Vault Upgrades

The mad methods of keeping current

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Designated Support Specialist

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Upgrade Coach

I have been in my current role as a Systems Analyst at Komotsu Mining Corp for 15 years and have been working with Autodesk products during that time. As a software developer I fell into the role of Vault Administrator as one of my duties. I am proficient in API's for Inventor, Vault and AutoCAD as well as being familiar with all aspects of Vault administration in a global environment.

Before all of this I am a father and also a bit of a tinkerer. I enjoy all aspects of technology, especially software development and electronics and enjoy sharing what I know with my kids.

Stephen Porath

Autodesk Designated Support Specialist

Assistant Upgrade Coach

I have been providing enterprise software supportfor over 15 years, primarily Microsoft .NET, IIS, and SQL Server applications. I’ve been with Autodesk Enterprise Priority Support for four years as a Vault Specialist and Designated Support Specialist with a focus on Manufacturing workflows. I love automotive and industrial design and have been learning Autodesk Alias. Outside of work I enjoy running, playing videogames, and traveling with my family.

Survey

How many have completed **one or more** Vault upgrades?
How many have completed **three or more** Vault upgrades?
How many have completed **five or more** Vault upgrades?

Introduction

Why this class?

UPGRADE EXPERIENCE

Participated in between 15 and 20 customer upgrades throughout my time at Autodesk. Single server environments to very complex environments with multiple servers and database replication.

OBSERVATIONS

Upgrades can be hard. There’s many moving pieces and requires knowledge and coordination.

THERE’S A BETTER WAY

Komatsu Mining has repeatedly accomplished Vault upgrades in a very large and complex environment with minimal issues and quickly.

Komatsu Mining Vault

200+
USERS

Users access via Inventor, AutoCAD Mechanical, and Vault

20
ADMS & AVFS

6 ADMS and 14 AVFS. AVFS utilized in expansion areas. Files replicated globally.

6
WORKGROUPS

1 Publisher and Subscriber in the US. Additional Subscribers in China, Australia, Europe, S. Africa.

3.8
TERABYTE FILESTORE

4.5M files with an average version of 3.8

Agenda

- Preparation
- Upgrade
- Migration
- Tips, Tricks, and Troubleshooting
- Question and Answer

Preparation

By failing to prepare, you are preparing to fail

- Benjamin Franklin

Why upgrade?

Typically driven by clients, which in turn is driven by features that users want within CAD applications. Since the Vault Client version is tied to the version of CAD application, a desired upgrade of those applications requires an upgrade of Vault.

On Versions

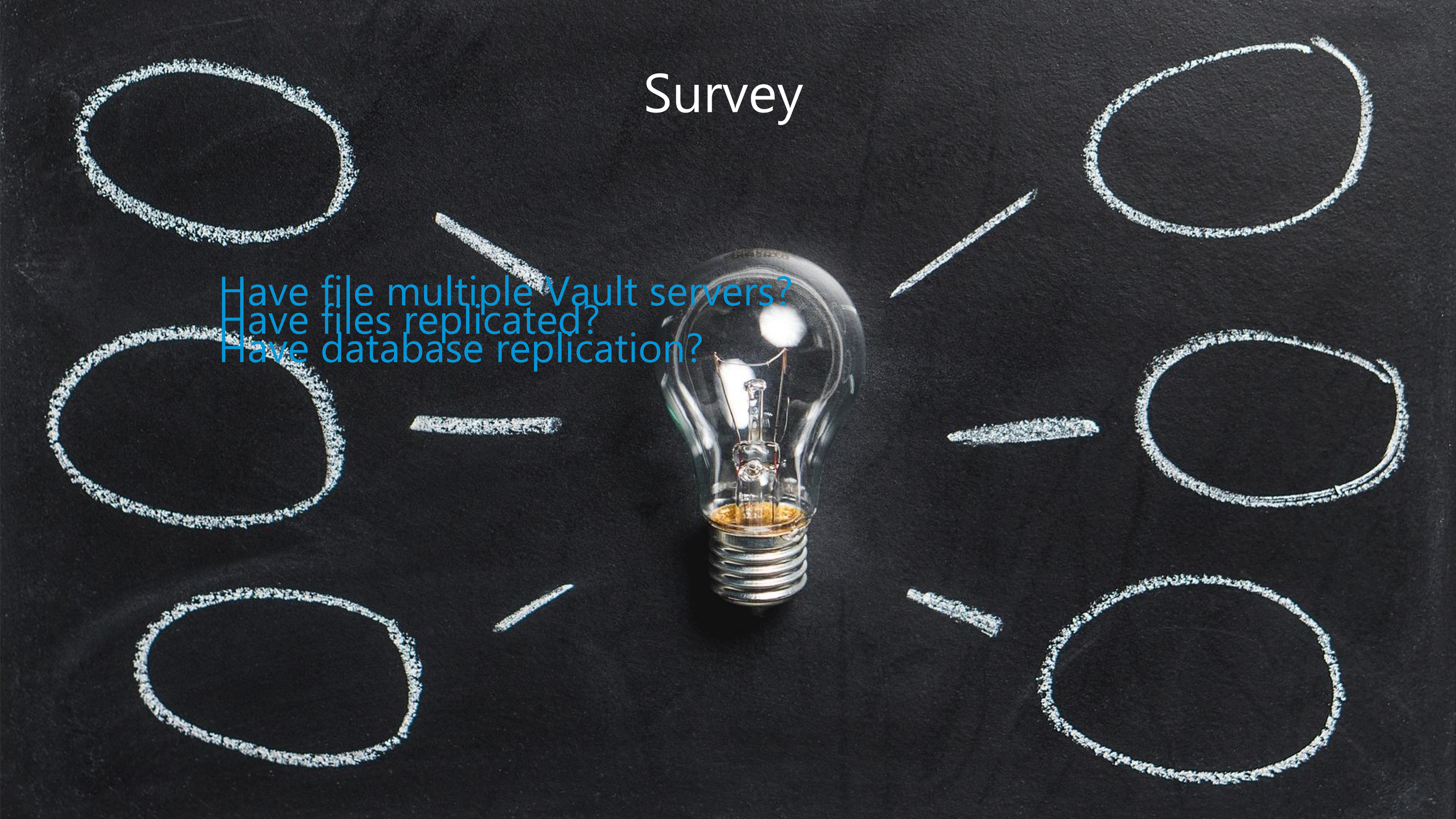
- Clients = Workstations
- Vault Client
- CAD Add ins (Version identical to Vault)
- Server version and two back
- Use server version as an advantage when possible
- Client version change and content centers

