UNIX System V
Release 4 MP-RAS

NCR
System
3000

NCR
An AT&T Company

Open,
Cooperative
Computing.
The Strategy
for Managing
Change.

UNIX System V

As the information processing needs of businesses have evolved over the years, so has the demand for systems that can bring together data and users in different locations, deliver competitive advantages, and promote organizational effectiveness and productivity. Equally important is the need for open systems, standardization and compatibility. UNIX® System V provides solutions to help manage these needs.

Compatibility, Portability and More

UNIX System V is widely accepted as the premier open, standards-based operating environment. It offers not only compatibility within a specific product architecture, but also portability of applications across architectures. What's more, UNIX System V is accompanied by a rich library of applications and utility software that addresses a broad spectrum of user needs. And comprehensive security features meet the needs of the vast majority of business and government users.

NCR's Commitment to UNIX

AT&T® invented UNIX, and NCR was one of the first major computer manufacturers to adopt it for commercial systems. With over 150,000 systems shipped — System 3000, StarServer™, TOWER®, 3B2, and others — NCR understands the needs of UNIX operating system users worldwide.

In addition, we have taken a leadership role in standards development. For over a decade, NCR and AT&T have actively committed funding, expertise and resources to key standards organizations including UNIX International, X/Open®, and the International Organization for Standardization. NCR is also a member of the Open Software Foundation. The result of all this is our customers are ensured access to products based upon the best technologies available from any source.

Today, our commitment continues. UNIX System V Release 4 is offered with the NCR System 3000, which ranges from desktops to mainframe-level systems. This powerful combination provides the foundation for NCR's scalable open systems strategy.

In response to our customers' need for a robust operating environment, NCR has incorporated substantial enhancements to the Reliability, Availability, and Serviceability — or RAS — of our UNIX System V Release 4 operating environment. We have also added multiprocessing capabilities, and tuned these for the architecture of the NCR System 3000.

This combination of UNIX System V Release 4, multiprocessing, and powerful RAS capabilities explains why we call our operating system *NCR UNIX SVR4 MP-RAS.*

Key UNIX System V Release 4 Features

Convergence of UNIX System Derivatives

UNIX System V Release 4 represents the convergence of the best features of UNIX System V with other popular versions of UNIX: the BSD version developed at Berkeley; XENIX®, developed by Microsoft® and SCO®; and SunOS. With the unification of these major UNIX System variants, System V now supports thousands of applications, including virtually all the major independent relational database products, as well as a number of products from the DOS/Windows world, like Lotus 1-2-3® and WordPerfect®.

Application Binary Interface

The advent of Application Binary Interfaces (ABIs) is an exciting step toward making shrink-wrapped software for UNIX-based systems a reality. ABI-conformant applications are portable across Intel® hardware platforms, increasing the number of applications available for the NCR System 3000.

Well-Defined Programming Interfaces

In addition to support for a range of application programming interfaces, UNIX System V Release 4 provides lower-level interfaces that simplify the development of communications software and drivers for special devices. This eases migration to future UNIX releases, and protects investments in software development through a stable interface that is consistent across all UNIX System V Release 4 environments.

