AppAssure Software Inc.

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[REPLAY: INSTALLING REPLAY CORE ON A FAILOVER MICROSOFT CLUSTER]

This guide describes how to manage the NTLM blocking feature on Windows 7 and Windows Server 2008 R2 to support Pass-through authentication.

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INTRODUCTION

In a default installation, AppAssure Replay Core runs on a single Windows-based server. Customers wanting higher availability of the application can now deploy Replay Core on an Active/Passive Microsoft Cluster, so the Replay Core Service is automatically restarted on a standby server if the primary server fails. This document describes the use of Microsoft Cluster Server (MSCS) to provide high availability for Replay Core. The Microsoft Cluster can be implemented on physical or virtual hardware but cluster must comply with Microsoft recommended practices.

KEY COMPONENTS OF REPLAY CORE

The components of Replay Core are

- The Replay Core Service, the primary engine that performs the backup snapshots, the deduplication and compression and also the connection end point for the management console.
- The Replay Repository, a physical disk that contains the recovery points for all the protected servers
- The Replay Core Registry Metadata, which contains all the pertinent information about the Replay Core and the protected servers

MICROSOFT CLUSTER GROUP DESIGN

This document assumes that a Windows Cluster with two nodes and shared disks is deployed and ready for use. You can refer to documentation from Microsoft and VMware to setup physical or virtual Microsoft Windows clusters respectively.

For a windows cluster that provides high availability for Replay Core, you must create a number of cluster resources. The following table provides a summary, indicating each resource and its purpose. Place all these resources in a single resource group, which is then used to provide availability for the tightly coupled Replay Core components

Resource	Type	Purpose
Replay Core IP Address	IP Address	Provides the IP address that all protected server hosts use to connect with the currently-active Replay Core Server host in the cluster
Replay Core Network Name	Network Name	Provides the network name used to connect with the currently-active Replay Core Server host in the cluster.
Replay Core Disk Repository	Physical Disk	Provides the shared disk resource that holds the Replay Core Recovery Points
Replay Core Service	Generic Service	The Replay Core Service that runs on the active node in the cluster. The Replay core service

PROCEDURE TO CREATE AND CONFIGURE THE CLUSTER GROUP AND RESOURCES

This section details the process for setting up the MSCS cluster for Replay Core Server. It assumes that two physical servers or virtual machines are being configured in the cluster and does not consider whether any application other than Replay Core is installed in the cluster. In Microsoft terminology, the servers that make up a cluster are called nodes and the cluster group that includes both network name and IP address is called a virtual server.

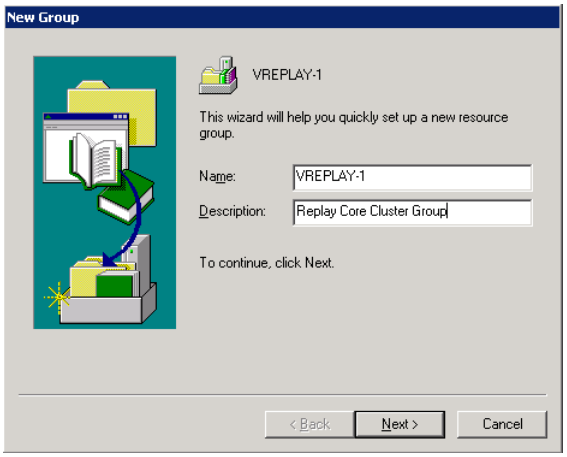
Complete the following tasks to create a clustered Replay Core Server host:

1. Set up Microsoft Cluster Server, using one of the two cluster configurations described earlier.
2. Configure a cluster group with a network name, IP address and shared physical disk(s) to store the Replay Core repository
3. Install Replay Core on the primary node followed by the secondary node. Do not start the Replay Core console, connect to any other Replay Cores or add any servers for protection
4. Create the Replay Core service resource and set resource dependencies.
5. Bring the cluster group online
6. Connect to the replay console using the network name of the cluster group
7. Test the Replay Core failover functionality.

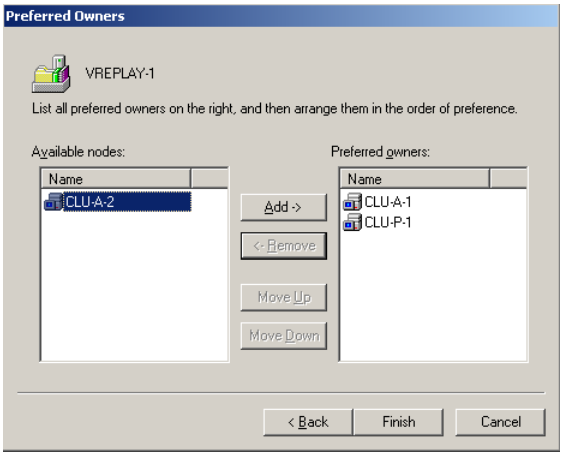
The following table summarizes the resource names that will be created in the cluster group.

Resource	Resource Name
Cluster Group Name	**VREPLAY-1**
Replay Core IP Address	10.23.2.176 / 255.255.0.0
Replay Core Network Name	VREPLAY
Replay Core Disk Repository	R: S:
Replay Core Service	HKEY_LOCAL_MACHINE\SOFTWARE\ReplayServer64

1. Create a Cluster Group: VREPLAY-1. Before you begin, Refer to the above table for the host name, IP address, and netmask to be used by the cluster to provide a common network identity for the clustered Replay Core service.
   a. Log in to begin configuration
   b. Log in to the first node in cluster. You must log in using an administrative account.
   c. Choose Start → Programs → Administrative Tools → Cluster Administrator.
   d. When prompted, type in the name of the cluster and click OK.
   e. Create the Replay Core resource group
   f. Right-click Groups and choose New > Group.
   g. Enter an appropriate name for the new group, such as VReplay-1, then click Next.



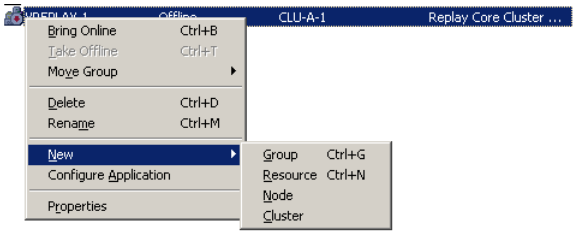
   h. Select the preferred owners. In this case CLU-A-1 and CLU-P-1. Click Finish.



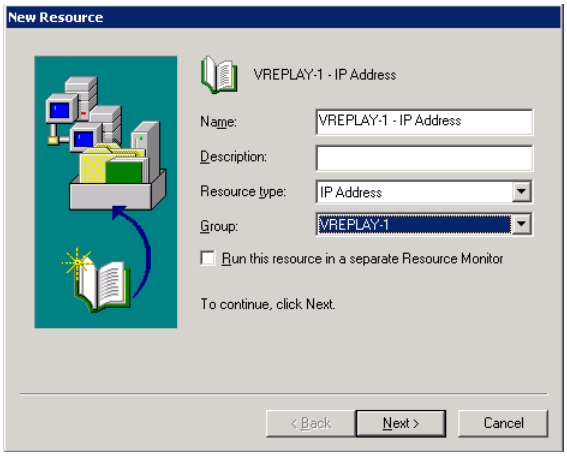
i. The confirmation pane appears. Click OK.

2. Create the Replay Core IP address resource

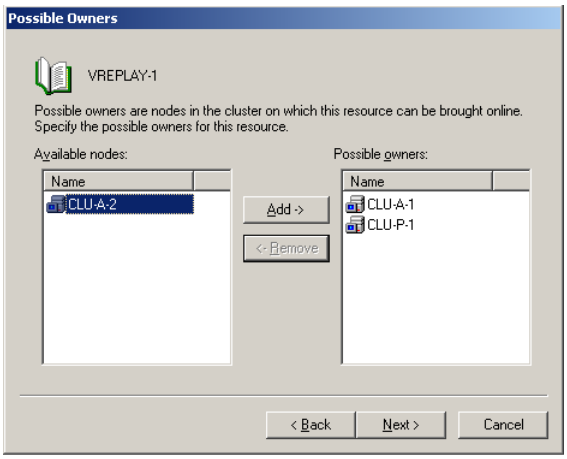
a. In the left navigation menu, right-click the VReplay-1, then choose New → Resource.



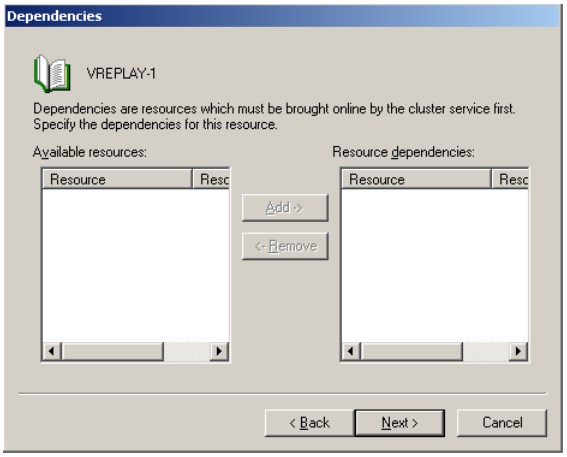
b. Enter a name **VREPLAY-1 – IP Address** for the resource. Select IP Address in the Resource type drop-down menu. Select Group VREPLAY-1. Click Next.



