The World's "Fastest" Supercomputers

Goal:

This lesson gives students exposure to some of the terminology used when categorizing supercomputers and challenges them to rethink one of the benchmarks used to rank those supercomputers.

Materials:
- Computer connected to the Internet, 1 per student or pair of students
- Parallel Computing Notebook, one per student

Activity:
1. Each student or pair of students uses the website Top500.org to answer the following questions in their Parallel Computing Notebook:
   - When was the most recent Top500 list published?
   - What is the name of the fastest supercomputer in the world according to the most recent list?
   - Where is that supercomputer located?
   - How many **cores** does it have?
   - How much **peak performance (RPEAK)** does it have?
   - How many of the Top500 sites in the top 10 are located in the United States?
   - If the **Blue Waters** supercomputer was capable of a **peak performance** of **13,000 TFLOP/S** when it came on-line in 2012, where would it be listed in the November 2012 list (http://top500.org/lists/2012/11/)?
   - According to the article linked below (which can be found by typing "Blue Waters Top500" into a search engine), why doesn't Blue Waters appear on the list (http://www.hpcwire.com/2012/11/16/blue_waters_opts_out_of_top500/)?

Questions to answer in your Parallel Computing Notebook:
1. What are **cores**?
2. What does **TFLOP/S** stand for?
3. What does **Linpack** measure?
4. What would be some different ways to rank supercomputers?