

**Request for Proposal (RFP) For  
Implementation of  
Bihar State Wide Area Network (BSWAN)  
On  
Build Own Operate Transfer (BOOT) Model**

**Tender Notice No: BSWAN/BSEDC 2007/03**

**26<sup>th</sup> February 2007**



**Bihar State Electronics Development Corporation Limited**

*(A Government of Bihar Undertaking)*

**BELTRON BHAWAN, SHASHTRI NAGAR, PATNA, BIHAR**

**PIN CODE-800023 Tel No:- 0612-2281856, 0612-2281857**

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## IMPORTANT INFORMATION

<b>Non-Refundable Tender Cost</b>	Rs. 25,000/- in cash or through demand draft from a scheduled bank, drawn in favour of "Bihar State Electronics Development Corporation Limited", payable at Patna.
<b>Sale of RFP document</b>	9.00 am to 5.00 pm on all working days starting from 26/02/2007 till 01/04/2007 and on 02/04/2007 from 9.00 am to 3.00 pm
<b>EMD</b>	Rs. 2,00,00,000/- (Two Crores) in the form of Demand Draft /Bank Guarantee in favour of Bihar State Electronics Development Corporation Limited payable at Patna from a scheduled bank
<b>Last Date of Submission of written queries on Bid document</b>	Any clarification and queries relating to tender document. Bidders have to submit their written clarifications & queries on before 12 <sup>th</sup> March 2007 in enclosed format {Ref: Annexure: 17}. Any clarification or query received after the due time and date will not be entertained
<b>Pre bid conference</b>	At 4 P.M. on 14/03/2007 <b>Venue:</b> BELTRON Bhawan, Shastri Nagar, PATNA, BIHAR - PIN CODE-800023
<b>Last date for submission of Bids</b>	Up to 3.00 P.M. on 02/04/2007 <b>Venue:</b> BELTRON Bhawan, Shastri Nagar, PATNA, BIHAR - PIN CODE-800023
<b>Opening of Pre-Qualification Bids</b>	At 4 P.M. on 02/04/2007 <b>Venue:</b> BELTRON Bhawan, Shastri Nagar, PATNA, BIHAR - PIN CODE-800023
<b>Address for Correspondence and Clarifications</b>	<b>Managing Director</b> <b>Bihar State Electronics Development Corporation Limited</b> BELTRON BHAWAN, SHASHTRI NAGAR, PATNA, BIHAR, PIN Code - 800023 Fax No: - 0612-2281857 E-mail: -bsedc@beltron.in,best@ilfsets.com Web Site: - <a href="http://www.beltron.in">www.beltron.in</a>



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## Preface

- 1.1. Government of India is committed to leveraging advances in Information and Communication Technologies (ICT) for the benefit of the common man, especially in the rural areas. The Government of Bihar is also determined to make efforts to effectively use Information Technology for delivering quality services to citizens and quicken the overall development of the State through improvement of Intra-government and Government – citizen Interface.
- 1.2. For successful implementation of the e-Governance projects, robust communication corridor is the first and foremost requirement. The said communication corridor can only be obtained by setting up of a State wide Area Network (SWAN).
- 1.3. Government of *Bihar* is considering the appointment of a **Bidder** (here in after referred to as “bidder”) to install and maintain Bihar State Wide Area Network (BSWAN) in an efficient and effective manner on an appropriate Public Private Partnership (PPP) model. Bidder has to quote for the implementation and management of the BSWAN in Build, Own, Operate and Transfer (BOOT) model for duration of five years, in accordance with the various provisions of this RFP document.
- 1.4. Government of *Bihar* now invites sealed technical and financial proposals from short-listed eligible Bidders for selection as bidder, to implement and operate Bihar State Wide Area Network (BSWAN) in the Bihar. The bidder shall be selected as per the procedures described in this Request for Proposal (RFP).
- 1.5. Bidder shall submit three sealed envelopes containing:
  - Part I: Three hard copies of Pre-qualification Bid and one soft copy of the Pre-qualification Bid.**
  - Part II: Three hard copies and one soft copy of the Technical Bid.**
  - Part III: Three hard copies and one soft copy of the Commercial Bid.**
- 1.6. You are hereby invited to submit technical and financial Proposals as per the provisions detailed in this RFP. The last date for submitting the technical and financial Proposal is 2<sup>nd</sup> April 2007 latest by 3.00 PM to the following address which is to be used for all communication in regards to this bid process



## ***Shri. Alok Vardhan Chaturvedi***

**Managing Director**

**Bihar State Electronics Development Corporation Limited**

**BELTRON Bhawan, Sastri Nagar**

**PATNA BIHAR - PIN CODE-800023**

**Tel No: - 0612-2281856, 0612-2281857**

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Please note that a pre-bid conference would be held on **14/03/2007 and 4.00 PM** in the office of Managing *Director*, and Bihar State Electronics Development Corporation Limited, BELTRON Bhawan, Sastri Nagar, PATNA, BIHAR - PIN CODE-800023

- 1.7. Bidders are requested to provide their queries or clarifications regarding the RFP conditions in the Annexure format only before the **12/04/2007** of pre-bid conference. Only those questions, which are submitted in writing, will be taken up for discussion in the conference.
- 1.8. The authorized representative of the bidder should sign all the communication including this RFP and the bid documents on each page. ***Only One Signed Copy is to be attached with the Pre-qualification bid.***



## Section-1: Letter for Invitation

Date of Issuance: \_\_\_\_\_

Ref. No: \_\_\_\_\_

To,

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Dear Sir,

Government of Bihar invites proposals to provide implementation and operations of Bihar State Wide Area Network (BSWAN) for a period of five years on a Build, Own, Operate and Transfer (BOOT) model. More details on the services are provided in the Schedule of requirements.

You are requested to go through the document carefully and submit your proposals as per the instructions and guidelines given in the document.

**Yours sincerely,**

***Alok Vardhan Chaturvedi***

***Managing Director***

*Bihar State Electronics Development Corporation Limited*

*BELTRON Bhawan, Sastri Nagar, Patna, 800023*



## **Section 2**

### **Project Profile**



## Section 2 - Project Profile

### About State

Bihar was known as Magadha in ancient times. It was the centre of what was called the Mauryan Empire. This empire dominated the Indian subcontinent from 325 BC to 185 BC. For the next one thousand years, Bihar was a centre of power. It was also at the forefront of Indian culture, and an important centre of education. Two very ancient Universities were located in Bihar, but both were totally destroyed by invaders during the middle Ages. As in other parts of India, religion has always played an important role in the life of Bihar.

It is known as the birthplace of more than one religion. Buddha was in the town of Bodh Gava in the modern district of Gava Mahavira when he was said to have attained his Enlightenment. Another religion called Jainism also had its earliest origins in Bihar. Its founder, Mahavira, was born in Vaishali. Even the name Bihar itself has a religious meaning. Its origin is from the Sanskrit word, Vihara, which means Monasteries. It referred to the many “vihareas” that at one time were to found all over the district. There is even a tradition that Buddha’s ashes were entombed in Bihar. In the years since the medieval period, Bihar has passed from hand to hand, as it was the time of foreign intervention in all of India. Bihar was involved in the wars and power struggles of this turbulent period. Sometimes its fortunes were on the rise, and other times on the wane.

Bihar played a major role in India’s struggle for Independence. Mahatma Gandhi came to Bihar on his return from South Africa, and started the freedom movement in the Champaran District of Bihar. He began what was called the "Satyagraha", a word for his form of non-violent confrontation. The first issue of this struggle was on behalf of local farmers who were being forced to plant indigo, which was profitable for the British rulers, but was very harmful to the soil, and was contributing to the poverty of the area.

This struggle, which came to be called the “Champaran Satyagraha”, was the opening act in a long drama that would result in a free India. The advent of this free India found the district, soon to be called a State, of Bihar facing numerous problems. It is a rich and fertile land with a mild climate. Many major rivers, including the Ganges, cross it. It has a large population of industrious people aware of their long heritage, and determined to overcome their many problems and return Bihar to the glory of its past.



Bihar is located in the eastern part of the country (between 83°-30' to 88°-00' longitude). It is an entirely land-locked state, although the outlet to the sea through the port of Kolkata is not far away. Bihar lies mid-way between the humid West Bengal in the east and the sub humid Uttar Pradesh in the west which provides it with a transitional position in respect of climate, economy and culture. It is bounded by Nepal in the north and by Jharkhand in the south. The Bihar plain is divided into two unequal halves by the river Ganga that flows through the middle from west to east.

### Physical Features

• Latitude	21°-58'-10" ~ 27°-31'-15" N
• Longitude	82°-19'-50" ~ 88°-17'-40" E
• Rural Area	92,257.51 sq. kms
• Urban Area	1,095.49 sq. kms
• Total Area	94,163.00 sq. kms
• Height above Sea-Level	173 Feet
• Normal Rainfall	1,205 mm
• Avg. Number of Rainy Days	52.5 Days in a Year

### Administrative Units

• Divisions	9
• Districts	38
• Sub-Divisions	101
• CD Blocks	534
• Panchayats	8,436
• Number of Revenue Villages	45,103
• Number of Urban Agglomerations	9
• Number of Towns	130
- Statutory Towns	125



- Non-Statutory Towns	5
● <b>Police Stations</b>	<b>853</b>
- Civil Police Stations	813
- Railway Police Stations	40
● <b>Police Districts</b>	<b>43</b>
- Civil Police District	39
- Railway Police District	4

#### Key Statistics - as per 2001 Census (Provisional)

● <b>Population</b>	<b>8,28,78,796</b>
- Male	4,31,53,964
- Female	3,97,24,832
● <b>Population (0~6 Years Group)</b>	
- In Absolute Numbers	<b>1,62,34,539</b>
	Male: 83,75,532
	Female: 78,59,007
- Percentage of Total Population	<b>19.59%</b>
	Male: 19.41%
	Female: 19.78%
● <b>Literacy</b>	
- In Absolute Numbers	<b>3,16,75,607</b>
	Male: 2,09,78,955
	Female: 1,06,96,652
- Percentage of Total Population	<b>47.53%</b>
	Male: 60.32%
	Female: 33.57%



● Decadal Population Growth (1991-2001)	130
- Absolute	1,83,48,242
- As Percentage	28.43%
● Highest Decadal Growth at	Sheohar District (36.16%)
● Lowest Decadal Growth at	Nalanda District (18.64%)
- Civil Police Stations	813
- Railway Police Stations	40
● Density of Population	880 per sq kms
- Highest Density	Patna, 1471 per sq kms
- Lowest Density	Kaimur, 382 per sq kms
● Sex Ratio (Females/Thousand Males)	921
- Highest Ratio	(Siwan) 1,033
- Lowest Ratio	(Patna) 873
● Highest Literacy Rate	Patna, 63.82%
● Lowest Literacy Rate	Kishanganj, 31.02%
● Average Population of a District	22,39,967

The state is endowed with an enviable mineral resources base. It is one of the largest producers of fruit and the second largest producer of vegetables in the country.

Bihar, with its rich factor endowment has been a land of attractive economic opportunities. Its immense mineral wealth makes it the treasure trove of India. It has been home to a number of industrial houses both from home and abroad since the beginning of the century.

Its bountiful agro climatic resources and the gains of the Green Revolution have enabled the state to become a leading producer of agriculture commodities. Its population of nearly 90 million provides vital human resources. It also constitutes a vast and rapidly expanding consumer market for a variety of products and services.

In order to translate its natural advantages to rapid economic growth and prosperity, the state welcomes entrepreneurs, from all over the world to be partners in progress. It strives to provide



them with quality infrastructure and business friendly environment for smooth operation of their investment proposals and projects to eliminate delays.

The Government of Bihar wishes to establish as Bihar State Wide Area Network (BSWAN). The BSWAN is envisaged as the backbone network for data, voice and video communications throughout the State. BSWAN would act as the vehicle for effective implementation of Electronic Governance (e-Governance) across the state.

The National e-Governance Plan (NeGP) has identified 22 Mission Mode Projects, which are to be implemented in a phased manner over the next 3-4 years by the Line Ministries/Departments concerned at the Central and State level, as applicable, in addition to the various other e-Governance initiatives being taken by the respective States and Central Ministries. State Wide Area Network (SWAN) has been identified as an element of the core infrastructure for supporting these e-Governance initiatives.

Various departments in Bihar have separate applications pertaining to their specific usage and purpose, for providing services to the citizens. A typical government department having an e-governance application requires the following:

- A delivery platform for e-Governance applications
- A mechanism for fast internal communication
- Increase access to services for the citizens and multiply usage
- Carry progressively increasing data and applications
- Speed up the transfer of information between employees in different locations and to allow them to share common files
- Carriage of voice and data in an integrated manner rather than having separate networks for voice and data
- Have a secure and reliable channel to transfer data across locations

To fulfill these requirements, implementation of a BSWAN is required. BSWAN is expected to cater to the information communication requirements of the entire state government and its departments. Through implementing BSWAN, the Government of Bihar (GoB) wishes to achieve the following:

- Ensure that every citizen in the state has access to Government services and information whenever and wherever they need it
- Provide reliable, vertical and horizontal connectivity within the state administration to make the Government more productive.



- Provide the Government agencies, the ability to leverage a robust infrastructure to provide a complete array of Government services and information.
- Reduce communication cost.
- Provide a secure backbone for encouraging electronic transactions.
- Provide efficient service management
- Make services available in a cost-efficient manner, offering public constituencies' equivalent access at an equivalent price, regardless of their location in the State of *Bihar*.
- Move toward the provisioning of converged communication Services (voice, data and video) and the interconnection and interoperation of network platforms and encouraging vendors to consider any network architecture to determine the most efficient and cost effective approach.
- To increase the efficiency of Govt. delivery mechanism and to optimize performance.

## **Vision Mission and Objectives of BSWAN**

“To establish a Bihar State Wide Area Network that would serve as the backbone network for data, video and voice communications throughout the State. Overall scope will be fine-tuning of design, implementation, operation & maintenance of BSWAN as per the required level of technical design /specifications and performance as per DIT, Government of India Guidelines issued in September 2004 and January 2006.”

The principal objective of the BSWAN is to accelerate the growth and use of Information Technology by creating a infrastructure that is used to provide all connectivity and services not only to the Government but also to citizens, over a period of time, rapid narrowing of the digital divide and promoting all pervasive use of IT in all matters of the State. Keeping the vision of the department and inputs from the key stakeholders of the system, we propose the following objectives for the BSWAN.

- BSWAN would act as the vehicle for effective implementation of Electronic Governance (e-Governance) across the state.
- BSWAN will link Government offices at the Department of Science & Technology (DS&T) called as the State Head Quarter (SHQ), District Head Quarter (DHQ), and Block Head quarters (BHQ).
- State Data Centre (SDC) will be created at SHQ –
- BSWAN will use a suitable topology, state-of-art technologies and flexibility to expand/ upgrade to cover all parts of the State.



- All e-Governance Applications, Communication and IT infrastructure would be linked to/ Integrated with BSWAN.
- BSWAN will be based on open standards, scalable with high capacity network to carry data, video and voice traffic between different offices of GoB at State, District and Block level.

## **BSWAN overview**

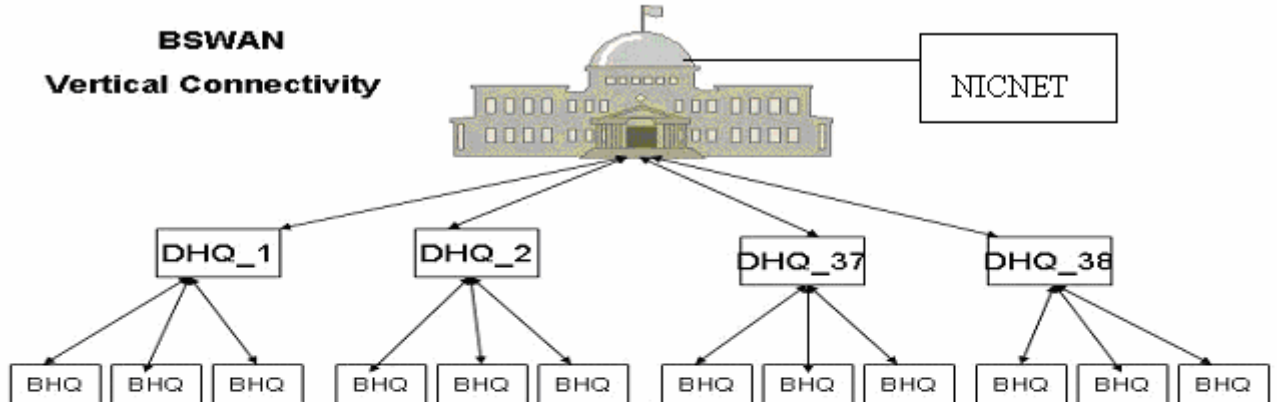
Government of Bihar (GoB) intends to set up a Bihar State Wide Area Network (BSWAN) through its Department of Science and Technology (DS&T), Technology Bhavan and Patna providing network connectivity to Government Offices and Departments at State Capital, District, Sub-Divisional, and Block headquarters across the State.. There will also be adequate bandwidth provision to meet the increasing demands of data, voice and video transmission. BSWAN will link GoB offices at the State Data Centre, called as the State Head Quarter (SHQ), District Head Quarter (DHQ), and Block Head Quarters (BHQ).

## **Connectivity at Various Levels**

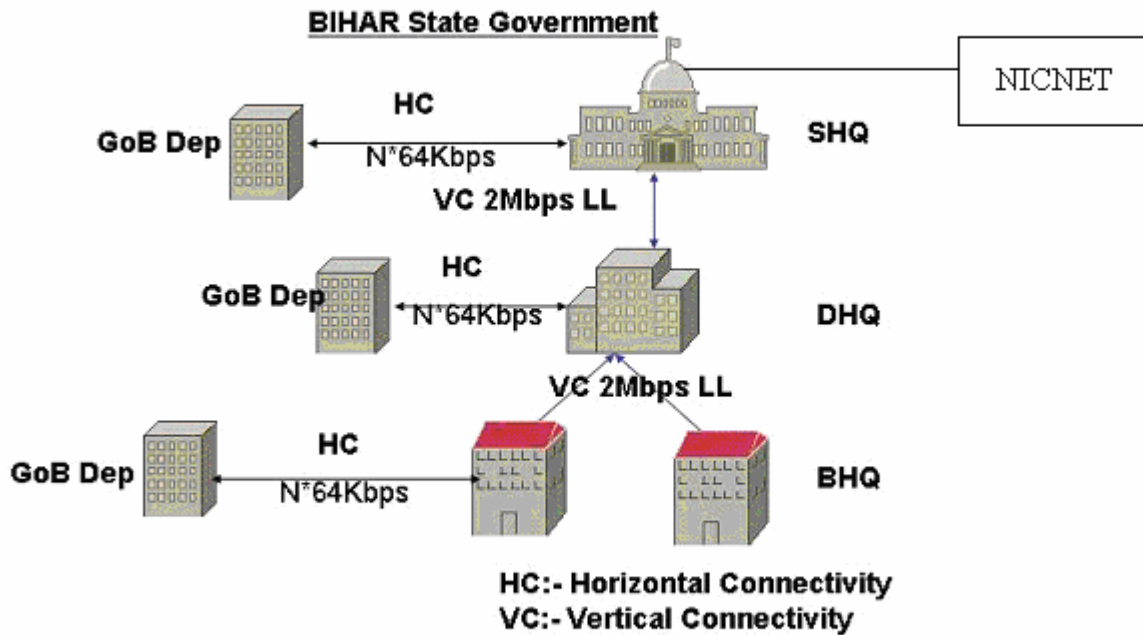
In the first instance, using 2Mbps leased lines, SHQ would be connected to all the District Headquarters (DHQs); Similarly, DHQs would also be connected to their respective Block Headquarters (BHQs) using the 2Mbps links. All these links at various State levels are Point of Presence (PoP) of BSWAN. This connectivity between PoP's are referred as Vertical connectivity (VC). The vertical connectivity for BSWAN is depicted in schematic below:



## BSWAN Vertical Connectivity



The BSWAN connectivity will be availed by all the GoB offices across the State from the nearest PoP. This connectivity between PoP to GoB offices is referred to as Horizontal Connectivity. The GoB offices that are co-located with PoP can be extended BSWAN connectivity using LAN technologies; else their needs to be some connectivity mode for these non localized departments from the respective HQ's. The Horizontal Connectivity (HC) and Vertical Connectivity (VC) are depicted using a logical schematic below. The bandwidths shown in the following diagram indicate immediate requirements.



Next schematic provides components level overview of both Vertical and horizontal connectivity, using 2Mbps lease lines, nX64Kbps lease lines, and LAN technologies.

The network architecture of BSWAN shall be designed on proven standards and technologies and shall be secure, reliable, accessible, configurable, scalable, high performance and high-bandwidth network.

**Interconnectivity between various Tiers**

BSWAN will be a three tier IP based Network, to provide connectivity among BSWAN PoPs at State HQ, District HQ and Block HQs. BSWAN will be based on star topology, using leased line network of Bandwidth Provider. The logical understanding of these tiers is briefed in the table below:

Point of Presence	Logical Layer	Tier
-------------------	---------------	------



<b>SHQ</b>	<b>State Head Quarters</b>	<b>Tier-I</b>
<b>DHQ</b>	<b>District Head Quarters</b>	<b>Tier 2</b>
<b>BHQ</b>	<b>Block Head Quarters</b>	<b>Tier 3</b>

**Highlights of these Logical Layers are as follows:**

**State Head Quarters (SHQ)**

Tier-I will be the core of the BSWAN at State Headquarter, which will be connected vertically to all the District Head Quarters (DHQs), PoPs (including state DHQ at Patna) and other GoB Offices, Departments in a city/town using horizontal connectivity mode. At SHQ the entire Bihar State Wide Area Network bandwidth is aggregated from all the connected GoB offices. For BSWAN SHQ will be facilitating e-Governance applications and services to GoB Departments, Offices and Citizens. SHQ as first level tier of BSWAN and will be located at Patna. The GoB Offices/Departments in Patna will be either connected to SHQ/ DHQ at DC Office Patna (horizontally) using n x 64 kbps leased lines, or broad band links. However, co-located offices will be connected to SHQ/DHQ using LAN technologies. There are 40 GoB Offices/Departments at the State level spread over.

**District Head Quarters (DHQs)**

This Tier-II of BSWAN initially will be using 2 Mbps leased lines to connect the SHQ with District Head Quarters (DHQ) as vertical connectivity. These DHQs will be located at the respective DHQ PoP. There are about 25 Government Departments/Organizations at the District level, which are spread over locations and will be connected to DHQ using n x 64 Kbps leased lines (horizontal), broad-band links. However, co-located offices will be connected to DHQ using LAN technologies. It is also proposed that offices located close to each other at one location will be covered with only one horizontal connection.

**Block Head Quarters (BHQs)**

This Tier 3 will link DHQ with Blocks/Division/Block Head Quarters to be located at the respective Sub-Division; Block head quarters using 2 Mbps leased lines. Each BLC will also be connected with other Government Offices at Sub Division/ Block level using n x 64 Kbps leased circuits, and broadband. However, co-located offices will be connected to BLC using LAN technologies. There



are about 10+ Government Departments/Organizations at the Sub Division/ Block level, which are spread over locations.

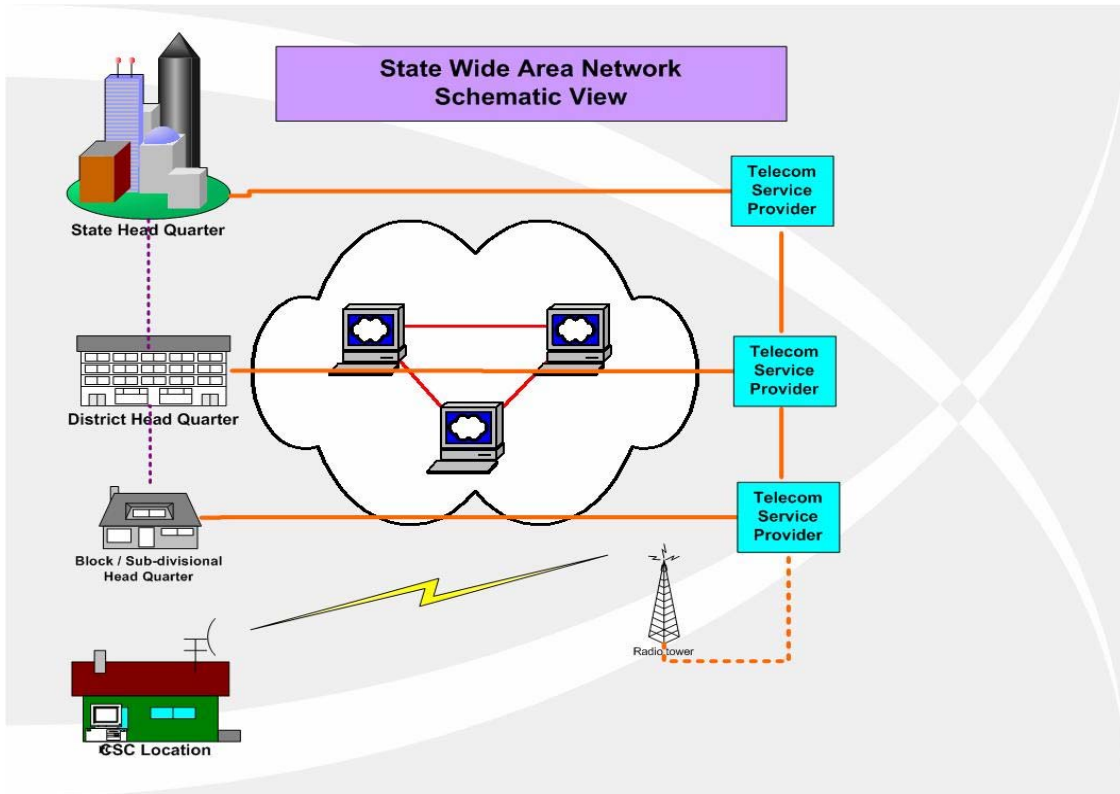
### **Connectivity between PoPs**

BSWAN to be established shall be capable of reaching all parts of the State and shall be able to deliver the following bandwidths between PoPs: **Voice and** Video applications like conferencing should support from SHQ level to DHQ/BHQ level.

<b>Initially</b>	<b>Upgrades in multiple(s) of</b>	<b>Connectivity between</b>
<b>2Mbps</b>	<b>2Mbps</b>	<b>SHQ – DHQ</b>
<b>2Mbps</b>	<b>2Mbps</b>	<b>DHQ - BHQ</b>



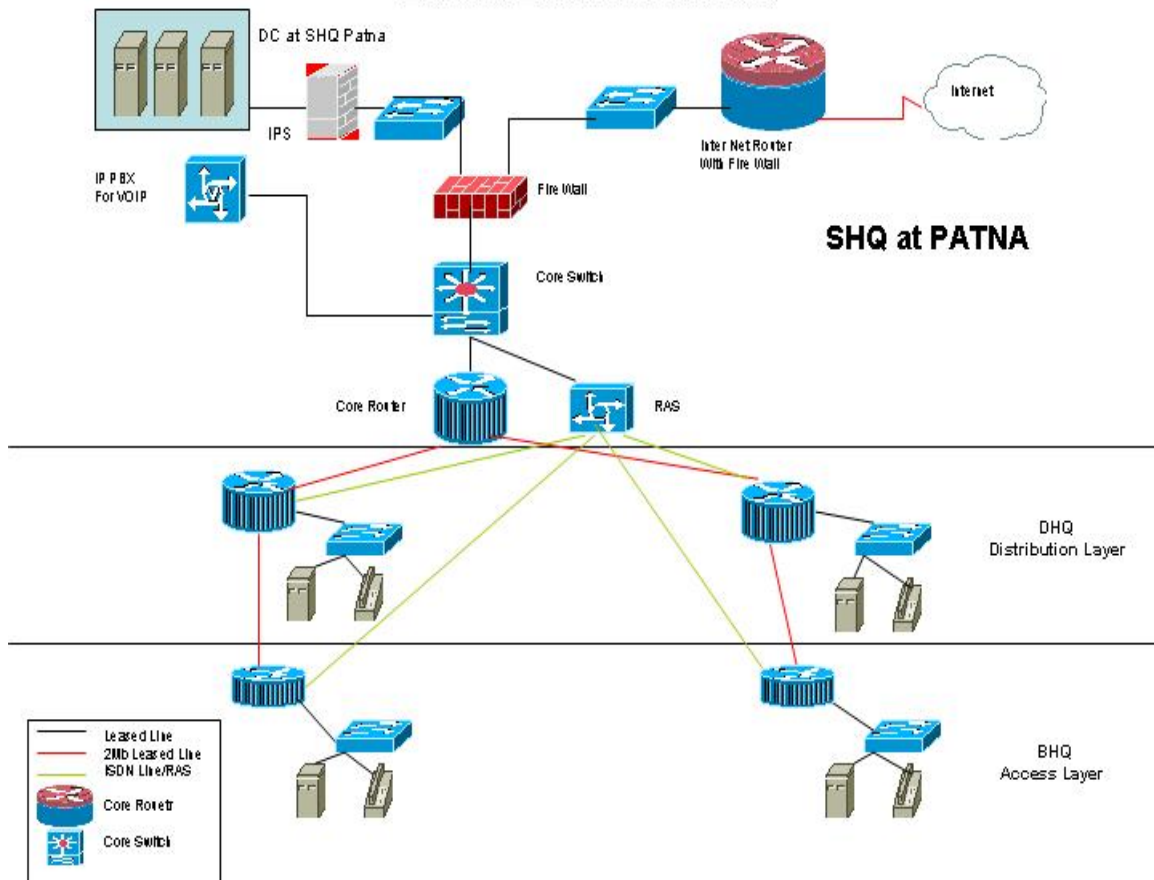
*Bihar State Wide Area Network Schematic View*



*State Wide Area Network Schematic View*



## BSWAN LOGICAL LAYERS



The inclusive approach of the government envisages that network connectivity can be brought to all the corners of the state, thus enabling the government's ability to take faster decisions, reduce the time lag in implementation of its various schemes, provides citizen-centric government services in more cost and time effective manner.

While several programs undertaken by the government have already created a base for Information and Communication Technology proliferation in the state, there are various e-Governance projects in the state which are either operational or are in process of being so in near future. Some of the projects that are already executed or are in the process of getting executed are provided in Table below. The web sites of various government departments and agencies are listed below:



## Web Sites Directory

Bihar State Portal	Bihar State Tourism Development Corporation
Bihar Vidhan Parishad	Bihar Rajya Pul Nirman Nigam Ltd
Bihar Vidhan Sabha	Bihar Intermediate Education Council
Dy. CM Grievance Cell	Central Excise
Industries Department	College of Arts & Crafts, Patna University
Khuda Bakhsh Library	Controller of Communication Accounts
Patna High Court	Dept. of Industries, Bihar
Bihar Staff Selection Commission	Directorate of Rice Development
Bihar State Tourism Development Corporation	Dy Chief Minister's Grievance Cell
State Election Commission	Ganga Flood Control Mission
Bihar Rajya Pul Nirman Nigam	Integrated Child Development Services
Bihar Intermediate Education Council	Jai Prakash University, Chapra
State Board of Technical Education	Khuda Bakhsh Oriental Public Library
Bihar State Electricity Board, Patna.	Koshi Kshetriya Gramin Bank, Purnea
Disaster Management	Krishi Vigyan Kendra, Vaishali
Accountant General, Bihar	Lalit Narayan Mahila University, Darbhanga
Bihar Legislative Council	Natural Calamity and Disaster Management
Bihar Staff Selection Commission	Patna High Court, Patna
Bihar State Co-operative Bank	Patna University, Patna
Bihar State Credit & Investment Corporation Ltd.	Railway Recruitment Board, Patna
Bihar State Housing Board	Science College, Patna
Bihar State Electricity Board	State Board of Technical Education
	State Election Commission
	Video Conference Booking

## List of Department Web Sites

Board of Revenue	Industries
Commercial Taxes	Information and Public Relations
Disaster Management	Labour, Employment and Training
Energy	Law
Finance	Minority Welfare
Food, Supply and Commerce	Planning and Development
Health, Medical Education & Family Welfare	Public Health and Engineering
Human Resource Development	Road Construction



Rural Development  
Science and Technology  
Sugarcane  
Tourism

Transport  
Water Resources  
Welfare  
Youth, Art and Culture



### **List of Departments Web Sites under construction**

- Agriculture.
- Animal Husbandry & Fisheries
- Environment & Forest
- Institutional Finance & Programme Implementation.
- Mines & Geology
- Personnel & Administrative Reforms
- Revenue & Land Reforms
- Urban Development



**Table 2: Applications in use by the State Departments**

S. No.	Department Name	Name of Application (s)	Current / Planned	If Planned project likely to be completed by	Key Functionalities	Front End	Back end	Network Architecture (LAN / MAN / WAN etc.)	Application integration with other departments/ Interoperability requirements	3rd Party Vendors if any (Consultant / Company Details etc.)
1.	Agriculture	Agmarknet	Current	NA	Providing information on Market Prices			2 tier	None	Developed by NIC
2.	Commercial Tax	VICTORY	Current	NA	Provides for Registration of dealers. All functionalities of the Department are taken care of by the software	Developer 2000	Oracle 10g	Web-enabled	None	Developed by NIC
3.	Election	ELECON	Current	NA	Was the first software deputed by the Election	VB	MS Access	2 tier	None	Developed by NIC



					Commission. Uses random number generation technique & is used in all 38 Districts.					
4.	Registration	SCORE	Current	NA	All services provided by the department are handled by the software	Developer 2000	Oracle	2 tier	None	Developed by NIC
5.	Transport	NICTRAN	Current	NA	For tax collection, registration and issue of driving licenses	VB	Oracle		None	Developed by NIC
6.	Transport	Permit issue	Current	NA	Used for issue of National Permit	VB	Oracle		None	Developed by NIC
7.	State Electricity Board	RACE	Current	NA	Revenue Administration through computerized Energy Billing system. Financial data with auditing for the department	Developer 2000	Oracle 8i	2 tier	None	Developed by NIC
8.	Land	BHUMI	Planned		A GIS that would				None	Being



	Records				provide comprehensive information about the land and associated details.					Developed by NIC
9.	Urban Development	Monitoring System	Current	NA	System for monitoring the physical progress in the construction of the buildings			2 tier	None	Developed by NIC
10	Treasury	Electronic, Centralized Treasury management system	Current	NA	To bring core treasury functions into one unified centralized system				None	Developed by NIC

From the list of the projects stated above, it is quite evident that state of Bihar is now in a position to leverage Information and Communication Technology to create a positive impact on the functioning of the government and its interaction with citizens. The above projects would form the building blocks for future e-enabled state machinery, along with the infrastructure components like State Data Centre, BSWAN and the CSC's. The infrastructure components would create the necessary environment for realizing the larger IT Vision for the state. GoB is keen to transform the State's telecommunications infrastructure to a converged network that leverages leading technologies and global best practices in communication infrastructure.

**The Bihar State Wide Area Network (BSWAN) would aim at:-**

Providing a reliable, integrated and robust telecommunications infrastructure catering to high speed and high capacity delivery of voice, data and video transmissions Setting up an open standard based, interoperable, scalable network infrastructure providing a ubiquitous communication backbone for the State's distributed information processing environment in addition to enabling connectivity to various government departments Improving the service delivery and response time to the citizens of Bihar enabling quick access to information. Streamlining the Information flow within the State Leveraging IT for greater transparency, accountability and easier access to information.

Bihar State has 9 revenue commission rate, 38 districts, 101 sub-divisions and 534 blocks. For the purpose BSWAN the total numbers of PoPs after considering the co-location of certain offices are:

**Table 3: BSWAN PoPs:**

SI No	Districts	Blocks	Co-located PoPs	Final BSWAN PoPs
1	Araria	9	1	8
2	Arwal	5	1	4
3	Aurangabad	11	1	10
4	Banka	11	1	10
5	Begusarai	18	1	17
6	Bhagalpur	16	1	15
7	Bhojpur	14	1	13
8	Buxar	11	1	10
9	Darbhangha	18	1	17
10	Gaya	24	1	23
11	Gopalganj	14	1	13



Sl No	Districts	Blocks	Co-located PoPs	Final BSWAN PoPs
12	Jamui	10	1	9
13	Jehanabad	7	1	7
14	Kaimur (Bhabua)	11	1	10
15	Katihar	16	1	15
16	Khagaria	7	1	6
17	Kishanganj	7	1	6
18	Lakhisarai	6	1	5
19	Madhepura	13	1	12
20	Madhubani	21	1	20
21	Munger	9	1	8
22	Muzaffarpur	16	1	15
23	Nalanda	20	1	19
24	Nawada	14	1	13
25	Pashchim Champaran	18	1	17
26	Patna (SHQ/DHQ/SDHQ/BHQ)	23	3	20
27	Purba Champaran	27	1	26
28	Purnia	14	1	13
29	Rohtas	19	1	18
30	Saharsa	10	1	9
31	Samastipur	20	1	19
32	Saran	20	1	19
33	Sheikhpura	6	1	5
34	Sheohar	5	1	4
35	Sitamarhi	17	1	16
36	Siwan	19	1	18
37	Supaul	11	1	10
38	Vaishali	16	1	15
	Total	534	40	495

**Table 4: Summary of BSWAN PoPs:**

Particulars	No of PoPs
State Head Quarter	1
District Head Quarter	37
Block Head Quarter	495



**Note:** The effective number of PoPs for BSWAN will be One State Head Quarter, 37 District Head Quarters and 495 Block Head Quarters. The Divisional Commissionerate and Sub-divisional Head Quarters are either co-located in DHQ or BHQ.

