



Vietnam Research and Education Network (vinaREN)

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Hanoi, 5th, November, 2011

Introduction



- VinaREN (Vietnam Research and Education Network) is a network for research and education in Vietnam.
- This is a modern network, high speed, quality, and great performance with the ability to provide and share rich content, very practical for research and education activities in Vietnam.
- VinaREN now links with International Networks (TEIN3) at 155 Mbps.
- At the 23rd APAN Conference, Vietnam was officially joined APAN, and NASATI (National Agency for Science and Technology Information) became a primary member of this network.



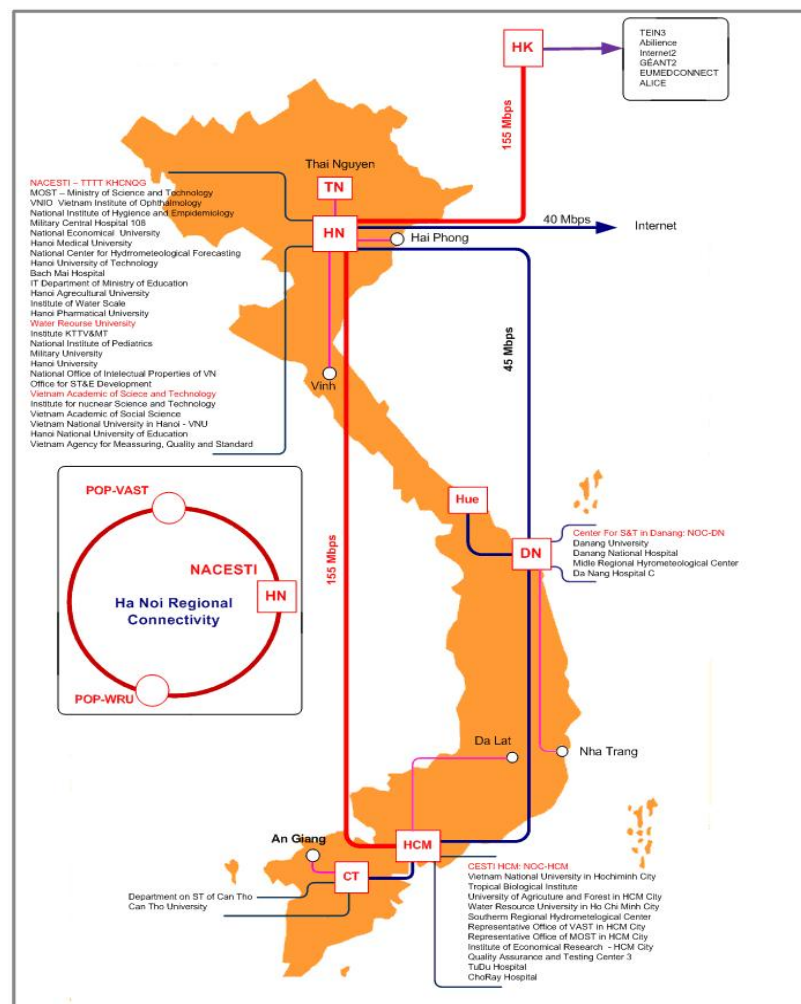
VinaREN technical infrastructure

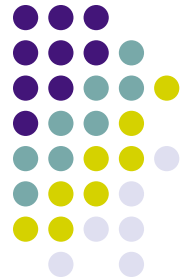


- VinaREN national backbone network is formed from the connection of six network operation centers (NOC) located in Hanoi (VNNOC, NOC-HN), Danang (NOC-DN), Ho Chi Minh City (NOC-HCM), Hue City (NOC-HUE), Can Tho City (NOC-CT) and Thai Nguyen city (NOC-TN)
- 57 Members (leading Universities and Institutes in whole country) are connected directly to the backbone with FE/GE standards.
- Connected 11 provinces and major Cities in Vietnam.
- VinaREN telecommunication infrastructure in Hanoi city is built based on the ring with three main nodes: VNNOC, POP-VAST - Vietnam Academy of Science and Technology, and POP-MRU - Water Resources University

