Oracle Application Server 10g Java and Web Services

*Accelerate Development and Deployment of Service-Oriented Applications*

*September 2005*
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EXECUTIVE OVERVIEW
As enterprise applications evolved from a client/server to an Internet computing architecture, and rapidly grew in complexity, many information technology departments deployed enterprise applications using a fragmented, piecemeal middleware infrastructure. The resulting middleware complexity represents nearly 50% of the information technology costs in organizations today. Further, 60% of organizations consider their enterprise application infrastructure an impediment to their ability to meet business requirements. Productivity and performance have suffered as users struggled with the applications built on these infrastructures. Therefore, enterprises require application infrastructure that delivers: (i) flexible applications (ii) adaptable business processes (iii) actionable business insight (iv) consolidated information management (v) collaborative online workplaces and (vi) better security and ownership experience. In response, especially to achieve flexible applications and flexible business processes, enterprises are evolving their applications from being monolithic, closed systems to being modular, open systems with well-defined interfaces. This trend in application architecture, called service-oriented architecture (SOA), represents a fundamental shift in the way new applications are designed, developed, and integrated with legacy business applications. Oracle Fusion Architecture builds on SOA to address the broader set of identified needs by providing a blueprint for creating this next generation infrastructure. Oracle Fusion Middleware enables Oracle Fusion Architecture with a complete set of products that provides a comprehensive technology foundation. To solve the challenge of middleware complexity, Oracle created an entirely new class of systems software as part of Oracle Fusion Middleware — an Application Platform Suite (APS)— a comprehensive, unified suite of standards-based middleware components.

Oracle Application Server 10g, an integral component of Oracle Fusion Middleware, is the industry’s most comprehensive and most cohesive SOA platform. It consists of four important solution components: (i) Oracle Containers for J2EE – a comprehensive, J2EE-based service-oriented architecture platform to develop and deploy simple and composite Web services, (ii) Oracle JDeveloper – an integrated J2EE development environment to develop, compose, and debug Web services, (iii) Oracle Application Development Framework (ADF) – an SOA framework based on the Model-View-Controller design pattern designed to dramatically improve developer productivity, and (iv) Oracle Toplink – an object-relational mapping solution that simplifies how J2EE applications map to and access relational and XML-oriented data. The SOA platform exploits grid computing architecture to allow services to be deployed on large numbers of low-cost, modular servers and storage with industry-leading performance, scalability, and availability. It exploits an identity management infrastructure to
centralize identity and access management and to federate identity for Web services. And it applies a common systems management infrastructure to monitor and manage systems and services centrally.

Service-oriented architecture can improve your organization’s ability to predict and respond to market dynamics, it can enhance your organization’s productivity, and it can dramatically simplify your information technology environment, while enabling you to exploit your existing investments. Oracle Application Server 10g provides the industry’s most complete, productive, open, and mission-critical service-oriented architecture platform. It is designed to be modular (to allow you to use only what you need), open (to interface with your existing investments), and integrated (to provide greater value the more you use). Oracle Application Server 10g is used by more than 20,000 organizations to run their businesses. Regardless of your organization’s size, the complexity of your IT infrastructure, or the increasing demands of your business, Oracle Application Server can provide the edge you need in today’s competitive business environment.

INTRODUCTION

With the advent of the Internet, enterprise applications evolved from a client/server to an Internet computing architecture, growing rapidly in complexity as a consequence. Faced with this architectural shift and with ever-changing business pressures, many information technology departments deployed enterprise applications using a fragmented, piecemeal software infrastructure called middleware. The resulting middleware complexity represents nearly 50% of IT costs in most organizations. Further, 60% of organizations today consider their enterprise application infrastructure an impediment to their ability to meet business requirements. Enterprises are also evolving their applications from being monolithic, closed systems to being modular, open systems with well-defined interfaces. This new application architecture, called service-oriented architecture, represents a fundamental shift in the way new applications are being designed and developed, and the way in which they are being integrated with existing legacy systems and business applications.

