digital

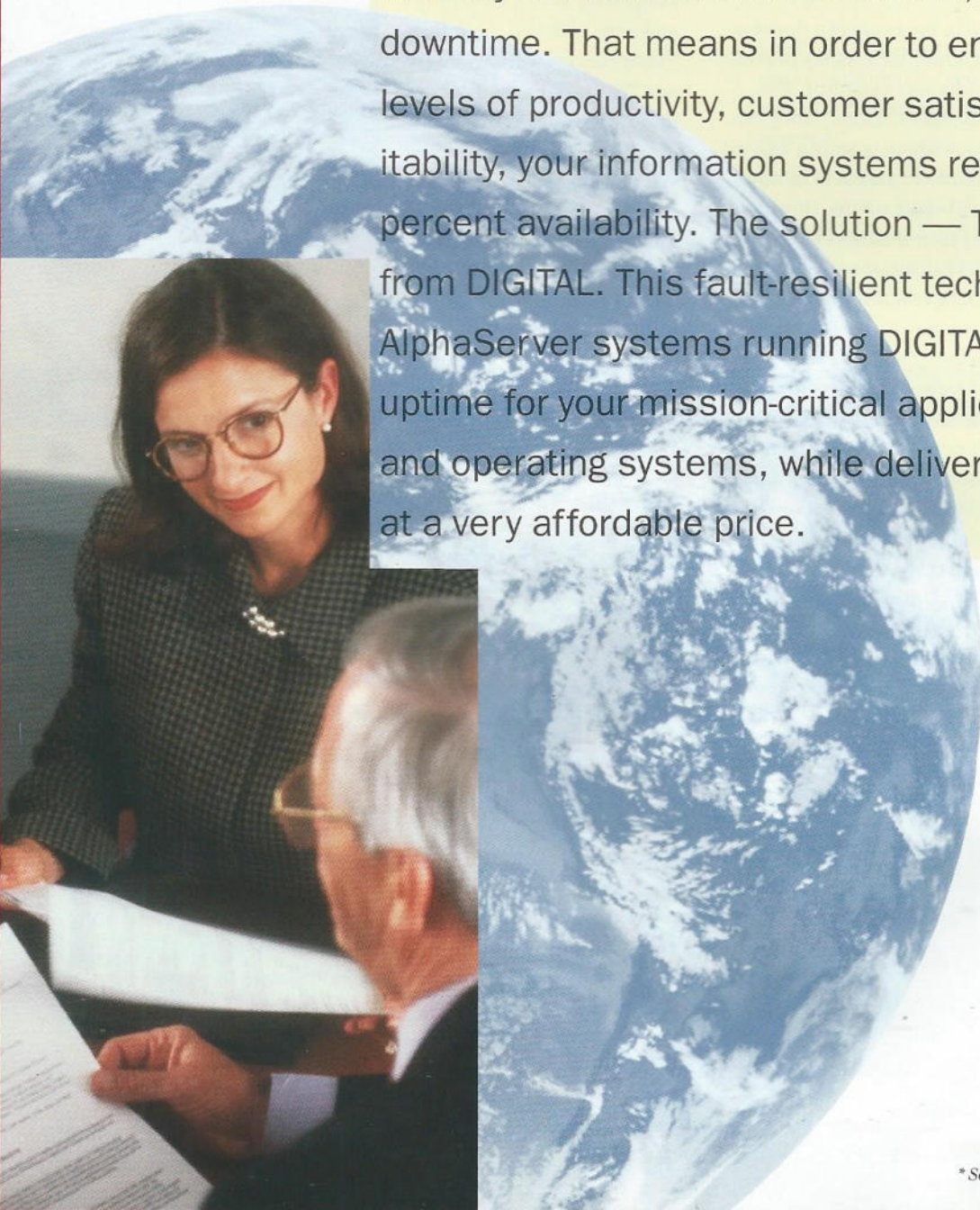## TruCluster Products for DIGITAL UNIX

High-availability, high-performance computing solutions for your critical business operations

In today's 24 x 365 business world, there's no time for downtime. That means in order to ensure the highest levels of productivity, customer satisfaction, and profitability, your information systems require near 100 percent availability. The solution — TruCluster Software from DIGITAL. This fault-resilient technology for AlphaServer systems running DIGITAL UNIX® maximizes uptime for your mission-critical applications, databases, and operating systems, while delivering high performance at a very affordable price.

