Grid Computing Exercise

Mathias Dalheimer
md@gonium.net

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1 Grid Security

1. What is the difference between authentication and authorization. Why is it important to distinguish them?

2. Describe the problem of decentralized authentication. How can it be solved?

2 Grid Scheduling

1. Create a simple model for grid scheduling. There are n activities $i = 1, ..., n$ and r Resources $k = 1, ..., r$. The size R_k of the resource k is available at any time. Each activity i must be processed for p_i time units, requiring a constant amount of r_{ik} units of resource k. Describe the objectives for the model.

2. Describe a simple algorithm that implements the model. Note that the algorithm doesn't need to create optimal results.

3. The model given above does only contain basic constraints. Can you think of some more?

3 Unicore

1. Describe the different entities of the Unicore system.

2. What happens when a job is submitted?

3. Install the Unicore client on your workstation.

4. Find out more about the Unicore testbed:
   (a) Which operating system is used?
   (b) What is the processor architecture?
   (c) What is the IP address of the system?

4 Xen

1. Describe the benefits of using virtualization in grid computing.
2. How does migration work? What are the restrictions concerning the environment? Hint: Use Clark et al, "Live Migration of Virtual Machines"