

# PowerFrame DS Series Overview





# Tricord DS Series: Superior Manageability, Availability and Performance for Local and Remote Workgroups

With today's global economy, organizations around the world are extending their computing resources beyond the boundaries of their main offices. Manufacturing sites, remote sales offices and distribution centers need powerful communication capabilities to link them to their company's headquarters.

Gone are the days of faxing or using a courier to send information overnight to other employees. E-mail, document sharing and immediate access to updated database information are essential components of any computing platform. This rapidly emerging trend toward local and remote servers has system administrators looking for an answer.

Enter the Tricord PowerFrame DS Series.

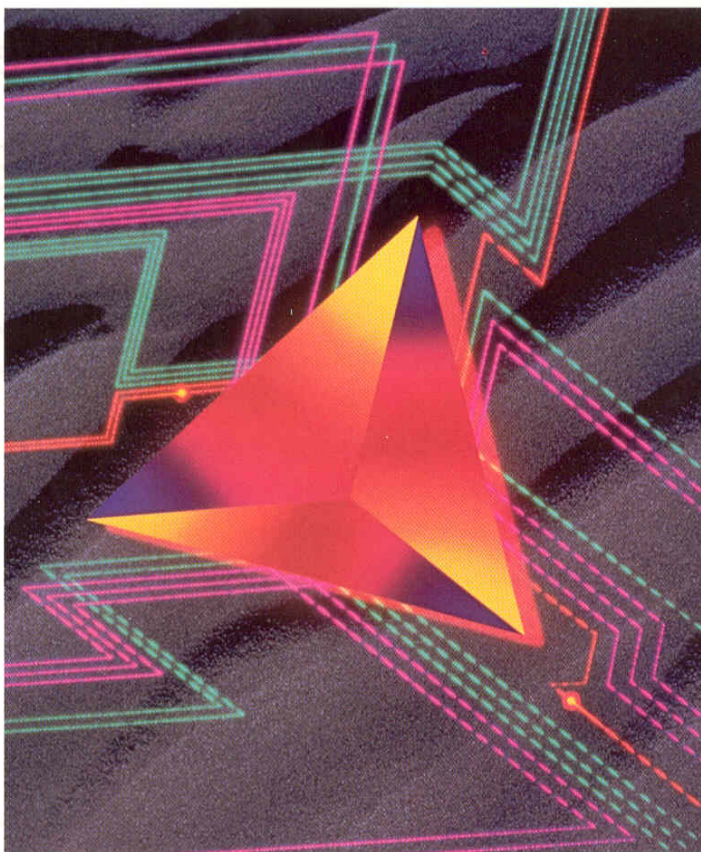
The DS Series is the ideal platform for remote and local workgroups that require the availability and performance of a high-end server at a price congruent with a smaller network. With the DS Series, you run the applications you want to run, when you want to run them and where you want to run them — all while remaining connected to your organization's central computer.

The DS Series scales the features and benefits of Tricord's PowerFrame ES Series to match the needs of smaller workgroups. All DS Series servers are fully loaded with the powerful features you want. All can be monitored from a central site. All contain the high-availability features that ensure your server won't go down when you need it most.

While remote and workgroup communications and computing capabilities are essential, remote technical assistance isn't always available. That's why all Tricord DS Series servers can be monitored and maintained from a company's computer center. If a problem occurs, the DS Series' management package stays on-line to keep the system running.

You'll earn strong returns on your PowerFrame investments because every server is fully upgradeable and compatible with most major software and hardware. PowerFrame servers grow as you grow, allowing you to add disk drives, processors and applications without buying a new server or sacrificing performance.

If you're maintaining remote offices or expanding your network to include workgroup servers, consider the PowerFrame DS Series. It provides the high-availability, high-performance features you need to perform file and application serving for local and remote workgroups.



# PowerFrame DS Series Provides the Big Features — Manageability, Availability, Performance and Compatibility — At a Small Price

It's no secret that remote and local workgroups need the power and availability offered by today's high-end enterprise servers. Immediate database access and admittance to office automation applications are essential when developing and maintaining a productive workgroup. Too often, however, workgroups are given slow and unreliable PCs to run their networks.

That's why Tricord developed the PowerFrame DS Series. Workgroups and remote sites can now have it all — the availability and performance of a high-end server at the price workgroups require.

## *PowerFrame DS Series: Dynamic management capabilities that enhance productivity, profit and performance*

Server reliability is the key to network success. Whether you are running a multiple-site wide area network or a small workgroup, knowing that your server is available and running at top performance is critical. That's why Tricord Systems has developed a three-tiered approach to server management.

