National Informatics Center

Using Server Clustering Services for High Availability of Systems

The National Informatics Center's NIC maintains state-of-the-art web servers (http://www.nic.in) at its Headquarters which currently hosts around 800 web sites providing extensive information about various aspects of the Indian Government. This includes the websites of the President of India, the Parliament of India, as well as websites of states and districts.

The critical nature of the data demands high-availability of the servers with maximum uptime. Trisoft Systems implemented the clustering service feature of Windows 2000 Advanced Server, which provides fail over support for back-end applications and services that require high availability and data integrity.

National Informatics Center is the organization responsible for application development, design, web site hosting of Government of India websites. One of the major strengths of NIC lies in the area of producing quality software at low cost. Since NIC is working at the grass root levels of the development administration, its expertise is not limited only to software engineering but also lies in the area of implementing it in various sectors of the economy. Thus it possesses Domain expertise as much as expertise in the field of software development, a fact that provides NIC with a solid foundation in the Software Development Process. The various Departments as well as State Centers of NIC are constantly in the pursuit of developing state-of-the-art application software that is customized to the users needs. These Application software packages are completely indigenous and user friendly and are intended to bring the benefits of the latest advancements in IT to the Government's doorsteps.

The Internet services of NIC are provided through NICNET, NIC's satellite based computer communication network, which is a prominent Gateway of Internet in India.

The range of Internet Services being provided by NIC includes:

- Electronic mail
- WWW Browsing
- File transfer Facility
- Remote Login
- Directory Services
- Gateway to SMTP/UUCP

Situation

NIC maintains state-of-the-art web servers (http://www.nic.in) at its Headquarters, which currently hosts around 800 web sites providing extensive information about various aspects of the Indian Government. The chance of data being non-available because of a hardware fault in, for

Solution Overview

Customer Profile

Industry

The National Informatics Center is the organization responsible for application development, design, web site hosting of Government of India websites.

Business Situation

One of the major strengths of NIC lies in the area of producing quality software at low cost. The range of Internet Services being provided by NIC include e-mail, web site hosting and ftp for government sites. Keeping in view the content of the material, its availability was of prime importance to everybody, the NIC as well as the government of India.

Solution

Business Scenario

Considering the demanding requests of the web clients in terms of availability, the obvious solution was for the reliable clustering service available with Windows 2000 Advanced Server. NIC opted for implementing the clustering feature available with Windows 2000 Advanced Server.

Benefits

The solution enables users of the applications and websites of NIC to be access these without any fail and available 24/7.

Industry – Cluster Solutions

example, the motherboard or RAM, was not an acceptable option. Hence, a robust solution for maximum uptime of the web sites and applications was required.

Solution

To make the applications and web services available with 100 percent uptime, we implemented the clustering feature of Windows 2000 Advanced Server. Clustering is a fast, reliable and low-cost solution. Cluster services, one of two Windows® Clustering technologies available for the Windows 2000 family of server products, was the obvious solution and was implemented at NIC on two single CPU machines in an Active/Passive mode. Windows 2000-based servers running Cluster service provide fail-over support for back-end applications and services that require high availability and data integrity. These back-end applications include enterprise applications such with databases and file servers. The database server that was clustered at NIC was SQL Server 2000.

Benefits

Cluster service at NIC enabled connecting multiple servers into server clusters that provided high availability and easy manageability of data and programs running within the cluster. Cluster service at NIC provided three principal advantages:

- **Improved availability** by enabling services and applications in the NIC server cluster to continue providing service during hardware or software component failure or during planned maintenance.
- **Increased scalability** by supporting servers that can be expanded with the addition of multiple processors (up to a maximum of eight processors in Windows 2000 Advanced Server in our case), and additional memory (up to a maximum of 8 gigabytes of random access memory in Advanced Server).
- **Improved manageability** by enabling NIC's administrators to manage devices and resources within the entire cluster as if they were managing a single computer.

Applications that has benefited from the increased availability assurance provided by the Cluster service includes:

- **Web services**, including customer support capabilities, e-commerce Web sites of Government of India, and intranets, which, for example, help employees order office supplies and computer equipment online, or retrieve payroll, benefits, and corporate policy information.
- **Line-of-business applications and databases**, such as accounting, and manufacturing systems allow businesses to link raw-materials suppliers and production data, for example, or let customers electronically place orders, check order status, and request product literature.

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This solution was flexible and made administration of the cluster easy and self-configuring. In case of a fail over, the applications allocated themselves.

Microsoft Products Used

- Microsoft Windows® 2000 Advanced Server
- Microsoft SQL 2000.