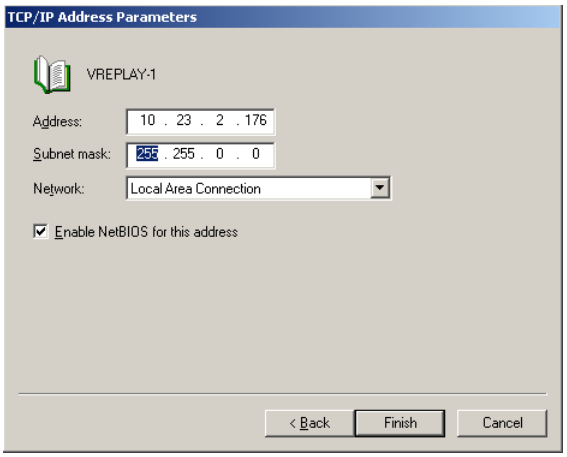
c. Verify that the cluster nodes are listed as possible owners, then click Next.



d. Since this is the first resource being created n the group, there should be no dependencies listed in the dependencies window. Click Next.



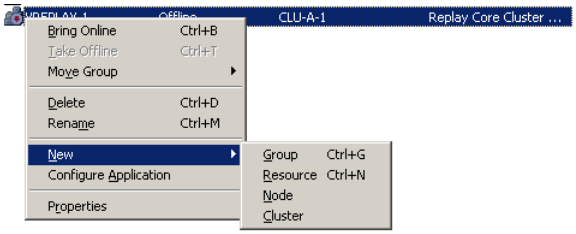
e. Enter the TCP/IP Address, subnet mask and select the network interface that will host this IP address. Click Finish.



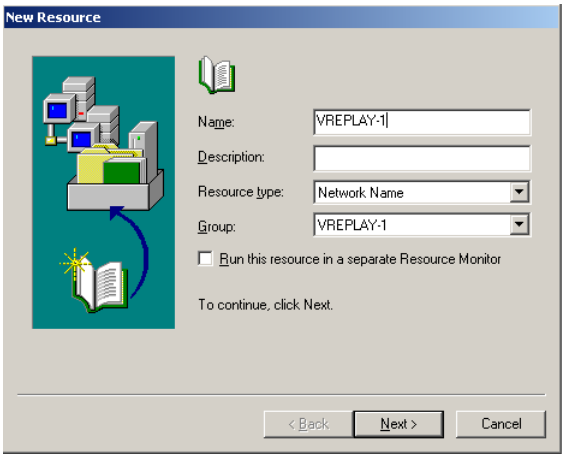
f. Click OK for the "VReplay – IP Address" resource created successfully message.

3. Create the Replay Core Network Name resource

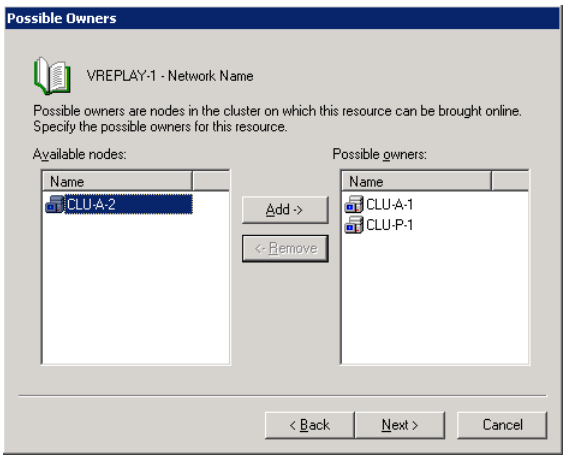
a. In the left navigation menu, right-click the VReplay-1, then choose New → Resource.



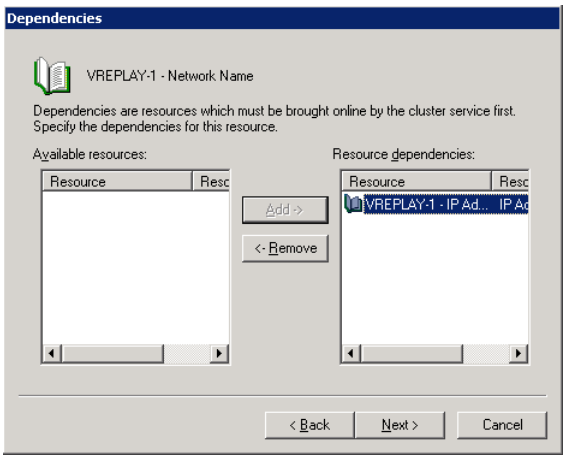
b. Enter a name **VREPLAY-1 – Network Name** for the resource. Select Network Name in the Resource type drop-down menu. Select Group VREPLAY-1. Click Next.



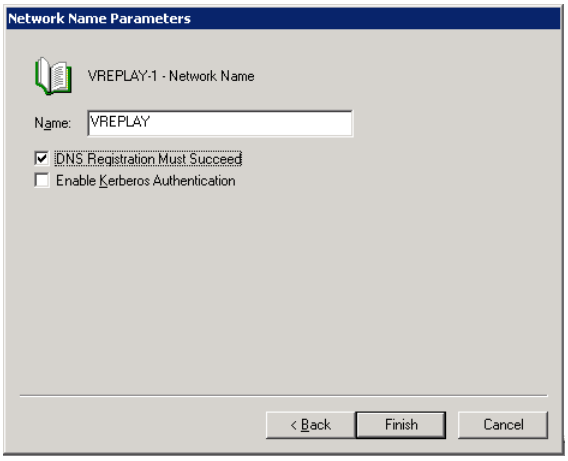
c. Verify that the cluster nodes are listed as possible owners, then click Next.



d. Since this is the second resource being created in the group and that the network name depends on the IP address, add VREPLAY-1 – IP Address to the resource dependency list. Click Next.



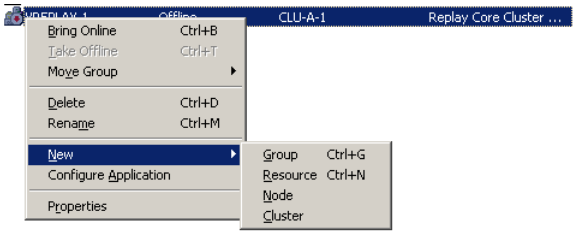
e. Enter the network name “VREPLAY” and select “DNS Registration Must Succeed”. Click Finish.



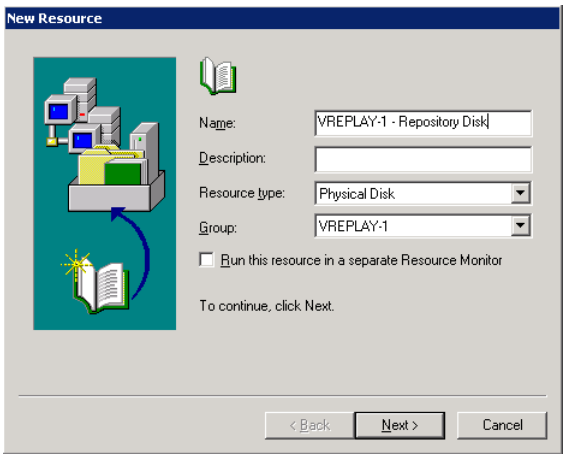
f. Click OK for the “VReplay – IP Address” resource created successfully message.

4. Create the Replay Core Physical Disk resource

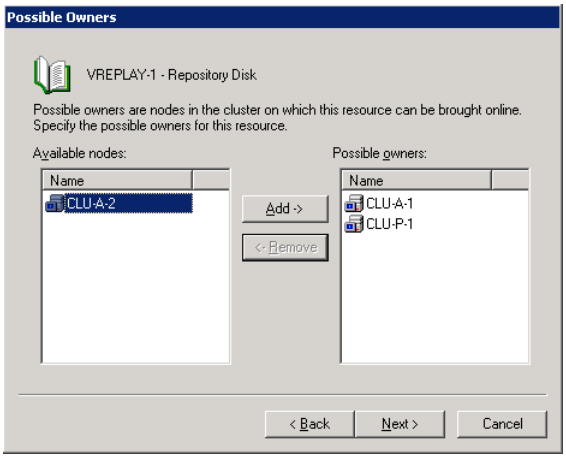
a. In the left navigation menu, right-click the VReplay-1, then choose New → Resource.



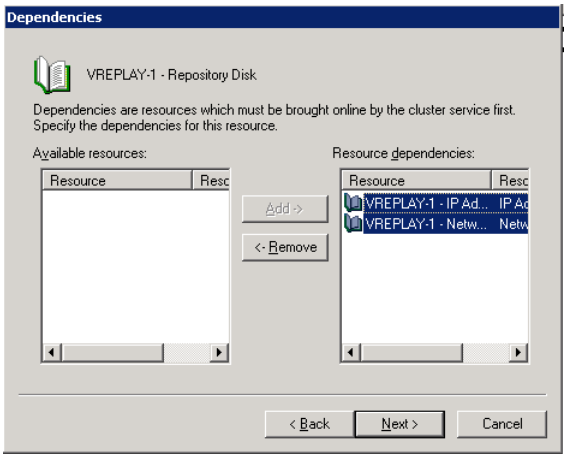
b. Enter a name **VREPLAY-1 – Network Name** for the resource. Select Physical Disk in the Resource type drop-down menu. Select Group VREPLAY-1. Click Next.



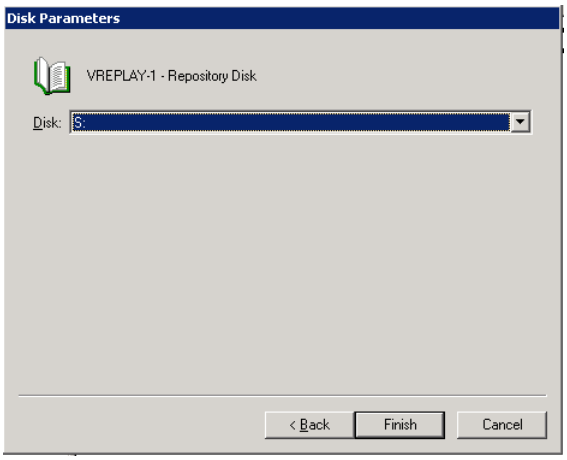
c. Verify that the cluster nodes are listed as possible owners, then click Next.



d. Select VREPLAY-1 – IP Address and VREPLAY-1 – Network Name and click Add to include them in the resource dependency list. Click Next.



e. Select Disk S: and Click Finish.