**Table 5: The Horizontal offices at each tier are:**

<b>Particulars</b>	<b>Horizontal Offices</b>
State Head Quarter	40
District Head Quarter	25
Block Head Quarter	10



## **Section 3**

# **Instructions to Bidders**



## Section 3 - Instructions to Bidders

### 1. Definitions

In this document, the following terms shall have following respective meanings:

1. **“Acceptance Test Document”** means a mutually agreed document, which defines procedures for testing the SWAN against requirements laid down in the Agreement.
2. **“Affiliate”** shall mean any holding company or subsidiary company of a part to the Agreement or any company, which is subsidiary of such a holding company. The expressions "holding company" and "subsidiary company" shall have the meaning specified in section 4 of the Companies Act 1956 (as amended from time to time).
3. **“Agreement”** means the Agreement to be signed between the successful bidder and Government of Bihar including all attachments, appendices, all documents incorporated by reference thereto together with any subsequent modifications, the RFP, the bid offer, the acceptance and all related correspondences, clarifications, presentations.
4. **“Authorized Representative”** shall mean any person authorized by either of the parties.
5. **“Bidder”** means any firm or group of firms (called consortium) offering the solution(s), service(s) and /or materials required in the RFP. The word Bidder when used in the pre award period shall be synonymous with Bidder, and when used after award of the Contract shall mean the successful Bidder with whom Government of Bihar signs the agreement for rendering of services for SWAN.
6. **“BLOCK”** means Block Head Quarter to be located at a place as decided by Bihar.
7. **“Centre”** means SHQ, DHQ, SDHQ / BLOCK.
8. **“Co-located Office”** means the office situated within a range of 3-5 KM from the respective Centre.
9. **“Contract”** is used synonymously with Agreement.
10. **“Corrupt Practice”** means the offering, giving, receiving or soliciting of any thing of value or influence the action of an official in the process of Contract execution.
11. **“DHQ”** means District Head Quarter to be located at a place as decided by Government of Bihar.
12. **“Default Notice”** shall mean the written notice of Default of the Agreement issued by one Party to the other in terms hereof.
13. **“Final Acceptance Test (FAT)”** means the acceptance testing of the network including equipment at SHQ, all DHQs, all SDHQs / BLOCKs and all co-located & remote offices.



14. **“Fraudulent Practice”** means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Government of Bihar of the benefits of free and open competition.
15. **“Good Industry Practice”** shall mean the exercise of that degree of skill, diligence and prudence which would reasonably and ordinarily be expected from a reasonably skilled and experienced Bidder engaged in the same type of undertaking under the same or similar circumstances.
16. **“GoI”** shall stand for the Government of India.
17. **“Guaranteed Revenue”** means the rate payable to the Bidder under the Agreement for the performance of the Bidder’s Contractual obligations.
18. **“Implementation Period”** shall mean the period from the date of signing of the Agreement and up to the issuance of Final Acceptance Certificate of SWAN.
19. **“Law”** shall mean any Act, notification, bye law, rules and regulations, directive, ordinance, order or instruction having the force of law enacted or issued by the Central Government and/ or the Government of Bihar or any other Government or regulatory authority or political subdivision of government agency.
20. **“LOI”** means issuing of Letter of Intent, which shall constitute the intention of the Tenderer to place the Purchase Order with the successful bidder.
21. **“BOOT model”** the services as required by the Tenderer are specified in Schedule of Requirements on Build Own Operate and Transfer (BOOT) model.
22. **“Bidder”** means the company providing the services under Agreement.
23. **“Partial Acceptance Test (PAT)”** means the provisional acceptance testing of SHQ, all DHQs and all BHQs.
24. **“Party”** means Government of Bihar or Bidder, individually and “Parties” mean Government of Bihar and Bidder, collectively.
25. **“Period of Agreement”** means 5 years from the date of final acceptance of the SWAN.
26. **“Proposal”** means the Technical Proposal and the Financial Proposal.
27. **“Remote Office”** means the office located at a distance of more than 1Km from the respective Centre.
28. **“Request for Proposal (RFP)”**, means the detailed notification seeking a set of solution(s), services(s), materials and/or any combination of them.
29. **“Requirements”** shall mean and include schedules, details, description, statement of technical data, performance characteristics, standards (Indian as well as International) as applicable and specified in the RFP.
30. **“Site”** shall mean the location(s) for which the Contract has been issued and where the service shall be provided as per agreement.



31. **“SHQ”** means State Head Quarter to be located at a place as decided by Government of Bihar.
32. **"Service"** means provision of Contracted service viz., operation, maintenance and associated services for SWAN as per this RFP.
33. **“SDHQ”** means Sub-Division Head Quarter to be located at a place as decided by Government of Bihar.
34. **"Third Party Agency"** means any agency other than the successful bidder, appointed by Government of Bihar for monitoring the SWAN during commissioning and operation.
35. **“Termination Notice”** means the written notice of termination of the Agreement issued by one Party to the other in terms hereof.
36. **"Uptime"** means the time period when specified services/network segments with specified technical and service standards as mentioned in this RFP are available to Government of Bihar. The uptime will be calculated as follows: Total time in a quarter (in minutes) less total Service Down time (in minutes) in the quarter.
37. **"%Uptime"** means ratio of 'up time' (in minutes) in a quarter to Total time in the quarter (in minutes) multiplied by 100.
38. **"Service Down Time"** (SDT) means the time period when specified services/network segments with specified technical and operational requirements as mentioned in this document are not available to Bihar. The network shall be operational on all days of a year and 24-hours/day with in the uptime specified in the Service Level Agreement (SLA). The network is considered as operational when all centres at all tiers/ levels are working, providing all/ specified services as mentioned in full capacity at all locations in the network.
39. **“BELTRON”** means Bihar State Electronics Development Corporation Limited, State level agency nominated by Government of Bihar as implementation agency for BSWAN.
40. **“GOB”** means Government of Bihar.
41. **“DS&T”** means Department of Science and Technology, Government of Bihar, line department for implementation of BSWAN.

## **2. Bid Documents**

Bidder is expected to examine all instructions, forms, terms, and requirements in the bid document. Failure to furnish all information required by the bid document or submit a Bid not substantially responsive to the bid document in every respect may result in the rejection of the Bid. The bids should be submitted in three parts as mentioned hereunder on or before *02/04/2007*

### **A. Pre-qualification bid as per eligibility criteria specified**

1. A letter on the bidder's letter-head (Appendix – 1)



- i. Describing the pre-qualifying technical competence and experience of the bidder,
  - ii. Certifying that the period of validity of bid is 180 days from the last date of submission of bid, and
  - iii. Asserting that the bidder is quoting for all the items (including services) mentioned in the tender.
2. The profile of the bidder (template given in Appendix -2)
3. Audited annual financial results (balance sheet and profit & loss statement) of the bidder for the last three financial years. (Template provided in Appendix 3)
4. The bid security in the form of a Bank Guarantee / Demand draft issued by a Nationalized / Scheduled Bank, in favour of Bihar State Electronics Development Corporation Limited, payable at Patna.
5. Quality certification in delivery of services sought under this RFP, from an internationally recognized/reputed agency, e.g. ISO 9001 : 2000
6. Manufacturer's authorization form(s) (template provided in Appendix -4)
7. Reference list of major clients (using equipment/services similar to Bihar requirement). (Template provided in Appendix 5)
8. Solvency Certificate
9. Power-of-attorney granting the person signing the bid the right to bind the bidder as the 'Constituted attorney of the Directorate'.
10. Permanent Account Number (PAN) from INCOME TAX authorities of area of operation of the bidder.
11. A copy of the RFP, all pages duly signed by the authorized signatory towards acceptance of the terms and conditions of the RFP. **Only one signed copy of RFP should be enclosed with the original Pre-qualification bid.**

## **B. Technical bid**

- a. Bid particulars
- b. Bid letter
- c. Proposed Network Architecture, Technical Solution, details of equipment and services offered
- d. Unpriced Bill of Material (BOM)



- e. Qualification and Deployment Schedule of the staff proposed for the project (Appendix 6 and 7)
- f. Proposed Project Plan and Implementation Schedule
- g. Statement of deviation from requirement specifications (Appendix 8)
- h. Statement of deviation from tender terms and conditions (Appendix 9)
- i. Schedule of delivery
- j. Warranty
- k. Manufacturer's authorization form(s).

### **C. Commercial bid**

- a. Bid letter
- b. Bid particulars including priced Bill of Material (BOM)
- c. Statement of commercial deviation (template provided in Appendix 11)
- d. Quarterly Guaranteed Payment (template Provided in Appendix 12)
- e. Quarterly Payment for Horizontal Office (template provided in Appendix 13)

Bidders should enclose with their offers full details of all the equipment and services offered as well as their latest equipment and services available with full documentation and descriptive literature supplementing the description and point out any special feature of the equipment and services. All documentation is required to be in English.

### **3. Pre-bid Conference (PBC)**

- (i) Tenderer shall hold a pre-bid conference (PBC) after the sale of the RFP document as per schedule mentioned in this RFP. In this PBC, tenderer would address the clarifications sought by the bidders with regard to the RFP document and the project. The bidders would be required to submit their queries to the Managing Director, Bihar State Electronics Development Corporation Limited in writing (Fax / post and e-mail) to be received at least 2 (two) days prior to the PBC. Queries not submitted within this deadline may not be taken up at the PBC. Queries should be submitted in the enclosed format ( template provided in Appendix-18)
- (ii) Tenderer will entertain queries of and clarifications sought by only those bidders who have purchased this RFP document. Bidders who has purchased the RFP document are welcome to attend the PBC, even if they do not have any specific queries.
- (iii) Tenderer reserves the right not to respond to any/all queries raised or clarifications sought if, in their opinion and at their sole discretion, they consider that it would be



inappropriate to do so or do not find any merit in it. The minutes of the PBC shall be circulated by tenderer to all those companies who have purchased this RFP document and also host the same on the State website [www.beltron.in](http://www.beltron.in).

#### **4. Amendment of Bid Documents**

The amendments in any of the terms and conditions including technical specifications of this RFP document will be notified in writing either through post or by fax or by email or publish through website to all prospective bidders who have purchased the tender documents and will be binding on them.

#### **5. Cost of Bidding**

The Bidder shall bear all costs associated with the preparation and submission of its Proposal, including the cost of presentation for the purposes of clarification of the bid, if so desired by the Government of Bihar. The Government of Bihar will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bid process.

#### **6. Cost of Bid Document**

The cost of Bid document is Rs. 25000 (Twenty five thousands only), the document can be purchased from the office of Managing Director, Bihar State Electronics Development Corporation, BELTRON Bhawan, Shastrinagar, Patna during office hours from 26<sup>th</sup> February 2007 to 1<sup>st</sup> April 2007 (from 9.00 am to 5.00 pm) on 2<sup>nd</sup> April 2007 (from 9.00 am to 3.00 pm) and the document is also uploaded on [www.beltron.in](http://www.beltron.in). In case the RFP document is downloaded the bidder has to enclose a Demand Draft in favour of MD, BSED payable at Patna along with pre-qualification proposal. But for attending the pre-bid conference the bidders have to purchase the bid document.

#### **7. Bid Security i.e. Earnest Money Deposit (EMD)**

- a) The Bid security shall be in Indian rupees (INR) and shall be a Bank Guarantee / Demand Draft, issued by a nationalized bank in India and shall be valid for at least six months. No interest shall be payable on Bid Security under any circumstance.
- b) The bidder shall furnish, as part of his bid, a bid security in the form of Bank Guarantee / Demand Draft of Rs. 2,00,00,000/- (Two Crores only). The template of bank guarantee is provided in Appendix – 15
- c) Unsuccessful Bidder's Bid security shall be discharged or returned within sixty (60) days after the expiration of the period of Bid validity prescribed by GoB.



- d) The successful Bidder's Bid security shall be discharged upon the Bidder signing the Agreement.
- e) The Bid security will be forfeited at the discretion of Government of Bihar on account of one or more of the following reasons:
  - The Bidder withdraws their Bid during the period of Bid validity
  - Bidder does not respond to requests for clarification of their Bid
  - Bidder fails to co-operate in the Bid evaluation process, and
- f) In case of a successful Bidder, the said Bidder fails :
  - to furnish Implementation Guarantee; or
  - to sign the Agreement in time

## 8. Bid Prices

- a) The Price Bid as prescribed should be filled up and sealed along with enclosures in a separate cover superscribed as **"Price Bid – Envelop B, Tender No : \_\_\_\_\_ Due on DD.MM.YYYY"**.
- b) The prices quoted by the bidder shall be in sufficient detail to enable the Tenderer to arrive at the price of equipment/system offered.
- c) The covers received without superscription are liable for rejection. The tenders not submitted as specified above will be summarily rejected.
- d) If any or all of the information asked in the RFP are not available in the Commercial Proposal the bid is liable for rejection.

## 9. Discounts

The Bidders are informed that discount, if any, should be merged with the quoted prices. Discount of any type, indicated separately, will not be taken into account for evaluation purposes.

## 10. Bid validity

The bids shall remain valid for a period of 180 days from the last date of submission of tender.

## 11. Submission of Proposals

- a) All the proposals will have to be submitted in hard bound form with all pages numbered. It should also have an index giving page wise information of above documents. Incomplete proposal will summarily be rejected.
- b) Number of Copies of Bid



- o The Bidder shall prepare one original and two hard copies of the following bids along with a soft copy in CD:
  - Pre Qualification Bid clearly marking "Pre Qualification Bid- Original Copy and Pre Qualification Bid- Copy of Bid".
  - Technical Bid separately, clearly marking "Technical Bid – Original Copy" and "Technical Bid –Copy of Bid".
  - Financial Bids, clearly marking "Financial Bid I– Do not open with Technical Bid".
- c) No bid will be considered unless and until each page of the bid document is duly signed by the authorized signatory. The bidder shall also submit the soft copy of Pre-qualification, technical and commercial bids on separate CDs duly packed in the respective envelopes.
- d) Prices should not be indicated in the Technical Bid.
- e) All the columns of the quotation form shall be duly, properly and exhaustively filled in. The rates and units shall not be overwritten. Rates shall always be both in the figures and words.
- f) The proposals shall be submitted in three parts, viz.,
  - o **Envelope - 1:** Pre- qualification documents super scribed as "**Envelope 1- Pre- qualification Documents**" containing EMD, Pre- qualification documents complete with all details.
  - o **Envelope 2:** - Technical Proposal super scribed as "**Envelope 2 – Technical Proposal**", complete with all technical details". In the technical proposal, there should not be any indication about the prices of any of the products offered.
  - o **Envelope-3:** Commercial Proposal containing Price Schedule super scribed as "**Envelope 3 – Commercial Proposal**".

All the three sealed envelopes should again be placed in a single sealed envelop super scribed as "**BSWAN Tender No BSWAN/BSEDC 2007 /03, Bid from: \_\_\_\_\_**)" "**NOT TO BE OPENED BEFORE 2<sup>nd</sup> April 2007, 4.00 P.M.,** which will be received in the office of

***Shri. Alok Vardhan Chaturvedi***

***Managing Director***

***Bihar State Electronics Development Corporation Limited***

***BELTRON Bhawan, Sastri Nagar***

***PATNA , BIHAR - PIN CODE-800023***

***Tel No:- 0612-2281856, 0612-2281857***

***Fax No:- 0612-2281857***

***e-mail:- bsedc@beltron.in, best@ilfsets.com Web Site:- [www.beltron.in](http://www.beltron.in)***



up to the due date and time mentioned in the Schedule of Events (Section-II – 2.18) of this document.

## **12. Language**

The Bids and all correspondence and documents relating to the bids, shall be written in the English language. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in English language. ***There should be proper page numbering on every page of Pre-qualification, Technical and Financial Bids, so that proper referencing can be done.***

## **13. Late Bids**

Any bid received by the Tenderer after the time and date for receipt of bids prescribed in the RFP document will be rejected and returned unopened to the Bidder.

## **14. Modification and withdrawal of Bids**

- a) The Bidder is allowed to modify or withdraw its submitted bid any time prior to the last date prescribed for receipt of bids, by giving a written notice to the Tenderer.
- b) Subsequent to the last date for receipt of bids, no modification of bids shall be allowed.
- c) The Bidders cannot withdraw the bid in the interval between the last date for receipt of bids and the expiry of the bid validity period specified in the Bid. Such withdrawal may result in the forfeiture of its EMD from the Bidder.

## **15. Bid Forms**

- a. Wherever a specific form is prescribed in the Bid document, the Bidder shall use the form to provide relevant information. If the form does not provide space for any required information, space at the end of the form or additional sheets shall be used to convey the said information.
- b. For all other cases, the Bidder shall design a form to hold the required information.
- c. GoB shall not be bound by any printed conditions or provisions in the Bidder's Bid Forms

## **16. Local Conditions**

- a. Each Bidder is expected to fully get acquainted with the local conditions and factors, which would have any effect on the performance of the contract and /or the cost.



- b. The Bidder is expected to know all conditions and factors, which may have any effect on the execution of the contract after issue of Letter of Award as described in the bidding documents. The tenderer shall not entertain any request for clarification from the Bidder regarding such local conditions.
- c. It is the Bidder's responsibility that such factors have properly been investigated and considered while submitting the bid proposals and no claim whatsoever including those for financial adjustment to the contract awarded under the bidding documents will be entertained by the Tenderer. Neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted by the Tenderer on account of failure of the Bidder to know the local laws / conditions.
- d. The Bidder is expected to visit and examine the location of State offices and its surroundings and obtain all information that may be necessary for preparing the bid at their own interest and cost.

#### **17. Contacting the Tenderer**

- a) Any effort by a Bidder influencing the Tenderer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the bid.
- b) Bidder shall not approach Bihar officers after office hours and/ or out side Bihar office premises, from the time of the bid opening till the time the Contract is awarded.

#### **18. Eligibility Criteria**

For each category of pre qualification criteria, the documentary evidence is to be produced duly certified-signed in ink with seal by authorized signatory of the Bidder(s), serially numbered and enclosed with technical bids. If the documentary proof is not enclosed for any/all criteria the Tender is liable for rejection.

The bidder shall meet the following criteria for eligibility:

- a. The bid shall be submitted by an individual organization or a consortium.
- b. The bidder (lead member of the consortium) shall be an Information Technology & Communication company.
- c. The bidder (lead member of the Consortium) should be a profitable organization (PSUs are exempted from the profitability clause) and should have average annual turnover from facility management services and system integration to the tune of INR 100Crores and above in the last three financial years
- d. The bidder (lead member of the consortium) should have a positive net worth
- e. The bidder (lead member of the Consortium together) must have successfully completed at least any one of the following:



- 1 project of minimum 200 WAN nodes
  - 2 projects of minimum 125 WAN nodes
  - 4 projects of minimum 100 WAN nodes
- f. References (contact details, customer completion certificate, customer satisfaction certificate etc) for these projects shall be provided. Projects executed for bidder's own, bidder's group of companies or bidder's JV companies shall not be considered.
- g. The bidder must have completed at least one network involving converged services (Voice, Video, Data) with minimum of 100 nodes.
- h. The bidder (All members of the consortium together) should have direct authorization from the Original Equipment Manufacturer (OEM) for selling and supporting the components offered.
- i. The bidder (lead member of the consortium) must have had at least 200 employees on-roll over each of the last three years (as on March 31, 2004, 2005 & 2006)
- j. The bidder (lead member of the Consortium) shall have Quality certification from an accredited and internationally reputed / renowned firm (viz. ISO 9001:2000)
- k. The bidder (any member of the Consortium) should have office in Bihar. In case bidder has no presence in Bihar, bidder shall furnish an undertaking that an office shall be opened in Bihar, with sufficient personnel and inventory of spares within a month of selection as Successful Bidder.
- l. The bidder (each member of the consortium) shall have bank's certificate of solvency.
- m. The bidder (each member of the consortium) must have company registration certificate, registration under Labour Laws Contract Act, valid sales tax registration certificate and valid service tax registration certificate.
- n. In case of a consortium, applicant consortia shall have a valid Memorandum of Understanding (MoU)/ agreement among all the members signed by the Chief Executives/ Authorised Signatories of the companies dated prior to the submission of the bid. The MoU/ agreement shall clearly specify the stake of each member and outline the roles and responsibilities of each member. The MoU/ agreement shall be exclusively for this project and shall be responsible in case of failure by any member.
- o. The consortium shall be evaluated based on the lead bidder's strength as defined in this bid document. Once short listed in pre qualification, change of consortium shall not be allowed.

## 19. Schedule of Events

Sr. NO	Events	Date



1	Last date for submission of queries	17.30 hrs on 12/03/2007
2	Pre-bid Conference at the Government of Bihar Premises	16.00 hrs on 14/03/2007
3	Last date and time of proposal Submission	02/04/2007 15.00 hrs
4	Date and time of opening of the Prequalification Documents at BSEDC Premises	16.00 hrs on 02/04/2007
5	Date and time of opening of the Technical Proposals at BSEDC Premises	16.00 hrs on 16/04/2007
6	Date of opening of the Commercial Proposal at Government of Bihar premises	16.00 hrs on 30/04/2007
7	Contract Signing	07/05/2007

## 20. Opening of Proposal

First, the envelope containing pre-qualification will be opened and if found that the bidder meets the eligibility criteria and has furnished all the documents in the prescribed manner, then the second envelope containing Technical Proposal shall be opened. The timing for opening the technical bid will be at the sole discretion of evaluation committee. The commercial bid would be opened in presence of technically short listed bidders. The Evaluation Committee or its authorized representative will open the tenders. Sequence of opening shall be as follows:

- Pre-qualification
- Technical Proposals
- Commercial Proposals

## 21. Evaluation

An evaluation committee so constituted by Bihar will evaluate the bids i.e. technical and commercial as per the following pattern.

- a) Conditional bids shall be summarily rejected.
- b) Evaluation committee will examine the bids to determine whether they are complete, whether any computational errors have been made, and whether the bids are generally in order.
- c) Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total



price shall be corrected. If the Bidder does not accept the correction of the errors, his bid will be rejected. If there is a discrepancy between words and figures, the amount in words will prevail.

- d) The tenderer may conduct clarification meetings with each or any bidder to discuss any matters, technical or otherwise.
- e) Further, the scope of the evaluation committee also covers taking of any decision with regard to the RFP, execution/ implementation of the project including management period.
- f) Bid shall be opened on the day of opening of the bids at 16.00 hrs on 2<sup>nd</sup> April, 2007 in the presence of bidders representatives who intend to attend at their cost. The bidders' representatives who are present shall sign a register evidencing their attendance.
- g) Bid document shall be evaluated as per the following steps.
  - (a) **Preliminary Examination of Pre-qualification documents:** The Pre-qualification document will be examined to determine whether the bidder meets the eligibility criteria, completeness of the bid, whether the documents have been properly signed and whether the bids are generally in order. Any bids found to be non-responsive for any reason or not meeting the minimum levels of the performance or eligibility criteria specified in the various sections of this RFP will be rejected and not included for further consideration.
  - (b) **Evaluation of document:** A detailed evaluation of the bids shall be carried out in order to determine whether the bidders are competent enough and whether the technical aspects are substantially responsive to the requirements set forth in the RFP. Bids received would be assigned scores based on the parameters defined in table below.

Criteria Points	(if the criteria Mentioned are met)	Total Group Points
<b>A. Organization Capability</b>		
<b>A1. Organizational Profile</b>		<b>10</b>
Existing Organizational strength (Manpower, Quality Certification etc.	5	
Existing infrastructure in Bihar (own/franchisee) (Supporting documents with location details/address/phone no to be submitted – at least one office in Patna). Presence of personnel	5	



in a customer site would not be considered as Infrastructure presence		
<b>A2. Financial Profile</b>		<b>10</b>
i. The bidder or the consortium leader should have a turnover of Rs 100 Crores from IT business. Should have healthy asset/debt ratio, and Positive Net worth	10	
<b>B. Technical Capability</b>		
<b>B1. Project Management</b>		
<b>Technical Capability in executing &amp; managing large (&gt;=200) multi location WAN projects, integrating various technologies. (Total number of nodes implemented by the bidder, along with maintenance track record, SLA audit etc. would be taken into account)</b>		<b>20</b>
i) Aggregated total number of nodes in all projects	5	
ii) Weighted average of aggregated managed bandwidth	5	
iii) SLA audit records of projects undertaken	5	
iv) Manpower deployment & strength	5	
<b>Implementation of Integrated Voice, Data &amp; Video Networks</b>		<b>5</b>
i)Number of Video conferencing nodes implemented	3	
ii)Number of VoIP terminal implemented	2	
<b>B2. Technical Solution Offered</b>		
<b>Solution Offered conforming to RFP (or higher) for SHQ/DHQ/BHQ (Technology with scalability, interoperability, security, SLA implementation scheme ,time schedule of implementation etc would be taken into account)</b>		<b>50</b>
i) Compliance of specification of RFP	25	
ii) Additional features offered	5	
iii) Network architecture proposed	5	
iv) Scalability in terms of nodes for future upgradeability	2	
v) Scalability in terms of aggregated bandwidth for future upgradeability	2	
vi) Security & Antivirus Management Solution offered	5	
vii) SLA implementation scheme offered	5	
viii) Time schedule implementation projected	1	
<b>Manpower support offered (Details of manpower deployment plan)</b>		<b>5</b>
i) Manpower deployment plan for SWAN	2	



ii) Experience of manpower to be deployed	2	
iii) Qualification of manpower to be deployed (Educational background, Certifications),	1	
<b>TOTAL TECHNICAL SCORE (T) = 100</b>		<b>100</b>

#### **Commercial evaluation: L1**

The bidder's technical score will arrived at using percentile and relative ranking system on the basis of maximum and minimum value against the criteria. For example Bidder A has executed 800 nodes WAN project, and Bidder B has executed 2400 nodes WAN project; and the maximum score against the criteria is 5. The relative scores of the bidders will be arrived at as follows:-

Score of Bidder B = 5 (Maximum value against the criteria)

Score of Bidder A = 1.67 ( $=5*800/2400$ )

The technical scores of the bidder against each criteria would be then totaled up, and thereafter the technical scores of all the bidders would be listed in decreasing order.

Any proposal achieving a Total Technical Score (T) less than 75 will be treated as Not Substantially Responsive and will not be considered further. Only the technically qualified bidders will be informed for opening of the price bid.

#### **Evaluation of Commercial Bids: Lowest Commercial cost**

The commercial bids will be opened only for the bidders with score of 75 points and above on the parameter defined above.

The bid with the lowest commercial (L1) will be considered as the successful bidder.

## **22. Deciding Award of Contract**

- a) The Tenderer reserves the right to ask for a technical elaboration/clarification in the form of a technical presentation from the Bidder on the already submitted Technical Proposal at any point of time before opening of the Commercial Proposal. The Bidder shall furnish the required information to *Government of Bihar* and its appointed representative on the date asked for, at no cost to the Tenderer. The Tenderer may at its discretion, visit the office / Network Operation Centre (NOC) of the Bidder for Services, any time before the issue of Letter of Award.



- b) *Government of Bihar* shall inform those Bidders whose proposals did not meet the eligibility criteria or were considered non-responsive, informing that their Commercial Proposals will be returned unopened after completing the selection process. Government of Bihar shall simultaneously notify those Bidders who had qualified the Evaluation process as described in this RFP, informing the date and time set for opening of Commercial Proposals. The notification may be sent by mail or fax.
- c) The bidder's names, the Bid Prices, the total amount of each bid, and such other details as the Tendering Authority may consider appropriate, will be announced and recorded by the Tenderer at the opening.

### **23. Confidentiality**

- a) As used herein, the term “Confidential Information” means any information, including information created by or for the other party, whether written or oral, which relates to internal controls, computer or data processing programs, algorithms, electronic data processing applications, routines, subroutines, techniques or systems, or information concerning the business or financial affairs and methods of operation or proposed methods of operation, accounts, transactions, proposed transactions or security procedures of either party or any of its affiliates, or any client of either party, except such information which is in the public domain at the time of its disclosure or thereafter enters the public domain other than as a result of a breach of duty on the part of the party receiving such information. It is the express intent of the parties that all the business process and methods used by the Bidder in rendering the services hereunder are the Confidential Information of the Bidder.
- b) The Bidder shall keep confidential any information related to this tender with the same degree of care as it would treat its own confidential information. The Bidders shall note that the confidential information will be used only for the purposes of this tender and shall not be disclosed to any third party for any reason whatsoever.
- c) At all times during the performance of the Services, the Bidder shall abide by all applicable security rules, policies, standards, guidelines and procedures. The Bidder should note that before any of its employees or assignees is given access to the Confidential Information, each such employee and assignees shall agree to be bound by the term of this tender and such rules, policies, standards, guidelines and procedures by its employees or agents.
- d) The Bidder should not disclose to any other party and keep confidential the terms and conditions of this Contract agreement, any amendment hereof, and any Attachment or Annexure hereof.



- e) The obligations of confidentiality under this section shall survive rejection of the contract.

## **24. Publicity**

Any publicity by the bidder in which the name of BSWAN is to be used, should be done only with the explicit written permission from Government of Bihar.

## **25. Insurance**

The equipment and services supplied under the contract shall be fully insured by the bidder against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery and installation. The period of insurance shall be up to the date the supplies are accepted and the rights of the property are transferred to Government of Bihar.

***The Insurance cover should take care of Natural calamities like earth quake, floods, fire and also manmade calamities like riots, insurgency attacks etc.,***

## **26. Arbitration**

State and the selected bidder shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

If, after thirty (30) days from the commencement of such informal negotiations, State and the selected Bidder have been unable to amicably resolve dispute, either party may require that the dispute be referred for resolution to the formal mechanisms, which may include, but are not restricted to, conciliation mediated by a third party acceptable to both, or in accordance with the Arbitration and Conciliation Act, 1996.

All Arbitration proceedings shall be held at Patna, Bihar State, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.

## **27. Buy Back Policy**

In case of incorporation of new services or termination of any existing services, any of the deployed SWAN network components may have to be discarded or be replaced. In such a situation GoB shall buy back all such equipments with the depreciated price as per the straight line depreciation method. However, all such components should be in full working condition. The status of component, estimated useful life of the asset and third party monitoring agency shall certify the depreciated value of the asset.





## **Section 4**

# **SPECIAL CONDITIONS OF CONTRACT**



## Section 4 - Special Conditions of Contract

The following clauses shall supplement the Instructions to Bidders.

### 1. Responsibility Matrix

Sr. No	Activity	BELTRON GoB State implementation agency	Consultants	Operator	Third Party Monitoring Agency (to be identified)
1	Preparation of RFP for the Selection of SWAN Operator		√		
2	Tender Process for the Selection of SWAN Operator	√	√		
3	Approval for Appointment of SWAN Operator	√			
4	Review and suggestion on the Network Architecture			√	
5	Site Identification	√			
6	Site Handover	√		√	
7	Site Survey and Preparation			√	
8	Installation and Commissioning of the SWAN			√	
9	Monitoring the Installation and Commissioning of the SWAN	√	√		√
10	Acceptance Tests (Partial & Final Acceptance)		√	√	√
11	Onsite Inspection and Verification of Acceptance Tests	√	√	√	√
12	Trial Run			√	√
13	Witness of Trial Run	√	√		√



14	Issue of Final Acceptance Test Certificate	√			√
15	Operation, Management and Maintenance of the SAWN			√	
16	Centralized Monitoring from NOC (24x7)			√	
17	Supervision of the Monitoring of the SWAN				√
18	Periodical Generation Of NMS report			√	√
19	Verification of the NMS Report				√
20	Approval of NMS Report	√			
21	Periodical Auditing of the SWAN				√
22	Submission of the Audited Report of SWAN as advised by Consultant			√	√

## 2. Third Party Monitoring Agency

GoB shall appoint a Third Party Agency, which shall monitor the BSWAN during implementation, commissioning and operation. The Third Party Agency shall also conduct the Partial and Final Acceptance Test as per the technical requirement of the Agreement and shall issue the Certificate of Completion for SHQ, DHQ, SDHQ/BLOCK and co-located & remote office. Third Party Agency shall verify the services as mentioned in Section III provided by the bidder. The bidder shall cooperate with such Third Party Agency. Third Party Agency will be responsible for verification, validation of all invoices under the terms & conditions of the Agreement and will recommend on the eligible payment. Third party agency will be responsible for performance audit and will recommend release of QGR.

## 3. Site Preparation and Site Survey

As per implementation plan, GoB shall arrange the necessary minimum constructed rooms/ space permanent construction for locating State Head Quarter (SHQ), District Head Quarters (DHQs), Sub district Head Quarters (SDHQ/BLOCKS) and co-located & remote



offices for operation of the BSWAN. The space cannot be used for any purpose other than for delivering the services as mentioned Section III as contracted under the Agreement. GoB shall arrange for necessary clearances, which shall enable the Bidder to undertake civil, electrical, and mechanical works including false ceiling, partitioning, installation of air conditioning equipment, installation of diesel generator sets, installation of UPS equipment, cable laying etc., at the respective sites. Bidder shall provide the Video conference infrastructure facilities including Furniture, Lights and Air Conditioner at all DHQs and SHQs. Infrastructure required for installation of equipment (for 8-10 persons) including power shall also be the responsibility of the Bidder.

GoB may decide at its discretion to change the location of SDHQ/BLOCK/ DHQ/ SHQ/ co-located & remote office during implementation or after implementation but during the Agreement period. The services shall be operational as per Section III within a period of 15 days from the date the space is provided by GoB. GoB shall reimburse the actual cost of relocation incurred by the Bidder as verified by the Third Party Agency.

The entry and exit to the site for the equipment and personnel of the Bidder shall be in accordance with Security Rules and Regulations that may apply to the Government Campus where the site is located.

GoB shall provide site readiness roadmap at the time of signing the contract. The Bidder will be responsible for site survey to identify the exact situation of the site and for ensuring site readiness for the implementation of the SWAN infrastructure. The Bidder would prepare a detailed report detailing status of each site.

The Bidder in his report detailing status of each site has to accord his acceptance for each of the site handed over by the State Government for BSWAN implementation. If the site is not otherwise acceptable to the bidder, he has to give clearly the deficiencies and possible remedies to the State Government. On receipt of Bidder's Acceptance Report the State Government will initiate appropriate corrections or modifications for stated site deficiencies.

- After the site has been accepted by the network operator, any further issues emanating due to the gaps in site shall be the responsibility of the network operator only and not the State Government.

The payment for the site preparation activity would be a lump sum amount and the payment period would start after the issuance of the site acceptance certificate by the network operator.

#### **4. Acceptance Test**



**Partial Acceptance:** The provisional acceptance of 75% of the sites including SHQ, DHQs, BHQs, and all co-located & remote offices in accordance with the requirements in Section III shall be conducted. After successful testing by the Third Party Agency a Partial Acceptance Test Certificate shall be issued by GoB to the Bidder. The test shall include the following

1. All hardware and software items must be installed at particular site as per the specification.
2. Availability of all the defined services shall be verified. The successful bidder shall be required to demonstrate all the features/facilities/functionalities as mentioned in the RFP.
3. The third party monitoring agency in consultation with Government of Bihar shall define detailed test plan.
4. Successful bidder will arrange the test equipment required for performance verification. Successful bidder will also provide documented test results.

**Final Acceptance Testing:** After successful installation of 90% of SHQ, DHQs, BHQs and all co-located & remote offices, an acceptance test in accordance with the requirements in Section III shall be conducted. After successful testing by the Third Party Agency a Final Acceptance Test Certificate shall be issued by GoB to the Bidder. The date on which Final Acceptance certificate is issued shall be deemed to be the date of successful commissioning of the BSWAN.

The test shall include the following

1. All hardware and software items must be installed at particular site as per the specification.
1. Availability of all the defined services shall be verified. The successful bidder shall be required to demonstrate all the features/facilities/functionalities as mentioned in the RFP for each site.
2. The third party monitoring agency in consultation with GoB shall define detailed test plan.
3. Successful bidder will arrange the test equipment required for performance verification. Successful bidder will also provide documented test results.
4. The successful bidder shall be responsible for the security audit of the network to be carried out by a certified agency other than the successful bidder.
5. All documentation as defined should be completed before the final acceptance test.



6. The training requirements as mentioned should be completed before the final acceptance test.

Any delay by the Bidder in the Partial/ Final Acceptance Testing shall render the Bidder liable to the imposition of appropriate Penalties.

In the event the Bidder is not able to complete the installation linking SHQ, all DHQs, all SDHQ/Blocks and all co-located & remote offices as defined by GoB due to non availability of bandwidth from the bandwidth service providers, the Bidder and GoB may mutually agree to redefine the Network so the Bidder can complete installation and conduct the Partial Acceptance Test/ Final Acceptance Test within the specified time.

## **5. Performance Security for Operations**

Within 15 days of the issuance of Letter of intent (LoI) the Bidder shall furnish revolving Performance Guarantee, as provided, to GoB for an amount equal to 10% of the arithmetic sum of 5 years of the Guaranteed Revenue according to the Agreement. The Performance Guarantee shall be valid initially for a period of one year. The guarantee shall be renewed year by year, at least 30 days before expiry date, for a minimum period of one year and thus cover the balance period of the agreement. The guarantee amount for each year shall be calculated on the basis of Guaranteed Revenue for the remaining years of operation under the agreement subject to minimum Performance Guarantee based on sum of two years Guaranteed Revenue. The GoB may forfeit the Performance Guarantee for any failure on part of Bidder to complete its obligations under the Agreement. The Performance Guarantee shall be denominated in Indian Rupees and shall be in the form of a Bank Guarantee issued by a scheduled bank located in India with at least one branch office in Patna in the format provided by GoB. The Performance Guarantee shall be returned to the Bidder within 30 days of the date of successful discharge of all contractual obligations at the end of the period of the Agreement by GoB. In the event of any amendments to Agreement, the Bidder shall within 15 days of receipt of such amendment furnish the amendment to the Performance Guarantee as required.

## **6. Force Majeure**

Neither party shall be responsible to the other for any delay or failure in performance of its obligations due to any occurrence commonly known as Force Majeure which is beyond the control of any of the parties, including, but without limited to, fire, flood, explosion, acts of God or any Governmental body, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions. If a Force Majeure arises, the Bidder shall promptly notify



Tenderer in writing of such condition and the cause thereof. Unless otherwise directed by Tenderer, the successful bidder shall continue to perform his obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. The successful bidder shall be excused from performance of his obligations in whole or part as long as such causes, circumstances or events shall continue to prevent or delay such performance.

