

Seminario

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**“AVES:
A Computer Cluster System approach for INTEGRAL
Scientific Analysis”**

11 Maggio 2010, ore 11,00
Aula IB09

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Via Fosso del Cavaliere 100- Roma

Abstract

The AVES computing system, based on an “Cluster” architecture is a fully integrated, low cost computing facility dedicated to the archiving and analysis of INTEGRAL data. AVES is a modular system that uses the software resource manager (SLURM) and allows unlimited expandability (65,536 nodes and hundreds of thousands of processors); actually is composed by 30 Personal Computers with Quad-Cores CPU able to reach the computing power of 300 Giga Flops (300x10⁹ Floating point Operations Per Second), with 120 GB of RAM and 7.5 Tera Bytes (TB) of storage memory in UFS configuration. AVES was designed and built to solve growing problems raised from the analysis of the big data amount accumulated by INTEGRAL mission (actually about 9 TB) and due to increase every year. The analysis software used is OSA package, distributed by the ISDC Geneva. This is a very complex package consisting of dozens of programs that can not be converted to parallel computing. To overcome this limitation we developed a series of programs to distribute the workload analysis on the various nodes making AVES automatically divide the analysis in N jobs sent to N cores. This solution thus produces a result similar to that obtained at the parallel computing configuration. In support of this we have developed tools that allow a flexible use of the scientific software and quality control of on-line data storing.