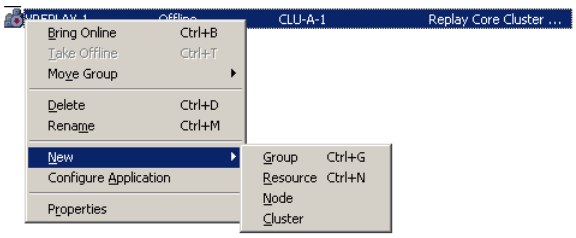


f. Click OK for the "VReplay – Repository Disk" resource created successfully message. If necessary, repeat the process for additional disk repositories

5. Install Replay Core on CLU-A-1 and Replay CLU-P-1. Refer to the Install Guide. DO NOT START THE REPLAY CONSOLE YET.

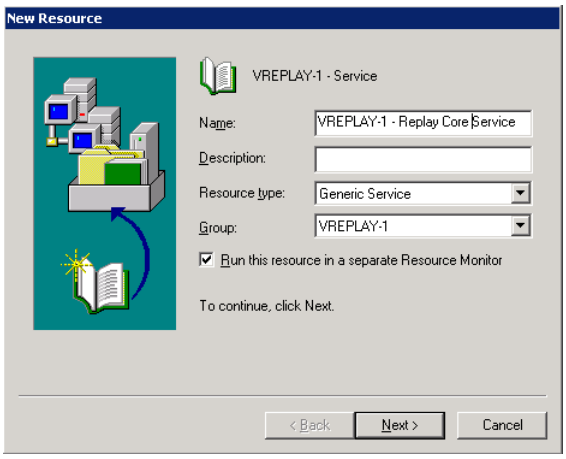
6. Create the Replay Core Generic Service resource

a. In the left navigation menu, right-click the VReplay-1, then choose New → Resource.

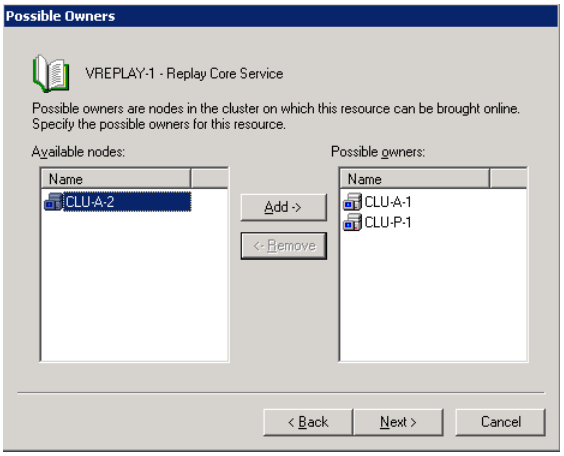


b. Enter a name **VREPLAY-1 – Replay Core Service** for the resource. Select Generic Service in the Resource type drop-down menu. Select Group VREPLAY-1 and "Run this resource in a separate Resource Monitor" and Click Next.

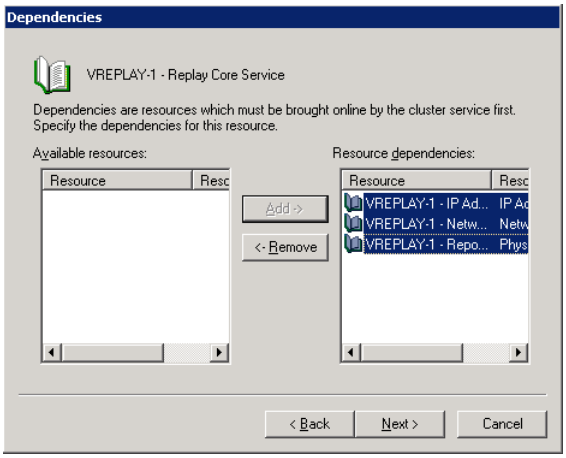
By default, Microsoft Cluster Service uses the Resource Monitor for all resources on a node. If a problematic resource causes a Resource Monitor to stop responding, you can run that resource in a separate Resource Monitor. Because each Resource Monitor runs as a separate process, this isolates the problematic resource.



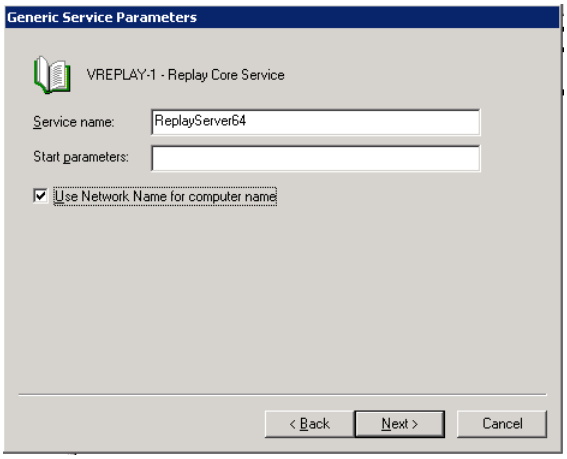
c. Verify that the cluster nodes are listed as possible owners, then click Next.



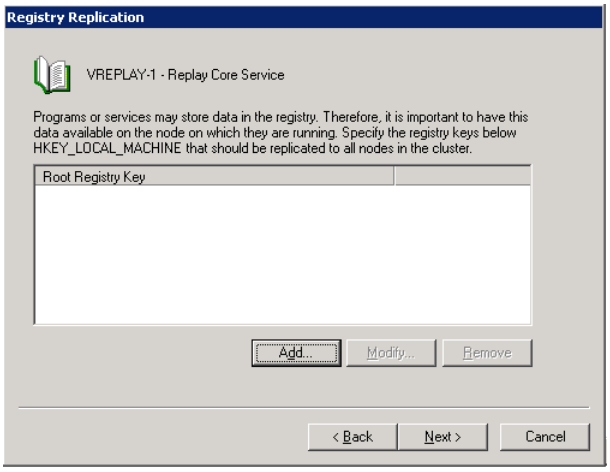
d. Add “VREPLAY-1 – IP Address”, “VREPLAY-1 – Network Name” and “VREPLAY-1 – Physical Disk Repository” in the resource dependencies list and click Next.



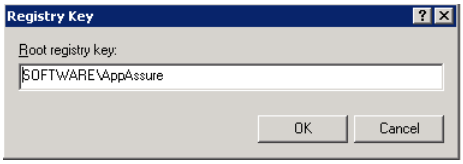
e. In the Generic Service Parameters window, enter service name as “ReplayServer64” and check the box for “Use Network Name for Computer Name” and Click Next.



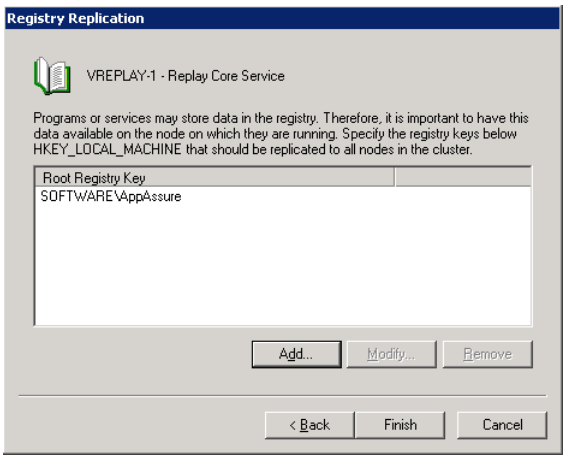
f. In the Registry Replication window. Click Add. and enter “Software\AppAssure” (without the quotes) and



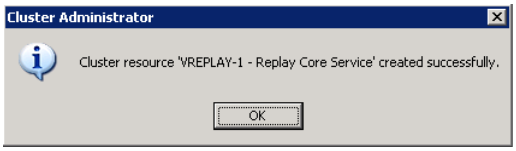
g. Enter “Software\AppAssure” (without the quotes) and Click OK



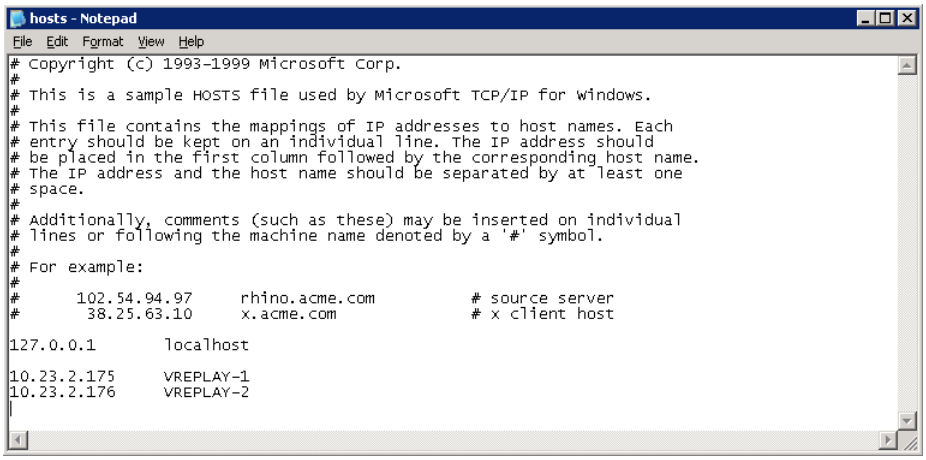
h. Click Finish.



i. Click Ok on the "Cluster resource 'VREPLAY-1 – Replay Core Service' created successfully.



j. Create a static IP address entry for VREPLAY-1 in the <SystemRoot>\System32\Drivers\etc\Hosts file on CLU-A-1 and CLU-P-1.