## 7. Bandwidth

The required bandwidth for the BSWAN will be provided by GoB. Bharat Sanchar Nigam Limited (BSNL) has been entrusted the role of bandwidth Service Provider for BSWAN. There will be a designated Nodal officer of GoB for coordination. The Bidder shall take all necessary steps for restoration of bandwidth in case of any problem and shall report to GoB in writing regarding the action taken. The Bidder shall arrange to obtain all relevant consents/ approvals from BSNL if required for operation of BSWAN. It is responsibility of the bidder to highlight to the Government of Bihar, if the bandwidth usage is more than 70% of the time. The Bidder is responsible for coordination and maintenance of the bandwidth during the period of the Agreement

## 8. Implementation Schedule

Sr NO	Activity	Completion Schedule
1	Issue of LOA (Letter of Acceptance) of Tender.	T0 = LOA issuance and Agreement signing
2	Site Preparation	T1 = T0 + 2 Weeks for SHQ T1 = T0+8 weeks for DHQ sites, T1 = T0+ 36 Weeks for BHQ sites,
3	Dispatch of Networking Hardware to the Centres.	T2 + T1 + 2 Weeks for SHQ T2= T1+ 4 Weeks for DHQ sites T2 = T1+ 16 weeks for BHQ sites
4	Implementation of the network	T3 = T2 + 1 Week for SHQ T3 = T2+2 Weeks for DHQ Sites T3 = T2 + 12 Weeks for BHQ



		sites
5	Partial Acceptance testing	T4 = T3 + 2 Weeks for SHQ T4 = T3 + 2 Weeks for DHQ T4 = T3 + 12 Weeks for BHQ
6	Acceptance test	T5 = T4 overall (SHQ + DHQ+BHQ) + 12 Weeks
6	Trial Period and Commencement of Operation.	Trial period will be for 2 months and commencement of operation will announced by the state.

## 9. SLA Requirement

1. Service Level Agreement (SLA) is the contract between the Government of Bihar and the BSWAN Implementation Agency. SLA defines the terms of the operator's responsibility in ensuring the performance of the BSWAN based on the agreed Performance Indicators as detailed in the Agreement. This section defines various Service Level Indicators for BSWAN, which can be considered by the State in the Service Level Agreement with operator.
2. The Table below summarizes the Indicative Performance Indicators for the services to be offered by the BSWAN Operator. The detailed description of the performance indicators, SLA Terms and their definitions are discussed in the following sections.

S.No	Indicative SLA Parameter	SLA Target
1	Circuit Availability in SHQ – DHQ during Prime Business Hours	99.5 %
2	Circuit Availability in DNC – SDNC/BNC during Prime Business Hours	99%
3	Circuit Availability in SNC – DNC during Extended SLA Hours	95%
4	Circuit Availability in DNC – SDNC/BNC during Extended SLA Hours	90%
5	SWAN Backbone Latency (in Milliseconds)	90 ms – 120 ms
6	SWAN Backbone Packet Loss	<=1 %
7	SWAN Jitter	30 ms
8	Internet Availability	95 %



9	Firewall Outage	0%
10	IDS Outage	0%

Note: Inability to access Internet shall also be considered as data **downtime**.

### 3. BSWAN SLA Terms & Definitions

S.No	SLA Terms	Description
1	BSWAN Backbone	'BSWAN Backbone' refers to Internet Protocol (IP) based routing infrastructure consisting network of selected BSWAN points of presence identified by the State at which, BSWAN operator has installed network devices ("Selected POPs") for Wide Area Network within the State.
2	Uptime	'Uptime' refers to BSWAN backbone availability across various segments i.e. between State Head Quarters to District Head Quarters and District Head Quarters to Block Head Quarters. "%Uptime" means ratio of 'up time' (in minutes) in a month to Total time in the month (in minutes) multiplied by 100.
3	Latency	'Latency' refers to the average time required for round-trip packet transfers between Selected POPs on the selected portions of the SWAN Backbone during a calendar month.
4	Packet Loss	'Packet Loss' refers to the average percentage of IP packets transmitted between Selected POPs during a calendar month that are not successfully delivered.
5	Average Jitter	'Average Jitter' refers to the average variation in delay for packet transfers between Selected POPs during a calendar month.
6	Maximum Jitter	'Maximum Jitter' refers to the maximum variation in delay for packet transfers between Selected POPs.
7	Prime Business Hours (PBH)	PBH refers to the prime network utilization period for SWAN, which shall be typically starting from 08:00 hrs till 20:00 hrs Monday to Saturday or any other period to be defined by the state.
8	Extended SLA Hours (ESH)	ESH refers to the lean network utilization period for SWAN, which shall be typically starting from 20:00 hrs till 08:00 hrs on Monday to Saturday and 00:00 hrs to 23:59 hrs on Sunday or any other period to be defined by the state.
9	Planned Network Outage	'Planned Network Outage' refers to unavailability of network services due to infrastructure maintenance activities such as configuration changes, up gradation or changes to any supporting infrastructure.



S.No	SLA Terms	Description
		Details related to such planned outage shall be agreed with the State government and shall be notified to the DHQ's, SDHQ/BHQ's and related Departments in advance ( <i>at least five working days</i> ).
10	Unplanned Network Outage	'Unplanned Network Outage' refers to an instance in which no traffic can pass in or out of the Selected POP through which Departments connects to the BSWAN Backbone for more than 5 consecutive minutes.

#### 4. Considerations for Service Level Agreement with SWAN Operator

This section discusses various parameters of the Service Level Agreement (SLA) for BSWAN Operator.

##### Network Availability:

SLA Parameter		Network Availability	
Network Segment	Network Outage		Remarks
	PBH	ESH	
SNC-DNC	99.5 %	95 %	SLA allows approximately four hours of down time in the connectivity between the State Head Quarters and the District Head Quarters.
DNC-SDNC/BNC	99%	90%	SLA allows approximately 7 hours of aggregate down time in the connectivity between the District Head Quarters and the Sub Division / Block Head Quarters.

#### 5. BSWAN Backbone Latency

The Latency on the BSWAN Backbone shall be maintained at

- (i) 90 milliseconds or less for the District level Network and
- (ii) 120 milliseconds or less for the Sub Division/Block level Network. As a delay-sensitive application, voice cannot tolerate much delay. Latency is the average travel time it takes for a packet to reach its destination. If bandwidth utilization is high, the voice packet will be delayed to the point that the quality of the call is compromised. The maximum amount of latency that a voice call can tolerate one way is typically 150



milliseconds (100 milliseconds is optimum). Similar latency requirements exist for video traffic also ranging 150-200 ms one way.

SLA Parameter		SWAN Backbone Latency
Network Segment	Network Latency	Remarks
SNC-DNC	90 MS	SLA allows a maximum of 90 Milliseconds in the connectivity between the State Head Quarters and to all the District Head Quarters.
DNC –SDNC/BNC	130 MS	SLA allows a maximum of 90 Milliseconds in the connectivity between the District Head Quarters to all the Sub Division or Blocks.

#### 6. BSWAN Backbone Packet Loss

The Packet Loss on the BSWAN Backbone shall be maintained typically at less than 1% measured on a monthly basis.

**Packet loss for voice and video applications:** Dropped voice packets are the discarded packets, which are not retransmitted. Voice traffic can tolerate typically less than a 3 percent loss of packets (1% is optimum) before end users experience disconcerting gaps in conversation. Similarly video applications can not tolerate typically a packet loss > 1%.

SLA Parameter		Packet Loss
Network Segment	Packet Loss	Remarks
SHQ-DHQ & DHQ-SDHQ/BHQ	<=1%	SLA allows a maximum of 1% of packet loss in the connectivity between the State Head Quarters and to all the District Head Quarters and all the Block Head Quarters.



## 7. BSWAN Average and Maximum Jitter

States shall aim to keep Average Jitter on the BSWAN Backbone typically to 20 microseconds or less; and for Maximum Jitter typically not to exceed 30 milliseconds. Jitter shall be measured by averaging sample measurements taken during a calendar month between Hub Routers.

**Jitter for Voice and Video Applications:** In order for voice to be intelligible, consecutive voice packets must arrive at regular intervals. Jitter describes the degree of variability in packet arrivals, which can be caused by bursts of data traffic or just too much traffic on the line. Voice packets can tolerate typically about 75 milliseconds (40 milliseconds is optimum) of jitter delay. For video applications to work on BSWAN, Jitter should be typically less than < 30ms.

SLA Parameter		Jitter
Network Segment	Jitter	Remarks
Average Jitter	250 Microseconds	
Maximum Jitter	10 Milliseconds	

## 8. Internet Availability

SLA Parameter		Internet Availability
Network Segment	%	Remarks
Overall Internet Availability	95	SLA allows a maximum of 7 hours internet services unavailability per month.

## 9. Firewall Outage

SLA Parameter		Firewall Outage
Network Segment	Firewall Outage	Remarks
Internet Firewall Availability	0 %	SLA allows no down time in the Internet firewall availability.
Intranet Firewall Availability	0 %	SLA allows no down time in the Intranet firewall availability.

## 10. IPS Outage

SLA Parameter		IDS Outage
Network Segment	IDS Outage	Remarks
IDS for In Bound & Outbound Traffic	0 %	SLA allows no down time in the IDS deployed inbound



		traffic to SWAN.
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### 11. Denial of Service

Denial of Service (DoS) is the most common form of attack on the Network, which leads to network unavailability for the genuine network users. The operator shall respond to Denial of Service attacks reported by departments/BSWAN users or BSWAN maintenance personnel within 15 minutes of intimation to the helpdesk. The Denial of Service attack can be defined as sudden burst of network traffic leading to more than 90-95% utilization of the BSWAN bandwidth in any segment or complete network. In such a scenario operator shall perform an analysis of the issue, verify whether the network utilization is due to genuine user requirements or it is a denial of service attack. In case it is identified as DoS attack, operator shall identify the source of Denial of Service attack, and shall disconnect the source or network from SWAN backbone and resolve the issue to ensure availability and performance of the backbone.

The BSWAN Operator, at regular intervals, shall monitor and measure the actual bandwidth allocated by the Bandwidth Provider against the agreed Committed Interface Rate (CIR) and issues identified shall be reported to PSEGS and shall be escalated to the Bandwidth Service provider for resolution.

### 12. Network Operations Management

The operator is required to establish Contact Centre (Helpdesk) at the State level (*with a toll free number*) with an appropriate CRM Solution. The Helpdesk shall act as a SPOC (Single Point of Contact) for all the Network & Security related issues reported by the government departments or any other related stakeholders of the BSWAN. BSWAN Project Management Unit (PMU) established by the State shall monitor each issue need to be recorded in the CRM as a Service Request (with allocation of service request number) and the resolution timelines for such Service Requests.

S.No	Severity	Initial Response Time	Issue Time	Resolution
1	Level 1	15 Mins	1 Hr	
2	Level 2	30 Mins	2 Hrs	
3	Level 3	60 Mins	8 Hrs	

### 13. Severity Level Definition

<b>Level 1:</b>	The network outage, security or performance related issues impacting the network availability/performance and leading to unavailability of the services in State Head Quarter.
<b>Level 2:</b>	The network outage, security or performance related issues impacting the



	network availability/performance and leading to unavailability of the services in one or more Districts.
<b>Level 3:</b>	The network outage, security or performance related issues impacting the network availability/performance and leading to unavailability of the services to one or more departments in Sub division/Block.

**14. Other Information related to SLA management are provided below.**

**a. Capacity and Performance Management**

The BSWAN operator shall provide capacity planning services through network base lining and trending, to determine the resources required for BSWAN and to plan and complete network upgrades before a capacity problem causes BSWAN down time or performance problems. In addition to availability, latency, jitter and packet loss, BSWAN operator shall monitor the network and dependent infrastructure (*resource*) utilization during successive time periods (*hour, day, week, month, and year*) and shall provide recommendations to State government on SWAN infrastructure upgradation. BSWAN operator shall perform the planned network upgrades with prior notification to the departments/users in the network segment (s) affected by the planned outages. BSWAN operator should ensure that all the planned outages are performed only in the Extended SLA Hours and only the emergency upgrades are performed in the Prime Business Hours.

The overall responsibility of ensuring the BSWAN performance rests with the BSWAN operator and the following are critical areas in performance management which shall be monitored by the BSWAN operator on a constant basis.

- CPU utilization
- Backplane or I/O
- Memory and buffers
- Link Utilization

i. CPU Utilization

CPU is used by both the control plane and data plane on any network device. In capacity and performance management, BSWAN operator must ensure that the device and network have sufficient CPU capacity to function at all times. BSWAN operator shall configure the NMS to monitor the CPU utilization of the critical network devices implemented in POP's. In case the average CPU utilization is above 80 % on a continuous basis, BSWAN operator shall perform the diagnostic review of the device and provide recommendations on addressing the issue. BSWAN operator shall own the overall responsibility of the performance and shall accordingly escalate any performance related issues to the state government.

ii. Backplane or I/O



Backplane or I/O refers to the total amount of traffic that a device can handle, usually described in terms of BUS size or backplane capability. Any issues with backplane or I/O need to be monitored and recommendations need to be provided to address the performance issues.

iii. Memory and buffers

Memory is another resource that has data plane and control plane requirements. When devices run out of memory, operations on the device can fail. In case the average memory utilization is above 70 % on a continuous basis, BSWAN operator shall perform the diagnostic review of the device and provide recommendations on addressing the issue. BSWAN operator shall own the overall responsibility of the performance and shall accordingly escalate any performance related issues to the state government.

iv. Link Utilization

BSWAN operator shall monitor the utilization of BSWAN links across the segments to verify the current utilization and the trends to ensure that enough bandwidth is made available for the applications and services to function with out performance issues. BSWAN operator shall provide fortnightly reports on the link utilization and in case the link utilization on a constant basis is exceeding 70 %, BSWAN operator shall provide recommendations to the State government on procurement of additional bandwidth.

**b. Measurement of SLA**

The Measurement of SLA shall be performed by a third party agency, independent of the BSWAN Operator, to be identified by the State Government.

The Operator shall establish a Network Management System for monitoring and measurement of the SLA parameters identified for the BSWAN. The NMS implemented for BSWAN shall conform to the open network management standards such as Simple Network Management Protocol and Remote Monitoring (RMON) features. State reserves the right to periodically change the measurement points and methodologies it uses without notice to the Operator.

**c. SLA Reporting**

For reports of performance of the SWAN Backbone, the operator is required to setup a portal solution available to all stakeholders to be established at the State level for BSWAN Implementation. This portal shall provide online performance and availability reports of BSWAN.

**d. BSWAN Security Auditing-**

Upon completion of BSWAN Installation and before the 'go-live' phase, it is mandatory for the BSWAN operator to get the BSWAN Infrastructure audited by a reputed third party agency from a security and business continuity perspective. Such Security audit shall include complete



infrastructure established at the State Head Quarter and the infrastructure at District and sub division on a sample basis. Such sampling rate shall be agreed mutually between the state Project Management Unit (PMU), consultant and the implementation partner.

**e. Certification**

The BSWAN operator is required to obtain certifications such as BS 7799/IS 17799 for the processes and procedures established for monitoring and management of BSWAN Infrastructure.

**10. Penalties**

The BOOT Operator shall be paid QGR as per the services (i.e. availability) provided to the tenderer.

Link	Availability during PBH	Penalty	Availability during ESH	Penalty
SNC – DNC	>= 99.5%	Nil	>= 95%	Nil
	Less by 1%	0.5% of the QGR	Less by 1%	0.25% of the QGR
	Less by >1% but < 2%	Additional 1% of the QGR	Less by >1% but < 2%	Additional 0.5% of the QGR
	Less by >2% but <5%	Additional 2% for every %age	Less by >2% but <5%	Additional 1% for every %age
	Less by >5% but <20%	Additional 2.5% for every %age	Less by >5% but <20%	Additional 1.25% for every %age
	>20%	No payment	>20%	No payment
DNC – SDNC/BNC	>/= 99%	Nil	>/= 90%	Nil
	Less by 1%	0.5% of the QGR	Less by 1%	0.25% of the QGR
	Less by >1% but < 2%	Additional 1% of the QGR	Less by >1% but < 2%	Additional 0.5% of the QGR
	Less by >2% but <5%	Additional 2% for every %age	Less by >2% but <5%	Additional 1% for every %age
	Less by >5% but <20%	Additional 2.5% for every %age	Less by >5% but <20%	Additional 1.25% for every %age



Link	Availability during PBH	Penalty	Availability during ESH	Penalty
				%age
	>20%	No payment	>20%	No payment

1. **Network availability:** - Network availability is defined as total time in a quarter (in minutes) less total down time (in minutes) in the quarter including planned downtime. The network is considered available when all the services mentioned in the requirement section in full capacity are available. Bandwidth downtime will not be considered as part of network downtime. BOOT Operator will take atleast 15 days prior approval from the state for the network maintenance i.e. planned downtime. The BOOT Operator should provide support and maintenance for the BSWAN from the date of Final acceptance testing. The BOOT Operator's request for payment shall be made at the end of each quarter by invoices along with the following supporting documents:

- Performance statistics
- Log of network parameters along with Service Downtime calculation and Uptime percentage.
- Any other document necessary in support of the service performance acceptable to GoB.

The Third Party Agency shall verify all the supporting documents as prescribed and acceptable to GoB. On receipt of such invoice after verification by the Third Party Agency and after deducting Income Tax, other taxes and any Penalties, GoB shall pay the amount within a period of 15 days. The BOOT Operator shall furnish all tax payment receipts to GoB.

**2. Penalties for delay in implementation**

If the BOOT Operator fails to complete the Partial Acceptance Test within the time period (s) specified in the implementation plan, GoB may, without prejudice to its other remedies under the Agreement, levy as Penalties, a sum equivalent to 0.25 % of the arithmetic sum of the guaranteed revenue for 75% of the overall site (SNC, DNCs, BNCs and location connection) for the five years payable under the Agreement, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 2% of the arithmetic sum of five years Guaranteed Revenue for 75% of overall site (SNC, DNC, BNC). If the delay continues beyond 18 weeks, GoB may terminate the Agreement.

Failure to complete the Final Acceptance Test as specified in the implementation plan, GoB may, without prejudice to its other remedies under the Agreement, levy as



Penalties, a sum equivalent to 0.25 % of the arithmetic sum of the guaranteed revenue 95% of the overall site (SHQ, DHQs, BHQ) for the five years payable under the Agreement, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 5% of the arithmetic sum of five years Guaranteed Revenue for overall site (SNC, DNCs, BNCs and local office). If the delay continues beyond 20 weeks, GoB may terminate the Agreement

### **3. Operational Penalties**

In the event the BOOT operator is unable to meet any one of the SLA parameters defined in this RFP for 10% or more of the operational POPs during two quarters in a year or five quarters during the five years of the contract, GoB reserves the right to terminate the contract.

### **4. Penalties for misuse**

In case of misuse of bandwidth/ Internet at the instance of BOOT Operator, the penalty imposed on the BOOT Operator, without prejudice to GoB other remedies under the Agreement shall be 200% of the quarterly guaranteed revenue under the Agreement for all the centres. If the misuse continues for two quarters, GoB may terminate the Agreement. The BOOT operator shall realize returns on the costs incurred on creating the whole asset (Capital Cost), the operations cost for operating these assets (Operations Cost), for maintaining these assets (Maintenance Cost) and for providing the horizontal connectivity (Horizontal Cost is asked for as separate QGR). The payments shall be released by the Government on a Quarterly basis based on compliance of the services provided by the BOOT operator against the SLA's entered into. For setting up the site, the bidder will have to quote the price separately, which should not be included in the QGR mentioned above.

### **5. Payment Terms**

No payment shall accrue until after the performance guarantee bond has been furnished. The selected BOOT operator engaged shall be responsible to invest in the project to implement and operate the facilities, for a term of 5 years and on expiry of 5 years, the ownership of the Infrastructure will be transferred to GoB. During this period of 5 years, the BOOT operator shall have full responsibility for the delivery of the services, including all operational, maintenance, and management activities, etc.

The BOOT Operator shall be paid Minimum Guaranteed Revenue on quarterly basis in arrears at the end of each quarter for the SNC, each DNC, each SDNC/BNC and each co-located & remote office which have been accepted in the Final Acceptance Test by GoB based on the certificate provided by the Third Party Agency, at the rates specified by the BOOT Operator.



## 11. Quarterly Guaranteed Payment for Backbone

- a) The payment period will be through the contract period of five years, which would start from the date of issuance of Final Acceptance certificate after the Final Acceptance Test of the POP's as defined in the RFP.
- b) The selected BOOT operator shall be paid Guaranteed Revenue on quarterly basis at the end of each quarter for each backbone POP which has been accepted in the Final Acceptance Test by GoB based on the certificate provided by the Third Party Agency, at the rates specified by the bidder.
- c) Quarterly guaranteed payment for each POP shall include the procurement, implementation, operation and maintenance of equipments as specified in the requirements section of each tier along with providing the specified services for the entire service period.
- d) Eligible quarterly payments, for the PoPs accepted in the Acceptance Test shall become due from the date of issuance of final Acceptance Certificate. The quarterly guaranteed revenue in the Agreement shall be adjusted in proportion to the actual number of PoPs included in the Acceptance Test of BSWAN i.e. total revenue shall depend on the number of PoPs.
- e) If the bandwidth requirement for any link goes beyond 2 Mbps, additional hardware charges shall be borne by GoB. A third party shall verify the rates.-
- f) Prices indicated for each POP should include cost of all equipments for the specified POP, cost of installation, configuring, erection, commissioning, making equipment and services fully operational, maintaining and providing service for the next five years thereafter.
- g) The Selected BOOT operator shall make a payment request after the end of each quarter with the following supporting document:
  - Acceptance certificate for inclusion of new PoPs in QGR
  - SLA compliance report as prepared by the Third Party Monitoring Agency
- h) Bidder is expected to quote a rate for a single POP at each tier in the given proforma

Sr. No	POP	POP No. of Locations	Capital Cost per	Operations Charge of the	Maintenance Charge (field



			location per Quarter	Network (onsite engineers, NOC, etc) per location per Quarter per POP	maintenance of equipments, links, etc) per location per Quarter
1	SHQ				
2	DHQ				
3	SDNC/BNC				

- i) Total number of PoPs in each tier as mentioned in the table may vary depending on the actual distances and would be adjusted accordingly after the initial survey conducted by the BOOT operator.
- j) Quarterly Payment for horizontal connectivity
  - i) The horizontal connectivity cost shall include lump sum charges for implementation and QGR charges for maintenance; it will not include any hardware/software cost
  - ii) The selected BOOT operator is expected to prepare the backbone for providing horizontal connectivity up to the upper limit of horizontal offices as specified for each tier without any additional cost.
  - iii) The Agency shall specify rates for horizontal connectivity at SHQ, DHQ and BHQ.
  - iv) GoB or the concerned department shall provide equipments required at horizontal office end.

**Charge for Implementation**

Sr. No	Payment Head	Lump sum Charge for Implementation
1	Horizontal office at SHQ	
2	Horizontal Office at DHQ	
3	Horizontal Office at BHQ	

**Charge for Maintenance**

Sr. No	Payment Head	Maintenance Charge per location per Quarter



1	Horizontal Office at SHQ	
2	Horizontal Office at DHQ	
3	Horizontal Office BHQ	

## 12. Representations and warranties

### 12.1. Representations and Warranties by the Bidder

- a. It is a company duly organized and validly existing under the laws of India and has all requisite legal power and authority and corporate authorizations to execute the Agreement and carry out the terms, conditions and provisions hereof;
- b. It has in full force and effect all requisite clearances, approvals and permits necessary to enter into the Agreement and perform its obligations hereof;
- c. It will have the legally valid and enforceable title to all Equipment as may be necessary for proper functioning and it will be free from all encumbrances, liens, charges, any security interest and adverse claims of any description;
- d. The Agreement and the transactions and obligations hereof do not contravene its constitutional documents or any law, regulation or government directive and will not contravene any provisions of, or constitute a default under, any other Agreement or instrument to which it is a party or by which it or its property may be bound or any of its obligations or undertakings by which it or any of its assets are bound or cause a limitation on its powers or cause it to exceed its authorized powers;
- e. There is no pending or threatened actions, suits or proceedings affecting the Bidder or its affiliates or any of their respective assets before a court, governmental agency, commission or arbitrator or administrative tribunal which affects the Bidder's ability to perform its obligations under the Agreement; and neither Bidder nor any of its affiliates have immunity from the jurisdiction of a court or from legal process (whether through service of notice, attachment prior to judgment, attachment in aid of execution or otherwise);
- f. The Bidder confirms that all representations and warranties of the Bidder set forth in the Agreement are true, complete and correct in all respects;
- g. No information given by the Bidder in relation to the Agreement, project documents or any document comprising security contains any material mis-statement of fact or omits



to state as fact which would be materially adverse to the enforcement of the rights and remedies of GoB or which would be necessary to make any statement, representation or warranty contained herein or therein true and correct;

- h. All equipment including material to be installed by the Bidder in the BSWAN shall be new and the product should not be de-supported or declared end of life within next 5 years. A certificate to that effect should be furnished from OEM. All equipment shall conform to the codes, standards and regulations applicable to networking facilities and benefit from the usual manufacturer's guarantees.

#### **12.2. Representations and Warranties by GoB**

- a) It has full legal right; power and authority to execute the BSWAN project and to enter into and perform its obligations under the Agreement and there are no proceedings pending.
- b) The Agreement has been duly authorized, executed and delivered by GoB and constitutes valid, legal and binding obligation of GoB.
- c) The execution and delivery of the Agreement with the Bidder does not violate any statutory judgment, order, decree, regulation, right, obligation or rule of any court, government authority or arbitrator of competent jurisdiction applicable in relation to GoB, its assets or its administration.

#### **12.3. Each Day during the Agreement**

The Parties agree that these representations and warranties are taken to be made on each Day during the term of the Agreement.

#### **12.4. No title to the equipment**

The Bidder and Government of Bihar agree that GoB shall have no title to any of the equipment and construction/ pre-fabricated site & laid cables made available for delivery of services by the Bidder during the period of the Agreement. After 5 years, it shall be transferred to GoB.

### **13. Approval / Clearances**



- a) Necessary approvals/ clearances from DoT/ TEC/ TRAI/ Concerned authorities/ BSNL/ any service provider, for establishing the network and connecting different Network elements/ ports to BSNL/ any service provider's circuits, shall be obtained by the short listed Bidder.
- b) Necessary approvals/ clearances from concerned authorities, as required, for fire protection, government duties/ taxes/ octroi, shall be obtained by the short listed Bidder.
- c) Necessary approvals/ clearances, from concerned authorities (like Municipalities, Public Works Department (PWD), Department of Irrigation, State Electricity Board etc. for "Right of way"), as required, shall be obtained by the short listed Bidder for laying their own cables to meet BSWAN requirements
- d) Necessary approvals/ clearances from concerned authorities, as required, for providing Internet Service shall be obtained by the short listed Bidder.
- e) Approvals for Leased Lines: To transmit data between computer and electronic information devices, BSNL provides data communication services to its subscribers, it offers a choice of High, Medium and low speed Leased Data Circuits as well as Dial-up lines. Bandwidth is available on demand in most of the places. Managed Leased Lines Network (MLLN) offers flexibility of providing circuits with speeds of nx64 Kbps up to 2Mbps useful for internet Leased Lines and international principle Leased Lines (IPLCs).

## 14. Exit Management

1. Upon completion of the contract period or upon termination of the agreement for any reasons, the BSWAN Bidder shall comply with the following:
  - (a) Notify to the Government of Bihar forthwith the particulars of all Project Assets;
  - (b) Deliver forthwith actual or constructive possession of the BSWAN Project free and clear of all Encumbrances and execute such deeds, writings and documents as may be required by the Government of Bihar for fully and effectively divesting the BSWAN Bidder of all of the rights, title and interest of the BSWAN Bidder in the BSWAN Project and conveying the BSWAN Project;
  - (c) Comply with the Divestment Requirements set out in Section 2 except in case if Termination of this Agreement is due to Government of Bihar Event of Default, Indirect Political Event or Political Event the BSWAN Bidder shall have implemented the maintenance schedule as well as any repairs pointed out by the Independent



Consultant in its Operations & Maintenance Inspection Report prior to date of Termination Notice. In case of Termination due to Non-Political Force Majeure Event, the Divestment Requirements shall be agreed between Government of Bihar and the BSWAN Bidder; and

- (d) Pay all transfer costs and stamp duty applicable on handback of project assets except in case the Project is being transferred due to Government of Bihar of Default, Indirect Political Event, Political Event or expiry of Concession period, where Government of Bihar shall be responsible for transfer costs and stamp duty, if any. For clarification of doubt, transfer costs in this Clause relate to taxes and duties applicable at transfer of BSWAN Project, if any.
2. Subject to clause 1 of exit management, upon completion of the contract period or upon termination of the agreement, the BSWAN Bidder shall comply and conform to the following Divestment Requirements in respect of the BSWAN Project:
    - (i) All Project Assets including the hardware, software, documentation and any other infrastructure shall have been renewed and cured of all defects and deficiencies as necessary so that the BSWAN Project is compliant with the Specifications and Standards set forth in the RFP, Agreement and any other amendments made during the contract period;
    - (ii) The BSWAN Bidder delivers relevant records and reports pertaining to the BSWAN Project and its design, engineering, operation, and maintenance including all operation and maintenance records and manuals pertaining thereto and complete as on the Divestment Date;
    - (iii) The BSWAN Bidder executes such deeds of conveyance, documents and other writings as the Government of Bihar may reasonably require to convey, divest and assign all the rights, title and interest of the BSWAN Bidder in the BSWAN Project free from all Encumbrances absolutely and free of any charge or tax unto the Government of Bihar or its Nominee; and
    - (iv) The BSWAN Bidder complies with all other requirements as may be prescribed under Applicable Laws to complete the divestment and assignment of all the rights, title and interest of the BSWAN Bidder in the BSWAN Project free from all Encumbrances absolutely and free of any charge or tax to Government of Bihar or its nominee.
  3. Not earlier than 3 (three) months before the expiry of the contract Period but not later than 30 (thirty) days before such expiry, or in the event of earlier Termination of the contract, immediately upon but not later than 15 (fifteen) days from the date of issue of Termination Notice, the Independent Consultant as nominated by the State Government shall verify, in the presence of a representative of the BSWAN Bidder, compliance by the BSWAN Bidder with the Divestment Requirements set forth in Section 2 in relation to the BSWAN Project and, if required, cause appropriate tests to be carried out at the BSWAN Bidder's cost for



determining the compliance therewith. If either Party finds any shortcomings in the Divestment Requirements, it shall notify the other of the same and the BSWAN Bidder shall rectify the same at its cost.

4. Upon the BSWAN Bidder conforming to all Divestment Requirements and handing over actual or constructive possession of the BSWAN Project to Government of Bihar or a person nominated by Government of Bihar in this regard, Government of Bihar shall issue a certificate substantially in the form set forth in Section 2, which will have the effect of constituting evidence of divestment of all rights, title and lien in the BSWAN Project by the BSWAN Bidder and their vesting in BSWAN Project pursuant hereto. State Government shall not unreasonably withhold issue of such certificate. The divestment of all rights, title and lien in the BSWAN Project shall be deemed to be complete on the date when all the Divestment Requirements have been fulfilled or the Certificate has been issued, whichever is earlier, it being expressly agreed that any defect or deficiency in any Divestment Requirement shall not in any manner be construed or interpreted as restricting the exercise of any rights by State Government or its nominee on or in respect of the BSWAN Project on the footing as if all Divestment Requirements have been complied with by the Concessionaire

#### **GoB's Event(s) of Default**

1. If the payment to the Operator is due for more than 3 quarters consecutively - If the termination occurs due to non payment by GoB to the Operator for the three consecutive quarters then the operator would be paid those three quarters revenue plus the Net Present Value of Capex. No operational charges would be paid to the operator for all those quarters for which his services have not been used by GoB. In the event of such termination, GoB will take over all equipment (without any liability) necessary for the proper and normal operation of the BSWAN including but not limited to all constructed sites, laid cables, software, technical designs, technical & operational manuals and also all electrical, civil and mechanical works at SHQ, all DHQs, all BHQs & all co-located & remote offices related to the BSWAN.
2. The discounting interest rate for calculating the Net Present Value will be Prime Lending Rate (PLR) plus 550 basis points prevailing on the date of termination.
3. In an exceptional event if the termination occurs during the first two quarters from the date of Final Acceptance then the Net Present Value of the Capex will be paid to the operator. No operational expenses would be paid to the operator for the period for which his services have not been used by GoB.



## 15. Maintenance of Equipment

The selected vendor shall ensure that services of a professionally qualified person is available for providing comprehensive on-site maintenance and administration (on 24x7 basis at SHQ and NOC and DHQ and 8X6 basis at SDHQ/BHQ) of hardware and software for a period of five years (hardware and system software) at SHQ, DHQs and BHQs.

Comprehensive Maintenance and Administration of the network shall include, among other things, day to day administration and maintenance of the system as per the policy, regular log monitoring, reconfiguring of switches, etc. when required. In case of network failure, the vendor shall ensure that the network is made operational to the full satisfaction of BELTRON / GoB within the MTTR (Mean Time To Repair) committed by the bidder.

In the event of network break down or failures at any stage, protection available, which would include the following, shall be specified.

- Diagnostics for identification of hardware failures
- Recovery/restart network

The selected Vendor shall ensure the SLA's on 24X7X365 basis (shutting down of equipment at BELTRON's discretion and Planned outage will not be considered for calculation of uptime.

The list of critical spares, the vendor proposes to stock at the major sites should be furnished separately along with the technical bid. The scope of the contract will include at least one scheduled servicing (Preventive Maintenance) at quarterly intervals and any number of breakdown calls. The comprehensive maintenance would be inclusive of all spares need to be replaced and excluding consumables.

The vendor shall guarantee the availability of spares for a period of at least five years in respect of all the hardware and software

## 16. Bankruptcy and Insolvency:

Bihar Government can terminate the contract if the bidder becomes bankrupt and/or losses the desired state of insolvency with a notice of 15 days. Bihar Government, in such cases of termination, will not be responsible for any loss or financial damage to the service provider resulted due to the termination. The Government will also, in such cases have the right to recover any pending dues by invoking the performance bank guarantee or any such instrument available with the Government.





## **SECTION 5**

### **Schedule of Requirements**



## Section 5: Schedule of Requirements

### 1) BSWAN architecture

BSWAN is required to be open standards based, scalable, high capacity Network to carry Voice, Data and Video traffic between designated Government of Bihar (GoB) offices at State, District and Sub Division /Block levels. The connectivity to the end-user is based on either one or more of the standard technologies like leased circuits, VSAT, Radio Frequency dial-up circuits or using Ethernet ports as appropriate for the individual offices. The Network should have single point Gateways of adequate capacity to Internet. BSWAN shall be built vertically on three tiers of Network connectivity comprising:

- Primary Tier consisting of SHQ
- Secondary Tier consisting of DHQs
- Tertiary Tier consisting of SDHQs/BHQ

The Bidder shall be solely and exclusively responsible to design, implement and maintain on a BOOT (Build, Own, Operate, and Transfer) model the network as mentioned in this RFP and to provide the services as specified

### 2) Network Design Principles

The key design considerations for building this network is as follows:

- a) **Protocol:** All the protocols used should be industry standard protocols. The network protocol to be used would be the industry standard Internet Protocol (IP). The design should also support IPV6 from day one.
- b) **Redundancy:** The network should be designed to minimize the single point of failure. The network shall have capability for defining and enabling alternate routes to avoid disruption in service. Bidder shall provide the details of redundancy and the level of redundancy provided in the network. The network shall have redundancy of relevant elements at appropriate levels so that any one failure does not cause a total disruption of services. The design at DHQs shall cater for providing redundancy, whenever required by Government of Bihar, to the extent that each DHQ may be connected to the adjacent DHQs to form a ring and each DHQ is connected to SHQ.

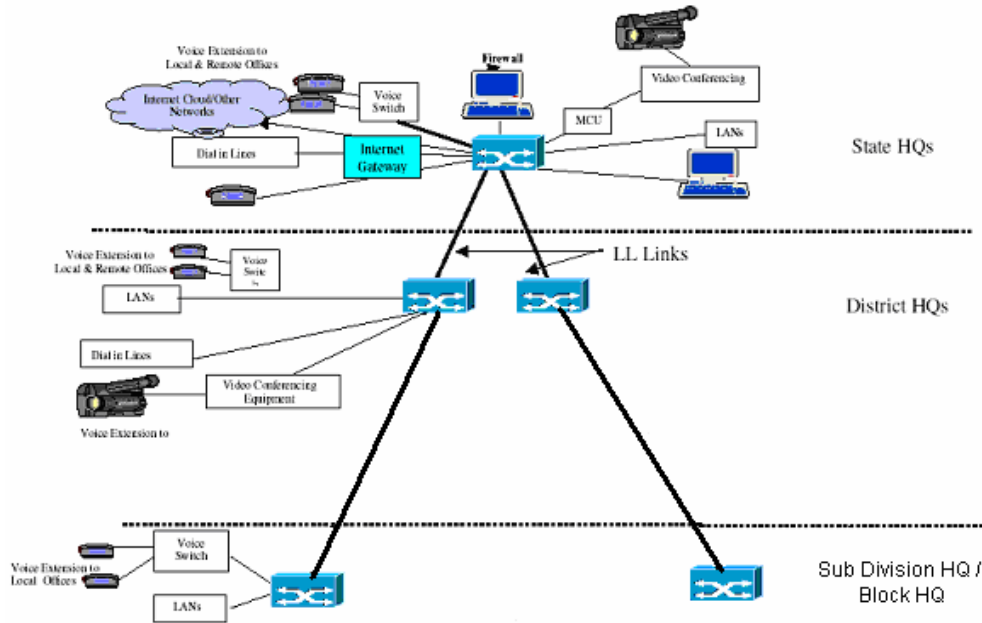


- c) **Scalability:** The network design shall accommodate future scalability. Chassis based switches and access equipment shall be used to ensure future scalability at the equipment level as well. The design shall be scalable with respect to number of centers; number of interfaces per centre and bandwidth at all the levels. The various interfaces shall be realized on plug-in cards with hot swappable facility. (Applicable for SHQ, DHQ & SDHQ).
- d) **Optimization** The Network shall have industry efficient compression engine to optimize bandwidth utilization
- e) **Performance Considerations:** The equipment selected to ensure adequate back plane capacity to route under peak load to prevent any performance issues. Performance of the network will be periodically monitored using Network Management tools and capacity will be upgraded proactively. Necessary memory slots to be provided on all routers to accommodate future performance scalability.
- f) **Manageability:** A centralized Network Management System (NMS) should be deployed to manage Wide Area Network (WAN). NMS should also support SNMP. The Network Management System used shall be capable of doing fault management (at the network and server level) performance management, configuration management, security management and also accounting management (if inter-departmental accounting is needed). The Network Management System should be scalable as well and would be able to provide a hierarchical, topological view of the entire network and provide trouble ticketing. The design shall have sufficient diagnostic facilities to identify & locate the faults and easy rectification of faults. The bidder shall specify the details & level of diagnostics provided.
- g) **Standards** The equipments/ interfaces shall comply with relevant ITU-T/ IEEE/ IETF/ EIA/ TIA/ ANSI/ NEBS/ TEC etc. standards as applicable. The design shall comply to interconnect and security guidelines issued by Department of Information Technology (DIT), GoI and Government of Bihar from time to time.
- h) **Configurable** The network shall route the data traffic as per the requirement from any location to any other location. The network shall allow Internet connectivity to all/ selective users at all/ selective centers / locations as per requirement using the same network infrastructure.



