National Knowledge Network

21 April 2011

National **Knowledge** Network

Agenda

- ► Introduction
- ► Key Highlights
- ► National Knowledge Network Evolution
    - ► 9th April, 2009
    - ► 5th February, 2011
    - ► Current Status
- ► NKN Services
- ► NKN Infrastructure
- ► NKN: On Conclusion of Final Phase

National Knowledge Network

Introduction

- ► An idea from Office of the Principal Scientific Advisor to Govt. of India and National Knowledge Commission. For the execution of National Knowledge Network (NKN), following committees were formed:
  - ► High Level Committee (HLC)
  - ► Technical Advisory Committee (TAC)
- ► NKN will connect Educational Institutes, R&D institutions, Health service facilities, Agricultural institutions and Libraries of the country
- ► In March 2010, Government of India allocated a budget of INR 5990 Crore for the Implementation of NKN
- ► Implementation plan was finalized by TAC under the guidance of HLC
- ► National Informatics Centre (NIC) was appointed as the Project Execution Agency (PEA)
- ► In Phase – I NKN plans to connect 550+ institutions by March, 2011
- ► On Conclusion of the final Phase NKN would have connected 1500+ institutions

National Knowledge Network

Hon'ble President of India, Smt. Pratibha Devisingh Patil inaugurates the National Knowledge Network on 9th April, 2009
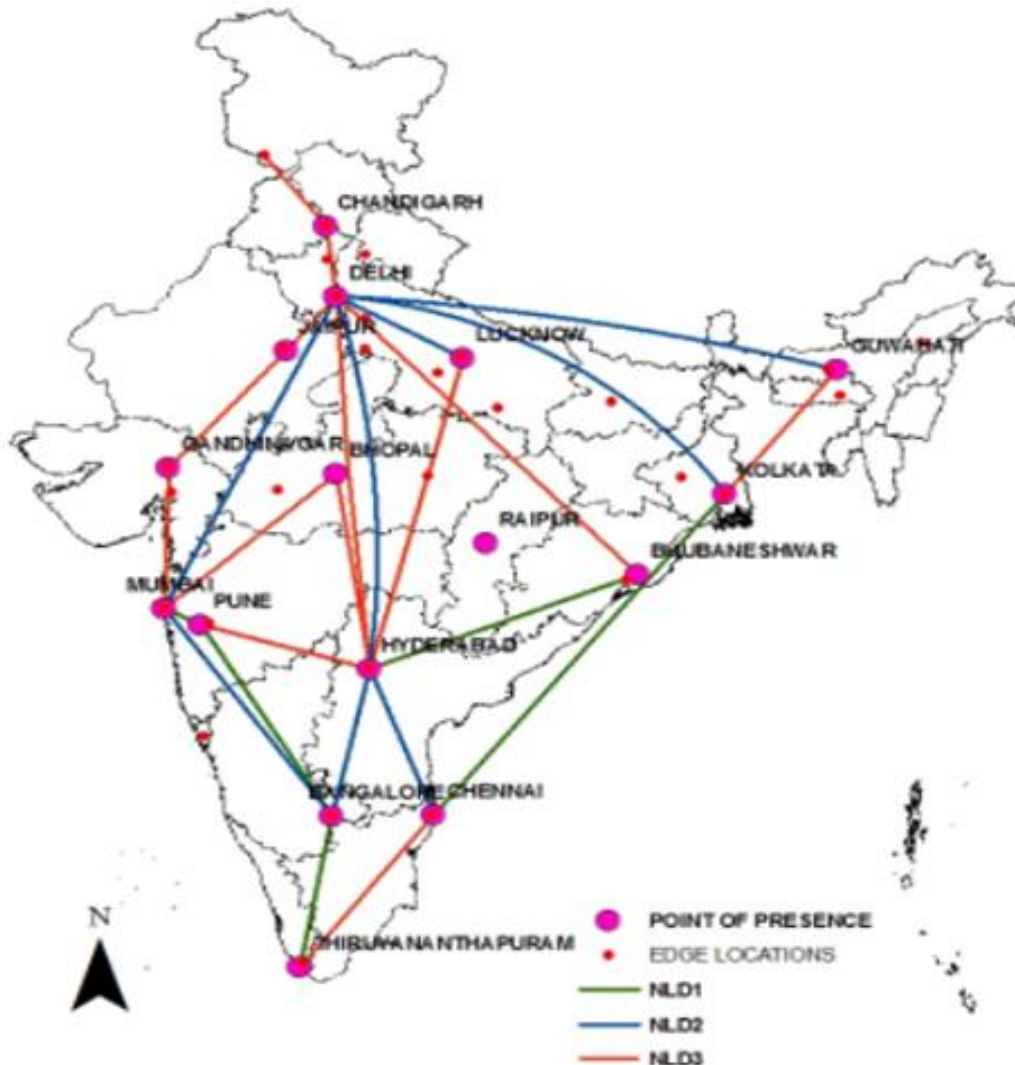
National Knowledge Network