The solution starts with Novell's NetWare Management Agent, a software tool that generates server statistics and alarms for monitoring, maintaining and managing NetWare servers from a central site. The agent gathers server configuration data and notifies users of potential or existing problems with the directory, file system or other components. In addition, it allows users to customize alert thresholds for alarm systems and provides configurable target designations for SNMP alarms. Each server in a network contains an agent, which connects to tier two, the NetWare Management System.

The NetWare Management System (NMS) provides a centralized management package for distributed NetWare servers that have the NetWare Management Agent. In addition to collecting all trouble alerts and configuration data from the agents, the NMS maps all IPX devices and IP routers, monitors the network for potential trouble spots and issues alarms when potential problems are discovered.

The third tier, Tricord's Availability Management Subsystem (AMS), takes over if a problem occurs on a PowerFrame DS Server. You simply click the PowerFrame icon in the NMS to access the AMS, even if the PowerFrame is down. The AMS delivers the tools you need to successfully manage network availability and performance.

AMS sends notification to a pager or the NMS console or both to alert you of NetWare abends, high internal temperatures or loss of power. The remote console capability allows you to reboot the server, run DOS-based diagnostics or remotely control the NetWare server console.

Best of all, uninterruptible access to the AMS keeps you informed because these features are fully functional even during a general power outage or server failure. The AMS's battery backup keeps management on-line even when the server is not.

The management features currently are available for Novell NetWare environments. Similar packages for other operating systems will be available soon.

**“The LAN market experienced strong growth within small businesses and remote sites, bolstering LAN server sales in the United States and Western Europe. As LAN technology continues to penetrate these previously untapped markets, IDC expects server shipments into these segments to increase rapidly.”**

*- International Data Corporation*

# PowerFrame DS Series High-Availability Features Maximize Uptime and Increase Productivity for Local and Remote Workgroups

The availability features of the PowerFrame DS Series surpass those found in any other remote or workgroup server. Now available with all of the reliability and manageability you've come to expect from the PowerFrame ES Series, the DS Series is scaled to meet the capacity of smaller workgroups.

## ***Distributed Disks and Power***

The DS Series PowerFile provides storage access for up to 28 half-height, hot-replaceable disk drives. Each drive can be configured in RAID arrays of 0, 1, 5 and 10 with hot replacement. Each of these hot-replaceable drives features its own power supply, distributing the disk power to isolate failures to one drive without affecting other disk drives. In addition, the disks can be hot spared and mirrored, ensuring optimum uptime.

## ***Hot Sparring and Hot Replacement***

Hot sparing ensures the immediate reconstruction of a failed drive using a spare drive residing in the system cabinet. Hot replacement is a procedure so simple that anyone on site can take out a failed drive and insert a new drive without disturbing the system.

## ***RAID Support***

The DS Series provides RAID support independent of your network operating system. It is implemented as firmware, eliminating the need to purchase expensive disk arrays.

## ***Error Checking***

The DS Series supports up to 384 MBytes of ECC memory. ECC circuitry increases data integrity and ensures that the information the system reads from memory is the same information that was written to the memory. The memory system of the DS Series also incorporates self-configuring decode logic, allowing the system to determine the capacity and speed of each SIMM during the power-on testing phase.

