



TERMS OF REFERENCE

1. Project Name: LAN Revamping

2. Background

College of Language and Culture Studies under Royal University of Bhutan is located 16 kilometers south of Trongsa town. It has 89 acres of campus boundary with 1000 plus student and 100 plus staff. The area is divided into 2 campus namely Academic zone (Administration & faculties offices, classrooms, library and etc.) and Residential zone (Hostels, Staff quarter, Guest House etc.) 800m in between.

The academic zone is accessible to Internet and main server placed in it. Star topology is used to connect different managed switches. Currently college is subscribed to 10 mbps from Bhutan Telecom (BT) and expected to increase to 25 mbps soon. But Residential zone has not been connected with Internet.

3. Objective

The main objective is to revamp the existing LAN and extend to residential zone for efficient, secured and well managed LAN and Internet services to meet the needs of students and staff residing in it.

4. Scope of the work

The scope of the work should cover comprehensive **study on existing LAN** and supply the equipment and then accordingly revamp and extend to suit the needs of the Authority.

Revamp the existing LAN which is cost effective, user friendly and functional. Ensure that it is capable of accessing information smoothly through LAN and Internet.



The main scopes of the work are as follows.

Configuration

The L3 Cisco Nexus Switch should also be configured. The current L3 switch or core router will be replaced by Nexus switch. So the IT firm should have experience of installing nexus switch with proper configuration and also managed cisco switches.

Splicing

College Academic Zone has been connected with fiber optic cable internally. It has been connected with 12 cores fiber optic cable but only 2 cores are used. The current network has lots of VLAN being tagged and all are used via 2 cores single fiber optic cable. So while designing or restructuring, all the 12 cores has to be used for different VLANs. Each managed switch should carry separate VLAN. There are 7 managed switches in the campus that needs to have separate VLANs. At the same time configuration should be done in all the affected switches, core router and border router too.

For security reason campus network design will not be exposed and hence it will not be attached with tender. But network engineer have extensive knowledge should be able to foresee the expected network complexity and should **visit the site** before attempting.

Labeling/Cabling

Currently the cabling in the campus has not been labeled or marked with port numbers or room number. And proper cabling should be done in server room as well as to all the switches.

For more details for labeling and cabling refer **Cabling specification** and hence all the equipment should be labeled with tag.

Cost of tag for Labeling and Rj45, casing capping for cabling should be included in work expenses.



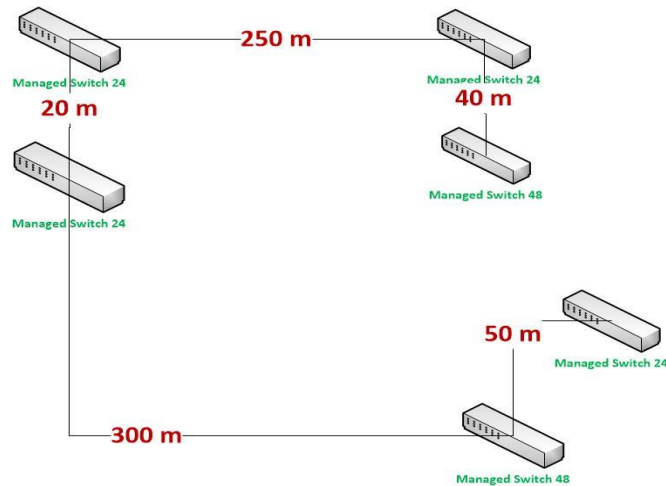
Extension

The Internal network extension shall be carried out in the residential campus of CLCS. The network layout will begin from Guest House and ends at staff quarter as shown in the diagram. Currently guest house has Internet connection. The extension shall be connected using 24 core single fiber optic cables, managed switch supporting SFP and PoE.

The diagram is part of extension of network in residential campus. S1-S5 is managed switches to be placed in the building.



And the diagram below shows additional information about the network extension.





The firm shall strictly follow the **cabling system specification** attached with the tender when extension or revamping is carried out.

5. Technical Qualification Requirement

The supplier should have prior experience in designing, installation and configuration of network.

In order to qualify for financial bid evaluation, the business firm must demonstrate having considerable experience in design, installation and implementation of similar network in the past.

Following are list of mandatory criteria

- I. Company's overall technical strength and competency relevant to the project
- II. Company's experience in Cisco Nexus switch configuration and installation in network of one large enterprise or organization in Bhutan
- III. At least 2 professional engineers with expertise configuration and installation of Cisco switches and routers
- IV. Professional engineer with expertise in FTTx project working full-time with the company
- V. Company's experience in carrying out physical cabling and networking of mid-size to large enterprise or organization in Bhutan
- VI. TDS certificate or TPN Number for proposed technical team.
- VII. Enclose list of clients for proof of work carried out

The claim must be supported by documentary evidence such as proof of work, completion certificate and certified certificate of IT Engineers.



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6. Deadline

The firm should complete the work within 2 months after the work is awarded.

7. Documents to be submitted

The business firm should submit the financial bid along with the documents for technical qualification. Bidder shall demonstrate clear understanding of the TOR and how the assignment could be achieved.

8. Bid Evaluation

The evaluation will be done on the technical qualification requirements followed by the financial bid. In absence of incomplete technical qualification requirements the bid shall be **disqualified for further evaluation.**