Eliminating End User and Application Downtime

Continuous Availability for Microsoft SharePoint® Farms

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SharePoint High Availability and Disaster Recovery

The adoption of SharePoint as a business critical technology continues to drive productivity and process improvement across organizations of various sizes and types. Many organizations now

regard SharePoint as mission-critical to them as Microsoft Exchange. With the release of Microsoft Office SharePoint Server 2010 this rate of adoption is expected to accelerate.

SharePoint underpins a wide range of business critical processes including areas such as collaboration portals, web content management and application development. It is used across every business sector and has become a key component of many organization's business and IT infrastructure.

SharePoint implementations bring rapid business benefit, but at the same time it is important to make sure that the business can be isolated from the impact of any downtime. Many SharePoint based systems support mission-critical business processes and need to be available around the clock, yet in many cases the growth of SharePoint has been at such a pace that its importance has not been recognized in Business Continuity and Disaster Recovery planning.

Organizations are discovering that traditional backup and data protection technologies for SharePoint are not sufficient to deliver the necessary 24x7 availability. A major stumbling block for continuous availability of SharePoint is coordinating the failover of all the interdependent servers needed to meet performance and scalability requirements of a SharePoint farm.

Delivering High Availability and Disaster Resiliency of SharePoint farms, including farm failover to protect against planned and unplanned outages, is a vital part of any SharePoint implementation.

The Business Impact of Downtime

The wrong time to discover the impact of SharePoint downtime is after an IT failure.

SharePoint implementation planning should determine how the business will operate in the event of the failure of one or more components in a SharePoint Farm. This planning should include evaluating all potential downtime pitfalls such as hardware or network failures, database issues, application or configuration errors and server environment issues such as power failure. SharePoint implementations also need to be included in Disaster Recovery planning and processes.

For some implementations the impact of downtime might be limited, for others it can be significant. In all cases it's vital to assess the impact from an end-user perspective. In order to meet availability and performance SLA's, it is essential that the individual components, and the entire farm, can be failed over automatically and on demand.

Assessing the impact of downtime to the business is vital to determine how business productivity, revenue and the brand would be affected by downtime. Some SharePoint implementations may tolerate extended periods of downtime as they are non-essential to the business. Others may have significant impact if they are down for just a few minutes.

Once the critical SharePoint deployments have been identified the next step is to assess how the application will be recovered, and the subsequent impact on IT and support staff as well as end-users, customers and suppliers.

In the event of an outage of a critical application, can IT staff provide 24 hour operational cover? Is it sufficient for a user to alert them of an issue? If immediate action is required, shouldn't application monitoring integrated with automated failover be a mandatory requirement? If a data failure will require recovery from a backup then continuous replication should be mandatory across all SharePoint farm components.

Due to the fact that SharePoint farms consist of multiple, interdependent servers, the effect of any one component failing should be assessed. However for performance and scalability reasons it isn't sufficient to architect a solution that only avoids a single server failure. Doing so brings significant risks to the end-to-end availability, especially in the event of having to transfer processing to another location where network bandwidth and latency constraints may mean that several components should be relocated in unison.

Server Component	Impact of Downtime
Query	Full-text search unavailable
Index	Search results out-of-date
Windows SharePoint 3.0 search	Search unavailable – difficult or impossible to find relevant information or documentation
Office Project Server 2007 services	Office project unavailable, third-party integration unavailable
Excel calculation services	Server-side Excel processing unavailable
Custom applications	Custom processing unavailable
Database server	Complete functionality loss

The complexity of the architecture, and the mechanisms for recovery and availability, should not be underestimated.

If multiple technologies are used (for example SQL Clustering combined with backup) it is highly likely there will be conflict and contention when it comes to dealing with an outage. As with many things the simpler the approach the less potential there is for failure. Identifying a farm level, integrated approach to local and remote failover is important and will provide the most cost effective solution for continuous availability.

SharePoint Farms: Redundancy, Resiliency and Availability

It's important to recognize from the start that redundancy is not the same as availability. Redundancy may be used in a farm to improve performance; to scale and to provide a level of continued operations should issues occur.

In a traditional implementation that delivers the maximum level of operational redundancy, a minimum six servers are required (fig 1). This will protect the user against failure of a single server. It will not address site

failures, problems with the index server or data issues. Redundancy alone cannot deliver a resilient deployment.

Redundancy does not provide a resilient solution. Amongst other things a farm with built in redundancy will still be vulnerable to site failures, data issues and user error. It will not meet regulatory requirements for business continuity, which will demand a disaster recovery strategy.

