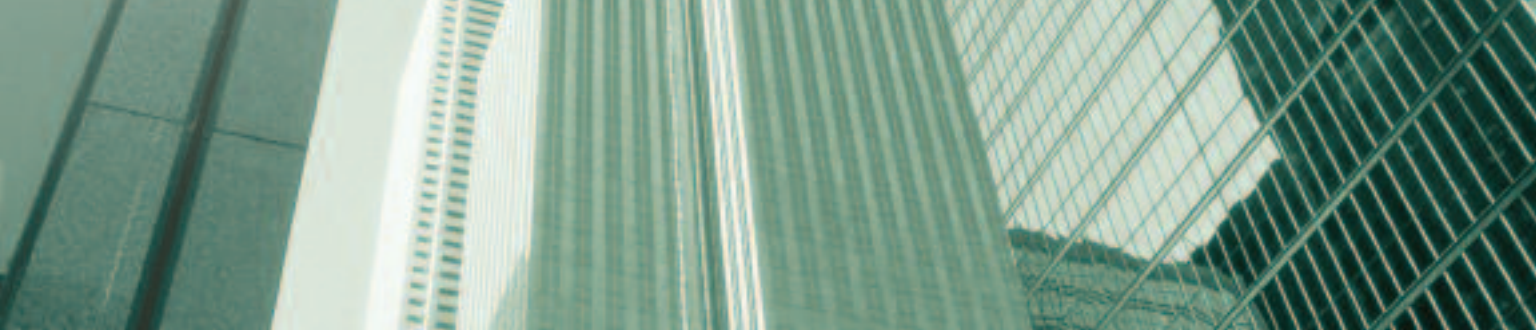




FlexFrame for Oracle:  
Putting **business**  
on the **grid**

The Fujitsu Group and Oracle

have teamed up to help companies  
**accelerate the move** to grid computing  
and the **autonomous**  
**infrastructure.**



For many companies, having their information systems up and running has become synonymous with being open for business—and for the IT departments at those companies, that has made high availability a critical issue for a growing range of systems.

At the same time, however, those IT departments have to contend with another fundamental business reality: constant change. For many companies, IT usage varies dramatically over time due to factors such as holiday or back-to-school sales, regularly scheduled business events such as payroll or end-of-month financial closings, or the redesign of business processes.

What's more, IT departments must provide both flexibility and high availability while keeping a close eye on costs and budget constraints. "Many IT organizations today need to deliver virtually constant availability, and yet manage fluctuating workloads—and

**"As grid computing continues to move into the mainstream, companies need complete solutions—and partnerships like this are vital to delivering those solutions, and creating new options for Oracle users."**

—Robert Shimp, vice president, Technology Marketing, Oracle

that is not a simple task," says Richard McCormack, senior vice president, Marketing, Fujitsu Computer Systems Corporation. "The handling of application and infrastructure availability, failover, and load scenarios in a cost-effective way is one of the most challenging tasks IT directors face."

Companies have typically dealt with that challenge by establishing server farms, which can be scaled up cost-effectively to handle larger workloads. But the maintenance of those farms can be time-consuming and expensive. In addition, keeping up with changing workloads means reassigning

applications from server to server. And if there is a system failure, recovery often requires a team of hardware, operating system, application, and network specialists. "Troubleshooting may take a painfully long time if a required expert is not available," says McCormack. "These factors affect reliability and overall quality of service, and ultimately the total cost of ownership."

