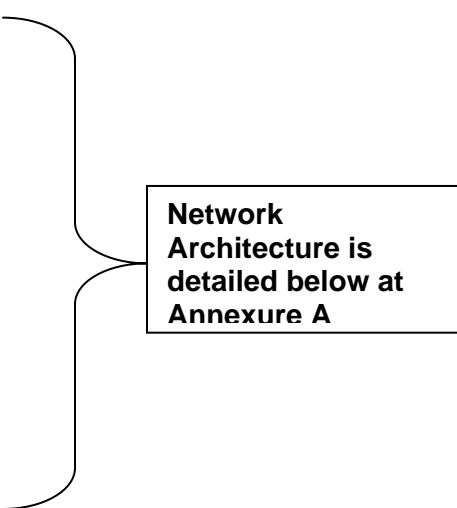


Punjab Wide Area Network (PAWAN)

| SNo. | Item | Value |
|------|-------------------------------------|---|
| 1 | Name of the Department/Office | Department of Information Technology |
| 2 | Name of Project | Establishment of Punjab State Wide Area Network (PAWAN) |
| 3 | Brief Description about the project | <p>The National e-Governance Plan (NeGP) has identified various 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. The Government of Punjab views NeGP as a chance to take its e-Governance vision to greater heights.</p> <p>The Government of Punjab is establishing the Punjab State Wide Area Network (PAWAN). This Wide Area Network (WAN) is envisaged as the backbone network for data, voice and video communications throughout the State. PAWAN would act as the vehicle for effective implementation of Electronic Governance (e-Governance) across PAWAN would follow a 3 Tier structure through Point of Presence (POP) across the various levels:</p> <ul style="list-style-type: none"> • State Head Quarter or State Network Centre (SNC) - Tier I • District Head Quarter or District Network Centre (DNC) - Tier II • Sub Divisional Head Quarter or Sub Division Network Centre (SDNC) and the Block Head Quarters or Block Network Centers (BNC) - Tier III <p>Departmental offices of Government of Punjab shall be connected to these Points of Presence (POP) of PAWAN as Horizontal Office. PAWAN will be based on open standards, scalable with high capacity network to carry data, video and voice traffic between different offices of the Government of Punjab at the State, District and Block level. PAWAN is also expected to help in the rollout of central applications covered under NeGP through interconnection with the national backbone as envisaged by GoI as part of its PAWAN initiative.</p> <p>The minimum bandwidth for PAWAN at each tier shall be of 2Mbps. The bandwidth requirement is expected to increase maximum up to 8 mbps at various levels over the next five years and thus the network should be scalable up to the required level.</p> <p>The model of implementation for PAWAN is Build, Own, Operate and Transfer (BOOT) model. The services required by GoP under this model are listed later in the document. The bidder should carry out the activities mentioned below, and GoP will release payments against the services as prescribed in the Payment Terms of this document.</p> <ol style="list-style-type: none"> 1. Supply, install and integrate the necessary hardware, software, and commission necessary bandwidth, etc. at SNC, DNC, SDNC, BNC. 2. Provide Facility Management Services & Operate |