"Modern applications are more powerful and more agile, but also more complex, than ever. To their core application server offerings, the current leaders are adding support for business process management, services-oriented architecture and Web services, composite integrated applications, multichannel applications, and event-driven architecture."
To solve the challenge of middleware complexity, Oracle created an entirely new class of systems software — an Application Platform Suite (APS) — a comprehensive and integrated enterprise application infrastructure based on service-oriented architecture (SOA). In so doing, Oracle was the first software provider in the industry to offer a solution to middleware complexity. Oracle Application Server 10g Java and Web Services, an integral component of Oracle’s APS, offers the industry’s most comprehensive and most cohesive SOA platform. It has been designed to exploit two important technology trends — service-oriented computing and grid computing — to offer you the best total value of opportunity.

- **Service-Oriented Architecture** — A software architecture that facilitates the development of enterprise applications as modular business services. Oracle Application Server 10g provides a comprehensive SOA infrastructure to enable you to develop, wrap, orchestrate, provision, manage, secure, federate, discover, and access enterprise applications as services. Service-oriented computing can provide you with a flexible enterprise application infrastructure.

- **Grid Computing** — A software architecture that coordinates the use of large numbers of low-cost, modular servers and storage to act as one large computer. Oracle Application Server 10g is the industry’s first application server to support grid computing, allowing you to use low-cost modular servers and storage to run enterprise applications. You can start small; you can use low-cost computers; you’ll have less excess capacity; and you can add capacity when you need it. Grid computing can dramatically lower your information technology costs and reduce complexity.

- **Best Total Value of Opportunity** — Oracle Application Server 10g provides you with the best total value of opportunity: a single application development framework to improve developer productivity, a single cohesive product architecture to reduce middleware complexity, and a single provisioning and management tool to reduce operational and management costs. You can reduce middleware complexity, deliver projects faster, and save costs on hardware, storage, operations, and management.

**BUSINESS CHALLENGES**

Today, every organization is faced with the need to predict changes in the global business environment, to rapidly respond to competitors, and to best exploit organizational assets to prepare for growth. Your enterprise application infrastructure can either help you meet these business imperatives or it can impede your ability to change. To help you, your infrastructure must:

**Improve Your Ability to Predict and Respond to Change**

By improving your organization’s visibility to business events; by enabling you to develop and roll out new business services quickly; by modernizing your legacy systems and applications; and by helping you to optimize business processes in response to market dynamics.
**Improve Organizational Productivity**
By facilitating better decisions with accurate business intelligence; by helping employees to find the information they need and to share it collaboratively with others; and by providing employees and customers with the information they need when and where they need it.

**Simplify Your Information Technology Environment**
By being provisioned, deployed, monitored, and managed as a single cohesive infrastructure.

**Leverage Existing Investments**
By being modular, open, and extensible to allow you to adopt it in a heterogeneous environment without needing to remove or replace your existing systems.

**ORACLE’S VALUE PROPOSITION**
Oracle Application Server 10g is the industry’s most comprehensive and most cohesive SOA platform. It consists of four key solution components:

- **Oracle Containers for J2EE** – A comprehensive, J2EE-certified service-oriented architecture platform to develop and deploy simple and composite Web services
- **Oracle JDeveloper** – An integrated J2EE development environment to develop, compose, and debug Web services
- **Oracle Application Development Framework (ADF)** – An SOA framework based on the Model-View-Controller design pattern and designed to dramatically improve developer productivity
- **Oracle TopLink** – An object-relational mapping solution that simplifies how J2EE applications map to and access relational and XML-oriented data

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“The emergence of SOAs and grid computing are essential to making the agile enterprise a reality. By building Web services for enterprise grid computing, applications become easier to maintain, manage, access and integrate to respond to changing business needs.”

Gartner Group, as cited in Oracle® JDeveloper 10g Enhances Productivity in Grid and Service-Oriented Architectures, Oracle Press Release, April 2004

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**Oracle Application Server 10g – Java and Web Services**

The SOA platform exploits **grid computing** architecture to allow services to be deployed on large numbers of low-cost, modular servers and storage with industry-leading performance, scalability, and availability. It exploits an **identity management** infrastructure to centralize identity and access management and to federate identity for Web services. And it applies a common **systems management** infrastructure to monitor and manage systems and services centrally. Oracle Application Server 10g can improve your organization’s ability to predict
and respond to market dynamics, it can enhance your organization’s productivity, and it can dramatically simplify your information technology environment, while allowing you to exploit your existing investments.

