

Oracle for Sun — An Enterprise Computing Platform

An IDC White Paper

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No single company can deliver the breadth and depth of hardware and software required to meet the computing needs of business today. In a broader sense, this statement applies to most companies in most industries, so partnerships have become a way of life, a way of doing business in the 1990s. What has resulted are many partnerships being advertised in many ways, with strong core technology alliances sometimes indistinguishable from marketing hype.

This paper is intended to discuss the specifics of the Oracle and Sun technology and business partnership, the goal of which is to build on each other's core competency to produce better information technology products and services faster.

Today's IT Challenges

Information Technology (IT) is becoming a competitive weapon in the business battles of the 1990s. IT managers share the responsibility to maintain global competitiveness by rapidly delivering information to users in time to impact the bottom line. Improved inventory management, cash management, and customer service can provide substantial cost savings as well as increase revenues.

At the same time, IT is under tremendous pressure to minimize or at least manage cost increases incrementally and to deliver new products and services that are highly intuitive and easy to use in weeks and months, not years. These pressures are changing the information technology landscape, moving away from proprietary systems to open systems and moving from mainframes and standalone PCs to the more advanced technology and cost-effective model offered by client/server computing.



Results of IDC's 1993 *Global IT Survey* show that 42% of CEOs surveyed believe that "improving organizational competitiveness" is the primary IT objective. Another 26% specified "integrating central and end-user resources" as the most important, while "migrating to more modern platforms" and "controlling costs" were specified by 18% and 14%, respectively. The survey also indicated that CEOs are increasingly holding IS accountable for delivery of specific IT objectives.

IS faces top management pressures and the impatience of sophisticated end users. IS management can respond or watch their staff and influence continue to shrink. More and more successful IS organizations are looking at an effective enterprise architecture as an important vehicle to realize their goals.

The restructuring of business today demands an information architecture and underlying hardware and software architecture that can keep pace with continual change.

The restructuring of business today demands an information architecture and underlying hardware and software architecture that can keep pace with continual change. The technology choice must be extensible and scalable in multiple directions to meet those demands.

The freedom of choice available with open systems can lead to a high degree of system integration, frustration, and even failure for IT organizations. A fully integrated and quality assured open solution comprising best-of-breed components can deliver the benefit of both an open systems architecture and minimum risk implementation.

Oracle and Sun: Two Market Leaders

Oracle and Sun have partnered to address the advanced computing requirements of their mutual customers and their own businesses. The dedication of resources throughout both companies to the "Oracle for Sun" solution has resulted in an integrated, open systems platform. This solution is heavily tested and used by Oracle and Sun prior to delivery to their mutual customers. From base engineering through to customer service and support, hundreds of Oracle and Sun engineers and consultants are working together to provide a proven enterprise computing solution built from their complementary core technologies.

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Sun Microsystems Inc. (Sun), building on its distributed computing strategy, has emerged as a leading provider of open, enterprise computing solutions. Today, Sun is beginning to deliver alternatives to traditional data-center-class hardware and software by scaling its SPARC-based server line upwards with the 20-way SMP SPARC-center 2000 and also scaling its system software environment, Solaris, to take advantage of this power. Sun continues to evolve its open, client/server computing with the blending of workstation and PC-class clients with its advanced server technology.

Oracle Corporation (Oracle), building on its core database technology and market leadership, is delivering function rich and highly scalable cooperative data server technology.

Sun was extremely successful in exploiting a movement away from minicomputers to workstations in the technical market. Sun was also very successful in capitalizing on Unix and in many ways created the concept of open systems. Sun's original open systems concept was that of open competition at all levels of the system solution. In addition, Sun developed and licensed the SPARC architecture —

thus providing the ability for competitors to “clone” its machines. The company was able as well to create the perception that Unix and open systems were synonymous, a perception that still lives today in the minds of many. Sun was able to market itself effectively as a very open company. As a result, it has long been the leader in the Unix systems market (see Figure 1).

