose and Scope of the Instructions	1
1.1	Background	1
1.2	Purpose of the Instructions	1
1.3	Scope of the Instructions	1
1.4	Interpretation	3
1.5	Structure of the Instructions	3
2	Definitions	5
3	Management of Interconnection	8
3.1	Account Management	8
3.2	Joint Technical Committee	8
3.3	Provision of Information between Licensees	9
3.3.1	General Network Information	9
3.3.2	Planned Changes to Networks	9
3.3.3	Records of Interconnection Links	10
4	Interconnection Services	12
4.1	Overview	12
4.2	Traffic Conveyance Services	13
4.2.1	Overview	13
4.2.2	Traffic Termination Service	14
4.2.3	Traffic Transit Service	15
4.2.4	Traffic Origination Service	16
4.2.5	Number Translation Traffic Origination Service	17
4.3	Transport Services	18
4.3.1	Service Definition	18
4.3.2	Requirement to Provide the Service	18
4.4	Collocation and Infrastructure Sharing Services	18
4.4.1	Service Definition	18
4.4.2	Requirement to Provide the Service	18

4.5	Operator Services	19
4.5.1	Operator Assistance	19
4.5.2	Emergency Services	19
4.5.3	Directory Enquiries	19
4.6	International Gateway Access Services.....	19
4.6.1	Service Definition.....	19
4.6.2	Requirement to Provide the Service	19
4.7	Billing and Collection Service.....	20
4.7.1	Service Definition.....	20
4.7.2	Requirement to Provide the Service	20
4.8	Bit-stream Unbundling Service.....	20
4.8.1	Service Definition.....	20
4.8.2	Requirement to Provide the Service	20
5	Technical Aspects.....	21
5.1	Introduction	21
5.2	Interconnection of Public Switches.....	21
5.2.1	General Rules for Interconnect Links between Public Switches	22
5.2.1.1	General	22
5.2.1.2	Number of Interconnect Links	22
5.2.1.3	Link Direction	22
5.2.1.4	Link Capacity	22
5.3	Transport Links.....	23
5.3.1	Point of Interconnection (POI)	24
5.3.2	Interconnect Extension Circuits	26
5.3.3	Transport Technologies	26
5.4	Interconnection of Signalling Networks.....	27
5.5	Interface Standards and Technical Requirements.....	27
5.6	Numbering	28
5.7	Quality of Service.....	28

6	Interconnection Processes	30
6.1	Interconnect Provisioning Processes	30
6.1.1	Definition.....	30
6.1.2	Lead Times.....	30
6.1.3	Planning Processes	31
6.1.3.5.1	Interconnect Traffic Forecasts.....	33
6.1.3.5.2	Interconnect capacity forecasts.....	33
6.1.3.5.3	Reactive capacity planning	34
6.1.4	Collocation and Infrastructure Sharing Processes	35
6.1.5	Bit-stream Unbundling Service Processes	36
6.1.6	Request for Service Processes	36
6.1.7	Implementation.....	38
6.2	Interconnection Operations Processes	38
6.2.1	General Principles.....	38
6.2.2	Network Traffic Management.....	39
6.2.2.1	General	39
6.2.2.2	Traffic and Quality of Service Measurement.....	40
6.2.2.3	Traffic Controls.....	40
6.2.2.4	Routing Management.....	41
6.2.2.5	Mass Traffic Events	42
6.2.3	Fault Management.....	42
6.2.3.1	Contact Points	42
6.2.3.2	Fault Detection	43
6.2.3.3	Fault Processing	43
6.3	Interconnection Maintenance Processes.....	44
6.3.1	General Principles.....	44
6.3.2	Operational Testing	44
6.4	Planned Engineering Works	44
6.4.1	Site Access Procedures	45

6.5	System Protection and Safety	46
7	Commercial Aspects.....	48
7.1	Charges and Payments	48
7.1.1	Principles of Charging.....	48
7.1.2	Traffic Conveyance Charges.....	49
7.1.3	Transport Link Costs and Charges	49
7.1.4	Collocation and Infrastructure Sharing Services Charges.....	50
7.1.5	Operator Services Charges.....	50
7.1.6	Billing and Collection Services Charges	50
7.1.7	Bit-stream Unbundling Service Charges	50
7.1.8	International Gateway Access Service Charges.....	51
7.2	Billing.....	51
7.2.1	Traffic Conveyance Billing.....	51
7.2.1.1	General	51
7.2.1.2	Interconnect Billing Reconciliation.....	52
8	Dispute Resolution Process.....	53
9	Arbitration.....	54
10	General Contract Provisions.....	55
10.1	General.....	55
10.2	Specific Clauses	55
10.2.1	Provision of Information	55
10.2.2	Statement of Service Level Offer	55
10.2.3	Duration	55
10.2.4	Review.....	55
10.2.5	Confidentiality.....	56
10.2.6	Intellectual Property Rights	56
10.2.7	Liability	56
10.2.8	Additional Provisions.....	56
	Annex A: Contents of a RIO	57

1 Purpose and Scope of the Instructions

1.1 Background

1. These Instructions are issued by the Telecommunications Regulatory Commission (TRC) in accordance with Articles 6(b), 6(J)) and 12 (a)(2) of the Telecommunications Law. The Instructions replace the previous "Interconnection Guidelines" that were issued by the TRC on 25th November 2002.
2. The Instructions 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 laws.

1.2 Purpose of the Instructions

3. The principal purpose of the Instructions is to clarify the arrangements for Interconnection and provision of Services between Licensees.
4. The Instructions provide a formal process for dealing with Interconnection disputes.
5. The Instructions assist in ensuring that all Licensees are treated fairly and in a non-discriminatory manner.
6. The Instructions aim to encourage good practice by Licensees and to promote the provision of high quality of service to Users at reasonable rates, through technical and economic efficiency.
7. A further aim of the Instructions is to clearly express the policy of the TRC with respect to the Interconnection of Public Telecommunications Networks in Jordan.

1.3 Scope of the Instructions

8. All Licensees shall comply with these Instructions to the extent that they are applicable to their licensed activities as determined by the TRC
9. The Instructions shall apply to all Licensees unless expressly stated otherwise. The TRC will determine which Licensees are required to produce and publish a Reference Interconnection Offer (RIO). Such a determination shall be made known to affected parties following due public consultation. A Licensee so determined is referred to, within the Instructions as a 'Designated Licensee'.

10. Previous determinations by the TRC regarding the designation of certain Licensees shall remain valid after the issuance of these Instructions unless superseded by new determinations by the TRC.
11. The Instructions 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 Instructions.
12. The Instructions do not set rates for the Interconnection Services. However, The Instructions (Section 7) set out the methodology by which rates of Traffic conveyance shall be determined and the framework under which a move towards cost based Interconnection rates should take place.
13. 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.
14. All new RIOs shall be subject to consultation and approval by the TRC prior to publication. Consultation will be managed by TRC and TRC determination shall be completed within 30 days from the submission of the draft RIO to the TRC.
15. The publication of a RIO by a Designated Licensee does not remove the need for individual Interconnection Agreements to be signed between the interconnecting Licensees. These Interconnection Agreements shall reflect the technical and commercial aspects of the RIO together with all necessary contractual conditions.
16. If the Licensee is unable to reach agreement with another licensee on the terms and conditions of interconnection or other arrangements within one (1) 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.

17. In those instances where the parties have reached agreement, the TRC will then have 30 days in which to approve the agreement or require changes by the parties in order to comply with the Interconnection Instructions.
18. Interconnection 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.
19. Designated Licensees shall update their RIOs periodically or upon receipt instructions from the TRC to reflect changes in the telecommunications sector, including the introduction of new services and the use of new technology. All updates shall be subject to consultation and approval by the TRC prior to publication.
20. The TRC understands that implementation of the Instructions may 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 Instructions.

1.4 Interpretation

21. Individual Instructions containing the word 'shall' are mandatory requirements and are binding on the Licensees as explicitly expressed.
22. Individual Instructions containing the word 'should' are recommendations to Licensees but are not mandatory.
23. Individual Instructions containing the word 'may' are permissions to Licensees.

1.5 Structure of the Instructions

24. The Instructions are structured along the lines of a typical Reference Interconnection Offer and comprise:
 - a. Definitions
 - b. Management
 - c. Interconnection Services
 - d. Technical Aspects
 - e. Processes

f. Commercial Aspects

25. Designated Licensees should use the headings in the Instructions for the development of their RIOs. Annex A provides a sample contents list for a RIO.

