



**BANGLADESH TELECOMMUNICATION  
REGULATORY COMMISSION**

IEB Bhaban, Ramna, Dhaka-1000

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**REGULATORY AND LICENSING GUIDELINES**

**FOR**

**ISSUING LICENSE**

**TO**

**NATIONAL INTERNET EXCHANGE (NIX)**

**IN**

**BANGLADESH**



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# BANGLADESH TELECOMMUNICATION REGULATORY COMMISSION

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## REGULATORY AND LICENSING GUIDELINES FOR NATIONAL INTERNET EXCHANGE (NIX)

### 1. INTRODUCTION

- 1.01 The Bangladesh Telecommunication Regulatory Commission (“The Commission”) is empowered under section 36 of the Bangladesh Telecommunication Regulatory Act 2001 (as amended) (“the Act”) to issue Licenses for the operation and provision of telecommunication services, and to determine the eligibility criteria and other general terms and conditions of Licenses with the prior approval of the Government.
- 1.02 Having given due consideration to the principles of transparency, fairness, non-discrimination and all other relevant principles, the Guidelines on Licensing Procedure of National Internet Exchange (NIX) are being issued as envisaged in the International Long Distance Telecommunication Services Policy, 2010 (ILDTS Policy, 2010).
- 1.03 These Guidelines, along with the terms and conditions of the License, should be read in conjunction with the Act, any subsequent legislation, and prevalent laws or sector policies framed by the Government, and other rules, regulations, orders, decisions, guidelines, directives and documents of general application issued by the Government or the Commission from time to time. The Act specifically provides that the establishment, operation or use of telecommunication system including radio apparatus and provision of telecommunication services in Bangladesh without a License is an offence, punishable with imprisonment or a fine or both.
- 1.04 These Guidelines may be withdrawn, revised, updated or amended by the appropriate authority from time to time, to take into consideration various factors including, but not limited to, any threat to public health, National security and statutory or Court orders.

### 2. AVAILABILITY OF THE LICENSING GUIDELINE

These guidelines are available at [www.btrc.gov.bd](http://www.btrc.gov.bd)

### 3. INTERPRETATIONS, DEFINITIONS AND ABBREVIATIONS

The interpretations and definitions of the terms used in these guidelines are annexed herewith as Appendix-1. The abbreviations are mentioned in Appendix-2.

### 4. OBJECTIVES

- 4.01 These Guidelines have been prepared taking into account the objectives of establishing National Internet Exchange (NIX) to route domestic Internet traffic. It will facilitate local content development, encourage local web hosting and reduce latency in domestic traffic and thereby saving international bandwidth and foreign currency.




- 4.02 These Guidelines are intended to provide an overview of the regulatory framework to develop, build, own, maintain and operate NIX in Bangladesh. No person or business entity shall be allowed to develop, build, own, operate and maintain NIX without license.

## 5. GENERAL REQUIREMENTS

- 5.01 The Applicant(s) shall have to obtain NIX license to provide NIX services subject to fulfilment of all conditions as mentioned in these guidelines. The Licensee shall develop, build, own, operate and maintain the NIX as provided in these guidelines.
- 5.02 The existing entities providing NIX services shall have to obtain License under these Guidelines from the Commission to continue their service. However, each of them will have to be certified, by at least 10 licensed ISPs that they have peering connectivity with the applicant.
- 5.03 The followings are the principal legal statutes governing the telecommunication industry in Bangladesh:
- 5.3.1 The Bangladesh Telecommunication Regulatory Act 2001 (as amended).
- 5.3.2 The Wireless Telegraphy Act, 1933 (Act No. XVII of 1933) and The Telegraph Act, 1885 (Act No. XIII of 1885), for matters that are not covered by the Bangladesh Telecommunication Regulatory Act 2001(as amended).
- 5.3.3 Any Regulation/Directives/Instructions made or to be made by the Commission.
- 5.04 Applicant(s) shall be disqualified from obtaining a License if any provision listed in sub clauses (i) to (vii) below applies to its owner(s) or to any of its director(s) or partner(s) or to the Applicant(s) himself
- (i) he is an insane person;
  - (ii) he has been sentenced by a court under any law, other than this Act, to imprisonment for a term of 2 (two) years or more, and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (iii) he has been sentenced by a court for committing of any offence under the Act and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (iv) he has been declared bankrupt by the Court and has not been discharged from the liability of bankruptcy;
  - (v) he has been identified or declared by the Bangladesh Bank or by the court or by a bank or financial institution as a defaulter loaner of that bank or institution;
  - (vi) his license has been cancelled by the Commission at any time during the last 5 (five) years;
  - (vii) if prosecution is going on against the applicant(s) or its owner(s) or shareholder(s) or any of its director(s) or partner(s) for any violation of the Act or license conditions or any other illegal activities.

## 6. ELIGIBILITY

- 6.01 Existing entities providing NIX services are eligible to apply to the Commission to obtain NIX License.
- 6.02 Entity(s)/consortium comprising of two or more licensed ISPs is eligible to apply for this license. The ISPs, intended to have NIX license will have to form a new joint venture company.



- 6.03 NIX license shall be issued only to Bangladeshi entities (resident citizens, NRB, proprietorship, partnership and companies registered under 'Joint Stock of Companies and Firms' under the Companies Act 1994.
- 6.04 The number of license shall not be limited. The Government may decide to award more NIX licenses considering the need of telecom sector at any time.
- 6.05 The Licenses will be awarded by the Commission with prior approval of the Government subject to fulfilment of the terms and conditions of these guidelines.
- 6.06 Existing operators are eligible to obtain NIX license.

## **7. SUBMISSION OF APPLICATIONS**

The interested entities can submit Application following these guidelines to the Commission from the date of issuance of these guidelines.

## **8. LICENSE AWARDING PROCESS**

- 8.01 'Open Licensing' procedures shall be followed in awarding NIX license.
- 8.02 The Commission, subject to approval of the Government, shall award the license to the Applicant(s) who will fulfil the criteria of these guidelines to develop, build, own, operate and maintain NIX in Bangladesh.
- 8.03 The existing entities, as mentioned in section-6.1, shall be preferred in awarding the NIX license subject to the fulfilment of terms and conditions mentioned in these Guidelines.
- 8.04 In awarding NIX license to any new entity, the number of licensed ISP members in that entity/consortium and their market dominance shall be considered.
- 8.05 Proposed cost sharing model & technical specifications shall also be considered in evaluating the applications.

## **9. REQUIREMENTS FOR APPLICATIONS**

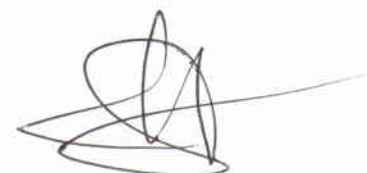
- 9.01 The applicant(s) shall submit Application for NIX License to the Commission in the prescribed form duly filled in, signed and sealed, together with all other necessary documents and information.
- 9.02 The papers/documents to be submitted by the applicant(s) shall be as per Appendix-3, Appendix-4, Appendix-5 and Appendix-6. Necessary forms available in the Commission's website can be downloaded and shall be considered valid for submission.

## **10. DURATION OF THE LICENSE**

The duration of the License(s) shall initially be for a term of 15 (fifteen) years. Upon expiry of the initial term, the License(s) may be renewed for subsequent terms, each of 5 (five) years in duration, subject to the approval of the Commission and to such conditions, including the payment of any fees, as may be specified herein and/or by the Government under the Act.

## **11. SCOPE OF THE LICENSE**

- 11.01 The Licensee shall provide facility for exchanging domestic inter-operators data services and inter IPTSP domestic VoIP calls among the NIX users through Multi Lateral Peering Agreement (MLPA). The NIX Licensee shall not restrict any domestic internet traffic among its members through the NIX without prior approval of the Commission.



- 11.02 Inter IPTSP calls shall only be within IPTSP licensees. The NIX Licensee shall keep enough provision for the ISPs and Content Providers to be connected with NIX.
- 11.03 The NIX Licensee may provide collocation facilities to its peering members.
- 11.04 The NIX operator shall be allowed to host contents in its system notifying the Commission. Also, the operator shall be allowed to offer any innovative VAS service for its peering members or others notifying BTRC in advance.
- 11.05 The NIX operator shall operate NIX on 'non-profit' basis for peering service. However, the cost and revenue from its content or any other VAS service shall totally belong to the NIX operator's account.

**12. OPERATION AND PEERING POLICY**

- 12.01 The NIX Licensee shall develop a cost (CAPEX and OPEX) sharing model for its peering members and shall take approval from the Commission before the commencement of operation.
- 12.02 The Licensee shall propose a Management Model for NIX operation to the Commission for approval. The proposed model shall include minimum 40% members of Board of Directors from the peering members.
- 12.03 The Licensee shall commence operation within 06 (six) months from issuance of license. Time extension may be considered upon receipt of application from licensee stating reasons thereof, otherwise license may be cancelled.
- 12.04 'Multilateral Peering Policy' shall be used for exchanging domestic Internet traffic and domestic inter IPTSP voice traffic among the peering NIX users. The NIX licensee shall submit the peering agreement to the Commission for vetting.
- 12.05 The NIX shall not have any direct international connectivity. The NIX licensees may go for peering agreement with international content provider with permission from the Commission. The schematic diagram for NIX connectivity is attached in Appendix-7.
- 12.06 The ISPs/content providers shall be connected with any NIX on their convenience. Peering members shall not announce default route to the NIX.
- 12.07 Peering among the Educational institutes through NIX shall be encouraged by the Licensee by providing discounted cost sharing arrangement as approved by the Commission. The Educational institutes shall use peering facilities for research or study purposes only. Educational organizations are not allowed for commercial use of this peering facility.
- 12.08 Members of the NIX shall ensure that their usage of NIX facilities is not detrimental to other members in any way. All usage shall be in compliant with the applicable standards of IETF.

**13. NETWORK DESIGN**

- 13.01 The NIX Licensee shall build, own, operate and maintain NIX as per following directions:  
At least 01 NIX within 06 months from the issuance of license primarily in any of these districts: Dhaka, Chittagong, Sylhet, Khulna, Rajshahi, Barisal, Gopalgong, Mymensingh, Comilla, Rangpur, Bogra;  
2<sup>nd</sup> NIX shall be established in any other of the mentioned districts. A licensee can set up only one NIX in a particular district. However, a licensee can establish Disaster Recovery (DR) site at any place upon notification to the Commission;



For setting up more NIX, the above mentioned Districts shall be covered with priority. However, NIX can be set up in other districts also with prior approval from the Commission.