**Improve Your Ability to Predict and Respond to Change**

Oracle Application Server 10g Java and Web Services provides comprehensive service-oriented architecture facilities to improve your organization’s ability to predict and respond to changing market forces. Web services can be developed using Oracle JDeveloper or Oracle ADF and deployed on Oracle Containers for J2EE (OC4J). Oracle’s service-oriented architecture platform provides comprehensive facilities to create, compose, orchestrate, provision, deploy, manage, secure, and federate Web services.

**Create Web Services — Increase Agility with SOA**

Oracle’s SOA infrastructure provides a comprehensive runtime platform for Web services, including:

- Certified support for J2EE 1.3 and J2EE 1.4
- Comprehensive support for J2EE services, including JTA, JCA, JMS, JNDI, JavaMail, MDB, and JAX-RPC
- Comprehensive Web services infrastructure, including WS-I Basic Profile–compliant SOAP and WSDL generation tools, supporting SOAP 1.1 and 1.2 and WSDL 1.1
- A UDDI V3 registry
- A comprehensive SOA platform with support for WS-Reliability, WS-Addressing, WS-Security and REST
- A Web services management infrastructure for policy management and policy enforcement
- Support for rpc/encoded and document/literal style Web services
- Support for SOAP over JMS and HTTP

**Compose Web Services — Maximize Business Application Connectivity**

Oracle’s SOA infrastructure also provides the ability to wrap legacy systems and access business applications using Web services. These facilities are designed to allow users to create “composite applications” by “wrapping” existing legacy systems and business applications with service interfaces. A variety of systems are supported, including:

- Legacy systems, including CICS, VSAM, IMS, IMS DB, and Tuxedo
- Relational databases, including Oracle Database, Microsoft SQL-Server, Informix, Sybase, IBM DB/2, and IBM DB/2-UDB, including database queries and stored procedures
- Business applications, including SAP R/3, mySAP, Oracle E-Business Suite 10.7, 11.0, and 11i, Siebel, Siebel 2000, Peoplesoft, and JD-Edwards
- Generating Web Service interfaces from a variety of J2EE artifacts, including Java classes, Java servlets, stateful and stateless session EJBs, entity beans, JMS, and message-driven beans
Orchestrate Web Services

Web services orchestration means creating a multistep business process that invokes one or more Web services as part of executing the process. To ensure that business process definitions are portable and interoperable in a multivendor environment, Oracle supports the emerging Web services orchestration standard called BPEL4WS (Business Process Execution Language for Web Services). Oracle offers the industry’s first BPEL 1.1–compliant business process management engine. It allows you to model business process definitions in a graphical modeling environment, to capture these definitions, and to execute them on Oracle’s Web services platform.

Oracle BPEL Process Manager has two important features: first, it is a model-based system, allowing you to capture business process definitions for reuse and customization easily and efficiently; secondly, unlike other business process management engines, which have legacy architectures that only support export and import of BPEL definitions, Oracle’s engine is the only native BPEL process manager. This provides both performance and scalability advantages over other solutions.

Improve Your Organization’s Productivity

Eighty-two percent of organizations indicate that improving productivity is central to improving their global competitive position. Oracle Application Server 10g Java and Web Services enhances your productivity with easy-to-use development tools and less complexity in the technology stack. It allows you to improve on-time project delivery, to maximize developer efficiency by reducing time spent on infrastructure, to lower training time by making Java development easier, and to improve productivity without compromising choice. The key components that facilitate productivity improvements are:

Oracle JDeveloper

Oracle JDeveloper is a widely adopted Java integrated development environment (IDE). It provides a very rich set of facilities to:

- Develop, debug, profile, and optimize Java and J2EE applications
- Package, deploy, profile, and tune J2EE applications both on Oracle Application Server and on other application servers
- Publish J2EE and legacy systems, including database stored procedures as Web services
- Compose and orchestrate Web services

Oracle Application Development Framework (ADF)

Oracle ADF provides a 100% J2EE standards–based framework based on the Model-View-Controller design pattern to dramatically improve developer productivity. It combines visual and declarative development capabilities with prebuilt runtime libraries that implement J2EE design practices, making J2EE development accessible to developers who may not be J2EE experts. Oracle’s own e-business suite is developed using Oracle JDeveloper and Oracle ADF, demonstrating ADF’s robustness for large-scale projects. Oracle’s e-business suite development organization found a 56% improvement in productivity when they switched from writing J2EE programs natively to using Oracle ADF. Further, unlike other frameworks

" [Oracle ADF] makes JDeveloper more attractive to people who are more mainstream developers. By reducing complexity and automating development steps, JDeveloper 10g will help developers — even those with little experience with Java coding — build more enterprise-class J2EE software and Web services."

