Isolation strategies on Solaris OS (Solaris Zones), performance and scalability

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Abstract

The Solaris Zones partitioning technology is used to provide an isolated and secure environment for running applications and to virtualize operating system services. Zones run with reduced privileges to improve security and operate inside a single instance of the Solaris kernel. They are used for isolation and limitation of the services. A zone also provides an abstract layer that separates applications from the physical attributes of the machine on which they are deployed.

The aim of this work is the research study of the improvement utilization of the hardware and OpenSolaris operating system. We will study how this technology can be used to obtain isolation for a service within the abstraction of the operating system, its advantages and disadvantages and also the overhead that introduces to the scalability of the system. We will present an evaluation of how this operating system technology, also known as Solaris Zones, can be used to improve the scalability, performance, and the utilization of the system. We will examine the effect of the zones in the entire operating system performance, and the scalability of the OS depending on the number of zones.

The tests and experiments will be based on the AIM (Advanced Integration Matrix) benchmark, Intel architecture and OpenSolaris OS 2008.11.

The results of this work will demonstrate the optimization of the overhead introduced and the scalability and performance reaction of Solaris Zones in the OpenSolaris

Keywords: Solaris, performance, operating system, optimization.