## ***Power and Cooling***

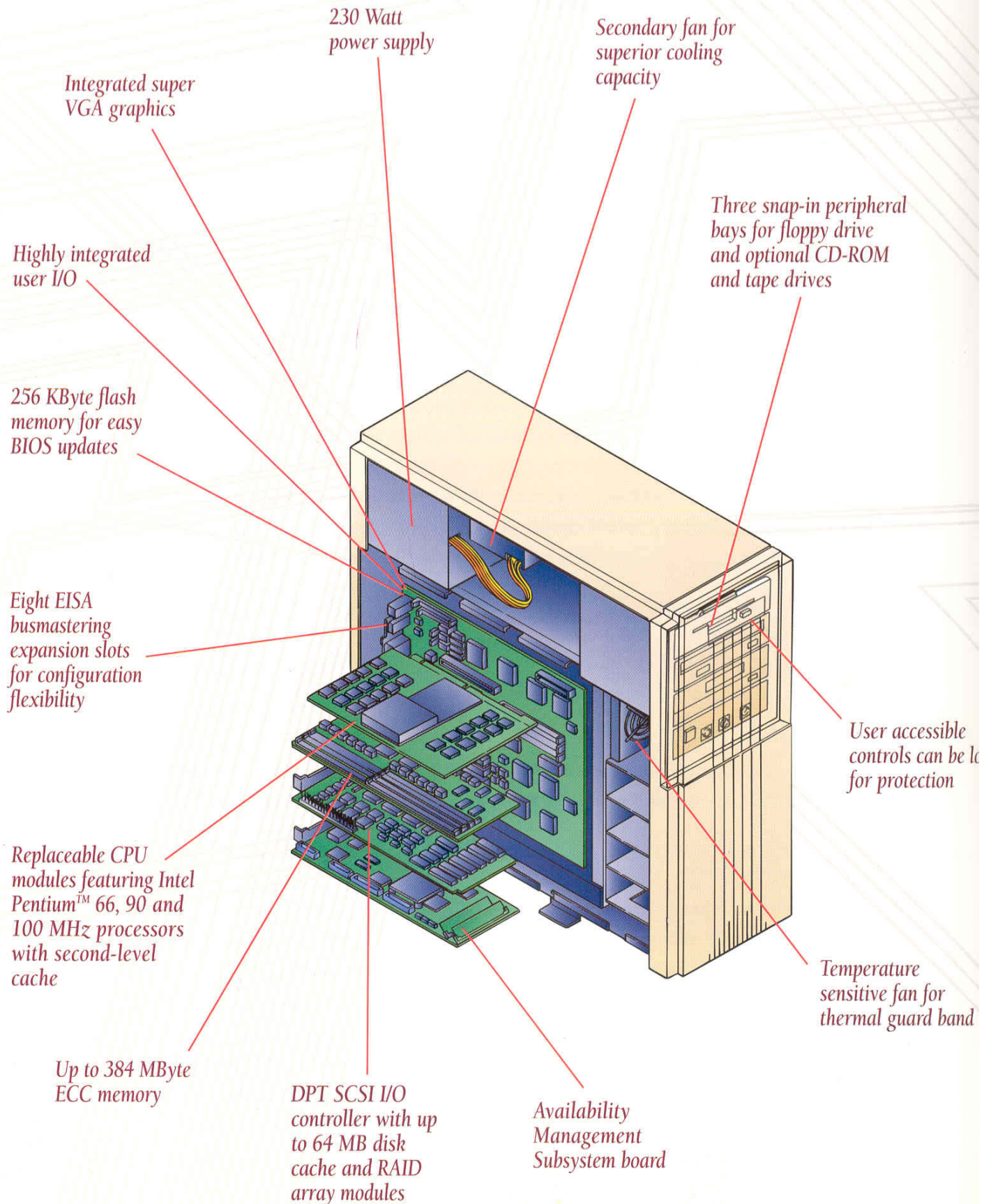
The power and cooling system in the DS Series monitors the power and temperature of the system and signals the AMS. This immediately notifies you of any over-heating problem, allowing you to act before serious damage is done.

## ***NIC Redundancy***

Redundancy of network interface cards (NICs) is available to ensure continued operation. For network protection in a NetWare environment, NIC Redundancy automatically distributes the network load among the remaining NICs if one NIC fails. When the failed NIC is functional again, the system automatically includes it with the other NICs.

The increasing need for off-site connections and small workgroup clusters does not decrease the requirement for server reliability. More users, more complex applications and more distance between sites all require the availability you've come to expect from Tricord. The PowerFrame DS Series delivers.

# DS Series Server



# DS Series PowerFile

3.5" disk drive shuttles provide universal industry standard SCSI drive support

Intelligent SCSI backplane contains extensive bus monitoring logic and active termination for reduced bus noise

Military spec SCSI bus and AC connectors allow hundreds of insertions

Hot replacement shuttle removal with quick release slide latches and shuttle handle

