Title: Strategy and Policy Issues: SUN Microsystems

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Author(s): H. Chong, R. Sammartino, R. Eram and J. Bonini

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Abstract: Presents an evaluation of the strategies that have led to SUN's current success; analyzes the challenges facing SUN and presents suggestions for future opportunities.

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H. Chong, R. Sammartino, R. Eram, J. Bonini

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Dundar F. Kocaoglu

Strategic and Policy Issues:

SUN Microsystems

Team #2

Hyuncher Chong

Rob Sammartino

Rick Eram

Juli Bonini

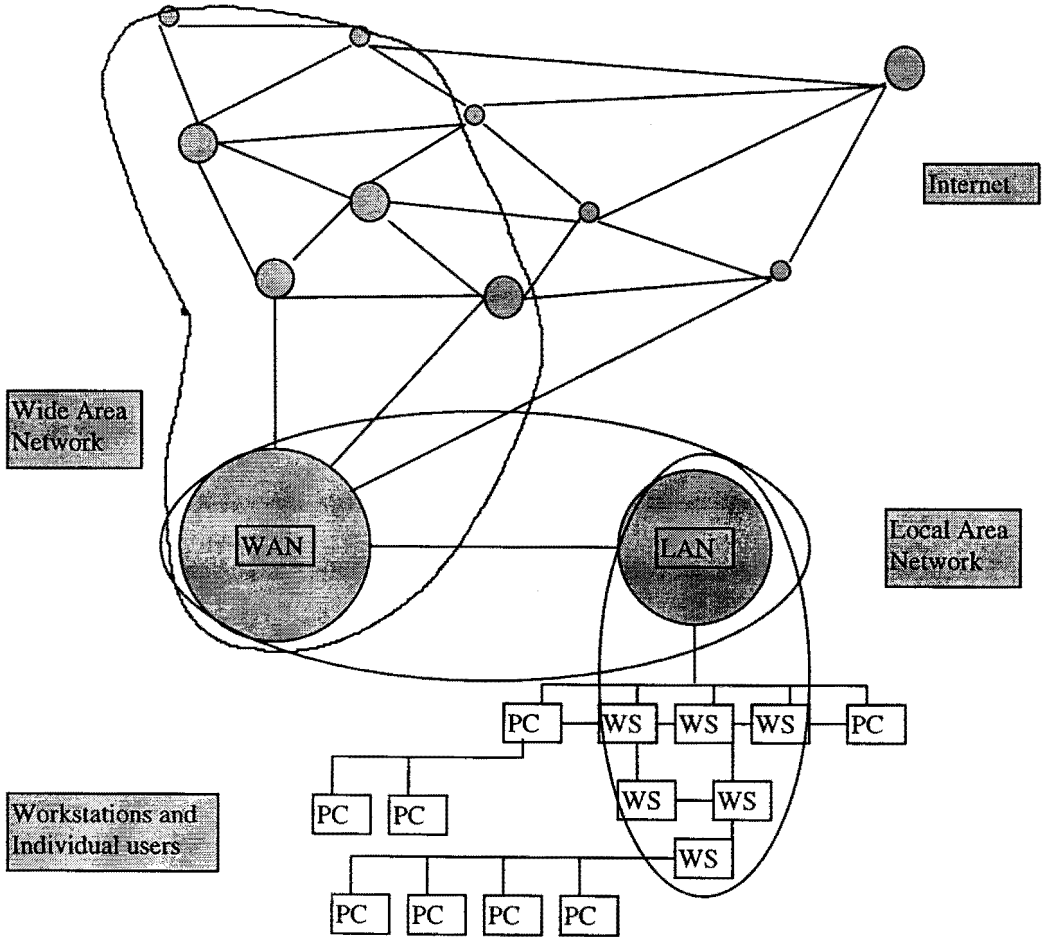
This paper provides a study of Sun Microsystems. We will review the history of Sun and the strategies that have led to Sun's success thus far. We will then look at the challenges currently faced by the company and suggest those that may lie ahead. We will analyze Sun's ability to meet these challenges. And finally, we will conclude with suggestions of future opportunities.