The old adage "time is money" is truer than ever in today's fast-paced global marketplace. The cost of productivity losses due to computer downtime is having a huge impact on business profits. In fact, downtime can cost some businesses as much as $1 million per hour!* Non-mission-critical applications are also costly, averaging $78,000 per hour for a typical mid-size company.* Even as few as eight or nine hours of downtime each year can really hurt your bottom line. But that's what you can expect from a server offering 99.9 percent uptime.

Source: International Data Corporation (IDC)

TruCluster products — maximizing uptime around the clock

International finance.
Telecommunications.
Internet commerce.
Health care.
Government.

There are countless organizations that depend on 'round-the-clock availability of critical applications and data. While hardware redundancy solves part of the problem, it doesn't address your need for application, operating system, and database availability. For that, you need clustering technology – you need DIGITAL TruCluster products.

TruCluster products allow you to distribute workload, applications, and databases across multiple processors, while linking them so they appear to users as a single system. With TruCluster products, if a component or network failure occurs on one system, other members of the cluster will automatically pick up its responsibilities in seconds. And most important, the failover is completely transparent to users, so they have uninterrupted access to mission-critical applications and data.

Even in the event of a disaster, TruCluster technology provides continuous computing. Fire, earthquakes, floods – they can strike without warning, leaving you without access to mission-critical applications. How long could your business survive? With TruCluster technology, you'll have a predictable recovery strategy that won't leave you guessing. That's because you can locate disaster tolerant cluster nodes miles apart, linked by high-performance DIGITAL network products, ensuring availability of applications and data despite complete loss of systems in your local facility. DIGITAL disaster recovery with our Computer Special Systems Division will consult with you to determine your precise requirements and appropriate levels of protection to meet those requirements.
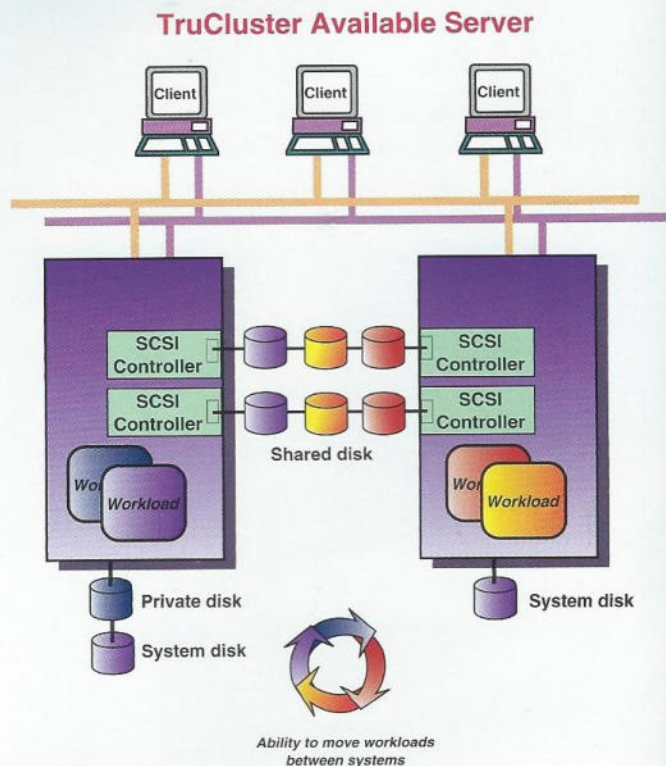
TruCluster products – the best way to protect your vital information assets and preserve your critical business operations around the clock.
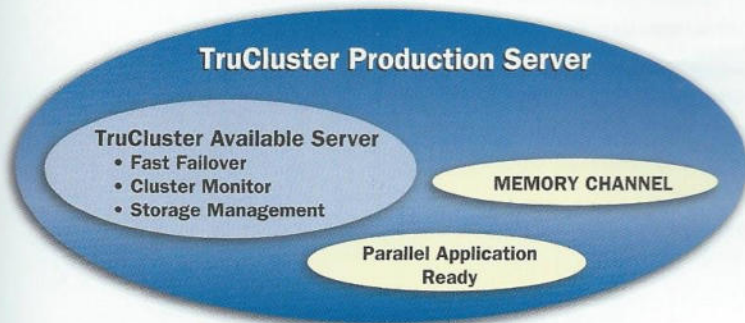
Proven technology from the industry leader

DIGITAL is the industry leader in clustering. We pioneered the technology over a decade ago and have installed more than 75,000 clusters worldwide. Today, our TruCluster products continue this tradition of leadership.