2 Definitions

26. For the purpose of use in the Instructions, the terms hereunder will have ascribed meanings.
27. In the event of conflict or ambiguity between the terms defined herein and the terms defined in the Licences or in the Telecommunications Law then the following order of precedence shall apply:
 - a. The Telecommunications Law
 - b. The Instructions
 - c. The Licence
28. Capitalised words and phrases that appear in these Instructions shall have the meanings assigned to them in the Telecommunications Law, the Instructions and the Licenses.
29. 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 (for Connection and Interconnection) shall be applicable for the purposes of the Instructions:
 - a. **'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.
 - b. **'Designated Licensee'** means a Licensee which the TRC has determined to have significant market power in a relevant market and therefore has been required to produce a RIO.
 - c. **'Instructions'** means this document (Interconnection Instructions) which may be revised by the TRC from time to time.

- d. **'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.
- e. **'Interconnection'** means the physical and logical 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.
- f. **'Interconnection Agreement'** means an agreement made between two interconnected Licensees in accordance with the requirements of these Instructions.
- g. **'Interconnection Services' or 'Service(s)'** means the services identified in these Instructions that may be provided by interconnected Licensees to each other in accordance with these Instructions.
- h. **'Licensee'** means legal person granted a Licence by the TRC pursuant to the Telecommunications Law and the words **Licence** or **Licences** shall be construed accordingly.
- i. **'Telecommunications Law' or 'Law'** means the Telecommunications Law No 13 of 1995 of Jordan and its amendments.
- j. **'Person'** means any individual, company, corporation, partnership, joint venture, consortium, government or governmental entity.
- k. **'Point of Interconnection'** (or POI) refers to any technically feasible point where the Networks of Licensees are interconnected.
- l. **'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.
- m. **'Public Network Operator'** means a Licensee that is an operator of a Public Telecommunications Network.
- n. **'Public Telecommunications Network' or '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. **'Public Telecommunications Services'** means a telecommunications service provided for compensation to the general public or any category thereof, in accordance with the Law.
- p. **'Reference Interconnection Offer (RIO)'** means 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 offers Interconnection Services to other Licensees. It forms the basis of a transparent offer by the Designated Licensee to contract with another party through an Interconnection agreement.
- q. **'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 or Private Telecommunications Services as the case may be.
- r. **'Traffic'** means the information moved over a communication channel.
- s. **'TRC'** means the Telecommunications Regulatory Commission.
- t. **'User'** means a person who makes use of Public Telecommunications Services using telecommunications means.
- u. **'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 Traffic to its destination.

3 Management of Interconnection

3.1 Account Management

30. 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.

31. All Licensees shall agree to meetings with an interconnected Licensee within five (5) working days of meetings being formally requested by that Licensee.

3.2 Joint Technical Committee

32. Interconnected Licensees should establish a joint technical committee.

33. 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.

34. 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.

35. 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

36. 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

37. Licensees shall provide information about their Networks and Services to Licensees requesting Interconnection Services. Information provided shall be limited to what is relevant and sufficient, in order for the requesting Licensee to conduct network planning, financial planning and operate its Network.
38. All information provided between Licensees shall be subject to the confidentiality rules defined in the RIO and Interconnection Agreements, and shall be only used for the purposes for which it is provided.
39. 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.
40. 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.
41. All Licensees shall define the rules for routing Traffic resulting from Interconnection in normal and abnormal situations in a non-discriminatory manner including dealing with overflow, congestion and Network management.
42. 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

43. All Licensees shall provide reasonable notice to the interconnected Licensees about any network design, roll-out or up grade plans or changes, which may be expected to affect the arrangements between the parties.

44. 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.: updating, closure or re-location of switching and transmission systems, signalling equipment, etc.,
 - b. Upgrade or modifications of, infrastructures (buildings, shelters, conduits, etc.) electrical specification, climate control, etc.).
 - c. Changes to the numbering, topology, routing, etc.
45. Licensees shall notify the other Licensee of any significant changes made in the Network that may affect the conveyance of Traffic and /or the quality of Traffic. The changing Licensee should pay the costs of the other Licensee where its 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 has been agreed to or where the alteration is part of a planned upgrade programme (such as deployment of new software, new numbering codes, network elements).

3.3.3 Records of Interconnection Links

46. All 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, at a minimum:
- a. A-end switch – name, location, manufacturer, software release
 - b. B-end switch – name, location, manufacturer, software release
 - c. Points of Interconnection, Tandems and Transmissions paths – direction, designation, type, ownership,
 - d. Network capacity (as currently available, and plans to expand capacity for future uses)
 - e. Associated signalling link(s)
 - f. Collocation and Infrastructure sharing data

47. 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

48. This Section defines the categories of Interconnection Services and contains/outlines/details/provides Instructions for the provision of the Services.

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

Traffic ¹ Conveyance Services	Services which involve the carriage of Traffic incoming or outgoing from the Point of Interconnection of one of the Licensees, respectively, originated or terminated on the Network of the other interconnected Licensee or a foreign operator
Transport Services	The provision by a Licensee to other Licensees of Traffic carried over transmission paths
Collocation and Infrastructure Sharing Services	The provision by a Licensee to other Licensees of space in its premises and/or the use of part of its physical or virtual infrastructure, such as ducts, dark fibre, energy, masts, towers, etc., to other Licensees.
Operator Services	The provision of Operator Services, such as directory enquiries and emergency services, operated by a Designated Licensee to other Licensees.
International Gateway Access Services	The provision of access to transport capacity and collocation space at international gateway facilities to be specified by the TRC.

¹ The Traffic Conveyance Service includes value-added, advanced features such as CLI, Ring Back when Free, Divert on Busy... etc.

Billing and Collection Services	The provision of billing and collection services by Licensee to other Licensees for Telecommunications services jointly provided through Interconnection.
Bit-stream Unbundling Services	The provision of unbundled bit-stream in the Local Loop by one Licensee to other Licensees.

50. Designated Licensees shall be required to obtain the approval of the TRC before the introduction of a new Interconnection service or withdrawing an existing one.
51. Designated Licensees shall be required to update their RIO to reflect the introduction of a new Interconnection service or the withdrawal of an existing one.
52. 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 Licensee. Suitable time shall be given to allow 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.
53. Designated Licensees shall fully define their Interconnection Services and charges, including technical and commercial conditions, within their RIOs.

4.2 Traffic Conveyance Services

4.2.1 Overview

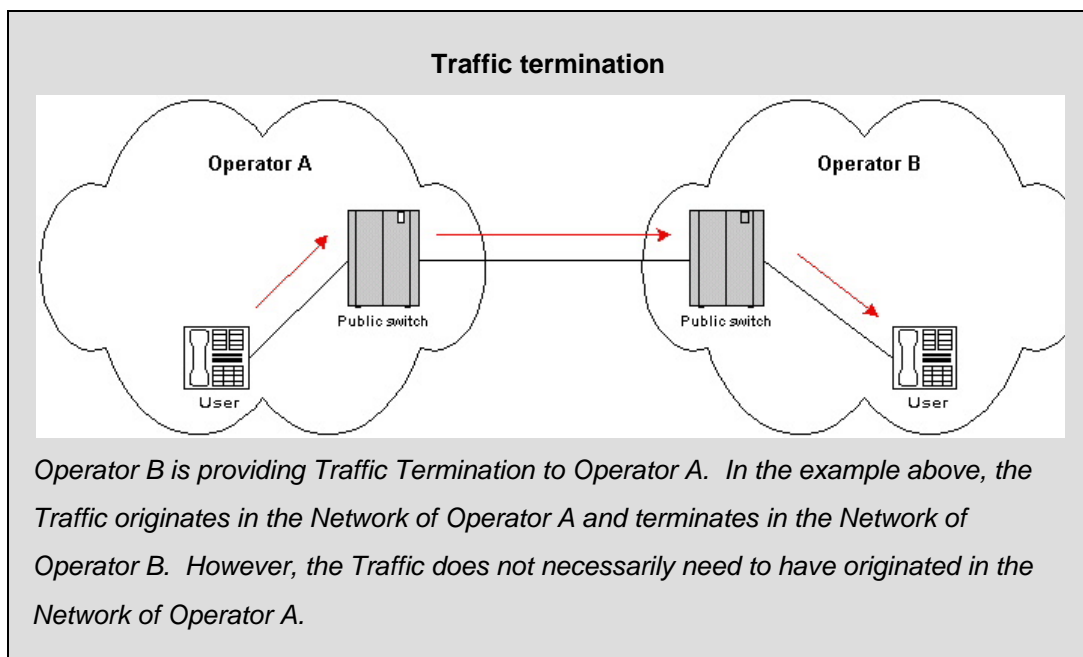
54. Traffic Conveyance Services are defined as those Services that involve a Public Telecommunications Licensee conveying (carrying) on its own Network either the Traffic going out from its Point of Interconnection (Origination or Transit) or the Traffic incoming at its Point of Interconnection (Termination or Transit), terminated in, or originated on, the Telecommunications System of another Licensee or a foreign operator.
55. The main forms of Traffic Conveyance Services are:
 - a. Traffic Termination Service
 - b. Traffic Transit Service