Oracle’s Application Development Framework Delivers Productivity and Choice of Methodology in One Development Environment, IDC, May 2004
that lock you into a specific set of technology choices and a specific application server, Oracle ADF provides you *Productivity with Choice*.

- **Model** – The model can be implemented using standard Enterprise JavaBeans, Plain Old Java Objects, TopLink, or ADF Business Components.
- **View** – The view can be implemented using JavaServer Pages, JavaServer Faces, or J2ME.
- **Controller** – Oracle ADF supports the popular Struts framework, as well as the JavaServer Faces controller.
- **Application Servers** – Oracle ADF applications can be deployed on Oracle, BEA, IBM, and JBOSS application servers.

**Oracle TopLink**

Service-oriented applications access information from relational databases and XML data stores (file systems, legacy systems, and relational databases). Mappings between database schemas and J2EE applications can be relatively simple (one schema to one object) or complex (many schemas to many objects), affecting how fast applications run and how easy they are to change. To solve this problem, Oracle offers TopLink — the industry’s leading object-relational mapping solution. TopLink provides a visual mapping tool to relate a particular schema or table to a particular set of Java objects, capturing the mapping in an XML file, which makes it easy to maintain and evolve when applications change. TopLink supports a number of different persistence models, including Plain Old Java Objects and Enterprise JavaBeans (both container-managed and bean-managed). And TopLink makes applications faster and easier to maintain.

**Simplify Your Information Technology Environment**

Middleware complexity represents nearly half of an organization’s IT costs. Oracle Application Server 10g exploits grid computing to provide unmatched performance, scalability, and high availability using commodity hardware and storage. It saves costs by lowering computing capacity requirements and enabling modular, inexpensive capacity growth. It also centralizes security and systems administration to simplify management and lower costs.

**Performance and Scalability — With Commodity Hardware**

Oracle Containers for J2EE exploits grid computing technologies to provide unmatched performance and scalability on commodity hardware. These facilities include:

- **Performance** – *Run the Fastest on Commodity Hardware* – Oracle Application Server has a number of performance optimizations, such as threading, asynchronous I/O, compact XML, and optimized database access drivers, designed to improve J2EE performance. It also provides a variety of integrated object-caching technologies, including data caching, Java object caching, and Web caching, to improve J2EE performance. Oracle’s leadership for three years in all major industry benchmarks (SpecJAppServer and ECPerf) demonstrates that Oracle’s J2EE server outperforms the competition on all hardware architectures in price and price/performance.
• Performance Monitoring and Service-Level Monitoring — Oracle Application Server is instrumented with Dynamic Monitoring Service (DMS), which provides more than 90 fine-grained performance metrics on any application. DMS makes it easy to identify bottlenecks and to tune applications without modifying code. DMS metrics are integrated with the application profiler within JDeveloper, making it easy to profile and optimize J2EE applications. Finally, Oracle Application Server also provides end-to-end service-level monitoring facilities, allowing you to measure and optimize end-user response times for Web services.

• Dynamic Scalability — Scale Up and Scale Out — Oracle’s Resource Manager and Dynamic Workload Manager provide a variety of workload distribution algorithms to distribute workloads across many application servers based on a specific application’s performance and scalability characteristics. These resource and workload managers also provide integrated clustering and failover facilities, allowing capacity to be added on demand to a resource-constrained system.

Maximum Availability — Zero Planned and Unplanned Downtime
Oracle Containers for J2EE exploits a variety of high-availability algorithms to eliminate all aspects of planned and unplanned downtime for mission-critical J2EE applications and Web services. These algorithms are part of a comprehensive maximum availability architecture, designed to provide the industry’s fastest recovery time from failures. They include:

• Zero Planned Downtime — Reduce Downtime for Maintenance — Oracle Application Server provides a number of facilities to reduce planned downtime, including the industry’s only fully automated backup and restore capabilities, the use of point-in-time configuration baselines to eliminate downtime from human errors, and automated rolling upgrade facilities to reduce downtime during system upgrades and patching.

