THE HASHEMITE KINGDOM OF JORDAN

Telecommunications Regulatory Commission (TRC)

-APPENDIX I-

Of

Regulatory Decision for Establishing an Internet Exchange Point (IXP) in Jordan

Telecommunications Regulatory Commission

TRC Board Decision No. (1-12/2019) Date (27/10/2019)

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TELECOMMUNICATIONS REGULATORY COMMISSION (TRC)

INTERNET EXCHANGE POINT (IXP) INSTRUCTIONS

Issued Pursuant to Articles 6(a), 6(b), 6(e) of the Telecommunications

Law No. (13) for the Year 1995 and its amendments, and Article (56) of the General Policy for the Information and Communications Technology and Postal Sectors, 2018

1 INTRODUCTION

This document is supplementary to the Regulatory decision issued by TRC on ( ), the document will tend to illustrate more in depth look of main pillars of establishing an Internet Exchange point in Jordan, from a technical perspective.

Note: any difficulties to explain any term, word or a definition please review section 2 "Definitions" of the Regulatory decision.

Items which will be covered within this appendix are:

- Interconnection
- Peering
- Quality of Service (QoS)
- General Provisions
- IXP Operations

2 INTERCONNECTION

Requisites for the interconnection and peering with IXP:

2.1 In those instances where the intended members 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.

2.2 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

2.3 IXP shall be versatile enough to accommodate all type of interconnect links as per Interconnection Instructions.

2.4 Any IXP member must at a minimum announce all its regional routes to the IXP router at that IXP location.

2.5 All IXP members are entitled to receive these routes using a single BGP session with the IXP router. This will guarantee the exchange of regional traffic within IXP, referred to as forced regional multi-lateral peering

2.6 In the case where one IXP member is already providing transit to another IXP member, the exchange of regional routes mentioned in above, may also happen using a separate private connection between the members

2.7 IXP members shall announce only those routes that belong to their Autonomous System, Aggregating traffic from other members in the region and connect to the IXP through a single connection.

2.8 The IXP router shall only exchange information but not carry any transit traffic unless indicated in the member's agreement

2.9 All IXP members must ensure that they suitably and proactively upgrade capacity from time-to-time so that they do not end up dropping traffic that other peers are exchanging with them

2.10 All IXP members shall not filter or block information but transmit traffic smoothly with no delay or jitter

2.11 If data rate transmission and IP network's equipment usage is high, and the processing power for any device or channel, and/or transmission port load of IPXs or one of the service providers reaches over 80% continuously, the device or equipment should rapidly upgraded and an immediate increase of capacity is advised.

2.12 The routing policy here also applies to "large" content providers to directly peer at any of the IXP nodes. They will be treated like stand-alone Data Centers. For this they need to adhere to the following criteria: a. they must have their own AS number b. The content hosted by them should be in accordance with Jordan laws (i.e they should not be hosting obscene content or promoting gambling or anti-national content, or any other content that violates either the ISP license condition or any other Jordanian Laws or regulations)

2.13 A telecommunications Licensee leasing line bandwidth to other Licensee shall ensure that they are connected to the IXP in terms of these Instructions

3 Peering

3.1 Non-governmental organization established by special license holders to establish information and communication network for cross-country and provide internet service shall establish IXP.

3.2 IXPs shall be connected to each point. IXP connection topology shall be organized at Layer2

3.3 Members who will exchange cross-country traffic should provide not less than 10Gbps uplink speed

3.4 In order to increase local internet traffic and improve quality, ISP shall connect to one of the IXPs and if provide internet service for public organizations, shall connect to the IXP located at the National Datacenter

3.5 Rights and obligations of parties connected to IXPs shall be regulated by the BA mentioned in section (2.17). BA draft between the Host and any ISP member specifying all technical conditions and all other details, and shall be reviewed and approved by TRC Jordan

3.6 Connection line connecting IXPs shall be not less than 10Gbps and connection lines connecting ISP shall be not less than 1Gbps in terms of capacity

3.7 BGP, one of the dynamic connection types, shall be used for IXP

3.8 IXPs shall offer the same service and technical conditions for ISP

3.9 IXPs shall organize activities regarding creation and update of routing table which will be used in local internet traffic exchange

3.10 Only own network information or IP address obtained from NITC and/or RIPE NCC shall be transmitted to IPXs

3.11 Local traffic routing shall be done according to the routing table generated by the use of eBGP from routing table of special license holders registered at IPXs

3.12 If transmission facility utilization reaches 80% in the IXP, either transmission facility channel or equipment shall be extended.