To gain resiliency a continuously available implementation must be employed. This goes further than a redundancy approach. To ensure normal usage, even if one or more servers in the farm are not operational, functionality is required to include monitoring; protect against disk failure; guard against site level issues such as power failure and of course failover.

Availability can embrace redundancy but additionally it must deliver failover and switchback in the event of failure.
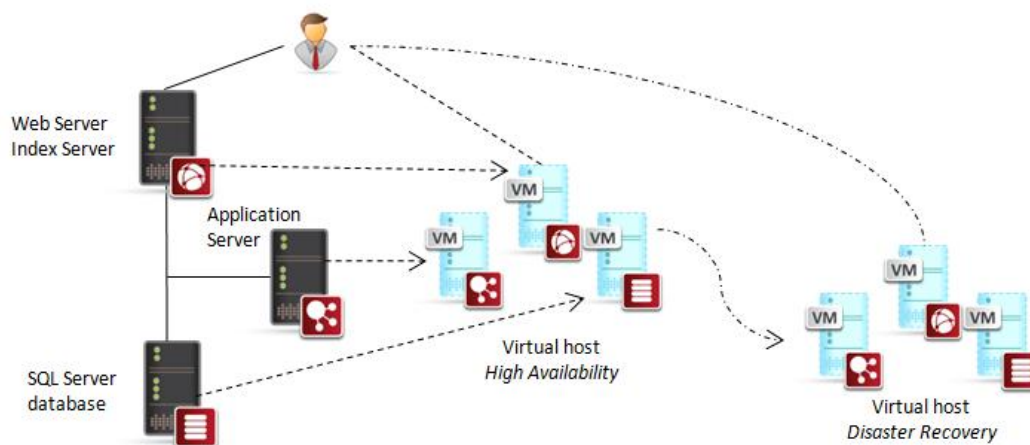

Figure 2: Resilient Architecture

In fact designing a resilient, highly available SharePoint implementation (fig 2) can reduce the number of servers required to ensure end-user continuous availability. This can be achieved by implementing farm failover technologies that provide high availability and disaster recovery protection without the need for redundancy in the farm.

Using a virtual platform such as Microsoft's Hyper-V can reduce costs even further by consolidating failover servers on a single virtual host.

Protecting The Extended SharePoint Ecosystem
As discussed earlier, SharePoint applications rely on many different components such as SQL databases, web servers, excel servers, project databases and file system content. They are also part of an extended ecosystem that is used to ultimately deliver the business service.

In some environments Fax may still be a regulatory requirement, in others Windows Mobile, BlackBerry and iPhone devices will be the information delivery point. And of course email remains as the central communication and workflow backbone.

The result is that protection of SharePoint farms against downtime needs to be complemented by protection of Exchange, Fax Servers, ActiveSync and BlackBerry Enterprise Servers as well. Only this way can the end-user access and experience be fully protected.

Continuous Availability SharePoint

The ultimate goal should be to isolate users from the impact of SharePoint downtime. When applications are critical, a good approach to take is to think in terms of "no business downtime". For business critical systems this means continuous availability. For less critical systems data protection or pure disaster recovery strategies may be sufficient.

If the priority is to protect data and provide a mechanism for recovering a SharePoint farm then learning all the ins and outs of content recovery, backup/restore, clustering, mirroring, log shipping and other tools may be a suitable approach if sufficient resources are available.

This will consume a great deal of time requiring scripting and using the command line interface while not overlooking any single piece that could turn out to be critical for the entire operation to work. There will be significant ongoing maintenance and validation required to deal with new configuration detail. And if a pro-active approach to downtime is required some sort of monitoring tool is recommended.

Of course backups, versioning, clustering, network load balancing, database mirroring, and log shipping are all important tools to protect the business from SharePoint farm failure. However, in the case of business critical applications, taking this approach alone will result in business disruption which can possibly result in days of downtime while farms are rebuilt from scratch.

Continuous availability can only really be achieved by addressing potential outages at all levels. Outages may be unplanned database failures or they may be planned interruptions to perform system maintenance. These outages may affect an individual server, or whole SharePoint farms, and depending on their nature may require local or remote failover. As a result the deployment architecture must be designed to deal with all eventualities.

For SharePoint farms where downtime cannot be tolerated there is no other option but to choose a continuous availability solution that delivers high availability and disaster recovery integrated together as a complete solution protecting complete farms.

