



WHITE PAPER

Captaris® Alchemy® Document Management in a Clustered Environment

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INTRODUCTION

This white paper is intended to outline the specific steps recommended to install Alchemy 8.X on an existing Microsoft Windows 2000 Advanced Server or 2003 Enterprise Server in a clustered environment. This is a Server Cluster and NOT a Network Load-balancing Cluster. Instructions for installing and configuring the cluster hardware, Windows Server, or the Windows Cluster Service are not included. This is not meant as a general guide on clustering concepts, configurations, operation, or support nor is it meant as a guide on upgrading an existing Alchemy-in-a-cluster environment. Captaris strongly recommends that you become familiar with clustering concepts and Windows Cluster Service prior to beginning this procedure.

REQUIREMENTS

- Two servers that are on the Microsoft Clustering Hardware Compatibility List running Windows 2000 Advanced Server or Windows Server 2003 Enterprise Edition
- Two network cards
- A hardware RAID controller (required for external array; optional but recommended for internal array)
- Windows Cluster Service must be installed, configured and operational
- An external RAID array running either SCSI or Fiber Channel (this also should be on the Microsoft Clustering Hardware Compatibility list)

Note: You must use SQL Server 2000 or 2005 in a cluster environment to support Alchemy. Microsoft SQL Desktop Engine (MSDE) is not supported in a cluster configuration.

All of the clustered Alchemy resources should be maintained in a single cluster group. This allows them to fail-over to the secondary node together in the event of individual resource failures. Before beginning the Alchemy installation, the group must include a disk resource, a server name resource, and an Internet Protocol (IP) address resource. The combination of these core resources constitutes a virtual server. Configure the group to have a preferred server and to allow fail-back. For instructions on creating a group and these core resources, see your Microsoft documentation.

If installing SQL Server in the clustered environment, it is recommended that you create a cluster group resource (Virtual Server) for SQL. Again, this allows independent fail-over of SQL Server resources, and dedicates an IP address, network name and drive space to the SQL instance. This document will not cover the installation of SQL in a clustered environment, although SQL 2000 and 2005 are cluster-aware, which will enable you to install and configure SQL Server by interfacing with only one node of the cluster. When we specify the SQL Server name in the Alchemy installation, you will either use a clustered network name for SQL Server, or the name of a remote SQL Server. You may also choose to use a remote SQL Server, but this is not recommended since remote services cannot be easily monitored with Cluster Administrator, and SQL connectivity is required for Alchemy to operate properly.

The default group created during the Cluster Service installation, named Cluster Group, should not be used for Alchemy or SQL Server. According to Microsoft best practices, applications should not be installed in the same group as the quorum or core cluster resources.

For the purpose of these instructions, the name Alchemy Group will be used to designate the group where the Alchemy services are to be created.

ALCHEMY CLUSTER INSTALLATION PREREQUISITES

- Before beginning, ensure that each node of the cluster meets the hardware requirements and software requirements in the Alchemy installation guide.
- Create a domain service account that will be used to run the Alchemy services. Ensure that this domain account is added to the local administrator group on each node.
- Install, configure and test the Cluster Services for each node.
- If IIS and SQL are to be installed into the cluster, ensure those components have been installed configured and tested prior to installing Alchemy.

Order of Installation

The Alchemy components should be installed in the same order as a non-clustered environment.

- Configure SQL
- Install Alchemy Server
- Install Alchemy Web (if required)

Configuring the SQL Server Database for Alchemy

You must create the "AuServer" database in SQL Server before the Alchemy services will run. Use the SQL setup routine on the Alchemy Prerequisites CD to automatically create this database. Refer to the *Alchemy Content Management Suite (ACMS) Installation Guide* if you need help in performing this step.

CONFIGURING ALCHEMY SERVERS

First Node

- Ensure that Node 1 has quorum of the cluster (Node 1 has control of all group resources in cluster administrator).
- From the first node, install ACMS. When prompted for the path, leave as the default C drive, or pick another LOCAL drive. DO NOT select the shared drive. Due to the architecture of Alchemy, the server must be installed local to each node to properly operate. Choose the **Local Administrator Group** as the Alchemy administrator group. When prompted for the account to use to run the services, check **Select Account** and choose the Alchemy domain account you created in the Prerequisites step. When prompted for the SQL Server, enter the SQL Server Virtual Server Name, or the name of a remote SQL Server.
- Select **No** if the software prompts for a reboot after the install.
- Once installed you will need to properly license the Alchemy Server. Two sets of licenses will be needed in a clustered install. Use the first set of licenses on Node 1. Run Alchemy License Manager (LM) from the program menu to perform this task.
- Set all of the Alchemy services in Windows Services to **Manual Start**.
- Install any available Alchemy service packs.
- DO NOT install any Alchemy client tools to the cluster.
- Start the Services Microsoft Management Console (MMC) and start the Alchemy Server Module. Ensure that it starts successfully.
- Shut down the first node and wait for the drive to fail-over to the second node.