- Two versions forward or less
- Can do more than two versions, with multiple steps
- Check OS
- Check SQL Server
- Check Backups (again)

Required prep items

- Know your environment (or learn it)
  - Servers
  - Users
  - Versions
  - Necessary credentials / support personnel
- Build or modify your plan
- Download and distribute software
- Test re-evaluate your plan
- Confirm backups
  - Database, filestore, configs

Survey


Have file multiple Vault servers?
Have files replicated?
Have database replication?

What’s replication for? Files? Workgroup?

It’s common to not know this unfortunately. Replication with Vault can mean two things. Files and Database replication. File replication occurs at scheduled intervals and ensures multiple sites are in sync from a file perspective. Database replication is utilized for replicating the data (meta data and program information) between multiple workgroups, hence the name Workgroup Replication.

Vault Replication Options

FILE STORE REPLICATION

Files are copied between sites to allow a better user experience when downloading

- Introduced with Vault 2014
- Files are copied between servers
- Utilizes AVFS
- Larger files are downloaded locally
- Web (meta data) traffic occurs with ADMS server(s)
- Less dependent on latency

WORKGROUP REPLICATION

Databases are copied between workgroups.

- ADMS with SQL Server at each Workgroup
- Merge replication
- Allows for better handling of sites with connectivity problems or intermittent issues that arise
- Available on older and newer versions of Vault
- Can and does include files
- More complex environment
- SQL Server traffic struggles with latency

Rollback Plan

A rollback plan is a good idea to have, even if you don’t want to do so. Think about this prior to upgrading and make sure you execute when you need to. Incorporate this in your upgrade plan and be sure to account for how long it will take to complete as well. Distribution of old software – covered later.