- i) **Interconnect with Existing network** The proposed network design shall allow the connectivity of existing networks and State Data Centres Servers with proposed BSWAN using standard protocol.
- j) **Security:-** The proposed design should adhere to security guidelines issued by DIT, Gol and Government of Bihar. The design shall also take care of all the security requirements mentioned in this RFP.

The architecture design of the BSWAN is as follows



### Understanding the BSWAN Network layers

Layer	Coverage	Description
Core Layer	SHQ	The primary responsibilities of this layer shall be to forward the traffic at very high speed, apply QoS parameters to meet desired service levels for various applications, integrate network security, ensure high-availability and the resilient network etc.
Distribution Layer	DHQ	Backbone router will be heart of the BSWAN network, and will facilitate in routing the data between the centralized Data Centre and GoB offices connected on BSWAN.



Access Layer	SDHQ / BHQ	The primary responsibilities of this layer shall be aggregating traffic coming from multiple access location to the core, summarizing the routes, applying QoS policies & integrated network security, acting as a topology change isolation point.
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## Technical Requirements at SHQ

### Considerations at SHQ

- (a) A core router with necessary modules would be installed at SHQ where all the leased lines from Districts on verticals get terminated. These connections at router would be provisioned through STM-1 module directly. STM-1 will be directly interfaced/ integrated to STM-1 interface of Core Router at SHQ using the fibre patch cords.
- (b) At SHQ ISDN PRI line(s) with required quantity will be availed for providing the backup ISDN connectivity for DHQs and BHQs, in case vertical E1 link failure. These ISDN PRI lines will be provisioned on last mile as copper from the Bandwidth Provider. These lines will be terminated directly on the Remote Access Server (RAS) at SHQ.
- (c) Centralized Internet bandwidth will be provisioned from the Internet Service provider, Bharat Sanchar Nigam Limited (BSNL) for BSWAN. This bandwidth will be terminated on a separate router and then connected to core router, firewall, IPS and to server farm.
- (d) Protecting integrity and confidentiality of information data of GoB's, and securing the same from internal as well as external threats, suitable security arrangements will be done using firewall and Intrusion prevention system (IPS).
- (e) Network monitoring of network devices and links will be done using centralized Network Management System (NMS).
- (f) Helpdesk System will be used for tracking the support and incident calls and inventory management purpose.
- (g) For voice communication on BSWAN network, IP based PABX Server will be in place at SHQ. This EPABX will connect the location based on IP address configured by



Service Provider.

(h) Multipoint control unit (MCU) will be deployed for Video-conferencing purpose. The MCU should also support desktop based VC option for desktop users, besides default VC end-points. MCU should support 118 endpoints in multiple concurrent sessions of varying sizes. The end-points can be hardware based and/or desktop based video conferencing mode. Video conferencing equipment should integrate with IP PBX for video telephony.

(i) Suitable solution for infrastructure services will be used for mailing, proxy, directory, anti-virus (with anti-spamming), database, web server, application server etc. As the traffic grows scalability in the form of clustering etc would be provisioned at the time of design itself. Necessary access rules on Proxy server will be provided on mutual discussion at the time of preparation of Security policy. Mails would be routed through Gateway Antivirus for spam and any other mail virus from time to time. Web and Database servers would be configured with necessary security on DMZ. The logs will be analysed at Syslog Server. Intrusion prevention Server would be placed to prevent and detect unauthorized access. Scalability would be planned for horizontal increase of servers in clusters in the event of increase in traffic, database servers will be scalable in terms of resources like increase in RAM, HDD and clustering. Database server would be configured with hot standby and data replication to DR setup as and when the DR setup is installed. Backup would be planned as per Network backup policy adopted by BSWAN with the System Integrator.

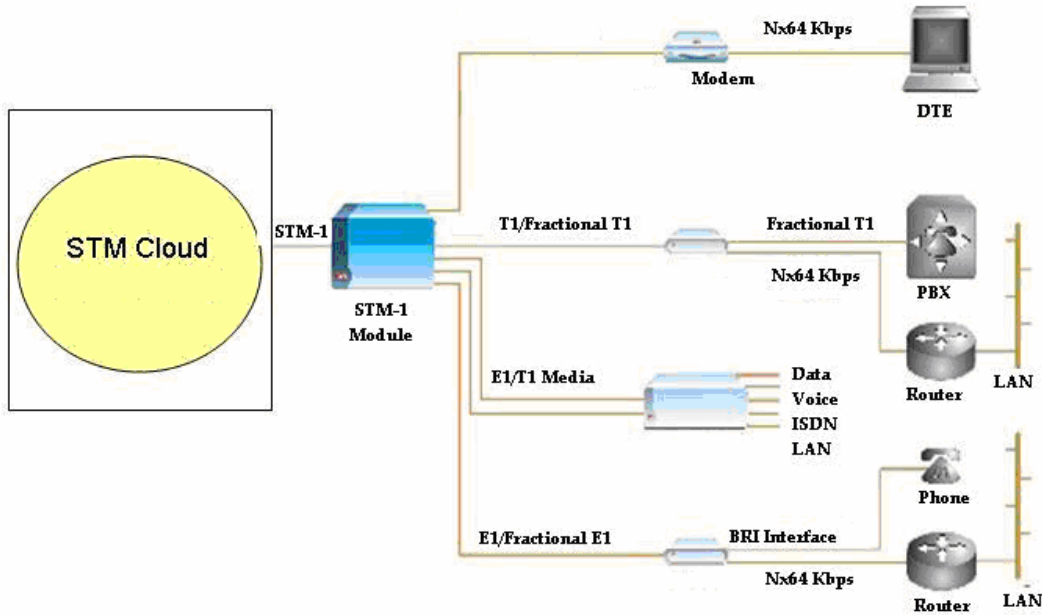
(j) Core switch with 96 Gigabit Ethernet ports distributed on minimum 2 modules and provision for further expansion is placed for providing vertical and horizontal connections. All the switches used in the BSWAN should be of Layer 3.

(1) About STM-1 Protocol

Both SONET (Synchronous Optical NETWORK) and SDH (Synchronous Digital Hierarchy) are based on transmission at speeds of multiples of 51.840 Mbps, or STS-1. The STS-1 frame is composed of octets which are nine rows high and 90 columns wide. The first three columns are used by the Transport Overhead (TOH) and contain framing, error monitoring, management and payload pointer information. The data (Payload) uses the remaining 87 columns, of which the first column is used for Path Overhead (POH). A pointer in the TOH identifies the start of the payload which is referred to as the Synchronous Payload Envelope or SPE.



OC-3c and STM-1 rates are an extension of the basic STS-1 speed and operate at 155.520 Mbps, carrying three interleaving STS-1 frames. Thus, the OC-3c frame has nine rows and 270 columns.



Schematic Diagram showing the Logical connections and Core Router

Successful bidder has to integrate the E1 lines aggregated at exchange end linked through fibre optic cable through STM-1 interface. The equipment required at the customer premise to link to STM-1 channel of the router is to be installed with necessary power supply and other allied accessories. The equipment thus installed should be approved by TEC

The proposed equipment is Combi MUX for STM – ADM (2MB x 63 incl. 2MB tributary), Interface card and wired Rack, power supply with 24x2V SMF battery pack and 25A charger to be part of STM interface.

### Understanding State Head Quarters Network Components

S.NO	Particulars	Description
1	Internet Router	Connects the BSWAN Server farm to Internet.
2.	Firewall	Provide Security to BSWAN Network from internet
3.	IPS	Detects and Prevention of Intrusion.
4.	Core Switch	Provide Vertical & Horizontal connections.



5.	Core Router	Provide Network access across BSWAN.
6.	RAS Server	Provide fallback connections to BSWAN locations.
7.	DMZ/Internet Switch	To connect Internet and Firewall.
8.	IP Phones	Provide VoIP to BSWAN locations.
9.	Server farm	Servers to provide BSWAN services.

## Design Requirements

The scope of work for bidder shall include the following: -

### 1. Design/Review the BSWAN architecture and provide recommendations on gaps/issues

#### a. Wide Area Network Connectivity

- i. The Bidder shall design/review the architecture of the BSWAN to provide Data, Voice and Video services that will integrate the PoPs identified across the state and provides recommendations on areas of improvement or the gaps in the BSWAN architecture.

#### b. Local Area Network Connectivity at PoPs

- i. The Bidder shall design the LAN architecture at all the PoPs identified for BSWAN.
- ii. The bidder shall plan and design the structured cabling and power cabling and all related works for the successful installation and commissioning of the BSWAN.

### 2. Design of other BSWAN elements including IP Addressing, Voice Dial Planning, Security etc for BSWAN

#### a. IP addressing & Voice Dial Plan design

- i. The Bidder shall design the IP-addressing schema and Voice Dial Plan schemes for the BSWAN. Wherever applicable and feasible within the guidelines specified by DIT, GoI. It is desired that the current IP addressing scheme at the state level network should be retained, however if the Bidder feels that it needs to be modified to be inline with the proposed IP addressing scheme, the bidder should plan for any migration with minimal disruption in service.
- ii. The Bidder has to prepare an integration plan for the voice and video communication system required for the state.

#### b. Network Security



- i. Security: Since the network is to be used by various agencies of the GoB, the successful bidder is required to prepare detailed IT Security Policy, Security architecture and deployment document for securing the IT infrastructure in the BSWAN and the same shall be submitted to the tenderer for approval along with the other documents/designs as mentioned. The guideline and framework to be used for the IT security policy is published at [www.cert.org](http://www.cert.org) – IT security policy guideline. The bidder shall also ensure BSWAN security to be in line with DIT-Gol guidelines.

### **Interoperability**

**The bidder has to completely understand and follow all the Interoperability guidelines laid down by Govt. time to time.**

### **3. Supply of Products/equipment including active and passive components for BSWAN and Factory Acceptance Testing.**

- a. The Bidder is responsible for the supply of all the Products/equipment specified in the Bill of Material (BoM) included in the tender and their appropriate quantity & capacity, which will meet the Technical Specifications as per the BSWAN design approved by the State.
- b. The bidder is responsible for supply of passive components specified in the BoM section of the tender viz. Cables, Racks etc.
- c. The Bidder shall also quote as optional items and their appropriate quantities that are not listed in the BoM Section of the tender but are considered necessary for the successful implementation of the project. The bidder selected for implementation should not submit any further BoM during the implementation stage.
- d. The Bidder shall undertake minimum five years comprehensive on-site Warranty for all the supplied products/equipment.
- e. Factory Acceptance Testing: The Bidder will get the Factory Acceptance Tests done for the products listed in BoM or agreement. (The team designated by the tenderer shall perform checking of the part or whole of the products to be supplied by the Bidder against the BoM and the respective Technical Specifications).

### **4. Installation and Commissioning of BSWAN connecting all the PoPs listed in the tender document in line with the requirements outlined.**



- a. The Bidder shall install, integrate and commission the BSWAN connecting all the PoPs identified for the state inline with the requirements specified in the RFP.
- b. The Bidder shall interact / coordinate with the Bandwidth Service Provider for successful commissioning of Leased Line.
- c. The Bidder shall also install and commission backup link for providing redundancy to the primary Leased Lines.
- d. The Bidder shall be responsible for configuring and implementing the security components of the BSWAN such as firewalls and IDS as approved by the Government of Bihar.
- e. Structured Cabling
  - a. The Bidder is required to install and commission on a turnkey basis, the structured cabling with in the PoP's involving CAT5E/CAT6 cables, Surface Mount I/Os, 3' CAT 5E/CAT6 patch cord, 7' CAT 5E/CAT6 patch cords, Jack Panel, Racks, PVC conduit / casing / capping with accessories, any other required components such as labels, ferrules etc., and all associated civil works at all the PoPs in accordance with the following guidelines.
    - (i) Carrying out of the required surveys prior to installation work is the responsibility of the Successful Bidder, if deemed necessary.
    - (ii) The cabling job should be carried out under the supervision of certified engineers.
    - (iii) All the wiring should be fully concealed inside the conduit and no cable (except patch cords) should be visible to the naked eye.
    - (iv) The actual ratio of trenching and casing work will depend upon the site layout. The Bidder is advised to familiarize itself with the site layout of POP locations through representative surveys/site visits and ascertain the actual ratio.
    - (v) The cabling shall be properly labeled and ferruled so as to facilitate easy identification and maintenance. The labeling and ferruling shall be documented.
    - (vi) All civil work like cutting, chiseling, drilling, etc. shall be finished to ensure smooth leveled surfaces matching the existing surface finish without disturbing the existing aesthetics of the office to the extent possible.
    - (vii) All waste material shall be properly disposed off from POP premises in an environment friendly manner and compliant to applicable civil / municipal guidelines.



- b. Testing, in conformance to measurement procedures and test parameters for V.35, CAT 5E / CAT 6 and other communication cables installation as defined in TIA/EIA-568-B standards, of each node at each site. The certified test results are to be submitted to State in hard copy.
- c. Certification of each site for minimum 15 years performance warranty based on the above test results from the manufacturer of the structured cabling components.
- d. Fixing & installation of existing hubs/switches, if any, inside the supplied rack(s)
- f. **Power Cabling**
  - a. The Bidder is required to install & commission the Power Cabling from the power source to the UPS & from the UPS to the network equipments that involves design, laying, fixing, installation, & commissioning of the power cabling system including electrical box / boards, cables, UPS, MDB, MCB, and associated civil works at each of the PoPs on a turnkey basis in accordance with the following guidelines.
    - (i) The power-cabling job should be carried out under the supervision of licensed electrical technicians.
    - (ii) All the wiring should be fully concealed inside the conduit / G.I. pipe / Aluminum Channel and no cable should be visible to the naked eye.
    - (iii) The cabling shall be properly labeled so as to facilitate easy identification and maintenance. The labeling and ferruling shall be as documented.
    - (iv) All civil work like cutting, chiseling, drilling, etc. shall be finished to ensure smooth leveled surfaces matching the existing surface finish without disturbing the existing aesthetics of the office.
    - (v) All waste material shall be properly disposed off from the PoP premises in an environment friendly manner and compliant to applicable civil / municipal guidelines.
  - b. **Earthing** - The Bidder is required ensure a proper electrical earth for Power Cabling is available in the PoPs. The bidder is also required to properly earth the UPS. The Bidder also shall repair the existing power earth(s), if any, and make sure that the existing earth is working properly.
  - c. **Testing** - Each electrical point should be tested with line tester / multi-meter. Test results are to be submitted to sate in hard copy.
- g. **IP Telephony and Video Conferencing Services**
  - (i) The Bidder has to install and commission one IP Telephone connection at each of the PoPs.



- (ii) The Bidder has to integrate these IP Phones with the dial plan designed for the state.

#### **h. Network Security**

- (i) The Successful bidder shall ensure by necessary configuration & security policies for the BSWAN that the whole network is totally secure and is not prone to any type of hacks/attacks from intruders.

#### **i. Final Acceptance Testing:**

The Bidder should get the Final Acceptance Tests and shall cover the Functional Tests of WAN components, Structured Cabling and Power Cabling. The Final Acceptance Test Procedure shall also include tests to verify the data, voice and video traffic handling capability of the BSWAN.

### **5. BSWAN Maintenance Services**

The Successful Bidder shall provide the following services for Management of the BSWAN. The Successful Bidder shall ensure that appropriate System and Processes are in place for delivering them.

- Configuration Management
- Problem Management
- Performance Management
- Change Management
- Help Desk Management
- Service Level Management
- Quarterly Performance Audits
- Quarterly Capacity Audits

### **6. Network Management Services**

a) Network management services are to be provided which includes managing ALL the BSWAN elements like routers and switches for required uptime, security, configuration of the network and performing suitable test to ensure high availability of the network elements & connectivity. ***This service is to be provided for a period of five years.***

b) The Bidder is responsible for maintenance of all the supplied hardware & software supplied for BSWAN. This maintenance is comprehensive onsite maintenance as part of the Warranty service.

### **7. Remote Management of Network Equipment and Monitoring of BSWAN Connectivity**



- a. The Bidder will implement a centralized helpdesk available on a toll free number for problem management, which will act as the 1<sup>st</sup> level helpdesk for all users of the BSWAN. The scope of this helpdesk will be to Accept all user calls, Respond to all calls related to the management and maintenance of BSWAN and its related assets, Issue a trouble ticket number to each call, resolve the issue or escalate calls to OEM's or Bandwidth Service Providers as per requirement. It is bidder's responsibility to ensure issue resolution within the timelines specified in the agreement.
- b. The Successful Bidder shall undertake the various responsibilities of the problem management functions of the helpdesk viz. to propose and adhere to an appropriate escalation matrix, to assign severity level to each call, to track each call to resolution, and make sure that the resolution time requirements, as per the definitions, is met with, to escalate calls as required, if necessary and to analyze the call statistics.
- c. The Successful Bidder should generate call reports using an automated tool. The reports should be generated and submitted at a monthly and quarterly basis.
- d. The successful bidder shall establish a portal solution for publishing the BSWAN performance and availability metrics. Such solution shall be made accessible to the select state representatives based on a user id and password.
- e. The Successful Bidder will implement a mechanism to ensure that all issues noted, complaints made and problems faced are identified by a unique Trouble ticket number within the timeline stipulated in the tender. All trouble tickets will be centrally noted, monitored and logged in the Successful Bidders NOC/Helpdesk facility. The Successful Bidder will mark all trouble tickets as "closed" upon resolution of the issue noted.
- f. The Successful Bidder has to manage the whole network system and provide Help Desk to remotely monitor the network availability, reliability, maintenance and quality of service for a period of five years.
- g. The Successful Bidder has to have skilled and certified manpower as L1/L2/L3 engineers for Management of the network round-the-clock, in his NOC.
- h. Bidder has to coordinate with the Bandwidth provider for day-to-day maintenance and upkeep of the BSWAN Links.
- i. The Successful Bidder has to provide the following reports on a monthly basis to State as part of their scope:
  - i. WAN Links Uptime Report (including backup links)
  - ii. WAN Links Utilization Report (including backup links)
  - iii. Scheduled Down Time Activities Report
  - iv. Problem Management Reports



- v. Performance Management Reports
- vi. Bi-annual Performance Audit Reports and Recommendations Report (bi-annual)
- vii. Bi-annual Capacity Audit Reports and Recommendations Report (bi-annual)

## **8. Training**

- Upon completion of the implementation, successful Bidder shall provide training free of cost to the personnel identified for the state. (The numbers of personnel required to be trained are to be specified by the state). The training should cover system design, installation, configuration, set-up, upgrade, administration, testing, management, and maintenance of all the equipment (hardware and software) supplied. This Training shall be held at the location (s) identified by the state. Separate training modules for the following components must be provided:
  - Routers, WAN setup, configuration & documentation
  - Switch, other LAN components in PoP, configuration & documentation
  - Firewall, IDS, their configuration & documentation
  - Interconnection details of attached hardware
  - Capabilities and technologies involved and configuration and troubleshooting of the equipment.
  - UPS, Structured Cabling, Power Cabling & documentation
  - Servers and system software configuration & documentation
  - Other supplied equipment.
- This training should cover the day-to-day maintenance, management, and operations related aspects of the Routers, Switches, Servers, related system software, and UPS etc.
- The training modules and their duration shall be finalized in consultation with the state.
- The Successful Bidder shall also supply detailed training material to state, to enable them to train more number of officers independently.

## **9. Handover**

After the training is over, the Bidder must properly handover the network to the Network Operations (Remote Management) team with all required documentation at the end of five years. If state wishes to continue the services of the successful bidder, further negotiations shall be held and a contract shall be signed for further support period identified at the end of five years.

## **10. General Scope of Work Clauses**



- a. **Implementation Methodology** – The Bidder shall adopt industry best practices to ensure smooth implementation of the project including but not limited to: -
- (i) Preparation of Project Schedule & Charter - a detailed location wise project schedule conforming to the overall Time frame of the project
  - (ii) Understanding the requirements for the project with specific details to kick-off the project as per schedule
  - (iii) Formulation of the Project Team with dedicated Project Manager for the project based on the Project Plan. The Successful Bidder shall deploy extra resources to complete the project as per the timelines, if required.

The Bidder shall submit the Project Schedule & charter and the Project Team Structure for approval to state within 2 week from issue of Letter of Award.

- b. It shall be the responsibility of the Successful Bidder to bring all the installation equipment and tools required for the installation of the BSWAN.
- c. The Successful Bidder has to provide all necessary assistance to the state in resolving regulatory issues like obtaining Clearances/License from any government agency/regulatory authority, as required for setting up of the communication network.
- d. The Successful Bidder has to be responsible for coordinating with the Bandwidth provider for provisioning of the connectivity and related services for successful implementation.
- e. The Successful Bidder shall provide all the test equipments/software required for the Factory Acceptance Tests. The Successful Bidder shall also get the Factory Acceptance Tests done as per Schedule.
- f. The Successful Bidder shall prepare the Final Acceptance Test procedures and submit to the state for approval at least two weeks prior to the schedule of respective activity. The Successful Bidder shall provide all the test equipments/software required for the Final Acceptance Tests. The Successful Bidder shall also get the Final Acceptance Tests done as per Schedule.
- g. Documentation: The Successful Bidder has to submit all relevant documentation pertaining to the entire network, for Remote Management of the Network. This should minimally cover the User Manuals, Operation Manuals, Manufacturer Supplied Technical Documentation, Configuration of all the Network Devices, all relevant diagrams/documentation required in hard copy as well as soft-copy. The documentation for Structured Cabling shall minimally cover detailed schematic layout of the structured cabling system with respect to the floor plan with details of cable numbering (labels and ferrules), wiring diagram for each node, test report for each node and pin-out diagram for each jack panel. The documentation for Power Cabling



shall minimally cover the detailed schematic layout of the power cabling system with respect to the floor plan with details of cable numbering (labels and ferrules).

**The above requirements shall be provided for the following locations**

**Data Requirements (Bandwidth Requirements)**

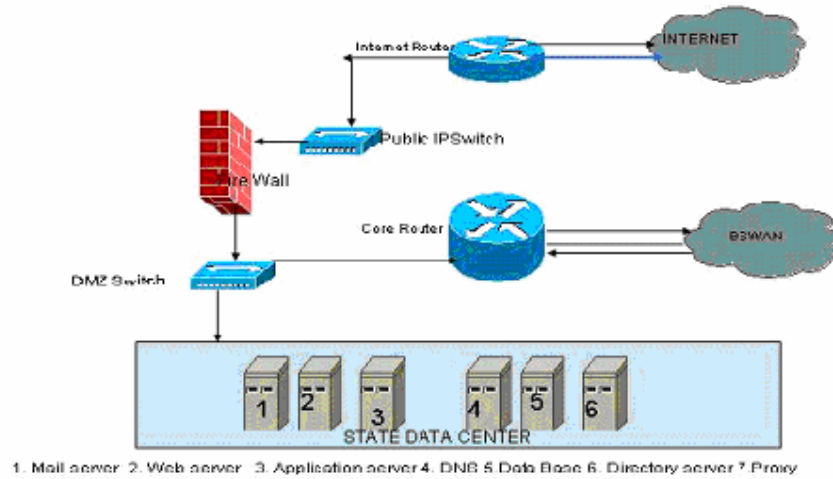
Place	Mbps
SHQ TO DHQ	2
DHQ TO SDHQ/BLOCK	2
Horizontal connections at SDHQ/Block	nx64
Horizontal connections at SHQ	2
Horizontal connections at DHQ	Nx64/ 2 MBPS
SHQ to ISP (internet)	4

Place	Local Office Requirements	Co-located & Remote Office
SDHQ	2	LAN /LAN Extender
DHQ	2	LAN / LAN Extender
SDHQ/Block	2	LAN / LAN Extender
SHQ horizontal offices	2	2
DHQ Horizontal offices	2	nx64 MLLN LAN Extender
Block Horizontal offices	2	Nx64 LAN Extender

**Note:** The number and user details, which are indicative and not exhaustive, of co-located and remote offices in the DHQ, SDHQ & Blocks are given in Annexure respectively.



## Infrastructure Service requirements



The overall infrastructure services include following components:

1. Directory Services
2. Web Server
3. Mailing services
4. Proxy Services
5. Anti-virus patches and Updates
6. NMS Server
7. Syslog Server

### Directory Services

Using Directory, SWAN administrator shall be able to define centralized authentication & authorization mechanisms for all network users. It would also be able to associate policies such as security, management etc on all workstations and servers from a central console. Many setups have multiple directory services that they must manage, such as one for sending e-mail, one for managing user accounts etc. The complexity of administering and using multiple accounts has a negative affect on the productivity of everyone involved. BSWAN will be having LDAP v3 compliant directory services that are the focal point of interoperability, security & manageability in a network. Centralized architecture at SHQ should support cluster for future up gradation. The cluster solution required will be active-active configuration. Whenever cluster solution will be used, bidder will not charge any cost during cluster implementation.



## Mail Services

Using BSWAN, centralized mailing facilities will be available for entire department/offices. This will increase communication, collaboration and enhanced productivity for the employee and officers of GoB, within and outside departments and citizens of the state, as they will be able to communicate / share information with other email users.

- Should provide support for digital signatures
- Should provide support for LDAP V3 Directory access.
- Should provide support for simple, flexible administration using a Web browser / MMC or any other management console.
- Should support tools for message tracking and monitoring management (including recall).
- Should support for application level or OS level clustering and automatic fail over and load balancing services
- Should provide support for POP, IMAP4, SMTP and Web based Access.
- Should support SSL encryption with 128/168 bit key and RSA keys.
- Should Allow administrators to automate notification and distribution of e-mail client software upgrades remotely. (optional)
- Should provide for Simplified Server Monitoring. Should provide easy creation of new database usage, activity, replication, and ACL monitors. Administrators should be able to assess server performance and behavior in a historical context and in real-time.
- X.509 V3 support - that provides a standard for all digital certificates.
- Periodic or per-message notification when the quota is exceeded.
- Support for Admin Script.
- Infrastructure should be scalable to support collaboration and workflow automation.
- Should be capable of developing these workflow applications rapidly and easily.
- Should support S-MIME browser access of email.
- Should provide a facility to monitor, manage and administer all the messaging related servers and applications centrally
- Should provide support for simple, flexible administration using a web browser / MMC or any other management console.
- Should be capable of providing policy based administration controls.
- Should provide for horizontal and Vertical scalability.
- Should provide reporting features to monitor Statistics and Events on the servers.
- Messaging system can be able to provide archiving & message indexing/ journaling capabilities on per user, per distribution list and per database basis. This feature is required for fast recovery of messages on mailbox or portal server



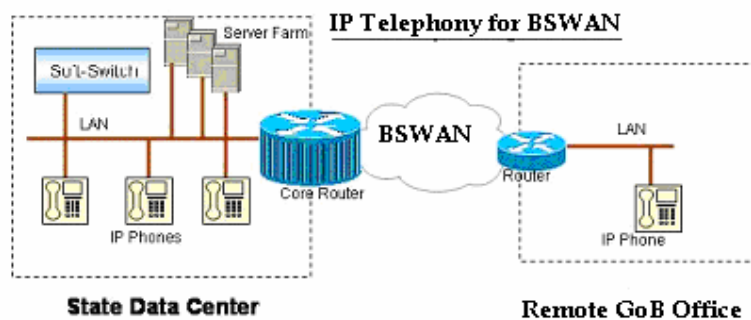
- Messaging solution can be able to provide customizable message classification like confidential, personal, company/department confidential, do not forward, client attorney privileged etc
- Messaging solution should be able to provide end to end encryption with a minimum of 128 bit key encryption
- Messaging solution can be capable of administration through a interface to provide server level control and configuration of the messaging system for all servers including: Create / rename /delete mail accounts Reset / set user passwords for both Directory
- Security & Encryption: Messaging solution should be able to provide end to end encryption of data namely from Client-to-Server, Server-to-Server

## Proxy Services

The Proxy services may provide the BSWAN users the access mechanism to the Internet. The Proxy server web access shall provide web-caching services for better performance and efficient utilization of Internet bandwidth. With proxy services the Internet access can be controlled and monitored in an efficient manner.

## Voice over IP setup

For BSWAN, centralized architecture based solution is envisaged. This is a Server-Client model, where call processing and controlling is carried out by Voice Switch (VS) at the state data centre, and IP phone (as end-points) spread across the BSWAN network. These IP based phones sets will integrate to VS, using Ethernet media LAN. These sets will be located at various remote GoB offices spread across WAN. IP Telephony for the government will be one of the core services to be provided using BSWAN. The IP Telephony system should be set up so that any user can make a telephone call to any other user in the BSWAN through his/ her IP Phone.





- Any IP Phone user, whether in the LAN or the WAN should be able to make a call to any other user in the network.
- The IP Telephony system should provide a unified numbering scheme for all the users in BSWAN.
- The IP Telephony switch/ soft-switch should be scalable to accommodate new users and services are rolled out the government departments and offices.
- The IP Telephony system shall support the following features – conference call, call forwarding, and call transfer.
- The IP Telephony system will have a unified directory service.
- The IP Telephony system would ensure good voice quality.
- Additionally, with use of state of art network infrastructure, overall VoIP system will provide redundancy for voice communication within a district (and its respective SDH/BHQ or BHQ), whenever there are any failure of connectivity between SHQ and DHQ. This will ensure that VoIP communication is unaffected, within departments and offices within a district. CDRs, performance and VOIP QOS events should be stored locally and NMS should provide comprehensive report.
- The IP Telephony system will have a unified directory service and shall imply for all the numbers of the IP Closed User Group system.

## Video Conferencing Setup

The following are the requirements for Video Conferencing System (VCS) for GoB: The video conferencing system (VCS) shall provide point-to-point and multipoint video conferencing. The VCS shall support, at the minimum, H.323 / SIP protocol for voice, video, data and control. The VCS shall be used with a Gatekeeper or LDAP directory for IP address translation. The VCS shall be able carryout Multi-point Conference. The VCS shall provide full motion video, with minimal latency and jitter. The VCS shall also have capability to provide Desktop based conferencing. VCS should integrate with IP telephony system and should be possible to initiate VC from an IP telephone.

## Security Infrastructure Consideration

Security Infrastructure should provide comprehensive identification, authentication, authorization/access control, administration, and audit mechanism in the Hardware or Software with relevant technologies, best practices, guidelines, and standards. The security services used to protect the information infrastructure shall include:

- (i) Identification – Process of distinguishing individual users
- (ii) Authentication – Process of verifying the identity of a user
- (iii) Authorization and Access Control – Process of establishing and enforcing user rights and privileges



- (iv) Administration – Process of managing, and maintaining infrastructure
- (v) Audit – Process of monitoring above mentioned processes, to make sure that suitable security has been established and maintained.

The security services shall be delivered, and that the technologies implemented, in conjunction with a set of best practices guidelines, and industry standards. The technology solution should comply with BS 7799 / IS 17799 standard or any other standard adopted as a policy by the GoI.

Security attributes should dynamically adapt to threats, attacks and the recommendations, as per CERT-In guidelines and alerts.

#### Firewall Architecture Requirements

- It should be able to support multiple interfaces
- It should be based on the Next Generation Networking technologies giving complete Scalability / Reliability / Availability from Hardware / Software standpoint.
- It should be capable of supporting Routing, Firewall, DDoS, VPN
- It should natively support Gigabit Ethernet and fibre ports.
- It should provide for interface based Stateful Filtering
- It should provide dynamic/static NAT & PAT capabilities.
- It should be based on real time, secure, operating system
- It should give complete Manageability In band as well as Out of band

#### Routers should support

- Routers should be capable of accepting VPN configurations.
- Security Filters imposed on Configuration ports and Access lines.
- Unused interfaces and Access lines shut down or disabled.
- Risky interface services disabled.
- SNMP disabled or enabled with good community strings and Security Filters.

#### Network Security considerations

- Overall BSWAN environment has to follow a well-defined security policy. The framework needs to ensure the information availability, integrity, and confidentiality of GoB infrastructure and data. The security policy should be comprehensive and shall address the security needs of the BSWAN and the NOC/ DC and the end-users
- A security audit of the BSWAN shall be done after the completion of implementation phase and regularly during the Operations and Maintenance phases on annual basis, to assess whether appropriate security procedures are being followed.
- BSWAN will be an IP based intranet, therefore strong security infrastructure be put in place from securing the network from the external network/ internet.



- Methods of mitigating a security breach from within the intranet or extranet should be address by the security policy. The bidder should design appropriate solution so that a security breach/ virus do not spread throughout the network if originating at the end-user level.
- BSWAN shall have IPS, Firewall, and Anti-virus server to secure the network in conjunction with ACL, port monitoring and management from any attacker. It should provide interface based user configurable DoS attacks policies.
- It should give CLI as well as Web GUI Single look & feel Architecture for managing and configuration.
- It should support standard DDoS signature support from external as well as internal attacks.
- It should Includes numerous application aware inspection engines that secure advanced networking protocols which are TCP/IP, RIP-V2.0, OSPF, RTP, L2TP, PPTP, IPSec, GRE, PPPoE, , SIP, RTSP, DNS, H.323, FTP, HTTP, HTTPS,SNMP, SMTP, TFTP, support for IPv6, DHCP.
- It should support Advanced Encryption Standard (AES) - 128, 192 and 256 bit key sizes for VPN Solution

#### IPS Architecture Requirements.

- It should be transparent to network and users. It should have Separate interface for secure management.
  - It should have Intrusion Detection & Prevention capability
  - It should have Web Protection, SNMP Vulnerability
  - It should have Brute Force Protection
  - It should have capability to protect from Worms & Viruses, Backdoor & Trojans. (As part of IPS or antivirus solution)
  - It should perform URL & content based Filtering. (As part of IPS or antivirus solution)
  - It should perform Antivirus detection & protection at Network gateway (As part of IPS or antivirus solution)
  - It should be configurable to act as wire in case of high CPU utilization. This is required to protect IPS itself from high bandwidth DOS/DDOS attacks. (As part of IPS or antivirus solution) It should have protection against TCP, UDP & ICMP Flood, SYN Flood
- #### Authentication System Requirements
- It should operates as a centralized RADIUS / AAA server. It should be able to provide for diverse type of network devices like switches, routers, firewalls, VPN using AAA.
  - Directory services also allow users to log on from anywhere on the network, because configuration and other user-related information is stored in the directory rather than in files on the user's desktop. It should provide features to define different access levels for each administrator and the ability to group network devices to enforce and change

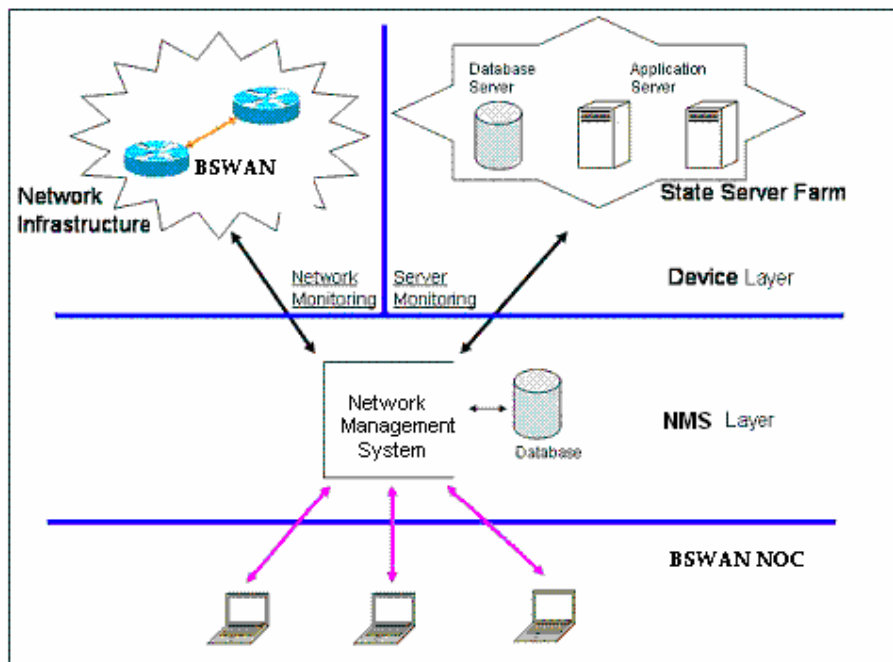


of security policy administration over all the devices in a network.