With DIGITAL TruCluster products, you're assured of getting proven cluster technology for an AlphaServer-based DIGITAL UNIX environment. TruCluster solutions are compatible across the full line of AlphaServer systems, enabling you to configure and reconfigure your environment with maximum ease and minimum risk. These products offer extensive scalability to increase performance and capacity as requirements dictate. And thanks to our adherence to industry standards, use of low-cost interconnects such as PCI and SCSI, and avoidance of specialized programming, you can adapt to changing business needs smoothly and cost-effectively, thus protecting your investments.

TruCluster Available Server

Ability to move workloads between systems

ZK-1330U-AI

A complete solution to meet both your high availability and high performance needs

TruCluster Production Server

TruCluster Available Server
- Fast Failover
- Cluster Monitor
- Storage Management

MEMORY CHANNEL

Parallel Application Ready

With DIGITAL TruCluster products, you can choose the capabilities that are just right for your particular needs today, while scaling seamlessly to support your needs tomorrow.

Your ideal high-availability solution — TruCluster Available Server

The TruCluster Available Server stands up to the most demanding high-availability requirements. It supports up to four nodes that can be added incrementally and incorporates industry-leading technology to ensure near 100 percent availability of systems and data.

Rapid failover

Rapid system failover is the key to maintaining high availability of data, applications, and resources in the event of component or network failure. To ensure the fastest possible failover, DIGITAL TruCluster Available Server uses a dual monitoring system that detects failure over your system's SCSI

bus, as well as Ethernet, ATM, or FDDI networks. Whether you experience an operating system crash, loss of a network controller, or I/O failure, TruCluster software will detect the problem and move operations over to a another system in a matter of seconds.

With the TruCluster Available Server, you can configure your cluster in either a Concurrently Active or Master/Standby mode. Concurrently Active configurations divide workload among all servers in the cluster, while in Master/Standby mode, one server remains idle until called upon in the event a failure. Failover occurs automatically, but you also have the option to initiate failover manually to perform scheduled maintenance, update operating systems, add new applications or technology, and upgrade servers—all without disrupting users. In fact, you can even perform online service modifications – add or remove disks, change NFS services, etc, – without shutting down the system. All it takes is the click of your mouse with our graphical management software.

Fast recovery

To minimize downtime, TruCluster Available Server takes advantage of the unique Advanced File System (AdvFS) that is part of DIGITAL UNIX. Unlike the "fsck" utility of traditional UNIX file systems, which can cause reboots to take hours, the DIGITAL AdvFS restarts in just seconds – regardless of your file system size. That way you can minimize the time and cost of unexpected downtime. And with its journal-based design, AdvFS assures you of the utmost in data integrity.

AdvFS supports multiple volumes, as well as an array of online maintenance, performance, and reconfiguration options. So, you can dynamically reconfigure your file systems, including cloning for hot back-up protection. The AdvFS intuitive graphical interface makes the process fast and easy.

Storage protection

The TruCluster Available Server also supports the Logical Storage Manger (LSM) within DIGITAL UNIX. LSM provides failover protection for storage, allowing you to create large file systems that span multiple disks. Then, using a graphical interface, you can dynamically allocate disk storage or perform online volume reconfiguration to re-balance I/O workload and optimize performance. LSM also supports RAID0 data striping and RAID1 data mirroring to protect critical data against unexpected outages or improve I/O performance. With LSM, even if one disk fails or is taken down for management, you're still assured of data availability with minimal disruption to users and applications. Clusters can be configured with no single point of failure.