Sun's History

SUN Microsystems provides products and services that enable customers to build and maintain open network computing environments. The company was established in 1982 based on the development and manufacture of high end workstation. By recognizing that the primitive desktop PC would not be adequate for the financial, design and engineering world, Sun focused on creating a market that closed the gap between the main frame machine and the desktop PC. The strategies of "doing it all" (from chip and software development through hardware manufacture) and providing total solutions to big customers has enabled Sun to be the dominant force in the network computing environment even in a volatile market where off the shelf goods prevail.

The designing of Sun products coincided with the development of the Internet backbone. Envisioning the dominance of networks, Sun incorporated network capabilities into the design of their products from day one. As a result, Sun established itself as one of the main players in the networking market. The original products addressed the needs of the high end users with great deal of networking capability and computing power serving multi-users. The hardware was designed to be fully configurable to operate at various levels of a computer network while the software was optimized to provide necessary tools to support the power of the hardware. Providing machines with varying levels of computing power and the software to support it, Sun was able to address several segments of the networking market emerging in the early 1980's. The result was dominance in the niche market between the large main frames and the desktop PC's.

Sun's product line covers all areas of the computation industry from the individual workstations to the complex servers forming the web. The following diagram shows how networks connect and outlines Sun's product coverage as it relates to networks and the connectivity of computers:



The outlined areas show server applications. The diagram particularly illustrates the flexibility and power of network systems.

Sun's Success

Sun correctly forecast the emergence of network technology as a major force of the future. As a strong proponent of open network computing environments, Sun has successfully adopted new

technologies and pushed implementation through network interfaces. Until the mid 1990's Internet explosion, network computing was confined to technically demanding customers such as engineering departments. And, until the late 1980's, Sun had virtually no competition. Sun has dominated all aspects of the networking market almost from the day it was founded. The Internet has only recently opened the mainstream office computer market to Sun.

Sun's enviable position today is a result of a combination of strategies successfully deployed over the years.

Sun is a technology leader. Sun's hardware is leading edge quality. The new SPARC technology and ultraSPARC workstations have no equal today.

Sun is an innovator. Sun does not follow, but leads with innovations in service and software(JAVA) as well as hardware.

Sun is a training leader. Sun is the leading and largest UNIX trainer in the world.

Sun is a service leader. Sun provides extensive support and value added services.

Sun delivers total solutions. An emphasis on total solutions allows Sun to maximize the solution rather than the components. This has led to attractive features in Sun products such as "hot-swappable" components for zero customer down time.

Sun "does it all". The concurrent and focused development of all components allows quicker solutions and a more smoothly integrated system.

Sun currently posts annual revenues of 6 billion and employs over 14,500 individuals. Although Sun encompassed about a dozen subsidiaries, Sun's business falls into four main divisions: Workstations(including chip technology), Servers, Software(including JAVA), and Service. The challenges Sun faces are in fact challenges to each of these segments.

Workstations

Despite Sun efforts to lead in the workstation market, the revenues in this area are declining. The reasons of course are the new players like Hewlett-Packard, IBM, and Digital Equipment Corporation.

With the rise of the Internet and the excitement created by its potentials, these companies wish to share in Sun's success. Prior to the Internet, Sun had only one early workstation competitor, Apollo Industries. Sun effectively won the market from Apollo in 1983. This gave Sun the opportunity to develop and create the workstation market for few years as the only player. This opportunity gave Sun the time to generate needed cash and to build up it's workstation market based on the "do it all" philosophy. When HP purchased Apollo in 1988, the competition heated up again. It didn't take long for HP to establish a workstation division and take on Sun. Sun now had the market share, but HP introduced more powerful processors and workstations and started to charge into Sun's territory. By the early 1990's Sun had started to loose its market share to HP. This also opened the gate for other new players such as DEC, IBM, and Silicon Graphics. For a couple of years the Sun workstations were no longer distinguished. Sun was faced with a strategic positioning challenge. Sun's answer was the introduction of several new workstations which again left the competition in the dust. The new workstations used new SPARC technologies.