- It should provide for certificate revocation using the X.509 CRL profile for enhanced security with
- Appropriate Server hardware to be provided with access control server
- Shall support replication of users and groups accounts database.

## Network Management System (NMS)

NMS will be deployed at State Data centre, to manage and monitor the entire BSWAN Network components (including Routers, Switches, links, etc.), Servers and applications at State Data centre round the clock basis. This will help in pro-actively diagnosing and resolution of any technical hindrance for smoother BSWAN operations. In addition of fault detection, these tools will be capable in providing reports for network availability, link utilization, network device performance, Server statistics and performance, SLA reports, which are required for analysis and future capacity building.



(i) NMS will be continuously monitoring the links, network devices and servers of the BSWAN.

(ii) Network monitoring for BSWAN will be based on SNMP, which is basically server-client architecture.



- (iii) NMS will automatically discover the entire network devices and present the same in a logical network topology map connected to each other using various network connectivity modes.
- (iv) The network components on the topology map will be presenting the status of the components with various colors.
- (v) Additionally whenever there is any network component failure, NMS will be logging all the faults in the event window with a timestamp, event description or event details etc.
- (vi) NMS will also create various reports in graphical format, for the performance and availability of network components such as links and network devices.
- (vii) NMS will be collecting these raw data and storing the same in a database repository. The database should be integral part of NMS and not separate entity.

The reporting engine will generate the reports based on the data collected, and help user in accessing these graphical reports using standard Web browser such as Internet Explorer or any standard browser.

NMS will be having provision for the reports, for consolidating automatically on hourly, daily, weekly, monthly, Quarterly or Yearly basis.

User can create his /or her customised reports based, such as on basis of certain objects or for any time period of the choice.

NMS will enable management of heterogeneous, e-business infrastructures and includes support for a broad range of Windows and UNIX systems and applications, including web and application servers, and email, databases and many standard applications.

NMS will log the event messages with information about system status, system events, or problem related to a server within the system.

NMS will notify status change, an event, or a problem on a server or network equipment by sending a message as an e-mail or Mobile-SMS.

NMS can forward or help in generating Trouble tickets in 'Help Desk' system automatically.

NMS provides performance, resource, and end-to-end transaction response time measurements and supports network and database measurement information.

NMS can provide statistics about the servers in the Data-centre such as Disk Space (logical/ Physical), memory usage, swap, paging, CPU, http, interface traffic, etc.



#### Network Management Server/Software

- Should be centralized architecture at SHQ
- Should support monitoring / managing of SNMP v1, v2C, v3 supporting devices
- Should be MIB-II compliant
- Should support Web Interface.
- Should provide accessibility to internal built-in database as well as compatibility to standard data base including Oracle / SQL

#### **Network Monitoring**

Ability to monitor network devices of various vendors and easily accessible through a common interface. Ability to monitor WAN links and LAN based on SNMP and RMON, providing traffic /percentage utilisation, error statistics etc. through various reports based on the environment monitored. Measure and collect data from, and set service level reporting on, ICMP echo (ping), SNMP MIB variable, services like HTTP, if required, Ability to monitor and report on availability, delay of target IP nodes – i.e. router interfaces - and monitor and provide reports on historical utilisation of CPU, memory of critical monitored servers running SNMP and system agents if required, Integration with NETWORK management system and ability to provide monitoring of the network based on SNMP and also support RMON / RMON2.

#### **Service Level Monitoring**

To provide various real-time and historical reports, providing the ability to format and present data in a graphical and tabular display. Should support automatic base lining on historical data, and thresholds that can be adjusted as required, based on data collected. The system should have a Web-based user interface and provide service level reporting using a console. It should support data collectors distributed across locations on collect system, which should be able to gather and measure statistics from the IT infrastructure if required provides a status view of all data collections and system involved, group data collections into report groups and assign them individual service goals and business hours if required. Ability to monitor and report on availability, delay of target IP nodes – i.e. router interfaces - and also monitor and provide reports on historical utilisation of CPU, memory of critical monitored servers running SNMP and system agents if required. It should also be integrated with other modules of Network management to provide service level reporting and be able to generate service level reports based on customised business process views if required.

#### **Security**

Should be able to provide secured windows based consoles as well as secured web-based consoles for accessibility to NMS using network.



Should have web browser interface with user name and Password Authentication. It should be possible to view topology maps, events, reports etc. in full graphical format using standard web browser.

- Polling Cycle Support discriminated polling Should be able to update router configuration changes like re-indexing of ports.
- Fault Management
- Discovery Should provide accurate discovery of layer 3 and heterogeneous layer 2 switched networks for Ethernet, LAN, WAN, Servers, etc.
- Presentation Should be able to discover redundant and ISDN Backup Links with proper colour status propagation for complete network visualization. It should support dynamic object collections and auto discovery. The topology of the entire Network should be available in a single map. It give user option to create his /or her map based on certain group of devices, or region & Should be capable of taking snapshots of Network maps at a certain point of time for future reference Should have ability to display port labels on the connected devices on the Network map, as configured in the routers.
- Windows OS Should monitor / manage following: Event log monitoring, Virtual and physical memory statistics , Paging and swap statistics, Operating System, Memory, Logical disk, Physical disk, Process, Processor, Paging file , IP statistics, ICMP statistics, Network interface traffic, Cache, Services, MS Active Directory, Should be capable of view/start / stop the services on windows servers, Should be capable to present “Task Manager” of the Windows Server centrally and show the current running processes.
- Unix / Linux.Should monitor with statistics: System CPU, idle CPU and wait I/O , System virtual memory (includes swapping and paging), System load Disk Usage , Disk inode usage on each file system , Network interface traffic, Critical System log integration Infrastructure Services: IIS / Tomcat / Web server statistics , HTTP service , HTTPS service , FTP server statistics, POP3 Services, SMTP Services, Mail Server Services, ICMP services, Database Servers.
- Availability Reports Overall Network Availability and Uptime – Daily, Weekly, Monthly, Yearly Basis, Lease Lines, ISDN, LAN, Network Devices, firewall and IPS and Servers Availability and Uptime – Daily, Weekly, Monthly, Yearly Basis , Trend Report , Top N report , Custom report, MTTA and MTTR reports, Overall Network Availability and Uptime – Daily, Weekly, Monthly, Yearly Basis.
- Performance Reports Device Performance (Router, Switch, Security Device)– CPU and Memory utilized.Link Input/Output Utilization (percentage, bps, kbps, mbps, octets/sec) – Lease Line, ISDN, Trunks between Switches, Link errors (lease lines, isdn, trunks, etc) Network Latency , Server and Infrastructure services statistics , Trend report based on Historical Information , Top N report, Custom report , Network Jitter.



- SLA Reporting Computation of SLA for entire BSWAN network, Individual links, Able to generate automated Daily, Weekly, Monthly, Quarterly and Yearly SLA reports, Trend Report, At A Glance report, Top N report, Custom report.
- Data collection: For reporting, required DB (Oracle /SQL or any other) to be provided with all licenses. Should support ODBC /or relevant database and interfaces to RDBMS such as Oracle, SQL. Should have tools for building MIB, Application used for testing devices on multiple MIB parameters. Data Collection Should be possible on MIB Expressions using specific formulas like link utilisation in Kbps, Mbps, etc or any other OID. Should have Storage capacity (HDD) to support all reporting data for 5 Years of BSWAN operation. The Database for NMS can reside on different server/box.
- Integration: Should be able to receive and process SNMP traps from infrastructure components such as router, switch, servers, etc.

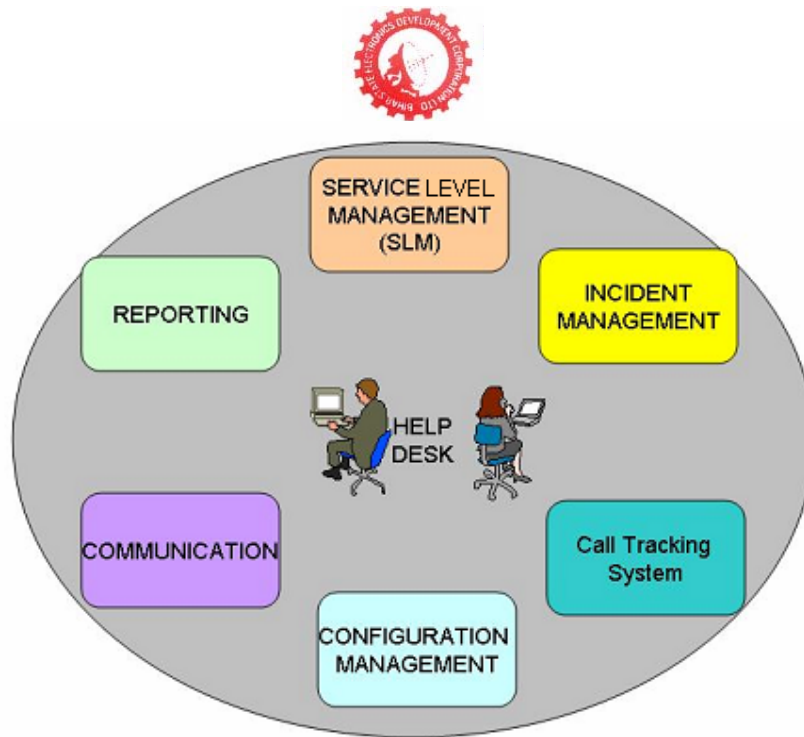
The bidders are requested to quote Network Monitoring and Server (including Application) monitoring as separate modules, so that appropriate modules can be purchased as per need and approvals.

### **Helpdesk Management System**

As BSWAN will be core IT platform of e-Governance for Government of Bihar (GoB) and its citizens, so it becomes necessary to have reliable services available 24 x 7 basis to GoB offices and state citizens. These services will be provisioned across the State using various components such as routers, switches, security devices, modems, lease lines, ISDN/dial-up lines, LAN, application servers, e-mail, information and utility portals, workstations, and Internet of course. These problems can be overcome, with the use of centralised Helpdesk for BSWAN. In all Helpdesk management comprises of Helpdesk tool, policies, and helpdesk personnel along with supporting people.

The key highlights of Helpdesk systems are:

- Recording of all service calls and Incidents
- Configuration management
- Service level management
- Problem management
- Change management



### Framework

Should be based on ITIL framework and support following ITIL processes:  
configuration, incident, problem, change and release management

### Capabilities and Features

Should support customizable thresholds for automated escalation of incidents, using SMS or e-mails etc. Should be capable to provide reports, like Total calls, calls resolved and unresolved, server calls, network calls, etc. Should be have capability to assign incidents to technical specialist and groups automatically Calls assignment and escalation should be flexible enough to work as per the BSWAN requirement. SWAN operator has to define and build and implement entire (BSWAN) support process for: Incident Management, Service Level Management Problem Management, Change Management and Release Management.

SWAN Operator has to build entire support process / logic as per best practices of ITIL. Support process, can be reviewed once in six month with an initial review at 3 months with BSWAN appointed agency and suitable changes should be incorporated. Should provide a graphical wizard or rule manager to create escalation, assignment and database field update rules, without any need for programming. Should help in preparing management reports from incident records

Should provide support to search the knowledge base by an end user

Should have Capability to support secure transaction over BSWAN network



Should support role based access and views

Should give capability to Helpdesk personnel to assign incidents to the Technical Specialist either manually or automatically depending on the Nature of the Call.

Should help in creating escalation matrix on basis of incident Nature / Severity / Other defined parameters.

Should have ability to automatically create Trouble Tickets (TT) automatically, by integration with NMS Should always provide accessibility through web or GUI using defined password by administrator

Shall allow authorised users to change the passwords

### **Incident Management**

Should have option to log call through Web interface from user Creation, modification and closure of incident records incident registration with along with following fields: time, date and incident number fields mandatory Restricted access to incident records Classification of incidents Customizable call status and closure codes tool enable and maintain the relationships between incidents, known error, and problem records. The tool facilitates the closure of all incidents when the associated problem or known error is resolved. The helpdesk shall allow tracking progress of an incident with deadline management.

### **Configuration Management**

Should facilitate the recording of categorization codes in terms of affected service or CI type

Should facilitate the recording of CI attributes, such as serial number, version, and location

Should facilitate the establishment of relationships between Calls, and with associated User/or people

Should facilitate only authorized access to the CMDB for read, write, and modify activities

Should facilitate the logging of historical changes to the CI record for auditing purposes. Should facilitate the verification of the CI data with the actual physical infrastructure.

Should provide flexible management reports regarding CI inventory, asset and financial information to facilitate configuration audits

Solution CMDB facilitate in identifying of infrastructure components that are problematic or unstable

Should facilitate the automated reestablishment of parent and child relationships when Clients are added, deleted, or updated Should have capability to record User/People



data, such as Name, ID, location, Address, contact, or customised field whenever required. Should have capability to export or import the CMDB in xml format  
Should have capability to archive older records in CMDB for incidents, faulty equipment

### **Service Level Management**

Should facilitate the input of service level targets in terms of operational requirements  
Should manage the scheduling of the review cycle and life span of an SLA  
Should automate service delivery threshold monitoring against defined service agreements  
Should record the actual resolution and response time against the required as per SLA  
Should facilitate the linkage of CI impact attributes such as critical CI's to Service Level Agreements  
Should facilitate the production of real time graphical service summaries, including identification of threshold breaches  
Should facilitate the customization of reports to a specific audience. Should have capability to monitor SLA for under-pinning services.

### **Problem Management**

Should facilitate in supporting Problem Management process.  
Should facilitate in linking the similar incidents for fixing the issues by identification of true cause of failures.  
Should maintain the audit trail of entire problem management process.

### **Change Management**

Should facilitate in Supporting the Change management process.  
Should provide suitable interface with Change Advisory Board (CAB) for approving the recommended changed.  
Should maintain the audit trail of change management process.

### **Release Management**

Should facilitate the task of software auditing.

- (i) Service calls – logging of end user calls with details and generating trouble tickets (TT). The users can log the calls either on phone or using the web interface of the tool, or can also be entered by the helpdesk coordinator.
- (ii) Incident Management – automated recording (logging) of critical component failures and generating TT.
- (iii) Manual or through automation assigning calls to specialist or technical support team members depending on the type of call; such as problem related to any Server



failure will be assigned to the Server .

(iv) Service calls can also be awarded to the OEM support team (under-pinning) and does tracking of the status of the resolution as per agreed service level

Escalation of the calls, if the services are not available or not recovered within time frame

Help in tracking calls till resolution

Closing the Calls and updating of database

Generating MIS reports for management on daily, weekly, monthly basis

Update to user/customer whenever there is change in the status.

Capability to send the alerts to users, Management, Technical specialist and 3rd party contractors

Helps in minimizing the regular faults (Service and Incident calls), to provide services smoothly.

Identify, document, classify and analyse historical issues to avoid similar problems in future

Reduction in service downtimes

Minimizing the errors due to recommended changes

Changes are more controlled and more process driven, which eventually helps in maintaining the quality of services.

Provides transparency for making management decisions with proper information flow

Provides precise up-to-date secure information for entire configuration items (CI – IT components)

All the CI's are interlinked as per their inter-relationship

Provides status of the CI's such as in-use, spare, faulty, etc.

Helps in auditing

Provides CI's detailed information such as supplier/vendor, Warranty,

Support contract, purchase or hire cost, etc.

Capability to list all the components of same category, such as if management

wants to have list of all the Routers active on network

Single database for storing the all information of CI inventory,

Calls, problem management, change management and Service level management

Helps in creating, monitor and control the service level agreements and their underlining service quality.

Helps in monitoring and reporting the SLA with Support vendors or 3rd party external providers appointed by BSWAN

Helps continuous lateral thinking for Service levels during operations

Ability to generate TT, by integrating with NMS



## Network Security Considerations

- a. Overall BSWAN environment has to follow a well-defined security policy. The framework needs to ensure the information availability, integrity, and confidentiality of GoB infrastructure and data. The security policy should be comprehensive and shall address the security needs of the BSWAN and the NOC/ DC and the end-users.
- b. A security audit of the BSWAN shall be done after the completion of implementation phase and regularly during the Operations and Maintenance phases on annual basis, to assess whether appropriate security procedures are being followed.
- c. BSWAN will be an IP based intranet, therefore strong security infrastructure be put in place from securing the network the external network/ internet.
- d. Methods of mitigating a security breach from within the intranet or extranet should be address by the security policy. The bidder should design appropriate solution so that a security breach/ virus do not spread throughout the network if originating at the end-user level.
- e. BSWAN shall have IPS, Firewall, and Anti-virus server to secure the network in conjunction with ACL, port monitoring and management from any attacker
- f. It should provide interface based user configurable DoS attacks policies.
- g. It should give CLI as well as Web GUI Single look & feel Architecture for managing and configuration
- h. It should support standard DDoS signature support from external as well as internal attacks.
- i. It should Includes numerous application aware inspection engines that secure advanced networking protocols which are TCP/IP, RIP-V2.0, OSPF, RTP, L2TP, PPTP, IPsec, GRE, PPPoE, , SIP, RTSP, DNS, H.323, FTP, HTTP, HTTPS, SNMP, SMTP, TFTP, IPv6, DHCP.  
(xiii) It should support Advanced Encryption Standard (AES) - 128, 192 and 256 bit key sizes for VPN

## Other considerations at SHQ

- DHQ Patna will not be separate PoP for Patna BHQs. It will be directly terminated along with Patna BHQs at SHQ backbone Router.
- Offices in Patna requires 2 Mbps leased line connectivity, will be terminated to nearest office either at DHQ (DC Office Patna) using Channelised E1 links.
- Departments and offices of GoB which are co-located in DHQ (DC office Patna) will be connected to SHQ directly using UTP or OFC.
- SHQ will also be connected to Bihar State Secretariat using OFC link.

This type of collocations at all the districts will be calculated and all the district blocks of each district are co located with in the respective DHQ.





## Schedule of Supply

Item No.	Name of the Goods	Description (See Detailed Specifications)	Unit of Measurement	Quantity
1.	At State Head Quarters (SHQ)			
1.1	Core Router		No.	1
1.2	Core Switch		No.	1
1.3	Internet Router		No.	1
1.4	Firewall		No.	2
1.5	IPS		No.	2
1.6	DMZ Switch		No.	2
1.7	RAS Server		No.	1
1.8	IP Phones		No.	583
1.81	IP telephony (Soft) Switch		No.	1
1.9	Network Monitoring System		No.	1
1.10	Help Desk Management System		No.	1
1.11	Multipoint Control Unit (MCU)		No.	1
1.12	Video Streaming Server		No.	1
1.13	Interface Server		No.	5
1.14	Infrastructure Servers		No.	5
1.15	Database Server		No.	2
1.16	Web Server		No.	2
1.17	Syslog Server		No.	1
1.18	KVM Switch		No.	5
1.19	Workstation		No.	7
1.20	42U Racks		No.	5
1.21	AAA Server		No.	1
1.22	UPS		No.	2
1.23	Air Conditioner		No.	2
1.24	Generator Set		No.	1
1.25	SMPS		No.	1
1.26	Battery Bank (2Vx24)		Set	1
1.27	LAN extender as per need			As reqd.
2.0	At DHQ and BHQ			
2.1	District Router		No.	37
2.2	LAN Switch		No.	37
2.3	Video Conference End Points		No.	37
2.4	Air-Conditioner 2 Ton		No.	37
2.5	UPS 5 KVA		No.	37
2.6	Generator Set 8 KVA		No.	37
2.7	BHQ Router		No.	495
2.8	BHQ LAN Switch		No.	495
2.9	15U Rack for DHQ and BHQ		No.	534
2.10	3KVA UPS		No.	495



2.11	Desktop based Video Conference		No.	495
2.12	Generator Set 5 KVA		No.	495
2.13	Passive Cabling			.
2.13.1	UTP Cabling		Mtr	As reqd.
2.13.2	Mounting Cords		No.	As reqd
2.13.3	Information Outlets		No.	As.reqd.
2.13.4	Line Interface Units		No.	As reqd.
2.14	Spares		No.	As reqd
2.15	SMPS		No.	37
2.16	Battery Bank (2Vx24)		Set	37
2.17	LAN extender			As reqd

**Note: Modems for lease line are to be provide at all BHQ locations, where as SHQ / DHQ it is only required if BSNL is not providing Channelised E1 links.**

### **Technical Specification at SHQ:**

**All bidders are required to fill in the compliance / deviation table given below.**

1.	Hardware	Specifications	Compliance / Deviations
1.1.	Core Router	<ul style="list-style-type: none"> <li>- Redundant Supervisor / Switching / Routing Engine. Routing performance claimed on the chassis should not degrade with failure of any one of the switching/routing engine modules.</li> <li>- The Bidder should provide adequate memory to accommodate all OS features required</li> <li>- The resources in the switch such as CPU, Memory etc., shall be capable of handling the ultimate capacity with all features enabled.</li> <li>- Redundant Power Supply (230V AC, 50Hz)</li> <li>- Multiple services (Data, voice, video)</li> <li>- Shall support IP, MPLS etc</li> <li>- All the modules, power supply and fan should be hot swappable.</li> <li>- Dual CPU (1+redundant)</li> <li>- Forwarding performance (with state-full switch-over) of the router shall not be impacted due to one CPU failure</li> <li>- Should support minimum 7 service slots</li> <li>- Shall support variety of interfaces like Ch-STM1/STM1 Interfaces as per ITU-T Standard.</li> </ul>	



		<ul style="list-style-type: none"><li>- Router should support interfacing with Ch-STM, STM1, ChE3, E3, ChE1, E1, 10/100 Mbps and 1000 base TX, Gigabit Fibre and 10 Gigabit.</li><li>- Ethernet Ports 8 x 10/100 Mbps and 1000 Mbps</li><li>- STM-1 2 Ports, upgradeable to 4 Interfaces</li><li>- STM-1 Transceiver Type Single-mode up to 5 KM</li><li>- Console port 1 numbers</li><li>- Built-in 1 GB RAM / 48 MB Flash Memory</li><li>- Single channel wire-speed 15Mpps or more</li><li>- Throughput should be 20 Gbps or more (full-duplex)</li><li>- All interfaces shall support wire rate throughput for L2, L3, VPN MPLS traffic with QoS and Security features enabled.</li><li>- Encryption Hardware based encryption for IPSec 3DES/AES – min of 2Gbps performance</li><li>- Routing Protocols RIPv1, RIPv2, OSPFv2 and v3, BGP4, IS-IS, Route redistribution between any of the above Protocols.</li><li>- Protocols PPP, Multi-link PPP, IPv4, IPv6, MPLS L2 &amp; L3, VRRP, ISIS protocol available as standard</li><li>- IP Multicasting (IGMPv1&amp;v2, PIM-SM,)</li><li>- IP Accounting (Using in-built /or external hardware/software infrastructure, Packet &amp; Byte Counts, Start &amp; End Time Stamp, Input &amp; Output interface ports, Source &amp; Destination IP addresses, Source &amp; Destination TCP/UDP ports)</li><li>- Physical Router should provided with 19" Rack mounting kit. All necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, wire managers, etc. should be provided Monitoring Event and</li></ul>	
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		<p>system history logging functions shall be available.</p> <ul style="list-style-type: none"> <li>- Management Accessibility using Telnet, SSH, Console access, Easier Software upgrades through network, using FTP, TFTP, etc. Configuration management through CLI, GUI based software utility and using Web interfaces. GUI tools shall be provided. Support for Syslog Server required Support pre-planned timed reboot to upgrade hardware to a new software feature and plan the rebooting as an off-peak time. Shall support boot options booting from remote Network node.</li> <li>- QoS: ToS, CoS, Queuing, Prioritising . Committed Access Rate/ Rate limiting. IP Precedence, Policy based routing. Congestion avoidance algorithm, such as WRED, Priority queuing, Class based weighted fair queuing, RSVP.</li> <li>- Debug &amp; Diagnostics Display of input and output error status on all interfaces, Display of Dynamic ARP table, Display of Routing table, Trace-route, Ping, extended PING</li> </ul>	
1.2	Core Switch	<ul style="list-style-type: none"> <li>- Hardware Architecture Redundant Supervisor / Switching / Routing engine. The Switch should have hot standby configuration switch fabric to ensure higher level of resiliency in the network. It should have non-blocking wire-speed architecture. Multiple services (Data, voice, video) Redundant Power Supply, Power supply 230 Volt 50Hz input, Modular Chassis.</li> <li>- Interfaces / Slots Minimum 7 Slots, All service Cards should be hot swappable, 96 Ports 10/100/1000Mbps Gig Fiber and upgradeable</li> <li>- 2 Free Slots should be available for future expansion</li> <li>- Performance High back plane speed 600Gbps or more,</li> </ul>	



		<p>Forwarding rate should be 325 Mpps or more.</p> <ul style="list-style-type: none"><li>- L2 Features Layer 2 switch ports and VLAN trunks, IEEE 802.1Q VLAN encapsulation, Support for at least 2500 VLANs., 802.1w, IGMP snooping v1 and v2, Port trunking technology across line cards.</li><li>- IP Routing Protocols. Static IP Routing, OSPF, RIP, BGPv4, VRRP.</li><li>- L3 features. PIM Sparse Mode / Dense Mode, Bi-directional PIM, IGMP v1, v2, / v3, ICMP support, IPv6 support in hardware with delivered configuration. Security. Standard and extended ACLs on all ports, Time based ACLs (option) , Dynamic Host Configuration Protocol (DHCP) snooping, AAA and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration. Secure Shell (SSH) Protocol and Simple Network Management Protocol to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.</li><li>- Manageability &amp; Up gradation. Switch needs to have console , port for administration &amp; management , SNMPv1, snmpv2/v3 , Support management using CLI, GUI using Web interface. Additionally, management can also be done using NMS. Support FTP/TFTP for upgrading the operating System. TCP-MIB, UDP-MIB. RFC1213-MIB (MIB-II), RFC1398-MIB (ETHERNETMIB), Should have server load balancing features, Should support PoEas 802.3af</li><li>- Standards. IEEE 802.3x full duplex on 10BASE-T and 100BASE-TX ports. IEEE 802.1D Spanning-</li></ul>	
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		<p>Tree Protocol , IEEE 802.1p class-of-service (CoS) prioritization, IEEE 802.1Q VLAN , IEEE 802.3x be on 10 BaseTx/ 100 Base Tx /1000 Base Tx,</p> <p>IEEE 802.3u 10 BaseT /100 Base Tx /1000 Base Tx.</p> <ul style="list-style-type: none"> <li>- Physical.</li> </ul> <p>19" Rack mountable, All necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, wire managers, etc. should be provided.</p>	
1.3	INTERNET ROUTER	<ul style="list-style-type: none"> <li>- Hardware Architecture.</li> </ul> <p>High Performance CPU , Modular Chassis , Power supply 230 Volt 50Hz input.</p> <ul style="list-style-type: none"> <li>- Memory</li> </ul> <p>RAM 64 MB, upgradeable to 128 MB, Flash 32 MB, upgradeable to 64 MB.</p> <ul style="list-style-type: none"> <li>- Performance.</li> </ul> <p>0.2 Mpps wire speed.</p> <ul style="list-style-type: none"> <li>- Interface / Slots.</li> </ul> <p>Ethernet 2 x 10/100/1000Mbps, 4 E1 Ports scallable to 12, One ISDN BRI ports. The ISDN will used for auto dial-back in case of lease line failure. The auto dial backup can also be given on separate device, if OEM does not support on a single device. Minimum 2 Free slots , Console port 1 number.</p> <ul style="list-style-type: none"> <li>- Routing Protocols.</li> </ul> <p>Static Routing , RIPv1, RIPv2, OSPF with demand Circuits , BGP4 , Policy Routing</p> <ul style="list-style-type: none"> <li>- Protocols.</li> </ul> <p>PPP, Multi link PPP, MPLS, <b>IPv4 and IPv6</b>, NAT, PAT, Multicasting PIM or MOSPF,.</p> <ul style="list-style-type: none"> <li>- VPN/Tunnel.</li> </ul> <p>tunnelling and IP Sec 3DES/AES VPN</p> <ul style="list-style-type: none"> <li>- Encryption.</li> </ul> <p>IP Sec 3DES/AES.</p> <ul style="list-style-type: none"> <li>- Dialling capability.</li> </ul>	



		<p>ISDN Dial backup. The ISDN will used in case of lease line failure for auto dial-back from Internet router. The auto dial backup can also be given on separate device, if OEM does not support on a single device, In-active hang-up.</p> <ul style="list-style-type: none"><li>- Security. NAT, PAT, Multilevel Access control, Support for ACL to provide supervision and control. Controlled SNMP Access through implementation of Access Lists on the router to ensure SNMP access only to the SNMP manager or the NMS workstation. Support for Remote Authentication User Service (RADIUS) and AAA , PPP CHAP support. PAP (optional), Controlled SNMP, access through the use of SNMP with MD5 authentication. Integrated Firewall and inline intrusion detection service to provide security for internet router.</li><li>- Management &amp; Upgradeability. Accessibility using Telnet, SSH, Console access for administration and configuration, Support FTP or TFTP for easy software upgrades over the network. SNMPv1, snmpv2/v3 , Support configuration management through the CLI, GUI or web interface shall be available. Event and system history logging functions shall be available. Support Syslog Support pre-planned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time.</li><li>- Physical. Router should be provided with 19" Rack mountable unit.</li></ul>	
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1.4	<b>Firewall</b>	<ul style="list-style-type: none"> <li>- Power Supply. 200-240 VAC, 50 Hz,</li> <li>- Physical attributes Should be mountable on 19” Rack, Modular Chassis.</li> <li>- Hardware Interfaces 4 x GE and option for expansion to 8 GE ports, Console Port 1 number. Adequate memory DRAM/Flash Encrypted throughput: minimum 400 Mbps, Concurrent connections: up to 400,000, Simultaneous VPN tunnels: 2000,</li> <li>- Architecture. Should be installed in Redundancy,</li> <li>- Routing Protocols Static Routes, OSPF Firewall Route redistribution between any of the above protocols (optional)</li> <li>- Protocols. TCP/IP, PPTP, RTP, IPSec, PPPoE, RTP, SIP, H.323, FTP, HTTP, HTTPS, SNMP, SMTP, TFTP, DHCP, DNS support for IPv6</li> <li>- Other support. 802.1Q, NAT, PAT, IP Multicast support, Remote access VPNURL Filtering Logical interface support (VLAN), Layer 2 Firewall, Virtual Firewall. Additionally Time based Access control Lists may be an optional feature.</li> <li>- Access. Radius/AAA /QoS. QoS features like traffic prioritization, differentiated services, committed access rate. Should support for QoS features for defining the QoS policies. Support for Low Latency Queuing. L2 and L3 CoS/DSCP Priority Mapping.</li> <li>- Encryption IPSec, DES/3DES/AES, Hardware, software.</li> <li>- Management.</li> </ul>	
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		<p>Console, Telnet, SSHv2, Browser based configuration, SNMPv1, snmpv2/v3.</p> <ul style="list-style-type: none"> <li>- Maintenance &amp; Serviceability. Scheduled System Reload (Reboot) , Main components like motherboard, IO board, power supplies and fan tray should be field replaceable.</li> </ul>	
1.5	<b>IPS</b>	<ul style="list-style-type: none"> <li>- Features. Minimum Layer 7 Throughput --&gt; 2.0 Gig, using single or multi device solution. Number of segments 4 x Gig. Should support fail-open to four Gigabit segments in case of Power / hardware / software failure, Should protect against DoS/ DDoS / SYN-flood/ TCP-flood /UDP-flood Must have “Zero-day” protection against DoS attacks based on traffic behaviour.</li> <li>- Action on detection. Block attacks in real time, Drop Attack Packets, Packet Logging , Reset Connections, Action per Attack</li> <li>- Stateful Operation. TCP Reassembly , IP Defragmentation , Bi-directional Inspection , Forensic Data Collection Access Lists. Alerting. Alerting SNMP, SMTP support, Log File, Syslog Support.</li> <li>- Management. Console, SSH, Telnet, HTTPS, HTTP, SNMP v1/v2C/ v3 required.</li> <li>- Operations Should support 24/7 Security Update Service , Should support Real Time signature update , Should support Provision to add static own</li> </ul>	



		<p>attack Signatures</p> <ul style="list-style-type: none"> <li>- Reporting System should provide centralized reporting and management. System should provide comprehensive security event reporting, System should provide comprehensive security event reporting (optional).</li> <li>- Power Redundant Power Supply , 230 V AC , 50Hz.</li> </ul>	
1.6	<b>DMZ/Internet Switch</b>	<ul style="list-style-type: none"> <li>- Interface /Slots 1 x 24 ports 10x100x1000 GE, 2 x 1000Mbps ports base Single Mode fibre</li> <li>- Performance Packet forwarding rate should be above 35.7 Mpps, 24 Gbps switching fabric capacity.</li> <li>- General Features Layer3 - with following support (RIPv1, v2, OSPFv2/v3, VRRP, DHCP) , Support Port Mirroring , Support Port Trunking, Link Aggregation , IEEE 802.1Q VLAN encapsulation Minimum 255 VLAN , Support Port based network access control (802.1x), Support port security. Traffic shaping and policing , MAC Address security/MAC Address Notification support which allows for notification of new users added or removed.</li> <li>- Management RS-232 Console port , Easier Software upgrades through network, using FTP, TFTP, etc. Accessibility using Telnet, SSH, Console access. Easier Software upgrades through network, using FTP, TFTP, etc. SNMPv1, snmpv2/v3 , Configuration management through CLI, GUI based software utility and using web interfaces. GUI tools shall be provided. Event and system</li> </ul>	



		<p>history logging functions shall be available. Support for Syslog Server required. Switch should Have CPU utilization monitoring &amp; Port description.</p> <ul style="list-style-type: none"> <li>- Standards. IEEE 802.1x support , IEEE 802.3x full duplex on 10BASE-T or 100BASE-TX or 100BASE-TXports , IEEE 802.1d Spanning-Tree Protocol , IEEE 802.1p class-of-service (CoS) prioritisation IEEE 802.1Q VLAN, IEEE 802.1s , IEEE 802.1w IEEE 802.3 10BASE-T specification , IEEE 802.3u 100BASE-TX specification.</li> <li>- Power Supply Internal power supply 230 Volt 50Hz input.</li> <li>- Mounting: 19" Rack mounting kit</li> <li>- L3 features PIM Sparse Mode / Dense Mode, Bi-directional PIM, IGMP v1, v2, / v3 , ICMP support , IPv6 support in hardware with delivered configuration.</li> </ul>	
1.7	<b>RAS</b>	<ul style="list-style-type: none"> <li>- Hardware Architecture Modular Chassis , Power supply 230 Volt 50Hz Input</li> <li>- Memory RAM 256 MB, Upgradeable to 512 MB . Flash 64MB, Upgradeable to 128 MB.</li> <li>- Performance: 0.2Mpps</li> <li>- Interfaces 2xFast Ethernet 10/100Mbps, ISDN PRI 8 ports (upgradeable to 12) , Console port 1 Port.</li> <li>- Routing Protocol Static routing , OSPF , RIP v1, v2 , BGP4.</li> <li>- Protocol. Multi protocol over IP/ MPLS , TCP/IP , PPP, IP Sec , 802.1x, 802.1Q, NAT, PAT.</li> <li>- Dialing Multicast traffic forwarding, Dial-backup using ISDN, Dial (in/out).</li> </ul>	



		<ul style="list-style-type: none"> <li>- Security Access control list , Multi-level Access control , Support for Remote Authentication User Service (RADIUS) and AAA , Dial (in/out).</li> <li>- QoS IP Precedence, Bandwidth optimization.</li> <li>- Encryptions. IP-Sec, 3DES/AES.</li> <li>- Management SSH, Browser based configuration, Accessibility using Telnet, SSH, Console access for administration and configuration, Support FTP or TFTP for easy software upgrades over the network, SNMPv1, snmpv2/v3, Support configuration management through the CLI, web interface shall be available. Event and system history logging functions shall be available. Support Syslog, Support pre-planned timed reboot to upgrade their hardware to a new software feature and plan the rebooting as an off-peak time.</li> <li>- Physical Should be mountable on 19" Rack, All accessories Including data cables, clamps, connectors, etc to be provided.</li> </ul>	
1.8	<b>IP Phones</b>	<ul style="list-style-type: none"> <li>- Power Supply Power supply 230 Volt 50Hz input.</li> <li>- Protocols supported H.323 / SIP , SIP (Session Initiation Protocol), Vendor proprietary protocols such as SCCP, STIM, NOE etc.,.</li> <li>- Network features Automatic IEEE 802.1q (VLAN) configuration, G.711a, G.711u, and G.729ab audio compression Codec, Integrated Ethernet switch Fast Ethernet 10/100Mbps, Software upgrade through network, Provisioning of network parameters through DHCP, Voice activity detection, silence Suppression, comfort-noise</li> </ul>	