Second Node

- Ensure that Node 2 has quorum of the cluster (Node 2 has control of all group resources in cluster administrator).
- From the first node, install ACMS. When prompted for the path, leave as the default C drive, or pick another LOCAL drive. DO NOT select the shared drive. Due to the architecture of Alchemy, the server must be installed local to each node to properly operate. Choose the local administrator group as the Alchemy administrator group. When prompted for the account to use to run the services, check **Select Account** and choose the Alchemy domain account you created. When prompted for the SQL Server, enter the SQL Server Virtual Server Name, or the name of a remote SQL Server.
- Select **No** if the software prompts for a reboot after the install.
- Once installed you will need to properly license the Alchemy Server. Two sets of licenses will be needed in a clustered install. Use the second set of licenses on Node 2. This may also be referred to as the Backup or Disaster Recovery Licenses. The licensing on the second node must match the first node. Run Alchemy LM from the program menu to perform this task.
- Set all of the Alchemy services in Windows Services to **Manual Start**.
- Install any available Alchemy service packs (must be identical to the service pack level of Node 1)
- DO NOT install any Alchemy client tools to the cluster.
- Start the Services MMC and start the Alchemy Server Module. Ensure that it starts successfully.
- Shut down the second node and wait for the drive to fail-over to the first node.

CREATING THE ALCHEMY CLUSTERED RESOURCES

- Open **Cluster Administrator** on Node 1. If you have not done so already, create a Resource Group for Alchemy. Ensure that the Resource Group contains an IP Address resource, Network Name Resource and Shared Disk resource at a minimum. This will be the Alchemy Virtual Server. Select this group for all actions below.
- Create the Alchemy Server Module Resource
 - Right-click **Resources**, and then click **New > Resource**. The Generic Resource Wizard appears.
 - In **Name**, enter **Alchemy Server Module**. The Description can be the same as the resource name.
 - In **Resource Type**, enter **Generic Service**.
 - Verify that the Alchemy group is selected.
 - In **Possible Owners**, enter the names of both nodes in the cluster by highlighting them and clicking **Add**. (By default, both nodes are in the Possible Owners side of the window.)
 - In **Resource Dependencies**, add the Disk Resource, Network Name and IP Address resources.
 - In **Generic Service Parameters**, enter **Alchemy Server**.
 - Select the **Use Network Name for computer name** checkbox.
 - In the **Registry Replication** window, click **Add** and then enter:
SOFTWARE\Information Management Research, Inc.\Alchemy Server\Security

Click ADD again, then enter:

SOFTWARE\Information Management Research, Inc.\Alchemy Server\Databases

This allows the registry information stored by Alchemy to dynamically change from one node to another when the server goes down.

Note: Do this for this service only.

Click Finish to add the resource to the group.

- Bring the Alchemy resource group online, verify that all services start successfully
- Verifying fail-over and fail-back.
 - On the second node, open **Cluster Administrator**.
 - In **Cluster Administrator**, verify that the primary node currently owns all resources, and that they are online.
 - Shut down the primary node and verify that all resource fail-over to the secondary node.
 - Restart primary node and verify that all resources fail-back.

Stopping Clustered Services

Always shut down a clustered service from within Cluster Administrator, never from Administrative Tools Services or from within the Alchemy Server MMC. The cluster service will consider any attempt to shut down a clustered service from an external source to be a failure, and it will immediately restart it. Anytime you need to stop the Alchemy service (licensing, etc), simply launch Cluster Administrator, right click on the **Alchemy Server Service resource** and choose **Take Offline**.

If you need to make any changes to the Alchemy registry keys, ensure you do so with the Alchemy resource groups online. Any changes to the registry while the resource group is offline may be overwritten when the services are brought back online.

CREATE THE FIRST SHARED ALCHEMY DATABASE

- All Alchemy databases should reside on the shared disk resource in the Alchemy Resource Group. This ensures that the databases can be accessed by both nodes in a fail-over state.
- Create a database on the shared disk resource using a client installation of Alchemy Administrator, or copy/move an existing database. Using the Alchemy Server MMC on the active node, or using a remote installation of Alchemy Server MMC, put the database on the shared disk under server control.
- Fail-over the cluster to opposite node.
- Run Alchemy Server MMC on the active node, or using a remote installation of Alchemy Server MMC, ensure that the database previously put under server control is shown in the databases tree. If it is not, add the database again, as performed in step 2.
- Fail-over the cluster to opposite node.
- From this point forward, any changes made using Alchemy Server should be replicated correctly.

