Platform Computing

Customer Success Story

Infineon Optimizes and Controls their Global IT Environment

Overview

Infineon needed to meet the rapidly changing requirements of the market by clustering existing IT resources all over the world to optimize their high-performance compute farms for chip development.

Challenge

- Optimize existing IT resources and cluster into a grid environment
- Configure cluster for maximum performance
- Standardize and optimize hardware and software

Solution

- Platform LSF® software
- Platform LSF® MultiCluster
- Platform Analytics

Results

- Significantly reduced the time-to•market for chip design
- Maximized system utilization of existing resources worldwide
- Optimally customized configurations to meet the requirements of the high performance computing environment
- Reduced new hardware requirements
- Increased efficiency through standardized systems and applications worldwide

"Without grid computing it would not be possible to achieve ever shorter chip development cycles and increasingly complex structures at the same time."

Karl Pomschar
CIO

With over 25 R&D sites on three continents and more than 6,500 employees in the chip development business area, Infineon Technologies is a market leader in the semiconductor industry. To meet the requirements of chip development their compute farms needed to be highly available and powerful. Additionally, they required an optimized configuration for each task.

Infineon first implemented Platform LSF eight years ago. Today, this intelligent software solution controls and manages numerous RAM development jobs on hundreds of CPUs. The parallel use of multiple computing resources helps the company reduce development costs and provides them with a large virtual computer.

The growing number and complexity of development projects required an increased computing capacity. While in the past each developer had their own workstation, it soon became obvious that a mere expansion of CPU and RAM capacities was not sufficient to cope with the increased complexity. The vast amount of distributed compute power could no longer be managed efficiently without organizing it in a grid environment.

Standardizing and optimizing the compute farms on a worldwide basis posed an additional challenge. In the summer of 2003 Infineon started a worldwide pilot project implementing Platform Analytics to optimize system configurations.

Business Challenge

At the moment the infrastructure comprises 18 clusters worldwide. Each cluster consists of systems of different sizes running on UNIX or Linux. One of the key features of the clusters is its dynamic configuration. Each system within a cluster is associated with a profile describing the capacity and services the system provides: size of memory and CPU, speed and available licenses. The Platform LSF software uses these profiles to intelligently schedule and balance the job load amongst the machines in the cluster. The load depends on the requirements of the individual jobs, such as the complexity of design, CPU, I/O requirements or necessary tools.

The submission of jobs to the grid is done either interactively or in a batch process by thin clients and login servers. Based on the requirements, the jobs are distributed or parallelized within the grid. The grid consist of heterogeneous systems ranging from desktops to large servers with RAM capacities of more than 100 GB. "The workflow management tools enable us to utilize our compute power more efficiently," says Fritz Kink, Director of the High-Performance Computing division at Infineon. The monitoring and measuring of individual jobs, which Platform LSF offers as standard functionality, provides the ability to perform simulations and show a comparison of the resources being used.

But grid middleware not only optimizes hardware utilization. The software also benefits from it. Through the optimized routing and resource model, software licenses in the grid can be used in a highly economical way. Running software tools on the fastest hardware available enables more calls to be conducted in the same amount of time.

The clusters are available all over the world, so that developers are able to prepare and perform their tasks from any location. "Accessing the services needed is as easy as putting a plug in a wall outlet," says Fritz Kink. "As soon as their thin client and user account are set up, newly hired developers will be online within minutes. So they have immediate access to the full compute power." This is achieved through Platform LSF MultiCluster, which enables worldwide access to computing resources.

Solution

Platform LSF provides a highly effective and extremely reliable solution, acting as grid middleware for the virtualization of all cluster resources. Through the guaranteed delivery of the necessary compute power Platform LSF ensures that the best possible resources are available anytime to service applications such as design simulations and test programs.

Additionally, Platform LSF provides information on idle CPU cycles on an under-utilized compute server. These CPU cycles may then be allocated to urgent jobs so that the existing hardware can be utilized to the fullest extent.

In chip development high availability of computing resources is essential. Through powerful failover functionality Platform LSF ensures a fail-safe computing environment. Today Platform LSF is deployed in every Infineon development center worldwide. These amount to several thousand of CPUs running on Solaris and Linux systems.

Encouraged by the positive experience with Platform LSF, Infineon has started a pilot project with Platform Analytics. This IT business intelligence software is used to optimize the standardized clusters all over the world. The aim is to improve the comparability of IT resources in the large compute farms in order to make better decisions on future hardware purchases. The configuration and performance data can easily be reviewed, compared, and customized. Based on this information the most suitable platform for a specific task can be identified and replicated.

Customer Site

Infineon Technologies (www.infineon.com)
Infineon is a leading innovator in the international semiconductor industry. We design, develop, manufacture and market a broad range of semiconductors and complete system solutions targeted at selected industries. Our products serve applications in the wireless and wireline communications, automotive, industrial, computer, security and chip card markets. Our product portfolio consists of both memory and logic products and includes digital, mixed-signal and analogue integrated circuits, or ICs, as well as discrete semiconductor products and system solutions.

Platform Computing

Platform Computing is the leader in cluster, grid and cloud management software - serving more than 2,000 of the world's most demanding organizations since 1992. Our workload and resource management solutions deliver IT responsiveness and lower costs for enterprise and HPC applications. Platform has strategic relationships with Cray, Dell™, HP, IBM®, Intel®, Microsoft®, Red Hat®, Fujitsu and SAS®. Visit www.platform.com.

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