

F. No. 16-24/2009-DL  
Government of India  
Ministry of Human Resource Development  
Department of Higher Education

New Delhi, the 20th March, 2009

Subject: Minutes of the Second Meeting of the Empowered Committee of Experts (Project Approval Board) of the National Mission on Education through Information and Communication Technology (ICT) - regarding.

A copy of the Minutes of the Second Meeting of the Empowered Committee of Experts (Project Approval Board) of the National Mission on Education through Information and Communication Technology (ICT), a Centrally Sponsored Scheme, held on 17th March, 2009 at 3.30 p.m. in Conference Room (No.112, C-Wing), Shastri Bhawan, New Delhi under the Chairpersonship of Secretary, Department of Higher Education, Ministry of Human Resource Development, is sent herewith for information and necessary action.

*D.K. Paliwal*  
(Dr. D.K. Paliwal)

Deputy Educational Adviser (DI.)  
Tele: 23385489

All members of the Project Approval Board of National Mission on Education through Information and Communication Technology (ICT)  
[As per list enclosed].

Copy, with a copy of Minutes, to: Sr. PPS to Secretary (HE) & Chairperson, PAB and JS(DL) & Member Secretary, PAB for information.

Copy, with a copy of Minutes, also to:

✓ 1. Shri Amitabh Bhattacharya,  
Principal Adviser (Education),  
Planning Commission,  
New Delhi.

✓ 2. Shri Furqan Qamar,  
Adviser (Education),  
Planning Commission,  
New Delhi.

*Recd 6:20 PM*

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- ✓ 3. Shri R. Chandrashekhar,  
Special Secretary,  
Department of Information Technology,  
Electronics Niketan, CGO Complex,  
Lodhi Road, New Delhi
- 
- ✓ 4. Shri N. Ravi Shanker,  
Joint Secretary,  
Department of Information Technology,  
Electronics Niketan, CGO Complex,  
Lodhi Road, New Delhi.
- ✓ 5. Shri Subodh Kumar,  
Additional Secretary,  
Department of Telecommunications,  
Sanchar Bhawan, New Delhi
- ✓ 6. Shri R.S. Mani,  
Sr. Technical Director,  
National Informatics Centre,  
Department of IT,  
New Delhi
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- 47 ✓ 7. Shri Anil Jain,  
GM (BB),  
Bharat Sanchar Nigam Ltd. (BSNL),  
Janpath, New Delhi
- ✓ 8. Shri R. Saji Kumar,  
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Bharat Sanchar Nigam Ltd. (BSNL),  
Janpath, New Delhi
- ✓ 9. Prof. Ajay Chakraborty,  
Dean (CE),  
Indian Institute of Technology,  
Kharagpur.
- ✓ 10. Shri R.K. Shevgaonkar,  
Dy. Director,  
Indian Institute of Technology,  
Bombay.
- ✓ 11. Prof. K. Mangala Sunder,  
Professor, Chemistry and  
NPTEL Coordinator,  
Indian Institute of Technology, Madras, Chennai
- ✓ 12. Ms. Shakila Shamsu,  
Joint Adviser (Edn),  
Planning Commission,  
New Delhi

- ✓ 13. Shri J.S. Deepak,  
Joint Secretary,  
Department of Telecommunications,  
Sanchar Bhawan, New Delhi.
- ✓ 14. Shri A. Bhaskaranarayana,  
Scientific Secretary,  
Indian Space Research Organization (ISRO),  
Bangalore
- ✓ 15. Dr. Prem K. Kalra,  
Professor, Dept. of EE,  
Indian Institute of Technology,  
Kanpur
- ✓ 16. Shri Ranjan Bose,  
Professor, Deptt. of EE,  
Indian Institute of Technology,  
Delhi
- ✓ 17. Shri Kannan Moudgalaya,  
Head, CDEEP, Indian Institute of Technology (IIT),  
IIT, Bombay, Mumbai.
- ✓ 18. Dr. B.K. Murthy,  
Head, NKN Division,  
Department of Information Technology,  
CGO Complex, Lodhi Road,  
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- ✓ 19. Shri Kushal Sen,  
C/o Director, IIT, Delhi  
Indian Institute of Delhi,  
Hauz Khas, Delhi
- ✓ 20. Prof. Phalguni Gupta,  
Prof. CSE Deptt.,  
Indian Institute of Technology(IIT),  
Kanpur
- ✓ 21. Dr. Yatindra Nath Singh,  
EE/ACES,  
Indian Institute of Technology (IIT),  
Kanpur
- ✓ 22. Prof. S.V. Raghavan,  
Indian Institute of Technology (IIT), Madras,  
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- ✓ 23. Prof. A.K. Bakshi,  
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- ✓ 24. Dr. Vimal Rarh,  
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- ✓ 25. Dr. P. Venkat Rongon,  
Vice Chancellor,  
Amrita University,  
Coimbatore
- ✓ 26. Shri Kamal Bijlani,  
Head, E-learning Initiative,  
Amirita Vishwa Vikdya Peetham,  
Amrita University, Amritapuri Campus,  
Kollam,  
Kerala.
- ✓ 27. Shri Vivek Vijayan,  
Amrita University,  
Coimbatore Campus,  
Coimbatore
- ✓ 28. Shri Raghu Raman,  
Amrita University,  
Coimbatore Campus,  
Coimbatore.

**Project Approval Board of National Mission on Education  
through Information and Communication Technology (ICT)**

**List of Members**

1. Secretary,  
Department of Higher Education,  
Chairperson  
Ministry of Human Resource Development  
Shastri Bhawan, New Delhi. Chairperson
2. Additional Secretary, & Financial Adviser,  
Department of Higher Education.  
Ministry of Human Resource Development,  
Shastri Bhawan, New Delhi
- ✓ 3. Secretary,  
Planning Commission  
Yojana Bhawan,  
New Delhi. (Fax No : 23096575)
- ✓ 4. Secretary,  
Department of Telecommunications  
Sanchar Bhawan,  
New Delhi. (Fax No.23711514)
- ✓ 5. Secretary,  
Department of Information Technology  
Ministry of Communication and Information Technology,  
CGO Complex, Lodhi Road,  
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- ✓ 6. Secretary,  
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Lok Nayak Bhawan,  
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- ✓ 7. Dr. A. Mukhopadhyay  
Adviser/Scientist 'G', SERC Division,  
M/o Science & Technology, D/o Science & Technology,  
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- ✓ 8. Director,  
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- ✓ 9. Director,  
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- ✓ 10. Director,  
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- ✓ 12. Director,  
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- ✓ 15. Director,  
Indian Institute of Technology,  
Hauz Khas,  
New Delhi-110 016 (Fax No.26582659)
- .....

**MINUTES OF THE SECOND MEETING OF THE EMPOWERED COMMITTEE OF EXPERTS (PROJECT APPROVAL BOARD) OF THE NATIONAL MISSION ON EDUCATION THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) HELD ON 17<sup>TH</sup> MARCH, 2009 AT 3.30 PM IN CONFERENCE ROOM NO.112-C WING, SHASTRI BHAWAN, NEW DELHI UNDER THE CHAIRPERSONSHIP OF SECRETARY, DEPARTMENT OF HIGHER EDUCATION**

The second meeting of the Empowered Committee of Experts (Project Approval Board) (PAB) of National Mission on Education through Information and Communication Technology (ICT) was held at 3.30 pm on 17<sup>th</sup> March, 2009 in the Conference Room No.112-C Wing, Shastri Bhawan, New Delhi under the Chairpersonship of Secretary, Department of Higher Education.