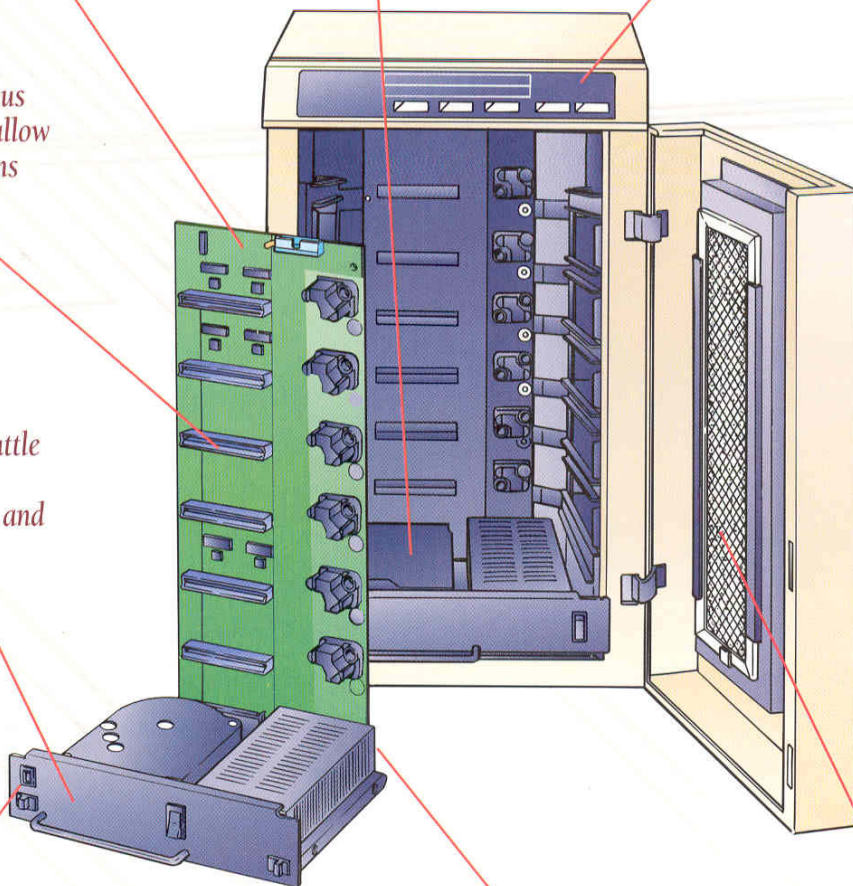
External SCSI ID selector for easy configuration of drives

Independent power supply isolates failures to the individual shuttle without affecting other system components

SCSI control panel provides PowerFile diagnostics

- Device ID select and control bus signals let you diagnose proper system operation on the selected SCSI channel
- Fan alarm warns of over-temperature within first 15 minutes of installation and also monitors fan RPM protecting drives from overheating
- Test button indicates properly functioning control LEDs and fan alarm

Removable air filter eliminates system dust buildup and provides easy routine cleaning



# DS Series High-Speed Components Ensure Top Performance at a Lower Cost

The DS Series uses up to two Pentium CPUs and up to four DPT SmartCache III controllers to maximize performance. The high-speed DPT controller utilizes dedicated processor technology and disk I/O performance-enhancing techniques such as disk caching, elevator seek, SCSI joins, command-tag queues and scatter/gather. In addition, optional NIC balancing software distributes the network load among multiple NICs to improve network performance up to 100 percent.

When it comes to performance, the DS Series really shines. In a series of sequential read and write tests, for instance, the DS Series consistently outperformed similarly configured servers from other manufacturers by reading or writing up to 29 percent more data in the same period of time. Sequential read and write tests emulate the I/O common in file serving environments where applications are accessed through a server.

But file serving isn't the only place it shines. AIM tests measure the performance in an application serving environment. The PowerFrame DS Series received an AIM rating of 81.9, the highest single-CPU AIM number ever recorded for an Intel-based machine.

## Compatible, Open System Design is Key to DS Series Success

The open system design of the PowerFrame DS Series offers true vendor independence. Free choice of operating systems, applications, network topologies, interconnectivity options and communications protocols are essential when designing networks for remote and local workgroups.

The PowerFrame DS Series is binary-compatible with today's top open system operating systems, software applications, databases and downsizing tools. Adherence to EISA standards provides the widest choice of NICs, communication cards and other EISA devices. SCSI and SCSI-II compatibility adds the highest performance disk drives, tape backup systems and other SCSI-based devices.

Just as important, however, is the DS Series' compatibility with other servers in the PowerFrame family. When you buy PowerFrame, you can use the same software and peripherals across all platforms. That means one operating system, one suite of applications and one peripheral set. And because the PowerFrame family scales to six processors, 1.0 GByte of memory and 168 SCSI devices, you can be assured of its compatibility throughout your enterprise. Regardless of your platform or your software, Tricord has an enterprise server that will meet your needs.