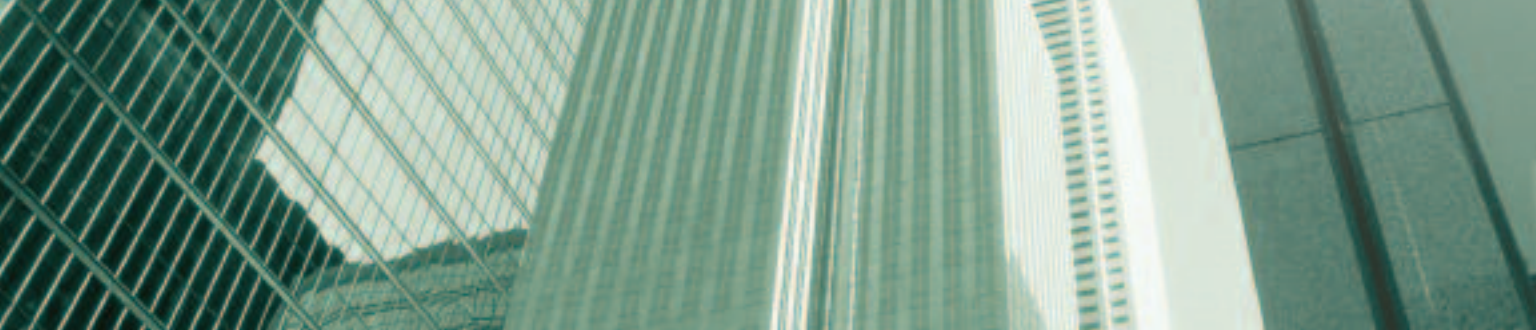
In response, many companies are exploring the use of grid computing, in which servers and storage are pooled and computing resources can be reallocated quickly to keep pace with changing workloads. Grid computing is rapidly entering the mainstream, but for many companies it is still new, and it usually requires that they piece together a variety of technologies to create grid infrastructures—which can be a challenge in its own right.

Now, however, Oracle users have a new tool for tackling that challenge: FlexFrame™ for Oracle, the first end-to-end infrastructure for Oracle grid computing. Created by Oracle and Fujitsu Siemens Computers, this solution provides a proven approach to implementing grid computing quickly and effectively—and creating cost-effective, available, and flexible infrastructures. "Both the Fujitsu Group and Oracle see grid computing as a major step forward in the evolution of IT infrastructure, and both bring unique strengths to the FlexFrame for Oracle solution," says Robert Shimp, vice president, Technology Marketing, Oracle. "As grid computing

## At a Glance: FlexFrame for Oracle

FlexFrame for Oracle provides—in one preconfigured and certified offering—a proven, complete solution for grid computing. It brings together several Oracle and Fujitsu Group technologies to provide a service-oriented architecture that enables companies to share computing resources across a virtual network of servers. These include:

- **Oracle core technologies.** The solution is based on Oracle Application Server 10g and Oracle Database 10g with Oracle Real Application Clusters. Oracle Grid Control, which is part of Oracle Enterprise Manager 10g, monitors database and application services.
- **Automation technologies.** Fujitsu Group FlexFrame for Oracle software components provide rule-based, dynamic load balancing and failover.
- **Virtualization technologies.** Fujitsu Group FlexFrame for Oracle software components enable cloning of the operating system, database, and application server software for sharing across the grid. Fujitsu Group NetBoot software provides dynamic provisioning.
- **Integration technology.** FlexFrame for Oracle Gridpack software provides optimum harmonization and interworking of the solution's various components.
- **Operating system.** Linux is supported, with others to come.
- **Hardware.** The solution runs on the Fujitsu Group's industry-standard, high-performance, fault-tolerant PRIMERGY blade servers.
- **Storage.** Either NAS or SAN filer centrally hosts customer data and the software stack; IP network infrastructure provides fast interconnection of server and central storage.



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### Bringing the pieces together

FlexFrame for Oracle is a powerful new solution that represents a significant step forward in the Fujitsu Group's TRIOLE™ global strategy for developing and deploying optimized IT infrastructures. The FlexFrame for Oracle solution implements elements of the TRIOLE strategy's three core technologies: *virtualization*, which enables companies to pool and share IT resources on demand; *automation*, or the use of computers to manage computers; and *integration*, which uses sophisticated middleware to seamlessly integrate existing and new technologies. "With these technologies, the Fujitsu Group is working to bring dramatically increased efficiency and quality to IT operations, and ultimately provide companies with autonomous IT infrastructures," says Tak Katayama, president, Global Marketing and Alliance, Product Business, Fujitsu Limited.