2. The list of participants is at Annexe-I.
3. Shri R. P. Agarwal, Secretary, Higher Education, welcomed all the members and briefly described the details of the centrally sponsored scheme of National Mission on Education through Information and Communication Technology (ICT) and, thereafter, agenda items were discussed and the following decisions were taken:

**Agenda Item No.1**

Minutes of the first meeting of Project Approval Board held on 17.3.2009 were confirmed unanimously.

**Agenda Item No.2**

Recommendations of the technical committee formed on 3<sup>rd</sup> March, 2009 to look into connectivity issues in National Mission on Education through Information and Communication Technology were circulated to all members of the Project Approval Board during the meeting. Dr. Y.N. Singh from Indian Institute of Technology, Kanpur made a power point presentation, highlighting the recommendations of the Technical

Committee. A copy of the Recommendations of the Technical Committee, as circulated in the PAB meeting on 17.3.2009, is at Annex-II. The Technical Committee recommended the transfer of Rs.300.00 crores to Department of Telecommunications, so that DOT/BSNL can initiate the appropriate process for deploying the NMEICT network at the earliest ensuring due diligence and goal of peering as well as congruence with the NKN. The rental (recurring component) would be paid on bandwidth-year basis. Technical Committee further recommended formation of a Monitoring Committee to assess the progress on a bi-annual basis to formulate further recommendations to PAB in this regard. The composition of the Monitoring Committee was recommended as MHRD, Planning Commission, DIT, NIC, Tech Experts (2), User institutions Reps (Univ 2, College 2) and JS(finance)/Rep. DOT/BSNL may be permanent invitees. The Committee also recommended that a separate technical committee having experts, representatives from network operator, NKN, should look at IP addressing scheme, QoS gatewaying mechanism, strategy of public IP announcement to Internet on behalf of universities and institutes. Further the same committee can review the policies in operations and management of interconnect gateways between the two networks. This committee can also review the Service Level Agreement (SLA) performance and decide on penalties to be imposed for the degraded performance.

PAB considered the Recommendations of the Technical Committee and these were deliberated upon by the PAB in detail. JS(DL) apprised PAB that Department of Higher Education intends to transfer an advance of Rs.300.00 crore to Department of Telecommunications which, in turn, could take further steps with due diligence. JS, DoT requested for continuation of 75% share of the Government of India (Department of Higher Education) in case of some broadband connections are withdrawn/disconnected on account of non-

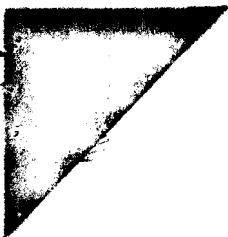


fulfilment of conditions. Secretary (HE) said that this matter could be looked into while finalizing the arrangement between MHRD and DoT but said that continued payment of entire 75% share of GOI towards recurring charges would be untenable and not justified.

After detailed discussion, PAB accepted the recommendations of the Technical Committee and approved transfer of Rs.300.00 crores as an advance to Department of Telecommunications. PAB further decided that beneficiary institutions, apart from deposit of Rs.10,000/- with the service provider, would also pay, at the time of installation, 25% of the 25% share which the beneficiary has to contribute to get VPN connectivity. PAB also directed that while transferring this advance, all procedures etc. would be taken care of and MHRD/DoT shall ensure that component of connectivity provisioned in the Mission is completed/achieved as per the approval granted by the Cabinet Committee on Economic Affairs to the National Mission on Education through Information and Communication Technology.

Agenda Item No.3

PAB approved Rs.20.00 lakh out of funds available under the National Mission on Education through Information and Communication Technology for the current financial year (2008-09) for meeting expenditure on administration-related matters pertaining to the Mission, including payment of TA/DA to experts. For the next financial year (2009-10), PAB deferred the proposal to the next meeting, stating that a detailed proposal may be submitted by the Bureau in this regard for consideration of PAB. AS & FA opined that Mission Secretariat needs to be first made operational and advised that some agency like Ed.CIL (which is working for SSA) may be identified




and manpower/equipment/facilities could be got provided through that agency.

#### Agenda Item No.4

Some of the proposals received for financial assistance/support under the National Mission on Education through Information and Communication Technology were circulated during the meeting of PAB. PAB opined that in order to uniformly assess all the proposals, while taking on board the opinions / suggestions / advice of domain experts (different for different project domains), a Standing Committee should be constituted. The composition of the Standing Committee, as proposed, needs to be representative of experts from varied quarters. PAB, therefore, authorized Chairperson to constitute a Standing Committee, inter-alia, comprising at least 4 experts from Indian Institutes of Technology (IITs), 2 experts from Central Universities, 2 experts from Research Laboratories, 2 persons from Industry and 2 experts from State Universities. PAB also decided that this Standing Committee could co-opt other members having specific domain knowledge, as may be necessary, from time to time to discharge its functions. Broadly, PAB decided that the Standing Committee would examine and scrutinize all proposals received for financial assistance/support under the Mission and make its recommendations based on its deliberations and the opinions expressed by the co-opted domain experts in the area of the proposal under consideration to the PAB. PAB, therefore, directed to submit all proposals to Convener of the Standing Committee. Dr. D.K. Paliwal, DEA(DL) submitted to PAB that all the correspondence of the Standing Committee with the Domain Experts etc. should be made available to MHRD also, apart from communicating via e-mails/on-line mechanism, so that MHRD could respond to applications which may be received under the Right to Information Act, 2005. Representatives of

Planning Commission and AS&FA specifically mentioned that there should be some norms/guidelines for the Standing Committee / Domain Experts so that their recommendations are based on those parameters. To this, JS(DL) responded that the activities under the Mission are of varied nature and it is not possible to specifically set / fix norms/guidelines for each of the activities. The Committees would, however, ensure that they recommend good proposals, which are found worthy of achieving goals of the Mission. Secretary, Higher Education specifically stated that the Committee, while making their recommendations, must take care of the copyright/intellectual property rights issue, so as to avoid litigation at a later stage.

Representative of Amrita University made a presentation on their proposal entitled, "E-learning: Live Interactive Teaching Environmnet (E-LITE)". This was followed by presentation made by IIT, Delhi on Virtual Laboratories and presentation by Prof. A.K. Baksni of University of Delhi on their proposal for National Resource Centre for e-Content Development in Higher Education for National Mission in Education (NME) through ICT. PAB after going through these presentations, decided that the Committees being constituted by it should first go into details of these proposals and make their recommendations to PAB. In the context of proposal of virtual laboratories, Secretary (HE)/Chairman, however, suggested that routine experiments need not be covered under this proposal of virtual laboratories and instead only those experiments which are otherwise very expensive but can be cost-effective through virtual laboratory need to be covered. PAB also opined that virtual laboratories can not be a substitute for a real laboratory but, at the same time, it may be helpful to the student/learner community, especially for those experiments which are conducted on expensive and sophisticated equipment/machines which may not be available in all the institutions.



4. Summing up the discussion, Secretary (HE) suggested that in order to achieve the goals of the Mission, full involvement of Directors of IITs / IISC and all the PAB members was absolutely essential.