- c. Traffic Origination Service
- d. Number Translation Traffic Origination Service

4.2.2 Traffic Termination Service

4.2.2.1 Service Definition

56. Traffic termination service is defined as a service where a Licensee receives Traffic from an interconnected Licensee and then terminates (or completes) it within its own Public Telecommunications Network. An example is shown below.



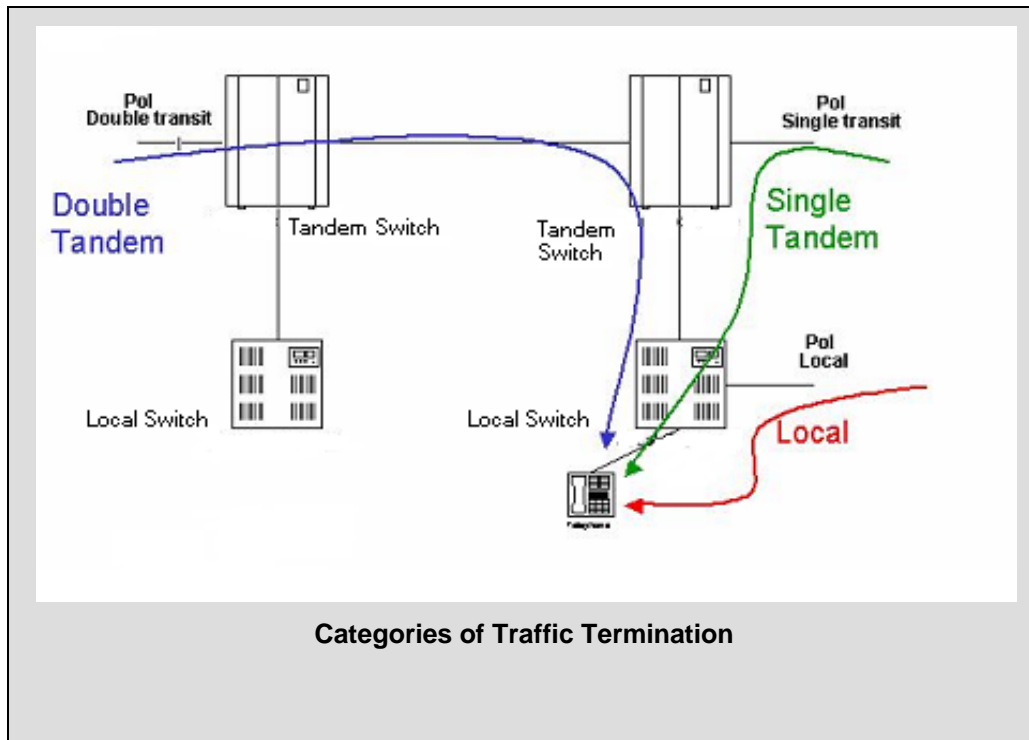
4.2.2.2 Requirement to Provide the Service

57. All Licensees shall be required to provide Traffic termination service to all other Licensees.

4.2.2.3 Categories of Traffic Termination

58. There are three categories of Traffic termination over Public Telecommunications Networks:

- a. Local termination: when the Point of Interconnection is in the local switch to which the destination end-User is directly connected.
- b. Single Tandem termination: when the Point of Interconnection is in the Tandem (or Transit) switch, to which the local switch of the end User is directly connected.



- c. Double Tandem termination: when the Point of Interconnection is in a Tandem (or Transit) switch that does not interconnect to the local switch to which the destination end User is directly connected. The Traffic must be routed over (at least) another Tandem or Transit switch before being sent to the destination local switch.

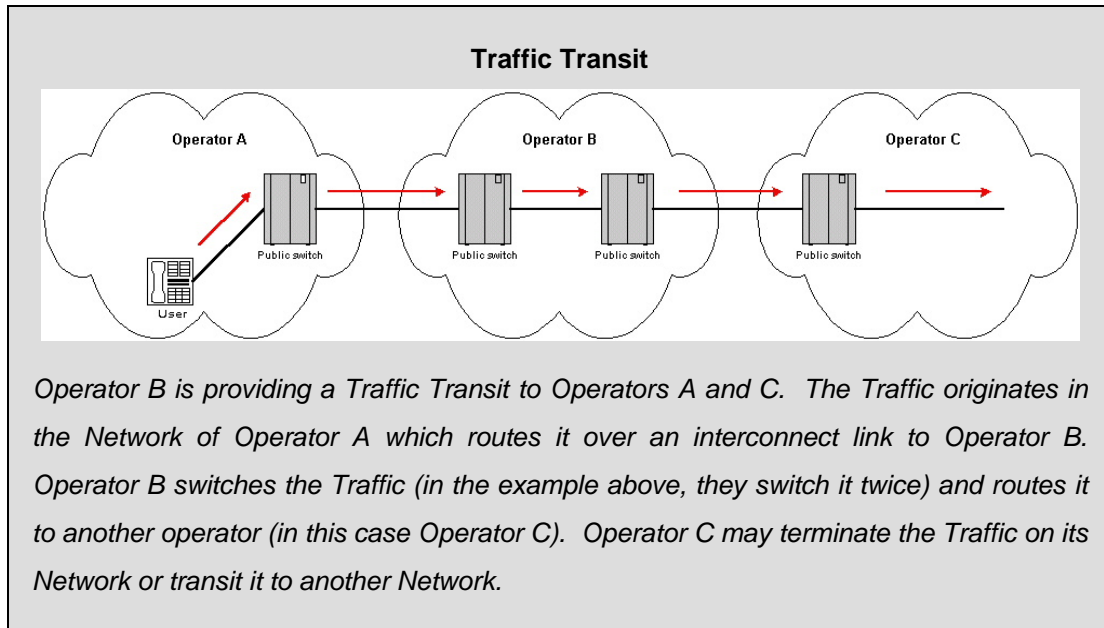
4.2.3 Traffic Transit Service

4.2.3.1 Service Definition

59. Traffic transit is defined as a service where a Licensee receives Traffic from one Licensee and routes it to the Network of the same or a different Licensee. In other words, the transit provider Licensee handles Traffic that is neither originated nor terminated within its own Network.

60. This service may be separated into two categories:

- a. National Traffic Transit: Traffic between Licensees within Jordan.
- b. International Traffic Transit: transit is provided to licensees to transit their international Traffic to other countries.