- 13.02 NIXs of a Licensee shall be interconnected through its existing network or leased backbone network from NTTN operator or from other licensed operators. Where such networks are not available, the NIX operator can build required network with prior approval from the Commission.
- 13.03 The NIX(s) of one Licensee shall be interconnected with the NIX(s) of other Licensees on agreed terms and conditions. Both parties shall submit the copy of the agreement to the Commission for approval.
- 13.04 Peering with International content providers shall be subjected to prior approval from the Commission. The connectivity with international content providers shall be through IIGs with prior approval of the Commission and the Licensee shall provide online monitoring facilities to the Commission.
- 13.05 The Licensee should install Route Server, Looking Glass, Country Code Top Level Domain (ccTLD i.e. dot bd) Server (mirror), Root Server (mirror) and NTP server in the NIX. In case of requirement, NIX licensee may use necessary Internet transit from any licensed operator with prior approval from the Commission.
- 13.06 The NIX Licensee shall have connectivity with IIG operator only to get connected with international Content Providers. The licensee shall take prior approval from the Commission for the capacity and modality of IIG connectivity.
- 13.07 The NIX licensee shall submit detail analysis of domestic traffic, CAPEX and OPEX requirement to the Commission prior to set-up of the 2<sup>nd</sup> NIX.

#### **14. TECHNICAL REQUIREMENTS**

- 14.01 The peering members of NIX will be connected to the NIX at their own arrangement including connection media. However, only the members having remote POP from the NIX may be connected with NIX using VSAT-HUB with prior permission from the Commission. The ISPs shall provide and maintain their own equipments, if required, at NIX premises. The Licensee shall provide space and power to those equipments as per peering agreement.
- 14.02 If the licensee has other telecom operator license(s), the core network of different licensed services shall be physically separated. i.e. NIX service shall not be provided by the routers, switches etc of the network that is being used to provide services under separate license(s).
- 14.03 The NIX shall support both IPv4 and IPv6. The NIX licensee shall not sub-allocate any IP Addresses, AS Numbers etc to its peering members. The member ISPs shall have their own AS number and shall use BGP4 for peering purpose.
- 14.04 The Licensee shall maintain 24x7 hours supervision, hardware maintenance and technical support service.
- 14.05 The Licensee(s) shall provide the necessary interface of connection for peering members at the NIX end. NIX systems must be interoperable with the existing IT equipment/system available in Bangladesh.
- 14.06 The licensee shall maintain proper Quality of Service in its system as per peering agreement. However, the Commission shall issue necessary directives regarding Quality of Service from time to time.



## 15. CONNECTIVITY CHARGE

- 15.01 The connectivity charge for the Internet Service Providers to be connected with NIX platform shall be as per the Service Level Agreement (SLA) with the prior approval of the Commission.
- 15.02 The Commission may set interconnection charge for inter-IPTSP voice calls, as and when necessary.

## 16. PUBLIC WORKS

- 16.01 Prior to any installation or maintenance work of the systems, the licensee(s) shall obtain all necessary permissions from the relevant authorities or Governmental departments for works on land owned or controlled by any Government or local authority or statutory body and from the relevant owner or occupier for works on any private land.
- 16.02 The Licensee(s) shall undertake and complete all installation and maintenance work diligently observing the need for public safety in compliance with local laws and regulations.
- 16.03 If there is possibility of affecting of third party owned property as a result of the installation and/or maintenance work, the Licensee(s) shall seek the applicable third party's consent prior to displacing or hindering with telecommunication lines, gas or water pipes, drains or sewers, or tubes, casings, ducts, wires or cables or other third party property or equipment.
- 16.04 The Licensee(s) shall be solely liable for any loss, damages, claims, costs or expenses caused, arising from or in connection with any installation and/or maintenance work in public and private areas.

## 17. SHARING OF FACILITIES

- 17.01 The Licensee(s) shall comply with the directions from the Commission on Infrastructural network and facility sharing. The pricing for sharing infrastructure shall be as per Infrastructure Sharing Guidelines of the Commission.
- 17.02 Where it deems necessary, the Commission may direct the Licensee to share facilities and/or infrastructure with other Licensee(s) and the Licensee shall cooperate and work with other Licensee(s) to submit plan for sharing of facilities/infrastructure to the Commission.

## 18. FEES

- 18.01 The following fees shall be applicable to the Licensee(s) acquiring license under these Guidelines. All fees shall be paid to the Commission in the form of pay order or bank draft.

1.	License Acquisition Fee	Tk. 10,000 (Ten Thousand).
2.	Annual License Fee	Tk. 5,000 (Five Thousand) shall be applicable from second year.

- 18.02 **License Acquisition fee:** The Licensee shall pay, within 10 (ten) days of being notified by the Commission of its approval of the application, as a non-refundable license acquisition fee.
- 18.03 **Annual License fee:** A sum of Taka 5000.00 (Five thousand) payable by the Licensee in advance on each anniversary of the date of the license.
- 18.04 If Licensee fails to pay the fees, charges, etc. in time, it shall be liable to pay a late fee of 15% (fifteen percent) per annum at compound rate on the outstanding amount. If the amount along with late fee is not paid in full within 60 (sixty) days as stipulated, such failure may result in cancellation of the License.





18.5 The Licensee shall not share any revenue for NIX services with the Commission.

**19. INFORMATION, INSPECTION AND REPORTING**

19.01 The Licensee(s) shall furnish necessary information and other related matters as may be sought by the Commission from time to time.

19.02 The Commission or any person authorized by the Commission shall have unfettered right and authority to obtain the copies of records, documents and other information relating to the Licensees' business, for the purpose of enabling the Commission to perform its functions under the Act and provisions of these Guidelines.

19.03 The Commission or its authorized representatives shall have free access to the installations and equipment of the licensee and shall have each and every right and authority to inspect such installations at any time and the Licensee shall always provide all sorts of cooperation and assistance including but not limited to use of suitable office accommodation for the purpose of inspection, tests and monitoring.

19.04 The Licensee shall maintain and record all type of technical documents, drawing, data, copy of reporting form, copy of license and other necessary information as required by the Commission.

19.05 NIX operator shall maintain NIX user history records, system failure records, SNMP traffic data and bandwidth utilization records of individual NIX user as daily log. All these records shall be made available on request by the Commission or NMC.

19.06 Licensee(s) shall furnish the following information of each NIX to the Commission on quarterly basis:-

- (i) the information of the type and capacity of its installations;
- (ii) the number of active NIX users;
- (iii) the number and type of connectivity;
- (iv) pending demand;
- (v) QoS reports;
- (vi) bandwidth utilization data of the system and individual NIX user;
- (vii) different types of applications used by the NIX user;
- (viii) MRTG/SNMP based system and provision for DPI;
- (ix) the type and capacity of the transmission links owned and taken on lease.

19.07 The Licensee shall submit Traffic data report to the Commission on quarterly basis. The Licensee shall maintain daily/weekly/monthly/quarterly Traffic data in the Licensee's website. Traffic Data shall contain the following information but not limited to:-

- (i) the volume of traffic based on physical port for incoming and outgoing;
- (ii) number of packets exchanged based on different protocols for incoming and outgoing for individual user;
- (iii) volume of Traffic based on originating and destination AS number;
- (iv) volume of traffic based on different applications for individual member.



- 19.08 In addition, the Licensee shall also be required to furnish any information on systems and services any time if asked by the Commission.
- 19.09 These above reports shall be sent via e-mail and/or softcopy in CD to the Commission.

## **20. TRANSFER, ASSIGNMENT AND PLEDGE AS SECURITY**

- 20.01 The Licensee shall inform the Commission all loan related information within 10 days of the approval of the loan by any financial institution.. The License(s) shall not be assigned or pledged as security.
- 20.02 The License and any right accrued hereunder shall not be transferred, wholly or partly, and as such transfer, if any shall be void.
- 20.03 The Licensee(s) shall not subcontract-out any part of the service or the system without prior written permission from the Commission.

## **21. AMENDMENTS**

The Commission with the approval of the Government has the right and authority to change, amend, vary or revoke any of the terms and conditions of these guidelines and also to incorporate new terms and conditions necessary for the interest of national security, or public interest, or any other reason, in consonance with the provisions of the Act and Regulations.

## **22. CANCELLATION, SUSPENSION, REVOCATION OF LICENSE AND FINES**

The Commission may cancel, suspend the License and impose fine and the Licensee shall be liable for action as per Bangladesh Telecommunication Regulation Act, 2001 (as amended) on the following grounds including but not limited to –

- (i) that any information furnished in the Application form for obtaining the License is found incorrect/ false;
- (ii) that the Applicant has obtained the License hiding the information as mentioned below:
  - (a) He is an insane person;
  - (b) He has been sentenced by a court under any law, other than this Act, to imprisonment for a term of 2 (two) years or more, and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (c) He has been sentenced by a court for committing any offence under the Act and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (d) He has been declared bankrupt by the Court and has not been discharged from the liability of bankruptcy;
  - (e) He has been identified or declared by the Bangladesh Bank or by the court or by a bank or financial institution as a defaulter loanee of that bank or institution;
  - (f) Any of his Licenses has been cancelled by the Commission at any time during the last 5 (five) years;
  - (g) If prosecution is going on against the applicant(s) or its owner(s) or any of its director(s) or partner(s) for illegal call termination or for violation of the Act.



- (iii) that required fees and charges are not paid by the Licensee as per the terms and conditions of the NIX License;
- (iv) that the Licensee provides and/or facilitates illegal traffic violating the terms and conditions of the NIX License;
- (v) that any share is transferred or issued without prior written permission of the Commission;
- (vi) that any of the condition of the NIX License is violated;
- (vii) that the licensee has disclosed or is involved with the disclosure of any information to anybody/ performing any illegal activities that may hamper National Security, Integrity, Sovereignty, Stability, and Harmony;
- (viii) that the Licensee is liquidated, bankrupt or insolvent that an application for declaration of bankruptcy or similar declaration or order is filed by the Licensee itself or a third party against the Licensee;
- (ix) that case the Licensee has ceased to carry on business mentioned in this license;
- (x) that the licensee hides any information for any financial earnings to furnish revenue sharing to the Commission, or any relevant information to its subscribers and/or the Commission; or furnishes any false or wrong information to the Commission; or conduct any fraudulent activities; or
- (xi) that the Licensee violates or purports to violate any sections/terms and/or conditions under the Act/Any Regulations/Rules/ Guidelines/Bye-laws/Directives/ Instructions/ Orders/ Circulars/ Decisions of the Commission and/or the Government etc.