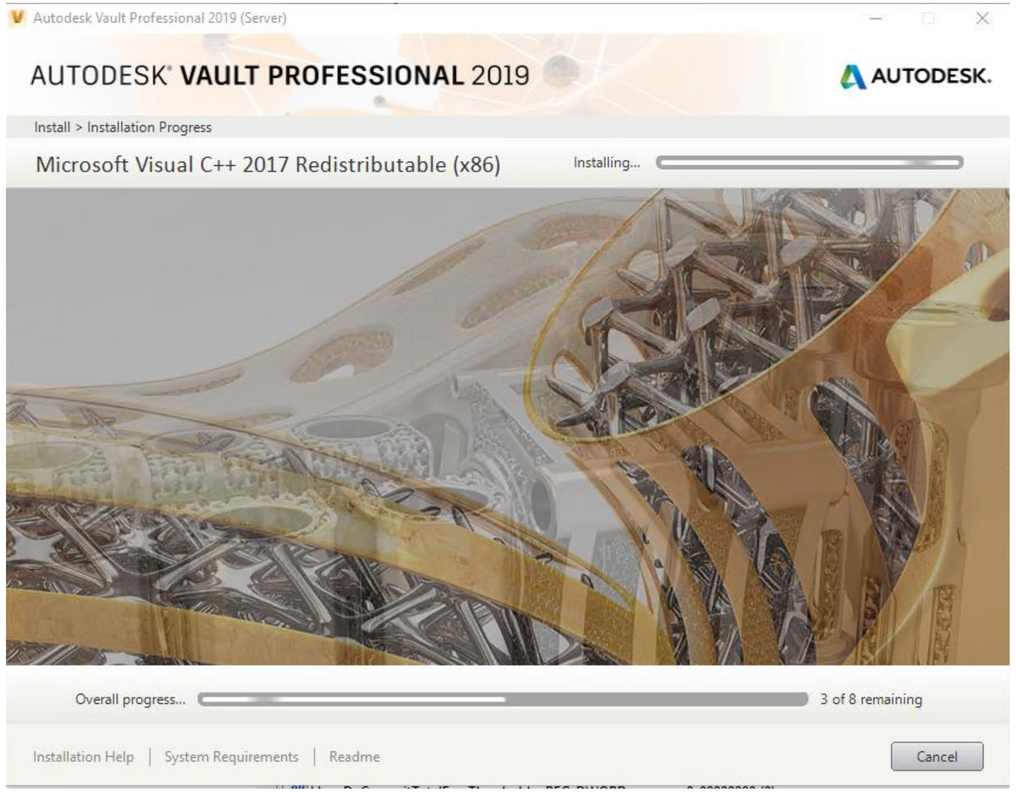
Upgrade

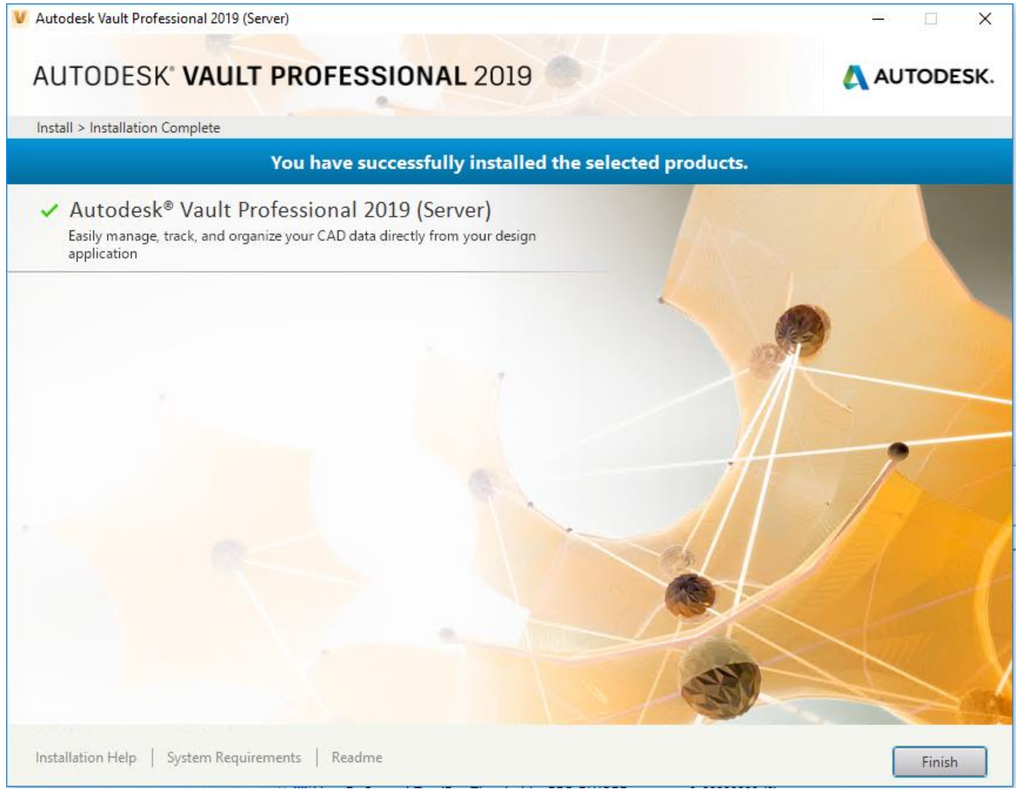
Upgrade start

Begin Backup Period

- Start this as early as possible, but after users are no longer using Vault
- Perform a Vault Backup or independently backup both the Databases and Filestores
  - If doing independent backup, IIS can be stopped
  - When backups are completed, validate where applicable
- In parallel to backups, begin installation of updated version (Software installation)
  - DO NOT Migrate
  - Rollback plan

Install/Upgrade





While installing on one ADMS/AVFS, others can be installed at the same time

- Multi server environments only

Successful installation message

- Troubleshooting covered later (if receiving a different message)
- Defer running ADMS Console

Success is where preparation and opportunity meet

- Bobby Unser

Migration

Web.config

Timeout

```
<server value=".\AutodeskVault" />
<timeouts connection="120" defaultCommand="360" longCommand="1800" />
<deadlocks retry="3" minPause="500" maxPause="2000" />
<pooling enabled="true" minSize="0" maxSize="100" />
<fragmentationCriteria minPageCount="30" minScanDensity="40" maxLogicalF
```

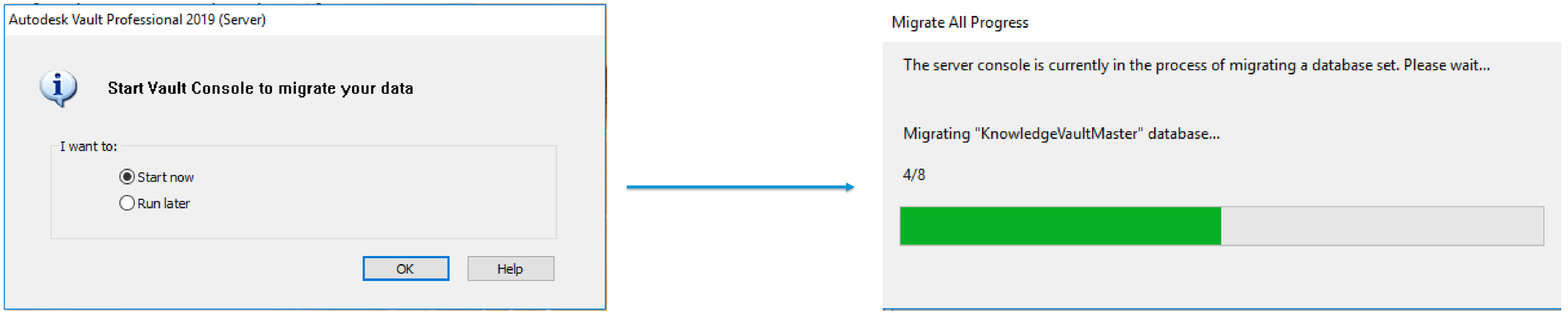
Increasing timeouts for a replication environment of a large size can be a must

Log files

```
<logging>
  <add key="basefilename" value="C:\ProgramData\Autodesk\VaultServer\FileStore\emaillog" />
  <add key="logfileextension" value=".txt" />
  <add key="dateformat" value="-yyyyMMdd" />
  <add key="loglevel" value="0" />
  <add key="keepnumberdays" value="-1" />
</logging>
```

Log files by default are retained forever. In addition, daily logs can get pretty large and storing on C:\ may become problematic