<p>1.8.1</p>	<p><b>IP Telephony System (Soft-Switch)</b></p>	<p>generation, and error suppression.</p> <ul style="list-style-type: none"> <li>- Physical Attributes Pixel-based display, Soft / normal dialing key-pad , Should provide missed calls, outgoing calls and incoming calls , Should support various preferences such as ring types and display contrast. Should support volume-control toggle for providing easy decibel-level adjustments of the Hand set and ringer. Foot stands to provide optimum display viewing and comfortable use of Buttons and keys.</li> <li>- Phone Feature Support of a single line or directory number, Calling name and number display, Call waiting, Call forward, Call transfer, Three-way calling (conference), On-hook dialing, pre-dialing, and off-hook dialing, Redial, Call hold, Call monitor, full duplex audio, broadband support, Soft key to access voicemail messages. Voicemail server support is required.</li> </ul> <p><b>General Requirements</b></p> <p>Shall be a fully redundant and hot-standby IP PBX solution in a cluster or single IP IBX with no single point of failure for 2000 IP phones. IP PBX also referred as central soft switch. The solution should be active-active configuration.</p> <p>Architecture should be Server-client, where server is central soft switch, providing VoIP based calls to IP telephone (clients). The system should be scalable to 4000 IP phones. There should be provision for expansion for Analog and digital phones. Soft switch would support for call processing and call-control centrally. The system should support at least four party audio conferences. Shall provide integrated end2-end QoS feature for voice quality across LAN as well as WAN connectivity. (Optional). System should</p>	
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		<p>have IP architecture and provide support for integrated telephony solution for Digital, Analog &amp; IP Phones. IP Telephony Soft switch System should support survivability across the WAN; Such as in the event of WAN failure local site should be able to carry IP Telephony Operations between DHQ and its BHQs.</p> <ul style="list-style-type: none"><li>- System capabilities</li><li>- Attenuation and gain adjustment per IP Phone , Silence suppression, voice , activity detection , G.711 mu-law, a-law , G.723.1 (optional) , G.729A/B , Distributed call processing - Solution should be fully redundant and fail-over in active-active configuration. Deployment of devices across an IP network. Soft switch should support for auto-call dis-connection. English Language support for client user, Pre-packaged alerts, monitor views, and historical reports. Real-time and historical application performance monitoring using tools and SNMP. Monitored data collection service. Real-time event monitoring and presentation to common Syslog. IP Telephony Soft switch should support Redundancy and automated fail over on call-processing failure, in active-active configuration.</li><li>- Solution features Abbreviated Dial, Answer and answer release, Barge, Call back busy, no reply to station , Call connection, Call coverage, Call forward—all, Call forward—busy, Call forward, no answer, Call hold and retrieve, Call Join, Call park and pickup Call pickup group-universal, Call status per line (state, duration, number), Call waiting and retrieve, Calling Line Identification, Calling Line Identification Restriction, Calling party name identification , Conference Barge, Conference List &amp; Drop any party, Directory dial from phone</li></ul>	
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		<p>Directories missed, placed, received calls list stored on IP phones, Distinctive rings, Extension mobility support, Hands-free, speakerphone, Immediate Divert to voicemail. Should support voicemail for future purpose, Last number redial, Malicious Call ID and Trace , Solution Features supported on IP Phones, analog and digital phones.</p> <ul style="list-style-type: none"> <li>- Administrative Features</li> </ul> <p>Application discovery and registration to SNMP manager, Call detail records . CDR Analysis and Reporting Tools (such as statistics – calls successful, duration, Call drops, etc.), Centralized, replicated configuration database, distributed Web-based management, Configurable Call Forward Display, Database automated change notification , Date and time display , Remote upgrading of IP phone devices , Dynamic Host Configuration Protocol block IP assignment for IP phones , Multilevel. Administration Access, QoS statistics recorded per call , Single point system and device Configuration.</p>	
1.9	<b>NMS</b>	<p>Hardware</p> <p>CPU :-2 numbers Intel Xeon (capabilities to expand to 4 CPU) , Processor 3.0Ghz (dual core) or higher with 2x2 MB L2 cache and 667 MHz FSB</p> <p>RAM :-4 GB PC2-3200 DDR II 677 MHz RAM with ECC expandable up to 16 GB.</p> <p>HDD :-3x72GB or higher Serial Attached Storage (SAS) HDDs (15K rpm) with RAID 5 implementation</p> <p>Network Card :-4 X 10/100/1000Mbps</p> <p>CD &amp; DVD:- 16x or higher DVD-ROM/ Combo drive</p> <p>DAT Drive :-20/40 GB SCSI DAT Drive.</p> <p>Graphics card :-minimum of 8 MB Display</p>	



		<p>memory.</p> <p>Ports :-1x Serial, 2xUSB, 1x PS/2 Mouse, 1x PS/2 KBD, 1xVGA , 2xRJ45, 1 Parallel Port</p> <p>Bays “:-1x3.5” External , 3x5.25” External, 6x3.5” (Hot Swap ) Internal</p> <p>Keyboard :-104 key Standard.</p> <p>Mouse :-Scroll Mouse (Optical) with OEM PAD</p> <p>Monitor :-17" SVGA colour LCD monitor with maximum 0.27mm dot pitch &amp; MPR -II compliant, anti glare, anti static coating, 1024 x 768 resolution at 72 Hz and 16 million colours, EMI/FCC (or ETDC Report for meeting FCC norms)</p>	
1.10	<b>Help Desk Management</b>	All the required furniture, Systems and operator should be provided	

1.11	<b>Multipoint Control Unit (MCU)</b>	<p><b>General</b></p> <p>Should be flexible enough to start with small and simple video conferencing need but expandable to large and complex video conferencing.</p> <p>Should support both desktop software based Video endpoints and hardware based conference room endpoints.</p> <p>The software and hardware based video endpoints should be from same OEM as that of MCU to avoid any kind of interoperability /compatibility issues. However, TV/LCD can be from different OEM.</p> <p><b>Protocols Support</b></p> <p>H.323, SIP, H.320, H.239, H.235, H.281 , G.711, G.729 , H.261, H.263, H.264.</p> <p><b>System Capacity</b></p> <p>Should have dial-in and/or dial-out capability</p> <p>Picture in Picture</p> <p>Dynamic layout according to the number of conference participants</p>	
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		<p>Multiple voice-activated modes Should support symmetrical and asymmetrical up and down streams for optimal bandwidth utilization</p> <p>Should provide the ability to directly connect IP</p> <p>Should have the capability that allows users to easily identify other conference participants by displaying names, locations, active speaker indication, background colours or other identifying information, etc.</p> <p>Should dial-out automatically to all participants, retry dial-out conferences to complete call setup and should report specific failures</p> <p>Should have dial-in feature providing one number access for all participants on the call</p> <p>PSTN, mobile (GSM and CDMA) participants in the same call with external gateway (Optional)</p> <p>Should provide video participants and audio participant in a single conference</p> <p>Should support integrated audio conferencing (“audio add-on”), enabling people to participate in the audio portion of the conference using any telephone with POTS service</p> <p>Should provide true full-duplex audio to all conference participants.</p> <p>To prevent background noise from being included in the audio mix and to minimize the unwanted and distracting noise-triggered video switching, the MCU should adjust to the varied acoustic conditions of different rooms and distinguish speech from background noise. For this each of the audio conferencing ports should have embedded network echo cancellers that prevent telephone network (hybrid) echo from disrupting the conference</p> <p>Should provide a host of audio and video processing capabilities. System shall support hardware based video conferencing end points and software based video end points over IP.</p> <p><b>Gatekeeper</b></p> <p>It should be provided along with MCU and end-points.</p>	
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		<p>It should also be from the same MCU manufacturer or certified partners, along with required hardware and software.</p> <p><b>Bandwidth flexibility</b></p> <p>Each endpoint in a video conference should participate according to individual video bandwidth capabilities without affecting the connection of other participants.</p> <p><b>QOS</b></p> <p>Support for Differentiated Services markings (ToS, CoS)</p> <p><b>Security &amp; Privacy</b></p> <p>Password protection for conferences to ensure privacy for participants Administrative functions should be password-protected.</p> <p><b>Scalability</b></p> <p>Capable of creating large conferences by cascading conferences between multiple Multipoint Control Units.</p> <p>Capable to increase the conferencing capacity by creating an MCU cluster.</p> <p>Capable to support conferencing with non BSWAN Videoconferencing system or equipment using IP networks.</p> <p><b>Monitoring and Management</b></p> <p>Should help in administration by using GUI or Web interface for remote monitoring and configuration</p> <p>The MCU across chassis and modules should support the same Operating System and software.</p> <p>The upgrade to new software on the MCU should be possible through the GUI/Web based interface. The MCU administration interface should support viewing to conference level monitoring and management up to participant level and MCU resource management.</p> <p>Real-time conference control, Password protection for Administrator, Conference organiser and User , Conference statistics, Conference admission, Operator assistance.</p>	
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		<p><b>Interface Support</b> Ethernet 1 x 10/100 Mbps Port . ISDN PRI (Optional)</p> <p><b>Power</b> Input 220 V AC, 50 Hz.</p> <p><b>Physical attributes</b> Should be mountable on 19” Rack.</p>	
1.12	<b>Video Streaming Server</b>	<p><b>Protocols</b> Should support Standard IETF protocols - Real Time-Transport Protocol (RTTP), Real Time Streaming Protocol (RTSP) and IP Multi cast.</p> <p><b>Video Format</b> Should support Video formats like MPEG - 1, MPEG-2, MPEG – 4 etc.</p> <p><b>Server specification</b> Should Support Integrated Event scheduling. Should support Program listing (Should allow to view the happening events. Should support Integrated media synchronization tools like Web presenter, screen caster, slide cast. Should support live, on-demand and scheduled Rebroadcasts.</p> <p><b>Hardware specification</b> CPU -&gt; Intel Xeon dual processor based @ 3.0 Ghz or higher, Mother board should be capable of handling quad processor, 8 GB RAM expandable to 16 GB. 2x500 GB SATA or higher with an option to add another HDD. Should have VGA, Sound, USB, Serial interface, keyboard, mouse ports, 2 x 10/100/1000 Mbps LAN.</p> <p><b>QOS</b> Should support QoS with protocols like Resource Reservation Protocol (RSVP).</p> <p><b>Security &amp; Privacy</b> Password protection for conferences to ensure privacy for participants. Administrative functions should be password-protected</p>	



		<p><b>Web-Based Monitoring and Management</b> Should support central management software.</p>	
1.13	Interface Server	<p><b>Users</b> Infrastructure Services required for 3000 end devices for immediate use.</p> <p><b>1. Directory Services</b> Should provide for Directory Services, which is compliant with LDAP v3 specifications. Support for integrated LDAP compliant directory services to record information for users, desktops, and network resources and help in availing resources to users and applications. Should support integrated authentication mechanism across operating system, messaging services. Should support directory services for ease of management and administration/replication. Should provide support for Group policies and software restriction. Should provide support for modifiable and extensible schema. Should support security features, such as Kerberos, smart cards, public key infrastructure (PKI), etc Should support that user account creation/deletion rights within a group or groups can be delegated to any nominated user. Should support that password reset capabilities for a given group or groups of users can be delegated to any nominated user.</p> <p><b>2. DNS</b> Support integration with other network services like DHCP, directory, etc. Should support DNS zone storage in Directory Should support conditional DNS forwarders e.g. forwarding based on a DNS Domain name in the query. Should allow clients to dynamically update resource records secure and non-secure Should Support incremental zone transfer between servers</p>	



		<p>Should provide security features like access control list</p> <p>Should support several new resource record (RR) types like service location (SRV) etc.</p> <p>Should support Round robin on all resource record (RR) types.</p> <p>Should have primary and secondary DNS servers</p>	
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		<p><b>3. Mailing server</b> Server platform: Windows/Solaris/AIX// Linux .Hardware should be quotes based on mail server software</p> <p><b>4. Proxy Server</b> Should support High Performance web caching. Should support web caching features like fast random access memory caching and disk caching to enhance web performance. Should support distributed and hierarchical caching. Should support integration with directory services. Should support caching rules and policies. Should support Multiple network configuration The solution should provide HTTP protection by blocking executable files that launch dangerous code such as spy ware, worms, and viruses. The HTTP filter should be configurable to block dangerous file types, Web page extensions, and pages containing keyword (optional if it is already available as a part of Antivirus Solution). Should have redundancy for uptime maintenance.</p> <p><b>5. Anti-Virus</b> Should restrict e-mail bound Virus attacks in real time without compromising performance of the system. Should be capable of providing multiple layers of defense and should be capable of installation on both the gateway as well as Mailing servers Should be capable of detecting and cleaning virus infected attachments as well. Should support scanning for ZIP, RAR compressed files, and TAR archive files Should support Hot upgrade, where by most product upgrades and patches can be performed without bringing messaging server off-line. Should use multiple scan engines during the scanning process Should support in-memory scanning so as to minimize Disk IO. Should support Multi-threaded scanning.</p>	
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		<p>Should support scanning of a single mailbox or a one off scan.</p> <p>Should support scanning of nested compressed files</p> <p>Should be capable of specifying the logic with which scan engines are applied; such as the most recently updated scan engine should scan all emails etc</p> <p>Updates to the scan engines should be automated and should not require manual intervention Updates should not cause queuing or rejection of email</p> <p>Updates should be capable of being rolled back in case required</p> <p>Should support content filtering based on sender or domain filtering</p> <p>Should provide content filtering for message body and subject line, blocking messages that contain keywords for inappropriate content</p> <p>File filtering should be supported by the proposed solution; file filtering should be based on true file type.</p> <p>Should support integration of an anti-spam software</p> <p>Should support various types of reporting formats such as CSV, HTML and text files</p> <p>Should be capable of being managed by a central management station</p> <p>Should support insertion of disclaimers to message bodies.</p> <p><b>(Note: Specification as per the infrastructure Serves given 1.14)</b></p>	
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<p>1.14</p>	<p><b>Infrastructure</b> <b>Servers</b></p>	<p><b>OS</b> Windows / Unix / Linux (with patches, license, Support, Subscription, Anti virus, etc).</p> <p><b>Hardware</b> CPU :-2 number (capabilities to expand to 4 CPU) Processor Intel Xeon 3.0Ghz (dual-core) or higher with 4 MB L2 cache (dual-core) and 1333 MHz FSB / or equivalent RAM:- 8 GB PC2-3200 DDR II 667 MHz RAM with ECC fully buffered memory expandable up to 16 GB HDD:- 3x146GB or higher Serial Attached SCSI (SAS) Hot Pluggable HDDs (15K rpm or higher, 3.5") with RAID 5 implementation. Network Card:- Dual: 10/100/1000Mbps RAID:- RAID controller with at least 256MB of battery-backup cache. CD &amp; DVD:- 16x or higher DVD-ROM Combo drive Graphics card:- minimum of 8 MB Display memory. Ports:- 1x Serial, 2xUSB, 1x PS/2 Mouse, 1x PS/2 KBD, 1xVGA , 2xRJ45,. Slots:- At least 3 PCI/ PCIe slots. Keyboard:- Please see details of KVM. Mouse:- Switch along with one. Monitor:- Keyboard and one Optical Mouse.</p> <p><b>Chassis</b> The chassis with redundant hot-swap power supplies. The chassis should have necessary provision to connect to an external SAN array with 2 FC Ports on separate cards (4 gig, option for additional 2 redundant ports). LEDs to show system activity and status of components chassis having 6 HS drive bays with Hot Swap power supply,</p> <p><b>Ports</b> 1x Serial, 4xUSB, 1x PS/2 Mouse, 1x PS/2 KBD, 1xVGA , 2xRJ45,</p> <p><b>Software</b></p>	
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		<p>All required device driver software as per above configuration, in media with manual, for OS installation, System Configuration &amp; Management.</p> <p><b>Server Management Features</b></p> <ul style="list-style-type: none"><li>(a) Remote management of the server over LAN/WAN</li><li>(b) Hardware remote console feature</li><li>(c) In band &amp; out of band remote management</li><li>(d) Remote power On</li><li>(e) Server health logging &amp; Monitoring Advance warning for processor &amp; memory failure</li><li>(f) Integrated management log.</li></ul> <p><b>Certifications</b></p> <p>Energy star compliant, NSTL, FCC (EMI EMC/ ETDC) certified, ISO 9001: 2000 ISO 14001, ACPI compliant, PCI compliant.</p> <p><b>OS Certifications</b></p> <p>Certified for proposed OS.</p>	
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<p>1.15</p>	<p><b>Database and Application Servers</b></p>	<p><b>Scalability</b> Cluster file system as option, Support massive internet application system with massive data warehouse needs.</p> <p><b>Performance</b> Tunable as per requirement as per BSWAN requirements, Data caching options. Options to improve data proximity online.</p> <p><b>Developers</b> Should provide rich set of interface for programmers, Shall enable applications developed on open standard tools , Native compiling of programming units.</p> <p><b>High availability and disaster recovery</b> Online Backup and recovery mechanism , Asynchronous and Synchronous DR setup mechanism, Online database re organisation, Transaction level consistency, Point in time recovery, fast recovery, Detailed log files, Cluster enabled.</p> <p><b>Security</b> Password Management , DBA auditing , Proxy Authentication , Encryption , Support creation of fine grained audit trails , Fine-grained Auditing , Security criteria , TCSEC, Level C2 as optional , TCSEC, Levels E3/F-C2 as optional , Level EAL-4 4 as optional.</p> <p><b>Administration</b> Space Management Resource Management Backup recovery Event and Alarms as per database standard Support for notification on data driven events as optional , Support for inbuilt reporting capabilities as optional.</p> <p><b>Hardware and Operating System</b> OS :-Windows / Unix / Linux (with patches, license, Support, Subscription, Anti-virus, etc). Type of Processor:- Total 2 Processor cores. (ie 1 no of dual core processors or equivalent ---- Expandable)</p>	
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		<p>A) Dual Core Itanium 2 1.6Ghz with 18MB L3 cache          B) 64 bit 1.9GHz Power 5 with 36 MB L3 cache          C) 1.8GHz Ultra Sparc IV+ with 32 MB L3 cache          Memory:- 16GB, RAM          Type:- PC2-5300 Fully buffered DIMM scalable upto 32 GB          Hard Disk:- 3x146GB 15k Hot Plug Ultra320 SAS drive or higher          I/O Slots:- 2 PCI-Express expansion slots (x8): (1) full-length, full-height slot; (1) low-profile slot;          1 option PCI-X (64-bit/133MHz) or higher supplied          Internal HDD Bays:- Minimum 6 hot plug HDD bays or higher          Power Supply:- Redundant Power supply and redundant cooling fans          Housing:- Rack Mounted System with all rack accessories to be          Mandatory Height:- Rack-optimized with 2U height          Remote Management:- Standard Remote management Diagonistics-          External Storage:- 2 no 2GB Fibre Channel HBA to connect to SAN Switches          Networking:- 4 no 10/100/1000 Base Tx Ethernet Adapters          CD/DVD:- DVD ROM (Combo Drive)          PCI-X Slots or higher Interfaces:- Minimum 1 dedicated port for server management Preferable          OS:- Windows/Unix</p>	
1.16	<b>Web Server</b>	<p>Should support integrated Web server solution with fault tolerance, requesting queuing, application health monitoring, automatic application recycling, caching          Should support load balancing.          Should be capable to store web server configuration data in XML, configuration versioning.          Should support web based administration.          Should Support for Web Distributed Authoring and Versioning and Web Folders.          Should support XML web services.          Should support Digest and advanced Digest</p>	



		<p>authentication.</p> <p>Should support integration with certificate services</p> <p><b>( Note: Specifications are as per the infrastructure serves given above)</b></p>	
1.17	<b>Syslog Server</b>	<p><b>Features</b></p> <p>Should support GUI or Web Based Access.</p> <p>Should be able to receives, logs, displays and forwards Syslog messages.</p> <p>Should provide real-time alerting, filtering and management of Syslog messages.</p> <p>Should report on event logs from distributed Windows host and, Syslog from UNIX hosts, Routers and Switches, Ability to filter reports/Syslog based on: IP Address / Hostname Message string or pattern matching Severity Time or any custom defined rule , Should support with any Database (same box).</p> <p><b>( Note: Specifications are as per the infrastructure serves given above)</b></p>	
1.18	<b>KVM Switch</b>	<p><b>Hardware</b></p> <p>19" Rack Mountable , 16 Port KVM Switch</p> <p>Port:- Video ,VGA, Standard Keyboard/Mouse: PS/2 or USB, 12 foot Cables for Keyboard/ Display/ Mouse</p> <p>Screen Resolution:- PC text mode: 720x400 , PC graphic modes: 640x480, 800x600, 1024x768, 1152x864, 1280x1024.</p> <p>Monitor, KBD, Mouse :-17" TFT color monitor with minimum Brightness 300cd/m2, Contrast Ratio 600:1, Resolution 1280 x 1024 or higher, Viewing Angle (Degrees) 130° (vertical), 140° (horizontal) or better , response time 8ms, Horizontal Frequency(kHz) 30~81 KHz, Vertical Frequency(Hz) 56~75 Hz, TCO99/ 03, EMI/FCC (or ETDC Report for meeting FCC norms) compliance, energy star compliance, same brand as that of PC. Keyboard, Mouse same brand as that of PC.</p> <p>SWAN Operator can design the placement of Servers</p>	



		as per their Design. Keyboard, Mouse and Monitor asked with each	
<b>1.19</b>	<b>Workstations</b>	<p><b>Hardware</b></p> <p>Intel P4 D-Processor, 2 GB RAM expandable 4 GB  HDD :-80GB SATA or higher (7200 rpm or higher)  Keyboard :-Standard 104 keys  Mouse :-Optical Scroll mouse with OEM Pad  Network Card :-10/100/1000Mbps with full duplex and WOL support  FDD :-1.44 FDD  CD :-16x DVD ROM- CD RW (Combo Drive) or higher  Ports :-1x Parallel, 1xSerial, 4xUSB, 1x PS/2 Mouse, 1x PS/2 KBD, 1xVGA &amp; 1xRJ45  Monitor :-17" TFT color monitor with minimum Brightness 300cd/m2, Contrast Ratio 600:1, Resolution 1280 x 1024 or higher, Viewing Angle (Degrees) 130° (vertical), 140° (horizontal) or better , response time 8ms, Horizontal Frequency(kHz) 30~81 KHz, Vertical Frequency(Hz) 56~75 Hz, TCO99/ 03, EMI/FCC (or ETDC Report for meeting FCC norms) compliance, energy star compliance, same brand as that of PC  OS :-Pre-installed Operating System with patches, license/Subscription, (Anti-virus if any), Standard Desktop software (like office tools)  Multimedia :-Onboard audio with 2x3 watt rms speakers, microphone  Certifications :-Energy star compliant, NSTL, FCC (EMI EMC/ ETDC) certified, ISO 9001: ISO 14001, ACPI compliant, PCI compliant</p>	



<b>1.20</b>	<b>RACK 42U</b>	<b>Physical Attributes</b> Height :-42U Rack Type :-Floor mount with caster wheels Wire managers :-Two vertical and four horizontal Power distribution :-10 points – 5Amp sockets horizontal and vertical mounting type Door :-Glass door in front with lock Fan trays :-With 4 fans mounted on top Depth :-1000 mm Metal :-Aluminum extruded profile Side panels :-Detachable side panels Width :-19” equipment mounting, extra width is recommended for managing voluminous cables Castors:-Suitable castors with brakes.	
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<p>1.21</p>	<p><b>Authentication, Authorisation and Accounting (AAA) Server.</b></p>	<p><b>Hardware Architecture</b> Should support high availability architecture Can be hardware or Software based.</p> <p><b>Administration</b> Web based GUI Interface for configuring users, groups and server configuration. Should be able to configure different access level for various administrators. Should be capable of defining the group policy to enforce and change of administration over all the devices on network.</p> <p><b>Feature Set</b> It should support LDAP authentication forwarding for user profiles stored in BSWAN directories. Should provide Authentication, Authorization and Accounting services for users dialing into BSWAN from remote locations to RAS Should support RADIUS features Accounting features to be part of the AAA server to identify RAS users access time. Should be able to define multiple ACL's which can be applied on networking device per user or per group basis. Should be able to manage and control accessibility based on time of day, number of sessions and day of week access restrictions, MAC Address, IP Address <b>Log:</b> Should maintain log files internally <b>Control:</b> Should be capable to restrict or allow session based on IP address, Hostname or MAC address.</p> <p><b>Power</b> Internal Redundant Power Supply , 230 V AC , 50Hz</p> <p><b>Cables and accessories</b> Should be Rack mountable in 19" Rack, All accessories including data cables, clamps, connectors, etc to be provided.</p> <p><b>Hardware</b> AAA Server - Interfaces: 2 x 10/100/1000Mbps. <b>( Note: Specifications are as per the infrastructure serves given above)</b></p>	
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<p>1.22</p>	<p><b>UPS 16 KVA</b></p>	<p><b>Manufacturer</b>  ISO 9001-2000 And ISO 14001  MAIT Level II Certification  <b>Safety Standards</b>  EMC/EMI as per SAMEER/ ERTL/ Equivalent Certification  <b>Technology</b>  Inverter device IGBT based , Microprocessor controlled, Double Conversion True Online UPS  <b>Voltage Regulation:</b> 220,230,240V +/- 1%.  <b>Rated Output current:</b> 41A  <b>Switching Frequency:</b> &gt;15 KHZ.  <b>Output Frequency regulation</b>  Free running Mode 50/60 Hz ± 0.5%,  Sync Mode 50/ 60Hz ± 2 Hz.  <b>Harmonic Distortion(THD)</b>  &lt;2% (linear load) , &lt;6% (non-linear load).  <b>Output Waveform</b> Pure Sine wave.  <b>Crest Factor</b> 3:1.  <b>Output Power Factor:</b> 0.7 or better  <b>Battery Backup:</b> 1 Hours on full resistive load.  <b>Battery Type:</b> SMF VRLA type.  Minimum VAH – 12V 65AH  <b>DC Bus Voltage</b>  DC Bus Voltage of UPS to be specified.  <b>Battery Enclosure:</b> MS Rack Powder Coated.  <b>Operating Temperature:</b> 15 to 45 degree C .  <b>Storage temperature:</b> 0 to 50 degree C.  <b>Power:</b>  220V-240V AC, 50Hz, with redundant supply.  <b>Noise level:</b> &lt;55 dB @ 1 Meter.  <b>Alarms &amp; Indications</b>  All necessary alarms &amp; indications essential for performance monitoring of UPS to be incorporated.  <b>Bypass</b>  Automatic Bypass.  <b>Overload capacity:</b> 105 to 120% for 10 minutes  &gt;130 % for 1 Sec.  <b>Compatibility</b></p>	
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		<p>UPS to be compatible with DG Set supply and mains supply.</p> <p><b>Standard</b> RS 232 port for software interface, SNMP interface support for battery wise status monitoring.</p> <p><b>Dimensions</b> Bidder to specify dimensions (HxWxD) for UPS &amp; Batteries Set.</p> <p><b>Architecture</b> UPS system should have redundancy with another UPS as load sharing / standby.</p>	
1.24	<b>Air-Conditioner – 4 tonnage</b>	<p><b>Capacity</b> Capacity 4 Tonnage , Cooling 50000 BTU/Hr, Compressor Rotary, Refrigerant R-22 type , Power Supply 230V/Ph.</p> <p><b>Performance</b> EER 10.6 , Air Circulation CFM 1030 , Noise level &lt;50db.</p> <p><b>Operation</b> Remote Control LCD.</p>	
1.25	<b>Generator Set 20 KVA</b>	<p><b>Engine type</b> Multi-cylinder, in accordance with IS 10002-1981with latest amendments.</p> <p><b>General Features</b> Electric start 12 V DC. Water cooled /Air cooled, Mechanical/Electronic Governor, Fuel Æ High speed diesel, Rating Continuous.</p> <p><b>Output</b> Suitable HP rated to match the alternator Rated Speed 1500 RPM.</p> <p><b>Over load capacity</b> 10% overload – 1 hour , 50% overload – 15 second</p> <p><b>Accessories</b> Flywheel to suitable diameter and fuel injection equipment, Air cleaner Lubricating oil cooler Electric motor starting equipment like motor, battery, charging generator with voltage regulator etc.</p>	



		<p>Heavy duty radiator with fan.</p> <p>Residential type silencer with exhaust piping with vibration isolator. Fuel tank suitable for 8 Hrs of continuous running with necessary piping and fuel gauge, drain valve, inlet and outlet connections.</p> <p>Anti vibration mounting pads.</p> <p>Speed controlling governor.</p> <p>Suitable coupling system to the Alternator.</p> <p>Tachometer.</p> <p>Lubricating oil pressure gauge.</p> <p>Hour meter to indicate number of Hrs of operation.</p> <p>Auto trip on low oil pressure</p> <p>Over speed alarm with trip.</p> <p>Thermal insulation for exhaust line with glass wool, Aluminium sheet, chicken mesh, Diesel line 12 mm dia including beads flanger etc.</p> <p>Battery 12 V with lead and terminal.</p> <p>Battery charger. Protection against low lubricating oil pressure, high water temperature and over speed shall be provided for engine with alarm and fuel shut off.</p> <p><b>Alternator</b></p> <p>Output 20 KVA .</p> <p>P.F 0.8 lag .</p> <p>Voltage 415V, 3Ph.</p> <p>Type continuous running duty type .</p> <p>Frequency 50 Hz.</p> <p>Phase 3,4 wire .</p> <p>Speed 1500 rpm.</p> <p>Cooling Air-cooled / water cooled.</p> <p>Over load capacity 10% overload – 1 hour 50% overload – 15 second .</p> <p>Lubrication forced.</p> <p>Excitation Self excited, self regulated, automatic voltage regulator with remote voltage control facility.</p> <p>Permissible voltage variation <math>\pm 1.5\%</math> of rated voltage.</p> <p>Insulation Class H.</p> <p>Base frame Engine and alternator shall be coupled</p>	
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		<p>and mounted on sturdy, fabricated, welded construction, channel iron base frame with coupling guard.</p> <p><b>Control Panel</b></p> <p>The Genset control panel shall be of 14 SWG CRCA sheet and powder coated finish. The panel shall be provided with standard engine instrumentation, Voltmeter with selector switch, Ammeter with selector switch, Frequency meter, Current transformer, Instrument Fuses etc. MCCB/MCB of suitable rating shall be provide for overload and short circuit protection.</p> <p><b>AMF</b></p> <p>AMF facility shall be provided for the DG set. AMF relay shall be provided in the control panel/Electrical panel with required control wiring and Contactors for automatic operation shall be done.</p> <p>- Acoustic enclosure</p> <p>Weather and sound proof Acoustic enclosure shall limit sound level below 70 db at 3 m distance from the set. Minimum 50 cm all round clearance shall be provided inside. The exhaust pipe shall be minimum 1.8 m above ground level. Additional Canopy shall be provided over the Acoustic enclosure with suitable steel structure.</p> <p>- Dimensions</p> <p>Bidder to specify dimensions (H x W x D).</p>	
1.26	<p><b>SMPS for STM1 (equipment of BSNL)</b></p>	<p><b><u>Please Refer: Generic Requirements No. GR/SMP-01/05 Jan 2005 issued by DOT Telecommunication Engineering Center</u></b></p> <p>1. Application :</p> <p>AC input : Single Phase</p> <p>RACK Height: 1500mm or 2200mm</p> <p>2. Category and ultimate Capacity</p> <p>Category No. : 3</p> <p>Basic Module : 25A ( Single Phase)</p> <p>Ultimate Capacity : 200A</p>	



		<p>3. Rating of the module : 25A as per the category</p> <p>4. Power plant compatible with VRLA batteries</p> <p>5. Remote monitoring requirements: required</p> <p>6. Battery health check requirements : Required</p> <p>7. Capacity of the battery proposed : ampere hours 200A/H</p> <p>8. Number of batteries at present and ultimate.</p> <p>Important Note:</p> <ul style="list-style-type: none"> <li>• Load shall include equipment load battery load at C/10 rate of charge and other load (Inverter etc.) if any.</li> <li>• While choosing the power plant the user shall ensure that the redundancy requirement had been taken care of.</li> <li>• It may be ensured that minimum 2 batteries are chosen to meet the load requirement.</li> </ul>	
1.27	<p><b>Battery Specification (for equipment of BSNL STM1)</b></p>	<p><b><u>Please Refer: Generic Requirements No. GR/BAT-01/02 March 2004 issued by DOT Telecommunication Engineering Center</u></b></p> <ul style="list-style-type: none"> <li>• Sign-writing and labeling : All the cells/Mono-blocks/batteries shall be properly sign-written with reference to the suppliers installation and maintenance.</li> <li>• Designation :- cell/Mono-block Voltage/type of positive plate/AH rating of Cell/mono-block/Type of container</li> <li>• Voltage of the cell/mono-block : 2V for cell and 12V for mono-block</li> <li>• Type of +ve plate:- Flat pasted type : F</li> </ul> <p>Tubular type : T</p> <ul style="list-style-type: none"> <li>• Capacity : 400AH</li> </ul> <p>Final specification of battery: 2V F400 PP – Designates 2V cell having flat pasted positive plates and a capacity of 400 AH at C/10 rate of</p>	



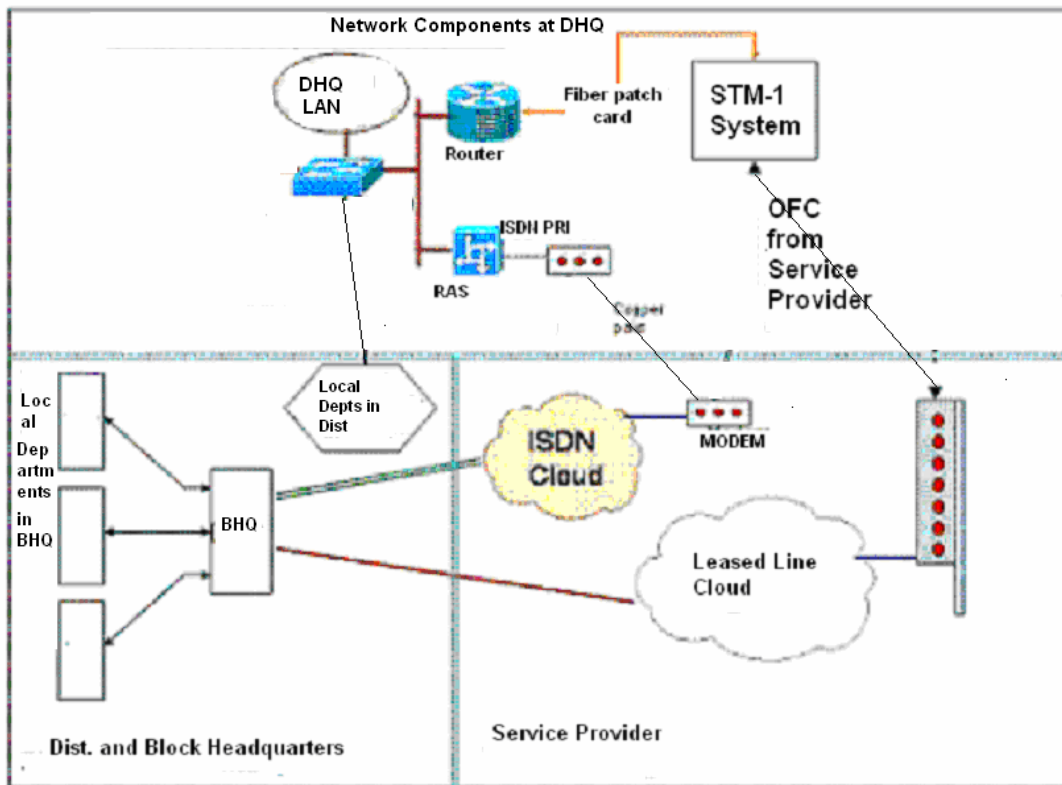
		discharge in container of polypropylene material.	
1.28	<b>Modems Specifications for leased</b>	<ul style="list-style-type: none"> <li>• <b>Visual Indication &amp; RS-232 Port for set-up, control &amp; monitoring. No jumper settings should be required for configuring the modem.</b></li> <li>• <b>It should be compliant to ITU-T G.991.2</b></li> <li>• <b>The desktop modem at the horizontal office should support either V.35 or 10/100 Base-T Ethernet Interface.</b></li> <li>• <b>The desktop modem at the BSNL Exchange of horizontal office should support G.703/G.704 Interface.</b></li> <li>• <b>It should support distance of 5.0Kms at 0.5mm copper over single pair. The distance should be mentioned over TEC Certificate.</b></li> <li>• <b>The modem should run on 230VAC as well as -48VDC power supply.</b></li> <li>• <b>Features of link performance monitoring and time based statistics should be available.</b></li> <li>• <b>Should be SNMP enabled.</b></li> <li>• <b>Support for configuration backup for future reference.</b></li> </ul>	
1.29	<b>LAN extenders</b>	<p>Ethernet interface Shielded RJ-45, auto-sensing 10/100Base-T, half or fullduplex I/O Two RJ-45 10/100 Ethernet connectors LEDs Link and activity Power Rating 41VDC, 0.45 Amps Dimensions 115W x 115H x 4.0D mm (4.52"W x 4.52"D x 1.5"H) Operating Temperature 0°C-50C° (0°F-122°F)</p> <p>RJ-11 10/100 Ethernet connectors LAN 10 Base 2 Connection 2W Line Interface Connection 19 AWG (0.9mm) Range 1000 meters 24 AWG (0.5mm) Range 600 meters Line Interface include EMC, EMP, Lightning</p>	



		<b>Protection</b> <b>Input Voltage : 18-32 VDC</b>  <b>The equipment should be complaint with at least</b> <b>ISO 9001:2000</b>	
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## Schematic Diagram showing DHQ



## Considerations at DHQ

All the 2Mbps leased lines from SHQ & respective BHQs and nx64Kbps links from horizontal offices would be provisioned using E3 links from STM-1 (OFC) system. Using Fibre patch cord E3 links will be integrated from STM-1/OLT to Router E3 interface directly.

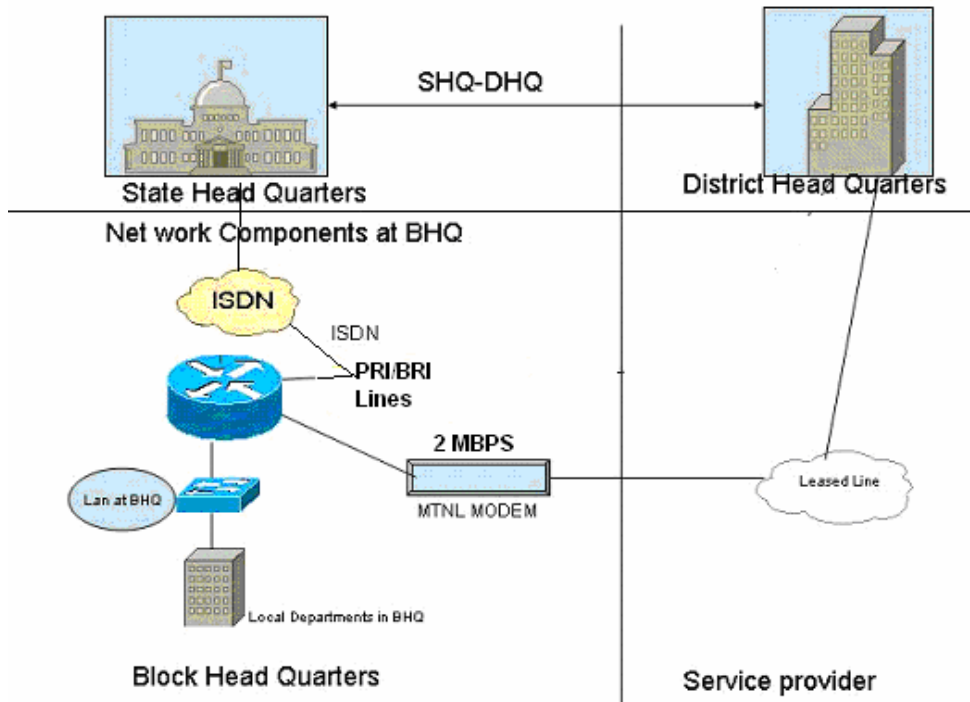
The co-located departments with the DHQ PoPs will be accessing BSWAN using LAN technologies directly on the LAN switch at DHQ; while rest of GoB offices in District level will be connected using n x 64Kbps link, as Horizontal connectivity or using LAN extenders or Broadband.