Neverfail Solutions for SharePoint

The key to providing SharePoint farm failover lies in the Neverfail Continuous Availability Suite (Fig 3). This is a complete solution designed to deliver continuous availability for business critical applications, SharePoint included. To eliminate user and application downtime it is architected from the ground up to protect data through continuous replication, to monitor the health and state of applications and to enable

automated failover of manual switchover to additional local and/or remote servers. This provides a very business centric, continuous availability solution for SharePoint deployments.

As part of the approach the Neverfail software maintains a second, complete, consistent and up-to-date copy of all SharePoint farm components and configuration data. This is more than just a copy of the data. Neverfail provides a "ready-to-go" clone of the components, including any configuration changes that may have been applied since the database, index and application servers were first installed.

To guard against configuration creep Neverfail's Application Management Framework provides automatic and ongoing discovery of all data associated with the protected SharePoint applications, including related registry changes, and automatically adjusts the replication schema accordingly, so there is no need to manually specify existing and additional application data locations to be protected.
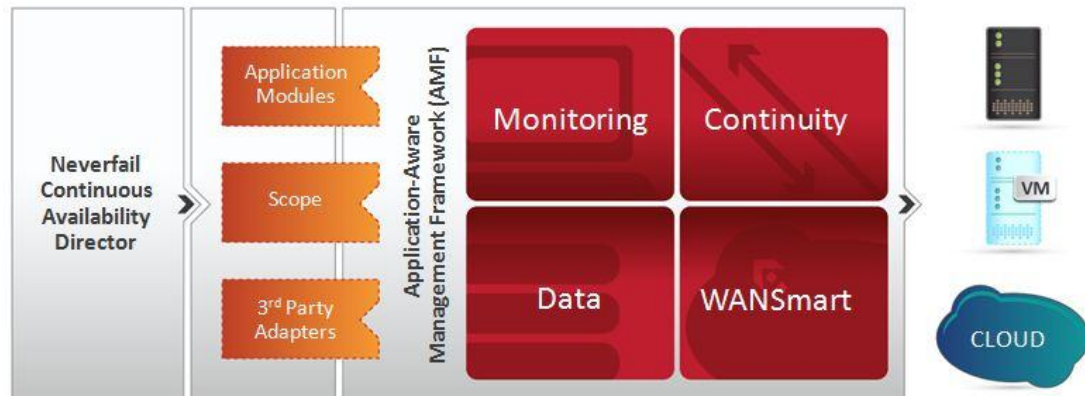

Figure 3: The Neverfail Continuous Availability Suite

Taking things further, the Application Management Framework then uses out-of-the-box policies to control monitoring of the components in a SharePoint farm, with the option to alert IT staff to potential issues and execute tasks according to pre-defined rules. These policies, rules and tasks provide complete protection for all farm components, and can be further configured through a unique point-and-click interface, without the need to create complex scripts.

In short, Neverfail ensures the application is immediately fully functional and available in the event of an automated failover or manual switchover. Failover and failback is also automated and a simple "one-click" manual switchover process is available if desired.

Managing Failover of SharePoint Farms with Neverfail

As SharePoint implementations increase in size and complexity it becomes important to make the entire SharePoint farm resilient to deliver both high availability and disaster recovery. SharePoint application resiliency cannot be achieved by making individual servers redundant. It requires a more holistic approach

that protects all components in the farm together with related applications such as Exchange and mobile messaging servers.

There are a number of fundamental requirements for farm failover. Most important is a consistency of technology used. The potential for things to go wrong is directly influenced by the number of different technologies. Each technology requires separate administration, different policies and of course IT admin staff must learn different ways of managing the technology. Equally important is having a central point of management which gives an integrated view of availability, and enables a single point of control.