AUDIT LOGGING

If you wish to use the Audit Logging Module, you must create a cluster resource to handle the audit logging service. **This does not apply to Alchemy 8.2. With 8.2 Audit Logging is now integrated in SQL.**

- Run the audit logging MMC remotely and select the audit properties. Ensure that the logging path is a path on the shared disk resource. Turn on audit logging and configure each database appropriately.
- Start the Audit Logging service using the Services MMC. Ensure that it runs and stays running. It may start and stop if you have not configured it correctly. Reconfigure until the service starts and stays started before you put it under cluster control. Otherwise it will continually fail the server over from node to node.
- Create the Alchemy Audit Log Cluster Resource
 - Right-click **Resources**, and then click **New > Resource**. The Generic Resource Wizard appears.
 - In **Name**, enter **Alchemy Logging Module**. The **Description** can be the same as the resource name.
 - In **Resource Type**, enter **Generic Service**.
 - Verify that the Alchemy group is selected.
 - In **Possible Owners**, enter the names of both nodes in the cluster by highlighting them and clicking **Add**. (By default, both nodes are in the Possible Owners side of the window.)
 - In **Resource Dependencies**, add the Disk Resource, Network Name, and IP Address resources.
 - In **Generic Service Parameters**, enter **AlchemyLoggingService**
 - Select the **Use Network Name for computer name** checkbox.
 - Click **Finish** to add the resource to the group.

ALCHEMY WEB SERVER INSTALLATION PREREQUISITES

- Ensure that each node meets the requirements for the Web Server installation.
- There are two primary components for Web Server installation; the Web Engine and Web Application. The Web Engine must be installed locally on each node, NOT on the shared disk resource. The Web Application should be installed on the shared disk resource. This ensures that any modifications to the Web Application look or feel is the same no matter which node has control.
- Alchemy 8.2 Library Services with Web in a clustered environment will not work properly. For configurations involving Alchemy 8.2 where Alchemy Web Client is used in conjunction with Library Services, documents checked-out prior to fail-over will not be able to be checked-in until the primary server is back online. This is only with Web clients. Desktop clients are not affected. The administrator may forcibly check documents back in if needed.

CONFIGURING ALCHEMY WEB

First Node

- Ensure that Node 1 has quorum of the cluster (Node 1 has control of all group resources in cluster administrator).
- From the first node, install Alchemy Web Engine. When prompted for the path, leave the path as the default C drive, or pick another LOCAL drive. DO NOT select the shared drive. Due to the architecture of Alchemy, the Web Engine must be installed local to each node to properly operate.
- During installation you will be prompted for the Alchemy Server address, make sure you enter the clustered Alchemy network name.
- Use the Alchemy domain service account to run the Alchemy Web Services.
- Install any available Alchemy Web Engine service packs.
- Set all of the Alchemy Web services in Windows Services to **Manual Start**. (Alchemy License Manager: LM and Pool Manager: PM services).
- Now install the Alchemy Web Application. When prompted for the path, ensure that you pick the shared disk resource. You can install to the local C drive, if so, you will need to create a new "Virtual Directory" in IIS and point it to a folder location on the shared disk resource.
- Ensure that the Web Module is correctly licensed using the Alchemy LM.
- Using the Services MMC, start the Alchemy LM and then the Alchemy PM Service. Make sure that the services start successfully.
- Shut down the first node and wait for the drive to fail-over to the second node.

Second Node

- Ensure that Node 2 has quorum of the cluster (Node 2 has control of all group resources in cluster administrator).
- From the second node, install Alchemy Web Engine. When prompted for the path, leave the path as the default C drive, or pick another LOCAL drive. DO NOT select the shared drive. Due to the architecture of Alchemy, the Web Engine must be installed local to each node to properly operate.
- During installation you will be prompted for the Alchemy Server address, make sure you enter the clustered Alchemy network name.
- Use the Alchemy domain service account to run the Alchemy Web Services.
- Install any available Alchemy Web Engine service packs.
- Set all of the Alchemy Web services in Windows Services to **Manual Start**. (Alchemy LM and PM services).
- Now install the Alchemy Web Application. When prompted for the path, ensure that you pick the shared disk resource. You can install to the local C drive, if so, you will need to create a new "Virtual Directory" in IIS and point it to a folder location on the shared disk resource.
- Ensure that the Web Module is correctly licensed using the Alchemy LM.
- Using the Services MMC, start the Alchemy LM and then the Alchemy PM Service. Make sure that the services start successfully.
- Shut down the second node and wait for the drive to fail-over to the first node.