VINAREN

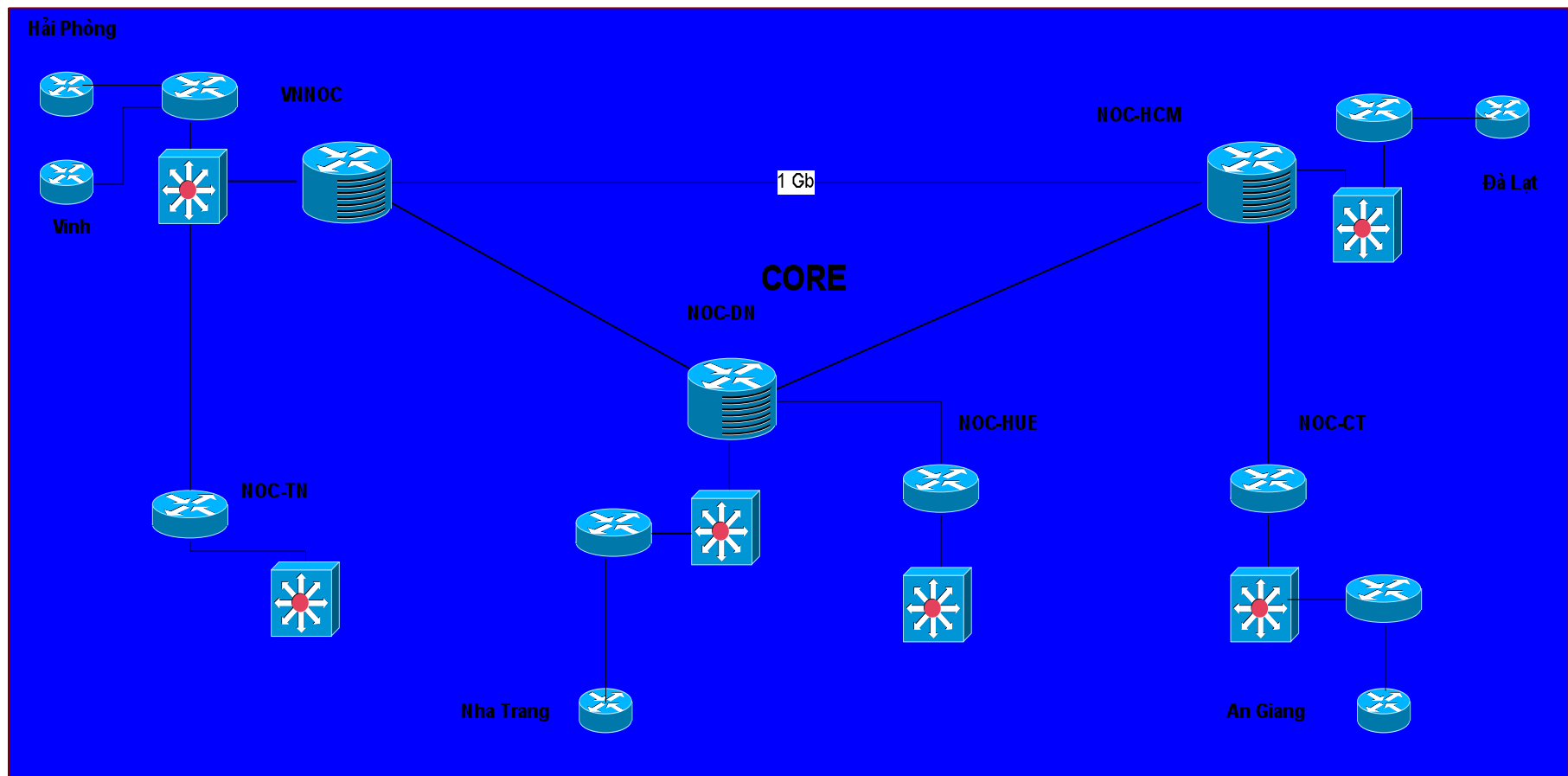
National Connectivity for Vietnam Research and Education Network – 3-2009