System database migrations



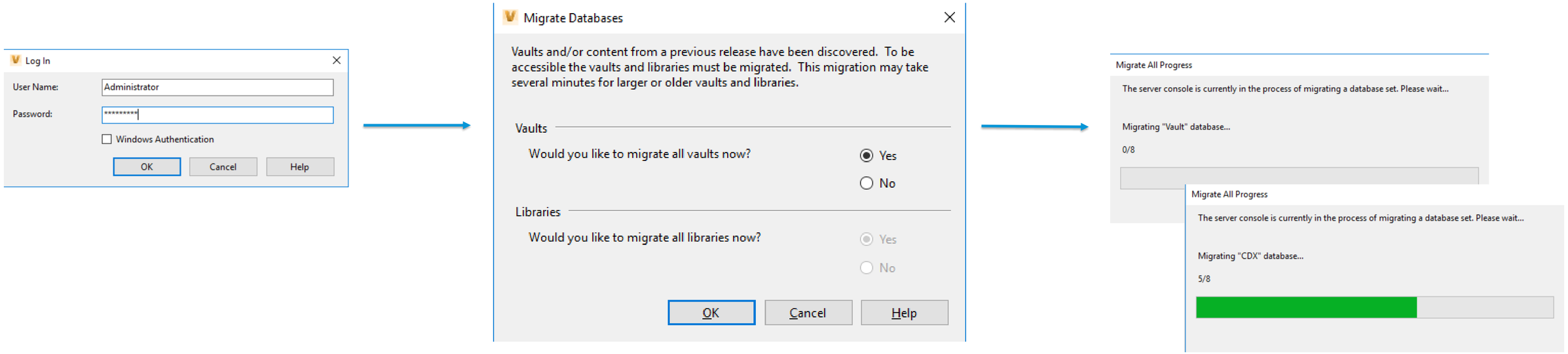
Open ADMS Console

Once installation is completed, you need to migrate data

*Only performed against the publisher

- This migration is for the Vault system databases

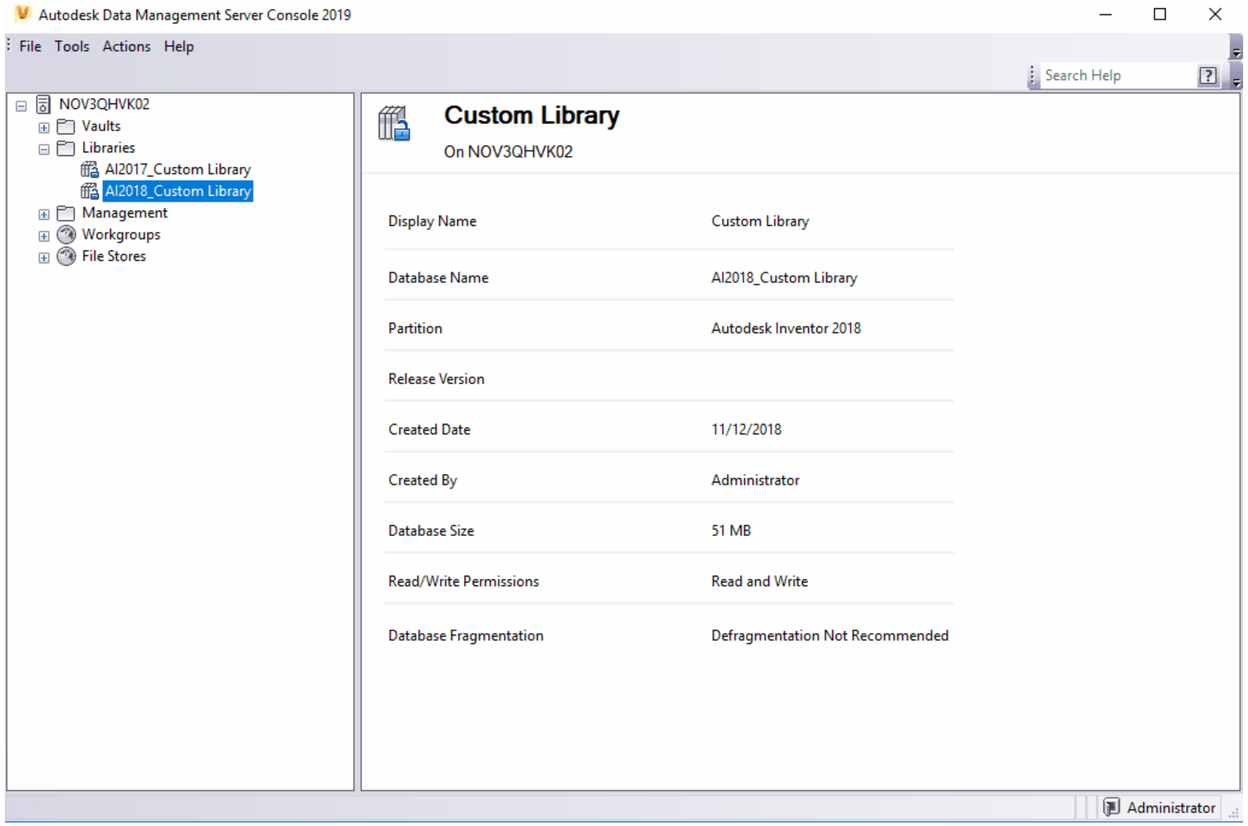
Migrating your Vaults and Content Centers



Once system migration is complete

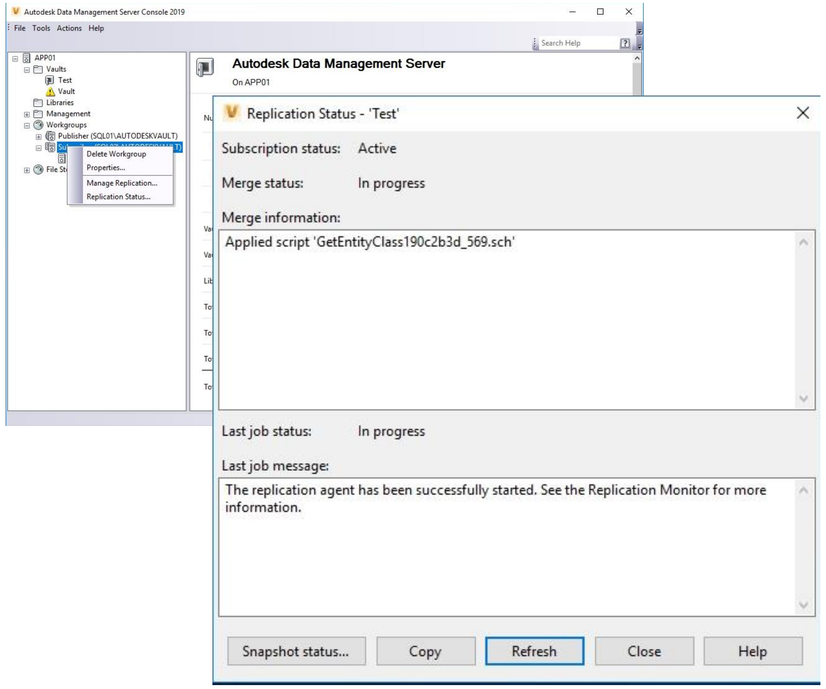
- *Only Publisher where applicable
- You'll need to login
- You'll be prompted to migrate your Databases again
  - This is for Vault and Content Center databases (not the system databases)
- Choose no (if you prefer to manage this tightly), Yes if you prefer to have this automated, or have a small number of Vaults
- You will also have an option to migrate libraries (Content Centers)
- This step will take a fair amount of time (longer for each version between upgrades)