Creating the Alchemy Web LM Service Cluster Resource

- Open Cluster Administrator on Node 1. Select the **Alchemy Resource Group**.
- Create the Alchemy Web Service LM Resource
 - Right-click **Resources**, and then click **New > Resource**. The Generic Resource Wizard appears.
 - In **Name**, enter **Alchemy LM Module**. The Description can be the same as the resource name.
 - In **Resource Type**, enter **Generic Service**.
 - Verify that the Alchemy group is selected.
 - In **Possible Owners**, enter the names of both nodes in the cluster by highlighting them and clicking **Add**. (By default, both nodes are in the Possible Owners side of the window)
 - In **Resource Dependencies**, add the Disk Resource, Network Name, and IP Address resources.
 - In **Generic Service Parameters**, enter **LicenseManagerService**
 - Select the **Use Network Name for computer name** checkbox.
 - In the **Registry Replication** window, click **Add** and then enter:
SOFTWARE\Information Management Research, Inc.\Alchemy Web Engine\1.0\PoolManager

This allows the registry information stored by Alchemy to dynamically change from one node to another when the server goes down.

Note: Do this for this service only.

Click **Finish** to add the resource to the group.

Creating the Alchemy Web PM Service Cluster Resource

- Open Cluster Administrator on Node 1. Select the **Alchemy Resource Group**.
- Create the Alchemy Web Service PM Resource
 - Right-click **Resources**, and then click **New > Resource**. The Generic Resource wizard appears.
 - In **Name**, enter **Alchemy PM Module**. The Description can be the same as the resource name.
 - In **Resource Type**, enter **Generic Service**.
 - Verify that the Alchemy group is selected.
 - In **Possible Owners**, enter the names of both nodes in the cluster by highlighting them and clicking **Add**. (By default, both nodes are in the Possible Owners side of the window)
 - In **Resource Dependencies**, add the Disk Resource, Network Name, and IP Address resources.
 - In **Generic Service Parameters**, enter **PoolManagerService**.
 - Select the **Use Network Name for computer name** checkbox.
 - Click **Finish** to add the resource to the group (no registry replication needed).

Starting the Alchemy Web Services

- Bring the Alchemy Resource Group online; verify that all services start successfully.
- Verify fail-over and fail-back.
 - On the second node, open Cluster Administrator.
 - In **Cluster Administrator**, verify that the primary node currently owns all resources, and that they are online.
 - Shut down the primary node and verify that all resource fail-over to the secondary node.
 - Restart primary node and verify that all resources fail-back.

Adding Databases to Web Engine Control

- Using the Web Engine Configuration MMC, enable a database for Web access.
- Using Internet Explorer, browse to <http://localhost/AlchemyWeb> and test connectivity to Alchemy Web. In the event that you encounter an error, make sure that the LM and PM services are running. Troubleshoot any permission or configuration issues using the Web installation documentation. Common issues revolve around IIS configuration of integrated security and/or NTFS security permissions on the shared disk resource.
- After a successful test, fail-over the cluster to the second node, making any changes to the second node that you had performed on the first. Any changes to IIS must be made on both nodes until you cluster the IIS resources and synchronize the IIS configurations.

Adding IIS Alchemy Web Instance to Cluster Administrator

- This document does not specifically address clustering IIS, as the clustering of IIS changes between a 2000 and 2003 cluster.
- In a 2000 Cluster, an IIS cluster resource is built into Cluster Administrator resource types. Typically you will add a new resource, resource type IIS instance. You may also need to synchronize settings for IIS using a Microsoft utility. Instructions may be found on the Microsoft Web site. Search for "clustering IIS 2000".
- In a 2003 Cluster, you will need to cluster a script that handles IIS. An example script is usually installed with the operating system. The script is named "clusweb.vbs". You must also use a synchronization utility that will sync the settings of the IIS Alchemy Web Instance. Instructions may be found on the Microsoft Web site. Search for "clustering IIS 2003".

CLIENT INSTALLATIONS

When installing any client applications that will access Alchemy, DO NOT use the machine name of either node in the cluster. Always use the Alchemy Resource Group's network name to access Alchemy resources. This ensures that the clients will always have access no matter which node has control of the quorum.

ABOUT CAPTARIS, INC.

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