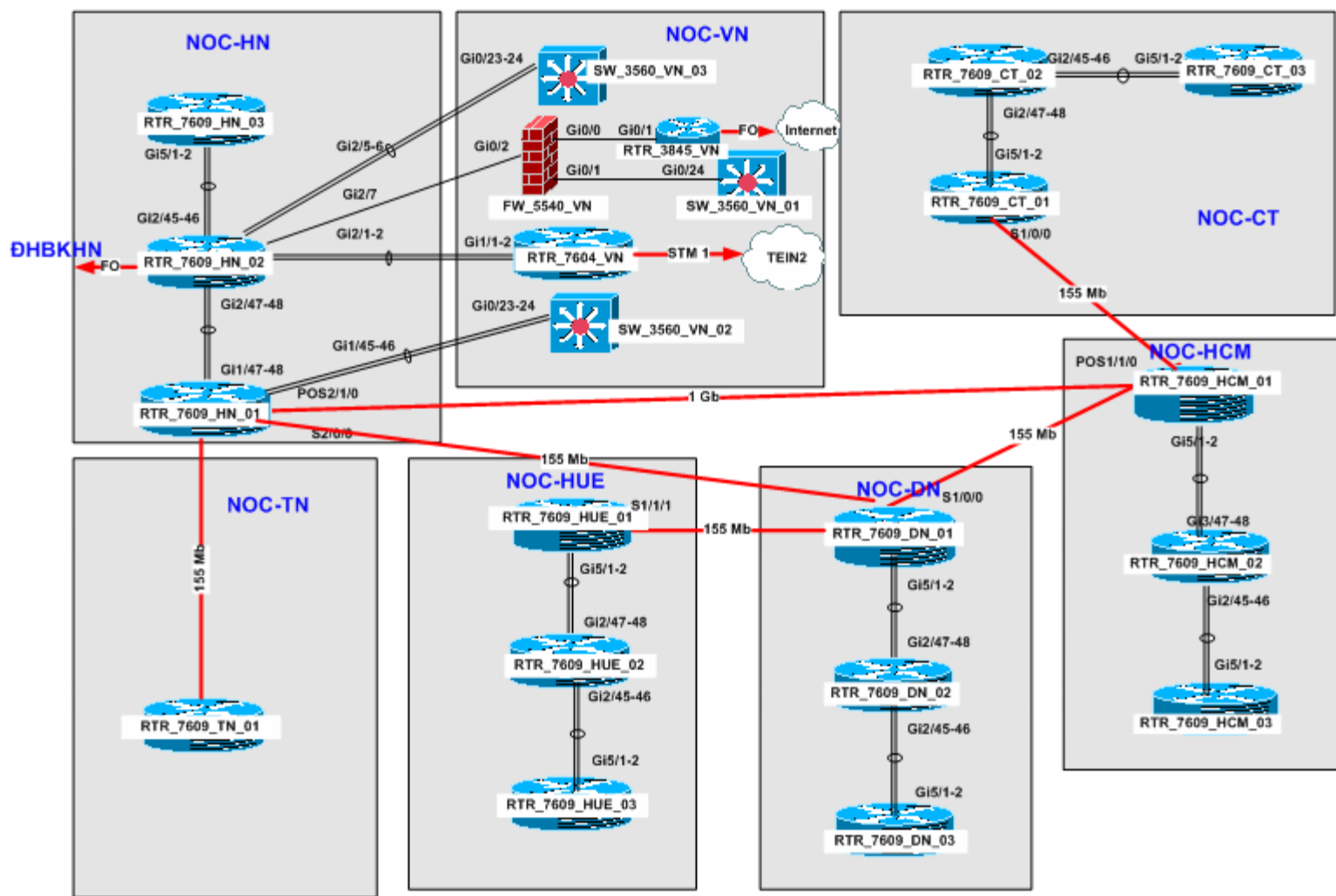
VinaREN national backbone Diagram

VinaREN National Backbone



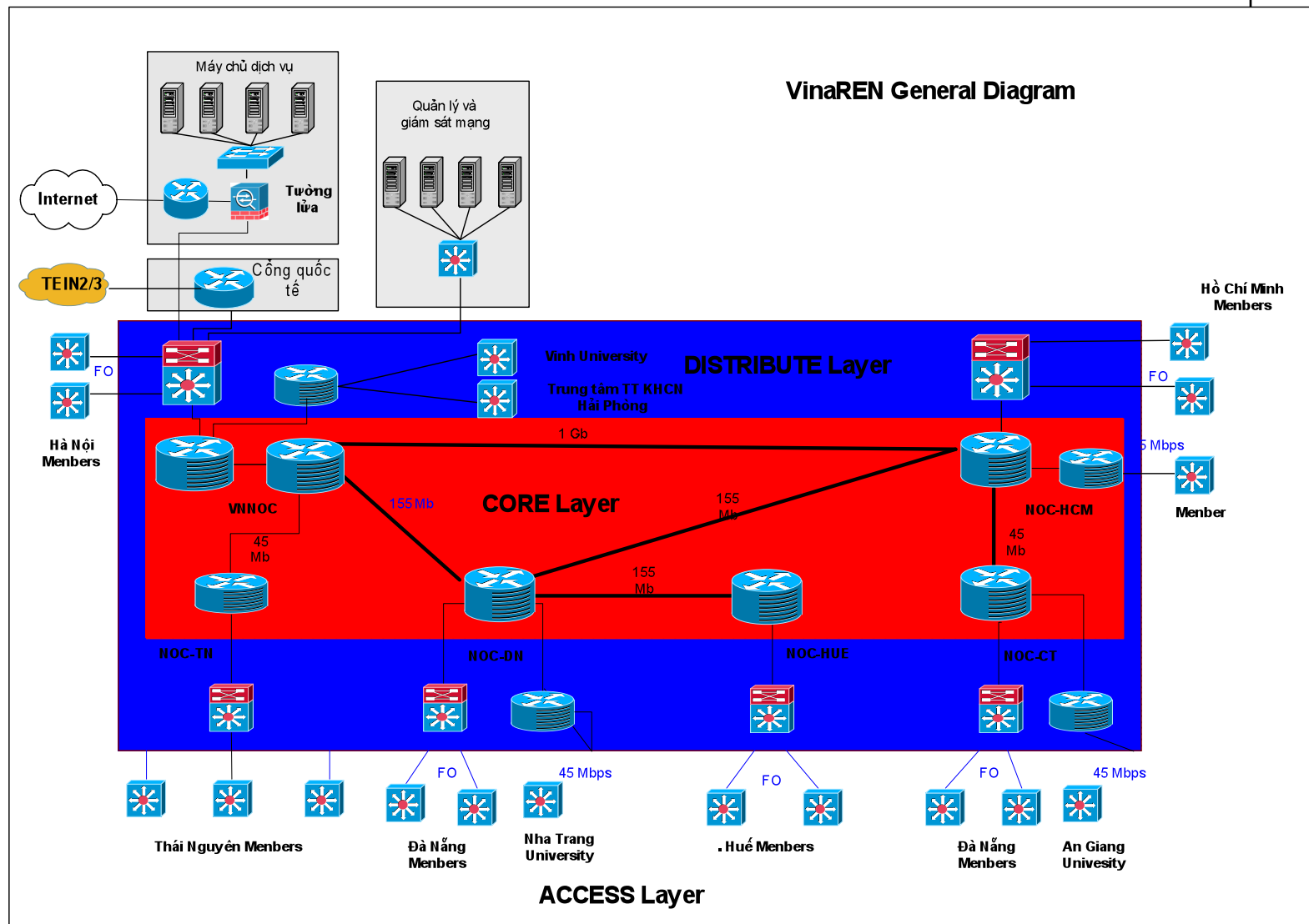


VinaREN logic Diagram





VinaREN general Diagram



Technical infrastructure



International connections:

- 155 Mbps connects to NOC-TEIN in Hong Kong.
- 40 Mbps connects to Internet for access to electronic information sources in the country and the world through the union of Vietnam libraries.
- In the future, VinaREN will connect to GLORIAD network as well as other international networks.

National backbone:

Connected to the network operations centers with bandwidth:

- 155 Mbps: VNNOC to NOC-HCM.
- 45 Mbps: VNNOC to NOC-DN.; NOC-HCM and NOC-DN; NOC-DN to NOC-HUE; NOC-HCM to NOC-CT and VNNOC to NOC-TN.
- VinaREN member networks are connected to the national backbone network by direct optical fiber lines with Fast Ethernet/ Giga Ethernet standard or private channel (leased line) via the network operations centers (NOCs) or the points of present (POPs).
- Connections were conducted via Core Switch at the NOC;

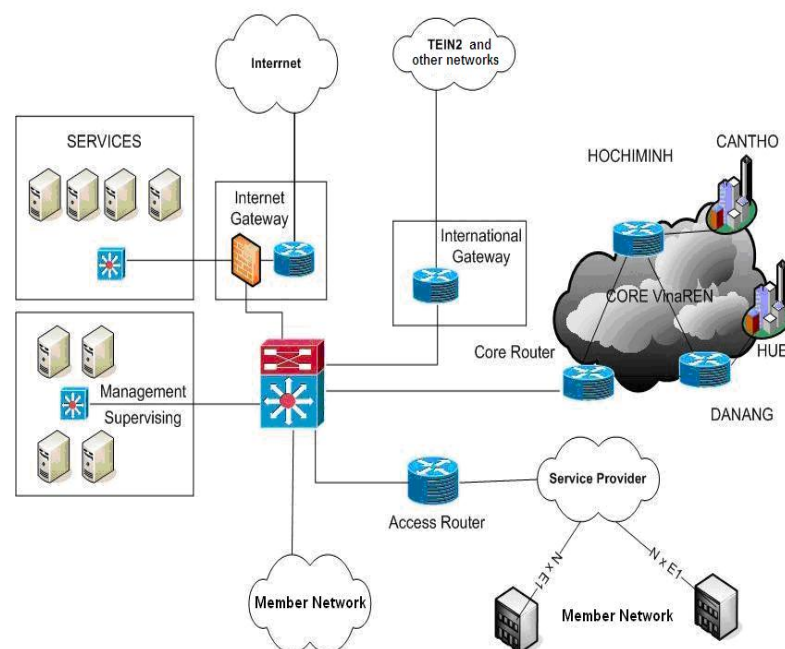
Technical infrastructure



VinaREN has a national network operation center called VNNOC (Vietnam Network Operation Centre). The mission of this center is managing and monitoring the activities of the whole network and VinaREN international ports.

VNNOC - the national focal point of VinaREN, is responsible for implementing the following tasks:

- Promote, implement, maintain and develop VinaREN;
- Manage resources and operation of VinaREN;
- Make sure the port access to electronic information sources on the Internet;
- Act as the focal point for international cooperation of VinaREN;
- Act as the focal point for organizing activities on the network in national and international scale.