### **23. DISPUTE RESOLUTION**

In the event of any differences or disputes with other telecommunication operators and failure to resolve the differences or disputes among themselves, the Licensee(s) may refer the matter to the Commission for resolution of the same. The Commission may decide as it consider appropriate to resolve the dispute and the same shall be binding on the concerned parties.

### **24. CHANGES IN MANAGEMENT STRUCTURE**

- 24.01 The Licensee(s) shall seek written approval from the Commission before making any change in its ownership. Any change in the ownership shall not be valid or effective without the prior written approval of the Commission.
- 24.02 The Licensee(s) shall neither transfer any share nor issue new shares without prior written permission from the Commission.
- 24.03 Any breach of the conditions contained in this licensing Guidelines shall result in cancellation of the license.

### **25. PERFORMANCE MONITORING BY THE COMMISSION**

- 25.01 Every NIX shall be capable to provide access to the Commission for necessary monitoring of information. The NIX shall be provided with MRTG/SNMP based system to monitor bandwidth utilization and shall have the provision to install DPI, Netflow Analyser and/or other latest equipment to monitor IP based traffic of its network. Access to the MRTG/SNMP based system shall be provided for the NIX member, NMC and the Commission. Access to the DPI, Netflow Analyser and/or latest equipment shall be provided for the NMC and the Commission. Access to the Looking Glass server shall be open for everybody.



- 25.02 The NIX operators shall provide web-based access to the Commission to monitor their NIX system.
- 25.03 The Licensee shall provide necessary connectivity for Operation and Maintenance (O & M) Control Consoles (Terminal) at the Commission premises to communicate with the Licensee's O&M console for inspection, monitoring and analysing purpose, if required. The Licensee shall arrange the connectivity with sufficient bandwidth to facilitate smooth monitoring.
- 25.04 The Licensee shall arrange training for personnel nominated by the Commission to enable them to monitor NIX and to operate Monitoring equipment.

## **26. NATIONAL EMERGENCIES**

- 26.01 Licensee(s) shall facilitate and cooperate with all relevant government bodies, departments and agencies for the continuity of traffic through the NIX in the event of National emergencies or where issues of National security arise.
- 26.02 In the event of any war or war situation, internal National disorder (including strikes), urgent state affairs or situations demanding National security, the Government may use equipment and the systems used by the Licensee(s) for Telecommunication purpose.
- 26.03 In case of National emergency, declared by the President, the Government may suspend any particular activity of the Licensee(s), to the extent that it does not materially hamper the business of the Licensee(s).

## **27. LAWFUL INTERCEPTION (LI) FOR NIX**

- 27.01 The NIX system shall be LI compatible. The required LI equipment including its connection media from each NIX to NMC premises shall be provided by Licensee. The required capacity of the LI system shall be decided by NMC and the Commission.
- 27.02 The NIX shall be capable to generate IPDR of all types Internet call to/from every connected route. The format/coding of IPDR shall comply with ETSI and/or CALEA standard.
- 27.03 The IPDR shall contain at least following fields but not limited to:-
- (i) Source IP Address;
  - (ii) Destination IP Address;
  - (iii) E-mail Address;
  - (iv) Web Address;
  - (v) Catchy words in e-mail, ftp, chatting;
  - (vi) Type of services application;
  - (vii) Other related information if any and as required by the Commission/NMC.
- 27.04 License shall provide an appropriate system to accumulate and analyze IPDR at NMC. Duration of IPDR to be stored shall be decided by the Commission & NMC. The Licensee shall provide necessary storage with capacity and archiving device to retain bulk IPDR.



## 28. REPORTS

The Licensee shall furnish necessary information and other related matters as may be asked by the Commission from time to time. In addition, the Licensee shall submit to the Commission 5 (five) copies of the audited financial statement of the company and yearly audited accounts within 03 (three) months of the end of each financial year.

## 29. MISCELLANEOUS

- 29.01 The Licensee(s) shall comply with all terms and conditions of the License, applicable legislation including the Bangladesh Telecommunication Act, 2001 (as amended), and any applicable subsidiary legislation and all directions issued by the Commission including any new enactments as may be considered expedient and necessary from time to time.
- 29.02 The Commission reserves exclusive right and authority to explain or interpret any provision of the Guidelines, if any confusion arises regarding the actual sense or import of any provision of the Guidelines. The explanation of the Commission shall be final and binding on the Licensee(s).
- 29.03 All correspondence shall be in writing and shall be sent to the Licensees' registered place of business. However, in required cases, electronic means of correspondence (e-mail etc) shall also be used as per the direction from the Commission.
- 29.04 The Licensee(s) shall observe the requirements of any applicable international conventions on telecommunications to the extent that such a convention imposes obligations on Bangladesh unless expressly exempted by the Commission.
- 29.05 The Commission and/or any other Government departments shall not be liable for any loss, damage, claim, and charge, expense which may be incurred as a result of or in relation to the activities of the Licensee(s), its employees, agents or authorized representatives.
- 29.06 The Commission reserves the right at its discretion to make the terms and conditions of the License publicly available in any medium and format whether on the Commission's or any other official government website, in any manner they deem fit.
- 29.07 For any unauthorized use of NIX by the NIX member or the Licensee, the concerned member/licensee shall be accountable to the Commission and shall be liable to be punished in accordance with conditions of the License and/or any other laws of Bangladesh. In this regard an undertaking shall be signed by the Licensee in the stamp paper as per government rule and shall be submitted to the Commission at the time of issuing License. The undertaking shall be notarized before submission to the Commission. The text of undertaking shall be as per Appendix-6.
- 29.08 Depending on the output of traffic analysis, if NIX Licensee understands that International voice/IP transit traffic either in normal or encrypted format is passing through the NIX or detect any illegal use of NIX, the Licensee shall immediately report with related supporting documents to the Commission.
- 29.09 If any condition or term herein is deemed to be invalid, unenforceable or illegal for some reason, that condition or term shall be severable and the remainder of the License shall remain in full force and effect.
- 29.10 The Appendixes annexed herewith shall form integral part of the license.
- 29.11 Unless otherwise stated –
- (i) All headings are for convenience only and shall not affect the interpretation of the provisions of these guidelines;



- (ii) The words importing the singular or plural shall be deemed to include the plural or singular respectively;
  - (iii) Any expression in masculine gender shall denote both genders;
  - (iv) Any reference in these guidelines to a person shall be deemed to include natural and legal persons;
  - (v) All references to legislation or guidelines or directions issued by the Commission shall include all amendments made from time to time;
  - (vi) The term or shall include and but not vice versa;
  - (vii) Any reference in the License to “writing” or “written” includes a reference to official facsimile transmission, official e-mail, or comparable means of communication;
- 29.12 None of the provisions of the License shall be deemed to have been waived by any act or acquiescence on the part of the Commission, but only by an instrument in writing signed/ issued by the Commission. No waiver of any provision of the License shall be construed as a waiver of any other provision or of the same provision on another occasion.
- 29.13 A generic form of NIX Service License is attached for reference as APPENDIX-8.
- 29.14 All sections of the Bangladesh Telecommunication Regulation Act, 2001 (as amended) shall be applicable in every case.



## APPENDIX-1

### DEFINITIONS AND INTERPRETATIONS

#### Definitions:

Unless the context otherwise requires, the different terms and expressions used in these guidelines shall have the following meaning assigned to them. The headings are given for the sake of convenience only and do not carry any special meaning. Definitions and interpretations not listed here shall bear the same meaning as contained in the Act and the International Long Distance Telecommunication Services Policy-2010.

1. **“Application Form”** means a form prescribed for applying for the license for the operation of NIX services.
2. **Asia Pacific Network Information Centre (APNIC)** is the Regional Internet Registry for the Asia-Pacific region. APNIC provides number resource (IP and AS number) allocation and registration services that support the global operation of the Internet. It is a not-for-profit, membership-based organization whose members include Internet Service Providers, National Internet Registries, and similar organizations.
3. **Autonomous System Number (ASN):** Autonomous System (AS) is a collection of IP networks in the Internet and routers under the control of one entity (or sometimes more) that presents a common routing policy to the Internet. A unique ASN is allocated to each AS for use in BGP routing. With BGP, AS numbers are important because the ASN uniquely identifies each network on the Internet.
4. **Border Gateway Protocol (BGP)** is the core routing protocol of the Internet. It works by maintaining a table of IP networks or ‘prefixes’ which designate network reach ability among autonomous systems (AS). It is described as a path vector protocol. BGP does not use traditional IGP metrics, but makes routing decisions based on path, network policies and/or rule sets.
5. **“Bi-Lateral Peering Agreement (BLPA)”**, where NIX will only provide layer-2 connection/switch port to ISPs and every ISPs will arrange necessary peering arrangement with other ISPs by their mutual business understanding.
6. **“ccTLD”** is the Country’s Top Level DNS (i.e. dot bd or .bd for Bangladesh). Asia Pacific Network Information Centre (APNIC) usually offers full software and hardware package for Internet Interconnection Exchanges.
7. **“Connection”** means the visible or invisible or logical linking of telecommunication network.
8. **“Content Provider”** is the entity which provides effective and useful information to the common people and multimedia content to the users through Internet. This may include Bangladesh Election Commission, National Identity Registration Authority, E-Library services of Universities, Utility Companies, Gaming Portal, Video on Demand service etc.
9. **“Deep Packet Inspection (DPI)”** is a form of computer network packet filtering that examines the data and/or header part of a packet as it passes an inspection point, searching for non-protocol compliance, viruses, spam, intrusions or predefined criteria to decide if the packet can pass or if it needs to be routed to a different destination, or for the purpose of collecting statistical information.