5. It was decided to hold the next meeting of PAB at 3.30 P.M. on 26-03-09.

6. The meeting ended with a vote of thanks to the Chair.

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List of Participants

1. Secretary,  
Department of Higher Education  
Ministry of Human Resource Development  
New Delhi (in Chair)
2. Shri R. Chandrashekhar,  
Special Secretary,  
Department of Information Technology,  
New Delhi
3. Shri S.K. Ray,  
Additional Secretary & Financial Adviser,  
Ministry of Human Resource Development,  
New Delhi
4. Shri Furgan Qamar,  
Adviser (Education),  
Planning Commission,  
New Delhi.
5. Ms. Shakila Shamsu,  
Joint Adviser (Edn),  
Planning Commission,  
New Delhi
6. Shri N. Ravi Shanker,  
Joint Secretary,  
Department of Information Technology,  
New Delhi.
7. Shri J.S. Deepak,  
Joint Secretary,  
Department of Telecommunications,  
New Delhi.
8. Shri A. Bhaskaranarayana,  
Scientific Secretary,  
Indian Space Research Organization (ISRO),  
Bangalore
9. Shri R.S. Mani,  
Sr. Technical Director,  
National Informatics Centre,  
Department of IT,  
New Delhi
10. Shri Anil Jain,  
GM (BB),  
Bharat Sanchar Nigam Ltd., (BSNL),  
New Delhi

11. Shri R. Saji Kumar,  
DGM,  
Bharat Sanchar Nigam Ltd. ( BSNL),  
New Delhi
- 
12. Prof. Ajay Chakraborty,  
Dean (CE),  
Indian Institute of Technology,  
Kharagpur.
13. Dr. Prem K. Kalra,  
Professor,  
Indian Institute of Technology,  
Kanpur
14. Shri Ranjan Bose,  
Professor, Deptt. of EE,  
Indian Institute of Technology,  
Delhi
15. Shri S.C. Saxena,  
Director,  
Indian Institute of Technology,  
Roorkee.
16. Dr. A. Mukhopadhyay,  
Adviser, Department of Science & Technology,  
New Delhi
17. Prof. K. Mangala Sunder,  
Professor, Chemistry and  
NPTEL Coordinator,  
Indian Institute of Technology,  
Madras,  
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18. Shri Kannan Moudgalaya,  
Head, CDEEP,  
IIT, Bombay.
19. Dr. B.K. Murthy,  
Head, NKN Division,  
Department of Information Technology,  
CGO Complex, Lodhi Road,  
New Delhi
20. Shri Kushal Sen,  
C/o Director, IIT, Delhi
21. Prof. D.V. Khakhar,  
Director, IIT,  
Bombay
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22. Prof. Phalguni Gupta,  
Prof. CSE Deptt.,  
IIT, Kanpur
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23. Dr. Yatindra Nath Singh,  
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IIT, Kanpur
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24. Prof. S.V. Raghavan,  
IIT, Madras,  
Chennai
25. Prof. A.K. Bakshi,  
University of Delhi,  
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26. Dr. Vimal Rarh,  
Academic Secretry, ILL (ICT),  
University of Delhi
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27. Dr. P. Venkat Rongon,  
Vice Chancellor,  
Amrita University, Coimbatore
28. Shri Kamal Singhani,  
Head, E-learning Initiative,  
Amrita Vishwa Vidyapeetham,
29. Shri Vivek Vijayan,  
Amrita University
30. Shri Raghu Raman,  
Amrita University
31. Shri N.K. Sinha,  
Joint Secretary (DL) and  
Member Secretary, PAB,  
Department of Higher Education,  
Ministry of Human Resource Development,  
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32. Dr. D.K. Paliwal,  
Deputy Educational Adviser (DL),  
Department of Higher Education,  
Ministry of Human Resource Development,  
New Delhi
33. Shri Raj Kumar,  
Under Secretary (DL),  
Department of Higher Education,  
Ministry of Human Resource Development,  
New Delhi

Recommendation of the technical committee formed on 3<sup>rd</sup> March 2009 to look into connectivity issues in NMEICT

[last revised on 17 March 2009 1238 hrs]

The persons in the committee had met in two groups; first group consisting of Drs. B.N. Jain (IITD), Huzur Saran (IITD), Ms. Shakila Shamsu (PC), Mr. Anil Jain (BSNL), Mr. R.S. Mani (NIC), Mr. R. Saji Kumar (BSNL), Mr. N.K. Sinha (MHRD), Dr. B.K. Murty (NKN) met on 4<sup>th</sup> March 2009.

The second group consisting of Drs. S.V. Raghavan (IITM), H.M. Gupta (IITD), Y.N. Singh (IITK), Ms. Shakila T. Shamsu, Dr. B.K. Murthy, Mr. N.K. Sinha met on 5<sup>th</sup> March 2009.

The final meeting of the committee took place on 13<sup>th</sup> March 2009. Following attended the meeting: Drs. Y.N. Singh, H.M. Gupta, B.N. Jain, Mr. B.K. Murthy, Mr. N.K. Sinha, Ms. Shakila T. Shamsu, Mr. Anil Jain, Mr. R. Sajakumar, Mr. R.S. Mani. A brief meeting with Mr. R.P. Agarwal, ES (MHRD) was also done to apprise him of the discussion and getting his inputs. The same has also been incorporated.

The comments on the initial and later revised drafts were sought from those members also who could not attend the meeting. They have been incorporated in this document.

The committee discussed the issues related to NMEICT network. The present status is that NKN, when sanctioned, will, in the first phase, connect 1250 institutes including 424 universities. Since NKN will have unlimited scalability, we assume that cost per unit of bandwidth to the educational institute will be minimum and quality of service (QoS) will be the best in the country as it would be a National effort, thus making NKN an icon and a natural choice for the institutes. As of now, NMEICT network will be covering all degree (art, science, engineering, commerce etc..) colleges at higher education level and most of it is not planned to be covered by NKN. The part of the NMEICT network for Universities will exist only until it migrates and merges within the NKN network over a period of time and as and when the NKN roll out is gradually completed to the unparalleled standards in the country. The NKN network will subsume the NKN ready University part of the NMEICT network and there is convergence as well as congruence between these two networks. We earnestly hope that in years to come NKN would achieve commanding heights and would be able to provide connectivity to all the institutes which are part of NMEICT network, at state of art technology and virtually no cost. Given this background, the committee recommends that:

1. The institutes not covered by NKN will be connected by NMEICT network till such time NKN is able to provide connectivity to them @ 1 Gbps. The NMEICT network will be MPLS VPN for Universities and VPN component of BBoVPN created by DOT/BSNL for Colleges. A copy of informal communication indicating item-wise cost estimates from BSNL is enclosed. These broadband over VPN connections will not require financial provisioning of telephone connections.
2. At 400 universities, the chosen operator will also set up on a average 400 node LAN. The installation, maintenance and facility management cost of these LANs will be paid as one time cost to the network operator. The DOT/BSNL will be responsible to manage and maintain the LAN facility for next five years. The cost for setting up, maintenance and facility management for five years will be approx 40 lakhs for a 400 node 1Gbps LAN. These LANs should be setup with Gigabit ethernet technology or better contemporary technology at the time of establishment to avoid earlier obsolescence. An SLA should be there for specifying the facility's performance. The technical committee, as mentioned in item 12, shall negotiate the appropriate SLA.