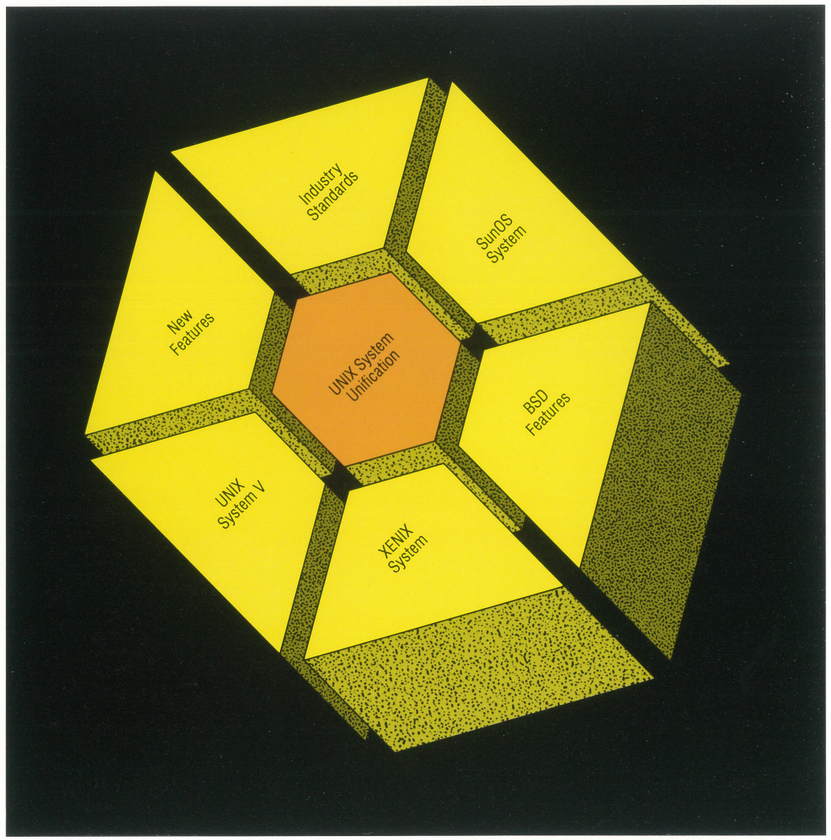
For the user, this means a wider selection of add-on hardware and software options.

Conformance to Standards

UNIX System V Release 4 reflects a strong dedication to industry standards through its conformance to the UNIX System V Interface Definition (SVID), the precursor of today's open standards — IEEE's POSIX®, X/OPEN's Portability Guide (XPG), ANSI C, and the government procurement standard, FIPS 151-1.

Security facilities built into UNIX System V Release 4 meet C-2 level standards as defined by the National Computer Security Center (NCSC).

By complying with these guidelines, UNIX System V Release 4 is designed to provide its users a secure, reliable product that is compatible with today's offerings as well as tomorrow's.



Multiprocessing Support

The widespread use of UNIX today reflects a desire for vendor independence and the need to protect investments in information technology.

An important element of investment protection is the ability to enhance the capabilities of your computing systems as your needs change. The NCR System 3000 is designed with growth in mind, and multiprocessing plays a key role in realizing this strategy.

NCR has been delivering multiprocessing UNIX to commercial customers since 1988 — longer than any of our major competitors. We also developed the multiprocessing technology currently found in the multiprocessing version of UNIX System V Release 4 from UNIX System Laboratories.

Multiprocessing offers incremental improvements in performance within a system, which can be applied whenever needed. And unlike an environment where single-processor systems are deployed, symmetrical multiprocessing can automatically balance your workload across multiple CPUs, delivering an optimum return on your investments in computing power.

This also provides the throughput needed to consolidate multiple applications onto fewer systems. And with fewer systems, more time can be spent applying information technology to business problems, less on managing your computing environment.

Real-Time Support

Real-time support provided by UNIX System V Release 4 makes it a better platform for time- or event-critical tasks found in applications such as transaction processing or factory automation. Real-time support includes:

- Real-time process priorities
- Process residency
- High-resolution timing
- Real-time process scheduling

These real-time processing facilities are now part of the System V Release 4 core operating system, so it is possible to design applications with real-time dependencies without giving up portability and vendor independence.

Internationalization

The need for internationalization, a major factor in providing truly open systems, spans many markets and customers. Since computer interoperability cannot be confined to geographic borders, the need exists for a software platform that supports all major written languages.

UNIX System V Release 4 provides enhanced internationalization capabilities designed to make it easier to customize applications in national languages by supporting:

- Multibyte characters
- Numeric editing rule differences
- Date and time information in local format
- Customized character sets and collating sequences

NCR Enhancements

NCR UNIX SVR4 MP-RAS provides a feature-rich environment for system administrators, programmers, and end users that includes major enhancements in the following areas:

- System Availability
- Manageability
- Security
- Communications & Networking

System Availability

The NCR UNIX SVR4 MP-RAS operating environment incorporates significant enhancements that deliver Fault Management, Serviceability, and System Switchover capabilities that are unique among open systems environments. These RAS attributes make the NCR System 3000 with NCR UNIX SVR4 MP-RAS optimally suited for use in mission-critical computing environments, where unnecessary system downtime is simply not an option.