FlexFrame for Oracle brings together server, storage, and software components—along with automation, virtualization, and deployment technologies—in one preconfigured and certified offering. Designed to support a range of consolidation and business integration initiatives, the solution offers companies a service-oriented architecture that enables any Oracle-based service to run on any server at any time. FlexFrame for Oracle is based on Oracle Application Server 10g and Oracle Database 10g with Oracle Real Application Clusters. Oracle Grid Control software, which is part of Oracle Enterprise Manager 10g, is used to monitor the solution's application server and database services, and constantly tracks factors such as response times, overall performance, loads, and availability of services and applications.

FlexFrame for Oracle also draws on Fujitsu Group software to automate many key server operations. These FlexFrame for Oracle software components run on the Fujitsu Group's industry-standard servers and can monitor the performance of all the servers in a farm. If an issue arises, such as the failure of a server, the software detects the change in operations and automatically triggers corrective actions based on rules that have been predefined by IT administrators. For example, the system can automatically direct the rebalancing of workloads across servers, provide an additional server to handle peaks in workloads, or in the event of a server failure, quickly restart applications on a free server.

The Oracle and Fujitsu Group software components work in a complementary fashion to provide intelligent system control for hardware and software. As a result, it is easier to stay ahead of fluctuations in workloads and ensure the high availability of business-critical applications—without the need for complex, hot standby clusters.

FlexFrame for Oracle also relies on the Fujitsu Group's software for virtualization. This software allows every Oracle application service to be provided to any server in the infrastructure. The complete software package (operating system, middleware, database, and application) is available on

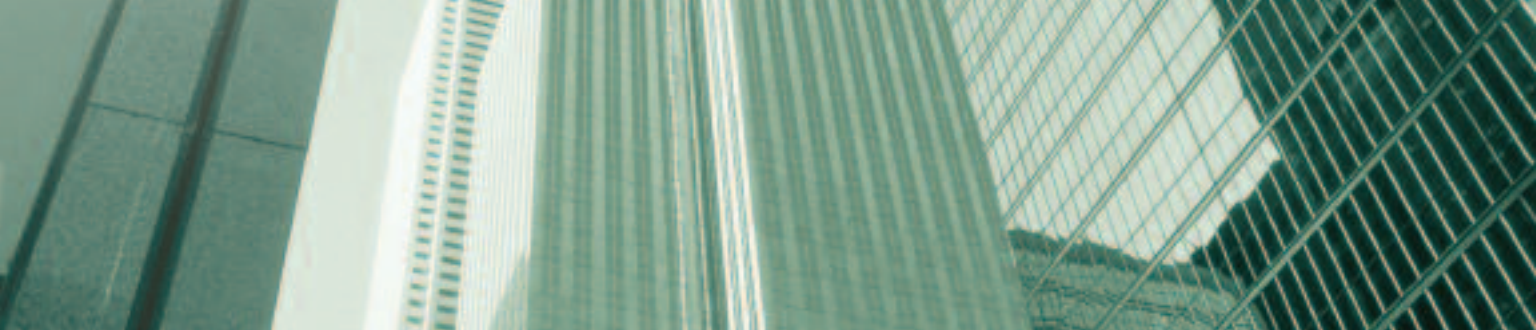
a central storage system—integrated via IP network—and distributed dynamically by the Fujitsu Group's NetBoot software. As a result, any server in the network can be configured for any application service—usually within a few minutes—from a central location. With this approach, no time is spent installing the operating system on servers. In addition, updates and patches can be tested without incurring downtime—and they can be available on all servers within seconds after a successful test run.

In terms of hardware, the solution runs on the Fujitsu Group's industry-standard, high-performance, fault-tolerant servers, including PRIMERGY® blade servers. PRIMERGY servers provide an ideal platform for FlexFrame for Oracle installations, not only because of their performance, but also because their hardware architecture allows for easy maintenance and scaling of server farms. In addition, PRIMERGY blade servers are compact in size and feature a modular design, making them a good fit in the flexible grid platform. PRIMERGY servers also provide fault-tolerance features that help further ensure reliable operations for all business-critical applications.

Finally, to help companies get the most out of the FlexFrame for Oracle solution, Fujitsu Siemens Computers offers up-front consulting and a range of services covering the



The FlexFrame for Oracle solution runs on the Fujitsu Group's industry-standard, high-performance, fault-tolerant PRIMERGY blade servers.



entire solution life cycle, from design and building to operation and maintenance. Fujitsu Siemens Computers also provides innovative ROI Services that make it possible to evaluate the execution of an ongoing project in detail, make precise predictions about the eventual return on investment of an initiative, and manage and control implementation projects.

