



**MEMORANDUM OF UNDERSTANDING
BETWEEN**

**NATIONAL KNOWLEDGE NETWORK OF INDIA (NKN)
NATIONAL INFORMATICS CENTRE
MINISTRY OF ELECTRONICS AND INFORMATION
TECHNOLOGY**

AND

**GOVERNMENT TECHNOLOGY (GovTech) AGENCY
(DRUK RESEARCH AND EDUCATION NETWORK)**

ON

PEERING ARRANGEMENT

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PREAMBLE

NKN - A National Research and Educational Network (NREN) of India, under National Informatics Centre, Ministry of Electronics & Information Technology, Government of India and Government Technology Agency (GovTech), Thimphu Bhutan, a government agency responsible for operation and management of DrukREN -A National Research and Educational Network (NREN) of Bhutan, (Hereinafter individually referred to as the "Party" and collectively referred to as the "Parties"):

WHEREAS, the **NKN** with its multi-gigabit capability aims to connect all universities, research institutions, libraries, laboratories, healthcare and agricultural institutions across India and global REN's to address such paradigm shift;

WHEREAS, **DrukREN** focuses on supporting and providing high speed network backbone to universities, higher education institutions and research institutions including hospitals in Bhutan;

Desiring to enter into a special relationship for which no charges will be claimed by either party or wherein both will exchange TCP/IP Data traffic over their respective networks at a mutually agreed-upon direct peering point;

Having reached the following understanding;

PURPOSE

1. This MoU is intended to recognize the general basis for a cooperative and collaborative working relationship between the Contracting Parties.



DEFINITIONS

2. For the purpose of this MoU, unless otherwise stated, the term:

- a) **"ASN"** means Autonomous System Number, which is a globally unique identifier for Autonomous Systems. An Autonomous System (AS) is a group of IP network having a single clearly defined routing policy, run by one or more network operators.
- b) **"BGP"** means Border Gateway Protocol which is a protocol for exchanging routing information between gateway hosts (each with its own router) in a network of Autonomous Systems. BGP is often the protocol used between gateway hosts on the internet. The routing table contains a list of known routers, the addresses they can reach, and a cost metric associated with the path to each router so that the best available route is chosen.
- c) **"Connection"** means the physical/logical connection of the peering routers of NKN and DrukREN.

3. AREAS OF COOPERATION AND COLLABORATION

The areas of cooperation under this MoU may include the following;

1.1. SERVICES:

1.1.1. The DrukREN will:

- i. Provide and maintain the connection between DrukREN and its infrastructure routers & RENs part of DrukREN; and
- ii. A service desk number for troubleshooting.

1.1.2. The NKN will:

- i. Provide and maintain the connection between NKN and its infrastructure routers and institutes & RENS part of NKN at 5Gbps;
- ii. Provide transit services to DrukREN for global R&E network at same bandwidth equivalent to 5Gbps;
- iii. Increase both peering and transit bandwidth if the current bandwidth is overloaded, subject to approval of both Governments; and
- iv. A service desk number for troubleshooting.

1.2. INTERCONNECTIVITY

- i. The parties agree not to make any payment whatsoever to each other for peering and transit.
- ii. Both Contracting Parties ensure to have an ASN and use BGP4 (+) for peering.
- iii. Both contracting parties ensure that the traffic meant for each other should always pass through this peering.
- iv. NKN agrees to advertise DrukREN's routes to global R&E network and announce global R&E routes to DrukREN.
- v. DrukREN can use the NKN's peering and cache facility with leading content service providers.

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- vi. Parties agree not use this connection to carry out illegal or unauthorized traffic.
- vii. The Parties agree to provide a network peering connection to their network.
- viii. The Parties ensure to provide, at their own cost and expense, the necessary equipment required in their premises to enable connectivity to each other's gateway router, as well as for the operation and maintenance thereof.

1.3. EXCHANGE OF TRAFFIC

The Parties agree not to monitor the contents of the other Party's data or traffic as it passes through the peering point, with the exception of Control Traffic or TCP/IP header and protocol information necessary for the operation, problem resolution and engineering of the Contracting Party's Network. In no event, the parties agree not to disclose such information to third parties.

However, this shall not prevent any Party from extending the monitoring facility to law enforcing/ investigating agencies in accordance with licensing conditions.