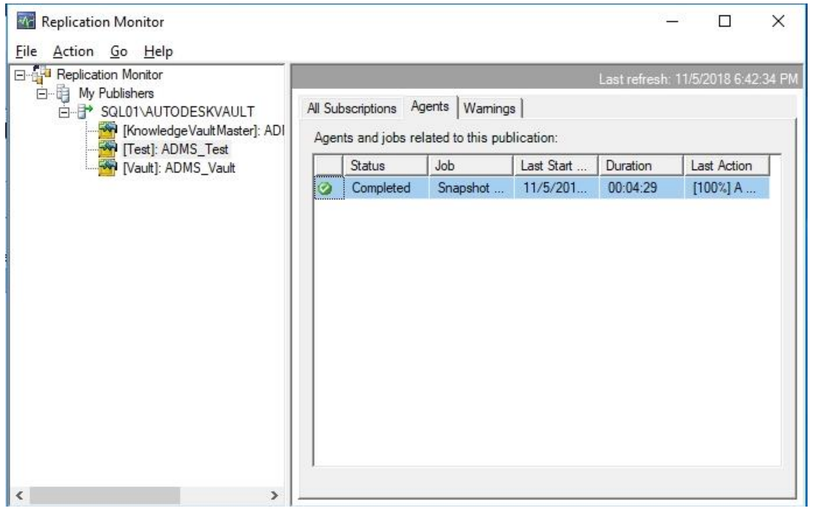
Updating Content Centers – Inventor only

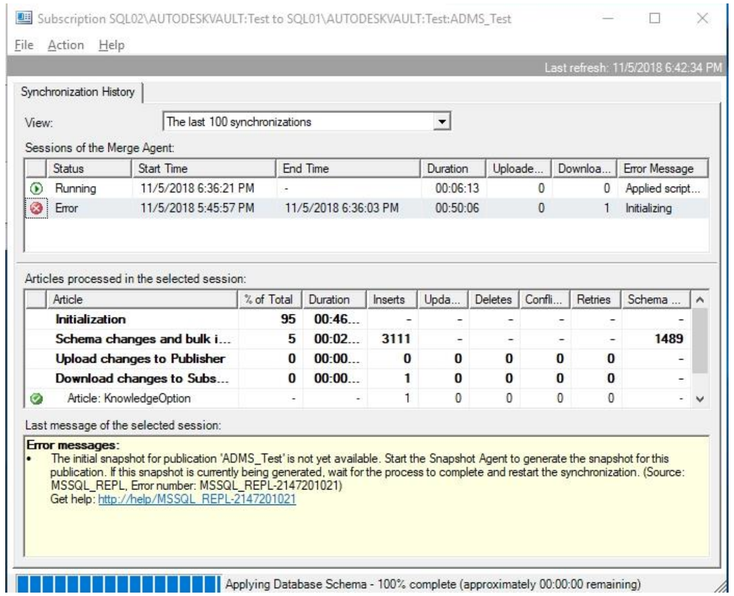


This step should occur prior to upgrading your clients

- You will need to copy your custom content centers before upgrading clients
  - Timing note – Custom Content Centers can continue to be updated. Update around time of client upgrades.
- From ADMS console, expand the library node and copy your custom content centers using the Partition for the new version of Inventor
- Download the latest version of standard content centers from Autodesk
- This step is separate from migrating your content centers and is required to allow the new version of Inventor to work with custom content







Replication Monitoring

Replication should be monitored after migration is completed. Whether intermittently or frequently will be dictated by environment, testing, and experience. You can monitor replication from both the Autodesk Vault ADMS Console, or from within the SQL Server Replication monitoring tools.

Final checks

IIS ON ALL SERVERS (ADMS AND AVFS)

Ensure that this has been started after the software installation. You will likely have noticed if it hasn’t up to this point, but perhaps not on all servers. IISRESET /START or just IISRESET will start these services. Do so from an elevated (as admin) command prompt

VAULT CLIENT CHECK

Attempt a GET with Checkout on a file or number of files from every ADMS server that is connected to the various SQL Servers throughout the organization.

USER ACCEPTANCE

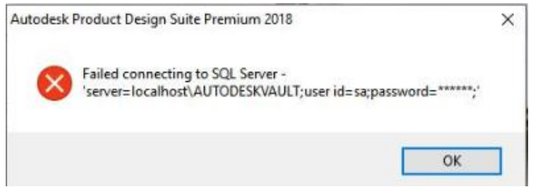
Assuming that the upgrade is occurring during off hours, having a user available to perform testing is necessary. Users should have their own testing plan, separate from the server upgrade one that covers day to day and even infrequent scenarios to ensure everything is up and running.