Key Highlights

► NKN will provide a common platform to the scientists, researchers, doctors, scholars and students to work together for advancing human development.

► NKN shall be a knowledge base for revolutionizing the education system of country

► The architecture of NKN has been designed for reliability, availability & scalability

► The network consists of an ultra-high speed core, starting with multiple 2.5/10 G and progressively moving towards 40/100 Gigabits per Second (Gbps)

► The core is complimented with a distribution layer covering all districts at appropriate speeds

► The participating institutions at the edge would seamlessly connect to NKN at Gigabit per second speed.

National Knowledge Network

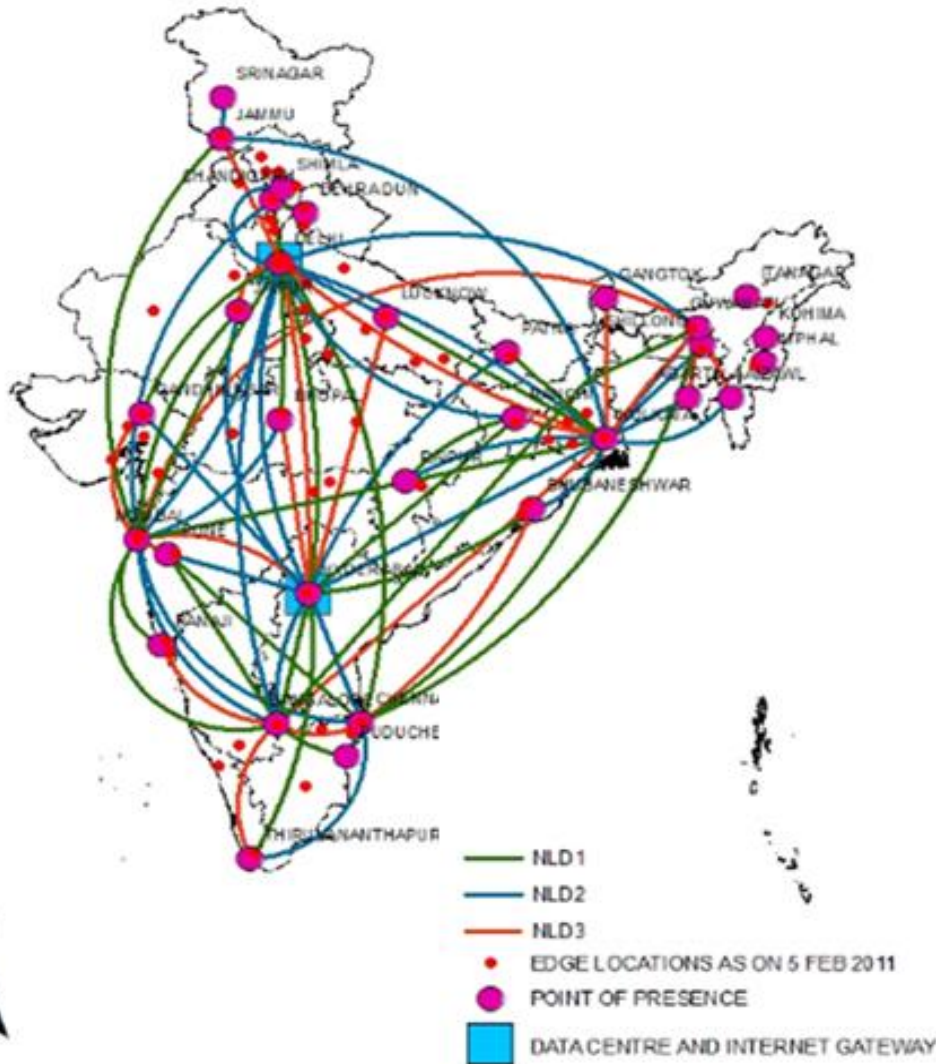# National Knowledge Network Evolution
9th April, 2009

