



The Simpler—and Smarter— Infrastructure

With its TRIOLE strategy, the Fujitsu Group is delivering
a flexible foundation for grid computing—and mapping out
a clear path for tomorrow

TRIOLE is focused on increasing enhancing agility, and

Business moves fast, and it's not always easy for IT to keep up. Just consider the XYZ company, a hypothetical online electronics distributor, which recently ran a half-off sale on new cell phones—and suddenly saw traffic at its Web site double. In response, the IT group scrambled to install additional Web servers, extend the application infrastructure, and configure the database server. It all took well over a day to complete, and the result was lost business, frustrated customers, and angry senior managers.

The problem is that today's IT infrastructures are complex, labor-intensive, and difficult to change. Analysts point out that corporate IT professionals spend three-quarters of their

Indeed, with TRIOLE-based technology, the XYZ company's IT group could have added the additional Web servers it needed, expanded its applications, and extended its databases in less than half an hour—without an army of administrators.

TRIOLE builds on the Fujitsu Group's experience of more than 50 years in enterprise and industry-standard infrastructures and applies that expertise to the Group's Intel-based PRIMERGY™ servers and PRIMEPOWER™ servers based on the Solaris™ Operating Environment, as well as its storage solutions. "Mobilizing the Fujitsu Group's global resources around TRIOLE will help our customers optimize their IT infrastructures in ways that will

products that companies need today for a flexible, efficient infrastructure," says Joseph Reger, CTO and CSO of Fujitsu Siemens Computers. "We're also providing a clear road map for the future, to enable companies to keep achieving further gains in efficiency, agility, and reliability in all parts of an IT infrastructure."

Virtualization: Pooling the Resources

Virtualization separates applications and data from hardware, which can then be pooled and assigned to various applications as needed. This makes it easy to adapt the IT infrastructure to changing workloads and to increase the overall utilization of the hardware. "Analysts note that over the next few years, virtualization technologies should help improve CPU utilization rates from 15 to 25 percent today to more than 40 percent, on average," says Fujitsu Limited's Mitsuhamma. The Fujitsu Group offers several fundamental technologies to support virtualization, including:

- *Centralized software deployment*, which enables the rapid distribution of software to numerous servers, allowing companies to have an application up and running on several servers, or shifted from one to another, in a matter of minutes.
- *Dynamic partitioning*, in which larger server systems are divided into smaller units using either hardware functionality or resource-management software. Administrators can easily allocate to these smaller units without having to shut the system down.
- *Dynamic load balancing*, which automatically controls the allocation of an application workload across servers. This is especially useful when scaling out to increase the performance of an application.

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—Genichi Mitsuhamma, general manager, TRIOLE Business Development Division, Fujitsu Limited

time on routine day-to-day operations, rather than improvements and changes. And because of the inflexibility of the infrastructure, companies are typically using only about 25 percent of their Windows/UNIX servers' capacity. As a result, IT—which has great potential to enable speed and competitiveness—is actually viewed as an obstacle to business change.

But it doesn't have to be that way. To help companies eliminate such problems, the Fujitsu group of companies has created TRIOLE™, a global strategy for developing and deploying optimized IT infrastructures that can keep IT in step with the business.

accelerate responsiveness to market changes and meet the most pressing management challenges," says Genichi Mitsuhamma, general manager of Fujitsu Limited's TRIOLE Business Development Division.

TRIOLE, which encompasses the Group's long-term Business Critical Computing efforts, is focused on increasing efficiency, enhancing agility, and improving business continuity. The strategy is based on three core concepts: virtualization, automation, and integration. Today, TRIOLE delivers a range of concrete solutions that embody these concepts, and more are being added to the lineup. "Under TRIOLE, we have the

efficiency, improving business continuity.

The Fujitsu Group has already brought virtualization to many of its technologies. For example, centralized software deployment is now available for PRIMERGY servers. Hardware partitioning up to a granularity of two processors can be performed with PRIMEPOWER servers. And Fujitsu Limited

Fujitsu Siemens Computers' AS (Adaptive Services) Control Center, which constantly monitors system availability and application workloads. Using predefined rules, the AS Control Center automatically triggers actions to adjust the system to changes in the environment. The Systemwalker Resource

installation in response to changing workloads; new automatic dynamic load balancing and rule- or priority-based allocation features for the FlexFrame solution; and automatic workload-dependent allocation capabilities for PRIMEPOWER resources. It also plans to enhance the automated operations of IT systems by combining the AS Control Center and the Systemwalker Resource Coordinator.

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has developed and markets Systemwalker Resource Coordinator software that plays a central role in virtualization—managing not only servers, but also storage, networks, and middleware software.

On a larger scale, the Fujitsu Group has created and markets FlexFrame™ for mySAP Business Suite™, an architecture for mySAP environments running on Oracle databases. FlexFrame replaces the traditional systems environment—with its numerous dedicated servers—with a modular approach based on PRIMERGY servers, including blade servers, and Network Appliance storage devices. The solution simplifies the infrastructure while offering on-demand provisioning and other automatic features, and reduces total cost of ownership by more than 30 percent.