To deal with the level of complexity required Neverfail has a unique approach where the Neverfail Continuous Availability suite can be used to protect each individual component while at the same time providing a view of the entire SharePoint farm with the ability to manage the failover configuration, activities and state from a single technology set.
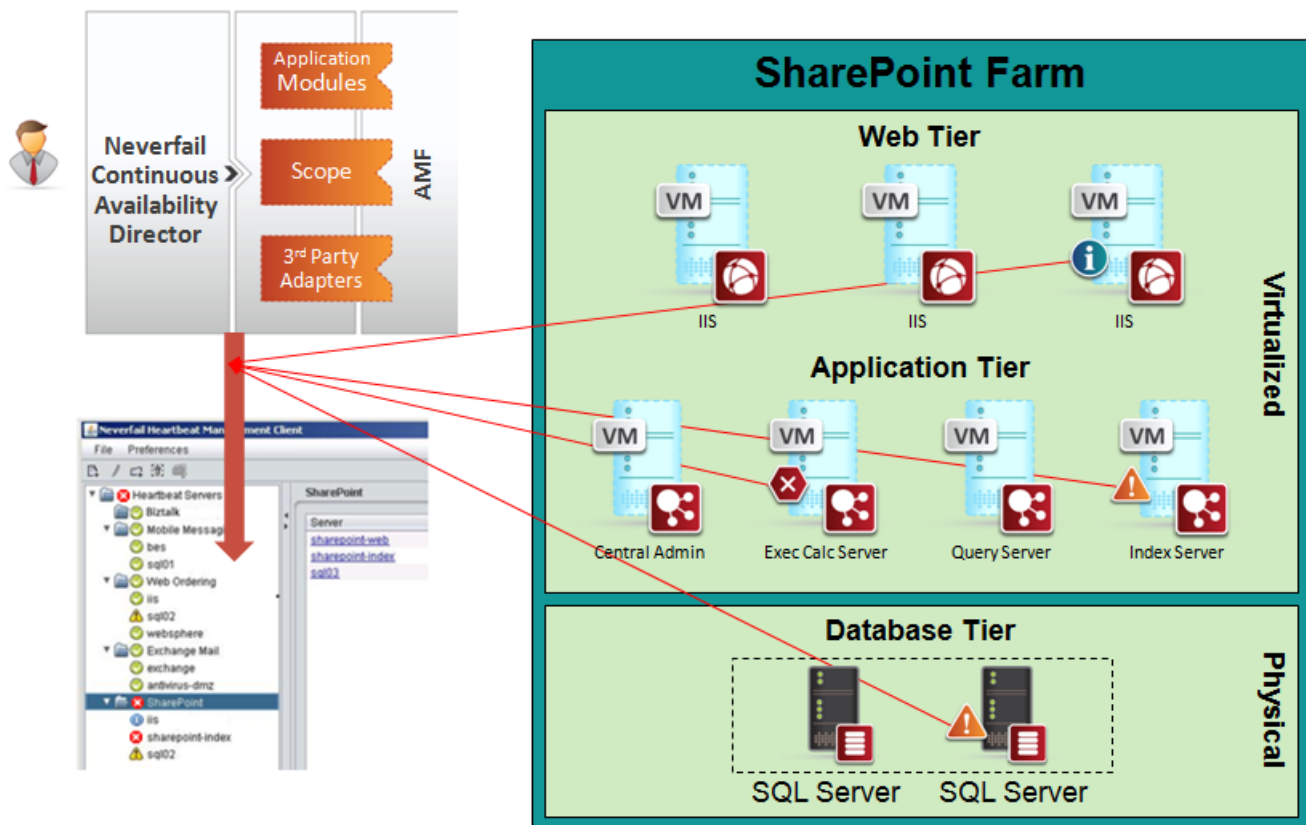

Figure 4: Neverfail Continuous Availability Director

In addition to protecting each component within a farm, Neverfail includes a central management console – The Neverfail Continuous Availability Director (Fig 4). The unique interface provides an enterprise-wide, business-centric view of critical applications and IT services. It has a flexible approach which allows logical grouping of application, database, messaging and other servers. The grouping provides a way of visualizing

interdependencies across servers and gives a central console where events, alerts and the overall health can be viewed.

The logical grouping provides a very convenient way of visualizing and managing SharePoint farms. If there are issues with any farm component, alerts will be visible at the farm level and because any issues with email, mobile messaging or other servers can also be routed to the Availability Director the extended eco-system can be managed.

Optimized for Local *and* Remote Deployment Options

Traditional solutions for high availability and disaster recovery have restricted the level of protection against outage. Very restrictive requirements for network latency and bandwidth have been a significant barrier to stretching SharePoint protection to remote sites to guard against events such as power failures, floods and other site wide issues.

Up to now the result has been a compromise. Even where high availability tools such as clustering have been deployed locally, the impact of a power outage or local storage failure has been significant downtime as legacy disaster recovery approaches have been unable to meet the service levels required.

The Neverfail Continuous Availability solution includes patent-pending technology which allows cost-effective deployment of a multi-tiered solution for continuous availability. At the heart of this is Neverfail WANSmart (Fig 5).

