IBM

IBM Netfinity® Clustering solutions

Highlights

Super power

Enhance the availability of business-critical applications and maximize system resources by harnessing Netfinity servers together into a high-availability cluster solution.

Max control

IBM Cluster Systems Management—a service for Microsoft® Cluster Server (MSCS)—is integrated into Netfinity Manager, but can also integrate smoothly with Intel® LANDesk® and Microsoft System Management Server for a clear view of clustered resource components.
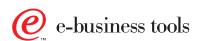
Flexible choices

Choose clustering for high-availability solutions for Microsoft Windows NT,® Novell NetWare and OS/2.

World-class cluster support

Run your Microsoft Cluster Server with Microsoft-certified configurations. Use IBM's installation and configuration planning service for Microsoft Cluster Server project management.

Netfinity

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e-business tools

What is clustering?

A cluster is a type of parallel or distributed system that consists of interconnected whole computers used as a single, unified computing resource. Put another way, a cluster links a series of server system nodes so they create a single, powerful system that can support numerous users at the same time. Clustering of high-availability Netfinity server systems keeps you in touch with the key applications you need to run your business.

Maximize systems availability

Your networked systems are the heart of your business because they allow you to leverage business-critical applications to your distinct advantage. What you need is a high-availability clustering solution built around features that work together to provide nonstop performance. Features that give you virtually uninterrupted access to your applications, even if a server fails. And, as your system requirements grow, you need a clustering solution that permits upgrades and maintenance with administrator-controlled "fail-over" capability. Therefore, your business continues to move ahead with minimal to no system interruption.

How IBM's clustering solutions work

IBM's extensive experience in high availability and clustering allows us to spearhead the use of fault-tolerant and highly reliable components and subsystems such as redundant and uninterruptible power supplies, RAID-protected storage, ECC memory and hot-swap components. Now, with IBM clustering solutions, you can connect several systems and subsystems to deliver high availability at the system level.

In a cluster, if one server node should go down unexpectedly or be taken off-line for upgrade or maintenance, the work it was performing is picked up automatically by the other surviving node(s) with minimal interruption. This process is known as "fail-over," with the goal of giving end users maximum access to business-critical applications.

A choice of high-availability IBM clustering options

One method, which supports Microsoft Cluster Server, provides hardware RAID capability to two servers that share access to a single set of disk drives located in an external enclosure. Both servers can be primary in this "shared" configuration.

Another method, which supports Windows NT, NetWare and OS/2, consists of two systems "mirroring" each others' hard drives. One server can be primary while the other provides utility services such as file and print functions. Under normal operating circumstances in both configurations, each server node operates independently of the other: running applications, storing files and managing resources.

IBM Enterprise storage offerings give you maximum flexibility in designing an external storage solution for your clustering environment. If distance between the cluster and the external storage is needed to enhance security, IBM Netfinity Fibre Channel offers distance up to 10km (6 miles) and performance up to 100MBps. And, IBM ServeRAID-3H and -3L Ultra2 SCSI adapters now include high-availability features for Microsoft Cluster Server and IBM Netfinity Cluster Pack by Vinca.

When one of the nodes in a Netfinity cluster fails, it automatically alerts the network administrator and the surviving node assumes the workload of the failed node—while still completing its own. Network administrators can prioritize which jobs and applications should continue to run on the surviving system to ensure efficient use of available system resources. Administrators also have the power to decide when a failed node goes back on line once it regains operational status.

Relationships that benefit you

IBM cluster solutions benefit from strategic relationships with Microsoft, Oracle, Vinca Corporation, Symbios Logic, Novell and Lotus. Microsoft and the IBM Kirkland Programming Center join forces to provide timely validation of current and future IBM Netfinity and PC Server systems and subsystems as a foundation for Microsoft Cluster Server solutions. Microsoft has certified a full range of IBM Netfinity and IBM PC Server system clusters, ranging from two-way SMP servers to high-performance four-way SMP servers with a wide choice of matched, shared storage subsystems. These subsystems include IBM SCSI and Serial Storage Architecture (SSA) based subsystems and the IBM Netfinity Fibre Channel mass storage subsystem.

IBM Netfinity Cluster Enabler software operating with Netfinity servers and IBM Fibre Channel storage products provide the platform necessary for a wide variety of business-critical activities, including database applications, e-business and thin client servers.

Customers who are migrating important database applications to the industry-standard Netfinity platform should consider Microsoft Cluster Server and Oracle Parallel Server software for:

• Faster access to shared data

• Reducing disaster risk by storing data at greater distances from production servers

• Scalability to support future high-speed data storage expansion

• Deploying multiple-node clusters for continuous availability

e-business customers will want to look seriously at Lotus Domino (Release 4.62), which offers an industry-first active/active implementation of Microsoft Cluster Server solutions using optional Domino Advanced Services. This solution also provides load balancing capability to end users. This configuration harvests the value of all your clustered assets: your server investment is constantly performing rather than waiting in passive stand-by mode and, with load-balancing, you don't need to worry about performance degradation during a fail-over.

For thin-client architecture solutions in a heterogeneous environment, the combination of Citrix Metaframe, the load-balancing option, and Microsoft Windows-based Terminal Server 4.0 (WBT Server) offers both load-balancing, non-Windows client support and multi-user access to software applications from all your X86 and Windows-based terminals. With the addition of Wincenter Connect, you can even add IBM network computers to your thin-client pool. This solution offers your server farm high availability and reduces your costs for hardware maintenance, software acquisition and total cost of computing.

