

2010

# Enhancing Exchange Server 2010 Availability with Neverfail

Best Practices for Simplifying and  
Automating Email Continuity



# Enhancing Exchange Server 2010 Availability with Neverfail®

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## **Implementing Highly Available Messaging: Business and Technical Challenges**

E-mail and messaging services always appear at the top of organizations' lists of critical applications and services. Businesses of all sizes rely extensively on their ability to communicate information quickly and efficiently. Reliability and availability problems related to messaging are highly visible and can cause immediate and significant business impact. A large number of potential problems can cause downtime and data loss, including:

- Loss of data due to hardware failure or software issues
- Infrastructure issues, such as storage, networking, or WAN outages
- User or administrator errors, such as accidental deletion or inadvertent configuration changes
- Planned maintenance activities

A well-designed availability plan must take into account all of these potential issues, while still working within organizational limitations such as budgets and IT expertise. Furthermore, an availability plan must minimize the impact of losses in service. To address the needs of high-availability, disaster recovery, and performance, Microsoft's Exchange Server 2010 platform has been vastly improved over previous versions. However, it is still the responsibility of IT organizations to plan for and implement highly-available solutions.

This White Paper provides an overview of the availability features in Microsoft's Exchange Server 2010 platform. Details include planning, migration, and cost-related considerations. The paper also includes details on how Neverfail's technology can help IT organizations build an efficient, manageable, and cost-effective messaging infrastructure.

### **E-Mail Continuity Features in Exchange Server 2010**

Exchange Server 2010 represents numerous improvements and changes from previous versions of Exchange Server. Among the long list of improves are the ability to change archive retention settings, support for storage performance and a new high-availability approach called Database Availability Groups (DAGs). In addition Exchange Server 2010 removes support for previous clustering and replication mechanisms, including Single Copy Clusters (SCC), Local Continuous Replication (LCR), Standby Continuous Replication (SCR) and Cluster Continuous Replication (CCR).

## Understanding Database Availability Groups (DAGs)

A DAG is a collection of up to 16 Exchange Mailbox servers that provides a highly-available solution. This approach is designed to simplify the implementation and management of availability and reliability for Exchange Server 2010 deployments. Administrators can easily define which mailbox servers belong to which DAG, and the setup process is largely automatic. Figure 1 provides an example of a DAG configuration based on three Exchange Server 2010 Mailbox servers.

*Note: For more information about high-availability features in previous versions of Microsoft Exchange Server, please see the Neverfail White Paper, "Enhancing Exchange Server 2007 High-Availability and Disaster Recovery with Neverfail".*