3. The university LANs will be connected by 155 Mbps MPLS VPN connection for which approx 40 lakhs per year per STM-1 connection will be required. The cost of carrying OFC to the university will be at most approx 19 lakhs. The network operator will charge for OFC laying as per the actual length of the laying. This cost will be reduced if the network operator installs its mobile tower or exchange in the campus. The network operator may be permitted to setup their tower/exchange at the institute premises, so that fiber reaches to them without any cost to institute and national mission. Whenever NKN comes up, the same link will be transferred to NKN, so that it can reuse it to the maximum possible to minimize cost on laying new fiber. The DOT and the service provider in consultation with the Committee should keep in mind the migration from one Class B network address space (for Universities) to the NKN Class B network address space.
4. The network operator should also provide at least 32 public IP addresses to each university, statically at their NAT at Internet gateways, so that universities can deploy their web, mail and other servers which have global visibility. Upon migration, the NKN will provide appropriate solutions to maintain continuity of all the services.
5. The NMEICT VPN network will be connected to Internet at four points with 2.5 Gbps links thus in total of 10Gbps. The cost for this Internet connectivity will be 30 crore per year. For higher connectivity, the cost could be lower than the pro-rata cost calculated at this rate. In the beginning, we will have 5 Gbps in total as minimum guarantee to network operator, with the condition that if the usage reaches 5 Gbps at any point of time, they would dynamically enhance the bandwidth for the required duration, so as to maintain good speed of internet access by the users. After one month, this minimum guarantee will be revised based on usage pattern. The payment for Internet connectivity will be given on minimum guarantee.
6. For the Internet bandwidth and VPN connectivity, the network operator should consider the different loads during day and night for deciding the pricing. A large number of educational institutes are non-residential and will not be using the network during night hours.
7. To begin with, the NMEICT VPN network will also be connected to NKN at four points with 1 Gbps links. NKN will provide its Internet connectivity to NMEICT VPN cloud also. NKN should be responsible for maintaining the gateways between NMEICT network and NKN. When NKN comes into existence, it is expected to take over the responsibility of managing 1 Gbps gateways at 27 locations (at least one in every State) for connecting the network of Colleges (presuming that the University network being created under NMEICT would be subsumed by the NKN).
8. NKN network should also provide 32 dedicated public IP addresses for facilitating server deployment by universities and institutes. NKN should also provide IPv6 with multicast and QoS functionality. This is user perspective. NKN is expected to provide the service continuity after migration.
9. Differential QoS support and its interworking has to be assured by NKN and the DOT/BSNL responsible for NMEICT network. This is required by some flows e.g., for live lecture delivery. While best effort service for browsing may be acceptable. We expect that the functionality to setup different QoS flows for different kind of traffic may be provisioned at all VPN endpoints by both BSNL and NKN.
10. The technical committee recommends the transfer of Rs.300crores to DOT pending the submission of details of implementation by DOT/BSNL, so that DOT/BSNL can initiate the

appropriate process for deploying the NMEICT network at the earliest ensuring due diligence and goal of peering as well as congruence with the NKN. The rental (recurring component) should be paid on bandwidth-year basis. Thus faster the NKN comes up and starts providing services to universities, lesser to be paid to network operator. The DOT should release the recurring payment to operator on bandwidth-year basis. This ensures that payment is made for the period for which bandwidth was available. The technical committee further recommends formation of a Monitoring Committee to assess the progress on a bi-annual basis to formulate further recommendations to PAB in this regard. The Monitoring Committee composition may be: MHRD, Plg Comm, DIT, NIC, Tech Experts (2), User Institutions Reps (Univ 2, College 2) and JS (Finance) / Rep. DoT/BSNL may be permanent invitees.

11. All the payment rates shall be revised proportionately at least once a year by the network operator depending on the actual cost of various service components, or whenever the network operators revises the charges for the various services to the general public. This will ensure the cost reduction to the mission due to increasing competition among the network operators.

12. The committee recommends that a separate technical committee having representative from network operator, NKN and experts should look at IP addressing scheme, QoS gatewaying mechanism, strategy of public IP announcement to Internet on behalf of the universities and institutes. This will ensure that NMEICT network and NKN can inter-operate without any problem. Further the same committee can review the policies in operations and management of interconnect gateways between the two networks. This committee can also review the SLA performance and decide on penalties to be imposed or any other solution to the degraded performance.

13. An SLA shall be agreed upon by the network operator which shall include – end-to-end delays, jitter, network uptime, packet loss rates in the NMEICT network, loss rate at the interconnect gateways. The SLA should have provisions for penalty in case the agreed performances are not achieved. A draft of the SLA is also included.

