

Best Practices for Implementing Autodesk Vault

Introduction

This document guides you through the best practices for implementing Autodesk® Vault software. This document covers standard methods for deploying Autodesk Vault. Although these are not the only methods for deploying the software, they are the most robust and easiest to maintain.

Use this guide as a starting point. You can always change your configuration later if your business demands it.

Note: Autodesk recommends that you contact your reseller to perform a professional implementation of Autodesk Vault if you have any questions about this document.

Understanding the Vault Architecture

One of the keys to understanding Autodesk Vault is to understand the two main components that make up its architecture: the vault clients and the vault server. Each component is shown in Figure 1 and explained in more detail in the following sections.

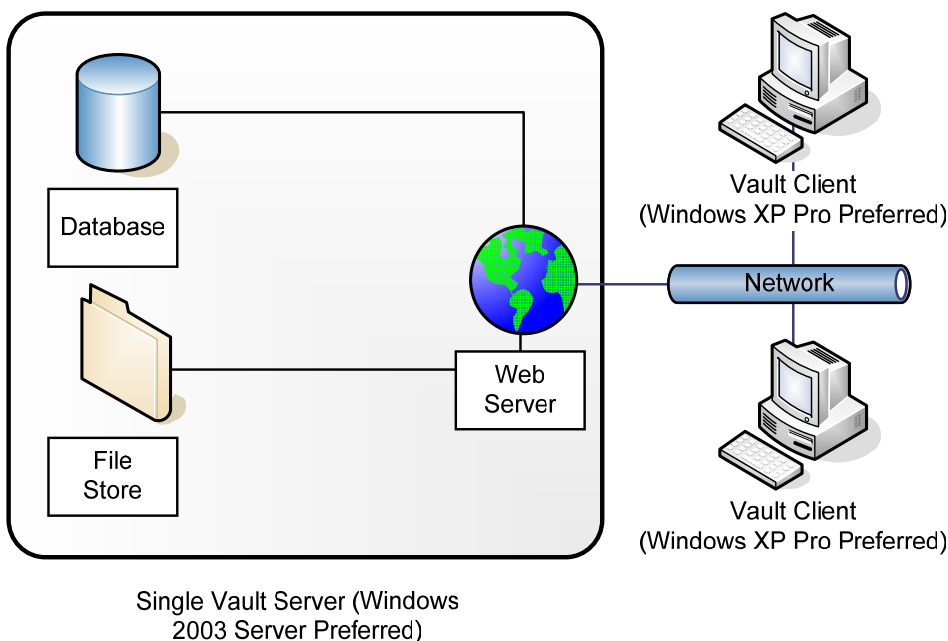


Figure 1: Recommended installation (single server).

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Vault Server

The vault server is the core of the vault, holding all the data and software. There are three key components to the server: the web server, the database, and the file store.

- **Web Server**—The web server can be one of two software applications, either Microsoft® Internet Information Services (IIS) or the Autodesk Web Server. The Autodesk Web Server is not covered in this document because it works only for configurations where the entire vault environment is installed on a single computer (Server and Clients with CAD software). IIS hosts components known as .NET Web Services. The web services provide all the logic needed for the vault to operate. Web services communicate with the other components via standard HTTP methods. In fact, all vault communication is via these Web Services over the web server's port 80.
- **Database Server**—The database server stores all the metadata for the vault. By default, Autodesk Vault installs a limited release of Microsoft SQL Server 2000 called Microsoft Desktop Engine (MSDE). You can upgrade MSDE to full SQL Server at any time. Please contact your local Microsoft® reseller for details on pricing and availability. The metadata stored in MSDE is crucial to the operation of the vault. It provides the search index and maintains the file relationships for all the data in the file store.
- **File Store**—The file store is the secure location where files are actually stored. The file store and the database server work together, pairing metadata with actual files to provide all the data needed to do your work. This location is controlled by Autodesk Vault. Never access or manipulate the file store directly. Instead, access the file store only through the vault clients, such as Vault Explorer or an application integration, explained in more detail in the next section. Likewise, perform file store maintenance only using Autodesk Vault Manager.

Vault Clients

A vault client is any application that connects to the vault server to perform vault operations such as Autodesk Vault Explorer or any of the application integrations.

Vault Explorer

This application is a generic interface to the vault server. Think of it as you would any desktop explorer functionality. You can browse the complete vault structure, add any file to the vault, and perform just about any operation in a generic way.