Cluster Pack for IBM Netfinity server systems contains Vinca Corporation's:

- StandbyServer™ products for previous versions of Microsoft NT, Novell NetWare and IBM OS/2.

- HA (High Availability) for NetWare with the IBM ServeRAID II Ultra SCSI Adapter.

  With Cluster Pack, full family platform support—from Netfinity 3000/3500 to Netfinity 7000 M10—is provided, all in one convenient option.

  The bottom line is that no matter whether you choose a "shared" or a "mirrored" approach to achieve high-availability clustering or whether you need clustering to provide extensive database support, e-business or a thin-client architecture—IBM and its strategic partners have a tried-and-true clustering solution that's exactly right for your business.

Industry-standard convenience

IBM's high-availability clustering solutions are based on Intel technology, an enduring industry standard, to broaden your network's capacity for change, reduce overall cost by virtually eliminating down time and promote ease of implementation or modification.

Additionally, because IBM clusters for high availability operate in the most popular network operating system environments, the widest possible range of software applications is always at your disposal.

Start smart. Scale up.

IBM understands technology. We were at the forefront with clustering through its early manifestations at the large system level, and we continue to play a leading role in today's network implementations. That said, be assured that state-of-the-art IBM clustering solutions are part of a phased, strategic plan for maximum use of your investment.

Through our ongoing cluster development programs and relationships, IBM will be a proactive participant in the expansion of this important technology from today's two-node fail-over configurations to the scalable, multi-node approach necessary to meet the needs of growing enterprise and application clusters. As these solutions grow, your clustering investment will remain a trusted foundation to drive your business-critical applications.

In the future, Netfinity clusters could be connected to a high-speed switch with RS/6000 SP clusters for ultimate flexibility.

Acclaimed service and support

All IBM Netfinity and IBM PC Server systems come complete with the world-class service and support you expect from IBM.

- IBM Installation and Planning Service for PC Server Clusters provides detailed project planning and delivery of the infrastructure services for your IBM clustering solution.

- 90-day IBM Start Up Support: For the first 90 days of your warranty period, at no additional charge, one call connects you to expert help for IBM and selected non-IBM hardware and network operating systems (NOS).

- For the first three years, you have on-site IBM Warranty Service.[1] And the IBM HelpCenter is a telephone call away.[2]

- ServerGuide™ provides hardware configuration and setup, assisted NOS installation, IBM Cluster System Management, device drivers and reference libraries. Applications such as IBM Update Connector, a simple way to update servers running Windows NT, and APC Power-Chute *plus*, comprehensive power management, and more, are provided at no additional cost.

- IBM TechConnect™ is our server information and certification program for IT professionals.

- The IBM Netfinity Rack Configurator—a powerful tool for simplifying and maximizing the setup of your resources.

- Through IBM SystemXtra,™ your IBM Business Partner can provide a customized solution combining Netfinity hardware, software, training, services and flexible total-package financing with a single monthly invoice. Plus, with the IBM SystemXtra Technology Exchange Option, you can update your Netfinity server after only two years. With the SystemXtra lease, you may qualify to receive additional remote technical support for a limited time at no additional charge.[3] If you upgrade your server's three-year warranty to 24 hours a day, seven days a week, 365 days per year, there is no fee for any Options by IBM products added to the warranty.

Our goal in offering you this comprehensive list of services and support is to allow you to focus less on running your systems and more on running your business.

The case for IBM

So, why IBM? What other company has the depth of experience and the proven track record to produce total server solutions for your business? The first-rate hardware and software products, an exhaustive list of options plus world-class service and support untouched by the competition?

IBM. When you think about it, it's just better business.

Netfinity Solutions

Options by IBM www.ibm.com/pc/us/accessories	The established way to add capacity and function to your Netfinity server with a wide range of options specifically designed and optimized for your Netfinity system. Options by IBM also offer the added benefit of assuming the three-year warranty term of the Netfinity server system they are installed on to provide seamless warranty coverage.
ServerProven www.ibm.com/pc/us/netfinity/serverproven	To provide a broad selection of easy-to-install-and-use software and hardware, IBM's Netfinity ServerProven Program works with vendors to test hundreds of products, options, network operating systems and applications.
The best in the business working together	As an integral part of system design, IBM brings the best in the business together for you through strategic alliances with key industry leaders such as Microsoft, Intel, Lotus, Oracle, Novell, SCO, SAP, J.D. Edwards and Baan.

Visit the Netfinity Web site at
www.ibm.com/netfinity

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IBM Fax Information Service

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Netfinity Fibre Channel Solution	#43044	#45469
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Netfinity Service and Support	#43031	#45487
Netfinity ServerProven Solutions	#43047	#45473
Netfinity 5500 M10	#43042	#45463
Netfinity Rack Solutions	#43018	#45466
Netfinity Clustering Solutions	#43012	#45467

World Wide Web

Support	www.pc.ibm.com/support
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SystemXtra	www.ibm.com/pc/us/systemxtra

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[1] For information regarding the terms and conditions of IBM's limited warranty, please call 1 800 772-2227 in the U.S. and in Canada, call 1 800 426-2255. Copies of IBM's statement of limited warranty are available upon request. Limited Warranty includes International Warranty Service in those countries where this product is sold by IBM Business Partners (registration required).

[2] Response times may vary.

[3] If you qualify and subject to conditions. Eligibility for the Technology Exchange Option is based on total IBM PC hardware acquisition commitment for a 12-month period; minimum qualifying levels apply.

[4] You may enroll in the TechConnect Program from this Web site.

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