Back-up availability

To ensure data protection and high availability even during back-up, TruCluster Available Server provides shared tape support with Networker for DIGITAL UNIX. Networker allows servers to share tape devices and index information, so if a server goes down during back-up, the back-up operation will failover to an alternate server automatically. Networker also provides high-performance back-up capabilities, which are particularly important for very large databases. Networker will handle hundreds of gigabytes per hour, dramatically reducing your backup time.

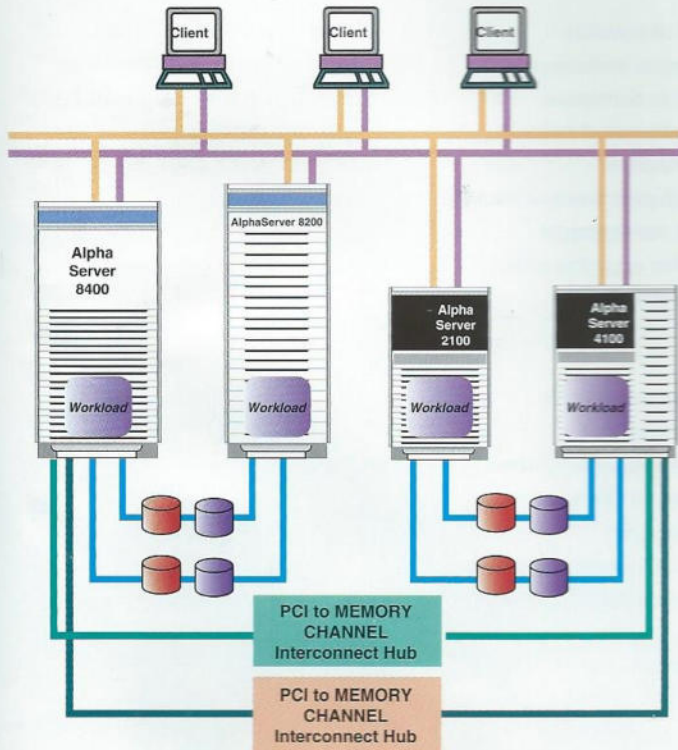### For high-availability with high-performance — choose the TruCluster Production Server

When your operation depends on both high availability and high performance, the TruCluster Production Server delivers. In addition to providing the same high availability features you get with the TruCluster Available Server, the TruCluster Production Server also supports your high-performance requirements. With the TruCluster Production Server, you can connect up to eight high-performance AlphaServer systems to achieve industry-leading performance levels. The TruCluster Production Server supports the DIGITAL breakthrough MEMORY CHANNEL interface

technology, which was designed specifically for DIGITAL clusters to ensure the fastest possible memory-to-memory connections. MEMORY CHANNEL delivers ten times the bandwidth of traditional cluster interconnects, while attaining latency and overhead on the order of 100 times lower. Since it operates at near system bus speeds, tightly-coupled clusters approach SMP and shared memory performance levels.

To maximize database performance, the TruCluster Production Server supports the Oracle Parallel Server (OPS)

and Informix eXtended Parallel Server (XPS) database management systems. These systems allow DBMS tasks to be distributed as a series of server processes across multiple processors or cluster nodes. As a result, applications have high-speed parallel access to databases across the cluster, ensuring the highest performance even in the event of failover. The Distributed Lock Manager further enhances the performance of parallelized applications by synchronizing access to information that is shared by applications running on multiple cluster nodes.

Simplify the configuration and management of clusters with a graphical cluster monitor

Both TruCluster products provide you with an intuitive graphical management interface to simplify the process of configuring and reconfiguring your

systems to meet changing needs. With just a point and click, this cluster monitor lets you configure, manage, and relocate services to customize failover procedures as appropriate for your unique requirements. You can specify network services to restart automatically or according to certain priorities, as well as shut down lower-priority services should a server be removed from the cluster. And you have the control to balance workload among multiple servers to optimize performance.

Management can be local or remote from any server in the cluster. Either way, you have a single, consistent management interface – greatly reducing administrative costs, making routine management tasks quick, easy, and convenient.