3.13 ISP shall have transmission channel and connection completely separate from any other internet connection transmission channel and connection, and shall not put speed limit for transmission facility, channel and IP network equipment and for its software.

4 QUALITY OF SERVICE (QoS)

Below table 3.1, illustrates requisites for the Quality of Service:

No.	Quality of Service Requirements
1	All critical components of the IXP should be up for 99.00 % of time in a quarter. These critical components are mainly IXP routers/Switches, interface module on which the links of the ISPs are terminated and any other equipment which affects the IXP traffic. Non critical faults which do not affect IXP traffic like failure of one power supply module should be rectified by IXP within max of 12 hours
2	Switching architecture of IXP shall be non-blocking, so that it does not introduce any delay
3	Uninterrupted power shall be ensured to the equipment of the ISP and IXP router itself in the IXP node. Power availability can be 99.00% in a quarter
4	IXP shall ensure proper environment (Proper Air conditioning with Humidity control) for housing equipment's of IXP members
5	Augmentation of IXP members' bandwidth to IXP: - IXP member shall augment its bandwidth to IXP, if the utilization of the existing link exceeds 80% of the capacity for 4 hrs. in a day and for 7 days. Such capacity management shall be through increase of capacity and not through reduction routes announced. The augmentation should normally be completed within a period of one month after IXP reported to the concerned IXP member. This time should be extendable by one more month in valid cases like IXP member having tangible problem and in case some additional equipment's are required to be procured
6	Facility for ensuring security of IXP equipment like access control, monitoring and keeping records of entry in equipment room etc
7	IXPs shall regularly and transparently distribute information to ISP in conformity to quality level determined by the following indicators: • Packet loss • Packet delay • Packet Utilization • CPU usage information of IXPs and IXP member • Connection types of all IXP members connected to IXPs and their load • IXPs shall ensure reliable and constant service and monitoring (24 x 7 x 365) activities.

5 GENERAL PROVISIONS

Below table 3.1, illustrates requirements of generic operations:

No.	General Provisions Requirements
1	It shall be an obligation of an IXP to accept interconnection with ISP in accordance with the following : • It shall be the obligation of every Internet Service Provider to interconnect its computer system and to keep it interconnected at all times (24/7) to the IXP for the purpose of facilitating the efficient routing and interconnection of Internet Protocol transit networks within Jordan and of minimizing the use of international Gateways for Internet Protocol traffic between Internet users in Jordan. • It shall be the obligation of every IXP member to distribute and receive routing information for local traffic data to or from all members of the IXP.
2	The IXP Host shall be entitled to demand such a reasonable extent of traffic data and engineering data from IXP members as is necessary and proportionate for it to be able to perform its functions efficiently.
3	Any data collected by the IXP Host in terms of these Instructions shall be kept confidential subject to any obligation of disclosure in accordance with the applicable legislations.
4	The IXP members shall comply with the telecommunications law and regulations in respect of any data collected in pursuance of these Instructions

6 IXP OPERATIONS

Below table 3.1, illustrates requirements of day-to-day functional operations of IXP:

No.	IXP Operations Requirements
1	IPX shall have a system to ensure reliable and continuous operation, and information security control and monitoring. System data shall be stored at least 6 months or as stipulated in the data retention instructions
2	The following principles shall be complied to solve troubleshooting. Those are: • When troubleshooting occurs, immediately inform related parties by using fully automated control system. • Involved IXP members shall quickly repair and troubleshoot. • Record troubleshooting type/classification, period and solutions, and analyze. • Host should agree with all ISP members to define proper down-time in the BA
3	IXP Data center standard security operations should be according to ISO 27001