Neverfail WANSmart provides patent-pending de-duplication based WAN optimization through a software component in the suite. It frees implementations from bandwidth and latency constraints which would otherwise prohibit the protection of individual SharePoint farm components, let alone the entire farm.
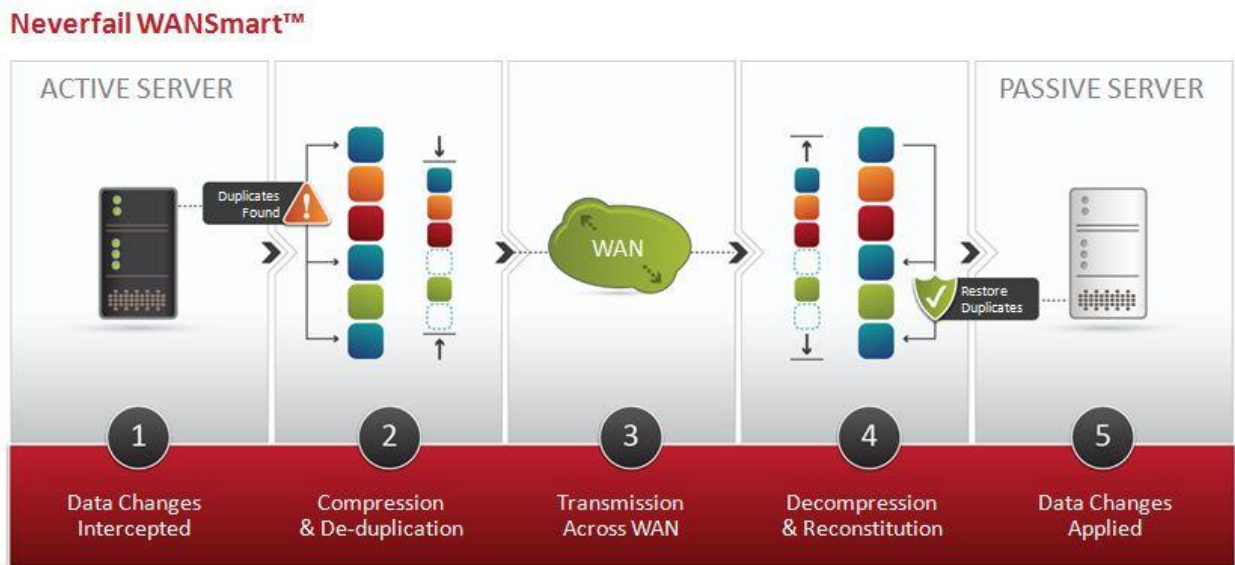