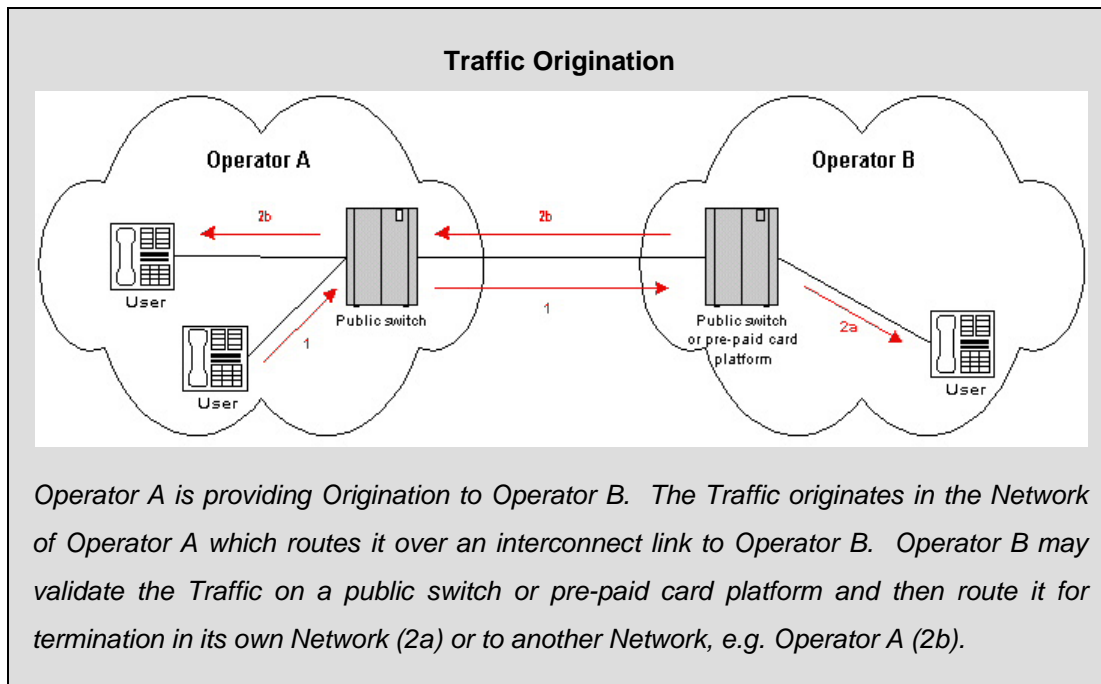
4.2.3.2 Requirement to Provide the Service

61. Designated Licensees that provide fixed telecommunications services (Incumbent) shall provide international and national Traffic transit Services for all other interconnected Licensees
62. Other Licensees may provide national and /or international transit Services.

4.2.4 Traffic Origination Service

4.2.4.1 Service Definition

63. A Traffic origination service is defined as a service provided for a "User Choice Call". Thus one Licensee provides Traffic 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 Traffic. The Traffic could be for any destination and will not necessarily terminate on the Network of the Licensee who receives it.
64. For User's Choice, Traffic Originations are:
 - ◆ Carrier Pre-Selection; customers choose an alternative carrier on a semi-permanent basis. The destination is selected with no additional digits to dial.
 - ◆ Carrier Selection; Customer chooses an alternative carrier by dialling an access code on a call-by-call basis.



4.2.4.2 Requirement to Provide the Service

65. Designated Licensees shall provide Traffic origination for all other interconnected Licensees.

4.2.5 Number Translation Traffic Origination Service

4.2.5.1 Service Definition

66. A Number Translation Traffic Origination Service is defined as a service where the User dials a non-geographic number (currently using leading digits 08 and 09) to a fixed terminating point on another Licensee's Network and is charged a fixed fee irrespective of the distance between the points of origination and termination. In some instances, this charge to the originating User might be zero.

67. The Number Translation Traffic Origination Services typically covers:

- i. "Auto Freefone" services where the caller pays nothing for the call but the terminating party 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 party pays a national retail tariff.

- iv. Internet Service Provider and Prepaid calling card selection

4.2.5.2 Requirement to Provide the Service

- 68. All Licensees shall provide Number Translation Traffic Origination Services to all other Licensees.

4.3 Transport Services

4.3.1 Service Definition

- 69. The provision by a Licensee to other Licensees, of transport capacities for the implementation of Interconnection and /or for the provision of service.
- 70. 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.
- 71. Transport Services may be provided using any appropriate technology including both fixed and wireless systems.

4.3.2 Requirement to Provide the Service

- 72. Designated Licensees shall be required to provide Transport Services to other Licensees.

4.4 Collocation and Infrastructure Sharing Services

4.4.1 Service Definition

- 73. Collocation and Infrastructure Sharing service means the provision by a Licensee of space in its premises and/or the use of part of its physical or virtual infrastructure, such as ducts, dark fibre, energy, masts, towers, etc. to other Licensees.

4.4.2 Requirement to Provide the Service

- 74. All Licensees shall provide collocation and infrastructure sharing to other licensees subject to availability.

4.5 Operator Services

4.5.1 Operator Assistance

75. All Licensees may establish their own Operator Assistance Services.

76. Designated Licensees shall offer their Operator Assistance Services to other Licensees.

4.5.2 Emergency Services

77. All Licensees shall offer connection to the Public Emergency Services to other Licensees.

78. Although this Service is currently provided free of charge, the tariffs may be changed according to the stipulations of the Licensee's Licence agreement and with the approval of the TRC.

79. Licensees shall cooperate to achieve a technical solution that provides prioritised capacity to connect to Public Emergency Services.

4.5.3 Directory Enquiries

80. All Licensees shall provide Directory Enquiry Services to other Licensees.

81. Although this service is currently provided free of charge, the tariffs may be changed according to the stipulations of the Licensees Licence agreement and with the approval of the TRC.

4.6 International Gateway Access Services

4.6.1 Service Definition

82. International Gateway Access Service is defined as the provision by a Licensee to other Licensees of access to transport capacity and allocation space at international gateway facilities as specified by the TRC.

4.6.2 Requirement to Provide the Service

83. Any Licensee controlling a point of connection to International transport facilities is required to provide access to such point of access on a non-discriminatory basis to all Licensees that request it. Currently, this is applicable to the international submarine cable (FLAG) landing station in Aqaba.

4.7 Billing and Collection Service

4.7.1 Service Definition

84. The provision of Billing and Collection Services of a Licensee to other Licensees for Telecommunications services which are jointly provided.

4.7.2 Requirement to Provide the Service

85. Designated Licensees providing Traffic origination Services shall be required to provide Billing and Collection Services to all other interconnected Licensees if the Designated Licensees already have this capability for their own services.

4.8 Bit-stream Unbundling Service

4.8.1 Service Definition

86. Bit-stream Unbundling is a form of local loop unbundling whereby a competing Licensee may offer the Users high-speed Traffic services while the original voice services continue to be provided by a Designated Licensee over the same local loop infrastructure. The high-speed data circuit is provided using the equipment of the Incumbent. Licensees may interconnect with the Incumbent either in a central location or at each local switch office. The Bit-stream unbundling offer shall include all elements necessary to provide high-speed data service to the Users, and no additional charges shall be applicable to such Users. The Bit-stream unbundling offer shall include various options of uplink and downlink speeds at the choice of the interconnecting Licensee.

4.8.2 Requirement to Provide the Service

87. Designated Licensees who provide fixed telecommunications services (Incumbent) shall provide bit-stream unbundling to other Licensees.

5 Technical Aspects

5.1 Introduction

88. This section deals primarily with the Interconnection of switching nodes (Switches) of Public Network Operators.

89. Other forms of Interconnection including Interconnection arrangements for packet switching Traffic and between different platforms and technologies that requires supplementary technical aspects shall be included in the RIOs of Designated Licensees.

5.2 Interconnection of Public Switches

90. The Instructions for the Interconnection of public Networks are applicable to all Licensees.

91. All Licensees shall provide other Licensees with details of their Networks that are required for Interconnection Services. Designated Licensees shall provide this information within their RIOs. The information should include, but not be limited to:

- a. Name of switches
- b. Locations (geographic address)
- c. Function (International/Tandem/Local)
- d. Manufacturer
- e. Model (Hardware/Software)
- f. Minimum number of interconnect links
- g. Maximum interconnect link capacity
- h. Requirements to interconnect to specific switches
- i. Signalling requirements

92. To reduce the requirement to update the main body of the RIO in response to Network developments, Designated Licensees should maintain details of their Networks within annexes to their RIOs, which may be available in an up-to-date electronic form i.e., institutional web page.

93. All Licensees shall provide Interconnection at any technically feasible point in their Networks, subject to operational practicability

5.2.1 General Rules for Interconnect Links between Public Switches

5.2.1.1 General

94. All Licensees shall define any technical Interconnection rules applicable to their Networks, and Designated Licensees shall include such rules within their RIOs.
95. Technical Interconnection rules shall not prevent the introduction and development of competition nor shall they represent an unreasonable obstacle to Interconnection.
96. Licensees may define a set of rules for handling Traffic routed incorrectly (non-agreed Traffic), and Designated Licensees shall include such rules within their RIOs

5.2.1.2 Number of Interconnect Links

97. In order to protect the Interconnection service resilience (i.e., availability of sufficient capacity to meet QoS targets), Licensees may require other Licensees to interconnect to more than one of their public Switches and to specify particular Switches 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.
98. 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

99. All Licensees shall enable other Licensees to designate and use transport interconnect links as being either uni-directional in either direction, or bi-directional.