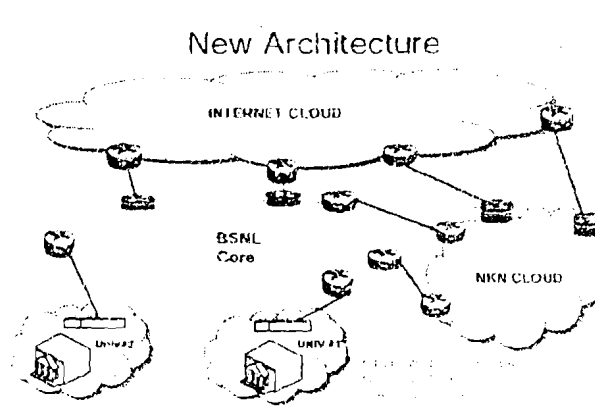


Fig.1: NMEICT connecting to Universities

### NKN Reaches University #1

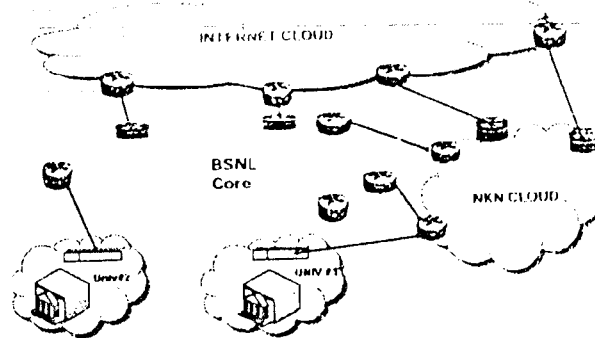


Fig.2: Universities connect to NKN when it reaches to them

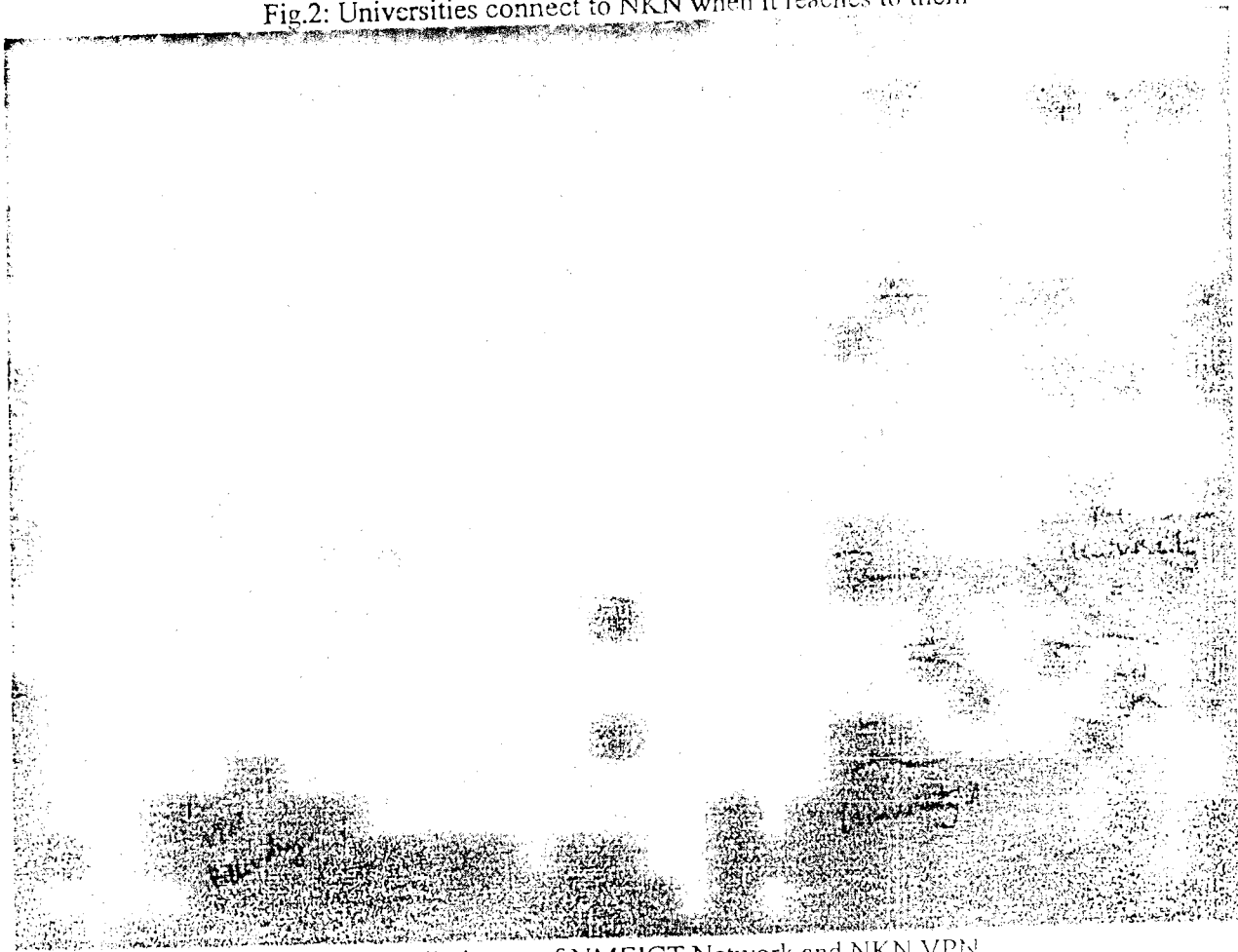


Fig.3: Overall picture of NMEICT Network and NKN VPN

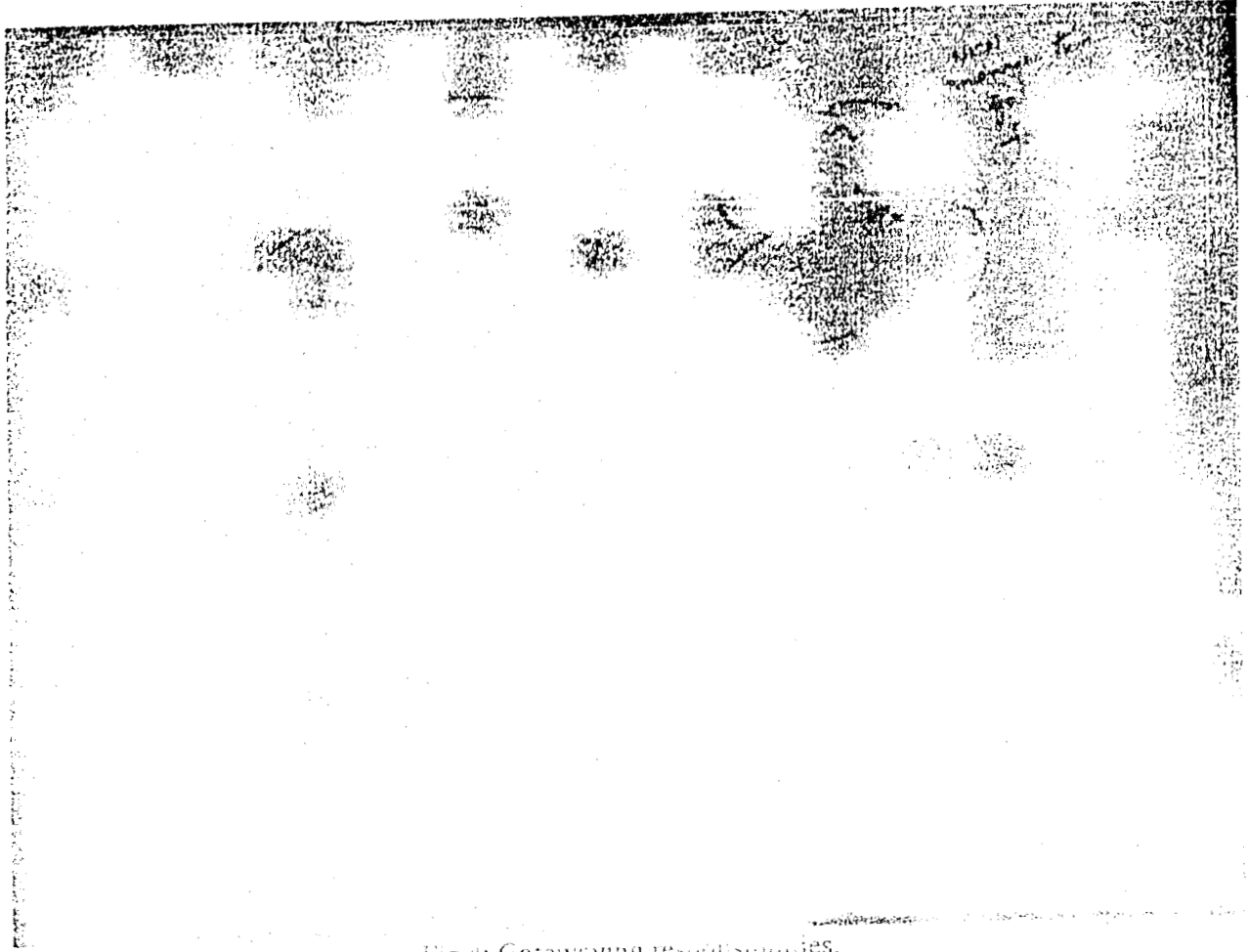


Fig.4: Gatewaying responsibilities.

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## **BSNL Proposal to Ministry of HRD for National Mission of Education**

### **I Introduction:**

- 1) National Mission of Education, Ministry of Human Resource Development proposed to provide Broadband connectivity to 419 Universities, its department and 20,000 colleges in the country for enabling them to make full use of e-contents.
- 2) The proposal is to connect all Universities /Colleges with Broadband and MPLS VPN in the National Mission of Education and colleges/universities connected with NKN MPLS at 4 metros (Delhi, Mumbai, Calcutta and Chennai).
- 3) A broadband VPN Connection provides-
  - 512 kbps of broadband download speed which can go upto 2 Mbps based on the distance of the location.
  - 512 kbps VPN
  - 512 kbps upload speed.
  - The usage within the VPN will be unlimited
- 4) Where ever technically feasible (within 2Km) BSNL will provide 8 Mbps single Broadband connection in place of multiple connections. BSNL will provide modem with 4 Ports which can be terminated to 4 different PC's.
- 5) Charges for Broadband over VPN connection, MPLS-VPN Charges for university, Inter Connectivity charges with NKN at one location, Telephone line Charges, Inter Connectivity with Internet port Charges & Charges for LAN setup in University are as under:-