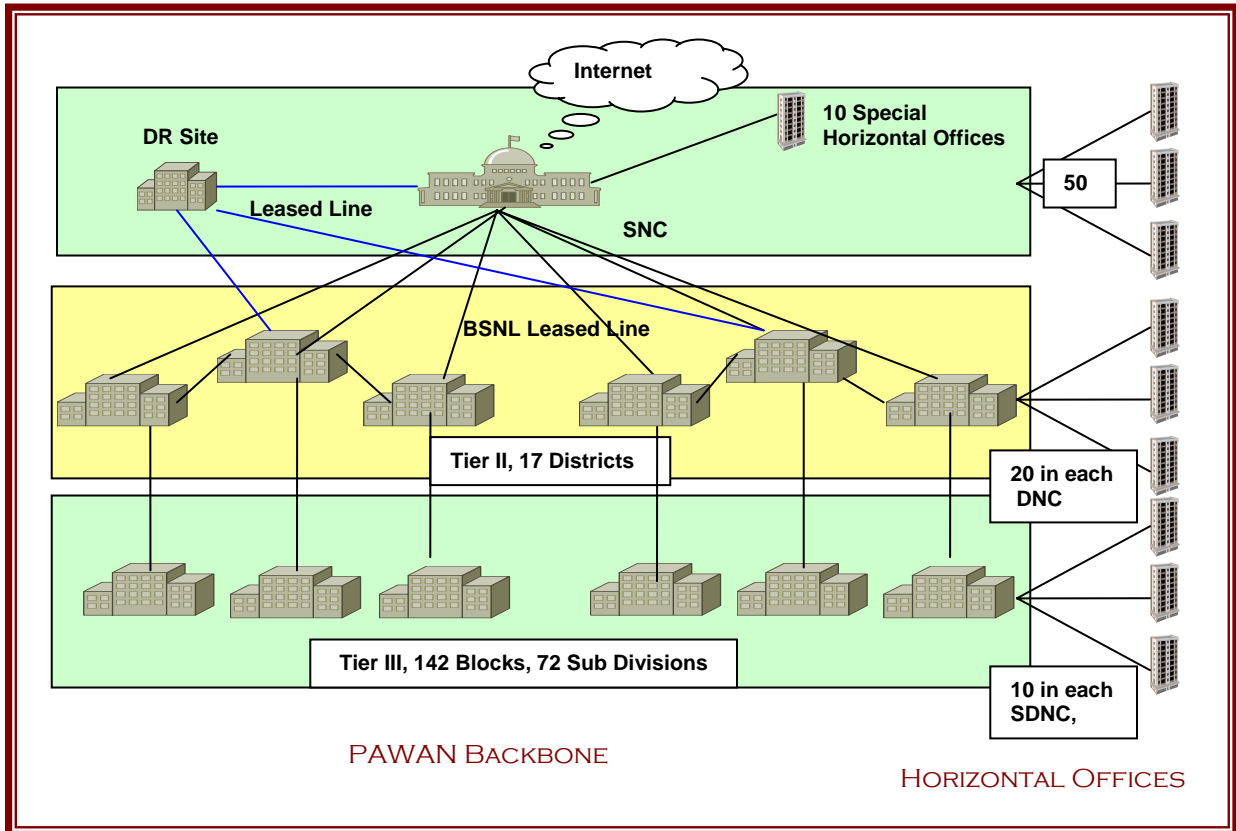
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| | | <p>PAWAN on BOOT basis.</p> <p>PAWAN is aimed at serving the requirement of all state departmental applications and also shall enable access to central government applications through interconnectivity with NICNet. Bidder shall have to study all the applications and analyse their requirement in terms of network & security along with present infrastructure and formulate their integration with PAWAN.</p> <p><i>PAWAN Services</i></p> <p>PAWAN shall cater to the information communication requirements of the entire state government and its departments. PAWAN shall facilitate the following minimum services to its entire user community:</p> <p><i>Core Services</i></p> <ol style="list-style-type: none"> 1. Converged Network Services (Data/Voice/video) <ul style="list-style-type: none"> • Seamless end to end connectivity for all government offices across Punjab • Inter departmental connectivity at each location • Allow horizontal connectivity facilities at each POP of PAWAN • Dedicated access to applications hosted at State and Central Department. • Providing Internet access to all PAWAN users through Internet Gateway at SNC • Voice over IP for government offices through IP Phone • Point-to-point and point-to-multipoint video conferencing through High quality video equipments & Multimedia PC 2. Security Services <ul style="list-style-type: none"> • Secure data transmission between departmental offices. • Secure access to centralized applications • Access rule for departments to be connected to PAWAN • Access rule for VPN access to departmental network on PAWAN • Gateway Level Antivirus protection for SNC NOC • Perimeter Security for SNC NOC <p><i>Additional Services</i></p> <ul style="list-style-type: none"> • Help Desk Services for incident handling • Provide VPN access to departmental network from remote sites • Centralized Network Monitoring System • Messaging services |
| 4 | Present Status | <ul style="list-style-type: none"> • GOI has approved the project at a project cost of Rs. 62.23 Crores over a span of five years. • GOP has received Rs. 12 Crores as a first installment for the project. • PwC has been appointed as the consultant. • BSNL has been appointed as the Bandwidth Service provider. • RFP has been sent to GOI for approval. |