5.2.1.4 Link Capacity

100. The unit for Interconnection transport links capacity shall be the E1 (or 2 Mbps - 2048 kbps) as defined by ITU-T recommendations.
101. Licensees may define a minimum and maximum capacity for any transport link requested for Interconnection Services by other Licensees.

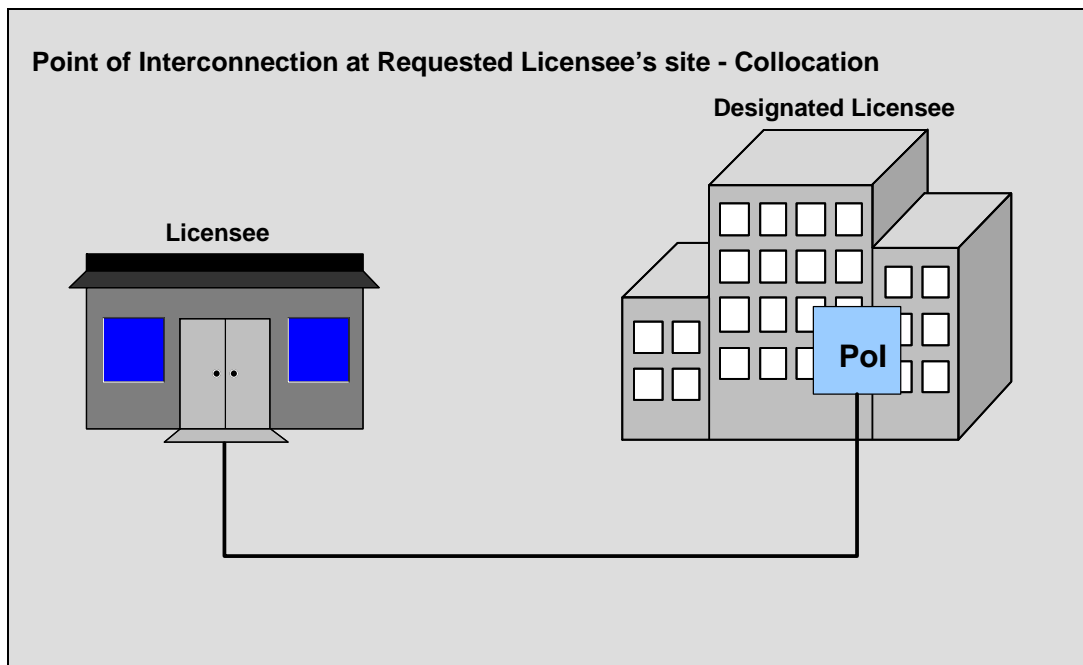
102. Licensees should not place excessive reliance on any particular interconnect link as this may endanger Interconnection service resilience. Licensees should endeavour to spread Interconnection Traffic over a number of diverse interconnect links
103. Designated Licensees providing switched Interconnection 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.
104. 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.
105. 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.
106. 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.
107. If a Licensee has designated an interconnect link as being high-usage, such designation shall be in conjunction with planned overflow via fully-provisioned interconnect links.
108. 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.

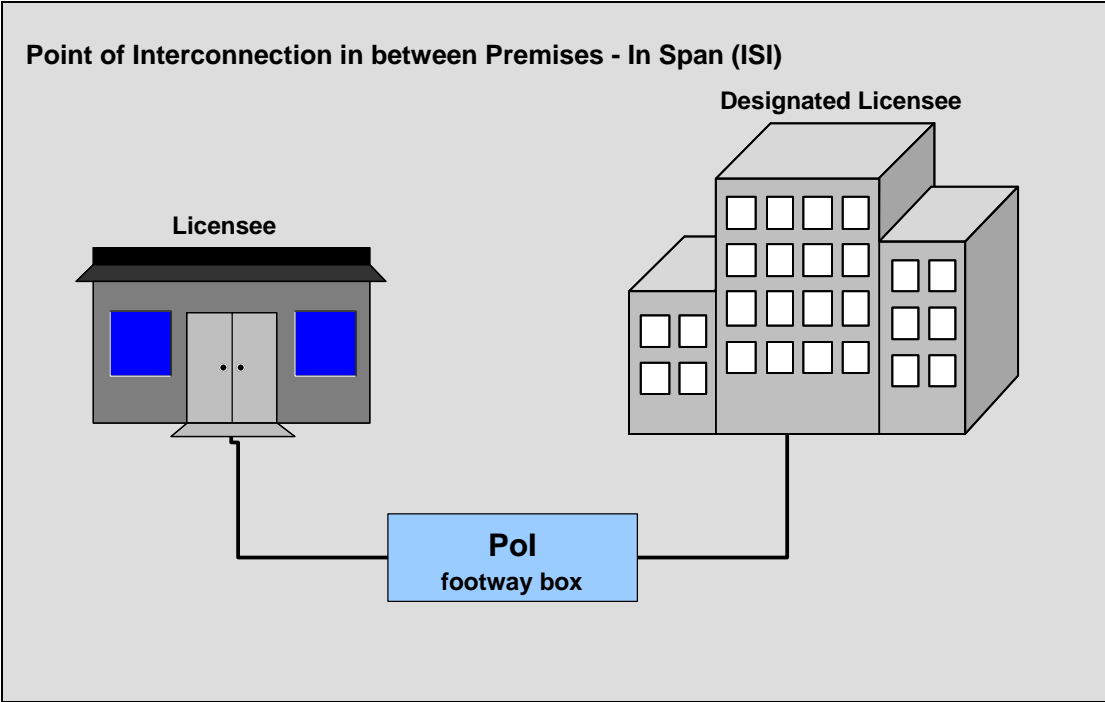
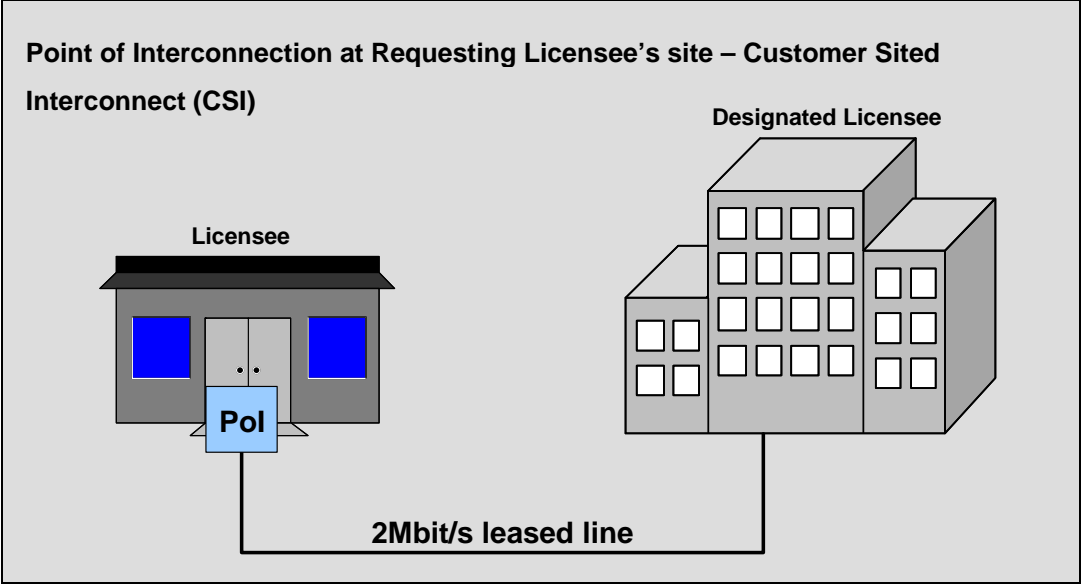
5.3 Transport Links

109. This section concerns the technical aspects of the transport links used to interconnect the Networks of Licensees in order to provide Interconnection Services.