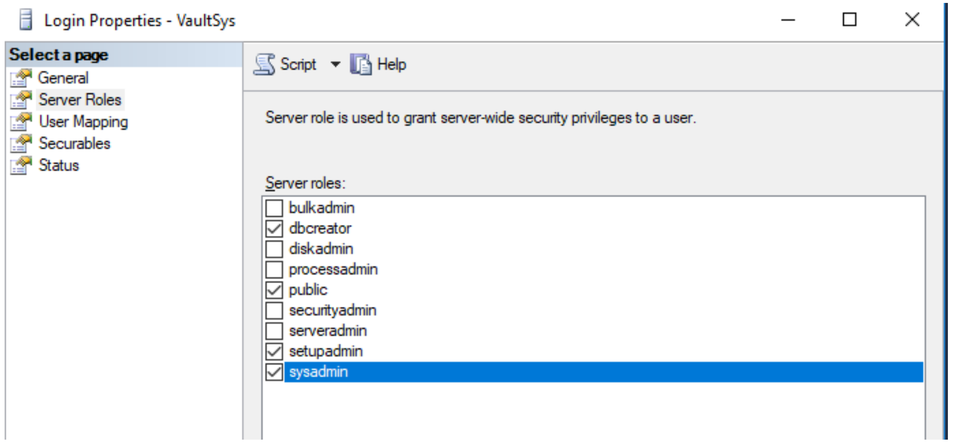
Tips, Tricks, and Troubleshooting

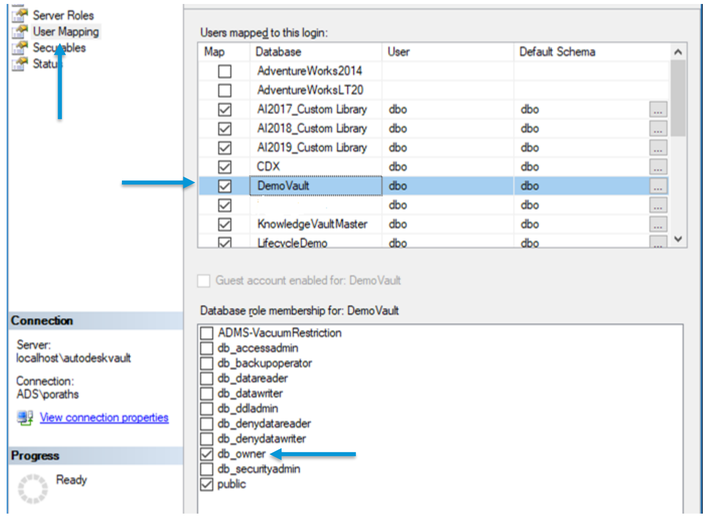
Survey

Reasonably confident that you can determine a database issue vs a IIS issue?