#### **Agile, autonomous, and aligned for results**

By bringing all these components together, FlexFrame for Oracle gives companies an agile infrastructure of shared resources—managed centrally by intelligent controls—that can adapt to changing demand, and support any custom or standard applications based on Oracle 10g. As a pretested, complete solution, FlexFrame for Oracle reduces the time and risk of implementing grid infrastructures. And once it is in place, it can help the IT department—and the business as a whole—achieve several key benefits, such as:

- **Increased flexibility.** With pooled servers and storage and the automatic, policy-based, on-demand allocation of CPU power to application and database service, companies can adapt smoothly to changing workloads while optimizing the utilization of resources.
- **Improved service quality.** Data centers can guarantee defined service levels—and ensure high availability—because the solution continuously monitors the health of the overall system, allowing it to quickly identify and resolve problems before service levels fall.
- **Lower total cost of ownership (TCO).** The solution helps reduce costs through the use of the Fujitsu Group's industry-standard PRIMERGY servers; the ability to consolidate servers; and the automation and simplification of administration, which reduces the need for human intervention.

### **About the Fujitsu Group**

The Fujitsu Group is a leader in IT and communications solutions for the global marketplace. The Group's technologies cover a range of personal and enterprise computing needs—from handhelds, notebooks, and PCs to workstations, servers, mainframes, and storage solutions, as well as a full range of IT services. The Fujitsu Group serves customers in most regions worldwide: Fujitsu Limited and its subsidiaries cover Japan and Asia Pacific; Fujitsu Siemens Computers focuses on markets in Europe, the Middle East, and Africa; and Fujitsu Computer Systems Corporation operates mainly in North America.

For more information:

- **Fujitsu Limited:** [www.fujitsu.com](http://www.fujitsu.com)
- **Fujitsu Siemens Computers:** [www.fujitsu-siemens.com](http://www.fujitsu-siemens.com)
- **Fujitsu Computer Systems Corporation:** [us.fujitsu.com/computers](http://us.fujitsu.com/computers)

"For FlexFrame for Oracle, we expect a TCO reduction similar to that of Fujitsu Siemens Computers' already established FlexFrame solutions, which is an average TCO reduction of about 30 percent and a maximum reduction of 60 percent, compared with traditional IT infrastructures," says Dr. Rolf Strotmann, vice president, Software and Solution Business, Fujitsu Siemens Computers. "So the solution actually lets you increase service quality while decreasing costs."

FlexFrame for Oracle is a landmark in the effort to create the autonomous infrastructure—but if history is any indication, there will be more to come. Oracle and the Fujitsu Group have worked together on a wide range of projects through nearly a decade and a half, and that partnership will continue to focus on helping Oracle users manage IT efficiently and effectively. "FlexFrame for Oracle is a good example of the alignment of vision and strategy of these two companies," says Strotmann. "In the end, we are both working toward the same goal: to help companies support their business with dynamic, flexible, and cost-effective data centers." •

### **Resources**

For more information, e-mail [team.oracle@fujitsu-siemens.com](mailto:team.oracle@fujitsu-siemens.com), or visit the following Web sites:

#### **FlexFrame for Oracle**

- [www.fujitsu-siemens.com/ff4oracle](http://www.fujitsu-siemens.com/ff4oracle)

#### **TRIOLE**

- [www.fujitsu.com/triole](http://www.fujitsu.com/triole)
- [www.fujitsu-siemens.com/triole](http://www.fujitsu-siemens.com/triole)
- [www.computers.us.fujitsu.com/triole](http://www.computers.us.fujitsu.com/triole)

#### **Oracle and Fujitsu**

- [uc.fujitsu.com/oracle](http://uc.fujitsu.com/oracle)
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- [us.fujitsu.com/computers/oracle](http://us.fujitsu.com/computers/oracle)
- [solutions.oracle.com](http://solutions.oracle.com) Enter "Fujitsu"