SPARC Technology

Sun initially started the SPARC line in the mid 1980's. SPARC technology was developed to take on smaller competitors while focusing on big customers. The product line was very popular and accounts for Sun's original success. Believing in network dominance, Sun, through SPARC technology, based their workstations on and incorporated in network capabilities. However this strategy did not prove initially to be successful since networking, which was embedded into their workstations, had yet to develop popularity or rather popular applications. This technology did however allow Sun to be the main provider of the smaller network which eventually established the Internet.

The new workstations were possible through the introduction of the SPARC20 and later the UltraSPARC lines which restored Sun to the technology leader position. The new workstations were designed to take on the complex operations required by animators and others in the design environment. Soon Sun captured the market which had some recognized leaders such as Silicon Graphics. Sun's strategy in this market is based on establishing and further developing new standards such as SBUS-the

new network core bus allowing variable bandwidths, UPA a new port architecture for a broad range of applications, and by focusing and tailoring the workstations based on today's multimedia and animation needs.

The design of the workstations are very closely tied with the development of JAVA. Sun believes that the superiority of its workstations will be proven once JAVA is established in the networking community, proving Sun's vision of the networking. The Ultra SPARC technology is designed to specifically address this need by incorporating needs of JAVA into the chipset and hence the workstations trough customizing the chip for networking and multimedia applications

Sun has managed to strategically price its chips in the Intel's Pentium price range, and opened up the architecture through its SPARC International organization. The next challenge however lies in competitively positioning the workstations given the shrinking margins due to increased competition in this market from such players as Intel. Sun is focusing on the market gap between the big main frames such as Cray and IBM and the PC's such as Intel's high end Pentium Pro. The workstations are planned to close the gap between the two markets.

Workstation issues and strategic implications

Sun has developed partnerships with Cray Research Corp., Amdahl Corp., and Oracle to take on the big competitors like HP and IBM. The vision is to focus on the networking computer to multiply their power through development of databases and applications which can be used in the business community. The workstations will prove their power in this market. To stay strategically positioned in the market, Sun is building depth and complimenting their product line with others. If Sun does not do this they will not be able to compete with larger rivals.

Sun's Servers

Sun Microsystems plans to revolutionize the corporate computing environment by transforming the traditional client/server computing approach to a Web based application platform. In this environment, servers play several critical roles; as application servers, as Web servers, as legacy gateways, as database servers, etc. Sun is now the current market leader but competitors, such as HP,

IBM, Silicon Graphics, and DEC are eating away at Sun's market share. In addition, Compaq Corporation is now targeting the low end servers market with the four Pentium Pro chip motherboard design. Sun currently has about 55 percent of the Internet server market. Holding and expanding this market share will be one of the most crucial factors for Sun's success in the future.

An effective server must consist of a design that is closely coordinated between the operating system and the hardware operation. Only a few vendors today have the required expertise to provide adequate solutions in the modern corporate information system. The key to implementing an effective information system in today's corporate environment is the ability to get the information to the right place at the right time. In addition, the information system must have ability to rapidly deploy and reconfigure distributed applications and specialized servers. With Sun's expertise in software and hardware, and with the introduction of Java, Sun has emerged as the leader in the servers market. As web usage continues to grow exponentially, some industry analysts are predicting that servers will replace the mainframe computer. This event can make Sun the next giant in the computing world, possibly replacing Microsoft and Intel Corporation.