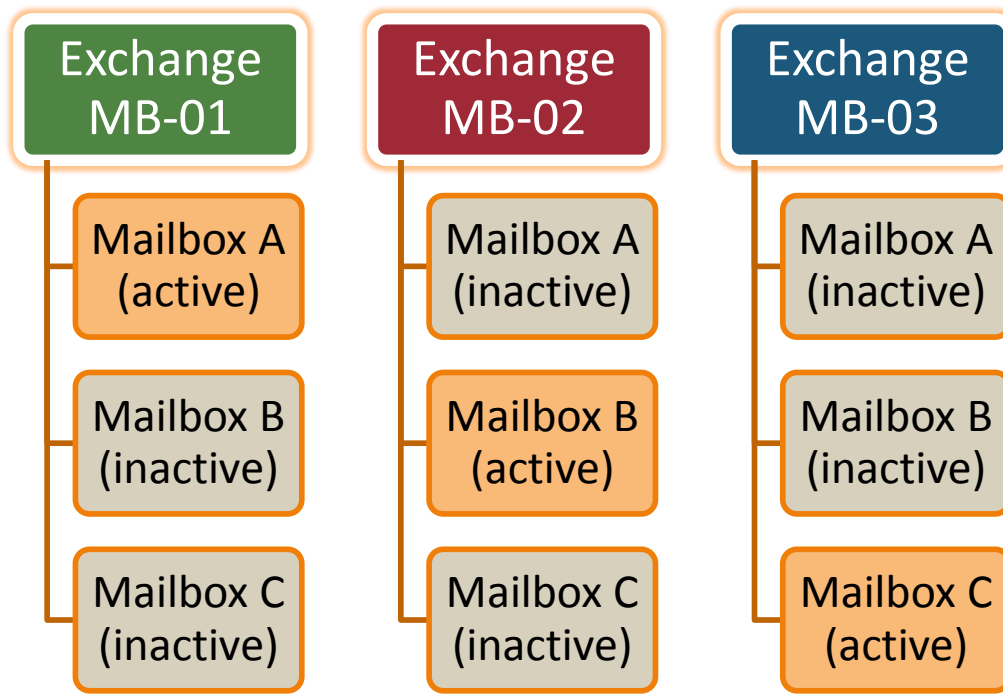


Figure 1: A sample DAG implementation consisting of three Exchange Server 2010 Mailbox Servers

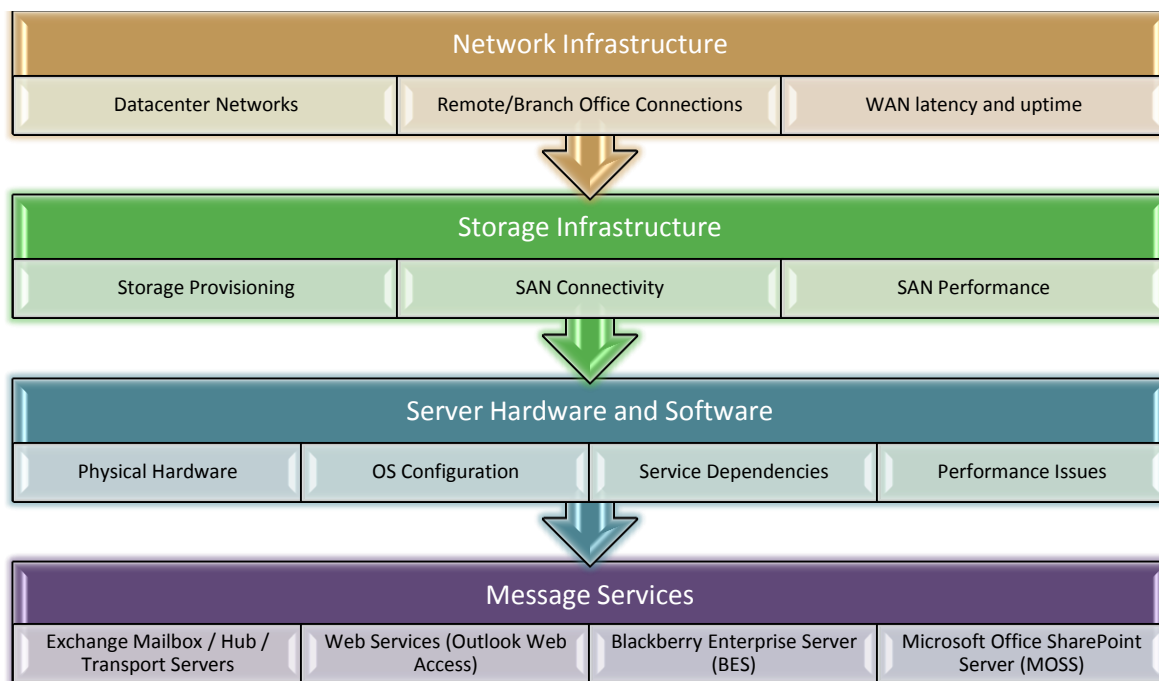
All of the servers within the DAG maintain copies of protected mailbox databases from other servers. Should one of the servers fail or its mailbox become otherwise unavailable, the active copy of that database is automatically transferred to another server in the DAG. Administrators can also use DAGs for performing server maintenance and for building multi-site replication configurations for disaster recovery.

## Considerations for Deploying Exchange Server 2010 High-Availability

While the DAG approach provides numerous improvements over high-availability options in previous versions of the Exchange Server platform, organizations often deal with important constraints when designing and implementing their messaging infrastructures. Common issues

include limited hardware resource budgets, slow or unreliable inter-site connections, limited systems administrator expertise, and monitoring issues.

