

# College Infrastructure Requirements for Participating in QEEE





## Contents

PREFACE .....	4
Audience .....	5
List of Abbreviations .....	6
1. Introduction .....	7
2. Hardware Requirements.....	7
2.1 IS: Institute Server .....	7
2.2 CPC: Class room PC .....	7
2.3 Two Projectors .....	7
2.4 SC: Student Computers .....	8
3. Software Requirements .....	8
4. Connectivity Requirements.....	8
5. DTH.....	8
6. Space Requirements .....	8
6.1 QEEE Class room .....	9
6.2 Server room .....	9
7. Appendix .....	9
Appendix 1- Model Institute server specifications .....	9
Appendix 2-Class room PC detailed specifications .....	10
Appendix 3-Model Class room Projector .....	11
Appendix 4- DTH specifications .....	11

## List of Tables

Table 1 Model Institute server specifications.....	10
Table 2 Class room desktop specifications .....	10
Table 3 Class room Other Audio-visual Specifications.....	11
Table 4 Model Class room Projector .....	11
Table 5 DTH Specifications.....	11

## PREFACE

This document gives the infrastructure requirements that are required at the colleges participating in the QEEE program of MHRD.

**Introduction** Gives the audience an idea about what the document is intended to cover.

**Hardware Requirements** Specifies the hardware requirements that need to be procured and installed at the colleges

**Software Requirements** Specifies the software requirements that needs to be adhered to at the colleges

**Connectivity Requirements** Specifies the IP connectivity requirements that the colleges should provision for including global IP address

**DTH** Specifies the requirements for receiving the QEEE lectures via DTH

**Space Requirements** Specifies the space requirements for students seating and for infrastructure setup

**Audience**

This document is intended to be used by System administrator in colleges to set up the infrastructure in their respective colleges for participating in QEEE program of MHRD

## List of Abbreviations

S.No	Abbreviation	Meaning
1	QEEE	Quality Enhancement in Engineering Education
2	DTH	Direct To Home

## 1. Introduction

Participation in the QEEE – Direct to Students program from IIT Madras requires the college to invest in infrastructure. This document specifies these infrastructure requirements and also provides a reference model system for the institute server meeting these requirements. Please note, colleges are free to purchase any system equivalent to the model system, so long as it meets the specifications.

## 2. Hardware Requirements

### 2.1 IS: Institute Server

The institute server is the one on which the QEEE application software will run within the college. It maintains all the student records, program details and stores course content for student reference.

#### Specification:

Intel® Xeon E3-1220v2 server(3.1GHz/4-core/8MB/69W)/HP/8GB RAM/2TB HDD/Mouse,Keyboard,18.5 " Monitor ,Ethernet Adapters-2/SATA RAID Controller /HP 1TB Non-hot plug LFF SATA/1\*300 Watts Non-hot plug. Reference Model Please refer Appendix – A Model Institute server specifications)

### 2.2 CPC: Class room PC

The classroom PC is to be situated within the QEEE classroom.

#### Specifications:

Corei3/2GB/500 GB/USB Mouse, USB Keyboard, DVD R/W, 18.5" Monitor For detailed specifications: Please refer Appendix 2 Class room PC detailed specifications.

### 2.3 Two Projectors

2 Projectors2800 LUMENS 3000; 1 CONTRAST RATIO SVGA RESOLUTION Reference Model: Please refer Appendix – C Model Class room Projector

## 2.4 SC: Student Computers

To run the tutorial and live lab components of the QEEE programme, it is expected that students have access to desktop or laptop computers that is connected to the institute LAN and can run any standard browser such as Google Chrome. This could be the students personal laptops or could be shared computers available somewhere at the college. For labs, the colleges should make available a computer for each student. For tutorials one computer for each student is recommended, but one computer shared by 2 students is acceptable.

## 3. Software Requirements

Institute server and classroom PC will need to run Centos 6.5 which is open-source software. The QEEE application will run on top of the Institute server. Training will be provided to the colleges to install and run all these software components.

## 4. Connectivity Requirements

- The college should have dedicated **4Mbps (2Mbps Uplink/2Mbps downlink) internet connectivity with one global IP address (for Institute server)** for this program.
- Stable LAN between Institute server and classroom desktop, typically a 10/100 Mbps connection with minimum 2 Mbps uplink/2 Mbps downlink between them.
- Seamless connectivity between student computers and institute server, typically a 10/100 Mbps connection.

## 5. DTH

Live content of the QEEE Direct to Students programme is offered through broadband and via DTH. To receive DTH, colleges will need to install a DTH dish and set top box from a specific service provider. The specifications of this equipments are provided in Appendix-.

## 6. Space Requirements

The college must make available the following space dedicated for the QEEE activities.