Vault Application Integrations

Most other integrations fall into this category. These are specialized integrations within a parent application, such as Autodesk Vault for Autodesk Inventor® software, Autodesk Vault for AutoCAD® software, Autodesk Vault for Microsoft® Office, and so on. These clients provide two things:

- Direct access to the vault via the application
- More data knowledge to the vault when interacting with the vault server

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Autodesk Inventor relationships are one example. When data is added to the vault using the Autodesk Inventor add-in, the vault maintains all the complex relationships that are created by assemblies, drawings, presentations, and so on.

Note: As a general rule, if an integrated client is available for a particular application, managing files using that client minimizes loss of data, such as the assembly relationships. Autodesk recommends that you use the integrated clients whenever possible.

Installation

There are many ways to set up a vault server and its related clients. The most robust way is to install the Autodesk Data Management server on a separate computer dedicated to Autodesk Vault and allow the appropriate clients to communicate with the server.

Note: A single, dedicated server means that other competing business applications do not interfere with the operation of Autodesk Vault. Other applications known to interfere with Vault are Microsoft Exchange, using the computer as either an Internet or intranet server, and other data management and document management systems.

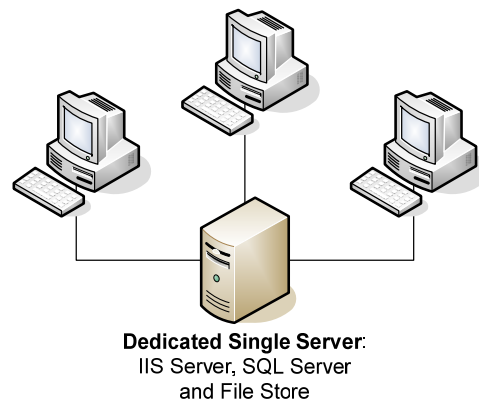


Figure 2: Recommended configuration.

Other Configurations

There are many other ways to configure and install Autodesk Vault; however, the single-server model is the solution recommended by Autodesk for the following reasons:

- **Installation and configuration**—When you use a single computer to host all server software, there are far fewer parts to diagnose should any problems arise. Few tools are currently available to diagnose different configurations, thus increasing guesswork.

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- **Performance**—When clients access data from the server, the data is located and then passed back to the client. This process works best when all data is stored on a single machine reading files directly from the local disk.
- **Backup and restore**—Backing up data is much more efficient on a single server machine. Because the backup process involves extensive transfer between files, keeping the components as close to each other as possible improves performance and reliability of the backup process.
- **Reliability**—In general, the more parts you add to your system, the less reliable it becomes and the more troubleshooting it requires.

System Requirements

Before installation, verify that your hardware meets the minimum system requirements. Of course, you should meet the *preferred* requirements if possible. See the Autodesk website for the latest system requirements:

- Visit www.autodesk.com/vault for more information about Autodesk Vault system requirements.

Upgrading from a Previous Release

If you already have Autodesk Vault installed, follow these steps to upgrade your system:

1. Back up your vault! Always make sure you have a valid backup of your data created using the *supplied* backup utility before upgrading your software. It is important to use the backup feature in Autodesk Vault Manager to back up your vault.
2. Check the Autodesk Knowledge Base (<http://support.autodesk.com>) for any additional information regarding the upgrade.
3. Follow the directions in the *Managing Your Data* manual that comes with the software.

Multiple Vaults

Autodesk Vault has the ability to create and manage multiple vaults. A vault is a separate storage repository, similar to having multiple hard drives on a computer. The following section details benefits and downsides of using more than one vault.

Note: Using a single vault is the recommended method.

Benefits of Using Multiple Vaults

Following are some of the benefits of using more than one vault:

- One of the best reasons is to provide training areas where users can feel free to experiment without interfering with the main vault. It is even possible to create a new vault for each user for training purposes, deleting them when they are finished.
- For companies that specialize in engineering consulting, it may be useful to create a separate vault for each customer you work with. This enables you to keep templates, standards, and project information separate and isolated.
- You can support different departments within your group. If you have multiple teams that work on separate projects and *do not* need to share data, multiple vaults may help.

Downside of Using Multiple Vaults

The most important thing to remember when working with multiple vaults is that the data is completely separate and can *never* be merged. The only way to combine two or more vaults is to remove data from one vault and manually add it to the other, resolving any conflicts that may occur.

