Sun Ray™ Deployments in Electronic Design Automation

White Paper
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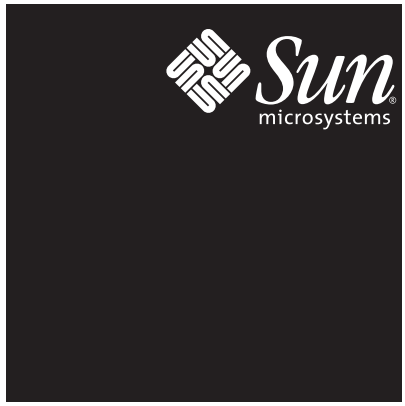

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Sun Ray™ Deployments in Electronic Design Automation

To maintain a competitive edge in the electronic design automation (EDA) marketplace, time to market is critical. That's one reason why, when most people think of EDA architectures, they think of high-powered symmetric multiprocessing (SMP) workstations that can quickly process massive amounts of data through complex applications. Two-CPU and four-CPU workstations and eight-CPU servers are not uncommon in this space; however, the tradeoffs for powerful workstations have traditionally been high acquisition costs, high administrative costs, high power bills, and underutilized computing resources.

But what if you had at your fingertips not just the power of a workstation, but the combined power of the servers in your corporate grid? What if rolling out a new engineering desktop took minutes instead of hours? What if desktop administration became a thing of the past?

This is not wishful thinking; it's a part of Sun's Sun Ray™ solution for the EDA industry.

Sun Ray — The Ultra-Thin Client

The Sun Ray architecture consists of Sun Ray thin clients, servers, and the Sun Ray Server Software that supports them. The Sun Ray system — a simple, unmanaged, low-cost device that is always on and requires no desktop administration — is sometimes called an ultra-thin client. Unlike traditional fat clients, Sun Ray thin clients do not need to be upgraded when new applications are introduced or more computing power is required. And unlike some products that *claim* to be thin clients yet still require local operating systems and local copies of application software, along with frequent upgrades and individualized, local desktop administration, the Sun Ray is a true thin client that completely virtualizes the desktop.

In addition, the Sun Ray architecture makes it easy for users — from manufacturing technicians to EDA engineers to the CEO — to access their sessions from any Sun Ray thin client in the workgroup or on the corporate LAN. With the Sun Ray smart card interface, a user can simply insert a smart card into any available Sun Ray thin client and instantaneously access an existing session or begin a new one.

For most users, this *hot desking* capability means freedom to work collaboratively and securely while mobile. In many cases, in fact, an engineer can carry a smart card instead of a laptop, notebook, or other cumbersome computing device and still access applications, file systems, remote systems, and ongoing projects at any time.

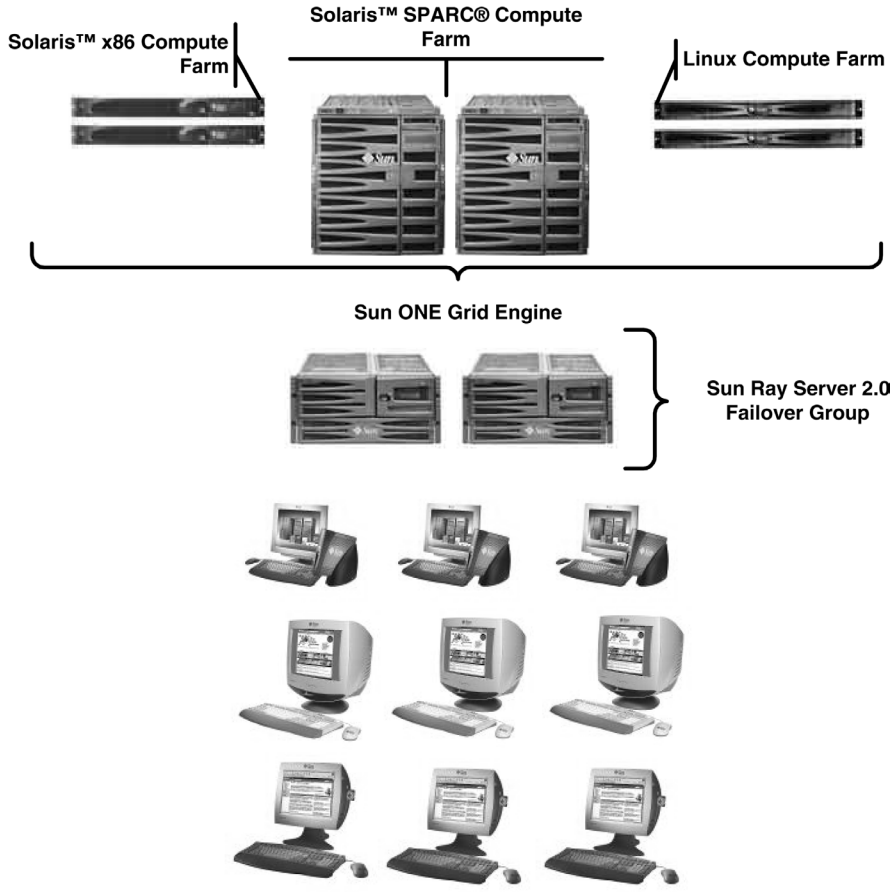
The Sun Ray 1 thin client is a compact, plug-and-work device that processes only user input and screen output. It is a "headless" device that is compatible with standard VGA monitors, and designed to allow leverage of existing IT investments.