5.3.1 Point of Interconnection (POI)

110. The Point of Interconnection shall be defined as the boundary between the networks of interconnected Licensees and is located at some point on the transport interconnect link.
111. The Point of Interconnection may be located at the premises of any of the Licensees or at a point in between their respective premises (In-span Interconnect). See diagrams below.
112. The Licensee owning the POI premises shall provide the digital distribution frame as the physical Interconnection point (line side) where the other Licensee shall connect its transmission systems.





113. Designated Licensees shall fully define within their RIOs the transmission options that Licensees interconnecting to them may use.
114. 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.
115. 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.
116. All Licensees shall offer the option of placing the point of interconnect at their own premises, at the premises of the other interconnected Licensees 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.
117. The Instructions for the site access to the premises of a Licensee where a Point of Interconnection is located are contained in Section 6..4.1

5.3.2 Interconnect Extension Circuits

118. Licensees shall enable interconnected Licensees, to lease transport links from the Point of Interconnection to other points in their Network in order to enable Points of Interconnection in a greater number of switches.

5.3.3 Transport Technologies

119. Licensees shall support the use of any appropriate transmission technologies for interconnect links.

5.4 Interconnection of Signalling Networks

120. Licensees shall support the ITU Signalling System Number 7, Integrated Services User Part (ISUP) for Interconnection signalling.
121. Designated Licensees who have international gateway access shall provide leased circuits routed via their international gateway switches to any Signalling Transfer Point outside of Jordan to interconnect with international operators to facilitate roaming with their Networks, and, shall provide, to the mobile Network operators, the use of SS7 signalling via their international switching centres to international operators for the transit of incoming and outgoing roaming messages with foreign mobile operators.
122. The utilisation of SS7 links shall be maintained within the ITU Recommendations :
 - a. Critical load per SS7 link: 0.36 Erlangs.
 - b. Maximum load per SS7 link: 0.44 Erlangs.
123. Designated Licensees shall specify the signalling configuration to be used on interconnect links within their RIOs.
124. Licensees providing Interconnection Services shall notify interconnected Licensees of any modification in the adopted ITU signalling system six (6) months in advance.

5.5 Interface Standards and Technical Requirements

125. Licensees shall adhere, as far as possible, to the appropriate ITU and ETSI technical standards related to Interconnection interfaces.
126. Designated Licensees offering Interconnection Services shall state the technical standards used for Interconnection within their RIOs.
127. Licensees offering Interconnection Services shall provide reasonable notice to interconnected Licensees of any modifications to the technical standards related to Interconnection interfaces.
128. Licensees offering Interconnection Services shall collaborate with interconnected Licensees to overcome any technical problems.
129. Licensees should agree on the manner in which they will synchronise their networks from time slots on E1 interconnect links and the master synchronisation clocks.

5.6 Numbering

130. All Licensees shall provide details of the number ranges that are hosted and / or active on each of their Switches to other Licensees in order to route calls to those number ranges directly on the interconnect links to the Switches.

5.7 Quality of Service

131. All Licensees providing Interconnection Services shall do so with the same quality of service provided wholly on their own Networks.
132. Licensees shall work jointly to ensure the overall quality of the Traffic that is 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.
133. Licensees shall have the capability to define a target Grade of Service for each transport interconnect link between their Network and other Licensees' Networks described in more detail in section 6.1.3.5
134. Licensees shall be capable of monitoring all transport 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
135. 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).
136. 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

137. 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.

138. 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

139. The implementation processes shall include:

- a. All civil engineering work
- b. Construction
- c. Installation
- d. Testing
- e. Commissioning

140. 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

141. The provisioning processes of Licensees shall include defined lead-time requirements and switching information requirements for specific provisioning activities. For example, the lead-time to establish a new transport interconnect will be longer than adding capacity to an existing transport interconnect link.

142. All Licensees shall provide Interconnection Services in a timely fashion. This requirement implies that any published lead-times shall be reasonable and it should be possible for Licensees to justify these to the TRC.
143. When defining lead-times, Licensees should aim to be as realistic as possible and provide sufficient time to overcome unforeseen implementation difficulties.
144. Licensees shall provide lead-times to other Licensees that are comparable with internal provisioning time-scales.
145. Lead-times may, for example, be given for the following:
 - a. Connection of a new Licensee Switch 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
146. Any proposed changes to lead-times of Licensees shall be subject to the approval of the TRC and shall be justified by the Licensee.

6.1.3 Planning Processes

6.1.3.1 Interconnection of a New Public Switch

147. Licensees shall define procedures to be followed by other Licensees wishing to interconnect a new public Switch to their Network.
148. Designated Licensees should define any such processes within their RIOs.
149. The procedures are likely to be more detailed in the event that the new switch model, hardware build or software build is not one that has previously been interconnected to the Licensee's Network.
150. Licensees should consider developing a 'Switch questionnaire' to be completed by Licensees wishing to interconnect new Switches to their Network.
151. The TRC shall have the responsibility of assigning the SS7 Point Code(s) to new Switches of Licensees.

6.1.3.2 Transport Link Planning

152. Designated Licensees offering Transport Link Services including provisions for new Transport Links shall define a formal process for the planning of such Services, within their RIOs.
153. The definition shall include the charges, provisioning, operations, maintenance processes and an offer for the quality of the service. The offer shall include delivery and repair performance criteria and penalty payments for failure to meet the service levels. This process may be supported by electronic forms attached to the RIO.
154. Designated Licensees offering Transport Link Services shall use identical processes to provide such Services to all Licensees.
155. Planning of Transport Links, including civil engineering works shall be the responsibility of the Licensee providing the transport link. However, both Licensees should collaborate in such planning exercises. In the case of in-span Interconnection as described in section 5.3.1 the planning shall be considered to be a joint responsibility.

6.1.3.3 Planning of New Links

156. New Transport links should normally be requested by the Licensee that plans to use the Interconnection Services provided by the other Licensee.
157. The information that a Licensee providing Interconnection requires from a Licensee requesting a new link may include the following:
 - a. Licensee A Switch
 - b. Licensee B Switch
 - c. Transmission path(s)
 - d. Initial capacity
 - e. Link direction (Incoming/Outgoing/Both-ways)
 - f. Link configuration - Fully-provisioned/High-Usage
 - g. Utilisation Factor
 - h. Grade of Service
 - i. Purpose of link

6.1.3.4 Removal of Transport Links

158. Designated Licensees offering Interconnection should define a formal process for the removal of an existing Transport link within their RIOs. Such processes may then be supported by electronic forms attached to the RIOs.
159. Such a process should include agreement on how to migrate Traffic off the link which is to be removed.
160. All Licensees shall define a minimum period for which a transport link will be operational.

6.1.3.5 Capacity Planning on Transport Links

6.1.3.5.1 Interconnect Traffic Forecasts

161. All interconnected Licensees shall provide to each other forecasts of Traffic over each transport link between their Networks.
162. Traffic forecasts should be given in terms of Erlangs and the hour of the “peak” or ‘Busy Hour’ for a period of not more than two years. The forecast may then, for example, be updated every quarter.
163. Designated Licensees shall explicitly define the exact Traffic forecasts requirements in the RIOs. Furthermore, it is recommended that the process should be managed by electronic forms to be used by both Licensees when providing their Traffic forecasts.
164. 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.
165. 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.

6.1.3.5.2 Interconnect capacity forecasts

166. Interconnected Licensees shall provide to each other forecasts of capacity requirements over each transport link between their Networks.
167. These forecasts should be given in terms of E1s for a period of not more than two (2) years in advance. This forecast may then, for example, be updated every quarter.

168. 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.
169. On transport links designated as being fully provisioned; both Licensees shall provision, in advance, sufficient capacity to achieve the target Grade of Service.
170. 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.

6.1.3.5.3 Reactive capacity planning

171. 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 6.1.3.5.2 are being used, in the case that the capacity requirements have been under-forecasted.
172. 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.
173. 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.
174. 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 Switch 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.
175. If one or both Licensees consider 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.
176. A meeting shall be held within five (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.

177. At such meetings, both interconnected Licensees shall present their Traffic measurements to each other.
178. The Traffic measurements provided shall be as comprehensive as possible and should cover at least a seven day (7) period with the Traffic profile over each day, in 15 minute intervals.
179. 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.
180. 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.

