OSA Distributed Computing Platform





As the international market scenario becomes more and more selective, enterprises are forced to align both structures and procedures in order to maintain their competitiveness.

Enterprise information systems are closely involved in this process and must be able to keep step with changes in company structure.

TRENDS IN ENTERPRISE INFORMATION SYSTEMS

- There is a movement away from hierarchical/centralized data processing towards distributed/peer-to-peer applications in order to tailor information systems to distributed information requirements
- As large accounts are usually characterized by multivendor installations, heterogeneous systems are the rule.
- · Mega-control centers are gradually giving way to a distributed system and network management structure with multiple control at local, departmental and enterprise level.
- Existing systems still fulfill a need and must therefore be integrated: as the installed base cannot be replaced overnight, the new solutions must be integrated with the

hardware platforms. existing systems. DISTRIBUTED ACCESS TO DISTRIBUTED SERVICES Distributed access to distributed services STRIBUTED DMPUTING CORE is the underlying concept of the state-ments made above. Distributed services mean a set of servers running on properlyequipped systems in addition to the traditional host environment. SERVER

Distributed access means that the distributed structure is able to guarantee transparent access by any authorized client connected to the backbone network

OSA (Open System Architecture) provides the means and technologies to achieve these goals. The basic services and capabilities required to support distribution of the daily activities and procedures of an enterprise-wide information system are provided by specific components of the two mid layers of the OSA Model: the Application Cooperative Services, the Operating System Services and Network Services. This constitutes the OSA Distributed Computing Platform (DCP).

THE DCP SOLUTION

As regards applications, the DCP provides an open, secure, multivendor environment for distribution, updating, interoperability and management of these. From a systems engineering point of view, the DCP can be seen as a set of standard APIs to be used. From an architectural point of view, the DCP is the 'middieware" that decouples the application layers from the

The main building blocks and tech-nologies of OSA DCP are as follows:

- Operating Systems
- Local and Wide Area Network Connectivity
- Network and System Management Infrastructure

- . Security
- Distributed Object Management
- **OSF-DCE Services**.







OPERATING SYSTEMS

The distributed computing market is characterized by a growing awareness of the importance of not just one but of a number of standard operating systems:

- MS-DOS & MS Windows; the power of millions of installed PCs and thousands of applications.
 MS Windows eliminates memory restrictions, allows multitasking and gives a new look to MS-DOS.
- OS/2: PC multitasking, multi-thread operating system. Can be used for high-end advanced workstations as well as for workgroup servers.
- UNIX: increasingly seen as the real open standard; furthermore, the success of UNIX as the operating system with the highest degree of scalability, from PC to mainframeclass systems, has already been confirmed.

Client/Server Environments

In the Olivetti systems offer, each operating system has a role in which top performance is assured according to the preferred OSA computing model. The Olivetti distributed system is based on the client-server computing model that defines two different environment variations:

- The PC Integration environment, where MS-DOS, MS Windows and OS/2 provide the client side to UNIX and OS/2 servers; this is a mature model that supports the most important OSA application profiles.
- The homogeneous UNIX environment, where UNIX acts as client and server, is that most widely used today to assure interoperability in a multivendor situation.

UNIX: THE TRULY OPEN STANDARD

Olivetti UNIX System V Rel. 4.0 is the latest step towards standardizing the different versions of UNIX (AT&T, BSD, XENIX, SunOS); convergence of several versions of UNIX - combined with new features - provides a collection of the best features of the major UNIX operating systems.

Olivetti UNIX System V Release 4.0 conforms to leading standards (SVID3, IEEE P1003.1, POSIX System Standard, X/Open Portability Guide 3, ANSI X3J11 C Language Standard, Application Binary Interface - ABI - definition for Intel) and has been awarded the X/Open XPG3 Brand.

Its most important benefits can be summed up as follows:

- Protection of investments through upward compatibility
- Application portability
- Interoperability with mixed environments.

Olivetti enhancements to UNIX System V Rel. 4.0 assure full user exploitation of the many features of a system offer.

NETWORK CONNECTIVITY

In the old computing scenario, networks were merely a means of connecting computers. in the new emerging scenario, the network is seen as the center of activity for enterprisewide resource sharing. Therefore, the yardstick by which a computing system is judged is no longer simply its number-crunching efficiency, but also its ability to transfer information.

Networking is the backbone of Os and the connectivity it provides g antees synergy and integration of Olivetti offer while at the same allowing open, scalable solutions major OSA profiles rely heavily one nectivity to provide their functions





LAN Connectivity

The heart of the OSA networking offer is the Local Area Network that provides the platform on which to build distributed, client-server applications, where processing power is distributed and costly resources are shared among one or more servers and several clients. The capabilities of LAN-based, client-server distributed systems are then extended with peerto-peer 'full ISO-OSI' connectivity, with services such as X-400 electronic mail, file transfer (FTAM), Packet Assembler Disassembler (PAD), and virtual terminals.