The Sun Ray 100 thin client integrates Sun Ray functionality with a 17-inch CRT display. This all-in-one-design reduces the desktop system footprint while simplifying cabling and setup. Users gain a large clear display without bulky equipment.

The Sun Ray 150 thin client has a sleek all-in-one design, combining Sun Ray functionality with a 15-inch flat panel display. It can save valuable desktop space mounted on a wall or on a bracket with a moveable arm. It also alleviates the need for other presentation equipment with its built-in projector port.

Virtualization of the Desktop

A Sun Ray implementation moves computational resources from the desktop to the data center, and enables EDA customers to manage compute farms, server grids, and system administration from the same central location. This move also boosts utilization of these resources from the 10-20 percent range into the 80 percent range or higher. Administrators and IT managers are thus freed from many of the constraints imposed by networked PCs and other fat clients as they manage users and their sessions centrally — at the server. System administration and costly software upgrades on the desktop are completely eliminated, and administrators are freed to tackle other important projects.



If Two Heads Are Better Than One — How About 16?

As companies make greater use of compute farms and server-based applications, Sun Ray thin clients provide a compelling alternative desktop platform.

Engineers in the EDA space often have several workstations and multiple screens on their desks — perhaps a high-powered UNIX® workstation, a dual-CPU Linux box, and even a PC running Microsoft Windows. For some, a clutter of expensive equipment on the desktop means status. A Sun Ray desktop unit, however, can provide more computing power than a powerful, dedicated workstation, plus access to vital applications and considerable additional computing resources, especially with the aid of the Sun™ ONE Grid Engine.

When multiple screens are needed, the Sun Ray multihead feature enables control of as many as 16 Sun Ray systems (4 rows x 4 columns) with a single mouse and keyboard. With the Xinerama extension enabled, the monitors can be configured as a multihead group to look like a single desktop. Also, because it is the user session that is multiheaded, even a single Sun Ray is capable of accessing everything that would be displayed on a multihead configuration.

Interoperability

No matter what platform an organization's EDA tools now run on, Sun Ray thin clients enable engineers to continue to display and use all the tools they need. Sun Ray systems, designed in accord with Sun's open systems philosophy, offer a very large application base, including StarOffice™ productivity software, with no proprietary extensions. In fact, users of Sun Ray systems have access to any application developed to Web standards, written in the Java™ language, or that runs on the Solaris™ Operating System (OS).

In addition, the Sun Ray thin client provides simultaneous access to multiple platforms and applications running on other flavors of UNIX, Linux, Microsoft Windows, Windows NT, or Windows XP software. For UNIX and Linux OS-based tools, it's as easy as exporting your display. For access to Microsoft Windows tools, such as Outlook and Exchange, there is a full suite of connectivity tools from companies such as Tarantella, Citrix, and ThinSoft.