6.1.4 Collocation and Infrastructure Sharing Processes

181. All Licensees shall cooperate in all aspects of providing Collocation and Infrastructure Sharing Services. Adoption of such practices aids economic, environmental and social benefits.
182. All Licensees shall maintain a list of their sites where collocation space and infrastructure facilities are 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.
183. Designated Licensees shall publish their space allocation and infrastructure sharing 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
184. Licensees should maintain a list of infrastructure that they are prepared to share and the prices that they will charge others for doing so.
185. In circumstances where a Licensee rejects a Licensee's request for collocation space and/ or infrastructure sharing on the grounds of availability, the requested Licensee should propose an alternative solution. In case of dispute, the TRC shall make a determination.

6.1.5 Bit-stream Unbundling Service Processes

186. The procedures and provisioning intervals are listed below.
- a. Upon receipt of another Licensee's provisioning request, the unbundling Licensee shall provide an initial response within ten (10) working days
 - b. If the Licensee (one party) receives a positive response from the unbundling Licensee (the other party), the two parties will have a maximum of 15 working days in which to reach agreement on the manner and the time frame in which the bit- stream unbundling will be provisioned
 - c. Provided that the two parties reach agreement within the time frame specified above, the TRC will have five (5) working days in which to issue its approval or to require changes by one or both parties
 - d. If the unbundling Licensee's initial response is negative or if the parties fail to reach agreement, the TRC will investigate and render its decision within 30 working days
187. The Designated (unbundling) Licensees shall define their bit-stream unbundling provisioning procedures in their RIOs.

6.1.6 Request for Service Processes

188. Licensees offering Interconnection Services shall define clear request for Service processes to be followed by Licensees when requesting Services. Designated Licensees shall include such defined processes within their RIOs.
189. The request for service process should be supported by forms contained within, or attached, to the RIO.
190. 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 it could reasonably expect to wait.

191. 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.
192. 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.
193. 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'.
194. 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.
195. Licensees rejecting a request for service, in whole or in part, shall respond, in writing to the Licensee, giving it the reasons for this rejection. This letter shall also be copied to the TRC.
196. In the event of a 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.
197. 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.
198. 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.
199. 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 three (3) working days at any time following the notification of the delivery date.

6.1.7 Implementation

200. 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.
201. 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 Licensee offering the service.
202. 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

203. Interconnection operations processes are defined as those processes that are used to enable interconnected Licensees to operate Interconnection Services.
204. The operations processes shall include:
 - a. Network Traffic Management
 - b. Quality measurement
 - c. Traffic controls
 - d. Routing management
 - e. Fault reporting and resolution
205. Licensees offering Interconnection Services shall define the procedures used between themselves and Licensees using their services, to operate the Interconnection Services.
206. Licensees shall define the Interconnection operations processes within their RIOs.

6.2.2 Network Traffic Management

6.2.2.1 General

207. 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.
208. Designated Licensees shall establish Network Management Centres (NMCs) to monitor and control the flow and routing of Traffic to maximise the effective use of available capacity.
209. 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.
210. Licensees shall notify other Licensees in a timely manner when major problems occur which are likely to affect interconnected Traffic.
211. Licensees should communicate as necessary to achieve a co-ordinated NTM effort.
212. 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. 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. 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 both normal and failure conditions.

6.2.2.2 Traffic and Quality of Service Measurement

- 213. 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.
- 214. 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.
- 215. 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.
- 216. Licensees shall provide Traffic and Quality of Service measurements to the TRC upon request pursuant to the relevant provisions in the TRC Regulations and/or License Agreements.
- 217. 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

- 218. 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.
219. Protective controls prevent switching units being put in jeopardy due to excessive Traffic 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.
220. Licensees may request a control from 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.
221. Licensees may implement controls within their own networks in response to perceived problems detected in other 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.
222. 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

223. Licensees shall manage the routing of outgoing Traffic up to the Point of Interconnection and incoming Traffic from the Point of Interconnection to their destination.
224. Licensees shall make every effort to ensure that Traffic is routed to the other Licensees' Networks, using overflows to alternative routing paths if necessary.
225. 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.
226. When an interconnect link has been defined as being High Usage, the interconnect link(s) where calls will overflow should be defined.

- 227. Licensees should consider the formal agreement of routing plans between themselves and other interconnected Licensees. This could also include an agreed change process.
- 228. Licensees shall pass onto other Licensees, the full CLI and CLIR for all calls, to the extent that the CLI and CLIR are available.
- 229. Licensees should agree advanced contingency routing plans to be used to alleviate different levels of NTM problems.

6.2.2.5 Mass Traffic Events

- 230. A 'Mass Traffic Event' is defined as a planned period of high Traffic volumes to a specific set of destinations, e.g. a 'phone-in' to a 'telethon' type of event.
- 231. Licensees should establish procedures to coordinate Mass Traffic Events with their large Users who may host them.
- 232. Licensees with a User planning a Mass Traffic 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.
- 233. 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

- 234. Designated Licensees shall be required to provide 24-hour contact points for fault reporting (24-hours a day, seven (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.
- 235. Arrangements should be made for direct person-to-person connection between fault resolution functions of all interconnected Licensees.

6.2.3.2 Fault Detection

236. 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.
237. 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.
238. 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.
239. 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 the fault comes from a change and the eventual report back of service restoration.

6.2.3.3 Fault Processing

240. A Licensee shall provide sufficient information to the other Licensees to enable both to carry out diagnostics and then progress the fault to restoration.
241. It is recommended that Licensees implement a fault management system as part of their operational support systems.
242. Licensees should number fault reports in order to facilitate the management of individual faults, especially across two (2) (or more) Licensees.
243. When either Licensee believes that a fault has been cleared, it shall give positive confirmation to the other Licensee immediately.
244. Licensees should prioritise the clearance of faults affecting service over the clearance of faults not affecting service.
245. 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).

246. 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

247. Interconnection maintenance processes are defined as those processes that are used to enable interconnected Licensees to maintain the Interconnection and Interconnection Services.

248. The maintenance processes shall include:

- a. Operational testing
- b. Planned Engineering Works
- c. System protection and safety

249. All Licensees offering Interconnection Services shall define the procedures used between themselves and the Licensee who uses their services, to maintain the Interconnection Services.

250. Designated Licensees shall define these processes within their RIOs.

6.3.2 Operational Testing

251. 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

252. 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.

253. 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.

254. 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
255. 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

256. Site access procedures are defined as the procedures used to arrange and control access by one Licensee to its Network equipment collocated in the premises of a different Licensee.
257. Licensees providing collocation space and shared infrastructure shall define the site access procedures, and Designated licensees shall define such procedures within their RIOs.
258. Licensees providing collocation space should be able to provide access, by prior notice, on a 24 hour, seven (7) 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.
259. 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

260. 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.
261. 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 members comply with all reasonable safety and security requirements of the Licensee owning the site.
262. It is the responsibility of each Licensee's staff members 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.
263. 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

264. Licensees should define their respective obligations to protect each others' Networks and define measures to protect the safety all personnel and users.
265. 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.
266. 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

267. 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 Instructions contains the current policies of the TRC with respect to the derivation of cost based charges.

268. All Licensees' Interconnection charges shall be cost based rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the interconnecting party does not pay for Network components or facilities that it does not require for the service to be provided, it being understood that no unreasonable and unrecoverable costs will be imposed on the Licensee in connection with any unbundling. However, the charges of terminating international traffic in Jordan shall be excluded from the provisions of this Paragraph; such charges shall be subject to a decision to be issued by the TRC Board of Commissioners.

269. It is TRC's policy to move to a charging system based on Long Run Incremental Costs. However, TRC recognises that such an approach is not immediately applicable to Jordan and, in the short term, TRC has commenced a Consultation on Interconnection rates, which better reflect the costs incurred by Licensees in providing the Interconnection Services. The TRC also intends to develop a neutral cost model for the purpose of assessing the Licensees' Interconnection cost calculations

270. Until the TRC's internal cost model is complete and decisions regarding calculation of Interconnection costs are finalized, new fixed line entrants shall be permitted to charge, for the traffic originated in Jordan, call termination rates that are no higher than the Incumbent's

271. Subject to the exclusion provided under Paragraph 268, cost based charging shall apply equally to all Interconnection Services.