► Hon'ble President of India, Smt. Pratibha Devisingh Patil inaugurates the National Knowledge Network on 9th April, 2009

► Points of Presence (PoP)　　: 16
► Backbone Links　　　　　　 : 26
► Edge links　　　　　　　　　 : 57

National Knowledge Network Evolution
31st March, 2011

► Hon'ble Minister for communications and IT, Shri Kapil Sibal and Hon'ble Minister of State for Communications and IT, Shri Sachin Pilot launched the Logo and Website for the National Knowledge Network on 5th February, 2011

► Points of Presence (PoP) : 31
► Backbone Links : 76
► Edge links : 220

Map legend:
— NLD1
— NLD2
— NLD3
• EDGE LOCATIONS AS ON 5 FEB 2011
● POINT OF PRESENCE
■ DATA CENTRE AND INTERNET GATEWAY

Technical Overview

► The backbone of the network starts from 2.5 Gbps and progressively moves onto 10 Gbps connectivity between 7 Supercore (fully meshed) locations across India.

► The network is further spread out through Core locations with multiple of 2.5/10 Gbps partially meshed connectivity with Supercore locations.

► The network architecture and governance structure allows users with options to connect to the distribution layer as well.

► For special interest groups, NKN enables Virtual Private Networks

► NKN provides international connectivity to its users for global collaborative research. Presently, NKN is connected to:

  ► Trans Eurasia Information Network (TEIN3)

  ► Similar connectivity to GLORIAD network is in the pipeline

National Knowledge Network

NKN Services

S.No	Service Type	Description
1	Special	VPN (L2), VPN (L3), P2P (L2), P2P (L3), VPN Switching Service ** These services may be through a CUG as well*
2	Community	Shared Storage, e-Mail List Software Application (LISTSERV), Authentication Service, EVO, Session Initiation Protocol (SIP), Collaboration Service, Content Delivery Service, International Collaborations with EU-India Grid, Global Ring Network for Advanced Applications Development (GLORIAD) etc.
3	Generic	Internet, e-Mail, International Services (SS, CS), e-Mail Gateway, DNS - NKN, DNS - Security for NKN Users, Web Hosting, VoIP, MCU based Video Portal, SMS Gateway, Co-Location Services (CPU, Applications & Application Services)