## 6.1 QEEE Class room

A classroom needs to be prepared for QEEE lecture delivery with capacity to hold at least 60 students. There should be adequate space on the walls to mount two large sized projector screens with good visibility throughout the classroom. Ceiling mounts have to be made available to mount two projectors with power and cable connections. Good quality audio system needs to be installed and the room properly insulated from noise sources and echoes. Space will need to be made available near the podium to place a classroom computer along with monitor, mouse and keyboard. Adequate power provision with backup is needed in the classroom to ensure power supply to projectors and computers for 4 hours continuously so that they can be operated even during periods of power outage. To support DTH mode of operation, classroom will need to have access to rooftop space where a DTH dish can be placed and space within the classroom near the podium where the set top box and recording hardware can be placed.

## 6.2 Server room

Space needs to be made available in the college server room for placing the institute server. Adequate cooling and backup power will be needed to maintain the 24x operations of this server.

## 7. Appendix

### Appendix 1- Model Institute server specifications

INSTITUTE SERVER		
Model Number	Description	Quantity
757643-425	HP ProLiant ML 10 E3-1220v2 NHP SATA Server/Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/80W, 1333, Turbo 1/2/3/4) /8MB Intel® Smart Cache/ 4GB (1x2GB) PC3-10600E DDR3 UB ECC/ HP NC112i 1-Port Ethernet Server Adapter (x2)/ HP Embedded Smart Array B110i SATA RAID Controller (RAID 0/1/10)/ 350 Watts Non-Hot Plug, Non redundant Power Supply/ Half Hieght SATA DVD Rw Kit /HP Integrated	1

	Lights- Out Standard (iLO 3)/ Micro ATX Tower (4U)/3-3- 3 NBD Support	
500672-B21	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	1
507772-B21	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non- hot Plug Midline 1yr Warranty Hard Drive	2
	HP 18.5 MONITOR	1
<b>Price : INR 70,000</b>		

**Table 1 Model Institute server specifications**

### Appendix 2-Class room PC detailed specifications

Class room DESKTOP		
Model	Description	Quantity
DOQ20PA	Corei3- 3220/2GB/500GB/dvdrw, DOS Downgrade/3-3-3/18.5" LED	1
<b>Price: INR 30,000</b>		

**Table 2 Class room desktop specifications**

Other Audio-Visual Accessories		
Description	Remarks	Quantity
Microphone	Wireless/Collar/Head worn Microphones	1
Cameras	Good quality camera with connectivity to computer with live video streaming (HD Handy camera is recommended). It would be better to have a tripod if using Handy Camera The following is applicable only if your camera does not support USB live streaming. Ensure that the cable is long enough to connect your camera to the Computer ezCap and Grab Bee converts Composite and S-Video output to USB.	1

	Video Capture cards are alternatives.	
Speakers	For Audio output of received lectures	As per requirements of the class room in your institute
Audio Mixer	Audio Mixer with 4 or more Channels. (If external microphones and speakers are being used. Ensure that you have the needed converters and cables (Belden cable, Neutrik Connectors are recommended).	1
VGA – Outputs	In addition to on-board VGA which will be used to connect the monitor, we need two VGA outputs. Some graphics cards have dual display outputs, which can support 2 displays in a single card. One such card has to be procured	2 (In addition to on-board VGA)

**Table 3 Class room Other Audio-visual Specifications**

### Appendix 3-Model Class room Projector


PROJECTOR		
Model	Description	Quantity
LG BE 320	2800 LUMENS 3000;1 CONTRAST RATIO SVGA RESOLUTION	2
<b>Price : INR 50,000 (for 2 projectors)</b>		


**Table 4 Model Class room Projector**

### Appendix 4- DTH specifications

DTH		
S.No	Description	Quantity
1	90CM Dish Antenna	1
2	Universal LNBF	1
3	Low Loss RF cable (RG-6)	1
4	Satellite Receiver with Remote Controller (SETTOP Box)	1
5	Audio Video Cable	1
6	TV/Projector/LCD Display	1
<b>Price : INR 7,000</b>		

**Table 5 DTH Specifications**

 Prices quoted in the Appendices are the price(exclusive of applicable taxes) at which these equipments were procured at IIT-M from HP after negotiations. Colleges can contact Vipinjith Rajappan at vipinjith.rajappan@hp.com for further details on the pricing and delivery. College can choose equivalent systems, but has to ensure that they interwork with our systems without our intervention.

 The complete list of equipments and some vendor details are provided at the following URL  
[http://pilot.edureform.iitm.ac.in/docs/Vendor\\_List.pdf](http://pilot.edureform.iitm.ac.in/docs/Vendor_List.pdf)