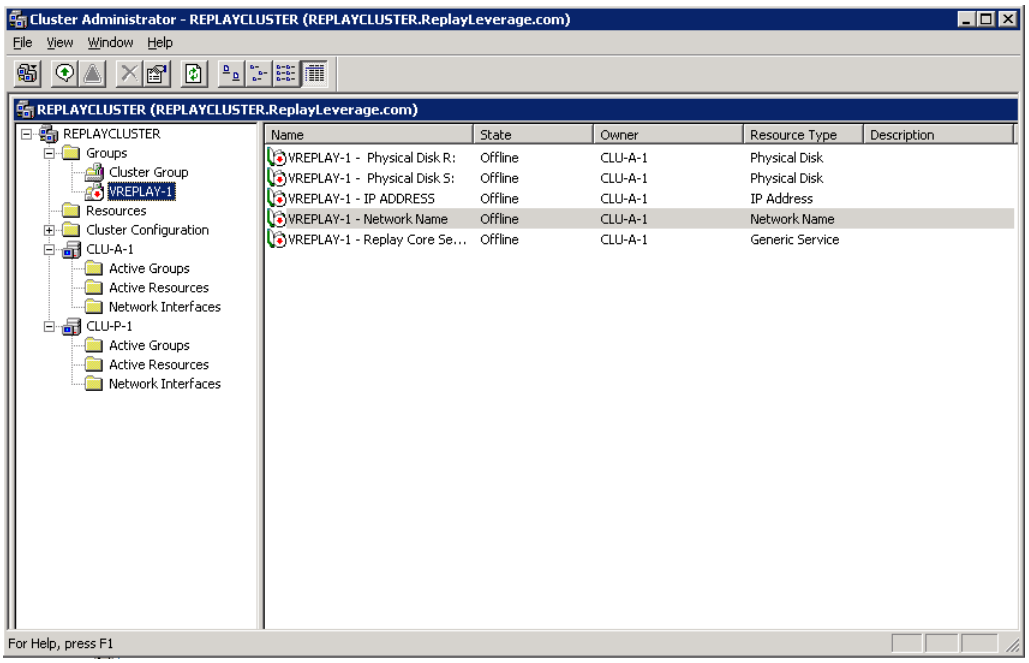


7. Set the cluster group advanced properties

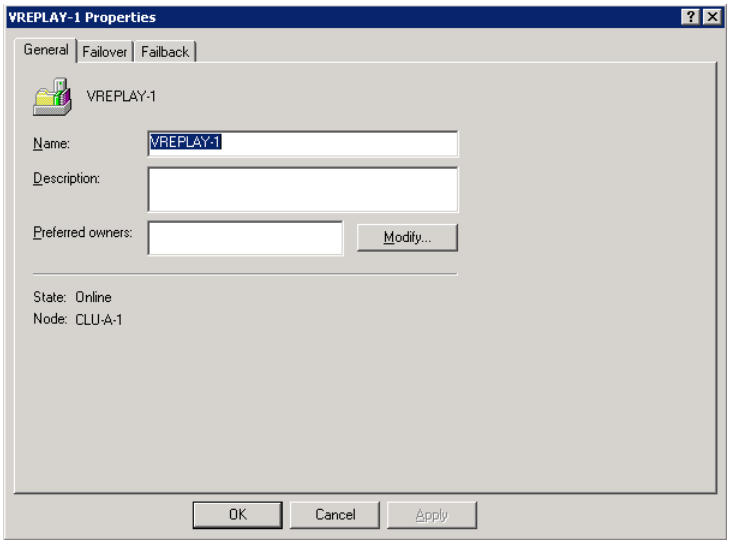
   a. Open Cluster Administrator by navigating to to Start → All Programs → Administrative Tools and select "Cluster Administrator"

   b. In the console tree, right-click the VREPLAY-1 Cluster Group folder and select properties.

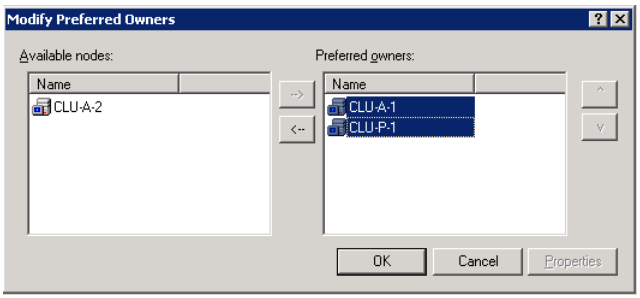
c.



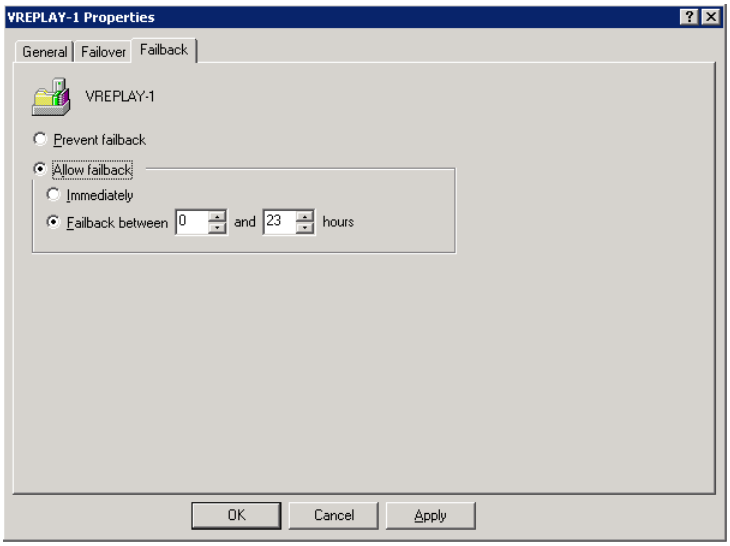
d. In the VREPLAY-1 Properties window, Click Modify



e. Select CLU-A-1 and CLU-P-1 and click the → button to ad as Preferred owners. Click OK.

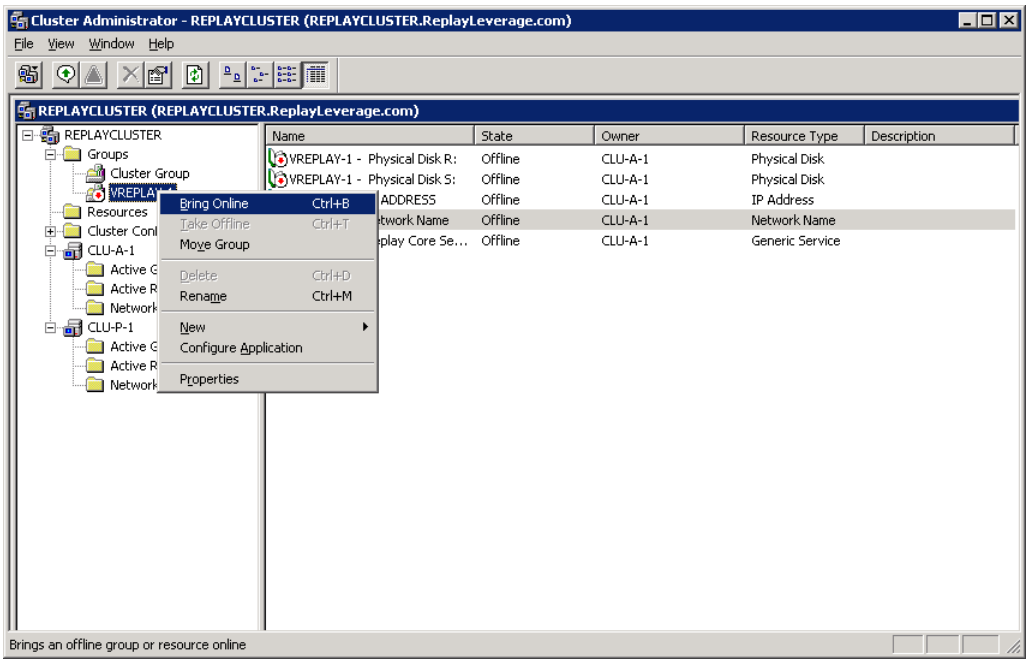


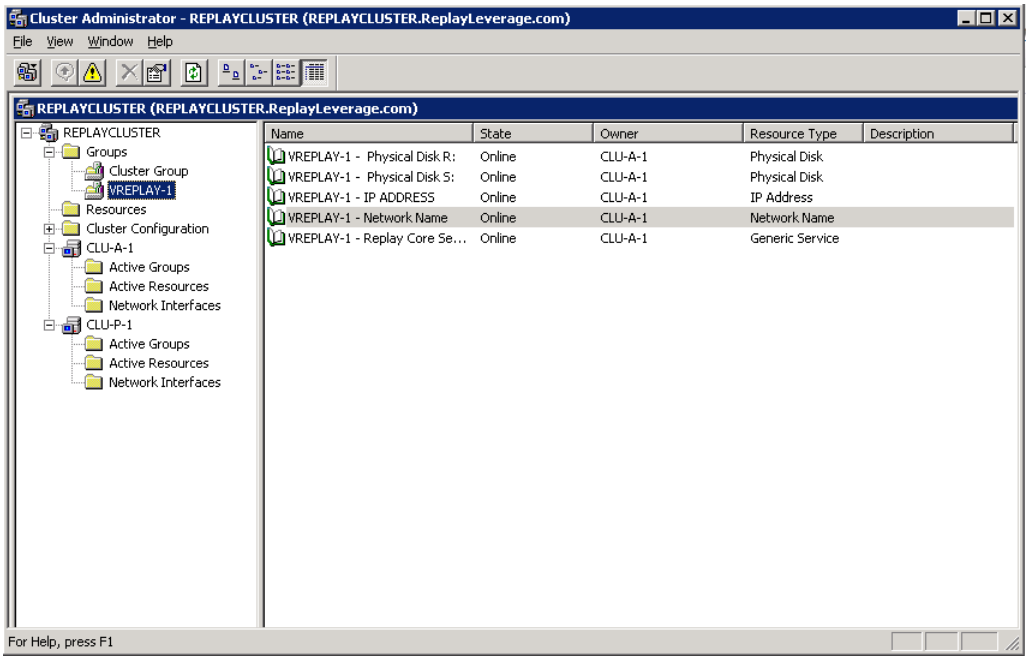
f. Click the Failback Tab. Select “Allow Failback”, “Failback between” and enter 0 and 23. Then click OK