10. **“Fast Ethernet (FE)”** is a collective term for a number of Ethernet standards that carry traffic at the nominal rate of 100 Mbit/s, against the original Ethernet speed of 10 Mbit/s in computer networking.
11. **“Gigabit Ethernet (GE)”** is a term describing various technologies for transmitting Ethernet frames at a rate of a Gigabit per second.
12. **“Internet Engineering Task Force (IETF)”** develops and promotes Internet standards, cooperating closely with the World Wide Web Consortium and ISO/IEC standard bodies and dealing in particular with standards of the TCP/IP and Internet protocol suite. It is an open standards organization, with no formal membership or membership requirements. All participants and leaders are volunteers, though their work is usually funded by their employers or sponsors.
13. **“Internet Protocol version 4 (IPv4)”** is the fourth iteration of the Internet Protocol (IP) and it is the first version of the protocol to be widely deployed. IPv4 is the dominant network layer protocol on the Internet. It uses 24 bit for Addressing.
14. **“Internet Protocol version 6 (IPv6)”** is a network layer for Packet-Switched Internet works. It is designated as the successor of IPv4, the current version of the Internet Protocol, for general use on the Internet. The main change brought by IPv6 is a much larger address space that allows greater flexibility in assigning addresses. It uses 128 bit for Addressing.
15. **“Internet Service Provider (ISP)”** provides Internet services to the end users.
16. **“Lease”** means providing authority to others for using telecommunication transmission facilities for telecommunication purpose in consideration for a rental.
17. **“Licensee”** means a company registered in Bangladesh under the Company’s Act 1994 that has been permitted and awarded a license to develop, build, operate, maintain and to lease out National Internet Exchange.
18. **“Looking Glass”** Server is a Route Collector. It collects all routes available for global view.
19. **“Multi-Lateral Peering Agreement (MLPA)”**, where each ISP will simply peer with a route server installed in the NIX. Route server will collect and distribute only the directly connected routes to every peers.
20. **“Mobile Switching Center (MSC)”** is the primary service delivery node for GSM, responsible for handling voice calls and SMS as well as other services (such as conference calls, FAX and circuit switched data). The MSC sets up and releases the end-to-end connection, handles mobility and hand-over requirements during the call and takes care of charging and real time pre-paid account monitoring.
21. **“Multi Router Traffic Grapher (MRTG)”** is free software for monitoring and measuring the traffic load on network links. It allows the user to see traffic load on a network over time in graphical form.
22. **“National Internet eXchange (NIX)”** is the exchange point for passing Internet traffic within the country according to the agreement among or between the ISPs.
23. **“NIX PoP”** is the Point of Presence of NIX in a district/specific area where ISP provider and/or other authorized user shall be connected to get access to the NIX.
24. **“NTP server”** is a server to provide Network Time Protocol (NTP) service for the ISP and other authorized users under NIX.





25. **“Peering”** is voluntary interconnection of administratively separate Internet networks for the purpose of exchanging traffic between the customers of each network. The pure definition of peering is settlement-free or “sender keeps all,” meaning that neither party pays the other for the exchanged traffic, instead, each derives revenue from its own customers.
26. **“PSTN”** means public switched telephone networks.
27. **“Quarter”** means a period of three months of a calendar year.
28. **“Root Server or Root Name Server”** is a DNS server that answers requests for the DNS root zone, and redirects requests for a particular Top-Level Domain (TLD) to that TLD’s name servers. Although any local implementation of DNS can implement its own private root name servers, the term “root name server” is generally used to describe the thirteen well-known root name servers that implement the root namespace domain for the Internet’s official global implementation of the Domain Name System.
29. **“Route Server”** serves as BGP information exchange to other BGP routers. Each ISP’s BGP router only peers to Route Server. Unlike normal BGP router, Route Server must have several routing tables for managing different routing policies for each BGP speaker.
30. **“Simple Network Management Protocol (SNMP)”** forms part of the Internet protocol suite as defined by the Internet Engineering Task Force (IETF). SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention. It consists of a set of standards for network management, including an Application Layer protocol, a database schema, and a set of data objects.
31. **“Very Small Aperture Terminal (VSAT)”** means a two-way satellite ground station with a dish antenna that is smaller than 3 meters.
32. **“Very Small Aperture Terminal-HUB (VSAT-HUB)”** is a two-way satellite ground station with a dish antenna that is around 9.3 meters diameter. It is used for overall control of the Remote Terminal/VSAT network and manages the Hub itself.



**APPENDIX-2**  
**LIST OF ABBREVIATIONS**

1.	APNIC	Asia Pacific Network Information Centre
2.	ASN	Autonomous System Number
3.	BGP	Boarder Gateway Protocol
4.	BLPA	Bi-Lateral Peering Agreement
5.	CCTLD	Country Code Top Level Domain
6.	Commission	Bangladesh Telecommunication Regulatory Commission.
7.	CDR	Call Data Records.
8.	FE	Fast Ethernet
9.	GE	Gigabit Ethernet
10.	IETF	Internet Engineering Task Force
11.	IIG	International Internet Gateway
12.	IPV4	Internet Protocol version 4
13.	IPV6	Internet Protocol version 6
14.	ISP	Internet Service Provider
15.	IPLC	International Private Leased Circuit
16.	LEA	Law Enforcement Agency
17.	MLPA	Multi-Lateral Peering Agreement
18.	MSC	Mobile Switching Center
19.	MRTG	Multi Router Traffic Grapher
20.	NIX	National Internet Exchange
21.	NMC	National Monitoring Center
22.	PoP	Point of Presence.
23.	PSTN	Public Switched Telephone Network.
24.	SLA	Service Level Agreement
25.	SNMP	Simple Network Management Protocol
26.	VSAT	Very Small Aperture Terminal.



## APPENDIX-3

### MANDATORY DOCUMENTS/INFORMATION TO BE PROVIDED BY THE APPLICANT

#### 1. General Documents/Information:

Applicant(s) must furnish the following information/documents as applicable:

- 1.01 Letter of Application (in letterhead pad).
- 1.02 Application Form (duly filled in, signed and sealed).
- 1.03 Applicant(s)' Details.
- 1.04 List of Peering users' Details (if any).
- 1.05 List of the License(s) obtained from the Commission (if any).
- 1.06 Supplementary Documents to Support Applicant(s)'s Proposals (if any).
- 1.07 Technical Details of the Proposed NIX System including network diagram.
- 1.08 House-rent Agreement/Ownership deed.
- 1.09 Description of existing business.
- 1.10 Bank Solvency Certificate.
- 1.11 Documents for financial capability to run the business.
- 1.12 Certificate of incorporation (if applicable).
- 1.13 Memorandum & Articles of Association (if applicable).
- 1.14 Trade License.
- 1.15 Business Plan.
- 1.16 Latest Income Tax Clearance Certificate (if applicable).
- 1.17 Information with relevant documents regarding the amount of VAT and Income Tax that the company/applicant(s) has deposited to the Government fund for the last 3 (three) years (if applicable).

#### 2. Proposed Cost (CAPEX & OPEX) Sharing Model



## APPENDIX-4

### INSTRUCTIONS FOR PREPARING THE APPLICATION FORM OF NIX LICENSE

1. The prescribed Application Form as per Appendix-5 is the first and foremost instrument for obtaining License of National Internet Exchange.
2. The application must be made by the Applicant(s)/Applicant(s)'s authorized personnel. The Commission reserves the right to reject the application if it is found that the information or documents provided for, in this application are untrue, inaccurate or incomplete.
3. The License shall be granted subject to the payment of License Acquisition Fee and any other relevant fees as laid down in the Licensing Guidelines.
4. All fees and charges for the NIX License shall be as per these Guidelines.
5. The License fees and other fees payable in connection with this application and the NIX License(s) shall be paid in the form of Pay Order / Bank Draft made in favour of Bangladesh Telecommunication Regulatory Commission. All payments must be made in BDT.
6. The Commission reserves the right either to accept or reject any application submitted without assigning any reason thereof.
7. Consideration for approval of the application shall be based on information declared in the application form. Where it thinks fit, the Commission may seek clarification or request additional information from any applicant/shareholder arising from the application. Any delay in notification or response may also affect the time for a decision on the application.
8. The Commission reserves the right to disclose any information submitted by Applicant(s) to any competent authority if the Commission deems the same necessary.



APPENDIX-5

**Bangladesh Telecommunication Regulatory Commission**

IEB Bhaban, Ramna, Dhaka-1000

LETTER OF TRANSMITTAL FOR

LICENSE OF NATIONAL INTERNET EXCHANGE (NIX)

**A. APPLICANT PROFILE**

1. Name of Applicant(s) or Registered name of the company (if applicable).	
2. Permanent and present address of individual or registered office address of Applicant(s) including Phone, FAX, mail and contact person.	Separate sheet may be used
3. List of all ISPs and/or other authorized users under each NIX at the time of Application including updated License number, Detail address, Phone number, E-mail, FAX number and Contact person.	Separate sheet may be used
4. Detail Organogram of the NIX operation.	Separate sheet may be used
5. Proposed network diagram showing all major equipment.	Separate sheet may be used
6. Technical specification/catalogue with at least following information: name, type, model, manufacturer and country of origin, etc. for each equipment of NIX.	Separate sheet may be used
7. List of equipments for monitoring, analysing system data and data storage provisioned for NMC and Commission.	Separate sheet may be used

**B. DECLARATION**

1. Has any Application for License of NIX been rejected before?  Yes  No  
(if yes, please give date of application and reasons for rejection)
2. Has any License issued previously to the Applicant or its any member of the ISP and/or other authorized user been cancelled?  
 Yes  No (if yes, please give details)



3. Does the Applicant or its any member of the ISP and/or other authorized user hold any other Operator Licenses from the Commission?  
 Yes  No (if yes, please give details)
4. I/We hereby certify that I/We have carefully read the guidelines/terms and conditions, for the license and I/We undertake to comply with the terms and conditions therein. (Terms and Conditions of **License Guidelines for National Internet Exchange** is available at [www.btrc.gov.bd](http://www.btrc.gov.bd).)
5. I/We hereby certify that I/We have carefully read the section 36 of Bangladesh Telecommunication Act, 2001 and I/We are not disqualified from obtaining the license.
6. I/We understand that this application if found incomplete in any respect and /or if found with conditional compliance shall be summarily rejected.
7. I/We understand that if at any time any information furnished for obtaining the license is found incorrect then the license if granted on the basis of such application shall deemed to be cancelled and shall be liable for action as per Bangladesh Telecommunication Act, 2001.

