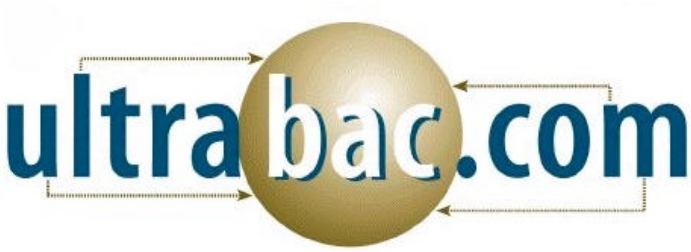
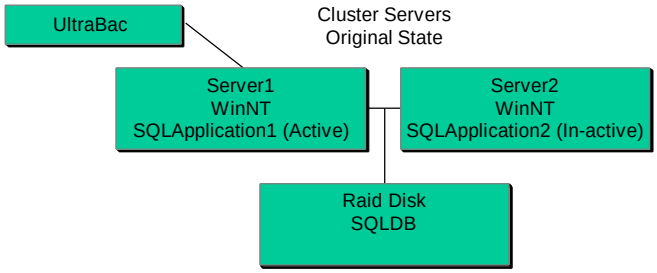
Microsoft®Cluster Server™ Live Backup & Restore by UltraBac for Windows NT™



Backup & Disaster Recovery Software

UltraBac – Microsoft Cluster Server Compatible!

ULTRABAC.COM announces that UltraBac for Windows NT is Microsoft NT Cluster Server compatible. In tests conducted at Microsoft during the week of February 22, 1999, UltraBac successfully backed up and restored an online Windows NT Cluster Server that was actively running SQL.



UltraBac First to Backup Cluster

UltraBac for Windows NT is the first commercial backup product that Microsoft has observed to successfully backup and restore a Cluster Server while the cluster machines were live and in an online production state.

Monitored by Microsoft Personnel

The equipment and software used for the test were installed and monitored by Microsoft personnel in the Partner Solution Center located at the Microsoft Campus in Redmond, Washington. Personnel from ULRABAC.COM installed UltraBac for Windows NT storage management software under the supervision of Microsoft.

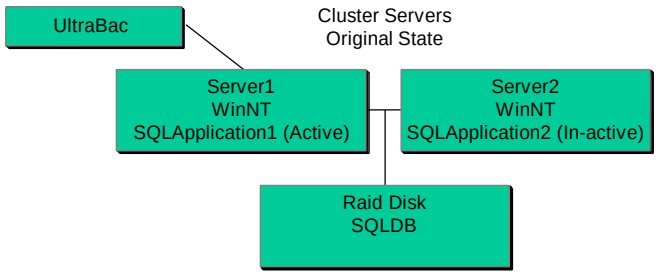
The Test Reviewed

This test was a performed on a live MSFT NT Cluster. UltraBac, which resided on a server outside the Cluster, was used to back up one of the two MSFT NT Cluster Servers to tape. The backed up Cluster Server (now considered the Failed Cluster Server) was shut down and the Remaining Cluster Server (now considered the Default Cluster Server) automatically took over the Failed Cluster Server's operation. The Failed Cluster Server's operating system drive was then completely erased using FDISK and re-partitioned.

Using UltraBac, the failed Cluster Server was swiftly restored without any complications, in about 8 minutes. The restore included a retrieval of the failed Cluster Server's registry and data. Upon recovery, the Failed Cluster Server was rebooted and the machine then re-synchronized successfully to resume 100% cluster operation. To verify success, the Default Cluster Server was shut down and the services were accessed using a server outside the cluster.

Step-by-Step Backup & Restore

The following instructions demonstrate how to backup and restore Clustered Servers using UltraBac. UltraBac allows the Cluster to keeps the SQL database available during all backups and restores. Between backup and restore we assume a complete failure of one of the Server's operating system disk.



Setup

This example consists of two Microsoft NT Cluster Servers each with Microsoft SQL installed. We will refer to the servers as Server1 and Server2. The SQL database is maintained on a shared hardware RAID disk.

Backup

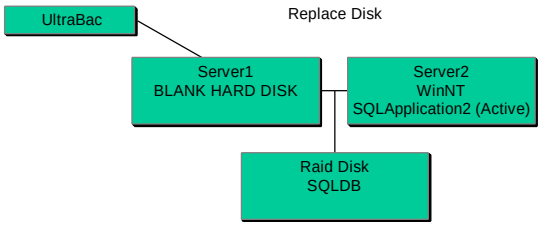
1. Perform a live UltraBac file-by-file backup of Server1 including the registry.
2. Perform a live UltraBac SQL Agent backup of SQLDB (recommended but not required.)