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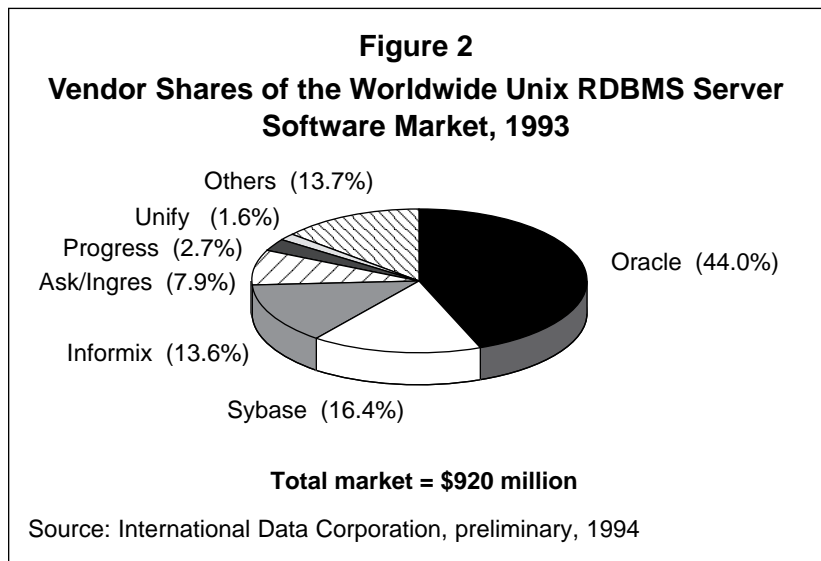
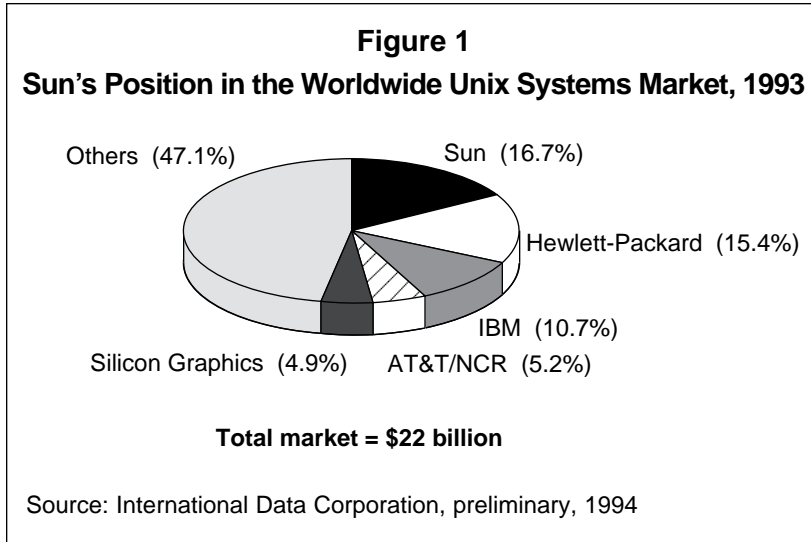
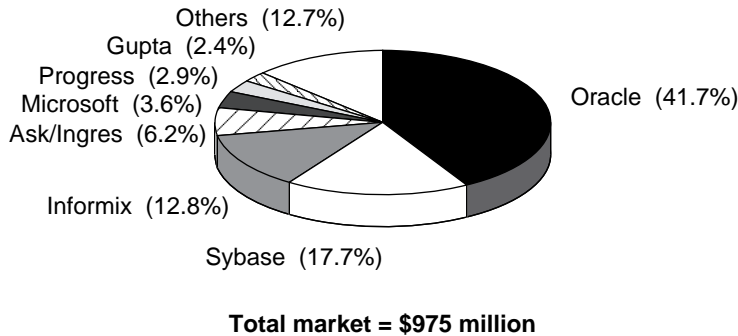


Figure 3
Vendor Shares of the Worldwide RDBMS Server Market for Advanced Operating Environments, 1993



Source: International Data Corporation, preliminary, 1994

In fact, Oracle's strong position in the Unix RDBMS market has helped the company establish a leadership position in the overall market for RDBMS software on advanced operating environments (AOEs).