| | | |
|-----|---|--|
| 5 | Technology Used |  |
| 5.1 | Operating System | |
| 5.2 | Front end | |
| 5.3 | RDBMS | |
| 5.4 | Type of Computing | |
| 5.5 | Language | |
| 5.6 | Number of PC's/ Terminals used in the project | |
| 5.7 | LAN Status | |
| 5.8 | Number of PC's connected to LAN | |
| 6 | Home Page | |
| 7 | Screen Shots | |
| 8 | Software developed by | |
| 9 | Benefits of the project | <p>PAWAN is expected to cater to the information communication requirements of the entire state government and its departments. Through implementing PAWAN, the GOP wishes to achieve the following:</p> <ul style="list-style-type: none"> • Provide reliable, vertical and horizontal connectivity within the state administration to make the Government more productive. • Reduce communication cost. • Provide a secure backbone for encouraging electronic transactions. • Provide efficient service management • Strengthen Disaster Management Capacity. • Provide the Government agencies, the ability to leverage a robust infrastructure to provide a complete array of Government services and information. • Ensure that every citizen in the state has access to Government services and information whenever and wherever they need it. • 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 Punjab. • Move toward the provisioning of converged communication Services (voice, data and video) and the interconnection and interoperation of network platforms. |
| 10 | Future Plan | All the Departments shall be integrated with PAWAN as Horizontal connectivity. |

PAWAN Architecture

PAWAN would consist of a three tiered architecture. At the top most tier, there would be the SNC. The 17 DNC's below would each have leased line connectivity to the SNC. In addition, there would be four aggregation points (4 of the 17 DNC's) at this second tier. The remaining 13 DNC's would have additional connectivity to their nearest aggregation point. The SDNC's and BNC's have been categorized as a single tier. They would connect to their respective DNC's. The detailed listing of Districts and their respective sub divisions and blocks is given in the POP List.