An important aspect of ensuring messaging continuity begins with the immediate detection of failures or other issues in the environment. In-depth monitoring of the end-user experience is a recommended best practice for mission-critical infrastructure components. For example, while services might appear to be running properly, performance issues or storage and network outages can impact the end user experience. Figure 2 provides examples of important components that must be closely monitored to protect against service disruptions.



**Figure 2: Inter-dependencies between messaging infrastructure components**

While Exchange Server 2010 provides a level of built-in support for monitoring messaging-related services, organizations must invest in Microsoft System Center or third-party solutions to monitoring the entire infrastructure. System Center Operations Manager (SCOM) provides the ability to quickly detect and respond to common sources of outages that may be unrelated to the direct failure of a specific mailbox server or service. In order to implement and maintain highly-available applications and services, organizations will need to implement additional enterprise management tools that can quickly and automatically resolve common configuration issues. Microsoft System Center Configuration Manager (SCCM) provides features for defining a desired configuration and automatically resolving many common issues that can lead to downtime or performance issues.

These solutions are separate products that require training, expertise, hardware costs, and additional licensing. Organizations that have not yet deployed the Microsoft System Center suite or another monitoring solution should factor these costs and issues into their Exchange Server 2010 migration and availability plans.

### **Migrating to Exchange Server 2010**

While Exchange Server 2010 provides numerous improvements and new features, IT managers must carefully plan for upgrading to Exchange Server 2010. Microsoft does not allow in-place upgrades from previous versions of Exchange Server and organizations with multiple servers will need to create a roll-out plan for moving to the latest version.

In some cases, server hardware and operating system upgrades might be required. Exchange Server 2010 DAG functionality relies on Microsoft's clustering and fail-over features. Therefore, organizations must purchase and deploy Windows Server 2008 Enterprise Edition for all mailbox servers that will be part of a DAG. Finally, some user-focused benefits of the Exchange Server 2010 product will require users to install Microsoft Outlook 2010.

### **Potential Data Loss and Fail-Back Issues**

While Exchange Server 2010's DAG architecture provides many improvements over previous versions of clustering and replication, it also has potential drawbacks. Organizations should consider the following issues when developing their overall e-mail continuity plan:

- **Support for Low Bandwidth Links:** Organizations often experience limitations in the reliability and performance of inter-site links to be a major limiting factor when supporting remote sites and disaster recovery configurations. Systems administrators should test and monitor overall bandwidth requirements to ensure that latency is low and that data can be recovered in the event of various types of failures.
- **Fail-Back Process:** When configured properly, the fail-over process between nodes in a DAG is fairly straight-forward. However, administrators can run into issues with failing back to their original server after the initial issue has been addressed. The process can involve a long sequence of manual steps, can require significant administrator expertise, and can involve the need to completely reseed the original mailbox database. All of this leads to increased costs, complex administration processes and lengthy failback times with significant bandwidth implications.
- **Disk Performance Issues:** Microsoft has improved overall disk performance in Exchange Server 2010, leading to potentially decreased storage hardware costs. However, when DAGs are enabled, the overall disk I/O cost is often much higher than expected. This is due to the increased I/O generated by the need to read the primary copy of the mailbox

and to send these updates to multiple standby servers. This requirement can potentially lead to decreased scalability and performance for highly-available implementations of Exchange Server 2010.

## Improving Exchange Server Availability with Neverfail

Neverfail provides high availability solutions that can help address potential issues and limitations found in the Exchange Server 2010 platform. This section provides an overview of the ways in which Neverfail can work to protect organizations' Exchange Server messaging infrastructure.