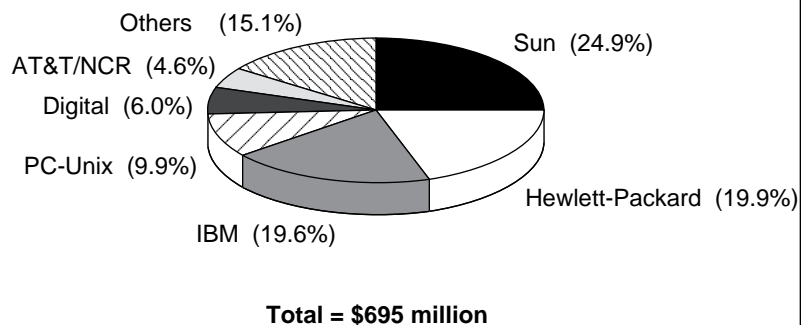
Since both Oracle and Sun are the market leaders within the appropriate markets, it should come as no surprise that Sun systems are the ones most likely to be running Oracle databases and that Oracle databases are most likely to be running on Sun systems.

based on an advanced operating system. Advanced operating systems are typically 32-bit, multitasking, portable across hardware architectures, and available unbundled from systems. Most support multithreading and symmetric multiprocessing. The complete environment includes the OS and the user interface, networking and distributed computing technologies, software development tools, system and network management, etc., often referred to as middleware. Examples of AOEs include Unix, Microsoft's Windows NT, IBM's OS/2, and Novell's NetWare.

Oracle and Sun: A Partnership of Market Leaders

Since both Oracle and Sun are the market leaders within the appropriate markets, it should come as no surprise that Sun systems are the ones most likely to be running Oracle databases and that Oracle databases are most likely to be running on Sun systems (see Figure 4).

Figure 4
Worldwide Unix RDBMS Software Licensing Revenues by Platform, 1992



Source: International Data Corporation, 1993

From 1991 to 1992, one of the notable changes in the platform distribution of Unix database server software revenues was an increase in the percentage of revenues on Sun systems (from 23% to 25%), mostly due to an increased commercial server sales emphasis with the SPARCserver family. Sun's new server lineup is even more attractive as a database platform than it was in 1992, but given HP's and IBM's momentum, it may be difficult for Sun to gain additional share. Given Sun and Oracle's positions, we do not expect major deviations for 1993.

Enterprise Computing Strategy

Movement from mainframes and PCs to enterprise information servers and local application servers demands a wide variety of products and services to support that transition. Server technology requirements range from high-performing, highly available, readily accessible computing systems to easily administered, low-maintenance workgroup and departmental systems. Enterprise server requirements are generated by the movement to resize or replace mainframes or reengineer mainframe applications. Local application servers are driven either by the movement from standalone PCs to integrated more powerful workgroup or departmental computing platforms or by the need to deploy existing PCs in a more productive way.

The Server Market

Although many Unix products today have been labeled "servers," the model of the Unix systems market appears to be much more of a hybrid, a cross between the traditional systems market (terminal to host) and the emerging server market (intelligent desktop systems to back-end systems). The variations in the market are seen among Unix product use in different markets:

- Workstation servers, such as Sun SPARCservers or Silicon Graphics IRIS servers, work nearly 100% of the time servicing intelligent desktops.
- PCs or Intel super servers running Unix (SCO, Interactive Unix) are used over 80% of the time as small business solutions with terminals.
- True midrange/data center Unix products often are used in some variance of "mixed mode," providing services to intelligent desktops and terminals.

Despite usage differences, the differences between the actual products used in these environments are minimal.