Failure

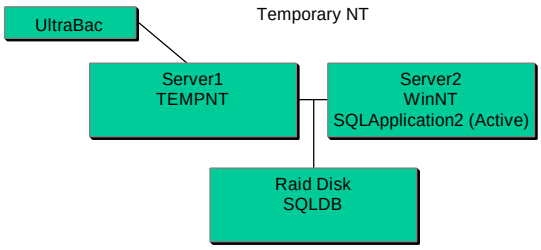
3. The Server1's operating system disk fails.
4. Server2 detects the failure and additionally becomes the primary server.

Recovery

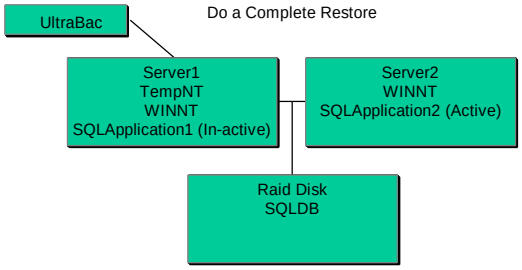
5. Replace the failed disk.



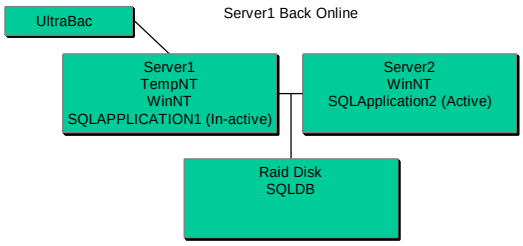
6. Install and boot to a temporary version of NT on the new disk (e.g. TEMPNT). See UltraBac's User Reference manual - Chapter "Restoring a Failed O/S Disk" for more information.



7. Perform an UltraBac file-by-file restore including the registry to Server1. Restore the registry to <original path>.

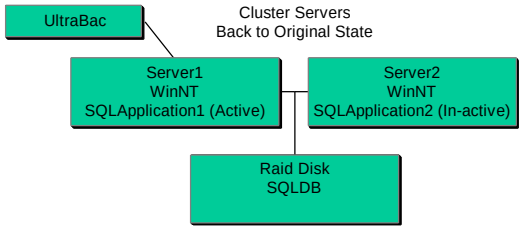


8. You may want to alter the boot.ini file to allow booting from either the original or the TEMPNT operating systems. Again this is explained in UltraBac's manual – chapter "Restoring a Failed O/S Disk".
9. Restart Server1 and boot into the original NT operating system (e.g. WINNT).
10. Server1 automatically performs synchronization.



Testing

11. Shutdown Server2.
12. Server1 detects the loss of Server2 and becomes the primary server.
13. Check all data.
14. Restart Server2.
15. Server2 automatically performs synchronization.
16. Remove the temporary NT operating system (e.g. TEMPNT) if desired.
17. The Cluster has now resumed 100% operational status.



This test conclusively proved that UltraBac can backup and recover a failed cluster server system without interrupting the clusters active SQL database.

Quick Reference.

Backup

1. Perform a live UltraBac file-by-file backup of Server1 including the registry.
2. Perform a live UltraBac SQL Agent backup of SQLDB (recommended but not required - the SQL agent operation is seamlessly integrated into UltraBac's normal backup operation.)

Failure

3. The Server1's operating system disk fails.
4. Server2 detects the failure and becomes the primary server.

Recovery

5. Replace the failed disk.
6. Install and boot to a temporary version of NT on the new disk (e.g. TEMPNT). See UltraBac's manual - chapter "Restoring a Failed O/S Disk" for more information.
7. Perform an UltraBac file-by-file restore including the registry to Server1. Restore the registry to <original path>.
8. You may want to alter the boot.ini file to allow booting from either the original or the TEMPNT operating systems. Again this is explained in UltraBac's manual – chapter "Restoring a Failed O/S Disk".
9. Restart Server1 and boot into the original NT operating system (e.g. WINNT).
10. Server1 automatically performs synchronization.

Testing

11. Shutdown Server2.
12. Server1 detects the loss of Server2 and becomes the primary server.
13. Check all data.
14. Restart Server2.
15. Server2 automatically performs synchronization.
16. Remove the temporary NT operating system (e.g. TEMPNT) if desired.
17. The cluster has now resumed 100% operational status without having interrupted the SQL db availability.

Michael A. Chantry- Quality Assurance / Technical Support at BEI Corporation. He also contributes in the areas of Technical Writing and Software Testing. He can be reached via email at mike@ultrabac.com