TruCluster Production Server

ZK-1331U-AI

When every minute counts, you can count on DIGITAL TruCluster Software. This sophisticated technology provides 99.99 percent uptime – just a few minutes of downtime per year – with the fastest failover available. So if a component failure occurs, it's barely noticed. There's no need to take down the cluster for scheduled maintenance or upgrades, either. You can perform rolling upgrades, backups, storage expansion, application updates–all without interrupting productivity.

What's more, you get outstanding performance, thanks to the awesome power of 64-bit DIGITAL AlphaServer systems, the industry's leading 64-bit UNIX implementation – DIGITAL UNIX – and our breakthrough MEMORY CHANNEL cluster interconnect. Plus, by adhering to industry standards in hardware, software, and programming, you're assured of both affordability today, and investment protection as you move into the future.

DIGITAL TruCluster products – the availability, performance, and affordability you need to succeed.

Choose the cluster solution that's right for you

TruCluster Available Server

Provides
- High availability, cost-effectiveness
- Industry's fastest automated failover
- Storage failover protection
- High-availability, high-performance back-up
- Simplified graphical management
- Fast reboot and online reconfiguration
- Dynamic workload balancing

Supports
- All AlphaServer systems
- Up to 4 nodes per cluster
- DIGITAL UNIX Advanced File System
- Multiple Local Area Networks (LANs)
- DIGITAL UNIX Logical Storage Manager
- Networker save and restore
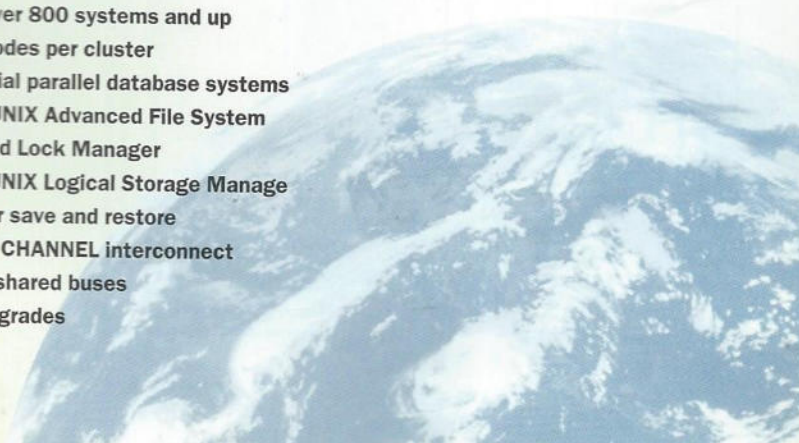- Tapes on shared buses
- Rolling upgrades

TruCluster Production Server

Provides
- Cost-effective, high availability
- Industry-leading system performance
- Enhanced database performance
- Industry's fastest automated failover
- Storage failover protection
- High-availability, high-performance back-up
- Simplified graphical management
- Fast reboot and online reconfiguration
- Dynamic workload balancing

Supports
- AlphaServer 800 systems and up
- Up to 8 nodes per cluster
- Commercial parallel database systems
- DIGITAL UNIX Advanced File System
- Distributed Lock Manager
- DIGITAL UNIX Logical Storage Manage
- Networker save and restore
- MEMORY CHANNEL interconnect
- Tapes on shared buses
- Rolling upgrades

Get started quickly and easily — with TruCluster packaged solutions

DIGITAL makes it easy for you to get started with a cluster solution – with the DIGITAL AlphaServer TruCluster Program.

The AlphaServer TruCluster Program combines TruCluster products on your choice of AlphaServer systems with Value-Added Implementation Services from DIGITAL. Since we perform system integration and testing in our factory, you are assured of getting a cluster solutions that is ready for action on day one.

If you are looking for complete design, integration, and testing support, DIGITAL's Computer Special Systems (CSS) organization has the solution for you. CSS will custom configure all the hardware and software you need to meet your availability and performance requirements. Server and storage configurations, applications, databases— everything–are precisely tuned and tested so your TruCluster solution is ready to go when it arrives at your facility. In fact, the CSS team will even deliver and install your TruCluster package on-site – giving you a complete, reliable, and hassle-free cluster solution.

For more information

For more information about DIGITAL TruCluster Software, contact your local DIGITAL reseller. For the name of the DIGITAL reseller nearest you, call 800-DIGITAL.