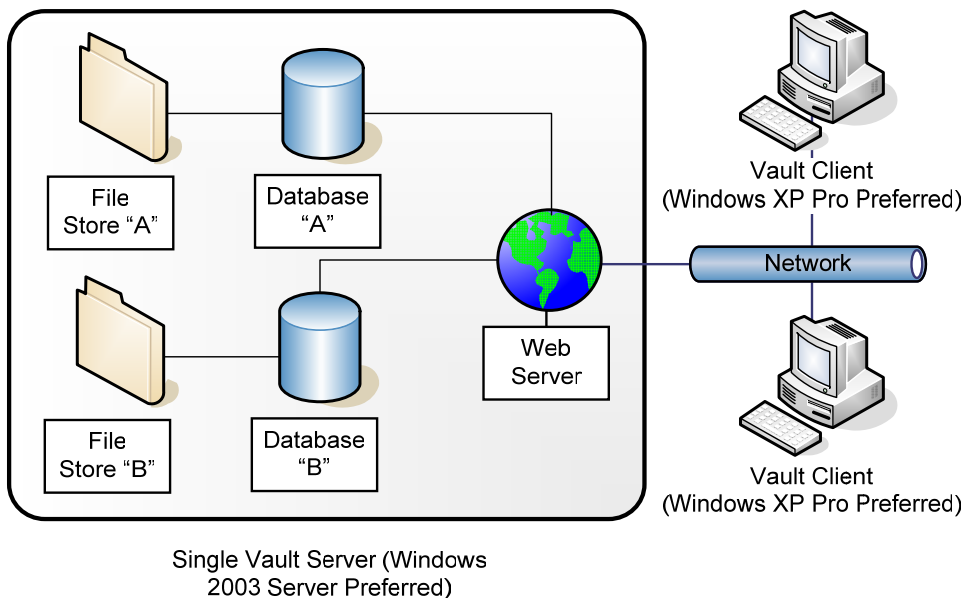


Figure 3: Multiple Vaults

Full SQL Server Upgrade

You should consider upgrading to full SQL Server if either the following conditions occurs:

- The number of users is greater than 10.
- The amount of metadata stored in a single vault is greater than 2 GB. **Note:** This is the amount of metadata in a vault and *not* the amount of actual file data in the file store.

Note: It is important to monitor the size of the SQL database file. If you find your database file approaching 1.5 GB you should consider either purging old versions from the vault, removing unwanted properties from the system or start planning your upgrade to full SQL. Information about purging old versions and removing unwanted properties is available in the help system.

There are two supported methods for upgrading or installing SQL Server for use with Autodesk Vault:

- Upgrading MSDE to full SQL Server
- Installing Autodesk Data Management Server on an existing AUTODESKVAULTSQL instance

Both methods can be found in the [Autodesk Vault Advanced Configuration Guide](#), accessible on the Autodesk website. Both methods are supported; however, the recommended and simplest method is to upgrade MSDE to full SQL Server.

Note: Installing Autodesk Vault on an existing SQL Server installation is not supported. It is dangerous to have multiple business systems share the same instance of SQL Server. If you currently own a license of SQL Server in a “per processor” mode or an Enterprise license of SQL Server in the Server/CAL mode, you may install SQL on the same computer under an additional instance. The following text is from Microsoft’s website on SQL server licensing (www.microsoft.com/sql/howtobuy/faq.asp):

Q: How does licensing work with the multi-instance feature in SQL Server 2000?

A: You can run multiple instances of SQL Server 2000 on a single computer. Multiple instances are used by organizations that have several applications running on a server, but want them to run in isolation so that any problem in one instance will not affect the other instances.

Under the Processor licensing model of SQL Server 2000, you can install multiple instances of SQL Server on the same computer without having additional licenses. Under the Server/CAL model, you can install multiple instances of SQL Server on the same computer only if you use SQL Server 2000 Enterprise Edition. With Standard Edition, using the Server/CAL licensing model, you must have a separate license for each instance.

Learning and Training

Before you roll out Autodesk Vault to all users in your group, it is a good idea to learn the basics and understand your deployment approach. Generally, Autodesk Vault is not difficult to implement; however, since it can affect multiple users, you need to make sure that the deployment goes as smoothly as possible.

Learning to Use Autodesk Vault

Note: It is recommended that all users go through training provided by an Autodesk Authorized Training Center in addition to the following steps.

As a first step to learning to use Autodesk Vault, refer to the tutorials included in the Autodesk Vault help file. There is a tutorial for each of the design applications, including Autodesk Inventor, AutoCAD® Mechanical, AutoCAD® Electrical, and Autodesk® Mechanical Desktop® software. You can access these tutorials from the Help menu in the respective design tool.