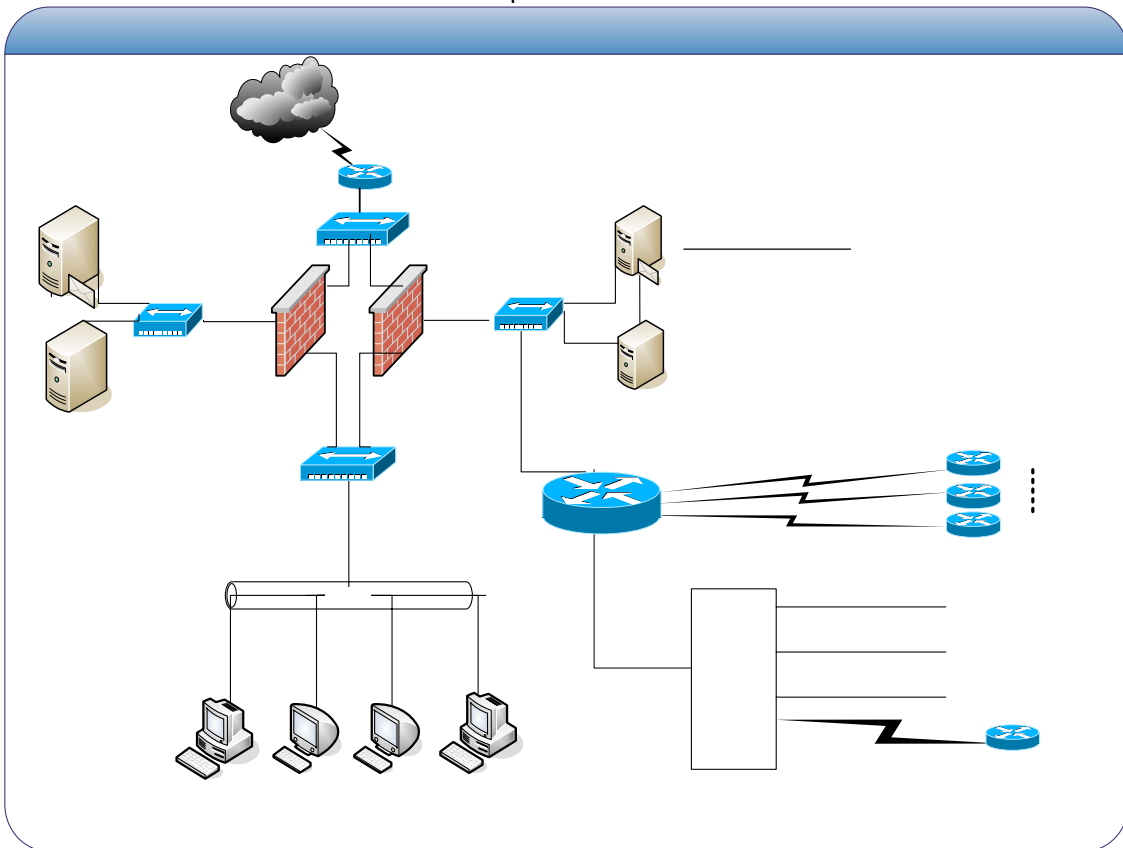
PAWAN Backbone Schematic



- All districts would be connected to a nearest aggregation point as given in the following Table through another minimum 2 mbps leased line.
- DR Site: PAWAN backbone shall have the provision for inclusion of DR site as and when required. The Backbone routers shall have\
- the required ports for DR site connectivity. Four E1 leased line shall link the four aggregated points to the DR Site. Routers at the aggregation points (DNCs) should have the required port. The DR site shall also be connected to the SNC through another E1 Leased line. Thus the SNC router and district aggregation point routers shall have one extra port for DR site connectivity. The bidder is expected to quote for DR Site components as mentioned in section 5.8. The bidder shall be responsible for implementation of the DR site as and when required by GoP.
- Co-located BNC/SDNC: Some of the Offices (SDNC/BNC) are located within the same city of upper tier POP. In those cases these offices shall not be a primary POP of PAWAN and these Offices will not act as a further distribution point for lower tier POPs. These offices shall be known as co-located Offices and shall be connected to the local upper tier pops as a horizontal office. The basic principle for the architecture shall be to have only one PAWAN pop in a single city. Definition and requirements at co-located Offices are described in

section 5.7.