Date:  
Place:

Signature and name of the  
Applicant/Authorized  
Signatory with seal

Note: The completed application form is to be submitted to:

Director General,  
Legal and Licensing,  
Bangladesh Telecommunication Regulatory Commission (BTRC)  
IEB Bhaban (5<sup>th</sup>, 6<sup>th</sup> & 7<sup>th</sup> floor),  
Ramna, Dhaka-1000.



## APPENDIX-6

### UNDERTAKING OF NATIONAL INTERNET EXCHANGE (NIX) LICENSEE

We, ...(name of authorized person of NIX License).....of ...( name of NIX License)..., having been given a License (License no..... dated ..... ) to develop, establish, own, operate and maintain NIX within Bangladesh from Bangladesh Telecommunication Regulatory Commission (the Commission) do hereby declare and undertake that:

1. That the software and hardware of the NIX system equipment to be installed in our premises conform to the requirements of the licensing conditions and guidelines.
2. That the system or software so installed does not allow any traffic to pass through the NIX equipment bypassing the monitoring system.
3. That the software shall not be modified by the manufacturer/ supplier/ any operating/maintenance personnel or any other person to bypass or hide any traffic or other records.
4. That any software change or upgrade shall be notified to the Commission with reasons thereof within 7 (seven) days of any such change.
5. That we shall be solely responsible and liable to the Commission for any unauthorized use of or activities related to the NIX equipment.
6. That we shall be responsible to the Commission for any breach of the above conditions in addition to the licensing guidelines.

We further declare and undertake that, if any of the above undertaking is breached by us for any reason, we shall be liable for action in accordance with conditions of the License and/or any other laws of Bangladesh.

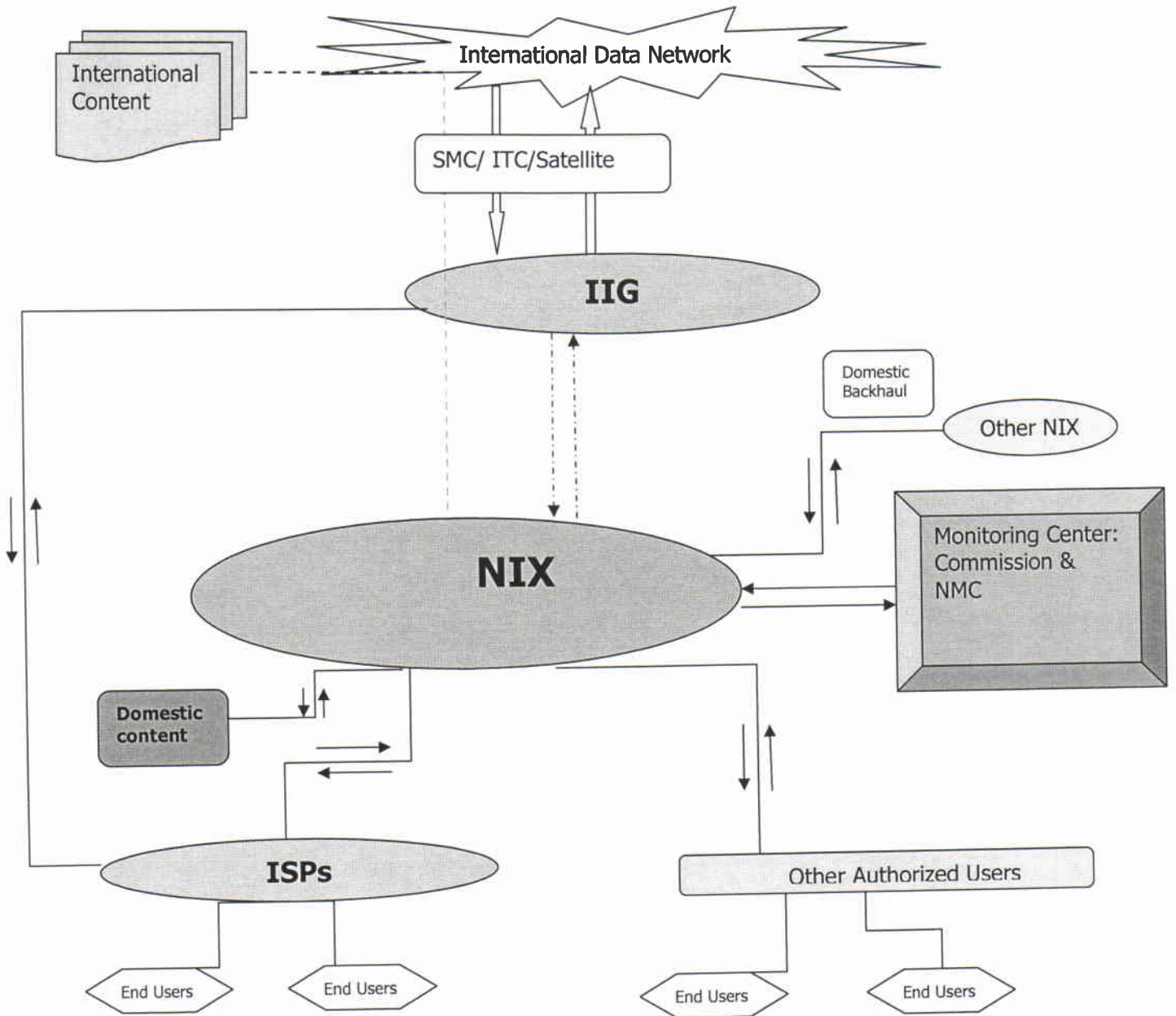
On behalf of NIX License,

(Signature, Name and Seal of authorized Person)

A handwritten signature in black ink, consisting of several overlapping loops and lines, located in the bottom right corner of the page.

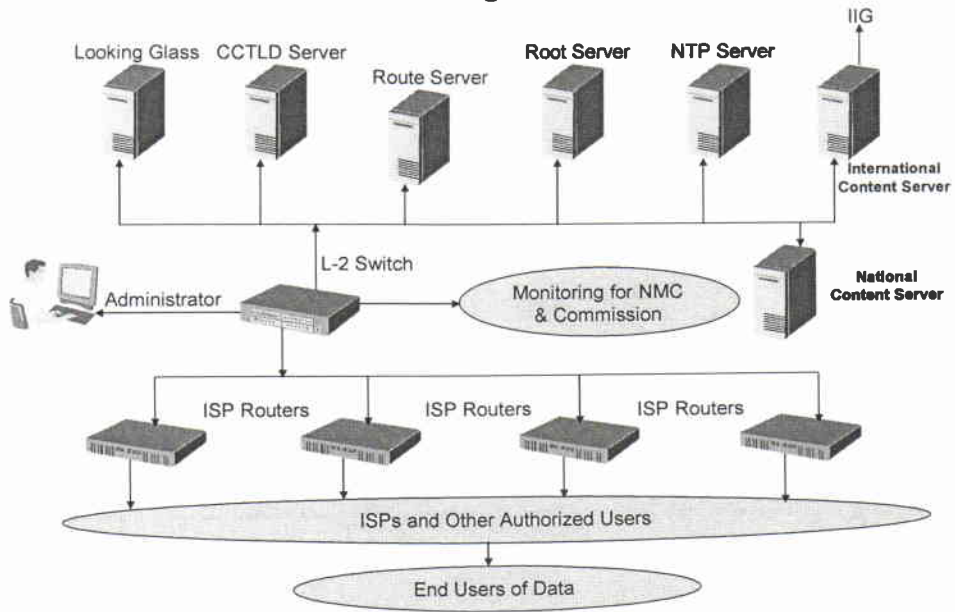
APPENDIX-7

NIX CONNECTIVITY-BLOCK DIAGRAM





# Schematic Diagram of NIX



**APPENDIX- 8 (Generic form of NIX License)**

**[Clause 29.13 of the Guidelines]**



**BANGLADESH TELECOMMUNICATION  
REGULATORY COMMISSION**

**IEB Bhaban, Ramna, Dhaka-1000**

**OPERATOR LICENSE**

**FOR**

**NATIONAL INTERNET EXCHANGE (NIX) SERVICES**

**ISSUED**

**TO**

.....

**UNDER**

**THE BANGLADESH TELECOMMUNICATION REGULATION ACT, 2001 (AS AMENDED)**

**ON**

**.....DAY OF ..... 20.....**



**BANGLADESH TELECOMMUNICATION  
REGULATORY COMMISSION**

IEB Bhaban, Ramna, Dhaka-1000

**OPERATOR LICENSE**

**FOR**

**NATIONAL INTERNET EXCHANGE (NIX) SERVICES**

<b>LICENSE NO:</b>	<b>DATE :</b>			
--------------------	---------------	--	--	--

In Exercise of the Power  
under section 36 of the Bangladesh Telecommunication Regulation Act, 2001 (as amended)  
(Act No. XVIII of 2001)  
BANGLADESH TELECOMMUNICATION REGULATORY COMMISSION  
is pleased to grant the license in favour of

.....  
represented by its Chairman/CEO/MD/MP having registered office at

.....  
as an Operator  
of  
NATIONAL INTERNET EXCHANGE (NIX)  
in Bangladesh  
whereby it is authorized  
to establish, maintain and operate the associated systems  
to provide services as specified in this license  
ON NON-EXCLUSIVE BASIS  
under the terms and conditions given in the following pages  
including the appendixes annexed hereto.

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# BANGLADESH TELECOMMUNICATION REGULATORY COMMISSION

IEB Bhaban, Ramna, Dhaka-1000

## NATIONAL INTERNET EXCHANGE SERVICES OPERATOR LICENSE

{Issued under section 36 of Bangladesh Telecommunication Regulation Act, 2001 (as amended)}

The Bangladesh Telecommunication Regulatory Commission (hereinafter called the Commission) has been empowered by the Government under section 36 of the Bangladesh Telecommunication Regulation Act, 2001 (as amended) (hereinafter called the Act) to issue Licenses for the operation and provision of telecommunication services.

Having given due consideration to the principles of transparency, fairness, non-discrimination and all other relevant principles, the Government has decided to issue Licenses on National Internet Exchange Services.