Fault Management

Fault Management facilities identify and attempt to address conditions that could lead to system failure. Many of NCR's enhancements in this area automatically take action to make problems transparent to users.

One of these features is NCR's Journaling File System, which can reduce downtime following a system failure from minutes or hours to just a few seconds.

Powerfail recovery on NCR's multiprocessing servers — fully integrated with the NCR UNIX SVR4 MP-RAS operating system — offers unparalleled data protection during power outages. The entire state of the system is transferred to non-volatile storage and automatically recovered upon the return of power.

Extensive support for disk arrays, including RAID levels 0, 1, 3, and 5, presents our customers with a broad range of options for data protection and improved performance.

Serviceability

NCR UNIX SVR4 MP-RAS presents many options for managing and maintaining your computer system without incurring downtime.

These capabilities include the ability to add storage devices, to modify your file system, to install data mirroring and striping options, and to load new system microcode and operating system software — all without bringing your system down.

System Switchover

System Switchover provides the ability to transfer critical system resources and application processing to a back-up system in the event of a failure, all without operator intervention.

Within the NCR UNIX SVR4 MP-RAS environment, NCR's LifeKeeper™ offerings can eliminate single points of failure to ensure continued availability of applications, data, and computing resources. And unlike some other switchover offerings, LifeKeeper allows all systems in a cluster to run mission-critical applications.

NCR Enhancements
(continued)

Manageability

The NCR UNIX SVR4 MP-RAS environment offers outstanding system and network management through its support for the NCR Open System Administrator (OSA), NCR StarSENTRY™, and 3rd-party management tools.

Open System Administrator

OSA is an easy-to-use graphical environment for systems management, providing tools for performance optimization, system diagnosis, file system management, and most other standard administrative functions within a user-friendly, mouse-driven, "point-and-click" visual environment.

With OSA, systems can be managed remotely, minimizing the need for on-site system administration expertise. This provides reduced cost and more options for distributing data and processing closer to the people who can benefit from it most.

NCR StarSENTRY

NCR StarSENTRY adds the network management element to NCR's management framework. It offers the following important functions:

- Management of the network as well as remote administration of individual systems
- Management of remote LANs
- Maintenance of a central software library, with automated software distribution facilities
- Management of remote PCs

Other Management Tools

The NCR System 3000 supports mainframe-style system management through availability of the CA-UNICENTER product suite from Computer Associates, Inc. CA-UNICENTER is the UNIX version of CAI's widely used mainframe system management products, and provides a familiar management environment for administrators familiar with mainframe tools.

Security

NCR UNIX SVR4 MP-RAS satisfies C-2 Level security requirements, including extensive auditing capabilities and discretionary access control, which allows users to define access to objects which they create.

B-1 security, with mandatory access control, is available as an option. As B-2 Level security features and certification tests become available, they will be offered in future NCR UNIX SVR4 MP-RAS releases.

NCR also delivers comprehensive network security capabilities for distributed computing. These include distributed OLTP environments using NCR TOP END®, as well as client/server computing with NCR StarGROUP® LAN Manager, NCR COOPERATION®, and the OSF Distributed Computing Environment (DCE).

NCR Enhancements
(continued)

Networking

The NCR UNIX SVR4 MP-RAS environment delivers outstanding core networking and interoperability capabilities. These include OSI Networking, OSF DCE support, SNA networking, PC Integration, and standard UNIX networking capabilities such as NFS and TCP/IP. This array of networking capabilities enables the System 3000 to integrate easily into virtually any enterprise computing environment.

OSI Networking

NCR UNIX SVR4 MP-RAS is OSI network-ready, since the OSI network transport and core OSI utilities are included with every copy of the operating system. This provides support for the deployment of distributed applications utilizing the OSI international standards.