The networking offer includes a number of significant added values:

Enterprise-wide Connectivity: the key factor for successful LAN integration in most of today's corporate information systems. The OSA systems offer can connect to the following network environments:

- IBM Host Communication
- ISO-OSI
- DECnet
- Internet Protocol Suite (TCP/IP)

Network and System Management Infrastructure: provides support to the integrated management solutions for today's enterprise information systems. This infrastructure comprises integrated, consistent management capabilities to support the advanced functions provided by Olivetti management solutions as well as by leading management environments (IBM Net-View, DECnet). In addition, it supports standard management protocols (CMIP, SNMP, CMOL).

THE OSA SYSTEM OFFER

Local Area Networks are the heart of Olivetti's distributed system offer. The major features of this area are:

- Industry standard Network Operaling Systems
- Support for a variety of standard protocols
- Wiring/transmission technology independence
- Local Management System
- Multivendor LAN interoperability.



LAN Technology: Choose the one you prefer.

Olivetti supports the two leading LAN technologies: Ethernet-STARLAN (IEEE 802.3) and Token Ring (IEEE 802.5). Regardless of the LAN hardware selected, the services and Application Programming Interfaces provided are the same.

LAN environments:

- PC Integration environment MS-DOS, MS Windows and OS/2 provide the client side to services provided by UNIX and OS/2 servers. This model provides the best support for OSA application profiles. Features are:
- LAN Manager and Netware Network Operating Systems
 OSI-TP4, TCP/IP, NetBEUI, IPX/SPX
- OSI-TP4, TCP/IP, NetBEUI, IPX/SPX protocols
- Ethernet-STARLAN and Token Ring LANs
- Bridges and routers for internetworking.
- Homogeneous UNIX environment: UNIX acts as both client and server. Features are:
- NFS as the Network Operating System
- TCP/IP protocols and services
 Ethernet LANs.

ENTERPRISE-WIDE CONNECTIVITY

Connecting a LAN-based distributed system with the major external networks provides enterprise-wide networking, the four major features of which are outlined below.



IBM Host Communication

This provides a very comprehensive, robust set of products:

- BSC 1/2/3, SNA/SDLC, SNA/X.25, and SNA/T.R.
- Physical Units 2.0 and 2.1. Logical Units 0, 1, 2, 3 and 6.2
- Integration of APPN architecture
- Native interfaces IBM LUA, APPC/CPI-C
- Batch and enquiry emulators 2780/3780, 3270, 3770
- Network Management NetView integration.

ISO-OSI

The same products provide enterprise-wide connectivity for an all-OSA System Offer configuration and for multivendor environments. The major building blocks are:

- Point-to-point and X.25 connections
- OSI standard services (PAD, FTAM,

X.400 E-Mail, Virtual Terminal). Future evolution will include: X.500, CMIS/CMIP management, APLI and XAPIA interfaces.

DECnet

This is a widely-used solution for building complex corporate networks. The Olivetti offer is fully compatible with DECnet Phase IV.

Internet Protocol Suite (TCP/IP)

Provides multivendor connectivity in the TCP/IP world. Besides the TCP/IP protocols and services, Olivetti supports the SNMP (Simple Network Management Protocol) agent component.

NETWORK AND SYSTEM MANAGEMENT

The Olivetti Management infrastructure is designed to manage entry level to large enterprise-wide networks. The management domain is divided into a set of logical domains (workgroup environments) controlled by the Olivetti Local Management System (LMS).

The LMS monitors and controls local resources from management applications available on either the Olivetti Network Control Center (NCC) or on the IBM NetView program.

Most of the current standard activities for network management are based on two protocol areas: the Simple Network Management Protocol (SNMP) for TCP/IP networks, and the Common Management Information Protocol (CMIP) and affiliated Common Man-agement Information Services (CMIS). The Olivetti OSA approach is to provide standard management protocols such as SNMP and CMIP as well as emerg-ing protocols such as CMOL (CMIP over LLC).



SECURITY

In all application areas, users are increasingly aware of the pressing need to protect sensitive information. OSA DCP includes security services able to guarantee enhanced protection of sensitive information in open networks and distributed systems:

- User identification and authentica-. tion
- Control of user and application access to system resources
- Integrity of the system software
- Data integrity and confidentiality on the system, network and removable media
- System authentication on a network
- Security administration
- Cryptographic services to support integrity and confidentiality functions

DISTRIBUTED OBJECT MANAGEMENT

Distributed Object Management is a building block of OSA DCP that provides the infrastructure for object-oriented applications in a distributed environment. It is based on the application of the Object Management Group (OMG), Common Requester Broker Architecture (CORBA) stand-ard. This kind of infrastructure is the base for future capabilities such as: object-oriented desktop, tools control integration, office information system.

OSF-DCE SERVICES

The OSF-Distributed Computing Envi-ronment provides the advanced features required to decentralize business functions and improve user productivity. The basic services offered by OSF-DCF include threads, remote procedure call, timing, naming, security.

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