Therefore, in exercise of the power under sections 36 of the Bangladesh Telecommunication Regulation Act, 2001 (as amended) Bangladesh Telecommunication Regulatory Commission is pleased to issue

### LICENSE

To

.....represented by its Chairman/CEO/MD having its registered office at .....as an operator to establish, operate and maintain National Internet Exchange Services, subject to the terms and conditions mentioned hereinafter.

**1. INTERPRETATIONS, DEFINITIONS AND ABBREVIATIONS**

The interpretations and definitions of the terms used in these guidelines are annexed herewith as Appendix-1. The abbreviations are mentioned in Appendix-2.

**2. COMMENCEMENT AND DURATION OF THE LICENSE**

- 2.01 The license shall come into force on this .....day of ....., 20... (two thousand.....) of Christian era.
- 2.02 Unless otherwise cancelled earlier, this License shall be valid for 15 (fifteen) years (initial term) from the date mentioned in sub-clause 2.01 subject to the payment of annual license fees and compliance with the term and conditions of this License.

**3. RENEWAL OF THE LICENSE**

Upon expiry of the initial term of 15 (fifteen) years, this License may be renewed by the Commission for subsequent terms, each of 5 (five) years in duration, subject to the satisfaction of the Commission and upon fulfillment of necessary conditions, including the payment of any fees, as may be specified herein and/or by the Government under the Act. The Licensee shall submit the renewal application 6 (six) months prior to the expiry date of each term.

**4. SCOPE OF THE LICENSE**

- 4.01 The Licensee shall provide facility for exchanging domestic inter-operators data services and inter IPTSP domestic VoIP calls among the NIX users through Multi-Lateral Peering Agreement (MLPA). The NIX Licensee shall not restrict any domestic internet traffic among its members through the NIX without prior approval of the Commission.
- 4.02 Inter IPTSP calls shall only be within IPTSP licensees. The NIX Licensee shall keep enough provision for the ISPs and Content Providers to be connected with NIX.
- 4.03 The NIX Licensee may provide collocation facilities to its peering members.
- 4.04 The NIX operator shall be allowed to host contents in its system notifying the Commission. Also, the operator shall be allowed to offer any innovative VAS service for its peering members or others notifying BTRC in advance.
- 4.05 The NIX operator shall operate NIX on 'non-profit' basis for peering service. However, the cost and revenue from its content or any other VAS service shall totally belong to the NIX operator's account.

**5. OPERATION AND PEERING POLICY**

- 5.01 The NIX Licensee shall develop a cost (CAPEX and OPEX) sharing model for its peering members and shall take approval from the Commission before the commencement of operation.
- 5.02 The Licensee shall propose a Management Model for NIX operation to the Commission for approval. The proposed model shall include minimum 40% members of Board of Directors from the peering members.
- 5.03 The Licensee shall commence operation within 06 (six) months from issuance of license. Time extension may be considered upon receipt of application from licensee stating reasons thereof, otherwise license may be cancelled.



- 5.04 'Multilateral Peering Policy' shall be used for exchanging domestic Internet traffic and domestic inter IPTSP voice traffic among the peering NIX users. The NIX licensee shall submit the peering agreement to the Commission for vetting.
- 5.05 The NIX shall not have any direct international connectivity. The NIX licensees may go for peering agreement with international content provider with permission from the Commission.
- 5.06 The ISPs/content providers shall be connected with any NIX on their convenience. Peering members shall not announce default route to the NIX.
- 5.07 Peering among the Educational institutes through NIX shall be encouraged by the Licensee by providing discounted cost sharing arrangement as approved by the Commission. The Educational institutes shall use peering facilities for research or study purposes only. Educational organizations are not allowed for commercial use of this peering facility.
- 5.08 Members of the NIX shall ensure that their usage of NIX facilities is not detrimental to other members in any way. All usage shall be in compliant with the applicable standards of IETF.

## 6. NETWORK DESIGN

- 6.01 The NIX Licensee shall build, own, operate and maintain NIX as per following directions:
- (i) At least 01 NIX within 06 months from the issuance of license primarily in any of these districts: Dhaka, Chittagong, Sylhet, Khulna, Rajshahi, Barisal, Gopalgong, Mymensingh, Comilla, Rangpur, Bogra;
  - (ii) 2<sup>nd</sup> NIX shall be established in any other of the mentioned districts. A licensee can set up only one NIX in a particular district. However, a licensee can establish Disaster Recovery (DR) site at any place upon notification to the Commission;
  - (iii) For setting up more NIX, the above mentioned Districts shall be covered with priority. However, NIX can be set up in other districts also with prior approval from the Commission.
- 6.02 NIXs of a Licensee shall be interconnected through its existing network or leased backbone network from NTTN operator or from other licensed operators. Where such networks are not available, the NIX operator can build required network with prior approval from the Commission.
- 6.03 The NIX(s) of one Licensee shall be interconnected with the NIX(s) of other Licensees on agreed terms and conditions. Both parties shall submit the copy of the agreement to the Commission for approval.
- 6.04 Peering with International content providers shall be subjected to prior approval from the Commission. The connectivity with international content providers shall be through IIGs with prior approval of the Commission and the Licensee shall provide online monitoring facilities to the Commission.
- 6.05 The Licensee should install Route Server, Looking Glass, Country Code Top Level Domain (ccTLD i.e. dot bd) Server (mirror), Root Server (mirror) and NTP server in the NIX. In case of requirement, NIX licensee may use necessary Internet transit from any licensed operator with prior approval from the Commission.



6.06 The NIX Licensee shall have connectivity with IIG operator only to get connected with international Content Providers. The licensee shall take prior approval from the Commission for the capacity and modality of IIG connectivity.

6.07 The NIX licensee shall submit detail analysis of domestic traffic, CAPEX and OPEX requirement to the Commission prior to set-up of the 2<sup>nd</sup> NIX.

## **7. TECHNICAL REQUIREMENTS**

7.01 The peering members of NIX will be connected to the NIX at their own arrangement including connection media. However, only the members having remote POP from the NIX may be connected with NIX using VSAT-HUB with prior permission from the Commission. The ISPs shall provide and maintain their own equipments, if required, at NIX premises. The Licensee shall provide space and power to those equipments as per peering agreement.

7.02 If the licensee has other telecom operator license(s), the core network of different licensed services shall be physically separated. i.e. NIX service shall not be provided by the routers, switches etc of the network that is being used to provide services under separate license(s).

7.03 The NIX shall support both IPv4 and IPv6. The NIX licensee shall not sub-allocate any IP Addresses, AS Numbers etc to its peering members. The member ISPs shall have their own AS number and shall use BGP4 for peering purpose.

7.04 The Licensee shall maintain 24x7 hours supervision, hardware maintenance and technical support service.

7.05 The Licensee(s) shall provide the necessary interface of connection for peering members at the NIX end. NIX systems must be interoperable with the existing IT equipment/system available in Bangladesh.

7.06 The licensee shall maintain proper Quality of Service in its system as per peering agreement. However, the Commission shall issue necessary directives regarding Quality of Service from time to time.

## **8. TARIFF**

8.01 The connectivity charge for the content providers to be connected with NIX platform shall be as per their Service Level Agreement (SLA). However, the Commission shall intervene in setting the connectivity charge when deems necessary.

8.02 The Commission may set interconnection charge for inter-IPTSP voice calls, as and when necessary.

## **9. PUBLIC WORKS**

9.01 Prior to any installation or maintenance work of the systems, the licensee(s) shall obtain all necessary permissions from the relevant authorities or Governmental departments for works on land owned or controlled by any Government or local authority or statutory body and from the relevant owner or occupier for works on any private land.

9.02 The Licensee(s) shall undertake and complete all installation and maintenance work diligently observing the need for public safety in compliance with local laws and regulations.

9.03 If there is possibility of affecting of third party owned property as a result of the installation and/or maintenance work, the Licensee(s) shall seek the applicable third party's consent prior to displacing or hindering with telecommunication lines, gas or water pipes, drains or sewers, or tubes, casings, ducts, wires or cables or other third party property or equipment.





9.04 The Licensee(s) shall be solely liable for any loss, damages, claims, costs or expenses caused, arising from or in connection with any installation and/or maintenance work in public and private areas.

## 10. SHARING OF FACILITIES

10.01 The Licensee(s) shall comply with the directions from the Commission on Infrastructural network and facility sharing. The pricing for sharing infrastructure shall be as per Infrastructure Sharing Guidelines of the Commission.

10.02 Where it deems necessary, the Commission may direct the Licensee to share facilities and/or infrastructure with other Licensee(s) and the Licensee shall cooperate and work with other Licensee(s) to submit plan for sharing of facilities/infrastructure to the Commission.

## 11. FEES

11.01 The following fees shall be applicable to the Licensee(s) acquiring license under these Guidelines. All fees shall be paid to the Commission in the form of pay order or bank draft.

1.	License Acquisition Fee	Tk. 10,000 (Ten Thousand).
2.	Annual License Fee	Tk. 5,000 (Five Thousand) shall be applicable from second year.

11.02 **License Acquisition fee:** The Licensee shall pay, within 10 (ten) days of being notified by the Commission of its approval of the application, as a non-refundable license acquisition fee.

11.03 **Annual License fee:** A sum of Taka 5000.00 (Five thousand) payable by the Licensee in advance on each anniversary of the date of the license.

11.04 If Licensee fails to pay the fees, charges, etc. in time, it shall be liable to pay a late fee of 15% (fifteen percent) per annum at compound rate on the outstanding amount. If the amount along with late fee is not paid in full within 60 (sixty) days as stipulated, such failure may result in cancellation of the License.

11.05 The Licensee shall not share any revenue for NIX services with the Commission.

## 12. INFORMATION, INSPECTION AND REPORTING

12.01 The Licensee(s) shall furnish necessary information and other related matters as may be sought by the Commission from time to time.

12.02 The Commission or any person authorized by the Commission shall have unfettered right and authority to obtain the copies of records, documents and other information relating to the Licensees' business, for the purpose of enabling the Commission to perform its functions under the Act and provisions of these Guidelines.

