# **Topic: Building a Cluster**

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**Date:** TBA

**Time:** TBA

**Materials needed (Per Group)**: Raspberry Pi’s (4); 4+ port USB Power Hub; 4+ port Ethernet Port Switch; Keyboard; Mouse; Monitor; Wireless Adapter; SD Cards (4); Extra SD Cards (Pre-Imaged for Student Recovery)

**Teacher level:** Familiar with building the cluster, able to troubleshoot issues

**Student level:** Teachers, with and without cs backgrounds. College Graduates; College Undergraduates; high-school seniors

-experience with Linux; Programming

**Learning styles/intelligences supported:** Group style learning, show and teach learning

**Why technology is used in this lesson:** The plan of the lesson is to teach how to build a cluster, technology will be used to teach how to use technology.

**Objectives:** By the end of the lesson, workshop participants will be able to build the cluster out of the materials provided and being able to modify an existing application and if possible, develop their own parallel applications.

**Training content:**

**Warm-up activities/review:**

Intros and overview of: 30 minutes

Why Parallel & Distributed Programming

Clusters

Raspberry Pi and Raspbian

**Instructions:**

Connecting hardware of cluster 20 minutes

Catch Up time

Configuration

Configure pinode0 30 minutes

Boot pinode0

configure wlan0

get scripts from Github

configure pinode0 using scripts

Configure pinode[1-3] 30 minutes

Catch Up time

Running Parallel programs 30 minutes

Catch Up time

Writing a Parallel Program 30 minutes

**Follow-up activities:**

Question and Answer

Having the teacher practice teaching it if time allows

**Assessment** (how will you know the lesson was successful?)**:**

If the teachers are comfortable the initial installation of a cluster and can perform further self study in preparation for teaching

Teachers can demonstrate:

How to connect and configure the RPi’s,

How to set-up wireless

How to perform basic navigation within the Raspbian OS

How to use

Feedback: