

GRID COMPUTING, COMPUTE AND STORAGE SERVICES

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Quote

“Anything worth doing, is worth doing right.”

Hunter S. Thompson

Introduction

Grid computing has become crucial in distributed computing, specifically among university research, (Xhafa & Abraham, 2010).

However, no one can rule out the urgent need to develop a communication standard to support large-scale but cheaper connectivity in African universities and particularly in the sub-Saharan Africa.

Introduction...

- ▶ Many managers in organizations and academicians in universities are not well knowledgeable about the advantages and characteristic of reducing the expense on computer resource using Grid computing (Bothun, 2016).
- ▶ Study on such information technology solutions is needed, in order to leverage by aligning most academic processes with information technology to improve the utilization of grid computing and reduce the cost of computer hardware and increase in computing power

Statement of the Problem

- ▶ In an enterprise, servers typically sit idle, with just 10% to 20% of servers storage and computing power utilized, (Lee & Zomaya, 2012). Computer resources are even less utilized about 1% or 2 % of these resources are used on average. This suggests that grid computing can leverage substantial amounts of idle business resources.
- ▶ Therefore, there is need to study how Grid computing can be adopted by the NRENs that are endeavoring to meet the global competition with the renowned institutions around the globe

Main Objective

To develop a suitable Grid Computing Model that could be adopted by the NRENs in the Region and Uganda in Particular for more effective and efficient academic and research activities among its members that would stand the tests of time.

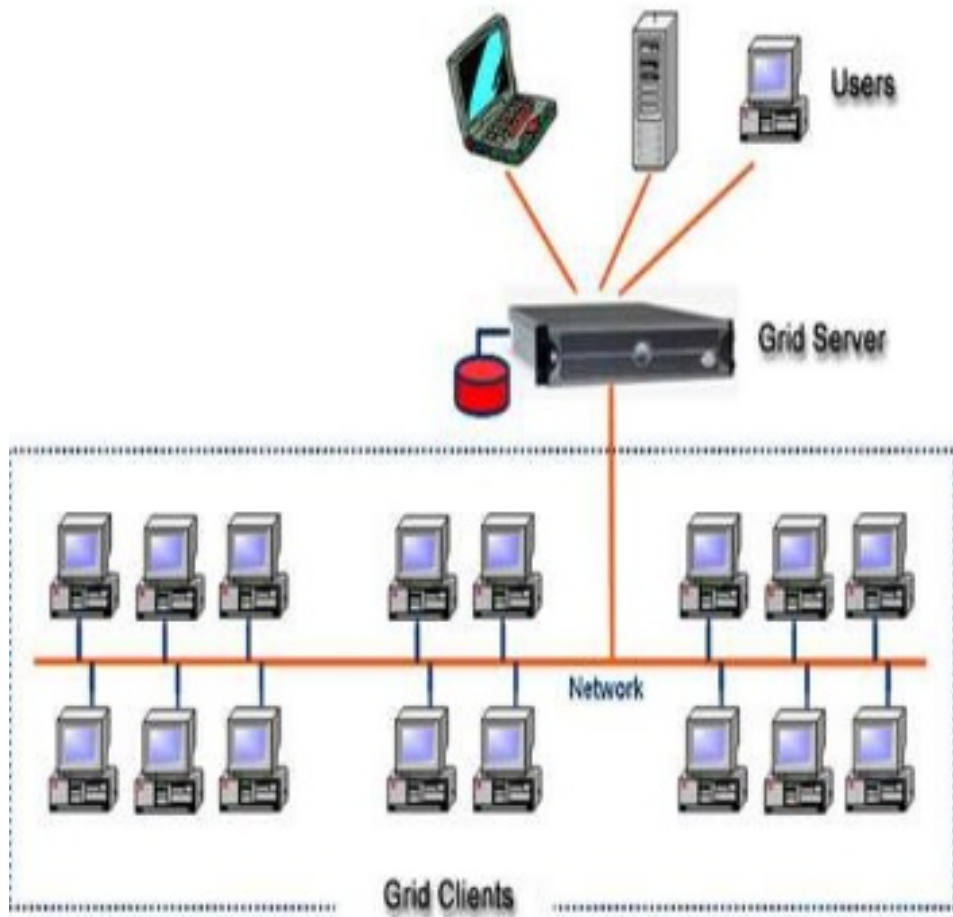
Specific Objectives

- To study the existing grid technology usage among the NRENs in Uganda and collect requirements for a suitable model for improving research and academic activities.
- To design a suitable grid computing model for improving research and academic activities among NRENs in Uganda.
- To implement a prototype of the developed model.
- To test and validate the developed prototype

The Concept of Grid Computing

Grid computing is a computer network in which each computer's resources are shared with every other computer in the system. Processing power, memory and data storage are all community resources that authorized users can tap into and leverage for specific tasks. A grid computing system can be as simple as a collection of similar computers running on the same operating system or as complex as inter-networked systems comprised of every computer platform you can think of. (Howstuffswork)

Grid Computer Logical Diagram



A grid computing system requires:

- At least one administrative computer system (usually a server)
- A network of computers running a special grid computing network software.
- A collection of computer software called middleware.

Methodology

This research will adopt an integrative model of both qualitative and quantitative. An analytical research design will be done to evaluate several related cases and comparative design to NRENs operations within the region and Uganda. These cases will provide the researchers with a clear business requirements, these will be used for analysis and design of a suitable Grid computing model for the NRENs using a UML notation and this model will be implemented using Network simulation tools, such as NS2 or OMNet++, and to test and validate the operation of the prototype.

Conclusion

The use of Grid Computing in universities has many benefits such as accessing and sharing of databases, e-mails, educational resources, research study applications and tools anywhere for professors, students and other users in university, at a very minimal cost. A few universities already started Grid computing innovation for instructional usage. Therefore, there is need to study how Grid computing can be adopted by the NRENs to the realization of some of it's objectives most especially in the area of cost cutting, effective networking among members, better storage management, among others.

The end.... Thank you!