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Much of the reason Unix systems have become accepted into the server world is the rich set of communications and data access software available. The completely open software model around which Unix has evolved, has led to a range of databases, development tools, and other middleware available on Unix, which is arguably more extensive than on other platforms. This gives the customer many more options for piecing together a more complex server platform

while maintaining consistency with the existing terminal users. This reason, in conjunction with the ability of Unix to deliver performance and price/performance, has led to the success of Unix.

Unix has been successful thus far as a technology base model where other middleware options can then be tailored to meet the needs of the specific market or user base (e.g., RDBMS, NFS, etc.).

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Unix, along with two other major advanced OS products (NetWare and Windows NT) are rapidly evolving to fill in what IDC calls the "server gap." While Unix is attempting to push itself downward from the more complex solutions world, NetWare and Windows NT are moving upward from the workgroup and desktop areas.

The goal of all three advanced operating environments is to provide the proper mix of application services for users looking to implement more advanced client/server networks.

The "Server Gap"

Unix and other operating systems are attempting to open their more complex services downward to the desktop, while desktop/LAN platforms are trying to add similar complex services to meet the upward expansion of the desktop and workgroup.

One issue in the development of client/server applications and the eventual advanced server market is that no platform today provides the proper combination of capabilities to step in as the dominant platform. Unix and other operating systems are attempting to open their more complex services downward to the desktop, while desktop/LAN platforms are trying to add similar complex services to meet the upward expansion of the desktop and workgroup. IDC defines this eagerly sought middle ground as the "server gap."

The ultimate goal of suppliers in filling the advanced server gap is to provide a platform with a combination of the following features that aid customers in deploying client/server networks:

- Robust local application services (database, etc.)
- Distributed computing services hidden to the application programmer
- Simple-to-integrate componentry
- Ease of operation (installation, maintenance)
- A large variety of applications and tools

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Enterprise Information Servers and Local Application Servers

There will evolve two models for server products. These two server models are called the "enterprise-information server" and the "local-application server."

Although the race appears to be one in which the winner fills in the server gap fastest, IDC believes there will evolve two models for server products. These two server models are called the "enterprise-information server" and the "local-application server." Many of the different characteristics within each model are the result of the purchasing environments that the two server types evolve from: traditional MIS and end-user LAN administrators.

The enterprise-information server is the evolution of the corporate multiuser system. This type of server will play two roles: (1) warehouses of corporate information and (2) control stations or backbone for the flow of information in an organization. On the other hand, local-application servers will play the role of the delivery and interpretation of information for specific tasks or operations.

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The enterprise-information server will be designed, built, delivered, and managed via central MIS or organizations with subcharters of MIS. Since these servers will control the flow of corporate data, enterprise-level application and network connectivity (TCP/IP, SNA, DCE, CICS, DRDA, SQL Access, etc.) as well as intricate development and integration tools are primary requirements. Management tools to control resources and information pipelines will be essential for MIS to capture and dispense the data.

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The local-application servers will have two important requirements: close integration with desktop tools and services and the ability to be self-managed and/or managed remotely by MIS. While MIS involvement may be lower than that for enterprise-information servers, there will be an increasing amount of this involvement, especially in regard to management of the remote environments.

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The vast majority of simple workgroup functions (file, print, e-mail) will reside on local-application servers, with some limited exceptions (large enterprise e-mail servers). OLTP and complex data and networking applications such as imaging will most likely be dominated by enterprise-information servers with some specialized applications on local-application servers. We believe the crossover ground will be in the areas of workflow and decision support, where the specifics of the application and the channels of distribution will determine which type of server the customer will use.