SQL Server Errors

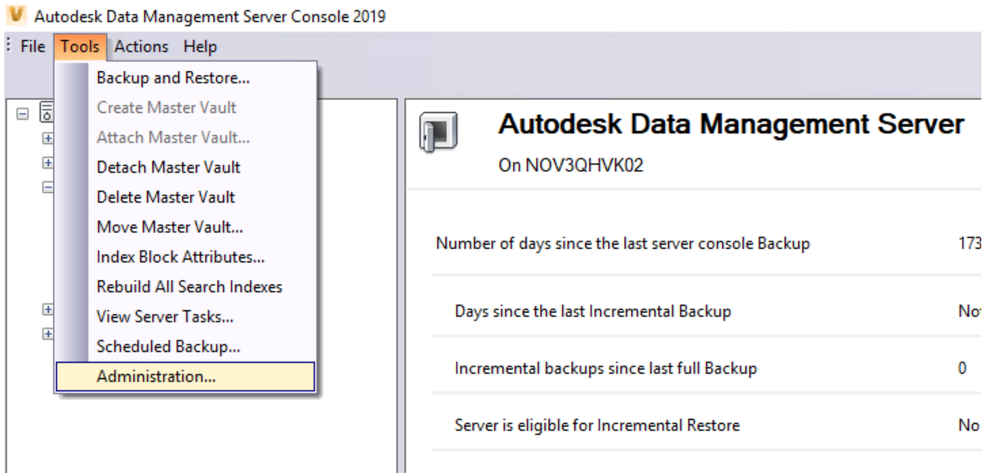


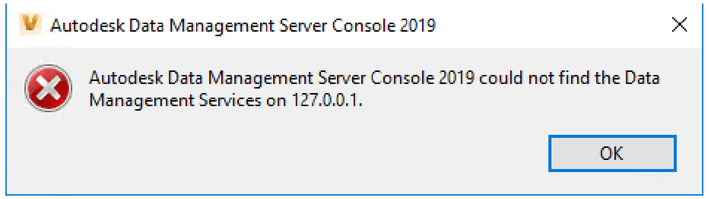




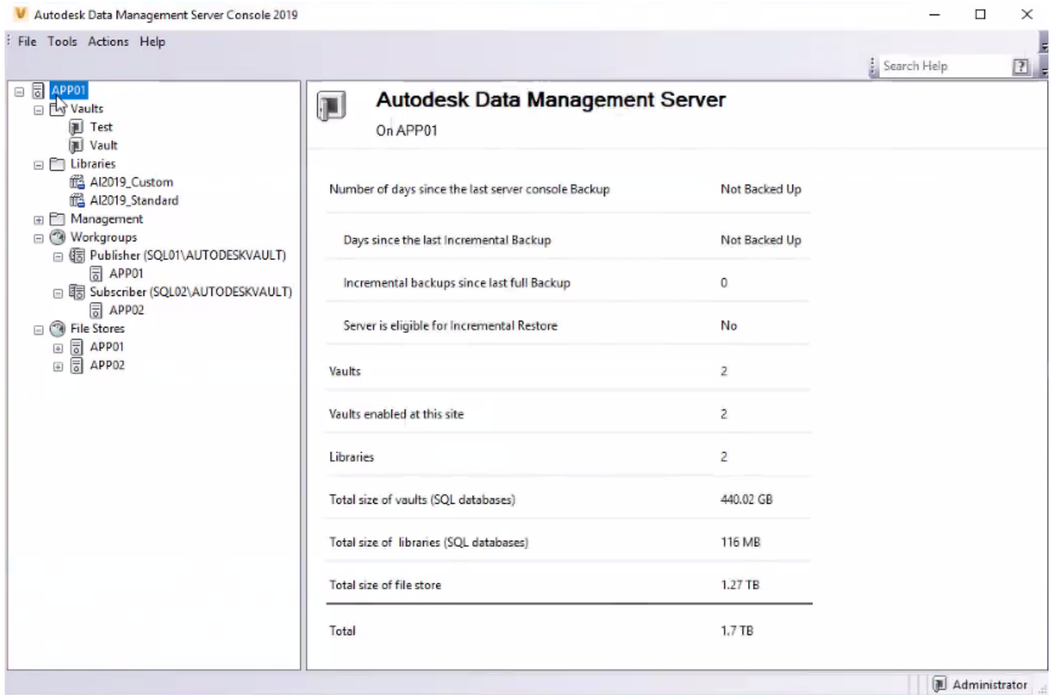
- SQL Server typically in message
- Login issues are most common
- Accounts: SA, VaultSys, ADMS-*ServerName*
- ADMS Console uses SQL Server, Clients use IIS (in general, with exceptions)
- Database role and mapping

IIS Errors





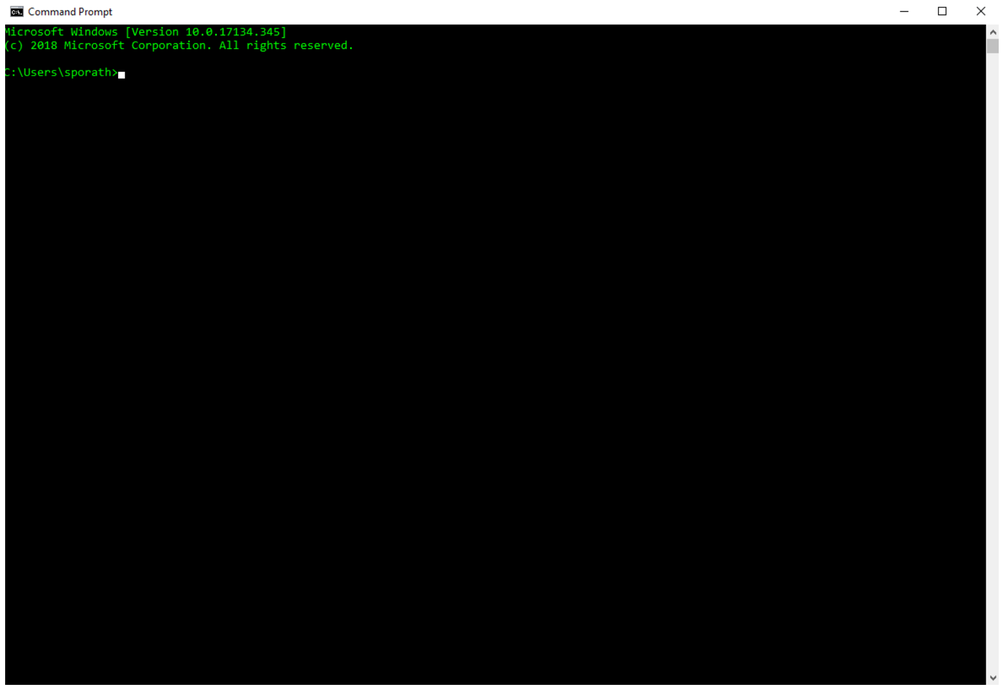
- Timeouts can be a symptom
- Commonly – “could not find the Data Management Services on *YourServer*
- Check to ensure IIS is running
- Recycle App Pools and/or Restart IIS



How many servers

ADMS Console can help you

- Vaults/Libraries
- Workgroups are database servers
- File Stores lists all file stores (ADMS and AVFS)
- Main Server node displays sizing info

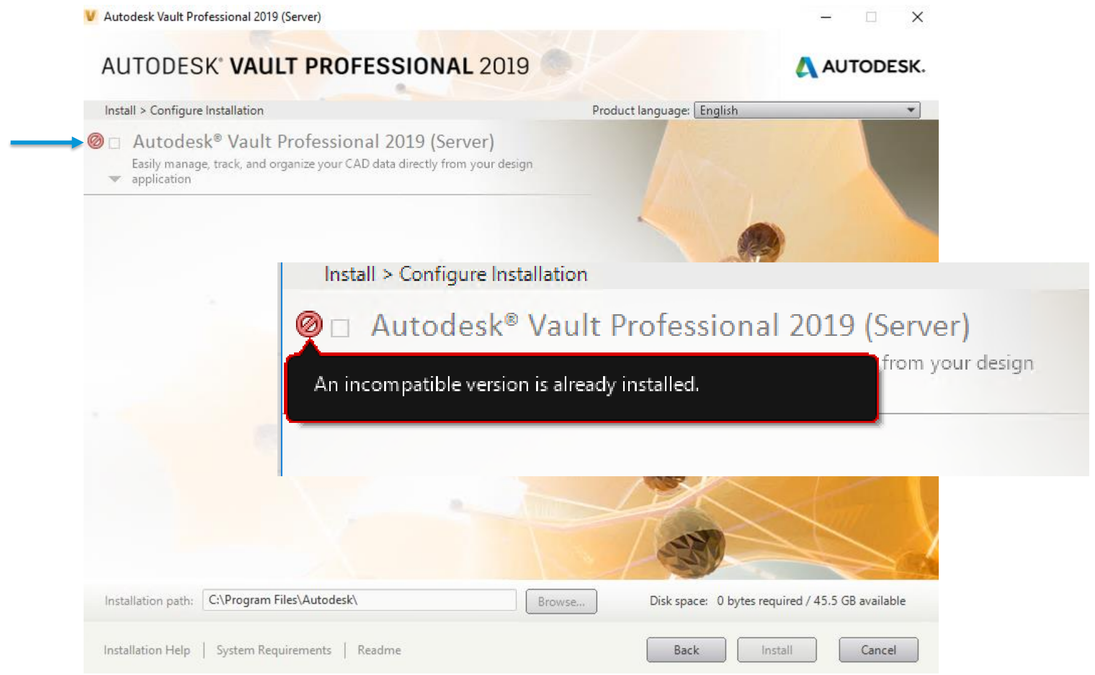


Network latency

Applicable to database replication only. Database replication is greatly dependent on good network latency:

- Less than 100ms is good
- Less than 200ms would be acceptable
- Greater than 250ms can be a problem if reinitialization needed

Other sources



- Google – if you have an error, start here
- Vault Logs – Location in web.config, or can be accessed through ADMS console
- Windows Events

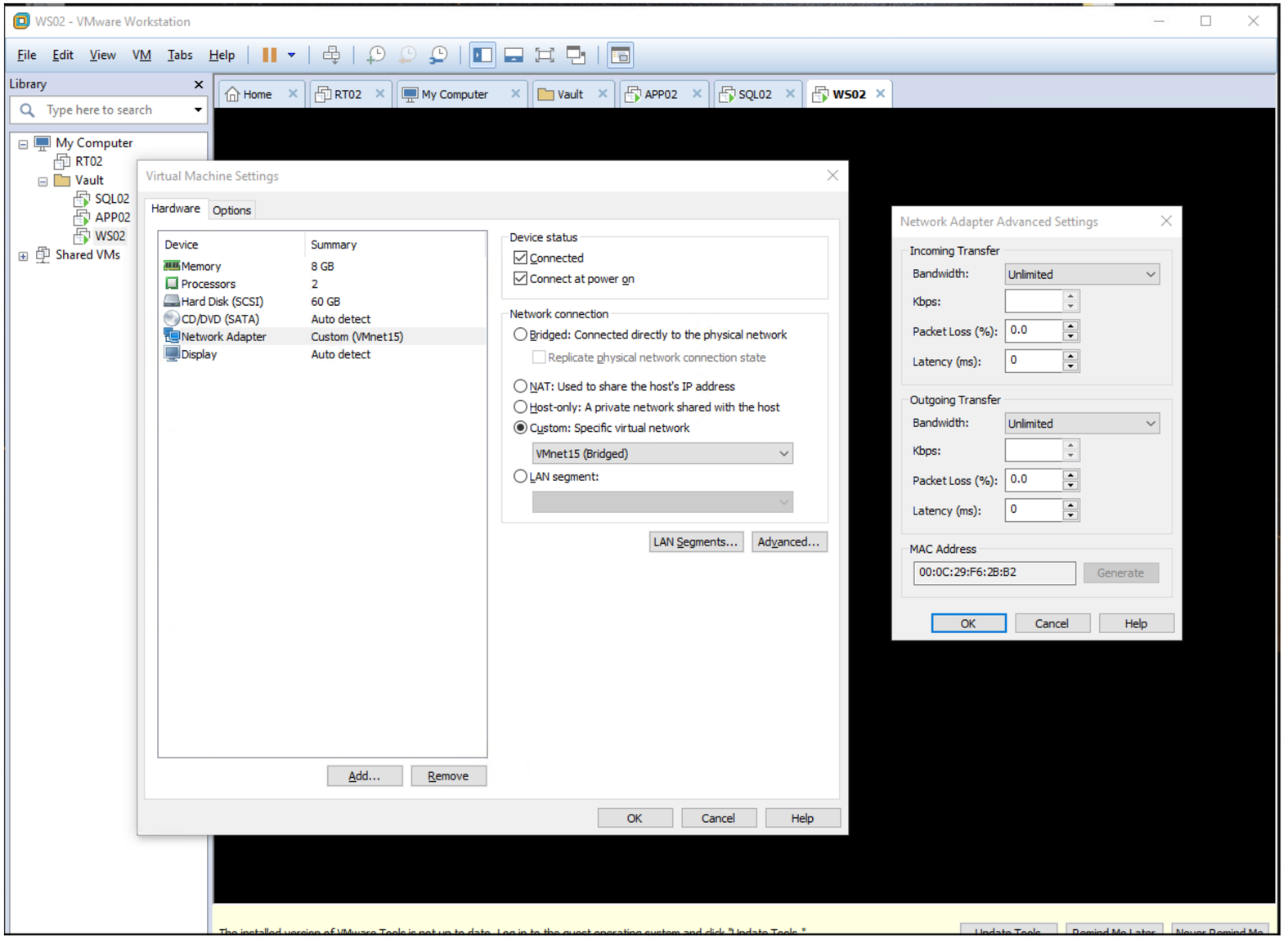
Recommended Tools

- A text editor – Notepad++ or Visual Studio Code
- **Process Monitor** – Microsoft Windows tool for monitoring processes in great detail
- Microsoft Fix It / Mr Fix It – Tool for helping with uninstall/install problems
- Fiddler – Network monitoring tool – easier to use
- Wireshark – Network monitoring tool – more robust than Fiddler, but also more complicated
- Windows steps recorder – built into Windows 10 and will record “steps” taken along with screenshots. Good for providing steps taken in troubleshooting.
- **SQL Server Management Studio** – SQL Server GUI Database Management tool
- Vault Error Codes – Provided with client SDK and helpful if getting messages with an error code
- Virtualization – VMWare and Hyper V
- RDPManager – Microsoft Remote Desktop Manager

Previously mentioned

- **Google** – use it, the answers are likely out there
- SQL Server Replication Monitor
- Windows Event Viewer
- Vault Logs

Recommended Tools (VMWare)



Question and Answer

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