For taking care of the Horizontal connectivity, LAN extender equipment will also be installed and integrated with networking components at DHQ.

Logical links schematic at DHQ Router



## Technical requirements at DHQ /BHQ



## Highlights of DHQ/BHQ

2Mbps leased lines to DHQ terminating at SHQ/DHQ/BHQ and  $n \times 64$ Kbps links from local GoB Offices & Departments will be provisioned using MLLN based links from the Bandwidth Provider.

SDHQ/BHQ will be connected to DHQ with primary 2Mbps lease link and ISDN as backup.

The local co-located departments in the respective Block will have Horizontal Connectivity using LAN technologies.

Some GoB offices in the Block will be connected using  $n \times 64$ kbps lease lines to the SDHQ/BHQ or using Broadband technologies.

ISDN PRI/BRI line will be availed at SDHQ/BHQ for providing the backup to the primary link i.e. 2Mbps leased line.

For taking care of the Horizontal connectivity, LAN extender will also be installed and integrated with networking components at SHQ/DHQ.



## Backup connectivity requirements

E1 connectivity will be provisioned from SHQ to DHQ and further DHQ will be connected using E1 links to the respective BHQs. Thus in case of these Primary E1 links failure, alternative connectivity mode is required in order to maintain the network availability. ISDN PRI/BRI lines would be installed and configured at Router for automatic fallback connection establishment. This connection at SHQ would be terminated on RAS Server with 1:10 ration E1 PRI Lines.

### ISDN Links

Thus ISDN PRI/BRI connectivity is proposed to be the backup of the Primary leased line links. The main advantage of ISDN links is quick call setup, which is required for High network availability. ISDN will be used as backup in case of primary vertical & horizontal lease line failure. Network device will automatically sense the lease line failure, and then dial the ISDN link to establish the backup connectivity.

POP Type	ISDN Type
SHQ	PRI
DHQ	PRI
BHQ	PRI/BRI

## Horizontal Connectivity

All the offices and departments of GoB which need BSWAN connectivity over a period of time will be integrated as and when required. Respective offices will give a formal request to SWAN Operator for the connectivity.

Following horizontal connectivity options can be considered from the respective PoPs to GoB offices:

Leased Line (n x 64Kbps) Offices can be connected to respective PoP using n x64Kbps lease lines. The PoP routers will integrate these links using Channelised E1 (C-E1) or MLLN links of required bandwidth with a maximum 2 mbps capacity.

LAN extenders: Horizontal offices can be connected using non-exchange pair (dead pair) of Service provider to respective PoP.

**Broadband Connectivity:** Using Broadband connectivity, ISP can direct the GoB office data towards BSWAN gateway at SHQ



## Technical specifications at DHQ/BHQ Network Components

All bidders are required to fill in the compliance / deviation table given below.

S.No.	Item Details	Item Specifications	Compliance / Deviation
2.1	District Router	<p><b>Hardware Architecture</b></p> <p>Multiple services (Data, voice, video), Should support IP, MPLS etc. All the modules, power supply and fan supporting hot swappable functionality. On-line insertion and removal for cards, Modular Chassis, Fast reboot for minimum network downtime, Power supply for 230 V AC 50 Hz with Redundant power supply.</p> <p><b>Interface / Slots</b></p> <p>Fast Ethernet Ports 2 x 10/100/1000Mbps, Should support variety of interfaces like ChSTM-1, STM-1, Ch-E3 2 x ChE3, upgradeable to 4 Interfaces , E3 Transceiver Type Single-mode.. E1 PRI - 2 Ports, upgradeable to 8 ports as a dedicated backup system. ISDN as backup should be integrated as Auto dial-backup option.</p> <p>Console port 1</p> <p><b>Memory</b></p> <p><b>Adequate memory to support all OS features.</b></p> <p><b>Performance</b></p> <p>2Mpps. Back plane performance of at least 1.5 Gbps full duplex</p> <p><b>Security</b></p> <p>IP Sec 3DES/AES,VPN for configuration of VPN tunnels.</p> <p>All interfaces shall support wire rate throughput for L2, L3, VPN MPLS traffic with QoS and Security</p>	



		<p>features enabled.</p> <p>Should have integrated firewall and inline intrusion detection services.</p> <p>Encryptions IP Sec 3DES/AES</p> <p><b>Routing Protocols</b></p> <p>Static Routes , RIPv1, RIPv2 .</p> <p>OSPFv2 and v3. BGP4, IS-IS ,</p> <p>Route redistribution between any of the above protocol</p> <p><b>Protocols</b></p> <p>PPP, Multi-link PPP , , IPv4, IPv6 MPLS L2 &amp; L3 , VRRP</p> <p><b>Congestion</b></p> <p>Random Early Detection , Weighted Fair Queuing, Selective Packet Discard</p> <p><b>IP Multicasting</b></p> <p>IGMPv1&amp;v2, PIM-SM,</p> <p><b>Multimedia Support</b></p> <p>Should support VoIP redundancy in case of WAN connectivity failure.</p> <p><b>IP Accounting support</b></p> <p>Using external hardware/software infrastructure Packet &amp; Byte Counts , Start &amp; End Time Stamp . Network Time Protocol, Input &amp; Output interface ports. Type of service, TCP Flags &amp; Protocol , Source &amp; Destination IP addresses , Source &amp; Destination TCP/UDP ports</p> <p><b>Management</b></p> <p>Accessibility using Telnet, SSH, Console access. Easier Software upgrades through network, using FTP, TFTP, etc. SNMPv1, snmpv2/v3 , Configuration management through CLI, GUI based software utility and using web interfaces. GUI tools shall be provided. Event and system history logging functions shall be</p>	
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		<p>available. Support for Syslog Server required. Support pre-planned timed reboot to upgrade hardware to a new software feature and plan the rebooting as an off-peak time. Shall support boot options booting from remote Network node</p> <p><b>QoS</b> ToS, CoS, Queuing, prioritizing. Committed Access Rate/ Rate limiting , IP Precedence, Policy based routing , Congestion avoidance algorithm, such as WRED, Priority queuing, Class based weighted fair queuing</p> <p><b>Debug &amp; Diagnostics</b> Display of input and output error status on all interfaces, Display of Dynamic ARP table. Display of Routing table, Trace-route, Ping, extended PING</p> <p><b>Physical</b> Router should be provided with 19" Rack mounting kit, All necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, wire managers, etc. should be provided</p>	
2.2	<b>LAN Switch</b>	<p><b>Interface /Slots</b> 1 x 24 ports 10x100x1000 GE , 2 x 1000 Mbps ports base Single Mode Packet forwarding rate should be 35 Mpps or more, 26 Gbps or more switching fabric capacity All copper ports should support PoE 802.3 af based</p> <p><b>General Features</b> Layer3 - with following support (RIPv1, v2, OSPFv2/v3, VRRP, DHCP) , Support Port Mirroring , Support Port Trunking , Link Aggregation , IEEE 802.1Q VLAN</p>	



		<p>encapsulation , , Support Port based network access control (802.1x) , Support port security , Traffic shaping and policing , MAC Address security/MAC Address Notification support which allows for notification of new users added or removed</p> <p><b>Management</b>  RS-232 Console port . Easier Software upgrades through network, using FTP, TFTP, etc. Accessibility using Telnet, SSH, Console access. Easier Software upgrades through network, using FTP, TFTP, etc. SNMPv1, snmpv2/v3 , Configuration management through CLI, GUI based software utility and using web interfaces. GUI tools shall be provided. Event and system history logging functions shall be available. Support for Syslog Server required , Switch should CPU, utilization monitoring and Port description</p> <p><b>Standards</b>  IEEE 802.1x support , IEEE 802.3x full duplex on 10BASE-T or 100BASE-TX or 100BASE-TXports, IEEE802.1d Spanning-Tree Protocol , IEEE 802.1p class. of-service (CoS) prioritisation . IEEE 802.1Q VLAN , IEEE 802.1s , IEEE 802.1w IEEE 802.3 10BASE-T specification , IEEE 802.3u 100BASE-TX specification</p> <p><b>Power Supply:</b> Internal power supply 230 Volt 50Hz input</p> <p><b>Mounting: 19” Rack mountable</b></p> <p><b>L3 features</b>  PIM Sparse Mode / Dense Mode, IGMP v1, v2, / v3 , ICMP support , IPv6 support in hardware with delivered</p>	
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		<p>configuration. If Software support not available, an undertaking to the effect that IPV6 support will be made available at the time of migration without any extra cost on the same hardware.</p>	
2.3	<p><b>Video-Conferencing end-points</b></p>	<p><b>Components</b> Wireless remote control, built-in camera, microphone, cables, codec and LCD/TV</p> <p><b>Interface</b> 1 x 10/100 Mbps, 4 x ISDN BRI (512 kbps) for future requirements (optional)</p> <p><b>Audio Standards</b> Should support G.722, G.722.1, G.711, G.728, G.729A Should support audio comparable to CD-quality sound for solid audio performance and should have in built echo-cancellation</p> <p><b>Microphone</b> Should support 360 degrees Voice pickup Should support external microphones connected to MCU</p> <p><b>Video Standards:</b> Should support H.261, H.263, H.264, H.239 and SIP</p> <p><b>H.323 Features</b> Video Error correction Audio Error correction, IP Precedence (ToS), DiffServ (DSCP) (COS), Dynamic Bandwidth Allocation. Packet and jitter control, Network Address Translation (NAT) support, Asymmetric speed control, TCP/UDP fixed-port firewall support, Lip synchronization, Echo cancellation, Echo suppression</p> <p><b>Frame Rates</b> 30 frames per second from 384 kbps to 1 Mbps and 60 frames per second from 1 mbps and higher</p>	



		<p><b>Video Resolution's</b> interlaced video (60/50 fields full-screen video for NTSC/PAL) – VCR</p> <p><b>Camera</b> Pan/tilt/zoom (PTZ) camera 65° field of view , Tilt range +25° to -25° , Minimum Pan Range: +/- 100° (Left/Right) , 10 x Optical Zoom , Auto focus , Camera presets - local and far-end</p> <p><b>Video Inputs</b> Integrated main camera. 1 x Composite or S-Video , VCR and DVD-R</p> <p><b>Video Outputs</b> 1 x S -Video (Main Monitor) , 1 x Composite (Main Monitor) , 1 x S-Video (for Second Monitor) , 1 x XGA (for Second Monitor)</p> <p><b>Operability</b> Should support in getting video with audio input from any external PC/laptop Should support in connecting to projector through a VGA output port for Video output</p> <p><b>Security</b> 128bit AES encryption. Should provide support for Administrator password Should support secured web access Should support H.235 standard for encryption</p> <p><b>Network Protocols</b> TCP/IP, DHCP, FTP, Telnet, HTTP</p> <p><b>Picture in Picture (PIP)</b> Should allow users to see both the near and far sites on a single screen with efficient use of a single display area.</p> <p><b>Management</b> Should support and software upgrades</p>	
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		<p>via Console and network. Should be managed from Web interface. SNMPv1, snmpv2/v3</p> <p><b>Call Statistics</b> Shall provide recent Calls List Shall provide Call Detail Record (CDR) along with call statistics</p> <p><b>LCD screen/TV: 29" Screen</b></p> <p><b>General Specification</b> General 42 inch LCD, Brightness 500 cd/sqm, Contrast Ratio 1600:1, Resolution 1366 x 768 , Channels 100. Search Feature. Automatic and semi automatic search feature Fine Tuning Manual Fine Tuning. Remote Control Full function Remote Control. On-screen display supported with multi-language. On/Off Timer built in, programmable. Auto Power off should be enabled. Sleep Timer Should be inbuilt. Aspect Ratio 4:3 and / or 16:9. Compatible TV PAL, PAL/SECAM, NTSC . Channel Coverage VHF-1, VHF-3, UHF , Side AV Input Should be enabled General 29 inch 100 Hz.</p> <p><b>Audio Type</b> Stereo , Built in speakers</p> <p><b>Power</b> 230 VAC, 50 Hz</p> <p><b>Power</b> Input 220 V AC, 50 Hz</p>	
2.4	<b>Air-Conditioner – 2 ton</b>	<p><b>Capacity</b> Capacity 2 Ton, Cooling 50000 BTU/Hr , Compressor Rotary , Refrigerant R-22 type , Power Supply 230V/Ph</p> <p><b>Performance</b> EER 10.6 , Air Circulation CFM 1030 , Noise level &lt;50db</p>	



		<p><b>Operation</b> Remote Control LCD</p>	
2.5	<b>UPS – 6 KVA</b>	<p><b>Manufacturer</b> ISO 9001-2000 And ISO 14001 MAIT Level II Certification</p> <p><b>Safety Standards</b> EMC/EMI as per SAMEER/ ERTL/ Equivalent Certification</p> <p><b>Technology</b> Inverter device IGBT based , DSP/ Microprocessor controlled, Double Conversion True On-line UPS</p> <p><b>Inverter efficiency</b> :&gt;90 %</p> <p><b>Capacity</b> 6KVA online UPS</p> <p><b>Input Voltage &amp; Range</b> 230V 50Hz, Range 180V – 270V</p> <p><b>Input Frequency Range</b> 50Hz ± 8%</p> <p><b>Input Phase</b> Single Phase with ground</p> <p><b>Input Power Factor</b> &gt;0.95</p> <p><b>-Output Voltage Regulation</b> 220/230/ +/- 1%-Output</p> <p>5 KVA</p> <p><b>Standard</b> RS 232 port for software interface SNMP interface support feature</p> <p><b>Rated Output Current - 21 Amps</b></p>	
2.6	<b>Generator Set – 8 KVA</b>	<p><b>Engine type</b> Multi cylinder, in accordance with IS 10002-1981with latest amendments.</p> <p><b>General Features</b> Electric start 12 V DC , Water cooled /Air cooled , Mechanical/Electronic Governor , Fuel Æ High speed diesel , Rating Continuous</p>	



		<p><b>Output</b>          Suitable HP rated to match the alternator , Rated speed 1500 RPM</p> <p><b>Over load capacity</b>          10% overload – 1 hour , 50% overload - 15 second</p> <p><b>Accessories</b>          Flywheel to suitable diameter and fuel injection equipment Air cleaner          Lubricating oil cooler Electric motor starting equipment like motor, battery, charging generator with voltage regulator etc. Heavy duty radiator with fan , Residential type silencer with exhaust piping with vibration isolator , Fuel tank suitable for 8 Hrs of continuous running with necessary piping and fuel gauge, drain valve, inlet and outlet connections. Anti vibration mounting pads , Speed controlling governor, Suitable coupling system to the Alternator          Tachometer          Lubricating oil pressure gauge , Hour meter to indicate number of Hrs of operation , Auto trip on low oil pressure          Over speed alarm with trip, Thermal insulation for exhaust line with glass wool, Aluminium sheet, chicken mesh, Diesel line 12 mm dia including beads flanger etc , Battery 12 V with lead and terminal Battery charger. Protection against low lubricating oil pressure, high water temperature and over speed shall be provided for engine with alarm and fuel shut off</p> <p><b>Alternator</b>          Output 8 KVA , P.F 0.8 lag , Voltage 220V, 1 Ph , Type continuous running</p>	
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		<p>duty type , Frequency 50 Hz , Phase single , Speed 1500 rpm , Cooling Air-cooled , Over load capacity 10% overload – 1 hour 50% overload -15 second , Lubrication forced ,. Excitation Self excited, self regulated, automatic voltage regulator with remote voltage control facility , Permissible voltage variation <math>\pm</math> +/-1.5% of rated voltage , Insulation Class H , Base frame Engine and alternator shall be coupled and mounted on sturdy, fabricated, welded construction, channel iron base frame with coupling guard.</p> <p><b>Control Panel</b></p> <p>The Genset control panel shall be of 14 SWG CRCA sheet and powder coated finish. The panel shall be provided with standard engine instrumentation, Voltmeter with selector switch, Ammeter with selector switch, Frequency meter, Current transformer, Instrument Fuses etc. MCCB/MCB of suitable rating shall be provide for overload and short circuit protection AMF facility shall be provided for the DG set. AMF relay shall be provided in the control panel/Electrical panel with required control wiring and Contactors for automatic operation shall be done</p> <p><b>Dimensions</b></p> <p>Bidder to specify dimensions (HxWxD)</p>	
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2.7	<b>BHQ Router</b>	<p><b>Hardware Architecture</b></p> <p>Multiple services (Data, voice, video)          Shall support IP, MPLS etc , Device should have sufficient slots for future expansion , Power supply for 230 V AC 50 Hz</p> <p><b>Interface / Slots</b></p> <ul style="list-style-type: none"> <li>- Ethernet Ports 2 x 10/100Mbps</li> <li>- Should support variety of interfaces like: ChE1/E1, ISDN BRI, E1 Æ 4 upgradeable to 8 ports (for Serial and CE-1 links).</li> <li>- E1 ports should support both Ce-1 and E1 (Serial) links,</li> <li>-1 BRI Port,</li> <li>-1 Console port</li> </ul> <p>Memory 128 MB, upgradeable to 256 MB,          Inbuilt / Flash Memory 32 MB, upgradeable to 64 MB or more</p> <p><b>Performance:</b> 150Kpps or more</p> <p><b>Security</b></p> <p>IP Sec 3DES/AES,VPN for configuration of VPN tunnels.          All interfaces shall support wire rate throughput for L2, L3, VPN MPLS traffic with QoS and Security features enabled.          Encryption Hardware assisted          IPSec 3DES/AES          Should have Integrated Firewall and inline Intrusion Detection services</p> <p><b>Routing Protocols</b></p> <p>Static Routes RIPv1, RIPv2 , OSPFv2 /V3 and v3. BGP4, IS-IS , Route redistribution between any of the above protocols</p> <p><b>Protocols</b></p> <p>PPP, Multi-link PPP , IPv4, IPv6 in future</p>
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		<p>MPLS , VRRP Random Early Detection Weighted Fair Queuing, Selective Packet Discard</p> <p><b>IP Multicasting</b> IGMPv1&amp;v2, PIM-SM, <b>IP Accounting support</b> Using external hardware/software infrastructure, Packet &amp; Byte Counts, Start &amp; End Time Stamp, Network Time Protocol, Input &amp; Output interface ports. Type of service, TCP Flags &amp; Protocol Source &amp; Destination IP addresses Source &amp; Destination TCP/UDP ports</p> <p><b>Management</b> Accessibility using Telnet, SSH, Console access. Easier Software upgrades through network, using FTP, TFTP, etc. SNMPv1, snmpv2/v3, Configuration management through CLI, GUI based software utility and using web interfaces. GUI tools shall be provided. Event and system history logging functions shall be available. Support for Syslog Server required Support pre-planned timed reboot to upgrade hardware to a new software feature and plan the rebooting as an off-peak time. Shall support boot options booting from remote Network node.</p> <p><b>QoS</b> ToS, CoS, Queuing, prioritizing, Committed Access Rate/ Rate limiting, IP Precedence, Policy based routing, Congestion avoidance, algorithm, such as WRED, Priority queuing, Class based weighted fair queuing</p> <p><b>Debug &amp; Diagnostics</b> Display of input and output error status on all interfaces, Display of Dynamic</p>	
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		<p>ARP table , Display of physical layer line status signals like DCD, DSR, DTR, RTS, CTS on all interfaces, Display of Routing table, Trace-route, Ping, extended PING</p> <p><b>Physical</b></p> <p>Router should be provided with 19" Rack mounting kit. All necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, wire managers, etc. should be provided</p>	
2.8	<b>BHQ LAN Switch</b>	<p><b>Interface /Slots</b></p> <p>1 x 24 ports 10x100 FE POE ports, 2 x 1000Mbps ports base single mode</p> <p><b>- Performance</b></p> <p>Packet forwarding rate , should be 6 Mpps, 8 Gbps switching fabric capacity</p> <p><b>General Features</b></p> <p>Support Port Mirroring, Support Port Trunking, Link Aggregation</p> <p><b>VLAN features</b></p> <p>IEEE 802.1Q VLAN encapsulation,</p> <p><b>Security</b></p> <p>Support Port based network access control (802.1x) , Support port security , Traffic shaping and policing</p> <p>MAC Address security/MAC Address Notification support which allows for notification of new users added or removed</p> <p><b>Management</b></p> <p>RS-232 Console port, Easier Software upgrades through network, using FTP, TFTP, etc. Accessibility using Telnet, SSH, Console access. Easier Software upgrades through network, using FTP, TFTP, etc. SNMPv1, snmpv2/v3, Configuration management through CLI, GUI based software utility and using web</p>	



		<p>interfaces. GUI tools shall be provided.          Event and system history logging functions shall be available. Support for Syslog Server required , Switch should CPU utilization monitoring and Port description</p> <p><b>Standards</b></p> <p>IEEE 802.1x support, IEEE 802.3x full duplex on 10BASE-T and 100BASE-TX ports, IEEE 802.1d Spanning-Tree Protocol, IEEE 802.1p class-of-service (CoS) prioritisation,          IEEE 802.1Q VLAN , IEEE 802.1s, IEEE 802.1w, MAC address authentication, IEEE 802.3 10BASE-T specification , IEEE 802.3u 100BASE-TX specification, 802.3af IGMP V1, V2 and V3</p> <p><b>Power Supply</b></p> <p>Internal power supply 230 Volt 50Hz input,</p> <p><b>Mounting:</b> 19” Rack mountable</p>	
2.9	<p><b>Rack – 15 U</b>  <b>For DHQ and BHQ</b></p>	<p><b>Physical Attributer 15U</b>          - TypeWall / floor mount</p> <p><b>Wire managers</b> - One horizontal</p> <p><b>Power distribution</b>          6 points – 5Amp sockets)          power distribution</p> <p><b>Door</b> - Glass door in front with lock</p> <p><b>Fan trays</b> - With 1 to 2 fans</p> <p><b>Equipment Tray</b> One number</p> <p><b>Depth – 800 mm</b></p> <p><b>Metal</b> - Aluminium extruded profile</p> <p><b>Side panels</b>          Detachable /non detachable side panels</p>	



		<b>Width - 19"</b> equipment mounting	
2.10	<b>UPS – 2 KVA</b>	<p><b>Manufacturer</b> ISO 9001-2000 &amp; ISO 14001 MAIT Level II certification</p> <p><b>- Safety Standard</b> EMC/ EMI certification be Sameer/ ERTL/ or equivalent certification</p> <p><b>Technology</b> Inverter device IGBT based DSP/ Microprocessor based Technology Double Conversion True On-line UPS</p> <p><b>Inverter efficiency:</b> &gt;90%</p> <p><b>-Capacity:</b> 2KVA online UPS</p> <p><b>Input Voltage &amp; Range -</b> 120-280VAC</p> <p><b>-Input Frequency Range</b> 50Hz <math>\pm</math>5%,7% &amp; 10% user settable</p> <p><b>Input Phase</b> Single Phase with ground</p> <p><b>Input Power Factor:</b> 0.99</p> <p><b>Switching frequency</b> &gt;15KHz</p> <p><b>OutputL 2KVA</b> Voltage Rated output voltage 230VAC</p> <p><b>Rated Output Current:</b> 12A.</p> <p><b>Voltage</b> 220/ 230 <math>\pm</math>1%</p> <p><b>Switching frequency</b> 15 KHz</p> <p><b>Output Frequency</b> 50 Hz <math>\pm</math> 2% <b>Output</b></p> <p><b>Waveform:</b> Pure Sine wave</p> <p><b>Crest Factor:</b> 3:1</p> <p><b>Output Power Factor</b> 0.7</p> <p><b>Battery Backup</b> 1 Hours on full resistive load</p> <p><b>Battery Type</b> Batteries SMF (VRLA) Type of reliable brand to provide1 hr backup: Min 3700 VAH (Battery Calculation to be Enclosed)</p>	



		<p>DC Bus Voltage</p> <p>DC Bus Voltage of UPS to be specified</p> <p><b>Battery Ratings:</b> 3KVA: Min 3700 VAH</p> <p><b>Overload capacity</b></p> <p>105% - continuous operation</p> <p>125% of rated load for 5 min</p> <p>150% of rated load for 1 min</p> <p><b>Battery Enclosure</b></p> <p>MS Rack Powder Coated</p> <p><b>Operating Temperature</b></p> <p>0 to 50 Degree Centigrade</p> <p><b>Noise level</b></p> <p>&lt;45 dB @ 1 Meter</p> <p><b>Charger type</b></p> <p>CVCC SMPS based</p> <p><b>Alarms &amp; Indications</b></p> <p>All necessary alarms &amp; indications essential for performance monitoring of UPS to be incorporated</p> <p><b>Bypass</b></p> <p>Automatic Bypass</p> <p><b>Compatibility</b></p> <p>UPS to be compatible with DG Set supply</p> <p><b>Standard</b></p> <p>RS 232 port for software interface</p> <p>SNMP interface support feature</p> <p><b>Dimensions</b></p> <p>Bidder to specify dimensions (HxWxD)</p>	
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S.No.	Item Details	Item Specifications	Compliance
2.11	<b>Desktops based Video Conferencing</b>	<p><b>Basic</b></p> <p>Pc based equipment with necessary software and licenses. The web Cam should be accompanied with the software base code.</p> <p><b>Protocol support</b></p> <p>Standard: H.323/SIP</p> <p>Video: H.261, H.263, H.263+,H264.</p> <p>Audio: G.711,G.729.</p>	



		<p><b>Camera</b></p> <p>Operating System: Windows 2000,XP.          Field of View 54".          Frame Rate upto 30 fps at 640X480 (VGA).          Image sensor size :1/3"          Manual Focus , Auto White Balance          0.35 Mega pixels          Resolution: Up to 640x480.          Focus Distance: 5cm to Infinity          Colours: Up to 32 bits RGB          USB Cable Length: 1 metres.</p> <p><b>Audio features</b></p> <p>Integrated Microphone, Noise suppression,          Automatic gain control , Echo cancellation.</p> <p><b>Video features</b></p> <p>Brightness Control, Picture-In-Picture (PIP).</p> <p><b>QoS</b></p> <p>IP Precedence (ToS) , Differentiate          Services(DiffServ), Network Address Translation          (NAT) , (optional), Dynamic bandwidth allocation.</p> <p><b>Security Features</b></p> <p>AES/TLS encryption, Should support encrypted          calls up to 2 Mbps, including audio, video and          content.</p> <p><b>Dialing options</b></p> <p>Should support dial out to the system through          following options: E.164 , DNS names, IP          address, Local address book, Active directory ,          supporting ILS and LDAP , SIP URI support</p>	
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S.No.	Item Details	Item Specifications	Compliance
2.12	<b>Generator Set – 5 KVA</b>	<p><b>Engine type</b></p> <p>Single cylinder, in accordance with IS            10002-1981with latest amendments.</p> <p><b>General Features</b></p> <p>Electric start 12 V DC , Water cooled /Air</p>	



		<p>cooled , Mechanical/Electronic Governor ,          Fuel High speed diesel , Rating          Continuous.</p> <p><b>Output</b>          Suitable HP rated to match the alternator ,          Rated speed 1500 RPM.</p> <p><b>Over load capacity.</b>          10% overload – 1 hour, 50% overload -15          second.</p> <p><b>Accessories</b>          Flywheel to suitable diameter and fuel          injection equipment, Air cleaner, Lubricating          oil cooler. Electric motor starting. equipment          like motor, battery, charging generator with          voltage regulator etc. Heavy duty radiator          with fan. Residential type silencer with          exhaust piping with vibration isolator. Fuel          tank suitable for 8 Hrs of continuous running          with necessary piping and fuel gauge, drain          valve, inlet and outlet connections. Anti          vibration mounting pads , Speed controlling          governor, Suitable coupling system to the          Alternator Tachometer , Lubricating oil          pressure gauge . Hour meter to indicate          number of Hrs of operation Auto trip on low          oil pressure Over speed alarm with trip,          Thermal insulation for exhaust line with          glass wool, Aluminium sheet, chicken mesh,          Diesel line 12 mm dia including beads          flanger etc . Battery 12 V with lead and          terminal. Battery charger. Protection against          low lubricating oil pressure, high water          temperature and over speed shall be          provided for engine with alarm and fuel shut          off.</p> <p><b>Alternator</b>          Output 5KVA          P.F 0.8 lag          Voltage 220V, 1 Ph</p>	
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		<p>Type continuous running duty type          Frequency 50 Hz          Phase single          Speed 1500 rpm          Cooling Air-cooled          Output 5KVA          Over load capacity 10% overload – 1 hour          50% overload -15 second Lubrication forced,          Excitation Self excited, self regulated,          automatic voltage regulator with remote          voltage control facility . Permissible voltage          variation <math>\pm</math> +/-1.5% of rated voltage ,          Insulation Class H , Base frame Engine and          alternator shall be coupled and mounted on          sturdy, fabricated, welded construction,          channel iron base frame with coupling          guard.</p> <p><b>Control Panel</b>          The Genset control panel shall be of 14          SWG CRCA sheet and powder coated          finish. The panel shall be provided with          standard engine instrumentation, Voltmeter          with selector switch, Ammeter with selector          switch, Frequency meter, Current          transformer, Instrument Fuses etc.          MCCB/MCB of suitable rating shall be          provide for overload and short circuit          protection. AMF facility shall be provided for          the DG set. AMF relay shall be provided in          the control panel/Electrical panel with          required control wiring and Contactors for          automatic operation shall be done.</p> <p><b>Dimensions</b>          Bidder to specify dimensions (H x W x D)</p>	
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S.No.	Item Details	Item Specifications	Compliance
2.13	<b>Cable Laying</b>	<b>Cabling</b>	



	<p>Structured Cabling as per industry Standards . UL * R certified for complete channel for both fibre and UTP (CAT 5e/ CAT6) cables. 20/ 25 years' standard performance warranty should be given on passive components.</p> <p><b>Documentation &amp; Lay-outs</b></p> <p>UTP or OFC Cable route, with detailed diagram and plan for laying of UTP and OFC for approval.</p> <p>Termination of cabling component, UTP cable and OFC with labels &amp; marking as per approved labeling plan &amp; documentation.</p> <p>Documentation for all PoPs (Hard and Soft Copy) to be maintained for entire 5 years of Projects.</p> <p><b>Conduits and Channels</b></p> <p>PVC pipe or Casing type</p> <p>Should be 1" diameter, with ISI mark., At least 4 cable can laid in one casing Using clamp channel should be fix on wall and distance between two clamps not more then 6 inch. GI pipe Should be 2" inch diameter class B standard , At least 2 cable can laid in one pipe , Underground OFC should be laid in GI pipe only.</p> <p><b>Passive component</b></p> <p><u>UTP cable laying</u>: Should follow approved plan.</p> <p><u>OFC laying on wall or under ground</u> : OFC laying on wall or underground in GI pipe, vendor should follow as approved plan.</p> <p><u>Rack</u> :As approved</p> <p><u>Jack Panel</u> :As approved</p> <p><u>IO</u> :As approved</p> <p><u>LIU</u> :As approved</p> <p><u>Fibre connectors</u>: As approved.</p>	
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S.No.	Item Details	Item Specifications	Compliance
2.14	<b>UTP Cable</b>	<p><b>Physical Attributes</b> UTP, Cat 6, ANSI/TIA/EIA 568B.2.1 .</p> <p><b>Conductors</b> 24 AWG solid copper.</p> <p><b>Insulation</b> Polyethylene/Polyolefin , Thickness 0.22 ± 0.03mm.</p> <p><b>Operating temperature</b> -20 to +60 Deg. C.</p> <p><b>Jacket</b> Flame Retardant PVC.</p> <p><b>Approvals</b> UL*R listed , Should be certified by independent test lab (ETL etc) for zero bit error rate Gigabit Ethernet Performance</p> <p><b>Capabilities</b> 1. Delay Skew : 25ns-45ns / 100m Max. 2.Impedance :100 Ω ± 6 Ω 3.Frequency tested up to 100 MHz&gt;=250 MHz</p> <p><b>Performance characteristics to Be provided along with bid.</b> Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR.</p>	

2.15	<b>Mounting Cord</b>	<p><b>Attributes</b></p> <p>A) Length:3 Feet or 7 Feet .</p> <p>B) Conductor:24 AWG 7 / 32, stranded copper.</p> <p>C) Cable Type :UTP CAT 6 ANSI/TIA/EIA 568-B.2.1</p> <p>D) Plug Protection :Matching colour boot to maintain bend radius</p>	
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		<p>E) Warranty: 20-year component warranty</p> <p>F) Cable Type Cat 6.</p> <p>G) Terminals :Phosphor Bronze with gold plating</p> <p>H) Jacket :PVC</p> <p>I) End point connector :Factory standard connector should be terminate at both end</p> <p>J) Insulation :Flame Retardant</p>	
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2.16	<b>Information Outlets (I/O)</b>	<p><b>Attributes Type</b></p> <p>1-port, Shuttered, White/Ivory, with surface box for surface mount applications, Cat 6,TIA/EIA 568-b.2.1 Cat 6, 100 <math>\Omega</math>, Cable Accommodate minimum of 8-Position/8Conductor Modular Jacks, 22-24 AWG copper cable.</p> <p><u>DC Resistance:</u> 0.3 <math>\Omega</math></p> <p><u>Interface resistance:</u> 20 milli <math>\Omega</math></p> <p><u>Material:</u> ABS/Polycarbonate</p> <p><u>No. of ports:</u> One</p> <p><u>Protection :</u> Shutters</p> <p><u>Identification:</u> To be supplied with label for port identification.</p>	
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S.No.	Item Details	Item Specifications	Compliance
2.17	<b>LIU</b>	<p><b>Attributes</b></p> <p><u>Fibre optic patch panel:</u> 19-inch, Rack mounted or wall mounted</p> <p><u>Height:</u> 1U</p> <p><u>No. of ports with connectors:</u> 12</p> <p><u>Cable Management rings:</u> Front and rear cable management rings</p> <p><u>No. of 6-port / 12port adapter plates:</u>2/ 4 Max.</p> <p><u>Fiber Optic Adapter Plate</u> 6 Port SC type, SM.</p>	

2.18	<b>OFC</b>	- <b>Attributes</b>	
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		<ol style="list-style-type: none"> <li>1) <u>Cable Type</u>: 6 -core, Single Mode, Armoured, Loose-tube, Gel filled</li> <li>2) <u>Fibre Type</u>: Single Mode, 9 / 125, 250 micron primary coated buffers.</li> <li>3) <u>No. of cores</u>: 6</li> <li>4) <u>Armour</u>: Corrugated Steel Tape Armour.</li> <li>5) <u>Cable Construction Type</u>: BELLCORE GR 20 / IEC 794-1</li> </ol> <p>- <b>Attenuation</b></p> <ol style="list-style-type: none"> <li>1) <u>1310nm</u>:0.45 db/KM</li> <li>2) <u>1500/1550nm</u>:0.4 dB/KM at 1500nm or 0.25dB/Km at 1550nm</li> <li>3) <u>Tensile rating</u>:1200N</li> <li>4) <u>Maximum Crush resistance</u>:3000N</li> <li>5) <u>Operating Temperature</u>:-40 Degree C to +60 Degree C.</li> </ol>	
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2.19	<b>Fibre Patch Cord</b>	<b>Cable type</b> single mode , Length $\pm$ 3" ft minimum, Duplex with SC-Style connectors, SM, 9 Micron, Losses < 0.5 db	
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2.20	<b>Fibre connector</b>	<b>Connector Type</b> SC-Style, Simplex Single Mode. MM connectors 500 cycles, Beige SM connectors 220 cycles, Blue, Ferrules Pre-radius Ceramic Ferrules. <b>Attenuation</b> Not more than 0.5 dB per mated pair. <b>Operating temperature</b> -40 Degree C up to +75 Degree C	
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BSWAN Project is a multi-location initiative. Its implementation is complex and can go out of control unless all the stakeholders, especially the SWAN operator designs and implements a comprehensive and effective project management methodology. The following requirements



are therefore prescribed in this regard.

## **Work Sheet**

The SWAN operator should design a detailed Project Plan which should include the following components:

- (i) Project Organization and Management Plan
- (ii) Phase-wise Design & Implementation Plan
- (iii) Phase-wise Integration Plan
- (iv) Acceptance-Testing (ATP) and Commissioning Plan
- (v) Helpdesk Management Plan
- (vi) Problem Management Plan
- (vii) Change Management Plan.
- (viii) Training Plan, Methodology and Training Details
- (ix) Any other relevant items related to the Project Development

## **Project Development**

The SWAN operator shall:

- (i) Manage and monitor project schedules as specified in this RFP.
- (ii) Monitor & review the activities related to rollout of the network and services in tune with the requirements given in the RFP and ensure conformance to requirements for BSWAN project.
- (iii) Establish appropriate proactive/ reactive reporting mechanism as required by GoB.
- (iv) Submit weekly project progress and status reports to GoB.
- (v) Design and develop online tools for enabling BSWAN appointed agency, to monitor the status of the project.