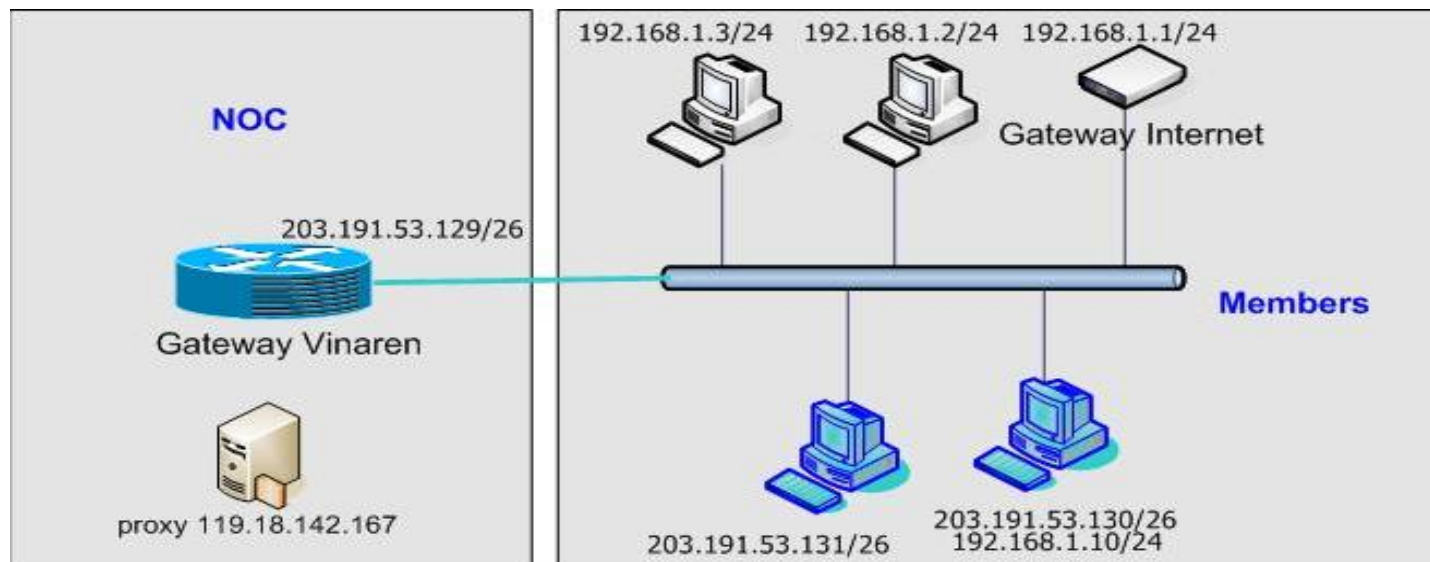


Network topology in VNNOC

The other network operation centers of VinaREN do the following tasks:

- Maintain stable activities for NOCs;
- Ensure connectivity among NOCs and the members of VinaREN in domains;
- Monitor, detect and cooperate with VNNOC, the other NOCs as well as the service providers to solve troubleshooting;
- Cooperate with VNNOC and support the other member networks for implementing activities on VinaREN and APAN networks.