12.03 The Commission or its authorized representatives shall have free access to the installations and equipment of the licensee and shall have each and every right and authority to inspect such installations at any time and the Licensee shall always provide all sorts of cooperation and assistance including but not limited to use of suitable office accommodation for the purpose of inspection, tests and monitoring.

12.04 The Licensee shall maintain and record all type of technical documents, drawing, data, copy of reporting form, copy of license and other necessary information as required by the Commission.



12.05 NIX operator shall maintain NIX user history records, system failure records, SNMP traffic data and bandwidth utilization records of individual NIX user as daily log. All these records shall be made available on request by the Commission or NMC.

12.06 Licensee(s) shall furnish the following information of each NIX to the Commission on quarterly basis:-

- (i) the information of the type and capacity of its installations;
- (ii) the number of active NIX users;
- (iii) the number and type of connectivity;
- (iv) pending demand;
- (v) QoS reports;
- (vi) bandwidth utilization data of the system and individual NIX user;
- (vii) different types of applications used by the NIX user;
- (viii) MRTG/SNMP based system and provision for DPI;
- (ix) the type and capacity of the transmission links owned and taken on lease.

12.07 The Licensee shall submit Traffic data report to the Commission on quarterly basis. The Licensee shall maintain daily/weekly/monthly/quarterly Traffic data in the Licensee's website. Traffic Data shall contain the following information but not limited to:-

- (i) the volume of traffic based on physical port for incoming and outgoing;
- (ii) number of packets exchanged based on different protocols for incoming and outgoing for individual user;
- (iii) volume of Traffic based on originating and destination AS number;
- (iv) volume of traffic based on different applications for individual member.

12.08 In addition, the Licensee shall also be required to furnish any information on systems and services any time if asked by the Commission.

12.09 These above reports shall be sent via e-mail and/or softcopy in CD to the Commission.

### **13. TRANSFER, ASSIGNMENT AND PLEDGE AS SECURITY**

13.01 The Licensee shall inform the Commission all loan related information within 10 days of the approval of the loan by any financial institution.. The License(s) shall not be assigned or pledged as security.

13.02 The License and any right accrued hereunder shall not be transferred, wholly or partly, and as such transfer, if any shall be void.

13.03 The Licensee(s) shall not subcontract-out any part of the service or the system without prior written permission from the Commission.

### **14. AMENDMENTS**

The Commission with the approval of the Government has the right and authority to change, amend, vary or revoke any of the terms and conditions of these guidelines and also to incorporate new terms and conditions necessary for the interest of national security, or public interest, or any other reason, in consonance with the provisions of the Act and Regulations.



## 15. CANCELLATION, SUSPENSION, REVOCATION OF LICENSE AND FINES

The Commission may cancel, suspend the License and impose fine and the Licensee shall be liable for action as per Bangladesh Telecommunication Regulation Act, 2001 (as amended) on the following grounds including but not limited to –

- (i) that any information furnished in the Application form for obtaining the License is found incorrect/ false;
- (ii) that the Applicant has obtained the License hiding the information as mentioned below:
  - (a) He is an insane person;
  - (b) He has been sentenced by a court under any law, other than this Act, to imprisonment for a term of 2 (two) years or more, and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (c) He has been sentenced by a court for committing any offence under the Act and a period of 5 (five) years has not elapsed since his release from such imprisonment;
  - (d) He has been declared bankrupt by the Court and has not been discharged from the liability of bankruptcy;
  - (e) He has been identified or declared by the Bangladesh Bank or by the court or by a bank or financial institution as a defaulter loanee of that bank or institution;
  - (f) Any of his Licenses has been cancelled by the Commission at any time during the last 5 (five) years;
  - (g) If prosecution is going on against the applicant(s) or its owner(s) or any of its director(s) or partner(s) for illegal call termination or for violation of the Act.
- (iii) that required fees and charges are not paid by the Licensee as per the terms and conditions of the NIX License;
- (iv) that the Licensee provides and/or facilitates illegal traffic violating the terms and conditions of the NIX License;
- (v) that any share is transferred or issued without prior written permission of the Commission;
- (vi) that any of the condition of the NIX License is violated;
- (vii) that the licensee has disclosed or is involved with the disclosure of any information to anybody/ performing any illegal activities that may hamper National Security, Integrity, Sovereignty, Stability, and Harmony;
- (viii) that the Licensee is liquidated, bankrupt or insolvent that an application for declaration of bankruptcy or similar declaration or order is filed by the Licensee itself or a third party against the Licensee;
- (ix) that case the Licensee has ceased to carry on business mentioned in this license;
- (x) that the licensee hides any information for any financial earnings to furnish revenue sharing to the Commission, or any relevant information to its subscribers and/or the Commission; or furnishes any false or wrong information to the Commission; or conduct any fraudulent activities; or



- (xi) that the Licensee violates or purports to violate any sections/terms and/or conditions under the Act/Any Regulations/Rules/ Guidelines/Bye-laws/Directives/ Instructions/ Orders/ Circulars/ Decisions of the Commission and/or the Government etc.

**16. DISPUTE RESOLUTION**

In the event of any differences or disputes with other telecommunication operators and failure to resolve the differences or disputes among themselves, the Licensee(s) may refer the matter to the Commission for resolution of the same. The Commission may decide as it consider appropriate to resolve the dispute and the same shall be binding on the concerned parties.

**17. CHANGES IN MANAGEMENT STRUCTURE**

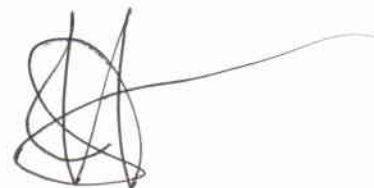
- 17.01 The Licensee(s) shall seek written approval from the Commission before making any change in its ownership. Any change in the ownership shall not be valid or effective without the prior written approval of the Commission.
- 17.02 The Licensee(s) shall neither transfer any share nor issue new shares without prior written permission from the Commission.
- 17.03 Any breach of the conditions contained in this licensing Guidelines shall result in cancellation of the license.

**18. PERFORMANCE MONITORING BY THE COMMISSION**

- 18.01 Every NIX shall be capable to provide access to the Commission for necessary monitoring of information. The NIX shall be provided with MRTG/SNMP based system to monitor bandwidth utilization and shall have the provision to install DPI, Netflow Analyser and/or other latest equipment to monitor IP based traffic of its network. Access to the MRTG/SNMP based system shall be provided for the NIX member, NMC and the Commission. Access to the DPI, Netflow Analyser and/or latest equipment shall be provided for the NMC and the Commission. Access to the Looking Glass server shall be open for everybody.
- 18.02 The NIX operators shall provide web-based access to the Commission to monitor their NIX system.
- 18.03 The Licensee shall provide necessary connectivity for Operation and Maintenance (O & M) Control Consoles (Terminal) at the Commission premises to communicate with the Licensee's O&M console for inspection, monitoring and analysing purpose, if required. The Licensee shall arrange the connectivity with sufficient bandwidth to facilitate smooth monitoring.
- 18.04 The Licensee shall arrange training for personnel nominated by the Commission to enable them to monitor NIX and to operate Monitoring equipment.

**19. NATIONAL EMERGENCIES**

- 19.01 Licensee(s) shall facilitate and cooperate with all relevant government bodies, departments and agencies for the continuity of traffic through the NIX in the event of National emergencies or where issues of National security arise.
- 19.02 In the event of any war or war situation, internal National disorder (including strikes), urgent state affairs or situations demanding National security, the Government may use equipment and the systems used by the Licensee(s) for Telecommunication purpose.



19.03 In case of National emergency, declared by the President, the Government may suspend any particular activity of the Licensee(s), to the extent that it does not materially hamper the business of the Licensee(s).

## **20. LAWFUL INTERCEPTION (LI) FOR NIX**

20.01 The NIX system shall be LI compatible. The required LI equipment including its connection media from each NIX to NMC premises shall be provided by Licensee. The required capacity of the LI system shall be decided by NMC and the Commission.

20.02 The NIX shall be capable to generate IPDR of all types Internet call to/from every connected route. The format/coding of IPDR shall comply with ETSI and/or CALEA standard.

20.03 The IPDR shall contain at least following fields but not limited to:-

- (i) Source IP Address;
- (ii) Destination IP Address;
- (iii) E-mail Address;
- (iv) Web Address;
- (v) Catchy words in e-mail, FTP, chatting;
- (vi) Type of services application;
- (vii) Other related information if any and as required by the Commission/NMC.

20.04 License shall provide an appropriate system to accumulate and analyze IPDR at NMC. Duration of IPDR to be stored shall be decided by the Commission & NMC. The Licensee shall provide necessary storage with capacity and archiving device to retain bulk IPDR.

## **21. REPORTS**

The Licensee shall furnish necessary information and other related matters as may be asked by the Commission from time to time. In addition, the Licensee shall submit to the Commission 5 (five) copies of the audited financial statement of the company and yearly audited accounts within 03 (three) months of the end of each financial year.

## **22. MISCELLANEOUS**

22.01 The Licensee(s) shall comply with all terms and conditions of the License, applicable legislation including the Bangladesh Telecommunication Act, 2001 (as amended), and any applicable subsidiary legislation and all directions issued by the Commission including any new enactments as may be considered expedient and necessary from time to time.

22.02 The Commission reserves exclusive right and authority to explain or interpret any provision of the Guidelines, if any confusion arises regarding the actual sense or import of any provision of the Guidelines. The explanation of the Commission shall be final and binding on the Licensee(s).

22.03 All correspondence shall be in writing and shall be sent to the Licensees' registered place of business. However, in required cases, electronic means of correspondence (e-mail etc) shall also be used as per the direction from the Commission.