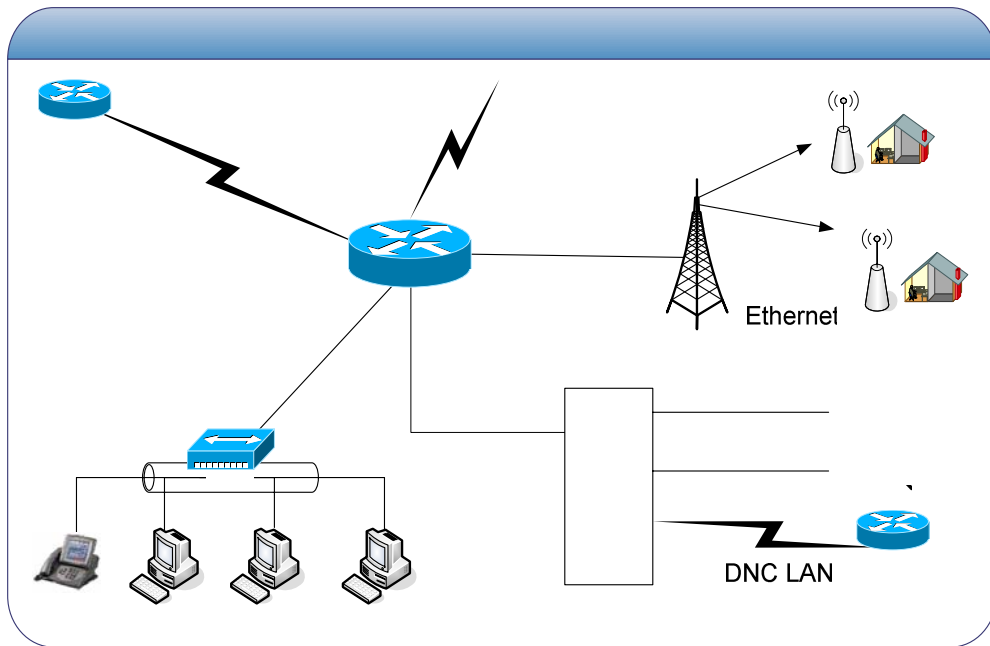
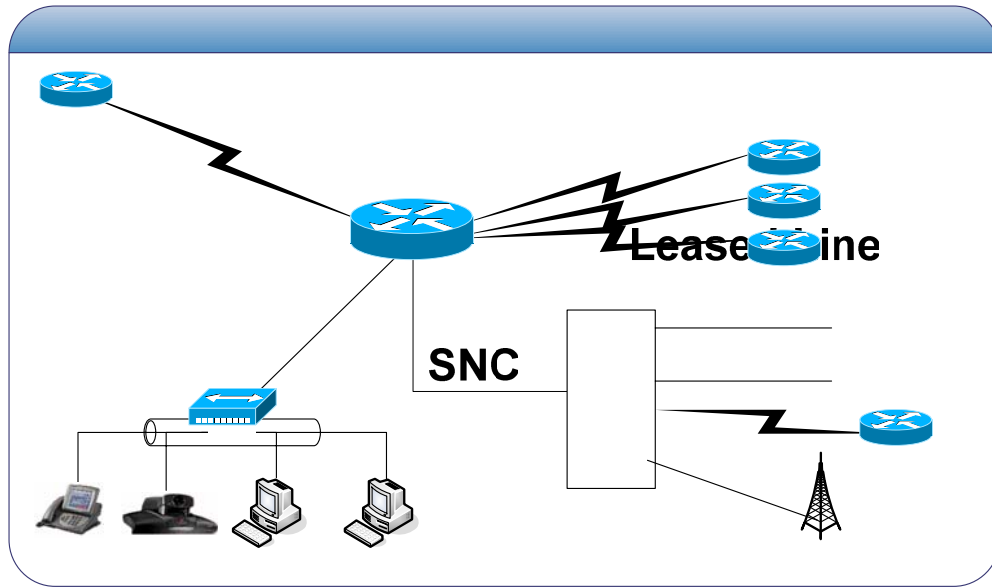
- Horizontal Office: All departmental offices are categorized as horizontal offices. At each tier, a number of these horizontal offices would connect to the POP, with the connectivity mechanism depending on the distance from the POP. All the POPs in the three tiers of the PAWAN backbone shall have the facility to connect departmental offices. Detailed Horizontal connectivity options are given in section 5.9.
- Special Horizontal Office: GoP wishes that 8 Horizontal offices within Chandigarh be connected with the SNC as part of the PAWAN backbone implementation. These offices are important locations in Chandigarh and require immediate connectivity. Requirements for these offices are given in section 5.10.
- The villages (at least one out of six) are expected to be connected to the BNCs in due course. The village connectivity is not within the scope of this RFP. However infrastructure including base station for providing wireless connectivity to village from BNC is part of the current project.
- BSNL would be the primary bandwidth provider for PAWAN. However GoP may incorporate services from other bandwidth providers at its own discretion. Details for WAN link and circuit termination types for each location as agreed by BSNL are provided in the Annexure 14.2. The bidder is expected to propose equipments as per the given information. GoP would separately negotiate with BSNL and ensure availability of the links to the selected bidder for implementing PAWAN.
- Minimum Bandwidth requirement at each circuit of PAWAN is 2 mbps. The scalability requirement is set to be 2-8 mbps at SNC-DNC links and internet link. The BNC-DNC link and special horizontal office scalability requirement is set to be 2-4 mbps. All routers shall have the required port as per the scalability requirement from day 1.
- Wireless base station shall be deployed in all primary pops of PAWAN (DNC and SDNC/BNC). All base station should support at least 30 remotes. The base station primarily shall be used for village connectivity. The same base station shall also be used for connecting horizontal offices and co-located BNC/SDNC as required.



SNC Arc

Internet Link

DNC Arc



BNC Arc

Leased Line

DNC

ISD