### Simplified Administration through Neverfail Application Management Framework (AMF)

Exchange Server 2010 provides basic monitoring capabilities for DAGs and the mailboxes that they host. However, as mentioned earlier, true messaging continuity involves monitoring of the entire IT environment, including hardware, software, network, and storage resources. To meet these requirements, organizations often incur additional costs related to implementing end-to-end-monitoring. These costs can include:

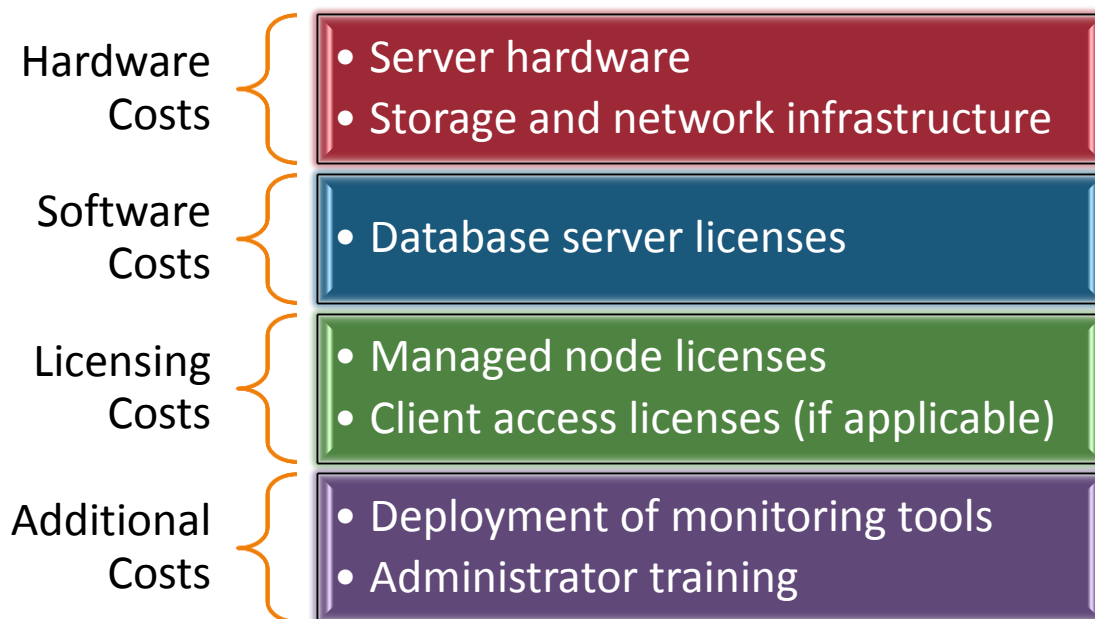


Figure 3: Potential costs related to messaging infrastructure monitoring solutions

Neverfail AMF provides a single, unified method of monitoring the entire infrastructure that is required for proper functioning of a messaging environment. In addition to monitoring critical Exchange Server services, it can quickly detect many other problems that might lead to

performance issues or downtime for users of Exchange Server. Furthermore, Neverfail provides high-availability solutions for a wide variety of different applications using a single, consistent user interface.

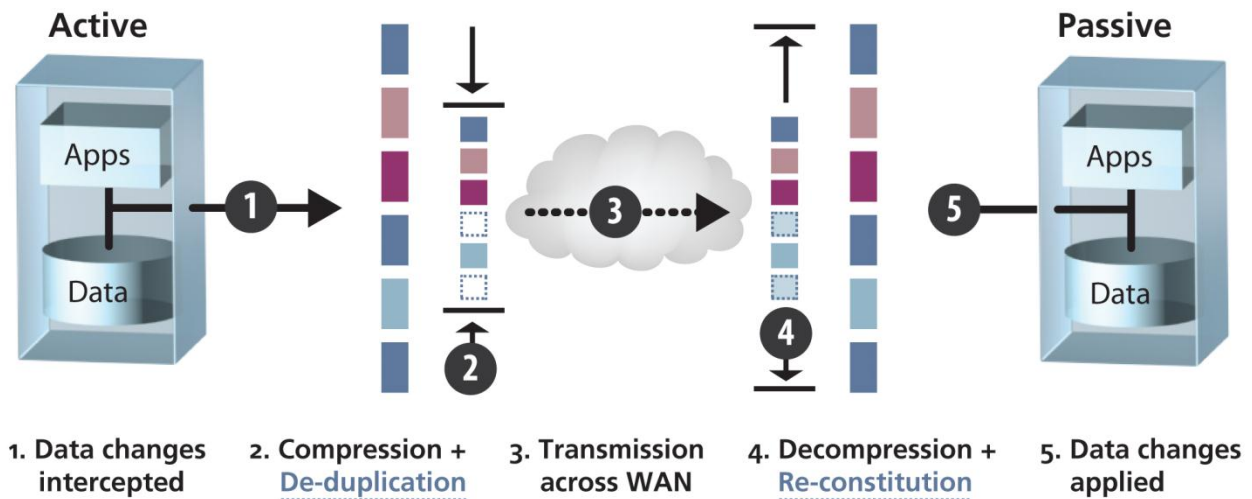
Organizations rarely have the time, budget, or expertise to hire and retain individual specialists in the wide array of different high availability approaches. Even within a product family such as the Exchange Server platform, changes in the availability methods between versions can be significant. The result is often a less-than-ideal implementation, or the need to hire application-specific experts for each portion of the infrastructure. By using Neverfail's AMF, organizations can eliminate the need to use many different high availability approaches while still protecting the entire messaging infrastructure. This typically leads to reduced administration costs and better proactive monitoring of potential issues that can lead to downtime or data loss.