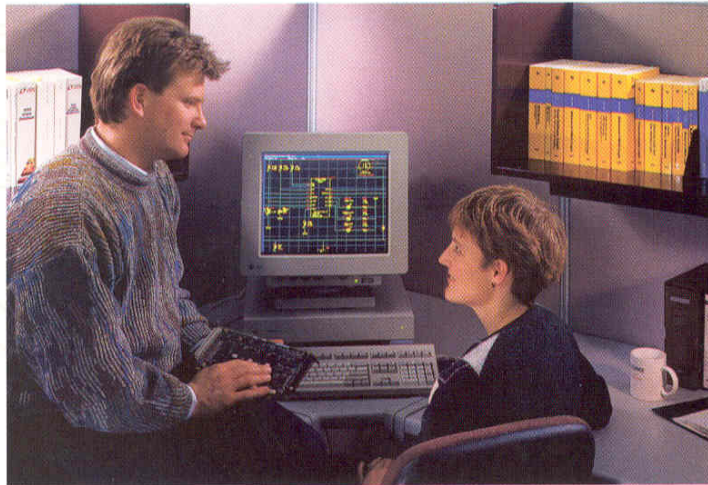
# PowerFrame DS Series: Providing the Manageability, Availability and Performance Remote and Local Workgroups Require at the Price They Need

The PowerFrame DS Series combines the availability, manageability and performance of high-end servers with a price you would expect only from less-featured, low-end servers. This combination creates the perfect match for anyone needing a local or remote workgroup server.

Remote monitoring and integrated centralized management ensure you can stay abreast of problems as they occur. A suite of availability features, including disk hot sparing and replacement, distributed disk power and ECC memory, keep the DS Series running. Multiple CPUs, a superior disk controller and optional NIC balancing keep it running fast.

The DS Series supports a wide collection of operating systems, applications and peripherals, and is Intel, EISA, SCSI and DOS/Windows compatible. When you purchase a PowerFrame server, you maximize your investment because every server in the PowerFrame family uses the same software applications and hardware components. Today and in the future, the PowerFrame DS Series provides a high performance, highly available and manageable server for local or remote workgroups. Whatever your computing needs or environment, the DS Series provides the power and reliability you need.

For more information about each of the servers in the PowerFrame DS Series, consult the individual Product Data Sheets or call your local Tricord representative.



*The network expertise of the Tricord engineering group is apparent in the scalable performance built into every PowerFrame DS Series server.*

# Tricord: A proven player.

Join these and thousands more who have already answered their network and application requirements with a PowerFrame enterprise server.

## **GOVERNMENT**

Internal Revenue Service  
States of Washington, Utah, Colorado and Montana  
Australian Prime Minister  
U.S. Department of Commerce  
Singapore Ministry of Defense  
U.S. Air Force  
FBI

## **FINANCIAL/LEGAL**

Franklin Fund  
American General Life  
John Alden Insurance  
Lawson & Lundell (Canada)  
J.P. Morgan  
Security Pacific  
Houston General Insurance  
Conseco  
Norwest Mortgage  
BGZ Bank (Poland)  
Radler, Raupach & Treise (Germany)

