



# Technical Specifications

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*This note summarizes the technical specifications for the CERN School of Computing.*

<b>1</b>	<b>Exercise room .....</b>	<b>1</b>
1.1	Maximum number of student .....	1
1.2	Student computers .....	1
1.3	Keyboards.....	1
1.4	Monitors .....	1
<b>2</b>	<b>Administration server.....</b>	<b>2</b>
<b>3</b>	<b>Networking.....</b>	<b>2</b>
3.1	Private network .....	2
3.2	WiFi.....	2
3.3	External connectivity.....	2

## 1 Exercise room

### 1.1 Maximum number of student

The maximum number of students for a given school **N(year)** is determined every year by the CSC management after consultation with the Local Organizing Committee.  
Over the past years, this number has evolved from **60** to **80**.

### 1.2 Student computers

Each machine is shared by two students. Therefore, the LOC must arrange for up to **N(year) / 2** (typically over past years: from **30** to **40**) + **2 spare/test-machines**

#### Features

- CPU Intel “**Core i3/5/7**” or newer  
This CPU is better suited for the exercises of the Computer architecture and Performance tuning lectures.
- **≥2 GB RAM**
- 100 GB disk space
- PXE bootable

#### Operating System

- The CSC technical team will install **CentOS 6 64bit** on all student computers.

*Note:*

*It would be very helpful if the organizers just install one machine by hand to see if everything works, esp. the NIC and the graphics card. If not, CERN may prepare workarounds/fixes beforehand which will save a lot of time on site.*

### 1.3 Keyboards

**US keyboards required** (local keyboards may be exceptionally considered if minimal differences with US keyboards).

### 1.4 Monitors

Monitors should provide **at least** 1280x1024 screen resolution. Recommended: 1600x1024 or above.

## 2 Administration server

One “admin” server as central control machine

### Features

- Multi-core CPU (**4 to 8 cores**)
- Min. 8 GB RAM, **16 GB RAM** recommended
- Min. 250 GB available disk space, **500 GB** recommended
- US keyboard preferred, monitor with at least 1280x1024 resolution
- Two network interfaces (2x 1Gb); PXE bootable
  - 10Gb interface for internal traffic highly preferred!
- **Has to be able to run SLC6 or CentOS 6 64bit** (installation should work “out-of-the-box”)

Location:

A locked room (e.g. the secretariat) or physically close to admin ... making unauthorized access difficult.

Note:

*It would be very helpful if the organizers install the server in advance and provide remote access to CERN technical staff some months before the School takes place.*

## 3 Networking

### 3.1 Private network

A private network is to be setup behind the administration server for the exercise machines.

- The network will run on 10.0.0.x IPs and Internet access will be routed through the admin server.

### 3.2 WiFi

In case the School is hosted in a campus:

- access to the campus WiFi infrastructure from the secretariat, the exercise rooms and the lectures room.
- the WiFi does NOT need to be routed to the admin server.

In case the School is not using a campus/installed infrastructure:

- 1x 48 port switch (exercise room) + 1x 24 port switch (secretariat).
- WiFi routers in the exercise rooms and the secretariat; the WiFi is routed and managed by the admin server.

### 3.3 External connectivity

The required bandwidth towards Internet, and in particular to CERN, is as follows. Tests can be arranged with CERN technical staff to assess the quality of the external connectivity (bandwidth and round-trip time).

- Absolute minimum bit rate: DSL with 8 Mbps (payload! That is 1 MByte/s downlink, 128 kByte/s uplink).
- Reasonable minimum: 10 Mbps bidirectional.