#### **a. Charges for one Broadband over VPN connection**

- i) The charges for the proposed BBVPN is @5000 rupees per annum
- ii) The charges will be applicable from the date of provision.
- iii) The usage within VPN will not be charged extra

#### **b. Charges for MPLS connectivity to university**

<b>S. No.</b>	<b>Particulars</b>	<b>Charges</b>
a	MPLS Port Charges for 155Mbps Port	1.17 Crores
b	Discount offered as per earlier proposal	80%
c	Discounted Port Charges	23.40 Lakhs
d	Leased Line Charges 45Km (155Mbps)	17.87 Lakhs
e	Special construction charges for OF Laying (One Time) (50% discount)	20 Lakhs
	<b>Total Charges (c+d+e)</b>	<b>61.27 Lakhs</b>

### Charges for the 1<sup>st</sup> Year

Particulars	Qty	Unit Charge	
<b>One Time Charges</b>			
OF special construction charges	210	Rs 20 Lakhs	Rs 42 Crores
LAN Charges	210	Rs 40 Lakhs	Rs 84 Crores
<b>Recurring Charges</b>			
Charges for BBoVPN for 20,000 Colleges (10 Connections each)	20,000	Rs 50,000	Rs 100 Crores
MPLS Port + Leased Line Charges	210	Rs 41.27 Lakhs	Rs 86.66 Crores
Interconnection charges(including port charges and one time lead charges) with NKN for 4 Metros (New Delhi, Mumbai, Calcutta, Chennai)	4	Rs 3 Crores	Rs 12 Crores
Internet Charges	10GE		Rs 30 Crores
<b>Total</b>			<b>Rs 354.66 Crores</b>

### **III Year-II**

- 1) The activities planned in 2<sup>nd</sup> year are as follows.
  - a. MPLS VPN connections with STM-1 for 209 universities.
  - b. Expand upto 20 BB connections with VPN per college for all 20,000 colleges.
  - c. LAN Setup to 209 universities.
  - d. Maintenance of LAN Setup and OF Cable.
- 3) The total cost of Phase-II works out to be Rs 578.52 Crores

### Total Charges for the 2<sup>nd</sup> Year

Particulars	Qty	Unit charge	
<b>One Time Charges</b>			
OF special construction charges	209	Rs 20 Lakhs	Rs 41.80 Crores
LAN Charges	209	Rs 40 Lakhs	Rs 83.60 Crores
<b>Recurring Charges</b>			
Charges for BBoVPN for 20,000 Colleges (20 Connections each)	20,000	Rs 100,000	Rs 200 Crores
MPLS Port + Leased Line Charges	419	Rs 41.27 Lakhs	Rs 172.92 Crores
Interconnection charges(including port charges and one time lead charges) with NKN for 4 Metros (New Delhi, Mumbai, Calcutta, Chennai)	4	Rs 3 Crores	Rs 12 Crores
Maintenance Charges for LAN Setup and OF Cable (5% of one time LAN Setup & OF cable laying charges)		4.18 Crores	
Internet Charges	10GE		Rs 30 Crores
<b>Total</b>			<b>Rs 544.5 Crores</b>

## **BSNL'S SLA FOR M/S NTPC**

### **Service Level Agreement for MPLS VPN Circuits**

#### **1 PREAMBLE**

This agreement, hereinafter called the Service Level Agreement (SLA), is made on the \_\_\_\_\_ day of \_\_\_\_\_ (year) to be effective from \_\_\_\_\_ between CGM/PGM/GM \_\_\_\_\_ Telecom District, Bharat Sanchar Limited, having office at..... (hereinafter called **BSNL**) of the ONE PART and M/s \_\_\_\_\_ having office at \_\_\_\_\_ (hereinafter called **Customer** which expression shall unless repugnant to the context, include its successors in business, legal representatives and administrators or permitted assigns) of the OTHER PART.

MPLS VPN Service is being provided by BSNL to the Corporate Companies, SMEs and other Institutions as a Data Networking solution. This includes providing Local Leads from the Customer Premises till the nearest BSNL Node (the Point of Presence of the BSNL MPLS VPN Network) and Ports on the Routers at these Nodes.

The customer expects the Service Provider (BSNL) to provide the circuits (local leads, ports) and expects BSNL to maintain and monitor the healthiness of the circuit as per the requirement spelt out in this SLA document.

#### **2 DEFINITIONS:**

**2.1 BSNL MPLS Core Network:** refers to the MPLS Core Network built across India having MPLS VPN nodes at over 70 cities which covers Ahmedabad, Bangalore, Chennai, Kolkata, Hyderabad, , Mumbai, New Delhi , Pune and other cities. This is expected to increase from time to time.

**2.2 SLA:** SLA is defined as the Service Level Agreement. It is a formal contract between a Service Provider (BSNL) and customer guaranteeing quantifiable network performance at defined levels. This SLA Document defines the Service Level Guarantees in terms of Availability, Network Latency and Packet Loss. This document touches upon the BSNL's Commitment to the Customer, customer's Requirement in utilizing this service, BSNL's methodology to rectify/ repair the Circuits, its Measurement & Compensation Mechanism and other terms and conditions.

**2.3 SSAs:** These are the Telecom Jurisdictions that are being used to provide Telecom Services in that Area. They are generally Telecom Districts / Major Cities / Industrially Important Cities.

**2.4 NTU:** Network Terminating Equipment forms the part of the Customer Premises Equipment (CPE) provided for using the Managed Leased Line Network (MLLN) of BSNL. This NTU is equivalent to the Modems that were being provided by the Customers at their premises/ locations. NTUs are fully managed from NMS. They are programmable for different data speeds  $n \times 64$  Kbps ranging from 64 Kbps ( $n=1$  to 31) depending upon the customer demand, thus having bandwidth control without changing Modem at his premises. NTUs operate on 230 Volts AC.

**2.5 Network Service Uptime / Availability:** The Uptime/Availability is defined as duration in which the customer can utilize the circuit for his operations and is defined as the percentage of network uptime, averaged over core nodes during the relevant period. Network Availability is calculated per circuit as mentioned at para 3.4 below.

**2.6 Provisioning:** The term "provisioning" refers to the process of building up the local lead to the customer premises from the nearest MPLS Node and to the configuration of the port on BSNL MPLS for the customer as per his requirement.

**2.7 Commissioning:** The term "Commissioning" refers to the installation, testing and operation of the MPLS VPN Circuit from the nearest MPLS Node to the Customer Premises. It is the stage in which the circuits will be handed over to the customer to carryout his operations.

**2.8 De-commissioning:** The term "De-commissioning" refers to the disconnection of the circuit for whatsoever be the reason including the shift of the circuit & shall be based on the customer / BSNL requests /requirement as per the contractual terms.

**2.9 Re-commissioning:** The term "Re-commissioning" refers to the activation of the said de-commissioned Circuits to the extent that the customer can utilize the circuits for his operations

**2.10 Latency:** Latency is defined as the Average Round Trip delay between the ingress and egress router of Core MPLS Network. BSNL monitors the round trip network latency periodically between core nodes using 64-byte ICMP Ping messages.

**2.11 Packet Loss:** Packet Delivery is defined as the percentage of packets that are successfully transported between the ingress and egress port as recorded at each core node. Packet Loss is defined as the percentage of packets that were lost during the transmission between ingress and egress router of the core MPLS Network.

