Overview

In enterprises that have private clouds, their capacity is usually designed to meet the average or peak time usage. When usage drops, the resources are very likely to keep running but stay idle. Although those resources are running idle, they are still consuming power, cooling, space and operational labor to maintain them. These costs are wasted. Considering the huge number of companies (with private cloud) in the world, the idle resources and the waste are huge.

On the other side, there are many organizations in the world that need computing resources, for example, many non-profitable organizations (NPO) and science research organizations. They may not have enough budget to purchase all of the required capacity or the procurement and installation may take a long time to complete. Therefore, they have a strong need to leverage the existing resources in the world. I would like to propose this project to bridge the requirements of such organizations with the idle resources in the enterprises.

Although we don't have the market data of how large the requirements from such organizations are, there are existing solutions in this area to meet the needs. For example, the famous SETI@home project run by UC Berkeley is a good example to unveil such cases. SETI@home calls people to donate their idle personal devices, from home lab to desktop/laptop to mobile devices. This project has been running for more than 20 years and during peak time, there were more than 1 million devices contributing computing resources to the project. Such kind of computing is also known as volunteer computing. However, SETI@home only includes personal devices. They have collaborated with companies like IBM to include employees' devices to run SETI@home clients, but there is no company contributing private cloud resources to SETI@home.

In addition, SETI@home is based on the BOINC program to distribute the jobs to the individual devices. And there are about 30 science projects using BOINC today. Our project wants to support BOINC and thus is able to contribute idle private cloud resources to the various of cutting-edge science research projects in the world.

Organizations/programs like SETI@home are the demanders of our project, while enterprises with private cloud are the suppliers. As VMware's product is the most used virtualization software in the market, our project assumes that the suppliers have vSphere in their private cloud and thus we can use vSphere API to communicate with the private cloud.

From a single enterprise viewpoint, they can contribute idle resources to multiple science research projects and from a science research project viewpoint, they can distribute computing jobs to multiple enterprises. We want to have a stats center to collect usage data.