Resource Access System in High-performance Computing Environment on Third-party Application Platform

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The national-level supercomputing environment has integrated 19 supercomputing centers such as major domestic supercomputing centers, with a total computing capacity of 200+ PF and storage capacity of 200+ PB. Supported by the national key R&D plan, the environment has a certain foundation in computing platform, environmental monitoring and other aspects. Among them, software application resources are various, including chemistry, mathematics and so on. Computing platform has its own account management system. With the rapid development of high-performance computing (hpc), more and more users aware that using hpc can solve their problems. Moreover, the needs of accounts are also expanding. Therefore, third-party application platforms want to use hpc environment and resources in it. Because the account management system of each platform and the way of using it are different, it is necessary to research and develop an access system to make the platform fit the environment well. This paper focuses on how the accounts in the platform are used in the environment and how they make use of the resources. At present, the environment provides API interfaces for external invocation. Thus third-party platforms need to consider the authorization of API interfaces. In order to solve this problem, this paper proposes a simple resource access technology and develops an access system using this technology. As for account correspondence, we set a mapping between platform account and grid account. Accounts that already have grid accounts are directly bound with their grid accounts. Those without grid accounts can quickly create a grid account by filling in the account name and contact information. It is bound to the platform account at the meaning while. Accounts can directly enter the high-performance computing environment platform to submit jobs and use resources. To authorize the use of resources, third-party platforms need to apply for API interface access, focusing on APPID and APPKEY. Then, according to the permissions of each API interface, platforms will open query permissions default. Finally, according to different levels of platforms and the source of platform accounts different permissions will be set. This access system has been validated in China's Science and Technology Cloud (CSTCloud). Users who have logged through the CSTCloud can directly enter the environmental platform. This system shows that the access system we designed is feasible and the account problem and resource authorization are validated effectively. In the following educational platform will also use this access system to dock with our hpc environment. In short, the resource access system proposed in this paper is feasible. It plays an important role in accessing the hpc environment on third-party application platform and also makes the hpc to develop sustainably⬚

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