### **WAN Optimization Support**

Support for remote office and branch office network connections is a significant concern for distributed organizations that must support a distributed IT environment. High latency, low bandwidth, and unreliable connections can all make it difficult for remote offices to remain connected. Replicating large messaging databases can place high requirements on these network connections and can often result in reduced performance and the potential for data loss.

Neverfail's WANSmart™ technology provides features that can significantly improve the efficiency of messaging-related replication. It is designed to use compression and de-duplication to reduce WAN requirements. Through the use of these methods, WANSmart can greatly reduce the amount of information that must be communicated between copies of Exchange Server mailbox databases. Figure 3 provides an overview of how these features work together to reduce network requirements for servers located in remote sites.





## Neverfail WANsmart™

Figure 4: Efficient database replication using Neverfail WANsmart

### Simplified Administration

Neverfail provides business continuity solutions for many different critical systems in the environment. By using a standard replication mechanism for many different types of applications and services, administrators can leverage their high-availability investment to protect a wide variety of different types of systems. Specific to messaging, maintaining true end-user availability often requires access to Microsoft Office SharePoint Server (MOSS), Blackberry Enterprise Server (BES), Outlook Web Access (OWA), ActiveSync and other critical applications. Regardless of the application or service that must be protected, Neverfail uses a consistent method to simplify administrative tasks.

While high-availability improvements in each new version of Microsoft's Exchange Server platform have provided significant benefits, they have also require retraining, planning, and significant administrative support. Neverfail's consistent approach to replication allows administrators to simplify monitoring, fail-over, and fail-back operations.

### Summary

Microsoft Exchange Server 2010 provides numerous new features, benefits, and enhancements over previous versions of the product. Organizations can take advantage of new availability mechanisms such as Database Availability Groups (DAGs) along with new end-user features. However, IT organizations must also consider costs related to performing fail-over and fail-back processes, support sites that are connected over WAN links and additional requirements for monitoring the entire messaging infrastructure.

Neverfail provides dedicated support for Exchange Server 2010 and can significantly reduce the cost and complexity of implementing a highly-available messaging infrastructure. Through the use of features like AMF and WANSmart, organizations can gain the benefits of Exchange Server 2010 while reducing the costs of true high availability.

## Resources for More Information

- Resources from Neverfail:
  - [Product Information](#)
  - [Product Demos](#)
  - [White Papers](#)
    - *Enhancing Exchange Server 2007 High-Availability and Disaster Recovery with Neverfail*
- [Microsoft Exchange Server 2010 Product Information](#) (Microsoft Corp.)

## About the Author

Anil Desai is an independent consultant based in Austin, TX. He specializes in evaluating, implementing, and managing IT solutions. Anil has worked extensively with Microsoft's server solutions and the .NET development platform. He is the author of over two dozen books and is a frequent writer on topics related to IT management best practices. Anil holds numerous certifications and is a Microsoft MVP (Windows Server – Virtualization). For more information, please see <http://AnilDesai.net>.