Application Note

Clusters with Microsoft Windows 2000™

Introduction

As the importance of the Internet and e-commerce grow there is an increasing need for applications to be available 24x7. In addition, the information systems that support those applications must be able to handle surges in demand and grow rapidly. Clustering has increased in popularity as a way to meet those requirements, ensuring high availability and scalable performance by balancing workloads across multiple nodes. Microsoft® Windows® 2000 extends OS clustering capabilities, allowing multiple systems to work together so that applications continue to run even when a server fails, and so that performance can be scaled by the quick addition of servers.

The combination of storage area networks (SAN) and clusters provides even more benefits than those found in Windows 2000 alone. SANs provide high performance paths to storage for greater cluster efficiency. SANs provide the configuration flexibility to allow storage resources to be shared, enhancing clustering and improving cost efficiency. SANs provide storage scalability far superior to traditional SCSI implementations. Finally, SANs increase the cluster's availability by allowing storage to be added to the cluster without taking the servers down.

To get the most out of Windows 2000, use the Gadzoox® Networks Capellix™ 2000 series stackable SAN switch, which was designed for high-performance, entry-level SAN environments. Its performance, modularity, interoperability, and open management will enhance the advanced storage capabilities enabled by Windows 2000.

Cluster and SAN Together

Start with a two-node cluster and add servers or storage as you need them. A typical 2-node cluster has two servers tied to storage with a Gadzoox Capellix 2000 series stackable SAN switch as the core of the cluster. The Capellix switch connects to Fibre Channel host bus adapters on the servers and the storage devices through either copper or optical cable (see Figure 1), providing a high-speed link between the components, faster than the typical SCSI connection. The Capellix 2000 series switch provides scalability up to 11 nodes, allowing the cluster to grow with your business. Zoning on the Capellix provides the ability to physically segment server types in a storage infrastructure to allow growth of a cluster even with incompatible servers. Even in a 2-node cluster, the Gadzoox Capellix switch provides certain benefits:

- High performance storage throughput
- Add storage without taking the server offline
- Add storage up to 10km away
- Scale up to 11 non-blocking FC ports with one Capellix 2000
- Dynamically allocate & reallocate storage resources

Capellix also enables advanced storage applications such as:

- Remote mirroring
- Remote data backups for disaster tolerance
- LAN-free & serverless backup
- Storage pooling
- Zoning of storage resource for data sharing

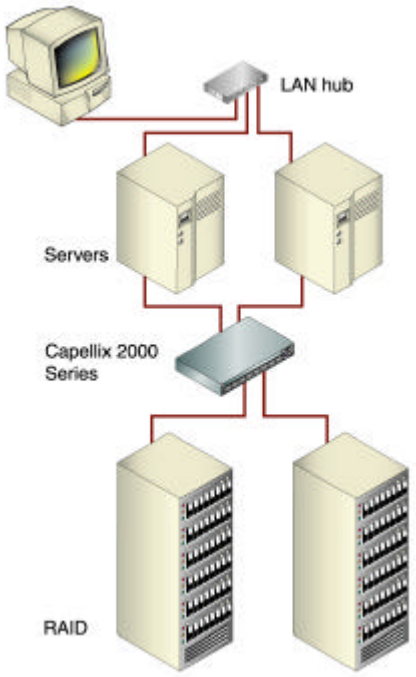

Figure 1 *2-Node Failover Cluster*

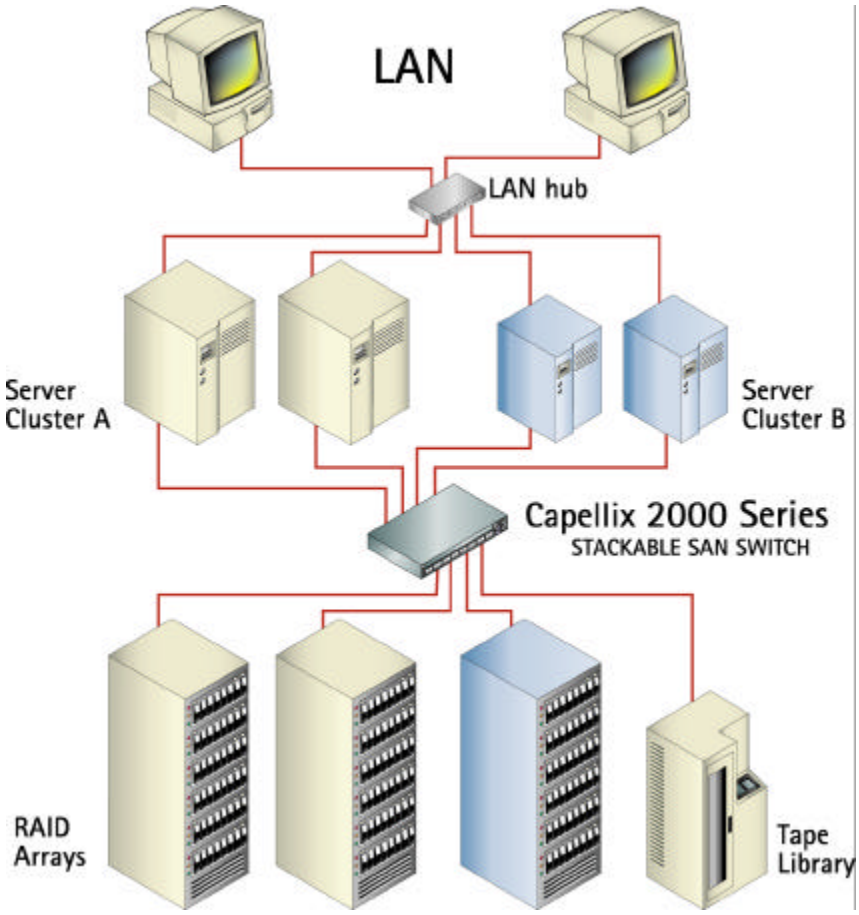

Figure 2 *Two, 2-Node Failover Clusters Sharing Storage*

The Combined Benefits

Creating a cluster with a Capellix 2000 series stackable SAN switch gives you the ability to grow the cluster as you need. As the processing requirements grow, add the newest servers available. As the amount of data grows, add the latest and most appropriate storage device. You can even add separate systems working together as a failover pair and still use the same storage infrastructure, enabling data sharing, centralized management, and reduced TCO.

Start your Windows 2000 cluster in a simple configuration based on a Capellix 2000 series stackable SAN switch and it will grow with your needs. No more concerns about taking servers offline to add storage. No more concerns about growing the cluster beyond just a few nodes, since the Capellix can scale to terabytes of storage in a single cluster configuration. No more concerns about sharing a storage infrastructure with different server types with Capellix zoning capabilities. No disparate management systems since SANtools™ management software is built into the Capellix for easy installation and use, and can be controlled by SNMP-enabled management frameworks.

Product Choices

Capellix 2000C: Eight integrated HSSDC copper ports offer an entry-level price for building cost-effective clusters. Enables use of SAN switching in place of hub or problematic SCSI bus implementations. Best for primarily intracabinet connectivity or price sensitive installations.

Capellix 2000F: Eight integrated Dual SC optical ports offer the best value when 3+ optical ports are required.

Capellix 2000G: Eight GBIC ports provide pay-as-you-grow flexibility and port-to-port media selection. Best for a configuration which requires long-wave ports or mixed media, or when upgrading from a GBIC-based Fibre Channel hub.