Since the servers play such critical roles in the Java computing environment, the corporate information specialist must give great consideration in choosing the best suited servers to meet their needs. The choice of integrated and the quality of the computer system will greatly impact the overall efficiency and cost effectiveness of the information system infrastructure. Sun's strategy is to provide an integrated system that is the most efficient and cost effective solution by providing the following.

Ease of operation, integration and management - Java enables companies to automatically distribute applications to widespread work groups and various locations without requiring on-site technical resource by including the tools for remote administration and management of Java clients. Java integrates easily into the existing environment and helps companies preserve their investments. Sun's server is designed to preserve connectivity with existing computer systems.

Throughput and scalability - Anticipating the corporate information system movement from mainframes onto network servers, Sun designed its server to be a modular, scaleable product which will be ideal for rapid growth environment.

Reliability and availability - Java servers are highly reliable and serviceable because it includes several features such as advance decision support and data mining systems.

System and network security - Security at both the system and network level is an important component of the Sun Java server solution. Sun servers offer various integrated security technologies at the system level to public Internet environment.

Expert service and support - Sun's corporate mission is to provide proactive and responsive service and support for Java server application. In addition, Sun offers various assistance through professional educational services.

By providing services and support to meet the customer's needs, Sun's strategy for servers is to offer measurable benefits to corporate information systems by creating and implementing an innovative computing environment. This will be accomplished by wide acceptance of Java. Sun's Java server delivers the technologies and the service required to help companies take advantage of the benefits of Java computing. In next few years , Sun is counting on Java technology to deliver key business computing application through their servers and workstations which will give companies greater benefits.

Software

UNIX operating system

In 1987 Sun got together with AT&T to create another version of UNIX. While this OS is very popular as Sun's Solaris systems its volume in the computer market does not compare to that of DOS, Windows, or Window NT based systems. UNIX developers, vendors and Microsoft indicated at UNIX Expo this year, that they would work together toward a better integration of UNIX and Windows NT OSs. Several software companies demonstrated products that used NT and UNIX concurrently. User typically look to UNIX for high-end server applications such as data warehousing. Increasingly a

number of users are looking towards NT for file application and even data base servers. Analysts say that these new products will help eliminate the conflict between UNIX and NT supporters.

JavaSoft

In the beginning of this year Sun announced the formation of a new business unit, JavaSoft. JavaSoft's mission is to develop, market and support products based on Java Technology to companies and users around the world both independently and through Sun Microsystems. The Javasoft business unit will create applications, tools, system platforms, and services to help promote the proliferation of the Java programming standard. This new business unit at Sun will play a major role in carrying out the corporations goals and objectives in order to help them compete and maybe some day take over the Intel Microsoft based computers.

Java

Java is Sun's new simplified object based, open system language that allows software developers to engineer applications that can be distributed over the Internet using the World Wide Web or any of several other front ends. Sun intends to use Java as a strategy for maintaining growth and profitability in the face of the Windows 95 based machine. Java is generally perceived as an Internet tool, but Sun expects the major focus on the software to be on developing-independent application and middle ware that can run on UNIX, Windows and Macintosh workstations. Sun's CEO , Scott G. McNealy has a plan to change the corporate computing model, to a model that will be based on inexpensive Internet terminals. The client will run Java applets, but will have no operating system or peripherals. The Sun client could be used as a workstation or a game machine with a touch screen. Users will be able to choose Java applets that will be downloaded through a server. Sun's belief is that with this model they will be able to go after volume.

Sun's strategy with Java

Sun does not expect to make their money with their software. Their strategy with Java is to get it in to the market, and make it widely used, so they sell more hardware. Sun also wants their software to be hardware independent. By making their software hardware independent they will create a competitive market that they will be able to be a larger player in. This will prevent them from falling into the same trap that Apple did, by not enabling their software to be run on other architectures.