Technical infrastructure

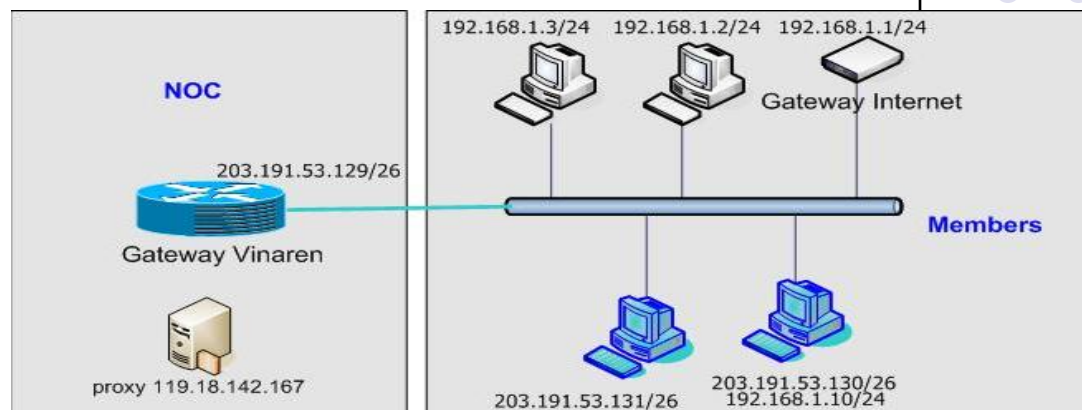


- Due to the number of VinaREN members is large, but the type of connections is heterogeneous, for example, some members want to have only few workstations connected to VinaREN; some members want to connect their networks with VinaREN while maintaining connection to Internet. Therefore, to support and meet the needs of member networks when connecting to VinaREN, VNNOC and the experts of member networks have organized the forum on VinaREN to support for routing to the networks. There are three models used to connect the members to VinaREN as follows:
- Model 1: appropriate for members which want to connect several workstations to VinaREN. In this model, these members use the layer 2 switch to connect to VinaREN.

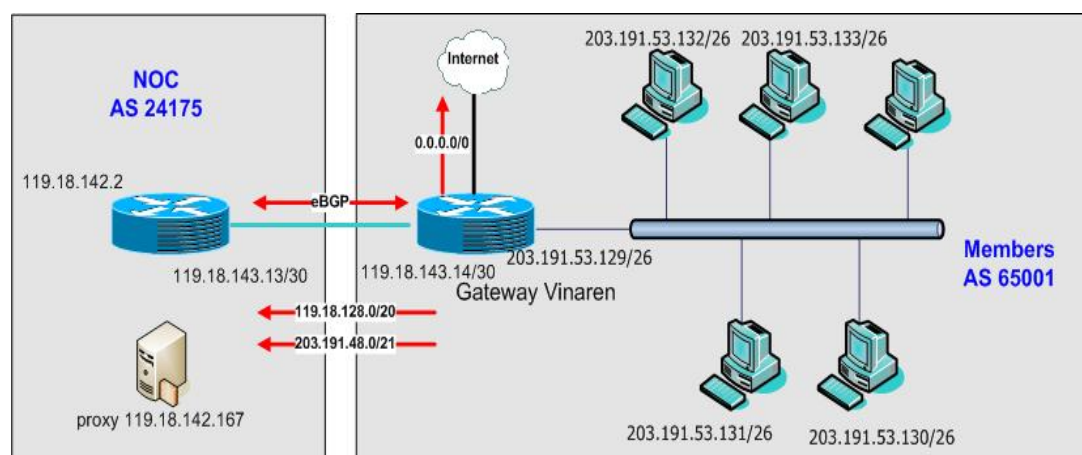
Technical infrastructure



- Model 2: suitable for members using the router or layer 3 switch which is not capable of running EGP dynamic routing protocol or not enough memory to receive 11,000 routes from TEIN
- Model 3: suitable for members using router or layer 3 switch which is capable of running EGP dynamic routing protocols, and enough memory to receive 11,000 routes from TEIN.
- With this classification, VinaREN gives instructions for routing based on the type of network devices that members use to connect to VinaREN.



Model 2



Model 3



Technical infrastructure

For network administration, VinaREN uses the following softwares:

- CiscoWorks - Lan Management Solution (LMS): a tool to support network management
- Cisco Performance Visibility Manager (PVM): a tool to monitor network performance
- QoS Policy Manager (QPM): a tool to manage QoS policy
- Cisco Security MARS (CS-MARS): a tool to manage network security
- Intrusion Detection System Services Module (IDSMM): a tool to monitor, analyze and react to the attacks



Services

Network Services:

Network Management
Network Security
IPv 6 and Multicast
Routing between networks

Technical Support for High performance Services on Research and Education:

E-leanning;
Telemedicine;
E-science;
ACGRID;
E-culture;
E-agriculture;
Disaster management, Climate change, forecast
Network research;
Access to the online database on the Internet.



Thank You for Attention

VinaREN

<http://www.vinaren.vn>