1.4. TECHNICAL AND OPERATIONAL ARRANGEMENT

The Parties agree to work together during the term of this MoU to establish mutually acceptable performance objectives and operational procedures to enable each Party to provide a high quality service over its Network, and Direct Interconnections in a cost effective manner. In particular, but without limiting the foregoing:

- i. Each Party ensure to present itself as one or more Autonomous Systems and announce the same routing information at the point of Direct Interconnection.
- ii. Each Party agrees to use reasonable efforts to secure its Networks and traffic through the Interconnection Points and the Direct Interconnections from unauthorized access, transmission or use. Furthermore, the Contracting Parties shall cooperate to address security issues and develop security procedures.
- iii. There can be Point-to-Point (P2P) Virtual Private Network between NKN Member Institute and DrukREN member Institute. Concerned organization's Director/Head of the Institute will be the SPOC for the Institute. Concerned organization need to fill a form to start the P2P VPN services after which NKN/DrukREN will create VPN for them.
- iv. If either Party receives notice that one or more of its users are disrupting the other Contracting Party's customers, routing, equipment, or network, or any services provided thereby, or in connection therewith, the Contracting Parties agree to cooperate and remedy the disruption promptly.
- v. In order to improve each Party's ability to locate and resolve connectivity problems, each Party agrees to make reasonable efforts to share information with the other Party about outages within the notifying Party's infrastructure

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- vi. Each Party with best of their abilities agree to comply with all applicable laws, regulations and other governmental requirements.

1.5. OBLIGATIONS & RESPONSIBILITY

The Parties agree to:

- i. Maintain a network operations center ("NOC") that provides a centralized point for reporting Network problems, and use reasonable efforts to make the NOC available for twenty-four (24) hours per day, seven (7) days per week to the other Party.
- ii. Use reasonable efforts to develop scheduled maintenance procedures that provide for reasonable notification to the other Party of all scheduled maintenance that the Party anticipates would cause significant connectivity degradation or loss of connectivity at the peering points of more than five (5) minutes.
- iii. Use reasonable efforts to achieve a mean time to repair of four (4) hours or less (measurement based on monthly results) for all outages through the Direct Interconnection point.
- iv. Take responsibility for the network security of its servers and take all reasonable measures to ensure that these servers do not become a launching pad for any attack at other sites.
- v. Ensure that its employees do not disclose any confidential information about the other Party to third parties.

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- vi. Refrain from carrying out any activity that may cause other Party's staff and equipment at risk or in general be detrimental to the other Party's interest.

1.6. GENERAL CONDITIONS

- i. Save as expressly provided in this MoU, the Parties agree not to assign or otherwise transfer this MoU or any of its rights and obligations hereunder whether in whole or in part without the prior written consent of the other Party.
- ii. All notices which are required to be given hereunder will be in English language and in writing and will be sent to the address of the recipient set out in this MoU or such other address as designated by notice given in accordance with the provisions of this clause. Any such notice may be delivered personally or by first class prepaid letter or facsimile transmission and shall be deemed to have been served if by hand when delivered or if by first class post forty-eight hours after posting and if by facsimile transmission when dispatched. Notices shall be given at following addresses: -

DrukREN Noticee:

Government Technology
(GovTech) Agency,
Thori Lam, Upper
Chubachu, Thimphu, Bhutan

NKN Noticee:

National Knowledge
Network
3rd Floor, Block-III, Delhi IT
Park, Shastri Park, Delhi, India



- iii. To discharge the responsibilities of this MoU, and /or when specific obligations or financial commitments appear necessary to the Parties, the Parties by mutual consent may enter into specific agreement defining in detail the respective obligations and commitment of each Party.

1.7. EXCLUSIVITY AND NON-EXCLUSIVITY

The MoU is on non-exclusive basis and each party will be free to enter into a similar arrangement with any other party.

1.8. CONTACT

Any approvals and other communications between the Parties under this MoU will be sent to the applicable party as follows:

NKN

Dr. Seema Khanna
Director Operations NKN &
Scientist "G"
New Delhi, India

Email: seema@gov.in

DrukREN

Jigme Tenzing
Secretary
Government Technology
(GovTech)Agency,
Thimphu, Bhutan

email: jtenzing@tech.gov.bt

2. VALIDITY

The MoU will be valid for a period of three years from the date of its signature. An extension or renewal to the MoU after its expiry shall be with a written mutual consent of the Parties.

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3. TERMINATION

- i. This MoU may be terminated by either Party, at any time, by giving one month notice in writing through diplomatic channels, to the other Party of its desire to terminate this MoU.
- ii. The MoU will be deemed to be terminated upon receipt of acceptance of termination from the other Party through diplomatic notes.
- iii. Termination of this MoU will not affect the validity of any Contracts or Agreements made under this MoU.

4. AMENDMENT

- i. Either Party may, at any time, request consultations with the other Party for the purpose of amending the present MoU. Such consultations shall begin within a period of 60(sixty) days from the date of receipt of such request.
- ii. The MoU may be amended with the mutual written consent of both the parties.

5. SETTLEMENT OF DISPUTES

- i. If any dispute arises between the Parties relating to the interpretation or implementation of the present MoU will be resolved through mutual consultations between the Parties and based on the principle of mutual understanding and respect.

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6. COMMENCEMENT

This MoU shall come into effect on Twenty First of March of the year Two Thousand Twenty Four.

The foregoing represents the understanding reached between the Parties on the matter referred to in this MoU and does not create any legally binding obligations upon the Parties.

For NKN



Mr. Sudhakar Dalela
Ambassador of India to Bhutan

For DrukREN



Mr. Jigme Tenzing
Secretary
GovTech Agency, Royal
Government of Bhutan