**2.12 Service Window:** Service window is the period/ duration during which the customers are normally expected to book complaint and contact BSNL for support. Action for fault rectification will normally be attended during the service window.

**Note:** These terms are generic in Nature and may change as per the requirements that may arise from time to time. In case customer wants the parameters to be measured between the CE (customer edge) routers, then the passwords of the CE routers will have



to be either kept with BSNL OR the CE router will have to be suitably configured so as to send the required information to the MPLS NOC on an automatic basis.

### **3 SLA COMMITMENTS BY BSNL:**

NOW the AGREEMENT witnesseth as follows:

#### **3.1 Contract Period**

The validity of this contract shall be for one year from the date of signing of the contract or commissioning of the VPN whichever is later. The contract period can be extended by mutual agreement of both sides.

#### **General Conditions**

3.2 This agreement is applicable to the MPLS VPN circuits leased by the Customer as per details in Annexure "A" and as per approved Network diagram attached at Annexure "B".

3.3 The 'Service Window' is from 1000 hrs to 1300 hrs on all working days (i.e. except Sundays & Gazetted holidays). Best efforts would be made for booking/ fault rectification outside the service window also but the period will not be considered for calculation rebate.

3.4 During the period of SLA the BSNL shall ensure proper functioning of MPLS VPN circuits for an uptime of 99% (Ninety nine per cent). \* on per link per year basis.

3.5 Uptime is defined as below:

$$\text{Uptime (in \%)} = \frac{(\text{Total no. of Hours in the year} - \text{Total Downtime (in Hours)}) * 100}{\text{Total No. of Hours in the year}}$$

3.6 The first quarter of the SLA (entered for the first time) will be taken as "proving in period". Though BSNL shall maintain the circuit to the highest possible efficiency during this period, no rebates as mentioned in clause 6 shall be applicable.

3.7 The Latency measured as the Round Trip Time from anywhere to anywhere in the BSNL MPLS core network shall be within 150 ms.

3.8 The Packet Loss within the BSNL MPLS Core network shall be  $\leq 1\%$ .

3.9 The Jitter within the BSNL MPLS Core Network shall be  $\leq 20\text{ms}$ .

3.10 The uptime guaranteed as per clause No. 3.4 above will be for the circuits from the Customer Premises till the nearest MPLS Node of BSNL (assuming that the uptime in the MPLS core is much higher due to the inbuilt redundancies in the transmission media & equipment).

3.11 If any circuit is shifted within the same SSA / other SSA, BSNL reserves the right to extend the agreement or terminate the agreement. SLA will stand suspended on de-commissioning of the circuit while under shift within same SSA and may be enforced again from the date of re-commissioning. In case of shift to another SSA, a fresh SLA may be signed depending on availability of resources.

3.12 The CUSTOMER shall provide reliable and regulated A/C Power Supply for working of the network termination unit (NTU) all the time. The CUSTOMER shall also keep the NTU powered on round the clock. If for any reason, NTU is required to be switched off, the CUSTOMER shall intimate the details at the Toll free Number: 1800 425 1957 of MPLS NOC or any other number as intimated by BSNL.

3.13 For the purpose of measurement, "downtime" or "fault duration" constitutes any period of time during which the MPLS Circuit is unavailable for the utilization of the customer due to the reasons assignable to BSNL MPLS network. Causes of downtime include but are not limited to

- Leased Circuit equipment (i.e. NTU) failures, supplied by BSNL to CUSTOMER
- Circuit Outage (at BSNL end only)
- Leased Circuit device hardware failure/malfunction
- Power outages (in BSNL)
- Human error (in BSNL)
- Process failure (in BSNL)
- Local Loop failure between the BSNL MPLS node and Customer's premises.

Downtime ends upon the successful transmission of data to and from such site or Circuit.

**\*\* With the use of Dial VPN facility the availability can further be improved. The Dial VPN facility services are available to the customers ON DEMAND.**

3.14 All Claims relating to this SLA must be submitted by Customer on a monthly basis. If BSNL fails to meet the Latency Guaranteed as per para 3.6 above and/or meet the Packet Loss Guaranteed as per para 3.7 above for a period of 30 minutes or more in any specific calendar month during a relevant Service Term, upon Customer's request, Customers' account shall be credited on a pro-rata basis five times of the period during which the latency /Packet Loss guaranteed is not met. Latency shall be measured by sample measurements taken during a calendar month between designated routers. Each month's network performance statistics relating to the Core Network Latency Guarantee can be viewed through the Infovista Portal/ HP-Openview that can be accessed from the Network Manager of the Company/ Institution..

#### **4 CUSTOMER'S RESPONSIBILITY:**

- 4.1 Any fault duration (i.e. downtime) shall be calculated from the time the fault is reported.
- 4.2 The CUSTOMER will ensure round the clock availability of staff (especially during the service window) who are capable of dealing with the MPLS Circuit equipment/ Router. The period in which CUSTOMER premises is found closed or no staff is available when BSNL staff visits the premises for testing or want to test the circuit from BSNL location, will be excluded from fault duration.
- 4.3 The CUSTOMER shall provide all necessary assistance and access to its facilities for preventive and corrective maintenance to BSNL staff all the time.
- 4.4 In addition to the above following shall be excluded from fault duration:
  - i. Unavailability of circuit due to power failure at CUSTOMER end.
  - ii. Unavailability of circuit due to mishandling of BSNL equipment (NTU) or any cables attached to such equipment at CUSTOMER end.
  - iii. Unavailability of circuit due to fault in CUSTOMER Premise equipment (CPE)/ network.
  - iv. Unavailability of circuit due to the faults in the outdoor network of BSNL by third parties.

- v. Unavailability of circuit due to the force majeure.
- vi. Fault duration outside service window, if fault is booked after service window period.
- vii. Unavailability of circuit due to Planned Service Outages or Routine Maintenance. BSNL shall also try to provide advance notice prior to conducting any scheduled maintenance.
- viii. Interruptions during any period when the Customer chooses / elects not to release the Service for testing or repair and continues to use the Service on an impaired basis.
- ix. Interruptions during any period when the customer has not released the Service to BSNL for maintenance or for the implementation of a Customer Service Request.
- x. Interruptions caused by the Negligence of the customer including the provision of inaccurate information.

## **5 PROCEDURE OF FAULT BOOKING**

- 5.1 CUSTOMER shall book the fault on assigned number of MPLS NCC viz., '1800-425-1957' (prescribed number for MPLS faults/complaints). (Date and time of booking of fault shall be taken as reference for the purpose of calculation of duration of non-availability of circuit).
- 5.2 CUSTOMER shall abide by the prescribed fault booking procedure of BSNL. Where the CUSTOMER is unable to find a BSNL representative on the number assigned above the fault can be booked on 080- 2580 4444/2580 7777, which will work as alternate number in such emergency. Status/fault report generated by BSNL MPLS network (to the extent provided by the system) shall be taken, as reference if situations where there is ambiguity about the timing and nature of fault.
- 5.3 Normally a fault docket number will be provided to the CUSTOMER from BSNL on booking of fault.