8. Bring Cluster Group Online

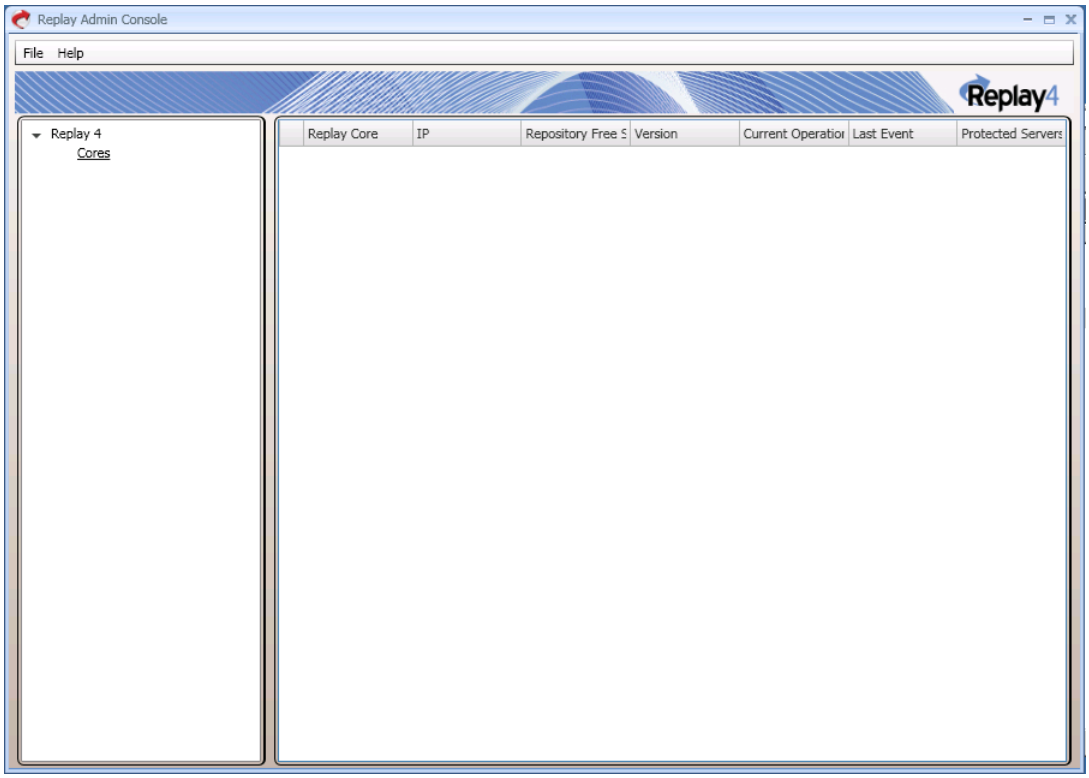
a. Right-Click VREPLAY-1 and select Bring Online



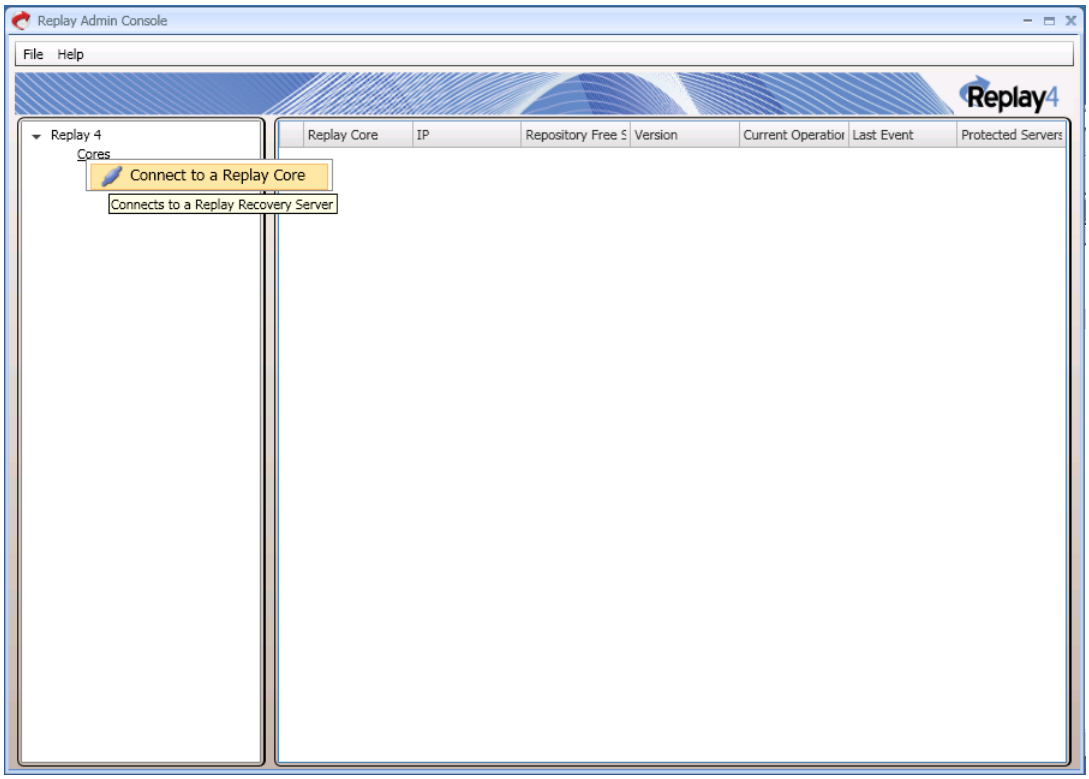


CONFIGURE THE REPLAY CORE CONSOLE AND PROTECTED SERVERS

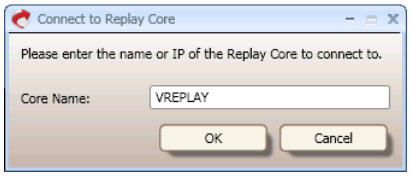
1. Start the Replay Core console by double-clicking on the Replay Admin Console or navigating to Start → All Programs → AppAssure Software → Replay 4 → Replay Admin Console