• Zero Unplanned Downtime — Reduce Downtime from Faults — Oracle Application Server provides a variety of failure detection, clustering, and fault recovery technologies to eliminate unplanned downtime. These technologies include a process management and failure notification architecture; an integrated fast restart fault recovery architecture; a common clustering and failover framework; and certification with a variety of hardware-clustering solutions, including Sun Clusters, HP ServiceGuard, Veritas Cluster Manager, Microsoft MSCS, and RedHat Cluster Manager, in both active-passive and active-active configurations.

• Disaster Recovery — Oracle Application Server provides the ability to automatically create and maintain standby application servers that mirror the primary system for disaster recovery purposes. Oracle Application Guard — an integrated disaster recovery framework — provides automated, point-in-time synchronization facilities that can be combined with Oracle Data Guard to take point-in-time checkpoints of your entire data center for disaster recovery purposes. Other vendors use rudimentary disk replication to manually create standbys that do not provide guaranteed recovery.

Lower Cost Administration — Identity and Systems Monitoring
Oracle Application Server provides integrated identity management to consolidate security administration and to improve security enforcement across the organization. Additionally, Oracle Application Server is integrated with Oracle Enterprise Manager to provide lifecycle monitoring and administration facilities for both the application server and the J2EE
applications running on it. These facilities provide the lowest total cost of ownership and include:

- **Identity and Access Management** – Oracle Application Server provides comprehensive Java2 security facilities; an integrated PKI infrastructure; an integrated identity management infrastructure, including LDAP v3–compliant directory services; identity and access management services; identity and user provisioning services; and a complete Web services security and federation infrastructure with support for SAML 1.1, Liberty I, and Liberty II. Oracle Application Server can also be used in concert with your existing identity management infrastructure.

- **Systems and Application Management** – Oracle Application Server provides comprehensive lifecycle management facilities for application servers and SOA-based applications. These include facilities to install, configure, clone, deploy, tune, patch, upgrade, configure, and maintain many application servers as easily as managing a single server. Application servers can be automatically provisioned and cloned in real time and can be added or taken away on demand to handle near linear scalability. Applications can be monitored for status, faults, resource consumption, and performance; and these metrics can be compared with historical baselines for policy-based administration.

- **Web Services Management** – Oracle Application Server also provides comprehensive Web services management facilities (including facilities for service provisioning, service integrity and conformance checking), service security provisioning (including configuration of identity, authorization, and access policies), service monitoring and auditing (including logging, metering and billing of services), service availability (including failover configurations and fault alerting), service upgrades, and service transformation.

**Leverage Your Existing Investments**

Organizations have invested more than $50 billion over the past eight years in enterprise applications. Oracle Application Server 10g is designed to be modular, open, and extensible, so as to work in a heterogeneous environment and to help you best exploit your existing IT investments, without the need to remove or replace them.

- **Modular – Start Small and Benefit the More You Use** – Oracle Application Server is designed to be modular to allow users to install, configure, and use only those services they need. It works with all major relational databases. It provides out-of-the-box connectivity to more than 25 different enterprise applications and legacy systems. And it is certified to work with more than 125 different third-party products, including a variety of JMS providers, JCA providers, object-relational mapping solutions, directory servers, identity managers, and systems management tools.

- **Open – Retain Flexibility and Choice** – Oracle Application Server provides unmatched flexibility and choice. Oracle Containers for J2EE is certified to work with a variety of different tools, including Oracle JDeveloper, Borland JBuilder, IntelliJ IDEA, Eclipse, Rational Rose, and a variety of other open source tools and frameworks, ensuring that you are able to develop SOA applications on Oracle using your favorite tools. Applications written using Oracle JDeveloper and Oracle ADF can be deployed to
Oracle Application Server, BEA, IBM, and JBOSS. Oracle Application Server 10g is the only SOA platform designed to work on 7 different processors, 11 different hardware architectures, and 13 different operating systems. It is the most widely used Java application platform on Windows and Linux. No other vendor provides such openness and choice.