## **6 PROCESS TO BE CARRIED OUT BY BSNL:**

### **Restoration of Fault**

- 6.1 On receipt of complaint, BSNL shall make its best efforts to localize the fault and restore the same at the earliest. The CUSTOMER shall provide all necessary support for enabling testing of the circuit at any hour of the day.
- 6.2 In case the CUSTOMER is unable to provide necessary facilities to BSNL, BSNL will test the circuit on its network to the last point feasible and clear the fault docket after rectification of the fault. Circuit shall be presumed to be restored when BSNL has tested the circuit and cleared the fault docket after finding that the circuit is capable of working properly. The fault duration shall be accounted accordingly.
- 6.3 Faults should be booked within the 'Service Window'. Faults booked within the Service Window shall normally be attended on the same day. However, for faults booked beyond the Service window, BSNL will make all efforts (from the NOC / Node, other field units) to restore the circuit during the night, to the extent feasible, the fault restoration work shall in any case be resumed during the 'Service window' on the next day.

## **7 BSNL's COMPENSATION (SLA rebates) :**

- 7.1 *If the circuit uptime for the applicable year is below the uptime guaranteed as per clause 2.2 above, then a rebate of 2% of the rental of the circuit per month shall be given for every 10 hours or part thereof downtime in excess of 88 hours in one year. For this purpose the number of days in a year is taken as 365 leading to a total duration of 8760 hours per year.*
- 7.2 *If the CUSTOMER opts for variable bandwidth service during any period of the day for any number of days during the validity of SLA, the SLA rebate shall be applicable only for the basic bandwidth for which the circuit is initially provided till up gradation and for the Higher Bandwidth from the time of up gradation after successful testing.*
- 7.3 *If the CUSTOMER wishes to change the bandwidth of the circuit from the one for which the circuit was initially hired up to the period of validity of SLA on 24 hours x 7 days basis for one month or more, the rebate shall be admissible on pro-rata basis for the duration for which the circuit is hired for changed bandwidth.*
- 7.4 *The maximum rebate shall be limited to 10% of the rental of the circuit for the lowest of the bandwidths availed during the period of SLA.*
- 7.5 *If BSNL fails to meet the Latency Guaranteed as per para 3.7 above and /or meet the Packet Loss Guaranteed as per para 3.8 above for a period of 30 minutes or more in any specific calendar month during a relevant Service Term, upon Customer's request, Customers' account shall be credited on a pro-rata basis with a credit equal to Five times of the period during which the latency /Packet Loss guaranteed is not met.*
- 7.6 *Latency and packet loss shall be measured by sample measurements taken during a calendar month between designated routers. Each month's network performance statistics relating to the Core Network Latency and packet loss can be viewed through the Infovista Portal/ HP-Openview that can be accessed by the Network Manager of the Company/ Institution.*

## **8 TERMINATION OF AGREEMENT**

- 8.1 *This agreement may be terminated only by the mutual, written consent of the parties giving 30 days notice.*
- 8.2 *Consequence of Termination: Termination of this agreement shall be without prejudice to the accrued rights and liabilities of the parties at the date of termination, unless waived in written by the agreement made by the Parties. On termination of this agreement, the MPLS VPN circuit may continue to be used by the CUSTOMER as per applicable terms and conditions.*
- 8.3 *Severability: Should any part of this agreement be declared unenforceable by TRAI/DOT through direction/order/regulation or if terms of license of BSNL are changed through any amendment or order of the Government, the parties will cooperate and take all appropriate steps to amend, modify or alter this agreement.*

## **9 MISCELLANEOUS**

- 9.1 *Assignment: This agreement shall be binding upon the respective successors and permitted assigns of the parties. The rights of a party hereunder may not be*

assigned in part to any third party without the prior written consent of the other party.

- 9.2 Any such permitted assignment shall not relieve the assigning party of any liability whether occurring before or after such assignment, arising out of activities carried out or events occurring prior to such assignment.
- 9.3 **Modifications:** Any of the terms and provisions of this agreement, including all Exhibits hereto, may be waived, amended, supplemented or otherwise modified only by a written instrument executed by the parties specifically and clearly stating that it is an amendment to this agreement.
- 9.4 **Consequential Damages:** BSNL shall not be liable to the CUSTOMER, notwithstanding any other provision to the contrary herein or under law and to the extent of any such right under law, the CUSTOMER hereby expressly and, irrevocably waives its right thereto, for any indirect or consequential damages arising out of this agreement, including, but not limited to, loss of revenue and profit.
- 9.5 **Date of Effect:** This agreement shall become effective from the date of commissioning of the circuit.

## **10 DISPUTES AND ARBITRATION**

- 10.1 In the event of any question, dispute or difference arising under this agreement or in connection therewith (except as to matter the decision of which is specifically provided under this agreement), the same shall be referred to sole arbitration of the CMD, BSNL, New Delhi or in case his designation is changed or his office is abolished then in such case to the sole arbitration of the officer for the time being entrusted (whether in addition to his own duties or otherwise) with the functions of the CMD, BSNL or by whatever designation such officers may be called (hereinafter referred to as the said officer) and if the CMD, BSNL or the said officer is unable or unwilling to act as such the same should be referred to the sole arbitration of some other person appointed by the CMD, BSNL or the said officer. The agreement to appoint an arbitrator will be in accordance with the Arbitration and Conciliation Act, 1966.
- 10.2 There will be no objection to any such appointment on the ground that the arbitrator is BSNL Employee or that he has to deal with the matter to which the agreement relates or that in the course of his duties as BSNL Employee he has expressed views on all or any of the matter under dispute. The award of the arbitrator shall be final and binding on the parties to the agreement. In the event of such arbitrator to whom the matter is originally referred, being transferred or vacating his office or being unable to act for any reasons whatsoever the CMD, BSNL or the said officer shall appoint another person to act as arbitrator in accordance with terms of the agreement and the person so appointed shall be entitled to proceed from the stage at which it was left out by his predecessors.
- 10.3 The arbitrator may from time to time with consent of parties enlarge the time for making and publishing the award. Subject to aforesaid Arbitration and Conciliation Act, 1996 and the Rules made thereunder, any modification thereof for the time being in force shall be deemed to apply to the arbitration proceeding under this clause.

10.4 The venue of the arbitration proceeding shall be the Office of the CMD, BSNL, New Delhi or such other Places as the arbitrator may decide.

10.5 Any party shall not use any information obtained from other party during the course of dispute resolution process under this clause for any purpose other than to resolve the dispute and such information shall not be used in any litigation.

10.6 Both parties shall use their best efforts in good faith and best intention to resolve disputes by mutual negotiation and consultation and shall settle amicably any dispute that may arise or relate to this agreement or a breach thereof.

#### 11 FORCE MAJEURE

Neither BSNL nor the CUSTOMER shall be liable to each other for any delay in or failure of performance of their respective obligation under the agreement caused by occurrences beyond the control of BSNL or the CUSTOMER including but not limited to fire (including failure or reductions), acts of God, acts of the public enemy, war, insurrections, riots, strikes, lockouts, sabotage, any law, statute or ordinance, thereof of any other local authority, or any compliance therewith or any other causes, contingencies of circumstances similar to the above. Either party shall promptly but not later than thirty days thereafter notify the other of the commencement, and cessation of such contingencies, and if such contingencies continue beyond three months, both parties agree upon an equitable solution for termination of this agreement or otherwise decide regarding course of action to be adopted.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed through their respective authorized representatives on the day and year first above written.

Signed and delivered for and on behalf of BHARAT SANCHAR NIGAM LIMITED

By \_\_\_\_\_

Signed on behalf of M/s \_\_\_\_\_ Executed in accordance with the  
Resolution No. .... dated \_\_\_\_\_ passed by Board of Directors.  
In the presence of:

Witnesses:

1. \_\_\_\_\_

2. \_\_\_\_\_