Automation: Letting the Computer Do It TRIOLE is based on the idea that IT should be used to manage IT, reducing the need for human attention to routine tasks. To that end, the Fujitsu Group offers a variety of automated system-administration solutions. These include the Systemwalker Resource Coordinator provided by Fujitsu Limited and

Coordinator monitors hardware and software resources and automatically performs maintenance operations in response to any failure. The Group's technology also lets companies automatically install blade servers through remote-deployment capabilities. This reduces installation time from the usual four to five hours per server to about 20 minutes per server. In tests, the installation of more than 200 PRIMERGY blade servers was performed in less than four hours.

In the near future, the Fujitsu Group plans to provide a solution for automated server

Integration: Old and New

In a changing world, companies must be able to integrate existing and new applications as smoothly as possible. The Fujitsu Group supports streamlined integration through sophisticated middleware that enables companies to weave systems and applications into an overall IT infrastructure. These include the Fujitsu Siemens Computers openSEAS solution, which is used to integrate legacy systems and applications with new solutions, as well as Web and mobile environments, allowing companies to change IT quickly while protecting past investments.

The Group is also enhancing integration with the use of tested "building blocks," which are configurations of its selected servers, storage devices, and networking and

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
- Fujitsu Siemens Computers: www.fujitsu-siemens.com
- Fujitsu Computer Systems Corporation: us.fujitsu.com/computers

Collaborating for Business Grids

The Fujitsu Group participates in a number of consortiums and alliances around the world that promote the advancement and use of grid technologies.

In terms of consortiums, Fujitsu has been a key member of the **Global Grid Forum (GGF)** from its founding and is co-chair of the forum's **Open Grid Services Architecture (OGSA)** working group. The Fujitsu Group also co-chairs the **Web Services Resource Framework Technical Committee (WSRF-TC)** of the **Organization for the Advancement of Structured Information Standards (OASIS)**, which is working to define a set of royalty-free, related, interoperable, and modular specifications in grid infrastructure.

Earlier this year, Fujitsu Siemens Computers and Oracle joined several other major technology companies to found the **Enterprise Grid Alliance (EGA)**, a consortium that aims to accelerate the deployment of grid computing and help establish clear directions for grid-related industry standards.

Grid computing connects pools of computers, storage, and networks, making it possible to dynamically allocate resources based on changing needs. The EGA is focusing on the rapidly evolving business use of such grids, which are well established in the academic, research, and technical fields. "In close coordination, the members of the EGA will create open, interoperable enterprise grid computing solutions and

increase the adoption of enterprise grid computing," says Donald Deutsch, president of the EGA and vice president of Standards Strategy and Architecture at Oracle.

The EGA will address obstacles that organizations face in moving to and using enterprise grids by looking at best practices and solutions that are open and interoperable. By focusing exclusively on the needs of enterprise users, the alliance will enable businesses to realize the many benefits of grid computing, such as faster response to changing business needs, better utilization and service level performance, and lower IT operating costs.



For more information about the EGA, visit www.gridalliance.org.

software products along with independent software and hardware vendors' products. These building blocks will be pretested for compatibility and documented in templates—all of which will help guarantee the fast implementation of IT innovations at reduced risks and lower costs.

As that building-block approach suggests, the TRIOLE integration strategy includes technologies from multiple vendors. "In fact, close cooperation with our software, hardware, and service and integration partners is an essential element of TRIOLE," says Genichi Mitsuhashi. To enhance integration, the Fujitsu Group works with Oracle—a longtime key partner for the Group—as well as with companies such as Network Appliance.

Oracle and the Fujitsu Group have cooperated on several fronts for more than 12 years, and that relationship is continuing. "In particular," says Reger of Fujitsu Siemens Computers, "the TRIOLE strategy and Oracle's grid initiatives are proving to be a good fit, with TRIOLE essentially delivering the platform for the consolidated, flexible IT infrastructure, and Oracle addressing the database and applications portions." In addition, Oracle

Application Server 10g has been fully integrated into the openSEAS product suite, and the two companies recently announced that they are launching joint sales and marketing activities for openSEAS.

"The explicit integration of partner products is a very important element of TRIOLE and a proof point for the strategic nature of the concept," says Benny Souder, vice president of Distributed Database Development at Oracle. "Consolidated and fully integrated infrastructure has now started to be the winning approach for enterprise IT and will soon be the dominating paradigm."

Altogether, TRIOLE is designed to make the journey to that winning approach faster and easier. "Over the years, the Fujitsu Group has amassed a wealth of knowledge in the implementation and management of comprehensive IT solutions," says Richard McCormack, vice president of product and solution marketing for Fujitsu Computer Systems. "We are able to combine this real-world experience with best-of-breed technologies to deliver highly adaptive IT solutions that help customers reduce TCO, improve service levels, and increase business profitability." •

Resources

Oracle and Fujitsu

- uc.fujitsu.com/oracle
- www.fujitsu-siemens.com/oracle
- us.fujitsu.com/computers/oracle
- www.oracle.com/partnerships/hw/fujitsugroup

TRIOLE

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