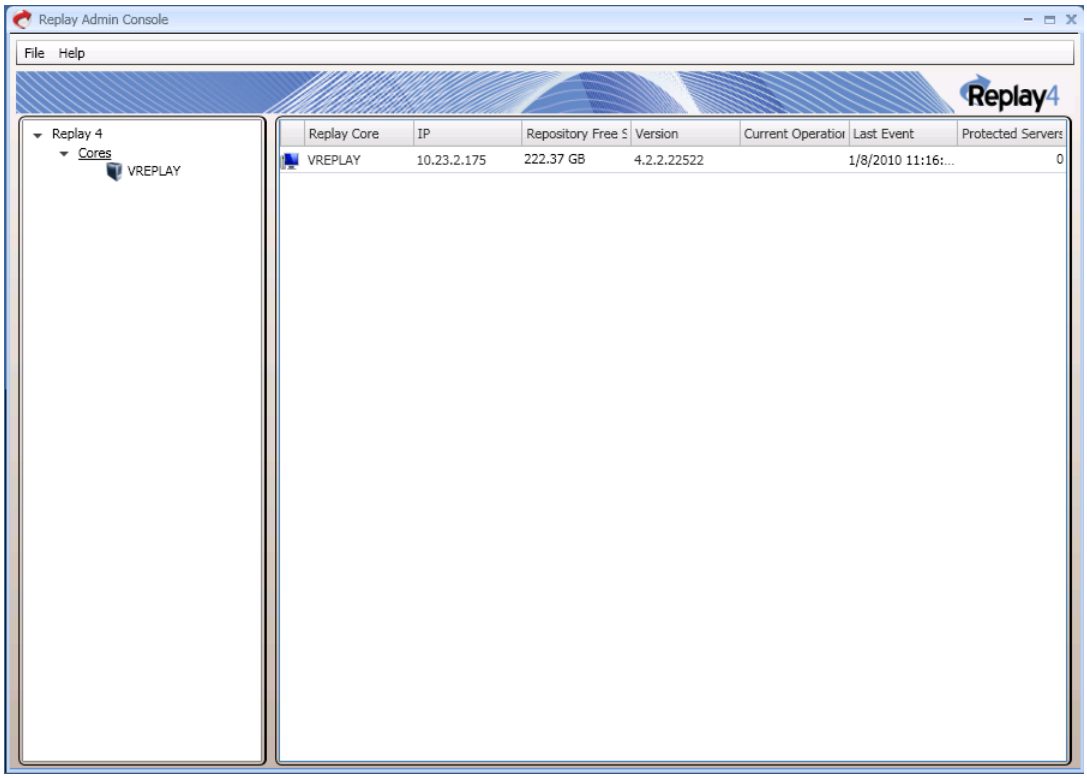


2. In the left pane right-click Cores and select Connect to a Replay Core

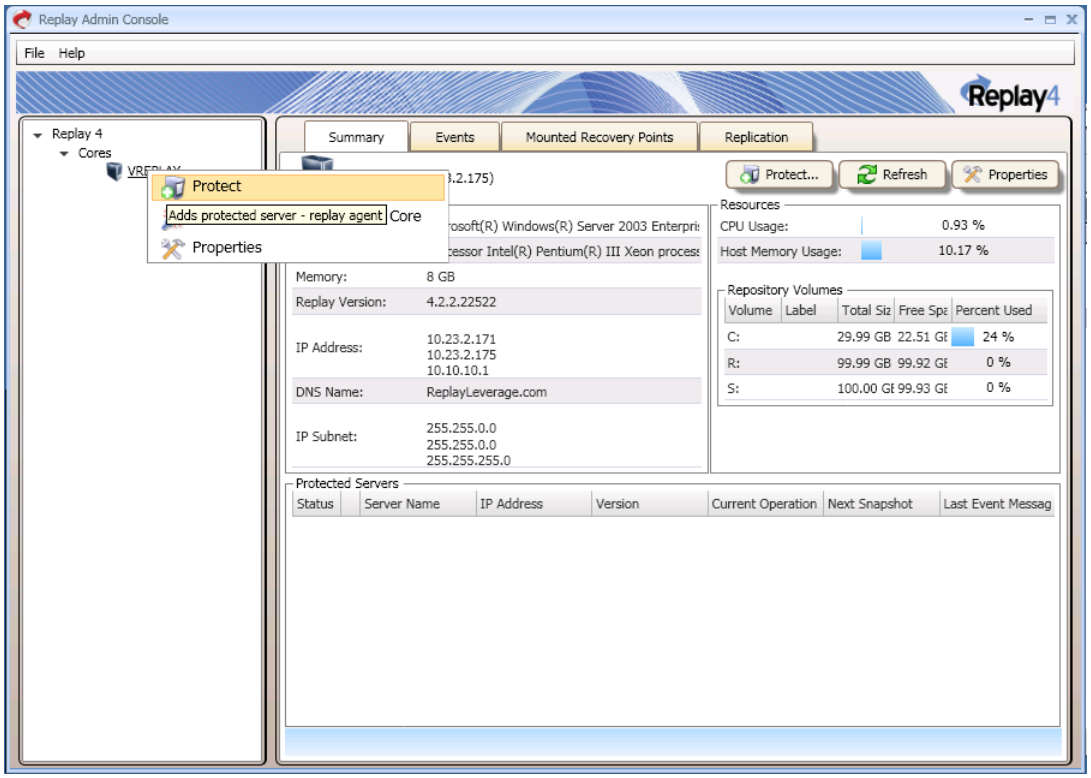


3. Enter the name of the Replay Core. In this case VREPLAY

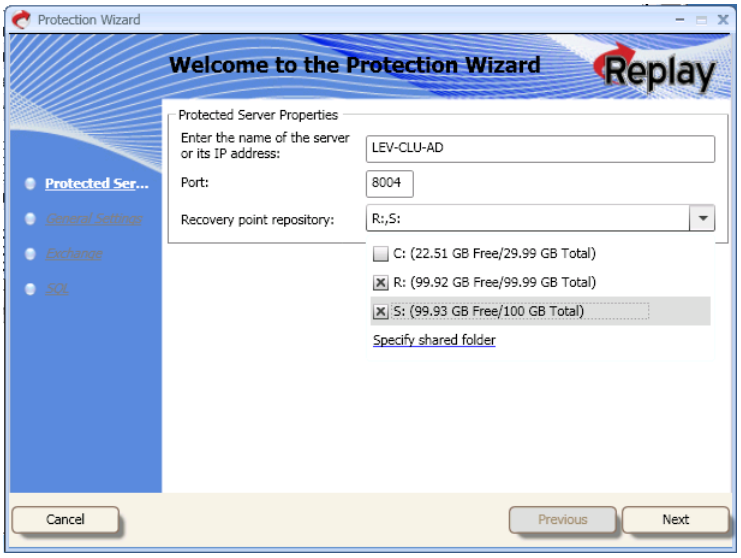




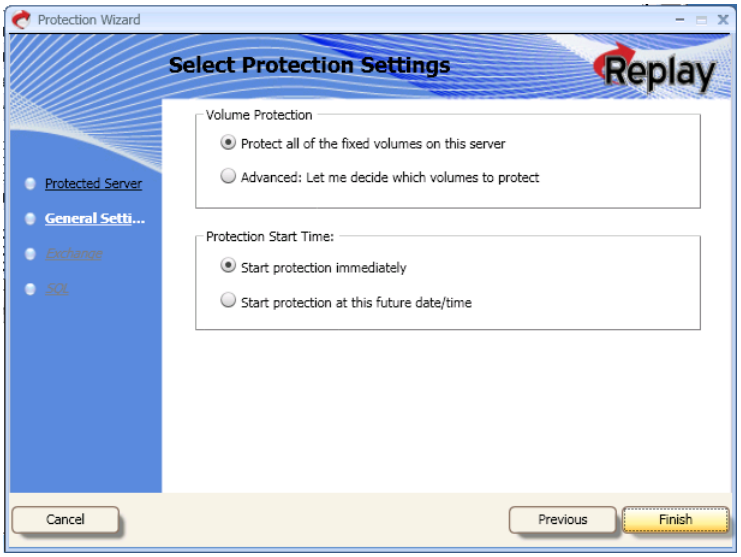
4. To add a protected server (that already has an installed agent) right-click on the Replay Core name (VREPLAY) and select Protect



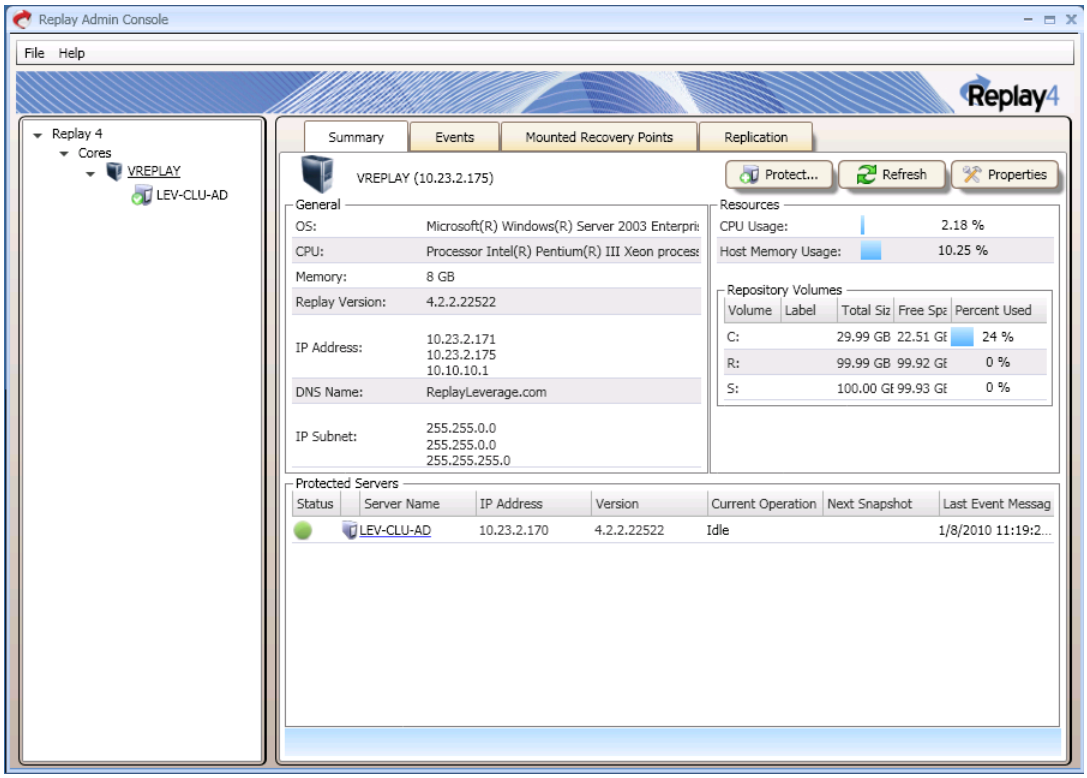
5. Enter the name of the server to protect, select the volumes on the Replay Core which will be used to store the Recovery Points. Click Next.