- 22.04 The Licensee(s) shall observe the requirements of any applicable international conventions on telecommunications to the extent that such a convention imposes obligations on Bangladesh unless expressly exempted by the Commission.
- 22.05 The Commission and/or any other Government departments shall not be liable for any loss, damage, claim, and charge, expense which may be incurred as a result of or in relation to the activities of the Licensee(s), its employees, agents or authorized representatives.
- 22.06 The Commission reserves the right at its discretion to make the terms and conditions of the License publicly available in any medium and format whether on the Commission's or any other official government website, in any manner they deem fit.
- 22.07 For any unauthorized use of NIX by the NIX member or the Licensee, the concerned member/licensee shall be accountable to the Commission and shall be liable to be punished in accordance with conditions of the License and/or any other laws of Bangladesh. In this regard, an undertaking shall be signed by the Licensee in the stamp paper as per government rule and shall be submitted to the Commission at the time of issuing License. The undertaking shall be notarized before submission to the Commission.
- 22.08 Depending on the output of traffic analysis, if NIX Licensee understands that International voice/IP transit traffic either in normal or encrypted format is passing through the NIX or detect any illegal use of NIX, the Licensee shall immediately report with related supporting documents to the Commission.
- 22.09 If any condition or term herein is deemed to be invalid, unenforceable or illegal for some reason, that condition or term shall be severable and the remainder of the License shall remain in full force and effect.
- 22.10 The Appendixes annexed herewith shall form integral part of the license.
- 22.11 Unless otherwise stated –
- (i) All headings are for convenience only and shall not affect the interpretation of the provisions of these guidelines;
  - (ii) The words importing the singular or plural shall be deemed to include the plural or singular respectively;
  - (iii) Any expression in masculine gender shall denote both genders;
  - (iv) Any reference in these guidelines to a person shall be deemed to include natural and legal persons;
  - (v) All references to legislation or guidelines or directions issued by the Commission shall include all amendments made from time to time;
  - (vi) The term or shall include and but not vice versa;
  - (vii) Any reference in the License to “writing” or “written” includes a reference to official facsimile transmission, official e-mail, or comparable means of communication;
- 22.12 None of the provisions of the License shall be deemed to have been waived by any act or acquiescence on the part of the Commission, but only by an instrument in writing signed / issued by the Commission. No waiver of any provision of the License shall be construed as a waiver of any other provision or of the same provision on another occasion.



- 22.13 This License shall be governed by and construed in accordance with the laws of Bangladesh.
- 22.14 This License is issued with the approval of the appropriate authority.

Signed on this ..... day of ....., 20....  
for and on behalf of the  
Bangladesh Telecommunication Regulatory Commission

Deputy Director  
Legal and Licensing Division  
BTRC

A handwritten signature in black ink, consisting of several overlapping loops and a vertical line, located in the bottom right corner of the page.

## APPENDIX- 1

### DEFINITIONS AND INTERPRETATIONS

#### Definitions:

Unless the context otherwise requires, the different terms and expressions used in these guidelines shall have the following meaning assigned to them. The headings are given for the sake of convenience only and do not carry any special meaning. Definitions and interpretations not listed here shall bear the same meaning as contained in the Act and the International Long Distance Telecommunication Services Policy-2010.

1. **“Application Form”** means a form prescribed for applying for the license for the operation of NIX services.
2. **Asia Pacific Network Information Centre (APNIC)** is the Regional Internet Registry for the Asia-Pacific region. APNIC provides number resource (IP and AS number) allocation and registration services that support the global operation of the Internet. It is a not-for-profit, membership-based organization whose members include Internet Service Providers, National Internet Registries, and similar organizations.
3. **Autonomous System Number (ASN):** Autonomous System (AS) is a collection of IP networks in the Internet and routers under the control of one entity (or sometimes more) that presents a common routing policy to the Internet. A unique ASN is allocated to each AS for use in BGP routing. With BGP, AS numbers are important because the ASN uniquely identifies each network on the Internet.
4. **Border Gateway Protocol (BGP)** is the core routing protocol of the Internet. It works by maintaining a table of IP networks or ‘prefixes’ which designate network reach ability among autonomous systems (AS). It is described as a path vector protocol. BGP does not use traditional IGP metrics, but makes routing decisions based on path, network policies and/or rule sets.
5. **“Bi-Lateral Peering Agreement (BLPA)”**, where NIX will only provide layer-2 connection/switch port to ISPs and every ISPs will arrange necessary peering arrangement with other ISPs by their mutual business understanding.
6. **“ccTLD”** is the Country’s Top Level DNS (i.e. dot bd or .bd for Bangladesh). Asia Pacific Network Information Centre (APNIC) usually offers full software and hardware package for Internet Interconnection Exchanges.
7. **“Connection”** means the visible or invisible or logical linking of telecommunication network.
8. **“Content Provider”** is the entity which provides effective and useful information to the common people and multimedia content to the users through Internet. This may include Bangladesh Election Commission, National Identity Registration Authority, E-Library services of Universities, Utility Companies, Gaming Portal, Video on Demand service etc.
9. **“Deep Packet Inspection (DPI)”** is a form of computer network packet filtering that examines the data and/or header part of a packet as it passes an inspection point, searching for non-protocol compliance, viruses, spam, intrusions or predefined criteria to decide if the packet can pass or if it needs to be routed to a different destination, or for the purpose of collecting statistical information.





10. **“Fast Ethernet (FE)”** is a collective term for a number of Ethernet standards that carry traffic at the nominal rate of 100 Mbit/s, against the original Ethernet speed of 10 Mbit/s in computer networking.
11. **“Gigabit Ethernet (GE)”** is a term describing various technologies for transmitting Ethernet frames at a rate of a Gigabit per second.
12. **“Internet Engineering Task Force (IETF)”** develops and promotes Internet standards, cooperating closely with the World Wide Web Consortium and ISO/IEC standard bodies and dealing in particular with standards of the TCP/IP and Internet protocol suite. It is an open standards organization, with no formal membership or membership requirements. All participants and leaders are volunteers, though their work is usually funded by their employers or sponsors.
13. **“Internet Protocol version 4 (IPv4)”** is the fourth iteration of the Internet Protocol (IP) and it is the first version of the protocol to be widely deployed. IPv4 is the dominant network layer protocol on the Internet. It uses 24 bit for Addressing.
14. **“Internet Protocol version 6 (IPv6)”** is a network layer for Packet-Switched Internet works. It is designated as the successor of IPv4, the current version of the Internet Protocol, for general use on the Internet. The main change brought by IPv6 is a much larger address space that allows greater flexibility in assigning addresses. It uses 128 bit for Addressing.
15. **“Internet Service Provider (ISP)”** provides Internet services to the end users.
16. **“Lease”** means providing authority to others for using telecommunication transmission facilities for telecommunication purpose in consideration for a rental.
17. **“Licensee”** means a company registered in Bangladesh under the Company’s Act 1994 that has been permitted and awarded a license to develop, build, operate, maintain and to lease out National Internet Exchange.
18. **“Looking Glass”** Server is a Route Collector. It collects all routes available for global view.
19. **“Multi-Lateral Peering Agreement (MLPA)”**, where each ISP will simply peer with a route server installed in the NIX. Route server will collect and distribute only the directly connected routes to every peers.
20. **“Mobile Switching Center (MSC)”** is the primary service delivery node for GSM, responsible for handling voice calls and SMS as well as other services (such as conference calls, FAX and circuit switched data). The MSC sets up and releases the end-to-end connection, handles mobility and hand-over requirements during the call and takes care of charging and real time pre-paid account monitoring.
21. **“Multi Router Traffic Grapher (MRTG)”** is free software for monitoring and measuring the traffic load on network links. It allows the user to see traffic load on a network over time in graphical form.
22. **“National Internet eXchange (NIX)”** is the exchange point for passing Internet traffic within the country according to the agreement among or between the ISPs.
23. **“NIX PoP”** is the Point of Presence of NIX in a district/specific area where ISP provider and/or other authorized user shall be connected to get access to the NIX.
24. **“NTP server”** is a server to provide Network Time Protocol (NTP) service for the ISP and other authorized users under NIX.



25. **“Peering”** is voluntary interconnection of administratively separate Internet networks for the purpose of exchanging traffic between the customers of each network. The pure definition of peering is settlement-free or “sender keeps all,” meaning that neither party pays the other for the exchanged traffic, instead, each derives revenue from its own customers.
26. **“PSTN”** means public switched telephone networks.
27. **“Quarter”** means a period of three months of a calendar year.
28. **“Root Server or Root Name Server”** is a DNS server that answers requests for the DNS root zone, and redirects requests for a particular Top-Level Domain (TLD) to that TLD’s name servers. Although any local implementation of DNS can implement its own private root name servers, the term “root name server” is generally used to describe the thirteen well-known root name servers that implement the root namespace domain for the Internet’s official global implementation of the Domain Name System.
29. **“Route Server”** serves as BGP information exchange to other BGP routers. Each ISP’s BGP router only peers to Route Server. Unlike normal BGP router, Route Server must have several routing tables for managing different routing policies for each BGP speaker.
30. **“Simple Network Management Protocol (SNMP)”** forms part of the Internet protocol suite as defined by the Internet Engineering Task Force (IETF). SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention. It consists of a set of standards for network management, including an Application Layer protocol, a database schema, and a set of data objects.
31. **“Very Small Aperture Terminal (VSAT)”** means a two-way satellite ground station with a dish antenna that is smaller than 3 meters.
32. **“Very Small Aperture Terminal-HUB (VSAT-HUB)”** is a two-way satellite ground station with a dish antenna that is around 9.3 meters diameter. It is used for overall control of the Remote Terminal/VSAT network and manages the Hub itself.



## APPENDIX- 2

### LIST OF ABBREVIATIONS

1.	APNIC	Asia Pacific Network Information Centre
2.	ASN	Autonomous System Number
3.	BGP	Boarder Gateway Protocol
4.	BLPA	Bi-Lateral Peering Agreement
5.	CCTLD	Country Code Top Level Domain
6.	Commission	Bangladesh Telecommunication Regulatory Commission.
7.	CDR	Call Data Records.
8.	FE	Fast Ethernet
9.	GE	Gigabit Ethernet
10.	IETF	Internet Engineering Task Force
11.	IIG	International Internet Gateway
12.	IPV4	Internet Protocol version 4
13.	IPV6	Internet Protocol version 6
14.	ISP	Internet Service Provider
15.	IPLC	International Private Leased Circuit
16.	LEA	Law Enforcement Agency
17.	MLPA	Multi-Lateral Peering Agreement
18.	MSC	Mobile Switching Center
19.	MRTG	Multi Router Traffic Grapher
20.	NIX	National Internet Exchange
21.	NMC	National Monitoring Center
22.	PoP	Point of Presence.
23.	PSTN	Public Switched Telephone Network.
24.	SLA	Service Level Agreement
25.	SNMP	Simple Network Management Protocol
26.	VSAT	Very Small Aperture Terminal.