## **Project Implementation**

The SWAN Operator shall:

- Assume the overall responsibility of managing and monitoring the project as per the Time Schedule.
- Review implementations at the locations as per the Schedule and report compliance to BSWAN project coordinator.
- Monitor the progress of change management plan as laid out in the agreement in order to enable smooth transition to the new system;
- Monitor the progress related to setting up of major project components like



- Setting up of Network Operation Centres
- Commissioning of equipment at SHQ, DHQ and BHQ.
- Any other component that are felt to be monitored as a priority from time-to-time

### **Requirements of Project Management**

#### **Approvals and Clearances**

SWAN Operator has to obtain all necessary approvals/ clearances from concerned authorities / departments including:

- (i) From DoT/ TEC/ TRAI/ BSNL, for establishing BSWAN network
- (ii) From local authorities (like Municipalities, PWD, BSSEB etc.), as required, including laying their own cables, etc.

The various requirements during the entire stages of the BSWAN project implementation are given below.

#### **Design**

- (i) The SWAN operator shall conduct site survey and submit the detailed project plan that should include following documentation: Best practices approach document for the connectivity and optimized configuration for network devices. Cabling lay-out for the set-up
- (ii) The SWAN operator shall design an IP addressing scheme for the BSWAN. The GoB shall review the IP scheme and if required, the SWAN operator would have to change IP addressing of the nodes wherever required.
- (iii) The SWAN operator shall prepare detailed security architecture, deployment and policies document for security components being supplied for securing the IT infrastructure in the BSWAN.

#### **Supply**

- (i) The SWAN operator shall not bid /supply any equipment that is likely to be declared end of life/ end of sale. The SWAN operator would be required to replace all such equipment with latest technology and equivalent/ higher configuration.
- (ii) The SWAN operator shall ensure that the sub-systems of following main categories of BSWAN are from same OEM, where ever feasible:
  - Network (Routers and Switches)
  - IP Telephony (IP PBX and IP Phones)
  - MCU, end-points and Desktop based VC
  - Cabling Systems (Fibre Optic, UTP and their accessories)
- (iii) Passive components such as patch cords shall be factory crimped and shall carry test certificates (EIA/ TIA with 20 years warranty) to ensure trouble free operations. All the



passive components need to be of the same make across the entire network to ensure standardization and ease of Certification from the manufacturers.

- (iv) The SWAN operator shall be responsible for end-to-end implementation and shall quote and provide/ supply any items not included in the bill of materials but required for commissioning of the network.
- (v) The SWAN operator shall supply all the installation material/ accessories/ consumables (e.g. screws, clamps, fasteners, ties anchors, supports, wires, fibre connection kits etc.) necessary for the installation of the systems.

### **Install**

- (i) It shall be the responsibility of the SWAN operator to bring all the installation equipment and tools required for the installation of the entire system.
- (ii) The SWAN operator shall install the UPS systems at PoPs & racks and wire up to the racks. The SWAN operator shall be required to provide & test required electrical ground at each existing power point before connecting networking devices/systems.
- (iii) All the work shall be done in a conscientious manner as per the OEM guidelines and best industry practices. The system shall be subjected to inspection at various stages. Local regulation/ codes shall be followed at all times.
- (iv) The SWAN Operator shall be responsible for storage and security of material on receipt at the site.
- (v) The SWAN Operator shall not cause any damage to Government buildings /other premises and property and will perform restoration if any damage occurs. Trenches, path-cutting etc. will be back-filled and restored to the original condition immediately after laying of the conduit/ cable.
- (vi) The SWAN Operator shall plug conduits and entrance holes where the cabling has been installed with suitable sealing material.
- (vii) The SWAN Operator shall install and configure all the active/ passive devices in accordance with OEM guidelines.

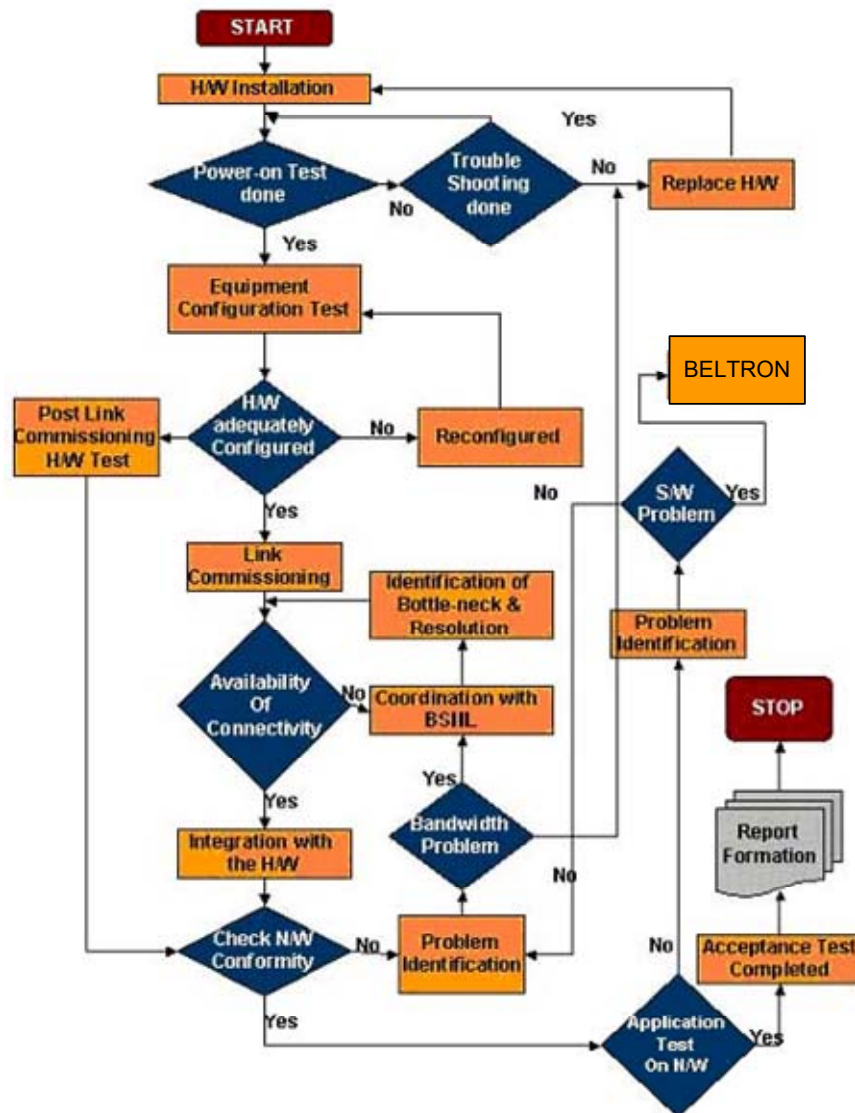
### **Testing**

- (i) The SWAN Operator shall prepare detailed acceptance testing plan (ATP) for each of the BSWAN components e.g. Network, IP Telephony, Video Conferencing Systems (VCS), Security components & cabling systems, Servers, NMS, Helpdesk, Anti Virus, DNS, Proxy, Directory, Messaging, desktops etc. and submit the same to the BSWAN appointed approval agency..
- (ii) The SWAN Operator shall ensure that the cabling and crimping/ termination is done in accordance with the EIA/ TIA standards and supported by the Original Equipment



Manufacturer (OEM) fully tested and certified (complete channel) for operations for a minimum period of 20 years.

- (iii) All the functionalities, features and configuration relevant to the BSWAN shall be documented by the SWAN Operator for the Network, IP Telephony, Video Conferencing Systems (VCS), Security components & cabling systems, Servers, NMS, Helpdesk, Anti Virus, DNS, desktops etc. and shall be provided to the BSWAN appointed approving agency. An indicative Acceptance Test Plan (ATP) for BSWAN components is described in flow chart as:



### Commissioning and Integration



- (i) The SWAN Operator shall configure the Network, IP Telephony, Video Conferencing Systems (VCS), Security components & cabling systems, Servers, NMS, Helpdesk, Anti Virus, DNS, , Proxy, Directory, Messaging, desktops etc. for end-to-end user access to applications/ services.
- (ii) The SWAN Operator shall be responsible for the installation and configuration of software applications/ modules for the Network Management and security management, IP telephony, Video Conferencing, Helpdesk, Server OS, infrastructure Services etc.
- (iii) The SWAN Operator shall provide support to BSWAN for integration of all existing/ operational LAN and WAN links to provide Network wide access to BSWAN. It shall be responsibility of the SWAN Operator to configure the systems to take care of all IP addressing or similar issues arising at the time of integration and should also ensure that all the existing applications run smoothly.
- (iv) The SWAN Operator shall be responsible for all the above mentioned points for horizontal connectivity also.
- (v) The SWAN Operator shall configure quality of service parameters on network switching and routing devices for end-to-end QoS for voice, video and other critical traffic over the network.
- (vi) The SWAN Operator shall be responsible for integration of security components in the network to ensure a secured network access for users.
- (vii) The SWAN Operator shall configure network management policies for managing all the network and security devices using network management systems.

## **Documentation**

- (i) The SWAN Operator shall document all the installation and commissioning procedures and provide the same to the GoB within 30 days of the commissioning of respective components (including SHQ, DHQ, BHQ and all Horizontal offices).
- (ii) BSWAN Security Policy: The SWAN operator shall prepare detailed security architecture, deployment and policies document for security components being supplied for securing the IT infrastructure in the BSWAN.
- (iii) All reports
  - Manpower Deployment schedule
  - Hardware / Software Delivery Report
  - Detailed weekly project Status report location wise
  - Training materials
  - Installation documents for each location.
  - Version Control report
  - Any other reports as mutually agreed.



- (iii) The SWAN Operator shall submit a complete cabling and electrical system layout (as Installed), including cable routing, telecommunication closets and telecommunication outlet/ connector designations. The layout shall detail locations of all equipment and indicate all wiring pathways. This shall be submitted to the BSWAN appointed agency within 30 days of completion of cabling system.
- (vi) Manufacturer's technical documentation on all devices used in the system including user manuals for configuring of switches, routers, etc and the SWAN Operator should provide their 'As installed' configuration (both Hard and Soft Copy).



## **Section 6**

### **Annexure – Template**



## Section 6 – Annexures & Templates

### Appendix -1 Bid Letter (Technical) Template

Date: dd/mm/yyyy

To,  
<< Address >>

**Reference:** Tender Number ..... Dated .....

Sir,

We hereby declare:

- i. We are the authorised agents of the manufacturers of the networking equipment proposed in our solution.
- ii. That we are equipped with adequate maintenance and service facilities within India for supporting the offered equipment. Our maintenance and service facilities are open for inspection by representatives of Government of Bihar.

We hereby offer to supply the equipment and provide the services at the prices and rates mentioned in the attached commercial bid.

In the event of acceptance of our bid, we do hereby undertake:

- i. To supply the equipment and commence services as stipulated in the schedule of delivery forming a part of the attached technical bid.
- ii. To undertake the project on BOOT basis for a period of 5 years, for quarterly guaranteed revenue as mentioned in the financial bid.
- iii. We affirm that the prices quoted are inclusive of delivery, installation, and commissioning charges and all sales/service taxes. (Octroi and any local levies will be charged on actual on submission of proof of remittance.)

We enclose herewith the complete Technical Bid as required by you. This includes:

1. Bid particulars
2. This bid letter



3. Proposed Network architecture, detailed technical solution, details of equipment and services offered
4. Proposed Project Plan and Implementation Schedule
5. Statement of deviation from requirement specifications
6. Statement of deviation from tender terms and conditions
7. Schedule of delivery
8. Warranty
9. Manufacturer's authorization form(s)

We agree to abide by our offer for a period of 180 days from the last date of submission of commercial bid prescribed by Government of Bihar and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the tender and the conditions of the contract applicable to the tender. We do hereby undertake to provision as per these terms and conditions.

- i. The deviations from the requirement specifications of tendered items and schedule of requirements are only those mentioned in section

*OR (Strike out whatever is not applicable)*

There are no deviations from the requirement specifications of tendered items and schedule of requirements.

- ii. The deviations from the terms and conditions of the tender are only those mentioned in section

*OR (Strike out whatever is not applicable)*

There are no deviations from the terms and conditions of the tender.

We hereby certify that the Bidder is a Directorate and the person signing the tender is the constituted attorney.

Bid Security in the form of a Bank Guarantee issued by \_\_\_\_\_  
(bank), valid till \_\_\_/\_\_\_/\_\_\_\_\_ (dd/mm/yyyy), for an amount of **Rupees 200 Lac** is enclosed in the cover containing pre-qualifying requirements.



We do hereby undertake, that, until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and notification of award of contract, shall constitute a binding contract between us.

\_\_\_\_\_  
**Signature of Bidder (with official seal)**

**Date**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Designation**

\_\_\_\_\_  
**Address**

\_\_\_\_\_  
**Telephone**

\_\_\_\_\_  
**Fax**

\_\_\_\_\_  
**E-mail address**

**Details of Enclosures:**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.





## Appendix 2 – Bidder profile

Sr. No	Details	
1	Name of the Firm	
2	Registered Office address Telephone Number Fax Number e-mail	
3	Correspondence/ contact address	
4	Details of Contact person (Name, designation, address etc.) Telephone Number Fax Number e-mail	
5	Is the firm a registered company? If yes, submit documentary proof. Year and Place of the establishment of the Company	
6	Former name of the company, if any.	
7	Is the firm <ul style="list-style-type: none"> <li>➤ Government/ Public Sector Undertaking propriety firm</li> <li>➤ partnership firm (if yes, give partnership deed)</li> <li>➤ limited company or limited corporation</li> <li>➤ member of a group of companies (if yes, give name and address, and description of other companies)</li> <li>➤ Subsidiary of a large corporation (if yes give the name and address of the parent organisation) If the company is subsidiary, state what involvement if any, will the parent company</li> </ul>	



	<p>have in the project.</p> <p>➤ Joint venture consortia (if yes, give name and address of each partner)</p>	
8	Is the firm registered with sales tax department? If yes, submit valid sales tax registration certificate.	
9	Is the firm registered for service tax with Central Excise Department (Service Tax Cell)? If yes, Submit valid service tax registration certificate.	
10	Is the firm registered under Labour Laws Contract Act? If yes, submit valid registration certificate.	
11	<p>Attach the organizational chart showing the structure of the organization including the names of the directors and the position of the officers.</p> <p>Total number of employees</p>	
12	<p>Number of years of experience:</p> <p>as a prime contractor in a joint venture/ Consortium</p>	
13	Are you registered with any Government/ Department/ Public Sector Undertaking (if yes, give details)	
14	<p>How many years has your organization been in business under your present name? What were your fields when you established your organization?</p> <p>When did you add new fields (if any)?</p>	
15	<p>What type best describes your firm? (documentary proof to be submitted)</p> <ul style="list-style-type: none"> <li>· Manufacturer</li> <li>· Supplier</li> <li>· System Integrator</li> <li>· Consultant</li> <li>· Service Provider (pl. specify details)</li> <li>· Software Development</li> <li>· Total solution provider (Design, Supply, Integration,</li> </ul>	



	O&M) · IT Company	
16	Number of Offices / Project Locations	
17	Do you have a local representation /office in Government of Bihar? If so, please give the address and the details of staff, infrastructure etc in the office and no. of years of operation of the local office	
18	Do you intend to associate any other organization for the works for which you are bidding? If so, please give full particulars of that organization separately.	
19	Please give details of Key Technical and Administrative staff who will be involved in this project, their role in the project, their Qualifications & experience and the certification attained from network product vendor. (documentary proof to be submitted)	
20	Is your organization has SEI –CMM / ISO 9000 certificates? If so, attach copies of the certificates. State details, if certified by bodies, other than that stated.	
21	List the major clients with whom your organization has been/ is currently associated.	
22	Were you ever required to suspend a project for a period of more than three months continuously after you started? If so, give the names of project and reasons for the same.	
23	Have you in any capacity not completed any work awarded to you? (If so, give the name of project and reason for not completing the work)	
24	In how many projects you were imposed penalties for delay? Please give details.	
25	The bidder/ prime member of the consortium shall disclose details pertaining to all contingent liabilities,	



	claims, disputes, matters in appeal & in court and any pending litigation against the bidder or any member of the Consortium. If nil, an undertaking from the bidder/ prime member of the consortium mentioning the same.	
26	Whether your organisation has Bank's certificate of solvency. If yes, submit documentary proof.	
27	Have you ever been denied tendering facilities by any Government/ Department/ Public sector Undertaking? (Give details)	



### Appendix 3 Financial Information Summary

S. NO	Name of the Bidder	Equity Contribution Proposed	Turn Over ( Rs. Crores)		
			03-04	04-05	05-06

**Note: Please enclose balance sheet and Profit & Loss statement.**



## Appendix -4 Manufacturer's Authorization Form

Date: dd/mm/yyyy

To,

### Reference:

Sir,

We \_\_\_\_\_, (*name and address of the manufacturer*) who are established and reputed manufacturers of \_\_\_\_\_ having factories at \_\_\_\_\_ (*addresses of manufacturing locations*) do hereby authorize M/s \_\_\_\_\_ (*name and address of the bidder*) to bid, negotiate and conclude the contract with you against the above mentioned tender for the above equipment manufactured by us.

Yours faithfully,

For and on behalf of M/s \_\_\_\_\_ (*Name of the manufacturer*)

Signature \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

Address \_\_\_\_\_

Date \_\_\_\_\_

### Directorate Seal

**Note:** This letter of authority should be on the letterhead of the concerned manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer.



## Appendix 5 Firm Experience

Assignment Name:	
Location within Country:	Professional Staff Provided by Your Firm
Name of Client:	No. of Staff:
Address:	No. of Staff-Months; duration of assignment
Start Date (Month/Year):	Completion Date (Month/Year):
Name of Associated Consultants, if any:	Approx. Value of Services :
	No. of Months of Professional Staff, provided by Associated Consultants:
Name of Senior Staff (Project Director/Coordinator, Team Leader) involved and functions performed:	
Narrative Description of Project:	
Description of Actual Services Provided by Your consultant :	



## Appendix 6 Team Composition and Task Assignments Summary

Name	Qualifications	Years of Experience	Area of Expertise	Task & Position Assigned



## Appendix 7 Curriculum Vitae for Proposed Staff

1. **Proposed Position** [*only one candidate shall be nominated for each position*]:
2. **Name of Firm** [*Insert name of firm proposing the staff*]:
3. **Name of Staff** [*Insert full name*]:
4. **Date of Birth:** **Nationality:**
5. **Education** [*Indicate college/university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates of obtainment*]:
6. **Membership of Professional Associations:**
7. **Other Training** [*Indicate significant training since degrees under 5 - Education were obtained*]:
8. **Countries of Work Experience:** [*List countries where staff has worked in the last ten years*]:
9. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]:
10. **Employment Record** [*Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.*]:

From [Year]: To [Year]:

Employer:

Positions held:



<p><b>11. Detailed Tasks Assigned</b> <i>[List all tasks to be performed under this assignment]</i></p>	<p><b>12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</b> [Among the assignments in which the staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under point 11.] Name of assignment or project: Year: Location: Client: Main project features: Positions held: Activities performed:</p>
---	---

**13. Certification:**

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

Date:

*[Signature of staff member or authorized representative of the staff]*

*Day/Month/Year*

Full name of authorized representative:



## Appendix 8 Statement of deviation from requirement Specification

Date: dd/mm/yyyy

To,

### Reference:

Sir,

There are no technical deviations (null deviations) from the requirement specifications of tendered items and schedule of requirements. The entire work shall be performed as per your specifications and documents.

OR (*Strike out whatever is not applicable*)

Following is the exhaustive list of technical deviations and variations from the requirement specifications of tendered items and schedule of requirements. Except for these deviations and variations, the entire work shall be performed as per your specifications and documents.

S. No.	Section No.	REQ No.	Page No.	Statement of deviations and variations
1.				
2.				

### Witness

Signature

Name

Designation

Address

Directorate

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Bidder

Signature

Name

Designation

Address

Directorate

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Date

---

---

Date

---

---

**Directorate Seal**



## Appendix 9 Statement of deviation from tender terms and conditions

Date: dd/mm/yyyy

To,

### Reference:

Sir,

There are no deviations (null deviations) from the terms and conditions of the tender. All the terms and conditions of the tender are acceptable to us.

*OR (Strike out whatever is not applicable)*

Following are the deviations from the terms and conditions of the tender. These deviations and variations are exhaustive. Except these deviations and variations, all other terms and conditions of the tender are acceptable to us.

S. No.	Section No.	Page No.	Para	Statement of deviations and variations
1.				
2.				

### Witness

Signature \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_  
Address \_\_\_\_\_  
Directorate \_\_\_\_\_  
Date \_\_\_\_\_

### Bidder

Signature \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_  
Address \_\_\_\_\_  
Directorate \_\_\_\_\_  
Date \_\_\_\_\_

**Directorate Seal**



## Appendix 10 - Bid letter – Commercial

Date: dd/mm/yyyy

To,

### Reference:

Sir,

We hereby declare:

- iii. We are the authorized agents of the manufacturers of the networking equipment proposed in our solution.
- iv. That we / our principals (manufacturer) are equipped with adequate maintenance and service facilities within India for supporting the offered equipment. Our maintenance and service facilities are open for inspection by representatives of Bihar.

We do hereby undertake that, in the event of acceptance of our bid, the supply of equipment and commencement of services shall be made as stipulated in the schedule of delivery forming a part of the attached technical bid.

In the event of acceptance of our bid, we do hereby undertake that:

- iv. To supply the equipment and commence services as stipulated in the schedule of delivery forming a part of the attached technical bid.
- v. To undertake the project on BOOT basis for a period of 5 years, for quarterly guaranteed revenue as mentioned in the financial bid.
- vi. We affirm that the prices quoted are inclusive of delivery, installation, and commissioning charges and all sales/service taxes. (Octroi and any local levies will be charged on actual on submission of proof of remittance.)

We enclose herewith the complete Commercial Bid as required by you. This includes:

1. This bid letter
2. Bid particulars



3. Statement of commercial deviation
4. Quarterly Guaranteed Payment
5. Quarterly Payment for Horizontal Office

We agree to abide by our offer for a period of 180 days from the last date of submission of commercial bid prescribed by GoB and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the tender and the conditions of the contract applicable to the tender. We do hereby undertake to provision as per these terms and conditions.

- i. The deviations from the requirement specifications of tendered items and schedule of requirements are only those mentioned in section 12.1.4

*OR (Strike out whatever is not applicable)*

There are no deviations from the requirement specifications of tendered items and schedule of requirements.

- ii. The commercial deviations of tendered items are only those mentioned in section 12.2.3.

*OR (Strike out whatever is not applicable)*

There are no commercial deviations.

- iii. The deviations from the terms and conditions of the tender are only those mentioned in section 12.1.5

*OR (Strike out whatever is not applicable)*

There are no deviations from the terms and conditions of the tender.

We hereby certify that the Bidder is a Directorate and the person signing the tender is the constituted attorney.

Bid Security in the form of a Bank Guarantee issued by \_\_\_\_\_ (bank), valid till \_\_\_/\_\_\_/\_\_\_\_ (dd/mm/yyyy), for an amount of Rupees two crores is enclosed in the cover containing pre-qualifying requirements.



We do hereby undertake, that, until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and notification of award of contract, shall constitute a binding contract between us.

\_\_\_\_\_  
**Signature of Bidder (with official seal)**

**Date**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Designation**

\_\_\_\_\_  
**Address**

\_\_\_\_\_  
**Telephone**

\_\_\_\_\_  
**Fax**

\_\_\_\_\_  
**E-mail address**

**Details of Enclosures:**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.



## Appendix 11 - Appendix Statement of Commercial Deviation

Date: dd/mm/yyyy

To,

### Reference:

Sir,

There are no deviations (null deviations) from the requirement specifications of tendered items and schedule of requirements and hence there are no commercial deviations. The entire work shall be performed as per your specifications and documents.

OR *(Strike out whatever is not applicable)*

Following is the exhaustive list of commercial deviations and variations from the exceptions to the specifications and documents for the above mentioned tender. Except for these deviations and variations, the entire work shall be performed as per your specifications and documents.

S. No.	Section No.	REQ No.	Page No.	Statement of deviations and variations
1.				
2.				

**Witness**

**Bidder**

Signature

Signature

re

Name

Name

Designa

Designati

tion

on

Address

Address

Director

Directorat

ate

e

Date

Date

**Directorate Seal**





**Appendix 12 - Quarterly Guaranteed Payment for POP to be paid by DIT,  
GoI**

Sr. No	POP	POP No. of Locations	Capital Cost per location per Quarter	Operations Charge of the Network (onsite engineers, NOC, etc) per location per Quarter per POP	Maintenance Charge (field maintenance of equipments, links, etc) per location per Quarter	Total QGR Amount in Rs.
1	SHQ					
2	DHQ					
3	BHQ					
	Grand Total					

**Witness**

Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Designation \_\_\_\_\_  
 Address \_\_\_\_\_  
 Directorate \_\_\_\_\_  
 Date \_\_\_\_\_

**Bidder**

Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Designation \_\_\_\_\_  
 Address \_\_\_\_\_  
 Directorate \_\_\_\_\_  
 Date \_\_\_\_\_

**Directorate Seal**



**Appendix 13 - Quarterly Payment for Horizontal Office to be paid by Government of Bihar (GoB)**

Sr. No	Payment Head	Lump sum Implementation charge
1	Horizontal Office at SHQ	
2	Horizontal Office at DHQ	
3	Horizontal Office at BHQ	

Sr. No	Payment Head	Maintenance charge per location per Quarter
1	Horizontal Office at SHQ	
2	Horizontal Office at DHQ	
3	Horizontal Office at BHQ	

<b>Witness</b>		<b>Bidder</b>	
Signature	_____	Signature	_____
Name	_____	Name	_____
Designation	_____	Designation	_____
Address	_____	Address	_____
Directorate	_____	Directorate	_____
Date	_____	Date	_____

**Directorate Seal**



**Site Preparation Cost to be paid by Government of Bihar (GoB)**

Sr. No	Payment Head	Site preparation Charge per location
1	SHQ	
2	DHQ	
3	BHQ	
4	Horizontal office at SHQ	
5	Horizontal office at DHQ	
6	Horizontal office at BHQ	

<b>Witness</b>		<b>Bidder</b>	
Signature	_____	Signature	_____
Name	_____	Name	_____
Designation	_____	Designation	_____
Address	_____	Address	_____
Directorate	_____	Directorate	_____
Date	_____	Date	_____

**Directorate Seal**



## **Component wise pricing**

**Brief particulars of the goods and services, which shall be supplied/ provided by the Bidder, are as under:**

Item No.	Description of the Item	Quantity	Price per Unit*	Operation and maintenance charges	Total Price

\* Unit price is inclusive of all taxes and duties

<b>Witness</b>		<b>Bidder</b>	
Signature	_____	Signature	_____
Name	_____	Name	_____
Designation	_____	Designation	_____
Address	_____	Address	_____
Directorate	_____	Directorate	_____
Date	_____	Date	_____

**Directorate Seal**



## Appendix 13 – Indicative Bill of Materials

### DIT-payable QGR

<b>Bill of Materials</b>		
<b>Networking Equipments expected to be installed for BSWAN</b>		
<b>S.No.</b>	<b>Description</b>	<b>Quantity</b>
<b>Equipment at the state HQ</b>		
1	Core Router	1
2	Modem Pair for Lease line	2
3	Core Switch	1
4	Rack/Passive Component	1
5	RAS	1
6	AAA	1
7	Network Management software(NMS)	1
8	Internet Router	1
9	Firewall	1
10	Infrastructure Server Farm(DNS/E-mail/Poxy/Web)	4
11	MCU	1
12	VOIP	1
13	VOIP Phone	1
14	Help Desk	1
15	UPS	2
16	Generator	1
17	Air Conditioner	1

<b>Equipments at District Head Quarters</b>		
1	<b>District Router</b>	37
2	Modem Pair for Lease line	74
3	Switch	37
4	Rack/Passive Component	37
5	PC	37
6	VOIP Phones	37
7	UPS	37
8	Generator	37
9	Air Conditioner with Stabilizer	37



<b>Equipments at Block Head Quarters</b>		
1	<b>Block Router</b>	495
2	Modem Pair for Lease line	990
3	Switch	495
4	PC	495
5	VOIP Phones	495
6	Rack/Passive Component	495
7	UPS	495
8	Generator	495
9	Air Conditioner with Stabilizer	495

**State-payable QGR**

<b>S.No</b>	<b>Equipment at SHQ</b>	<b>Quantity</b>
1	Rack/Passive component	4
2	VOIP phone	40
3.	KVM Switch	4
4.	Video Conferencing End Points	40
5.	Video Streaming Server	1
	Internet switch	1
	Interface server	5
	Database application server	2
	Web Server	2
	Syslog server	1
6	SMPS (for STM1 equipment of BSNL) one SHQ + 37 DHQs	38 sets
7	Battery bank (2Vx24)	38 sets
8	LAN extenders	As per need

<b>S.No.</b>	<b>Site preparation for vertical connectivity</b>	<b>Total number of offices</b>



1	Total for SHQ	1
2	Total for DHQ	37
3	Total for BHQ	495
	<b>Site preparation for horizontal connectivity</b>	
1	Total for SHQ	40
2	Total for DHQ	950
3	Total for BHQ	4950

Note :

1. If bandwidth service provider (BSNL) is providing E1 interface at router, modem pair is not required at SHQ/DHQ.
2. The site preparations at horizontal offices are only indicative figure.



**Appendix 15: Bank Guarantee- for Earnest Money Deposit**

**To**

**The Managing Director**

**Bihar State Electronics Development Corporation Limited**

**Government of Bihar**

**BELTRON Bhavan, Shastri Nagar,**

**Patna**

Whereas .....(hereinafter called “the Bidder”) has submitted its Bid dated ..... (date of submission of Bid) for execution of Turnkey Information Technology project on Build, Own, Operate and Transfer (BOOT) basis for the Bihar State Wide Area Network (BSWAN) in terms of the Tender dated ..... issued by the Managing Director of Bihar State Electronics Development Corporation Limited, Patna, (hereinafter called “the Bid”).

Whereas as per Clause \*\* Section \*\* of the Bid, the Bidder is required to furnish a bank guarantee as Earnest Money Deposit from a scheduled commercial bank (Bank Guarantee)

In consideration of the fact that the Bidder is our valued customer and the fact that he has submitted the Bid, we, (name and address of the bank), (hereinafter called “the Guarantor Bank”), has agreed to bind ourselves, our successors, and assigns to irrevocably issue this Bank Guarantee and guarantee as under

**NOW THIS GUARANTEE WITNESSETH: -**

1. If the Bidder
  - (a) withdraws its Bid proposal during the period of Bid validity specified by the Bidder on the Technical Proposal Cover Letter; or
  - (b) having been notified of the acceptance of its Bid by the Managing Director, Bihar State Electronics Development Corporation Limited during the period of Bid Proposal validity:
    - (i) fails or refuses to enter into the Contract; or



- (ii) fails or refuses to furnish the performance guarantee, in accordance with the Terms of Reference of the Tender document issued to the Bidders. The Guarantor Bank shall immediately on demand pay the Managing Director, Bihar State Electronics Development Corporation Limited without any demur and without the Managing Director, Bihar State Electronics Development Corporation Limited having to substantiate such demand a sum of Rs 2.00 Crores ( Two Crores) (Guaranteed Amount).
2. The Guarantor Bank will make the payment of the Guaranteed Amount forthwith on the demand made by the Managing Director, Bihar State Electronics Development Corporation Limited, notwithstanding any objection or dispute that may exist or arise between the Managing Director, Bihar State Electronics Development Corporation Limited and the Bidder or any other person.
  3. The demand of the Managing Director, Bihar State Electronics Development Corporation Limited on the Guarantor Bank for the payment of the Guaranteed Amount, shall be deemed as the final proof of fulfillment of the conditions stipulated in (1) above.
  4. This Guarantee shall be irrevocable and shall not be discharged except by payment of the above amount by us to the Managing Director, Bihar State Electronics Development Corporation Limited and our liability under this Guarantee shall be restricted to the Guaranteed Amount being Rs 2.00 Crores ( Two Crores).
  5. If it is necessary to extend this Guarantee on account of any reason whatsoever, we undertake to extend the period of this Guarantee on the request of the Bidder under intimation to the Managing Director, Bihar State Electronics Development Corporation Limited.



6. To give full effect to the Guarantee contained herein, the Managing Director, Bihar State Electronics Development Corporation Limited shall be entitled to act as if the Guarantor Bank is the principal debtor in respect of claims against the Bidder and the Guarantor Bank hereby expressly waives all its rights of surety-ship and other rights, if any, which are in any way inconsistent with any of the provisions of this Guarantee.
  
7. Any notice by way of demand or otherwise may be sent by special courier, telex, fax, registered post or other electronic media to our address as afore-said and if sent by post, shall be deemed to have been given to us after expiry of 48 hours when the same has been posted.
  
8. Our liability under this Guarantee will continue to exist until a demand is made by the Managing Director, Bihar State Electronics Development Corporation Limited in writing or up to and including One Hundred and Eighty (180) days after the period of the Bid Proposal validity, i.e. up to \_\_\_\_\_2007, and any demand in respect thereof should reach the Bank not later than the above date.

Dated ..... this ..... day .....2007....

Yours faithfully,

For and on behalf of the ..... Guarantor Bank,

(Signature)

Designation

(Address and Common Seal of the bank)



**Appendix 16: Performance Bank Guarantee Format.**

**To**

**The Managing Director**

**Bihar State Electronics Development Corporation Limited**

**Government of Bihar**

**BELTRON Bhavan, Shastri Nagar,**

**Patna**

Whereas .....(hereinafter called “the Bidder”) has submitted its Bid dated ..... (date of submission of Bid) for execution of Turnkey Information Technology project on Build, Own, Operate and Transfer (BOOT) basis for the Bihar State Wide Area Network (BSWAN) in terms of the Tender dated ..... issued by the Managing Director of Bihar State Electronics Development Corporation Limited, Patna, (hereinafter called “the Bid”).

Whereas as per Section \* Clause \* of the Bid, the Bidder is required to furnish a bank guarantee as Performance Guarantee from a scheduled nationalised bank (Bank Guarantee)

In consideration of the fact that the Bidder is our valued customer and the fact that he has submitted the Bid, we, (name and address of the bank), (hereinafter called “the Guarantor Bank”), has agreed to bind ourselves, our successors, and assigns to irrevocably issue this Bank Guarantee and guarantee as under

**NOW THIS GUARANTEE WITNESSETH: -**

1. If the Bidder

(a) Having been notified of the acceptance of its Bid by the Managing Director of Bihar State Electronics Development Corporation Limited, Patna, during the period of Bid Proposal validity:

- (i) Fails to perform as per the contract obligations.
- (ii) On invoking of Section \* Clause \*\*\* “Termination for Default”; and /or on invoking of Section \* Clause \* “Exit Management Schedule”.



The Guarantor Bank shall immediately on demand pay the Managing Director of Bihar State Electronics Development Corporation Limited, Patna, without any demur and without the Managing Director, Bihar State Electronics Development Corporation Limited having to substantiate such demand a sum of Rs \_\_\_\_ Lakhs (\_\_\_\_\_ Lakhs) (Guaranteed Amount).

2. The Guarantor Bank will make the payment of the Guaranteed Amount forthwith on the demand made by the Managing Director, Bihar State Electronics Development Corporation Limited, notwithstanding any objection or dispute that may exist or arise between the the Managing Director of Bihar State Electronics Development Corporation Limited, and the Bidder or any other person.
3. The demand of the Managing Director of Bihar State Electronics Development Corporation Limited, on the Guarantor Bank for the payment of the Guaranteed Amount, shall be deemed as the final proof of fulfillment of the conditions stipulated in (1) above.
4. This Guarantee shall be irrevocable and shall not be discharged except by payment of the above amount by us to the Managing Director of Bihar State Electronics Development Corporation Limited and our liability under this Guarantee shall be restricted to the Guaranteed Amount being Rs \_\_\_\_ Lakhs (\_\_\_\_\_ Lakhs).
5. If it is necessary to extend this Guarantee on account of any reason whatsoever, we undertake to extend the period of this Guarantee on the request of the Bidder under intimation to the Managing Director of Bihar State Electronics Development Corporation Limited.
6. To give full effect to the Guarantee contained herein, the Managing Director of Bihar State Electronics Development Corporation Limited, Patna, shall be entitled to act as if the Guarantor Bank is the principal debtor in respect of claims against the Bidder and the Guarantor Bank hereby expressly waives all its rights of surety-ship and other rights, if any, which are in any way inconsistent with any of the provisions of this Guarantee.
7. Any notice by way of demand or otherwise may be sent by special courier, telex, fax, registered post or other electronic media to our address as afore-said and if sent by post, shall be deemed to have been given to us after expiry of 48 hours when the same has been posted.



8. Our liability under this Guarantee will continue to exist until a demand is made by the Managing Director of Bihar State Electronics Development Corporation Limited, in writing or up to and including 5 year from the date of signing of contract, i.e. up to \_\_\_\_\_2007, and any demand in respect thereof should reach the Bank not later than the above date.

Dated ..... this ..... day .....2007....

Yours faithfully,

For and on behalf of the ..... Guarantor Bank,

(Signature)

Designation

(Address and Common Seal of the bank)

**Note: To be executed at the time of Signing of Contract by the Selected Vendor**



## Appendix 17: Template for Pre-bid Conference queries / Clarifications.

RFP purchase no:

Date:

Name of the Bidder:

Address:

Telephone Nos:

Fax No:

Mobile No:

Email ID:

Sl No:	Clause No:___ Section No:___	Corresponding page no in the RFP Document	Particulars of the query / clarification	Remarks / BSEDC / Govt of Bihar
1				
2				
3				
4				

Authorized Signatory

Designation

(If the queries / clarifications are submitted through e-mail, the bidder should send the queries / clarifications through official e-mail IDs only.)



## **Appendix 18: List of all PoP's**

Address and Phone Numbers for all POP's