We believe there are seven major capabilities that will determine the strength of an enterprise-information server platform:

- MIS Affinity — the overall attractiveness of an operating environment to the needs of the MIS organization
- Scalability — the flexibility of system configurations and range of platforms supported
- Availability — the capability of the platform to provide high levels of system uptime for mission-critical applications
- Integration — the ability to piece together technology components for complex solutions
- Development tools — the suite of tools available for modeling and creating large data and information repositories
- Enterprise connectivity — the ability of the platform to support various levels of interoperability and provide high-performance information distribution

- Management tools — the level and availability of products for controlling, planning, and operating a wide variety of data, applications, and technologies

The advantages of Unix as an enterprise-information server are exemplified in the following areas:

- The level of technological innovation for distributed-computing middleware such as DCE, ONC, distributed messaging (e.g., Sun's Tooltalk), and object management tools
- The wide suite of higher-level tools such as fourth-generation languages and relational databases, which are well tuned for Unix platforms
- The increasing level of availability functionality allowing for systems that can operate with limited down time and that have yet to develop on the other server OSs (i.e., clustering, online service, etc.)
- The ability to support a wide variety of desktop user environments (terminal, PC, workstation), and other sophisticated networked devices (high-volume networks, wide-area networks, other servers, scanners, etc.)
- Distributed windowing provided by the X Window System
- Distributed data access through the richness of the database and tools environments available
- Easy access to powerful scripting languages known as shells and shell programming

Where Unix is not as strong, other emerging platforms are in similar or worse positions. We expect Unix to improve more rapidly in the area of centralized system management and become more "MIS friendly" faster than the remaining competitive platforms with the addition of tools from Computer Associates and Legent, among others, as well as similar mainframe facilities such as CICS.

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Based on this analysis, Unix platforms have an advantage over emerging alternative advanced operating-system platforms for enterprise-information servers while facing the greatest potential competition within the local-application server area.

We believe the stream of technologies being developed on Unix will continue to maintain it at the forefront in areas such as distributed transaction processing, object-based computing, and distributed messaging systems. Successful suppliers will recognize these advantages and capitalize on means to get them to the customer. The key themes will be:

- Rapid application development and integration
- Enterprise-level distributed computing facilities and management tools
- Flexible information-management tools for extending data to the users

Sun and Oracle have partnered to deliver products that meet the criteria for enterprise-information servers.

Sun and Oracle have partnered to deliver products that meet the criteria for enterprise-information servers as exemplified by their mutual internal use. Sun has standardized on Oracle Applications running on SPARCservers for Sun's financial and manufacturing operations worldwide. And Oracle uses Sun for base development and throughout Oracle's Information Systems. MIS affinity is achieved largely through delivery of products that meet the other criteria. Table 1 shows the various products that meet each criterion.

Table 1
Products Available from Oracle and Sun for Enterprise Information Servers

Scalability	<ul style="list-style-type: none"> • SPARCserver 10, 1–4 way symmetric multiprocessors (SMP) • SPARCserver 1000, 1–8 way SMP • SPARCcenter 2000, 2–20 way SMP • Solaris x86 on Intel hardware • Oracle Parallel Query, Parallel Load, Parallel Index
Availability	<ul style="list-style-type: none"> • SPARCservers with Oracle Parallel Server • Oracle Parallel Backup & Recovery • Replication within Oracle7 • Solaris High Availability Failover • Sun SPARCstorage Array
Integration	<ul style="list-style-type: none"> • Oracle Transparent Gateways • Tuxedo, Encina, Unikix, etc. • Oracle XA Interface
Development tools	<ul style="list-style-type: none"> • Oracle7 Advanced RDBMS • Oracle CDE (Cooperative Development Environment) • Oracle CASE • Oracle support for Sun precompilers • Hundreds of third-party software tools
Enterprise connectivity	<ul style="list-style-type: none"> • Oracle Procedural Gateways • SNA, DECnet, TCP/IP, SPX/IPX, OSI • Oracle SQL*Net
Management tools	<ul style="list-style-type: none"> • Oracle Server Manager • SunConnect SunNet Manager • CompuWare ECOTools, BMS DDS/Patrol, OpenVision, CA-Unicenter...