Training Other Users

As mentioned earlier, when training other users on Autodesk Vault, it is good to use a new, personalized vault for learning purposes. Since a new vault is completely independent of others, there is no risk that the learning process will interfere with production data.

Creating a Backup Plan

Backing up Autodesk Vault is essential. The following are recommendations for backing up Autodesk Vault.

Using the Backup/Restore Utility

Autodesk Vault includes a *backup* and *restore* utility that packages all necessary data to restore a server if a failure should happen. This utility is accessed via the Vault Manager and can trigger a manual backup and restore at any time. When backing up and restoring the Autodesk Data Management Server, no users can access the vault. In fact, when you back up the vault, all users are blocked from accessing the system.

In addition, Autodesk Vault Manager backs up or restores *all* vaults on the server. There is no way to select individual vaults to back up or restore.

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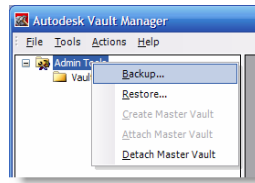


Figure 4: Back up and restore with Vault Manager.

Creating a Backup Schedule

The next step is to automate the process. The two most common methods are using the Windows[®] Task Scheduler and including the backup as part of a tape backup set.

Windows Task Scheduler

This process uses the backup tools included with Vault Manager as part of a standard Microsoft Windows batch file.

1. Create a new text file called *Backup.txt*.
2. Insert the following text:

```
@ECHO OFF

REM THIS WILL STOP THE WEB SERVER AND "CYCLE" THE SQL SERVER

REM PROVIDING THE BEST RESULTS FOR BACKING UP THE VAULT

IISRESET /STOP

NET STOP MSSQL$AUTODESKVAULT

NET START MSSQL$AUTODESKVAULT

REM DELETE B AND CASCADE A BACKUP SUBDIRECTORIES

RMDIR /Q /S "C:\Backup\Vault\B"

MOVE /Y "C:\Backup\Vault\A" "C:\Backup\Vault\B"

REM CREATE A NEW DIRECTORY FOR THE BACKUP

MKDIR "C:\Backup\Vault\A\"

REM START THE BACKUP PROCESS (THIS IS ONE LINE OF TEXT)

"C:\Program Files\Autodesk\Data Management Server 4\Vault
Manager\Connectivity.VaultManager.exe" -Obbackup -B"C:\Backup\Vault\A" -
VAdministrator -VP

REM START THE WEB SERVER

IISRESET /START
```

3. Edit the backup paths and installation paths as needed. The preceding text should work as is for a default installation.
4. Change the name of the text file to *Backup.bat* to convert it to a batch file.

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Tape Backup System

There are different ways to use a tape backup system to back up the vault: backing up the vault directly or by using a method similar to the Windows Task Scheduler.

The preferred and most reliable method for backing up the vault is to integrate the Vault Manager's backup tools into your tape backup plan. Many systems allow you to run a script before and after the tape job executes. To back up the vault using a tape backup system, use the following scripts before and after the job runs.

Note: Autodesk recommends that you do not use tape backup software to back up the SQL database and file store directly. Backing up using this method increases the difficulty when migrating to a new release of Autodesk Vault or restoring a vault on a new machine.

In addition, never back up the SQL Server using the "live" backup plug-ins that are available for major tape backup systems. You must ensure the file store and SQL data are perfectly in sync with each other. Failure to do so may render your data unusable.

1. Run the following script before your tape backup job starts:

```
@ECHO OFF

REM THIS WILL STOP THE WEB SERVER AND "CYCLE" THE SQL SERVER

REM PROVIDING THE BEST RESULTS FOR BACKING UP THE VAULT

IISRESET /STOP

NET STOP MSSQL$AUTODESKVAULT

NET START MSSQL$AUTODESKVAULT

REM START THE BACKUP PROCESS (THIS IS ONE LINE OF TEXT)

"C:\Program Files\Autodesk\Data Management Server 4\Vault
Manager\Connectivity.VaultManager.exe" -Obbackup -B"C:\Backup\Vault\A" -
VUadministrator -VP
```

2. Run the following script after your tape backup job completes:

```
@ECHO OFF

REM DELETE THE BACKUP SET AFTER THE TAPE SET COMPLETES

RMDIR /Q /S "C:\Backup\Vault\A"

REM START THE WEB SERVER

IISRESET /START
```

Validating Your Backup

To ensure that your backup set will restore properly, it is a good idea to test both your backup and your backup procedures.

To test your backup Autodesk recommends that you install the Autodesk Vault server on a separate computer and test a full restore of the data using the Restore command in Vault Manager.



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