Figure 5: Neverfail WANSmart™

Neverfail WANSmart can be used to reduce the bandwidth costs when implementing a stretched high availability architecture where primary and secondary servers are deployed across a WAN. In addition WANSmart can be used as an integral part of a multi-tier architecture where high availability is integrated with disaster recovery using Neverfail Tertiary™ (Fig 6).
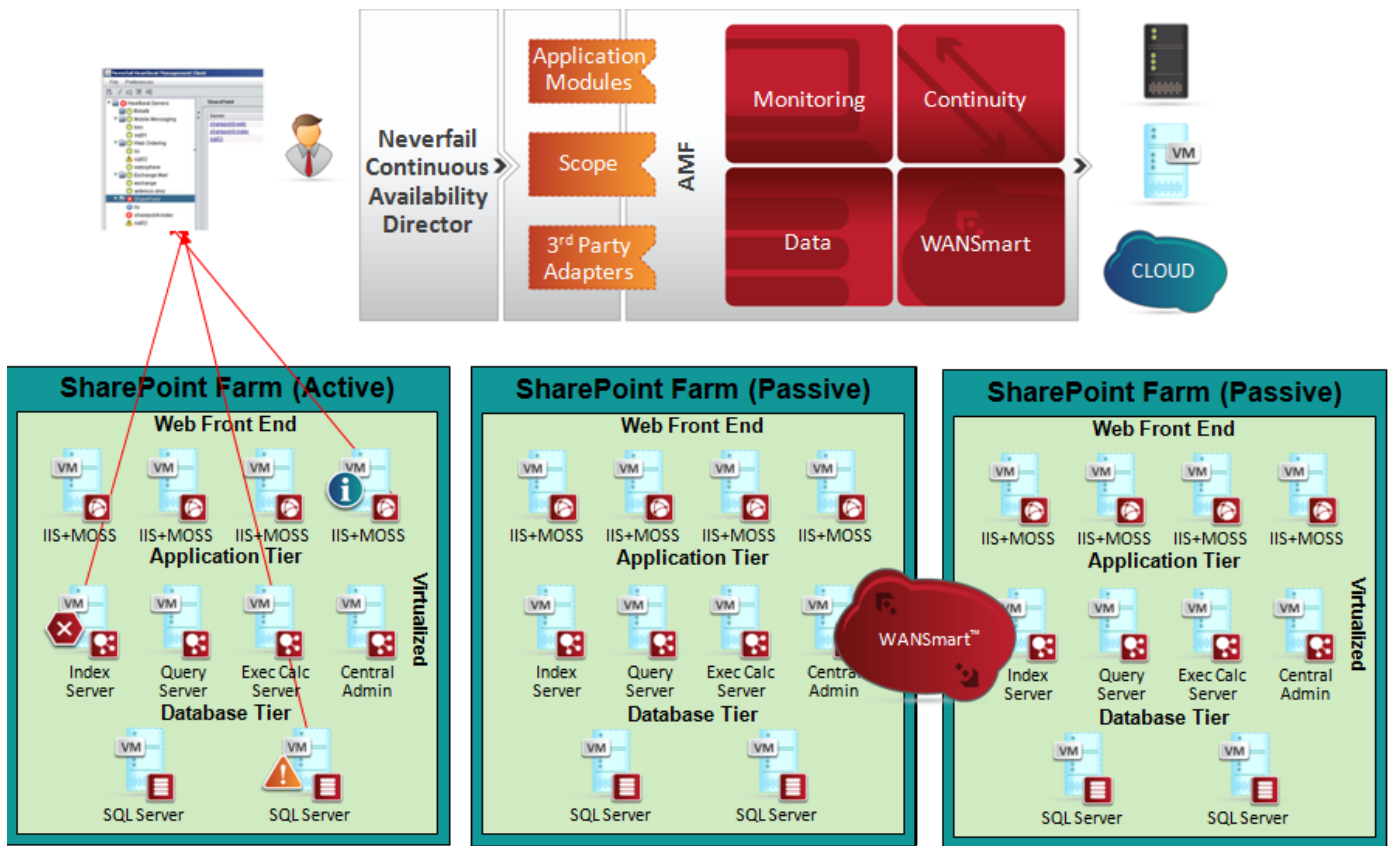

Figure 6: Neverfail Tertiary

Neverfail Tertiary allows for three servers to be used to provide high availability and disaster recovery options in one solution controlled by the Continuous Availability Director. This model entails Neverfail software maintaining local and remote clones of the application, database and other servers.

Neverfail Tertiary maintains fully automated and manual failover options. When an event happens which requires failover Neverfail Tertiary will determine if the failover should be local, or remote. It will ensure that replication continues in the event of a local failover and when normal service is resumed it will re-synchronize data back to the original server location.

Neverfail Customer Experience: Sonnenschien, Nath & Rosenthal

Numerous organizations around the world have selected Neverfail to provide continuous availability for their SharePoint deployments.

Just one example is Sonnenschein Nath & Rosenthal, a leading law firm with close to over 1000 lawyers and professional staff located around the globe. To better serve their business Sonnenschein implemented *The Portal.*

Sonnenschein attorneys are available to their clients 24 hours a day, seven days a week. To provide the level of service their clients demand, it is imperative they have access to all relevant information. To do so, they rely on continuous access to The Portal – their company intranet that provides access to all of the firm's intellectual property and supports extranet communications with clients. Without access to The Portal, business comes to a halt.

To protect The Portal from downtime, Sonnenschein needed a high availability and disaster recovery solution. They conducted an extensive review of several products available in the market place, but Sonnenschein's internal team found that other products were incapable of supporting the company's SharePoint environment because they were unable to replicate SharePoint's indexing system.

Sonnenschein selected Neverfail because it is a resilient and reliable high availability solution that could guarantee the integrity of The Portal and because they could reference existing customers using Neverfail for SharePoint who were pleased with the way the product worked in their environment. With the addition of new attorneys and increased usage, The Portal has become the key resource for day-to-day operations, making availability an unquestionable necessity for the firm.

In Summary

Neverfail is unique because it's the only continuous availability solution that can proactively manage the availability of entire SharePoint farms.

It protects critical application availability against physical server hardware, network infrastructure and operating system and application failures. If a problem occurs Neverfail can takes a variety of pre-emptive, corrective actions including full SharePoint farm failover

The net result is the elimination of end-user downtime.

www.neverfailgroup.com