

InterCondor: a Prototype High Throughput Computing Middleware for Geocomputation

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Abstract: The InterCondor system is an implementation of the concept of InterGrid. InterGrid is from the comparison of Internet and Grid. With the reference to the idea of Internet, which integrates different local networks into a global network with a certain protocol, InterGrid utilizes a set of Grid services to manage resources such as data, algorithms, and local Grid pools. In this paper we present the design, analysis and implementation of InterCondor system. The InterCondor system is an implementation of the concept of InterGrid. Condor was used as a basic local Grid computing engine. A series of Grid services are also used, which include register service, data transfer service, task schedule service, security authentication service and status monitor service, to manage the resources such as remote sensing algorithms, remote sensing data, and computing resource under the management of Condor engine. We aim at integrating Grid Service data management, task schedule, and the computing power of Condor into remote sensing data processing and analysis to reduce the processing time of a huge amount of data and long-processing-time remote sensing task by algorithms issuance, data division, and the utilization of any computing resources unused on Internet. An InterCondor system was built, which interconnects Condor pools as local Grids so that Condor can go through firework and integrate with other Grid systems. It is developed in Institute of Remote Sensing Applications, Chinese Academy of Sciences, China. Up to now InterCondor version 1.0 accomplished using java. We use Web service technology such as SOAP, XML, and WSDL to implement the system. It has a peer-to-peer architecture, so that in case that some CPE fails its function the whole InterCondor system also can work. There's no exclusive entry to InterCondor. Each CPE can be an entry. And each CPE can drive other CPEs to cooperate on one task. The current version of InterCondor only support java programs, IDL programs, and programs that can run on the windows operation system. And the security mechanism of it is SimpleCA. More supports should be developed in the future.

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