National Knowledge Network

NKN Infrastructure

► Creation of Virtual Classrooms at IITs Over NKN
  - ► 38 Virtual Classrooms are being created at I5 IITs
  - ► 26 Virtual Classrooms are fully ready and 12 are under preparation
  - ► All Virtual Classrooms are equipped with state-of-the-art high end teaching cum learning infrastructure
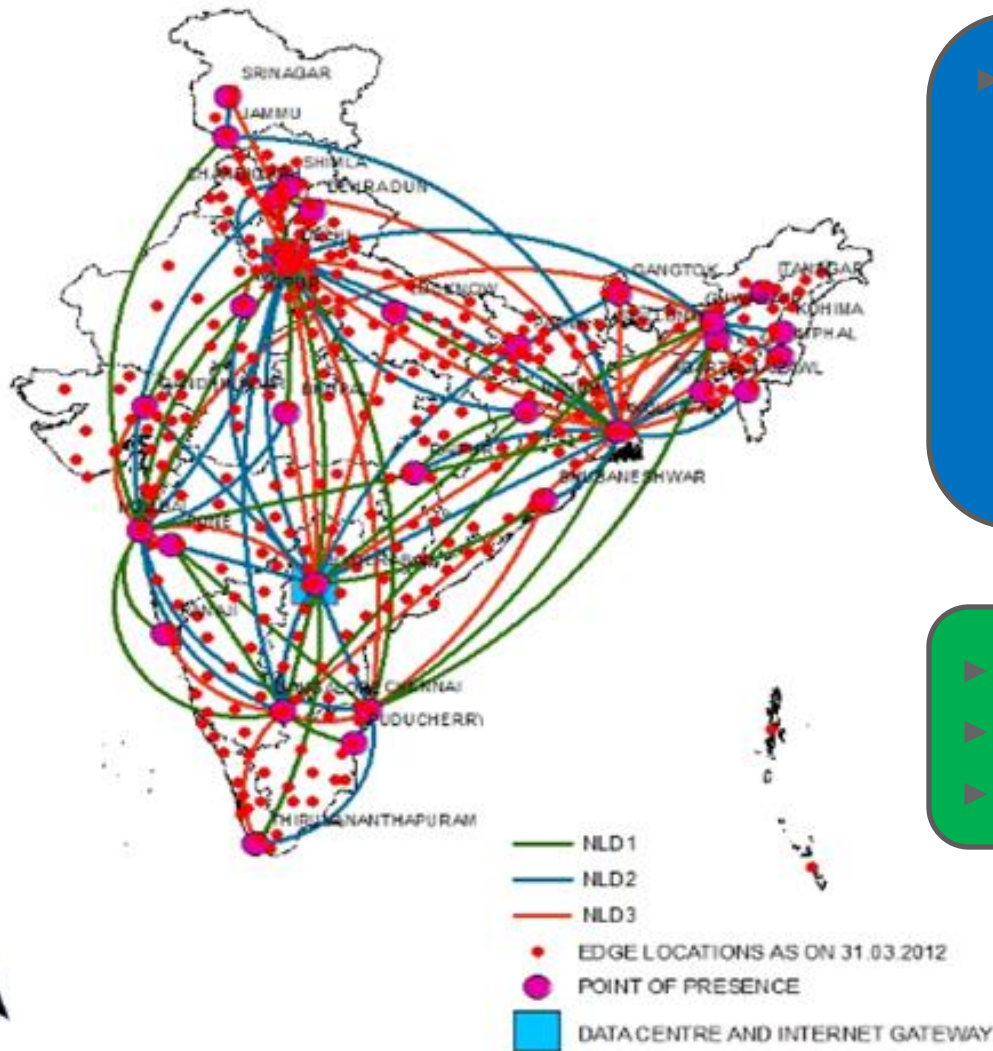

IIT, Bhubaneswar

IIT, Gandhinagar

IIT, Mandi

IIT, Ropar

National Knowledge Network

NKN Infrastructure

► **23** Additional Virtual Classrooms being developed at:

- ► Indian Institute of Science (IISC)
- ► National Institute of Technology (NIT)
- ► Indian Institutes of Science, Education & Research (IISER)
- ► Chennai Mathematical Institute (CMI)
- ► TIFR Centre for applicable Mathematics

NKN: On Conclusion of Final Phase

> ► At the conclusion of the final phase, NKN shall have presence in more than 500 districts of India with connectivity to major research and education institutions.

> ► Points of Presence (PoP)   : 31
> ► Backbone Links   : 89
> ► Edge links   : 1500

Legend:
- NLD1
- NLD2
- NLD3
- • EDGE LOCATIONS AS ON 31.03.2012
- ● POINT OF PRESENCE
- ■ DATA CENTRE AND INTERNET GATEWAY

MODEL PROJECTS & GRIDS ON NKN

► VIRTUAL CLASSROOM FOR MEDICAL TEACHING

► 3D IMAGE CREATION

► Medical Imaging

► Network Enabled Online Casting Simulation System

► CANCER GRID

► BRAIN GRID

► GARUDA

► WLCG (**Worldwide LHC Computing Grid**)

National Knowledge Network

Thank You

Project Implementation Unit
National Knowledge Network
iNOC, National Informatics Centre (NIC)
A - Block, C.G.O. Complex, Lodhi Road
New Delhi – 110 003
Website: www.nkn.in
e-mail: piu@nkn.in