Good Batch

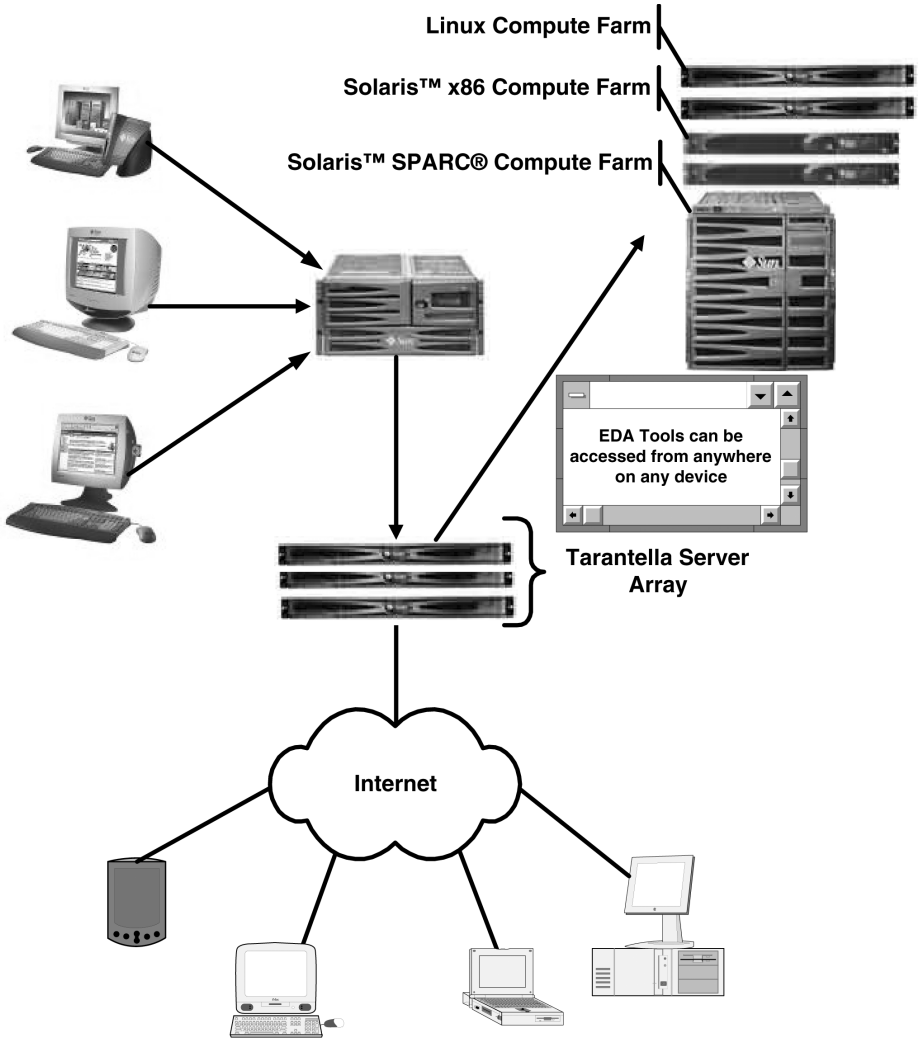
Interactive or batch applications can be run either locally on the Sun Ray server, in a controlled environment using technologies such as Solaris Resource Manager, or on server compute farms controlled by distributed resource management software such as the Sun ONE Grid Engine.

The Sun ONE Grid Engine allows users to submit jobs across a heterogeneous mix of servers: SPARC® and x86 systems running the Solaris OS, as well as x86 systems running Linux. Powerful desktops that once sat idle on engineers' desks can be added to the grid to ensure maximum CPU utilization.

EDA customers often take advantage of the Sun Ray architecture's server select feature, which enables engineers to select a server to run a job on before they log on. They can detach a session and start a new session on another server to submit batch jobs, read mail, work on documentation, or perform other work, all while their simulation continues to run on the detached session. In contrast to the realities of some other architectures, if they start a complex simulation on a Friday afternoon, they get fast results and don't have to come in over the weekend to find out whether the operating system has crashed. That can be a great convenience to the individual engineer, but what may be more important to the team or the enterprise is the ability to *complete the design cycle faster without extra effort*.

Sun Ray + Tarantella = Electronic Design Anywhere

Hot desking allows engineers to access their sessions so that they can access, check, or troubleshoot their work anywhere on the LAN. This provides a great boost for both productivity and collaboration, as well as convenience. But what if the engineer wants to check the state of a job from home or on the road?



With interoperability software from Tarantella, batch jobs can be submitted and checked from virtually any device with a Web browser as well as from platform-specific native clients. Many customers add a few low-cost Tarantella servers to their EDA architectures to allow their users to extend the virtual office all over the world.

Summary

Technical markets face unique competitive challenges today, with intense time-to-market demands as well as increasing needs for compute power, high availability, and access to resources. As a result, more companies are relying on the networked services computing model. By consolidating their compute cycles and memory at the server and in compute farms, they enable their users to share resources on an as-needed display basis.

Sun Ray zero-maintenance, zero-administration thin clients improve productivity and system utilization by providing resources on each desktop that are not only server-class but grid-class. They give EDA engineers access to advanced EDA applications and utilities from UNIX, Linux, and Microsoft Windows OS-based systems. In addition to EDA tools, legacy and traditional office productivity software is available from the same display device — without the acquisition cost or maintenance requirements of workstations or the intrinsic instability of PCs.

When coupled to a centralized compute farm that consolidates powerful desktop workstations and servers, Sun Ray thin clients provide access to additional compute cycles when they're needed, anytime, anywhere on the network.

Also, because Sun Ray clients are stateless and diskless, important work in progress, intellectual property, personal files, or other sensitive information cannot be lost through physical theft.

Finally, with the Sun Ray hot desking capability, users can access their work, or sessions, from any Sun Ray desktop in their workgroup or on the corporate LAN. With smart cards, they can suspend a session on the desktop, then resume it right where they left off, whether in the lab or conference room or at a coworker's desk. This capability means greater mobility, productivity, and collaboration for the team as well as extra convenience for each individual

For more details on Sun Ray thin clients, visit our Web site at sun.com/sunray.

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