Source: International Data Corporation, Sun, and Oracle, 1994

Technology for Enterprise-Information Servers

All of Sun's servers run the latest version of Sun's operating system, the Unix V.4-based Solaris 2, which represents a major technological step for Sun. Sun was the first high-volume Unix vendor to deploy Unix SVR4 technology. It includes many new system-management and base-technology features such as symmetric multiprocessing and will be the basis for future innovations such as Sun's continuing contributions to object-oriented technology. The operating system kernel provides for preemptive real-time scheduling, a feature particularly useful in commercial applications. It provides support for more than 256 users, another important requirement in the commercial server market.

To deliver advanced technology products and reduce time-to-market, a series of projects have been undertaken by Oracle and Sun.

To deliver advanced technology products and reduce time-to-market, a series of projects have been undertaken by Oracle and Sun. These efforts are designed to be extensible in breadth and grow in number, but will focus predominantly on the requirements for enterprise computing. Source code exchange between Oracle and Sun has been instrumental in these efforts:

- **Performance**

- Oracle and Sun engineering teams are working together to optimize and tune their products to achieve continued improvements in performance, price/performance, and functionality of the Oracle for Sun solution. The effects are visible in both application and utility performance and have produced impressive TPC-A performance and price performance at 734 tpsA and \$5,346/tpsA.
- Though heavily dependent on the database configuration and its spread across disk volumes, recovery throughput has been improved 100% through the use of asynchronous I/O.
- Current efforts are being redirected to “real world” performance, particularly stress testing the Oracle RDBMS and Solaris 2 using high-volume workloads provided by Oracle Applications.

- **Availability**

- Oracle and Sun are cooperating to enhance their technology in order to improve cluster architecture for high availability and greater system capacity using Oracle Parallel Server on Sun systems. The Solaris Distributed Lock Manager (DLM) will utilize multithread architecture and be designed for high-performance, high-availability operation across SPARC-servers.
- Cooperative efforts continue on parallel backup-and-restore functionality to provide continuous database operation and data consistency across the information resource. Sun Information Resources (IR) has been a key participant and contributor in the Oracle Parallel Backup beta program.

- **Management integration**
 - Oracle and SunConnect are planning to integrate database and network administration to simplify the operation and maintenance of the Oracle for Sun solution through joint use of the RDBMS Management Information Base (MIB).
 - Oracle created the Systems Management Initiative (SMTI) to foster close working relationships among systems management tool providers and provide individual technical assistance. The SunNet Manager console is the design point for integration of many of these products including Oracle's Server Manager. SunNet Manager leads the worldwide Unix network management market with 35.9% of the installed base.
- **Configuration management and product availability** — To simplify configuration management and installations Oracle is preconfigured and tested on every Solaris release, providing customers with pre-integrated Oracle and Solaris product releases. An additional result is same-day availability of the most current releases of Oracle on the most current Solaris releases.

Local Application Servers

The objective of a local-application server differs from the complex modeling of an enterprise-information server. It is more important for an local-application server to be a more powerful tool of the end user, with a shell of simplicity.

Local-application servers bring new capabilities to the desktop, such as enterprise data access, information sharing, ease of systems administration, software distribution, and flexibility in server size selection.

Local-application servers bring new capabilities to the desktop, such as enterprise data access, information sharing, ease of systems administration, software distribution, and flexibility in server size selection to meet both entry-level and expanding business needs.

For local-application servers, the key capabilities for success are as follows:

- Application suite — the number, variety, and ready availability of application software
- Embedded facilities — the integration of application services into a consolidated suite of APIs in a minimum number of packages
- Desktop affinity — the ability to have a common set of software and “look-n-feel” between the desktop systems and the server
- Ease of maintenance — the minimization of the tasks required for the installation, operation, and management of the server and software
- LAN connectivity — the level of “LAN awareness” built into the application services of the OS platform, thereby reducing the complexity of client/server application programming

Examples of technology well suited for the local application server are the following:

- Oracle on Solaris (either SPARC, x86, or PowerPC) utilizing Sun's recently announced support for SPX/IPX protocols in Solaris

Sun and Oracle have partnered to deliver products that meet the criteria for local application servers.