- **Extensible – Interoperable with Other Vendor’s Middleware** – Oracle Application Server 10g provides completely tested and certified interoperability with MS.NET, IBM WebSphere, and SAP Net Weaver to make it easy to adopt within your existing environment. Examples of MS.NET support include WS-I Basic Profile-based Web Service interoperability; support for custom serializers and Microsoft document-style Web services; interfaces to access MS.NET services, including MTS, ADO-DS, and MSMQ; the ability to bridge from Web services to Microsoft’s legacy component models COM+ and D-COM; support for Microsoft Security Services, including Kerberos, Active Directory, and Windows Native Authentication; and integration with Microsoft Clustering Services (MSCS) and load-balancing facilities.

- **Leverage Your Existing Skills** – There are roughly 4 million active Java developers today, and that number is expected to grow to more than 10 million in the next two years. With Oracle Application Server 10g, you can leverage the expertise of this large development community.

**WHY ORACLE?**

Service-oriented architecture can improve your organization’s ability to predict and respond to market dynamics, it can enhance your organization’s productivity, and it can dramatically simplify your information technology environment, while allowing you to exploit your existing investments. While other vendors have made significant marketing announcements about their future plans for SOA, Oracle Application Server 10g provides the industry’s most complete, productive, open, and mission-critical service-oriented architecture platform today.

- **Most Complete and Available Now** – Oracle offers the only SOA platform with a comprehensive SOA infrastructure, integrated development tools, and a productive development framework to create, compose, orchestrate, provision, deploy, manage, secure, and federate Web services today.

- **Most Productive** – Oracle JDeveloper and Oracle ADF allow you to improve on-time project delivery, to maximize developer efficiency, to lower training time by making J2EE development easier, and to improve productivity without compromising choice.

- **Most Open** – Oracle’s SOA platform provides unmatched capabilities to be adopted incrementally, to be integrated with your existing information technology environment, and to interoperate with solutions from other vendors in a heterogeneous environment. It gives you the benefits of SOA without locking you into a specific vendor’s platform.

- **Most Mission-Critical** – Oracle’s SOA platform is the only solution designed to exploit grid computing to provide you with industry-leading performance, scalability, and availability using commodity hardware and storage. It saves costs by lowering computing capacity requirements and enabling modular, inexpensive capacity growth. It also provides integrated identity and systems management to centralize security and systems administration, to lower costs, and to improve security and business continuity.
CUSTOMER PROOFPOINTS

Digital River

Digital River, a leading global e-commerce outsource provider founded in 1994, offers its clients the ability to cut costs and grow their businesses by using its complete e-commerce systems and services. Digital River relies on Oracle Application Server to host e-commerce operations for thousands of customers, processing up to 40,000 orders and generating 1.5 million dynamic Web pages daily. Among others, clients include Symantec, 3M, Novell, Autodesk, and Staples.com.

Digital River replaced BEA WebLogic and standardized its next-generation hosted e-commerce platform on Oracle Application Server and Oracle Database. “Oracle Application Server is much faster than our previous Java application server. With the move to Oracle Application Server, we now operate on a single, unified platform built on Oracle from the ground up,” says CIO Marty Boos. At the same time, switching from BEA WebLogic to Oracle Application Server saved Digital River 44% on the cost of maintenance and support, and 69% on the cost of future purchases.

The most immediate benefit of the new platform has been the remarkable performance improvement yielded by the Oracle’s revolutionary web cache technology. The average page load time shrank two- to fivefold and the average number of SQL database calls to generate a dynamic Web page decreased 100-fold. Boos raves, “With the Web-caching capabilities of Oracle Application Server, we find that we can now achieve all the scalability we need in the middle tier. The bottom line is that we save millions of dollars’ worth of server hardware.”

Poste Italiane (www.poste.it)

Poste Italiane Group is a multibusiness conglomerate based in Italy that offers core postal and mail delivery services, as well as communication, logistic, and financial services, all over Italy. The Poste Italiane Group includes the following major subsidiaries: the SDA Group, which provides express mail and logistics; Mototaxi city bike couriers; Postecom, managing Internet services; PosteVita and BancoPosta Fondi, offering life insurance and investment solution; and Postel, the European leader for hybrid electronic mail and document processing. Poste Italiane manages complex logistics and communications business processes on an outsourced basis for several industries, including retail, commercial business, and government and public administration segments. It also manages all of Italy’s more than 14,000 post offices.

