



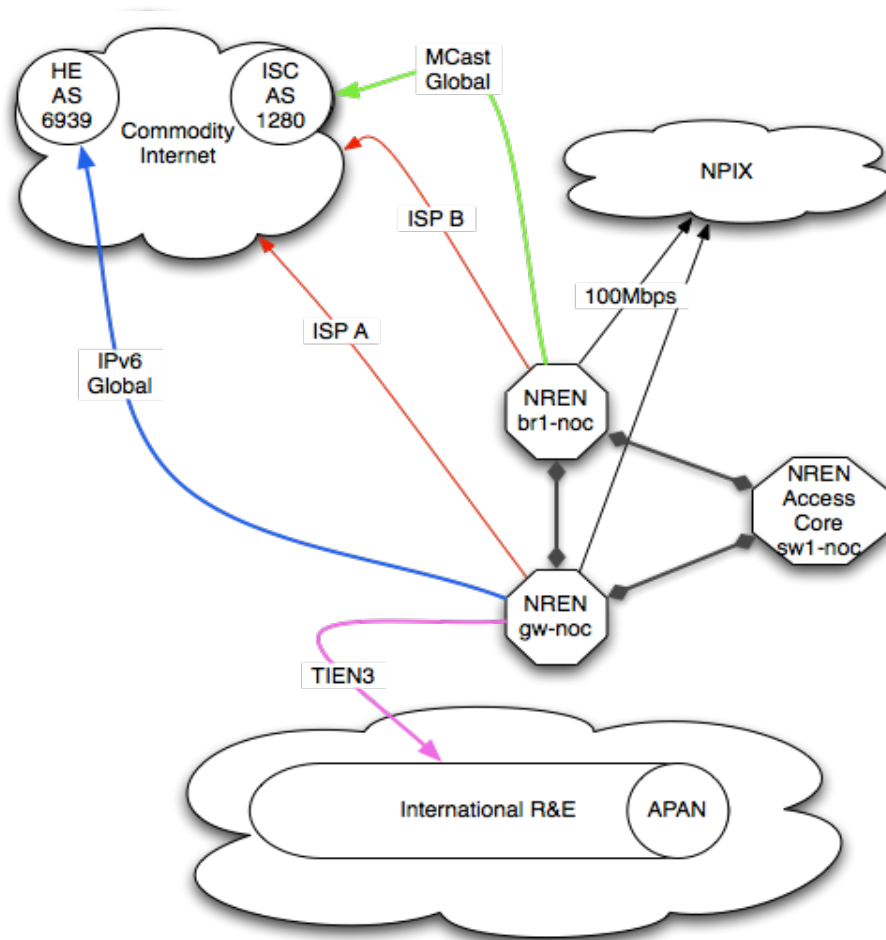
# Nepal Research and Education Network

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# NREN Current Status

- TEIN3 Connected via DS3 circuit to Mumbai (MB)
- IPv4 and IPv6 Unicast and Multicast
- Network is behind AS45170
- IPv4 and IPv6 from APNIC
- Tested vClass with CanalAVIST,DVTS with APAN-JP & VIDYO in APAN meets

# Network Architecture



- AS45170
- Global v6
  - Tunnel to Hurricane Electric
  - VLAN Carriers:
    - World Link
    - Subisu Cable Net
    - Websurfer Nepal
    - Vianet Communication
- Global Multicast
  - Tunnel to ISC (AS1280) through Greg Shepard
  - br1-noc is our RP

# NOC Activities

- Expanding Network
- Rural Networking
- Telemedicine
- Multicast and IPv6 Deployment to members
- Sensor Network provisioning
- Other Activities
- Virtual Classes and Meetings using Conferencing Server

# Expanding Network

- Connected to 15 members by Fiber, including TU Central Campus and KU campus in Dhulikhel - 30 KM from City and Three government Departments
  - National Academy of Medical Sciences, Bir Hospital
  - Nepal Academy of Science and Technology
  - Meteorological Forecasting Department
- Bandwidth allocation on network varies from 2Mbps to 10Mbps, can be increased with little additional costs. Few nodes used for Telemedicine already at 100Mbps, plan to get dark fiber.

# Expanding Network

- All fiber connections are specially negotiated pricing with the local service providers
- Network already extended to Pokhara to facilitate Nepal Wireless Project.
- Trying to extend to eastern region of Nepal.

# Rural Networking

- Supporting additional networking on wireless networks for telemedicine, tele-teaching.
- Trying to expand sensor networking into rural areas for environmental monitoring.
- Training on wireless networking and other activities to support other NGOs working on this field.
- Currently testing on performance metrics on wireless networks.

# Telemedicine

- NOC actively supports the Telemedicine Medical Working Group.
- Recently provisioned a 100Mbps circuit from NOC to the Kathmandu Model Hospital.
- Plans already made for dark fiber provision.
- Telemedicine Workshop in collaboration with CanalAVIST this week using vClass.
- DVTS and Vidyo applications are being used for live surgery video



# Multicast and v6

- R&E v6 and Multicast prefixes received from TEIN
- Global v6 prefixes received from Hurricane Electric tunnel
- Global v4/v6 Multicast prefixes received from Internet Systems Consortium (ISC), with help from Greg Shepard.
- NREN will facilitate v6 deployment at NPIX and other Nepali ISPs

# v6 and Multicast Deployment to Members

- Given the lack of commodity v6 and multicast transit, NREN plans to provide full v6 and multicast transit to all it's members and connected institutions.
- Currently upgrading routers software and gradually providing routers donated by PCH to members.
- We plan to deploy v6 multicast in our rural networking component for tele-teaching.

# Sensor Networking

- Working on formation of the Sensor Networking Working Group.
- Waiting on our rapid deployment v6 to all nodes to enable v6 based sensor networks
- Working with the IP-USN group.

# Other NOC Activities

- NOC Management of the Nepal Internet Exchange
- Technical support for Nepal Wireless Project.
- Technical support for Internet Exchange of Nepal
- Various projects to support Internet development in Nepal
  - support in deployment of Project Gulliver, i.root-servers.net anycast, PCH anycast servers deployment, RIPE Test Traffic Management System with NTP time clock, hosting a secondary for .np etc.

# Thanks

- If you have questions, please write to [info@nren.net.np](mailto:info@nren.net.np)