272. Licensees shall undertake a full analysis of their costs of providing Interconnection Services.

273. Licensees shall cooperate with the TRC in any service costing exercise that the TRC may decide to undertake.
274. The effective date of any changes to the interconnection charges and the notice provided to by the Licensees for such changes, shall be subject to determination is by TRC.
275. Designated Licensees may publish charges on their web site but shall publish the charges as annexes to their RIOs.
276. Designated Licensees shall define any penalties for cancellations of requests for Service within their RIOs.

7.1.2 Traffic Conveyance Charges

277. Charges shall be made only for completed calls – those calls receiving an answer signal in the backward direction.
278. The unit of measurement for all completed calls shall be one second of conversation time.
279. Designated Licensees shall charge all interconnected Licensees the same per-second rates for the same Traffic Conveyance Services.
280. There shall be no minimum charge for completed calls.
281. Subject to the exclusion provided under Paragraph 268, Traffic Conveyance charges shall reflect the amount of network infrastructure used in the conveyance of the Interconnection Traffic. Licensees shall therefore determine different Interconnection charges for local, single tandem, double tandem and transit (including international) Traffic.
282. Mobile licensees shall offer a single charge for terminating Traffic originated in Jordan based on the average utilization of network infrastructure by incoming calls originated in Jordan.
283. Designated Licensees shall offer flat Interconnection rates,

7.1.3 Transport Link Costs and Charges

284. The costs of the transport Interconnection links shall be shared between the interconnected Licensees based on proportion of Traffic, which originates on each link. This shall be shared based on Traffic volumes measured in call minutes over the preceding three (3) months. Bills should be retroactively adjusted.

285. Minimum contract periods shall not exceed one (1) year but discounts should be offered if longer commitments are made.

286. These charges shall be cost based but geographically averaged.

287. In the case of a transport link not used for Interconnection, the requesting Licensee shall bear the cost of such link, in such cases charges shall be the same for all requesting Licensees.

7.1.4 Collocation and Infrastructure Sharing Services Charges

288. The rates charged by Licensees for the running costs of collocation and infrastructure sharing services shall be, as far as is practicable, cost based. Leases for the collocation space within buildings should reflect local market values.

7.1.5 Operator Services Charges

289. Licensees shall offer operator assistance services at cost based charges.

7.1.6 Billing and Collection Services Charges

290. Designated licensees shall be entitled to charge for these Services on a cost recovery basis, subject to review and approval by the TRC.

291. Such costs will need to take into account the fixed cost component plus the variable costs related to the number of Users and associated bills and include a normal profit margin.

292. That is, all normal and reasonable billing and collection costs shall be considered as in the case of other Interconnection Services, and it is assumed that the form of these costs is partly a cost independent of the number of Users, while another part depends entirely on the number of Users.

293. In the absence of adequate cost substantiation by the Designated Licensee or if the TRC wishes to review independent cost estimates of billing services, it may choose to obtain estimates from banks and/or companies in the Jordanian IT sector specialising in these services.

7.1.7 Bit-stream Unbundling Service Charges

294. The charges for Bit-stream Unbundling shall be cost based charges.

7.1.8 International Gateway Access Service Charges

295. The rates charged by Licensees for provision of the service shall be cost based charges. Leases for the collocation space should reflect local market values.

7.2 Billing

7.2.1 Traffic Conveyance Billing

7.2.1.1 General

296. 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

297. Interconnect billing shall be based on Traffic in the interconnected Networks using Switches Call Detail Records (CDR).

298. Licensees on each side of an interconnect shall have the capability to measure the Traffic duration in seconds. If only one of the Licensees has the capability to measure such Traffic, then their measurements shall be considered to be definitive. If both Licensees have the ability to measure such Traffic, then the reconciliation process should be contained in the Interconnect Agreement and defined in the Licensees' RIOs.

299. The Traffic unit used by all Licensees for charging and settlement of Traffic conveyance bills shall be one minute. Conversation Time shall be measured in seconds according to the relevant ITU standards and definitions.

300. Designated Licensees shall define within their RIOs the format of the invoice and the method of transmitting the invoice.

301. Except for disputed amounts being processed in accordance with the billing disputes process (specified in the RIO), if a party fails to pay within 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 amount owing, as from the due date.
302. 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

303. Designated Licensees shall define their interconnect billing reconciliation process within their RIOs.
304. Some discrepancy in billing values should be expected. All Licensees should define a specific percentage difference in both parties calculation of a bill, below which there shall be no Interconnect Billing Reconciliation Process. Initial agreed capped values should be reviewed periodically and revised according to adjustments and better knowledge of the Interconnect Billing Reconciliation Processes.
305. During an Interconnect Billing Reconciliation Process, Licensees should work together in good faith, taking more frequent measurements and exchanging detailed information if necessary.
306. 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.
307. 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.
308. Interconnected Licensees should arrange audits of billing records and processes on a quarterly or biannual basis.

8 Dispute Resolution Process

309. 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:
310. 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);
311. 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.
312. 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

313. 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 ten (10) working days, the said dispute or difference may be submitted to arbitration by an arbitrator or arbitrators appointed as follows:

314. If the matter in dispute is principally:

- a. a legal matter, an impartial practising lawyer(s) of not less than ten (10) years standing;
- b. an accounting matter, an impartial practising chartered accountant(s) of not less than ten (10) years standing;
- c. a technical matter, an impartial telecommunications expert of not less than ten (10) 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 ten (10) working days after the arbitration has been demanded, the arbitrator shall be nominated at the request of either of the parties by the TRC.

315. 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.

316. The arbitration shall be held immediately and with a view to its being completed within fifteen (15) working days after it is demanded.

317. 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.

318. 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

319. 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

320. 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 Statement of Service Level Offer

321. Designated Licensees shall include within their RIOs a statement of the Service 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 in the Service Level Offer.

10.2.3 Duration

322. The Interconnect Agreement shall not have a defined fixed duration. The agreement should be an ongoing one with periodic mutually agreed upon reviews and opportunities for renegotiation.

10.2.4 Review

323. 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 dispute.

10.2.5 Confidentiality

324. Licensees should require other Licensees to sign a confidentiality agreement to protect its information from being divulged to any other party (except for the TRC), 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

325. 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

326. 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

327. 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

- Traffic Conveyance Services

 - Traffic Termination

 - Traffic Transit

 - Traffic Origination

 - Number Translation Traffic Origination Service

- Transport Services

- Collocation and Infrastructure Sharing Services

- Operator Services

 - Operator Assistance

 - Emergency Services

 - Directory Enquiries

- International Gateway Access Services

- Billing and Collection Services

- Bitstream Unbundling Services

Technical Aspects

- Interconnection of Public Switches

- Rules for Interconnect Links between Public Switches

 - Number of Interconnect Links

Link Direction

Link Capacity

Transport Links

Point of Interconnect

Interconnect Extension Circuits

Transmission Technologies

Interconnection of Signalling Networks

Interface Standards and Technical Requirements

Numbering

Quality of Service

Interconnection Processes

Interconnect Provisioning Processes

Lead-times

Planning Processes

Interconnection of a New Public Switch

Planning of Transport Links

Planning of New Links

Removal of Transport Link

Capacity Planning on Transport Links:

Interconnect Traffic Forecasts

Interconnect Capacity Forecasts

Reactive Capacity Planning

Collocation and Infrastructure Sharing Processes

Bitstream Unbundling Processes

Request for Service Processes

Implementation

Interconnection Operations Processes

General Principles

Network Traffic Management

- Traffic and Quality of Service Measurement
 - Traffic Controls
 - Routing Management
 - Mass Traffic Events
 - Fault Management
 - Contact Points
 - Fault Detection
 - Fault Processing
 - Interconnection Maintenance Processes
 - General Principles
 - Operational Testing
 - Planned Engineering Works
 - Site Access Procedures
 - System Protection and Safety
- Commercial Aspects
 - Charges and Payments
 - Traffic Conveyance
 - Transport Link Costs and Charges
 - Collocation and Infrastructure Sharing Services
 - Operator Services
 - Billing and Collection Services Charges
 - Billing
 - Traffic Conveyance Billing
 - Interconnect Billing Reconciliation
- Disputes Resolution Process
- Arbitration
- General Contract Provisions
 - Provision of Information
 - Duration

Review

Confidentiality

Intellectual Property Rights

Liability

Additional Provisions

Annex A: Charges

Annex B: Facilities Available for Collocation and Infrastructure Sharing

Annex C: Network Documentation

Annex D: Service Level Offer