- Oracle Workgroup Server, Oracle’s packaging of its database on Windows NT

Sun and Oracle have partnered to deliver products that meet the criteria for local application servers. Table 2 shows the various products that meet each criterion.

Application suite	<ul style="list-style-type: none"> • Over 8000 Solaris applications including Oracle applications • Over 50 Oracle7 RDBMS applications
Embedded facilities	<ul style="list-style-type: none"> • Oracle7 • Oracle Glue • Sun’s Federated Network Services • ODBC • Sun ToolTalk
Desktop affinity	<ul style="list-style-type: none"> • Wabi and Macintosh Application Environment • PC-NFS and NetWare connections
Ease of maintenance	<ul style="list-style-type: none"> • Oracle Server Manager, Legato Networker, Tivoli Management Environment. etc. • Sun’s SolarNet (for remote PC administration) • SunNet Manager
LAN connectivity	<ul style="list-style-type: none"> • SPX/IPX protocols • PC-NFS

Source: International Data Corporation, Sun, and Oracle, 1994

Customer Support

To minimize problem resolution time, Sun and Oracle will continue to refine the “no fingerpointing” service model.

Even the most rigorously tested and well integrated systems can encounter unanticipated problems in real-world environments. To minimize problem resolution time, Sun and Oracle will continue to refine the “no fingerpointing” service model. When required, Sun and Oracle contact each other directly, without involving the customer, and work cooperatively toward the resolution, independent of the ultimate source of the problem. This results in timely problem resolution status to all parties, a consistent understanding of the problem, and clearly defined responsibilities for resolution. To avoid costly delays, well-defined escalation procedures are in place with an eye for continual improvement as needs change.

Shared Expertise and Development

An open exchange of technology and extensive mutual use are part of the Oracle and Sun relationship. Oracle and Sun engineers have full access to each other's source code. Oracle makes use of Sun Solaris threads and has assisted in providing modifications to the Solaris dispatcher for improved database throughput. Significant improvements in performance and high availability have been realized to date, with high expectations for technologies still in research and development.

Oracle development is moving to client/server computing to improve base product development productivity and reduce costs and has selected Sun workstations, servers, and the Solaris operating system as the platform. Cooperative Server Technology (database and networking products), Cooperative Development Environment (CASE, 4GLs, and 3GL integration products), Oracle Office, and Oracle Applications have completed migration to SunOS (Solaris 1) and plan to complete migration to Solaris 2 by year end 1994.

Oracle7 and Oracle Financial Applications are used to stress-test every major and minor release of the Solaris operating environment, identifying and correcting code errors and potential system bottlenecks prior to product availability. Oracle7 is being used in the hardware qualification tests for the SPARCcenter 2000 in its fully configured 20-way environment to ensure that maximum scalability in real-world situations is achieved.

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Oracle and Sun today are sharing the experiences gained from their development activities with field organizations and customers. Specific topics include systems and network management, performance, backup and recovery, and case study development.

In order to continually improve the amount and quality of information available, Oracle and Sun have initiated the following activities:

- A customer advisory board composed of Oracle for Sun customers worldwide. This board will enable Oracle and Sun engineers and managers to hear first hand the concerns and problems of customers and to brief them on proposed projects, products, and future plans for the purpose of gathering feedback and establishing priorities that are consistent with customers' needs.
- Cross training respective field organizations. Several times per year, systems engineers and presales engineers worldwide visit Oracle and Sun headquarters to be trained on the latest developments in the Oracle for Sun environment directly by the engineers who developed them.

- Conducting seminars to educate customers and field forces on specifics of how to use the technology.
- Conducting industry-oriented seminars to illustrate Oracle for Sun capabilities in vertical markets such as finance, telecommunications, and process and manufacturing.
- Providing access to demonstration hardware and software to respective field organizations so customers can see first hand the latest products and features available from both companies.