Poste Italiane’s Pension Payment System was one of the world’s largest and highest transaction-rate mainframe applications, capable of handling 1.5 million pension transactions per day for more than 6 million government employees. Faced with the escalation of maintenance costs and the inflexibility of the mainframe, Poste Italiane migrated the application from the mainframe to the world’s largest, most complex, and highest transaction-rate J2EE application on the AIX operating system. Built on servlets, stateless session beans, and entity beans with container-managed persistence, the system was deployed to two Oracle Application Server instances accessing an Oracle Database Real Application Cluster (RAC).
Both the application server instances and the database server are replicated to a remote site for disaster recovery purposes.

With Oracle Application Server, Poste Italiane was able to downsize from their old, expensive, and hard-to-maintain mainframes, while reengineering their business logic to provide wider and simpler system access across the company’s many different groups, departments, and employees. Oracle Application Server 10g also provided Poste Italiana with the industry’s best performance, scalability, and availability features required to power this highly mission-critical system.

**CalPERS**

California Public Employees’ Retirement System (CalPERS) is the world’s largest public pension fund, managing $155 billion in assets. CalPERS provides retirement and health benefits to more than 1.4 million clients and their families, and is associated with more than 2400 different governmental organizations servicing state, schools, and public agencies employees.

To better serve its clients, CalPERS undertook a major initiative to improve customer service by providing Web-based, self-service applications. For its achievements related to this initiative, CalPERS recently won the prestigious 2003 NASCIO Recognition Awards, in the Digital Government-to-Government category, for its Oracle-based Automated Communication and Exchange System (ACES).

To deliver on the ACES system, CalPERS used the built-in framework of Oracle JDeveloper to make its Java developers more productive. “We can deliver J2EE applications based on the MVC design pattern in less than a month, compared to the many months it would have taken us without such a framework,” says E-Service Manager Josie Lang. CalPERS deploys its applications on Oracle Application Server. “Oracle offers a stable, secure, reliable application server with full J2EE support. It is rock solid,” Lang says.

With ACES in place, CalPERS has cut its costs and speeded up many crucial processes. Previously, the multistep process for issuing a health card to a new enrollee took 10 to 12 weeks. Now, health cards are delivered in five days. This speedy turnaround saves CalPERS significantly on processing costs. Automation also improves efficiency dramatically: CalPERS has upped the number of health transactions it processes from 50,000 to 350,000, but hasn’t had to add staff, despite the sevenfold increase. Now that state and public employers can do business with CalPERS electronically, postage costs are down and paperwork is sharply reduced. And the reduction in manual data entry by CalPERS staff means fewer errors.
SUMMARY

As enterprise applications evolved from a client/server to a service-oriented architecture, many information technology departments have deployed them using a fragmented, piecemeal middleware infrastructure. Middleware complexity represents nearly 50% of the information technology costs in organizations today. Service-oriented architecture has led to a fundamental shift in the way new applications are being designed and developed, and the way in which they are being integrated with existing legacy systems and business applications.

To solve the challenge of middleware complexity, Oracle created an entirely new class of systems software — an Application Platform Suite (APS) — a comprehensive and integrated enterprise application infrastructure based on service-oriented architecture. Oracle Application Server 10g Java and Web Services, the industry’s most comprehensive SOA platform, consists of four key components — Oracle Containers for J2EE, Oracle JDeveloper, Oracle Application Development Framework, and Oracle Toplink. Oracle Application Server 10g Java and Web Services is a key component of Oracle Fusion Middleware.

Service-oriented architecture can improve your organization’s ability to predict and respond to market dynamics, it can enhance your organization’s productivity, and it can dramatically simplify your information technology environment, while enabling you to exploit your existing investments. Oracle Application Server provides the industry’s most complete, productive, open, and mission-critical service-oriented architecture platform. It is designed to be modular (to allow you to use only what you need), open (to interface with your existing investments), and integrated (to provide greater value the more you use). Oracle Application Server 10g is used by more than 20,000 organizations to run their businesses. Regardless of your organization’s size, the complexity of your IT infrastructure, or the increasing demands of your business, Oracle Application Server can provide the edge you need in today’s competitive business environment.