



**M.S. RAMAIAH INSTITUTE OF TECHNOLOGY:**  
**High Performance Cloud and Grid Computing With Aneka**

**Manjrasoft Case Study**

**Industry: Education and Training**

**Application: M.S. Ramaiah Institute of Technology (MSRIT)**

**SOLUTION OVERVIEW**

<b>CUSTOMER SCENARIO</b>	MSRIT, based in Bangalore, India, is one of the premier autonomous universities in the country offering Engineering and Medical courses. The Computer Science and Information Science courses taught at the institution, are consistently rated highly among the students, both local and international. The department boasts of a spacious lab with approximately 350 high-end desktop computers. Students utilize this infrastructure to gain practical knowledge by implementing the programs taught in the course and also to carry out research to advance their knowledge. Students from the university are regularly recruited by the top IT companies based in India due to the high calibre.
<b>CHALLENGE</b>	MSRIT has ensured the availability of the resources to students in order to remain among the top institutions in the country. With the changing needs of the industry it needs to keep the course material up to date so that students are actually learning what they are going to use tomorrow. As a side issue, it is also the question for MSRIT on how to differentiate itself from the scores of other institutions in the country and to continue attracting top talent. In line with the industry trends, the university created a course in high performance cluster and grid computing so that students could learn state-of-the-art technology. But it also found a big gap in terms of the available technology to support the practical implementation of the course.



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<b>SOLUTION</b>	<p>After researching various solutions, MSRIT, came across Manjrasoft's Aneka software, which is used to build enterprise grids and clouds in Windows environment. With the help of Manjrasoft, the university was able to develop a new course syllabus, called High Performance Cluster and Grid Computing with Aneka, which in addition to the theoretical aspects also covered the practical implementation. Dr Raj Buyya and his colleagues developed a course using Aneka to teach grid computing. MSRIT was able to utilise the funding from AICTE, which encourages the development of next generation technologies in educational institutions to fund this. MSRIT also hosted Manjrasoft's CEO Buyya's workshop on grid computing which attracted university staff from all over India.</p>
<b>BENEFITS</b>	<p>MSRIT installed Aneka on all the systems in its existing lab and was able to create an enterprise level grid network. Students use Aneka to:</p> <ul style="list-style-type: none"> <li>- build distributed applications and learn implementing on this grid network</li> <li>- easily learn and implement the multiple programming models available in Aneka</li> <li>- carry out and mount their distributed applications on in-house grid and clouds</li> </ul> <p>MSRIT was able to:</p> <ul style="list-style-type: none"> <li>- develop a grid network on its existing infrastructure using Aneka in a cost effective manner</li> <li>- meet the industry needs by using state-of-the-art technology in its institutions</li> </ul>
<b>TECHNOLOGY</b>	<ul style="list-style-type: none"> <li>•Aneka platform from Manjrasoft</li> <li>•LAN-connected Windows systems</li> </ul>



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*"Aneka is a good tool for High Performance Computing. As it is very difficult for programming the Grid/Cloud directly, Aneka provides a very good, highly effective and user friendly interface for Cloud programming. As the tool is .NET based, it is easy for the students to program the Cloud. At MSRIT, we have installed Aneka based Cloud Computing Laboratory which basically provides HPC solutions for different Engineering problems.*

*As a part of this laboratory, already two PhD Scholars are working towards high performance image processing applications. The research scholars from Biotechnology, Chemistry and Chemical Engineering branches are using Aneka to program their models. M.Tech Students of Computer Science and Engineering are using this tool to carry out their final year project. 15 B.Tech Students are doing their undergraduate projects using Aneka.*

*Aneka serves as a better platform to implement parallel algorithms. At MSRIT, as an autonomous institute, we have introduced a course on Grid Computing using Aneka as an elective for both undergraduate and postgraduate students.*

*Industry representatives from IBM and HP have appreciated the Lab and they are ready to offer internships for the students who have worked with Aneka.*

*In general, it is a good tool for practicing HPC. Very much useful for the student community in particular and academia in general. It is very difficult to find such kind of tools for any HPC course."*

*Dr. Srinivasa K G  
Director, Data Mining Laboratory  
Assistant Professor, Dept. of Computer Science, MSRIT, Bangalore, India*