Expertise Center

Oracle and Sun have established a center of competency to further develop and stress product capabilities and to document implementation alternatives for these complex environments.

To establish core competency in strategic development initiatives such as backup and recovery and Oracle Parallel Server, and to stress distributed applications, very large databases, and high-volume OLTP (OnLine Transaction Processing), Oracle and Sun have established a center of competency to further develop and stress product capabilities and to document implementation alternatives for these complex environments.

This site will support leading-edge customers and provide an internal training ground for advanced implementation techniques as well as provide access to early code for benchmarking and demonstration use. European and Asian centers are planned for 1995 and will facilitate the deployment of Oracle for sun technologies within these regions.

Distribution Channels

The Oracle for Sun solution is available from channels that are certified by both Oracle and Sun. For example:

- Oracle has established a relationship with Access Graphics, a major Sun distributor. Access Graphics offers integrated training, support, and financing of the Oracle for Sun solution making it easier for all customers, regardless of size, to obtain the products and services they require.
- The channel also provides additional value-added services such as installation and configuration and Oracle Applications expertise.
- Both Oracle and Sun are devoting additional resources toward the expansion and further development of their mutual channels worldwide.

Management Commitment and Agreements

Both Oracle and Sun are leaders in their industry. As they move forward, Oracle and Sun CEOs, presidents, and senior vice-presidents continue to meet at least once per quarter.

Both Oracle and Sun are leaders in their industry. As they move forward, Oracle and Sun CEOs, presidents, and senior vice-presidents continue to meet at least once per quarter to ensure effective communication and implementation details. To ensure that both proactive developments and escalations receive the proper attention level, a vice-president from the Sun Products Division, Oracle, and a member of Sun's Executive Management Group (EMG) have been designated as the executives responsible for the Oracle and Sun relationship.

The following formal agreements have been put in place:

- A Strategic Vendor Agreement and Sun Consulting Agreement provides for alpha release availability of respective products.
- A Source Code Agreement provides for source code exchange between Oracle and Sun for performance enhancements, benchmarks, and tuning of Oracle and Sun products.
- A Global Lock Manager Agreement allows cooperative technology development on SPARC/Solaris for Oracle Parallel Server and DLM technology.

Future Directions

Oracle and Sun are on the forefront of multimedia and object-oriented technologies and are engaged in appropriate engineering discussions to leverage these core competencies. While much of this effort will not result in specific product for some time, more tangible results will be seen soon in wireless networks, integration of networks and database administration, and continued improvements in high performance and availability.

Challenges

Although the Oracle and Sun partnership is strong and delivers results today, IDC sees several areas where the partnership needs to deliver more. The main areas are the following:

- Delivery of integrated system, network, and database management. This goes beyond simple integration of individual management utilities and is a very difficult problem that no vendor has been able to deliver on. Successful productization of such would give Oracle and Sun an advantage.
- Common installation. By packaging Oracle and Solaris on a single CD with a single installation procedure, users would be spared some of the current complexities
- Joint-support hotline. This would take customer support to an even higher level by not requiring users to call Oracle or Sun, but someone specifically to deal with the combination.

Summary

At many customer sites, the benefits of the Oracle for Sun solution have enabled successful mainframe replacement for mission-critical, front-office applications. Whereas not every company may choose to follow this path, it is clear that it is no longer the risky path that it once was.

At many customer sites, the benefits of the Oracle for Sun solution have enabled successful mainframe replacement for mission-critical, front-office applications such as catalog order entry, customer order service, and retail branch automation. In addition, large overnight backroom batch applications, once the exclusive domain of the mainframe, now run in less time on less expensive enterprise servers utilizing technology from vendors such as Oracle and Sun. Whereas not every company may choose to follow this path, it is clear that it is no longer the risky path that it once was.

*Sun Literature No. FE 421-0
Oracle Part No. A18152*