## **ENERGY**

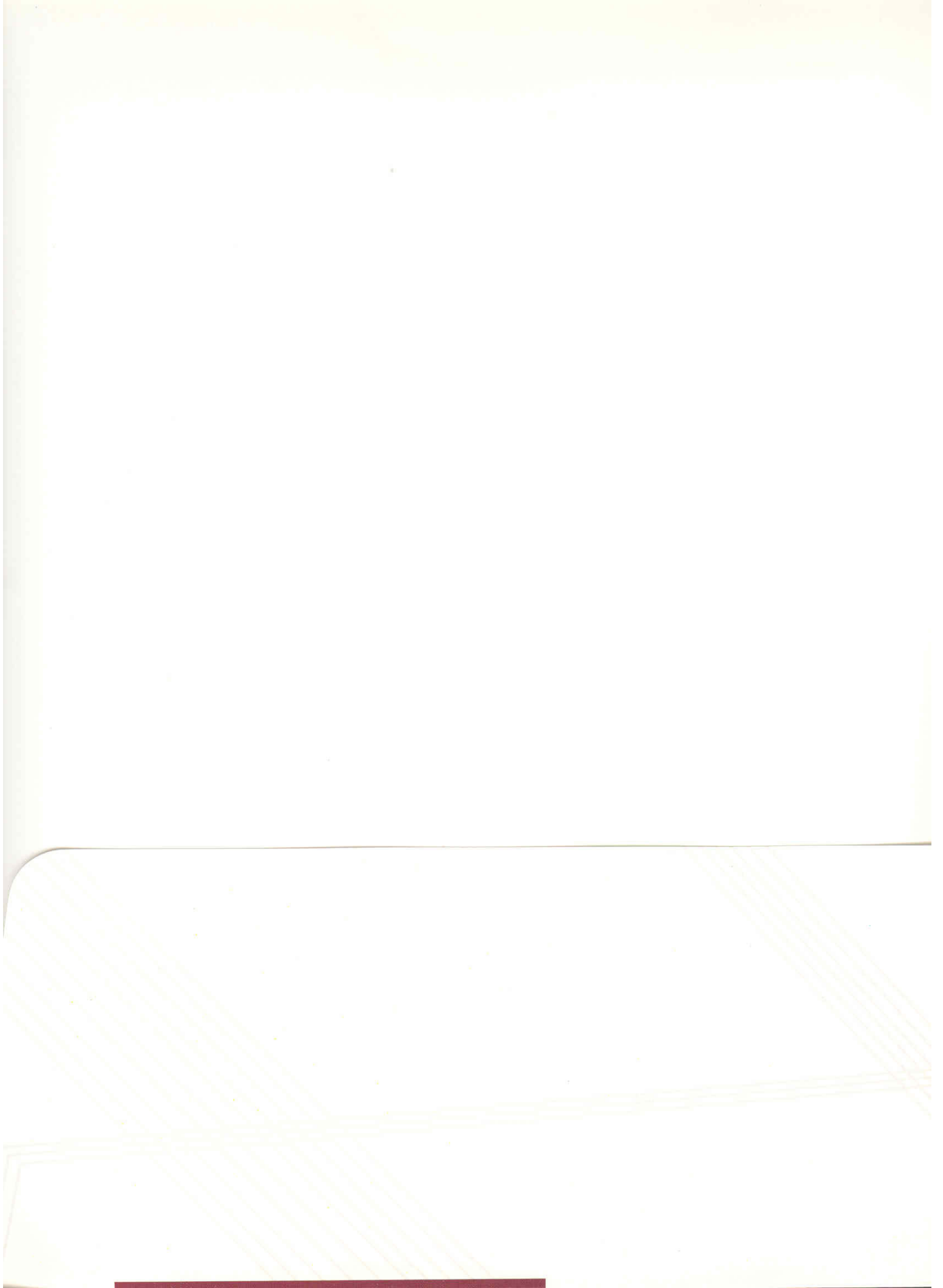
Chevron  
Texaco  
Jet Propulsion Laboratories  
Enron  
ARCO  
British Petroleum  
British Aerospace  
EDO Corporation

## **MEDICAL/EDUCATION**

MD Anderson Cancer Research  
Marshfield Clinic  
Dresden University  
U.S. Health Care  
Cooks Childrens Hospital  
Smithsonian Institute

## **MANUFACTURING/PROCESS**

Pillsbury  
John Deere  
Ericsson  
AGFA Compugraphics  
Hitachi  
U-Haul  
Tropicana  
Random House Publishing  
TRW Koyo



**Corporate Headquarters**

3750 Annapolis Lane  
Plymouth, Minnesota 55447  
(612) 557-9005  
Fax (612) 557-8403  
(800) TRICORD

**U.S. Sales Offices**

**Minneapolis**  
(612) 557-9005

**New York, New Jersey**  
(201) 843-2130

**Boston**  
(508) 626-2008

**Chicago**  
(708) 717-7672

**Denver**  
(303) 770-5546

**Philadelphia**  
(215) 940-1646

**Charlotte**  
(704) 552-0990

**Seattle**  
(206) 583-8395

**Southern California**  
(619) 931-4828  
(714) 852-4446

**Northern California**  
(408) 432-7231  
(408) 879-2344

**Atlanta**  
(404) 242-8177

**Dallas**  
(214) 702-6364

**Washington D.C.**  
(703) 847-3000

**Tampa**  
(813) 799-6099

**Detroit**  
(313) 591-7219

**International Sales Offices**

**Ottawa, Canada**  
(613) 837-8006

**Toronto, Canada**  
(416) 226-3375

**Mexico City, Mexico**  
525 628 1254

**London, United Kingdom**  
44 734 507 969

**Oslo, Norway**  
47 2265 49 40

**Düsseldorf, Germany**  
49 211 49 13 045

**Paris, France**  
33 140 07 86 76

**Near East, Far East, PacRim and China**  
3750 Annapolis Lane  
Plymouth, Minnesota 55447  
(612) 557-9005

**Tokyo, Japan**  
81 3 5420 4451