OSF DCE

When available, a full complement of additional distributed computing capabilities will be supported through NCR's offering of the OSF Distributed Computing Environment (DCE). Like OSI, DCE is an important part of NCR's Open Cooperative Computing Architecture (OCCA).

SNA Networking

To help you protect investments in installed systems and allow a smooth transition to a more open environment, NCR UNIX SVR4 MP-RAS offers extensive support for SNA communications.

PC Integration Services

Because NCR has focused on commercial applications for its UNIX-based systems, interoperability with personal computers has always been a priority.

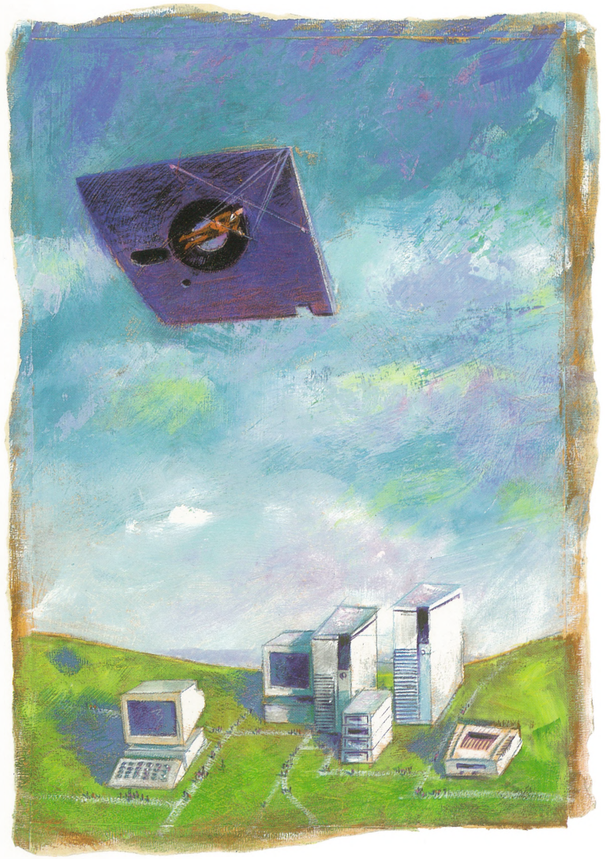
NCR was the first computer vendor to deliver a UNIX version of Novell® NetWare®, and is the principal developer of LAN Manager for UNIX, which we license jointly with Microsoft to a number of other companies.

NFS and TCP/IP Networking

The NCR System 3000 UNIX offering also provides full support for standards-based networking using TCP/IP and the Network File System (NFS). These, along with X11, Motif™, the NCR On-line CD Library, and a number of core RAS features, are packaged together into a single cost-effective operating environment.

NCR Online Library

The NCR UNIX SVR4 Online Library provides access to UNIX documentation through a Motif-based graphical user interface. It is distributed on CD-ROM and supports full-text keyword search, browse capabilities, and hyper links, allowing simultaneous and simplified access to System 3000 documentation.



Forging the Future

We think you'll agree UNIX System V Release 4 represents the future in commercial operating systems, and NCR UNIX SVR4 MP-RAS offers the most robust set of Reliability, Availability, and Serviceability capabilities available in any open systems environment. NCR SVR4 MP-RAS offers tools, utilities, and application software designed to satisfy your organization's requirements. NCR backs these offerings with over a century of providing quality information processing products and services, and has been delivering UNIX on commercial computing systems around the world for over a dozen years.

Whether you are part of a small business, a large corporation, a software development company, or a government or academic environment, we're confident your organization will stay at the leading edge of technology, compatibility, and availability with the choice of systems based upon UNIX System V Release 4 from NCR. Consult your local NCR representative to learn how the NCR System 3000 and NCR UNIX System V Release 4 MP-RAS can work for you.

NCR Corporation continually improves products as new technologies and components become available. NCR Corporation, therefore, reserves the right to change specifications without prior notice.

All features, functions, and operations described herein may not be marketed by NCR in all parts of the world. Consult your NCR representative or NCR office for the latest information.

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