

Experiences and Considerations on e-Infrastructure Development in Brazil and Latin America

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In the recent years the world has been experiencing a large growth (and dependence) on digital information. High performance computing and networking are crossing more and more the boundaries from leading edge e-science to the typical everyday access to the Internet. In this talk, we will focus on the evolving context of e-infrastructure and in Brazil and Latin America.

Brazil has gone through several stages of high performance computing and networking development, in support of the country science and technology. Today, the country counts with eight centers focused on massively parallel applications which integrate the SINAPAD – the National System of High Performance Computing. There are also a number of HPC efforts including initiatives in the areas of High Energy Physics, Oil and Gas and Climate. Grid computing is a focus of Brazilian high throughput computing projects such as the European & Latin America consortia EELA-2, HEPGrid and SPRACE collaborations with OSG, the opportunistic Grid computing project – OurGrid, the infra-structured Virtual Community Grid (VCG) project and others.

This talk will also go over science and technology initiatives which make use of high performance computing. They include the areas of biology, astronomy, medicine, weather prediction and agriculture.

We will also describe the high speed network infrastructure in Brazil – the metropolitan optical networks, the national research and education backbone from RNP and the international connectivity to RedClara, GEANT and North America.

Finally, we will talk about distributed services which support distributed computing applications in the region. We will describe the upcoming hybrid network technology which provides both end to end circuits and best IP services, which is being developed for the Brazilian NREN. The goal is to provide better quality of service for e-science, HPC and massive data applications. Other services include the public key infrastructure (PKI) for academic institutions – ICPEDU. And the perfSonar multi-domain network monitoring consortia – involving Internet2, GEANT, RNP, CLARA, Latin America and European NRENs.