Software issues and strategic implications

Sun's efforts to take over the computer market with the Java programming language is monumental task. Microsoft and Intel have a large share in the this market today and it will take huge corporate effort to compete with the name and brand recognition they have. The concept of Java applets sounds unique and interesting but what is preventing users in operations from using applications that already exist today over the network? Many corporations are already doing this today without having their application written the Java language. The concept that McNealy has of the featureless system on the corporate desktop may be easier for corporations to support however, there are people in the corporate model that will require expandability, for CD ROMs, faster and better sound, and video cards. Perhaps Sun should consider addressing both of these types of corporate users in their definition of the their new corporate model. Sun may have some good and some bad ideas, however they are not positioned in the market like that of their competition who could easily implement and design any ideas or models that Sun comes out with.

Services

The backbone and main source of revenue for SUN is still their hardware: workstations and servers. But the service areas are posting revenues not too far behind. Service is becoming increasingly more important, not only for SUN, who has not excelled in this area, but for the industry. Service revenues are showing strong growth across the board. The foremost reason is the proliferation of

services offered to meet demand opportunities in an increasingly competitive arena. Maintaining a full-service provider status is a critical challenge for SUN to continues to follow the strategy of "doing it all"(developing and selling complete networking packages), increasing market share and striving to meet it's goal of 15% growth.

SunService

Since the Web explosion, there has been increased and accelerated competition for net core computer business'. As a result, companies are looking at their service departments for an advantage. When the systems are equal, the service will differentiate. The SunService Division is Sun Microsystems service subsidiary. SunService provides systems and network support and management services, training and education services and consulting, and professional consulting and implementation services for Internet and corporate intranet services. SunService supports over 500,000 systems worldwide and is the largest UNIX trainer in the world. SunService supports distributors and resellers as well as end users.

Service expectations

Since its inception in 1993, SunService has been busily expanding to capitalize on the growing service market. This growth is due to the increased expectations by customers as to what service should be. Companies are not only looking for support in transitioning from main frames to networks, they are looking for insight in network and IT management systems. SunService has grown from just custom consulting to Sun hardware users to a broad portfolio of training and management tools and programs. In 1994, SunService expanded services to include IT consulting and operations. In 1995, they again expanded with the Solstice line of management products aimed at addressing the concerns of large enterprise information technology managers. Solstice supplies security, storage, fault management and performance management tools. And in 1996, SunService launched their SunSmart EduSavings Plan which offers customers a volume purchase plan for company wide training needs. This is a comprehensive plan where in effect the company hires SunService to manage their total IT training.

The challenges in the future will be a continuation of the current challenges: maintain credibility and continual introduction of value added services. But with the addition of services to support JAVA.

Analysis

Strengths

As the server and workstation market increases due to expanding Web usage, Sun Microsystems is well positioned to take advantage of this increasing market share. Sun has several strength over their competitors in this market. One of Sun's major strength is their expertise in the network system. In addition, they have a large installed base of servers and network systems utilizing their own hardware and software. This allows Sun to promote upgradbility of the both software and hardware and provide a single point of contact for their whole computer system. This enables Sun to provide the customer with a complete solution to their network system. Another strength that Sun has over their competitor is Java. Since Java can bypass the current window's operating system, and it can interface with any type of micro-processors with a small interface program called an applet. This enables Sun to design the server and the workstation which is optimum for Java. These strengths can open a whole new world for Sun Microsystems in terms of establishing themselves as the major platform provider.

Weaknesses

While Sun has been very successful over the last few years there are some weaknesses in their strategy. Sun has a lot on their plate. In the PC market today their is a different company for the OS (Microsoft) a different company for the processor, (Intel) and different companies that support these systems. Sun is trying to do it all, and this might be too much for them to handle as their markets change and expand. Sun does not have the brand recognition in some of the new corporate and home markets that they are trying to expand into. Overcoming this barrier will be a difficult one for Sun. A third weakness in Suns strategy is that the total solution based Sun's technology is very expensive. While the price for their processor might be competitively priced, their low volume causes other prices of the final product to the end users to be expensive, thus making them not competitively priced for certain markets.