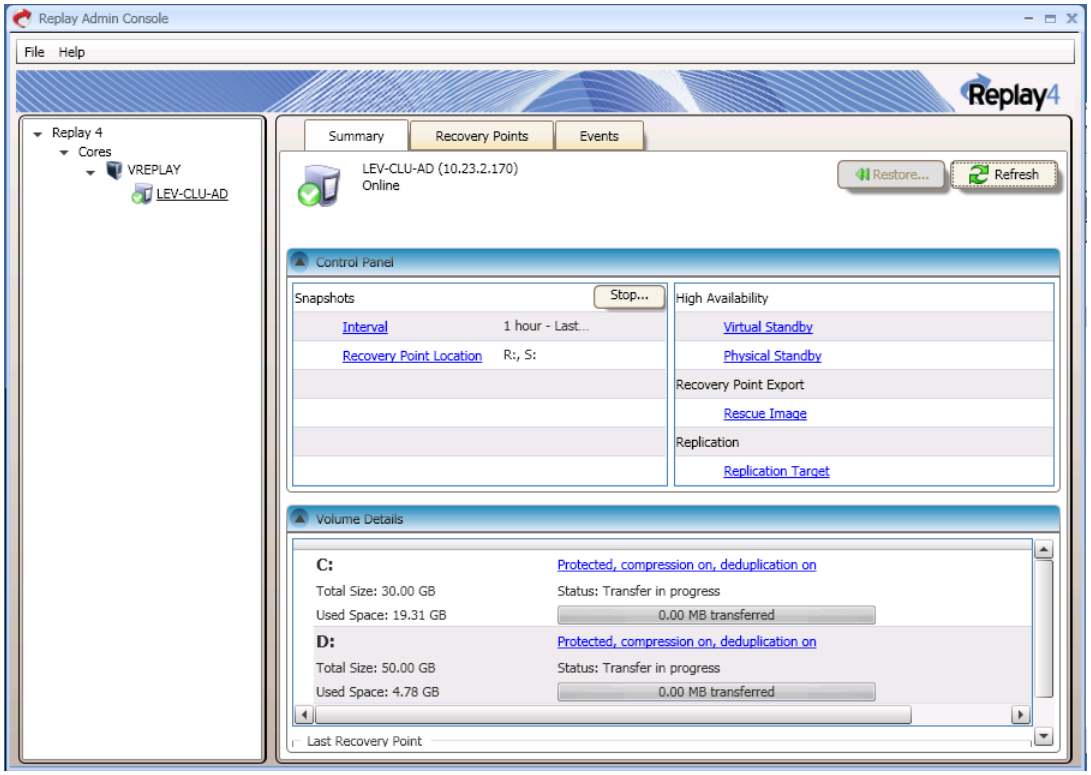


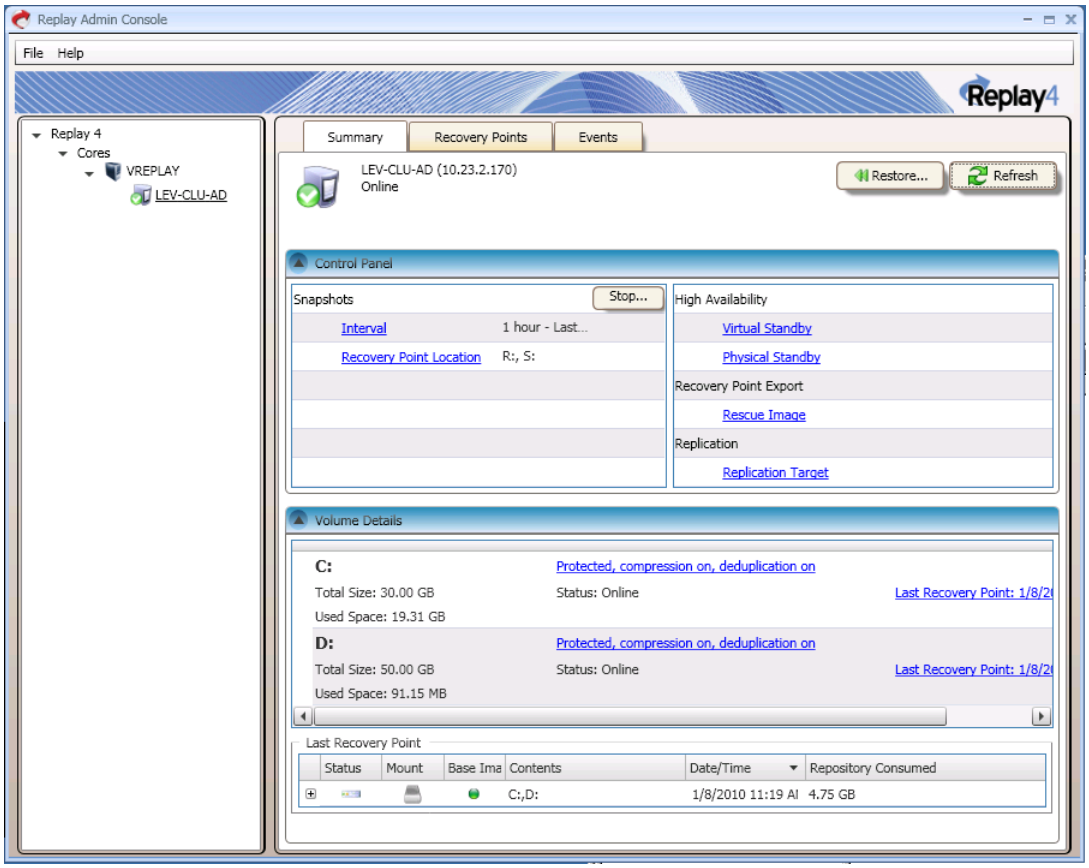
6. On the Protection Settings screen, chose the appropriate option for Volume Protection and Protection Start Time. Click Finish.



7. The Replay Admin Console should now show the Replay Core and a protected server. The process of protection will commence based on the configured parameters.


Replay Admin Console
File Help
Replay4
Replay 4
Cores
VREPLAY
LEV-CLU-AD
Summary
Events
Mounted Recovery Points
Replication
VREPLAY (10.23.2.175)
Protect...
Refresh
Properties
General
OS: Microsoft(R) Windows(R) Server 2003 Enterpri
CPU: Processor Intel(R) Pentium(R) III Xeon proces
Memory: 8 GB
Replay Version: 4.2.2.22522
IP Address: 10.23.2.171 10.23.2.175 10.10.10.1
DNS Name: ReplayLeverage.com
IP Subnet: 255.255.0.0 255.255.0.0 255.255.255.0
Resources
CPU Usage: 2.18 %
Host Memory Usage: 10.25 %
Repository Volumes
Volume Label Total Siz Free Spa Percent Used
C: 29.99 GB 22.51 GI 24 %
R: 99.99 GB 99.92 GI 0 %
S: 100.00 GI 99.93 GI 0 %
Protected Servers
Status Server Name IP Address Version Current Operation Next Snapshot Last Event Messag
LEV-CLU-AD 10.23.2.170 4.2.2.22522 Idle 1/8/2010 11:19:2...


Replay Admin Console
File Help
Replay4
Replay 4
Cores
VREPLAY
LEV-CLU-AD
Summary
Recovery Points
Events
LEV-CLU-AD (10.23.2.170)
Online
Restore...
Refresh
Control Panel
Snapshots
Stop...
Interval 1 hour - Last...
Recovery Point Location R:, S:
High Availability
Virtual Standby
Physical Standby
Recovery Point Export
Rescue Image
Replication
Replication Target
Volume Details
C:
Protected, compression on, deduplication on
Total Size: 30.00 GB
Status: Transfer in progress
Used Space: 19.31 GB
0.00 MB transferred
D:
Protected, compression on, deduplication on
Total Size: 50.00 GB
Status: Transfer in progress
Used Space: 4.78 GB
0.00 MB transferred
Last Recovery Point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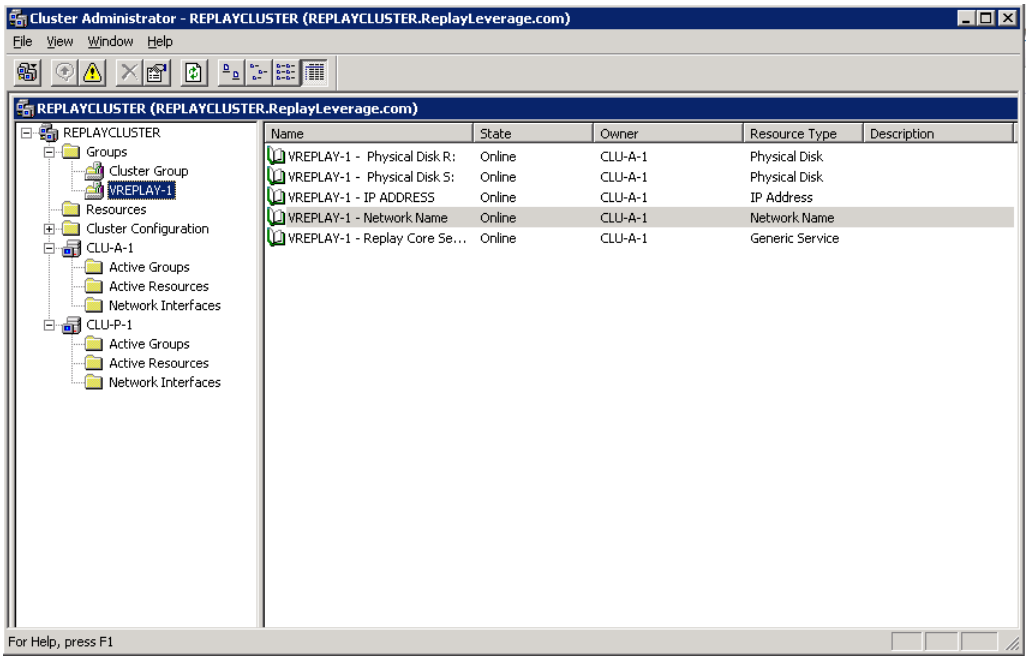
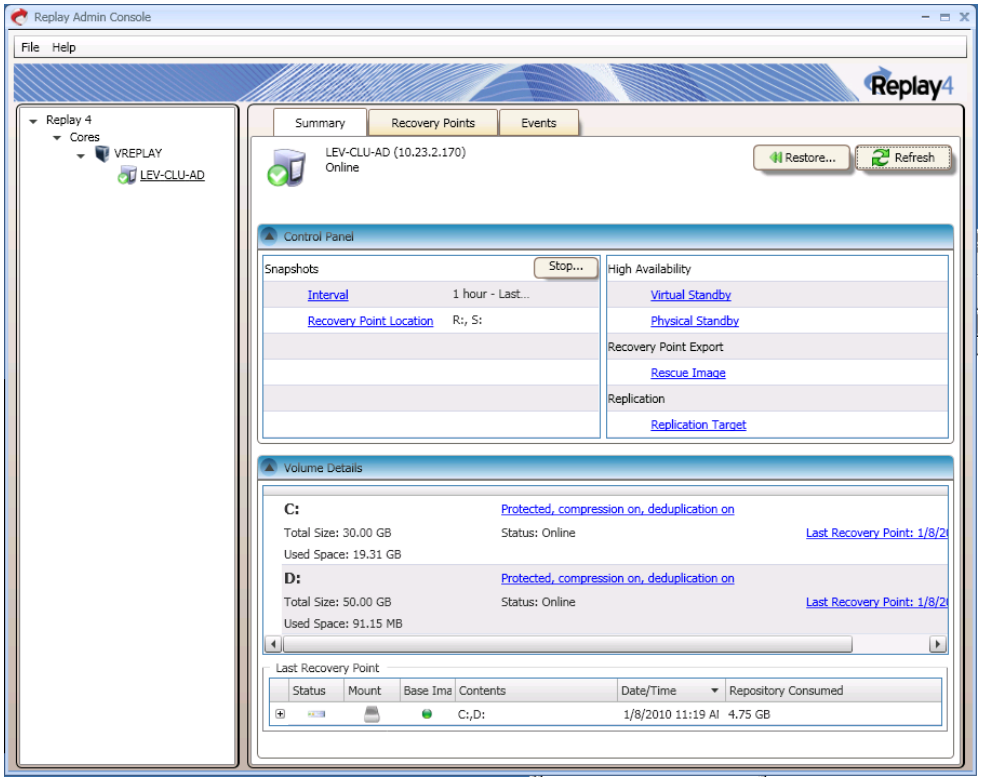
Total Size: 30.00 GB
Status: Online
Used Space: 19.31 GB
D:
Protected, compression on, deduplication on
Total Size: 50.00 GB
Status: Online
Used Space: 91.15 MB
Last Recovery Point
Status
Mount
Base Ima
Contents
Date/Time
Repository Consumed
C:,D:
1/8/2010 11:19 AI
4.75 GB

TEST CLUSTER GROUP FAILOVER

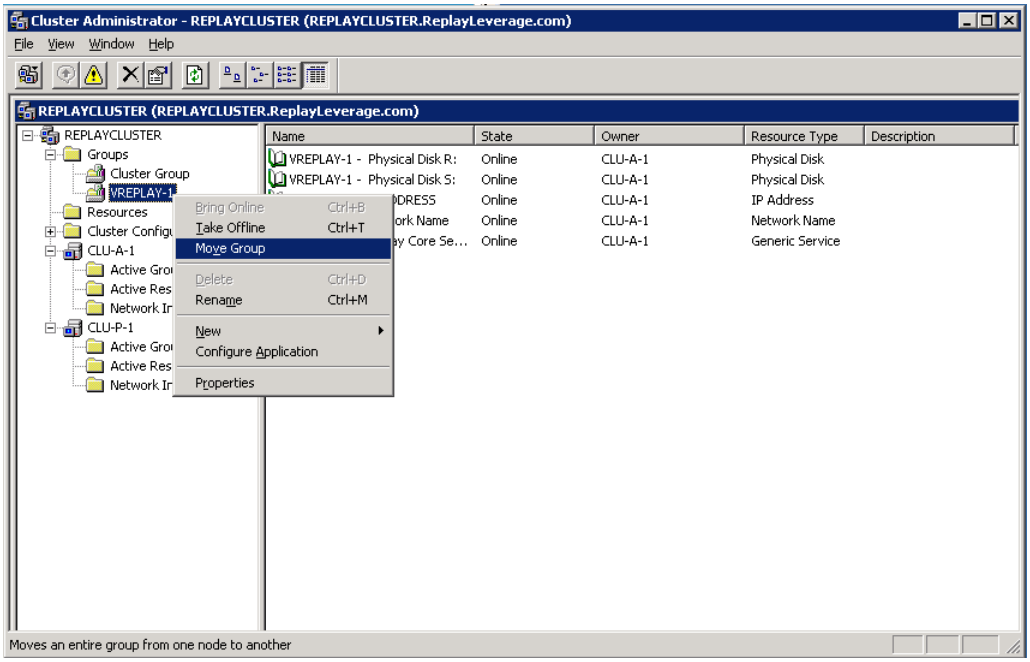
1. To cluster group resources failover, open Cluster Administrator by navigating to to Start → All Programs → Administrative Tools and select “Cluster Administrator”



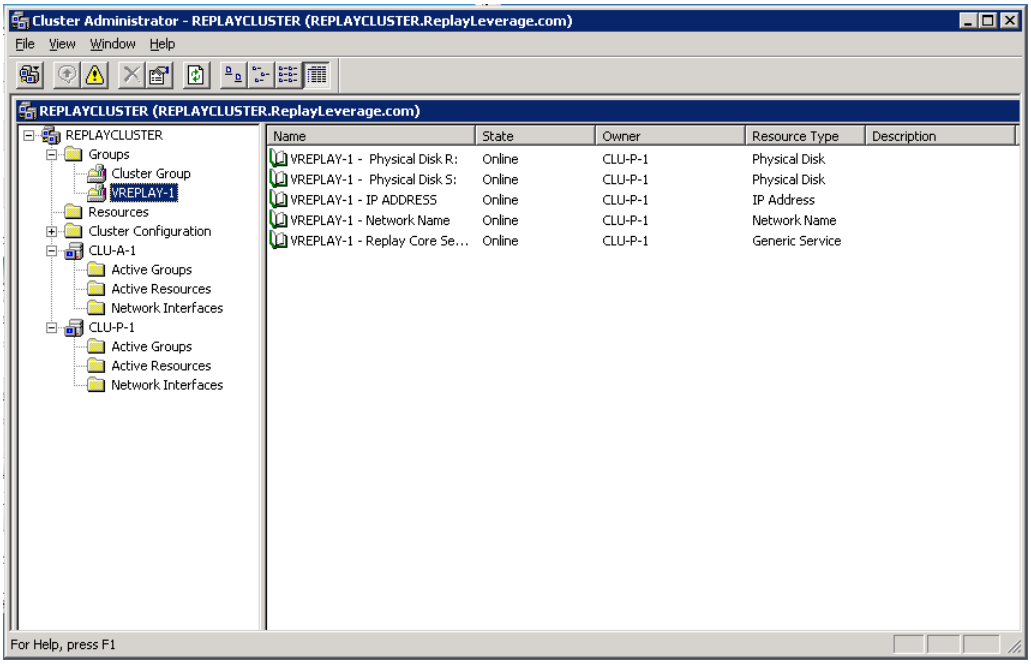
2. Open Replay Core Console and validate that the console is connected to VREPLAY and the protected server LEV-CLU-AD is online



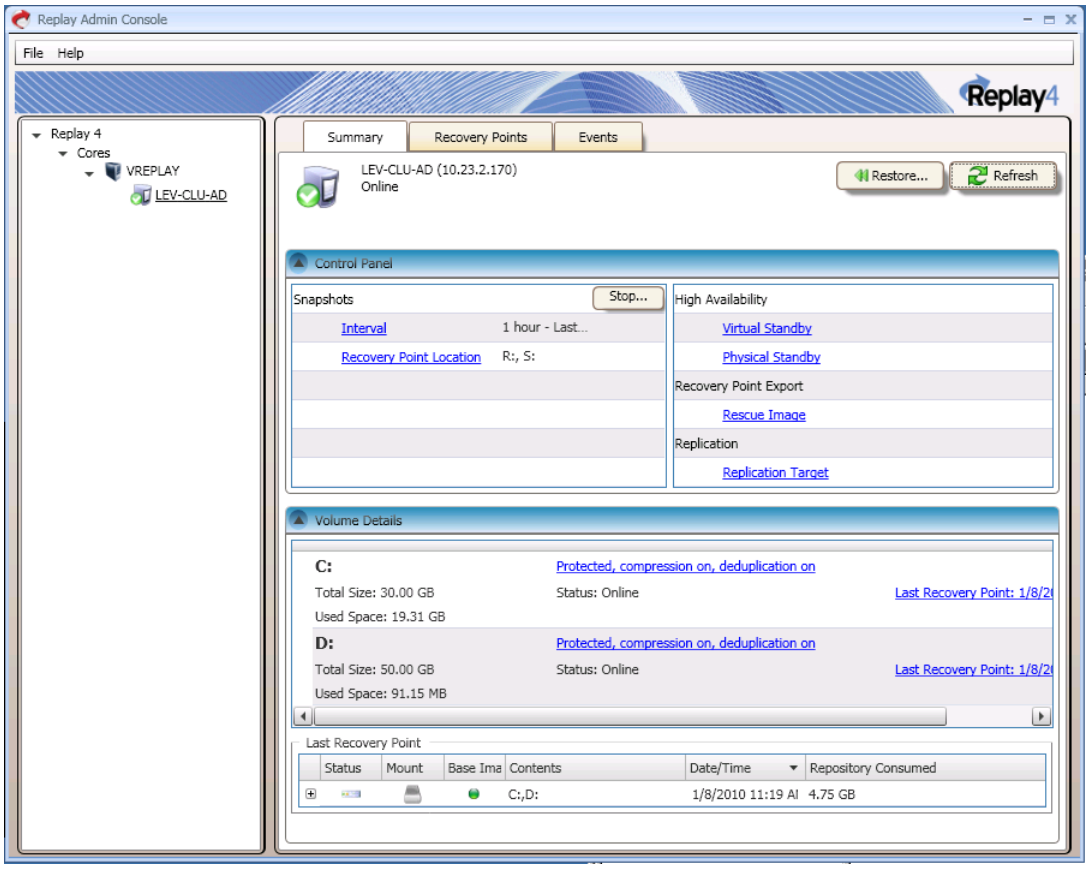
3. In the console tree, right-click the VREPLAY-1 Cluster Group folder and select click Move Group.



4. The cluster group will be offline for a brief period of time followed by a change of owner for all of the group's dependencies. In this case the cluster group moved from CLU-A-1 to CLU-P-1



5. Switch back to the Replay Core console and verify that the console is connected to VREPLAY and the protected server LEV-CLU-AD is online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