

12d Synergy Requirements

This document outlines the requirements for a 12d Synergy implementation.

The server requirements may differ based on the number of users. Operating below these minimum requirements will put you in an unsupported configuration that may yield unexpected results or behaviour.

Prior to installation, this document needs to be signed and returned to a 12d Synergy representative to confirm that you are aware of these requirements.

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1 12d Synergy Server Requirements

1.1 Installations with under 30 Users

1.1.1 Hardware Requirements

CPU	Intel i5 or AMD equivalent processor, 2 GHz or Higher (Minimum) Intel Xeon E7 or AMD equivalent processor, 3 GHz or Higher (Recommended)
RAM	8GB minimum, 16GB recommended
HDD	5.0 GB for installation

1.1.2 Software Requirements

1.1.2.1 Operating System

Windows 7 or Later, or Server 2008 SP2 or later.
12d Synergy is installed as a 32-bit application.

1.1.2.2 Required Components

The following software components are required:

- Microsoft .NET 4.5
- Microsoft SQL Server
 - Minimum version: SQL Server 2012
 - Recommended version: SQL Server 2014 or later
 - Full Text Search must be enabled

1.1.2.3 Optional Components

If you wish to use native conversion for Office Documents to PDF rather than the converter shipped with 12d Synergy, you can install Microsoft Office 2010 or later. The native office converter may provide better fidelity in some cases.

1.1.2.4 SQL Server

12d Synergy is bundled with a version of Microsoft SQL Server Express and can be used when you do not have a SQL Server license already.

SQL Server Express is limited to 1 GB of memory per database and will suffer from performance issues on systems with more than 30 users.

1.1.2.4.1 SQL Server Requirements

Microsoft SQL Server is provided by Microsoft and has its own set of requirements, including configurations that may be considered invalid or not recommended, such as running SQL Server on a Domain Controller.

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Please see the following link for more information:

<https://docs.microsoft.com/en-us/sql/sql-server/install/hardware-and-software-requirements-for-installing-sql-server>

1.1.2.4.2 SQL Server on a Separate Machine

Please note the following requirements when running SQL Server on a separate machine to your 12d Synergy server.

- Each server must have a minimum of 8 GB of Ram
- Latency between the SQL and 12d Synergy servers must be less than 10 ms. Less than 1 ms is recommended for optimal performance.

1.1.2.4.3 SQL Server Stacking

SQL Server stacking, which is the practice of installing separate instances of SQL Server, is not generally recommended as SQL Server is unable to perform optimal memory management. This practice may lead to performance bottlenecks and timeouts if memory is not managed correctly.

If you do not have an experienced Database Administrator to manage and monitor your SQL Server performance, SQL Server Stacking should not be used.

For installations involving SQL Server Stacking, you must ensure you reserve enough memory for the SQL Server to operate well – at least 1 GB for SQL Server Express, and 4 GB for SQL Server Standard.

1.2 Installations with over 30 users

1.2.1 Hardware Requirements

CPU	Intel i5 or AMD equivalent processor, 2 GHz or Higher (Minimum) Intel Xeon E7 or AMD equivalent processor, 3 GHz or Higher (Recommended)
RAM	16GB minimum, 24GB recommended
HDD	5.0 GB for installation

1.2.2 Software Requirements

1.2.2.1 Operating System

Windows 7 or Later, or Server 2008 SP2 or later.

12d Synergy is installed as a 32-bit application.

1.2.2.2 Required Components

The following software components are required:

- Microsoft .NET 4.5
- Microsoft SQL Server

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- Minimum version: SQL Server 2012
- Recommended version: SQL Server 2014 or later
- Full Text Search must be enabled

1.2.2.3 Optional Components

If you wish to use native conversion for Office Documents to PDF rather than the converter shipped with 12d Synergy, you can install Microsoft Office 2010 or later. The native office converter may provide better fidelity in some cases.

1.2.2.4 SQL Server

Microsoft SQL Server Express cannot be used if you have more than 30 users, as SQL Server will quickly consume more than the 1 GB limited to the express edition. You must use SQL Standard edition or greater.

1.2.2.4.1 SQL Server Requirements

Microsoft SQL Server is provided by Microsoft and has its own set of requirements, including configurations that may be considered invalid or not recommended, such as running SQL Server on a Domain Controller.

Please see the following link for more information:

<https://docs.microsoft.com/en-us/sql/sql-server/install/hardware-and-software-requirements-for-installing-sql-server>

1.2.2.4.2 SQL Server on a Separate Machine

Please note the following requirements when running SQL Server on a separate machine to your 12d Synergy server.

- The 12d Synergy Server must have a minimum of 8GB of RAM
- The SQL Server must have a minimum of 16 GB of RAM.
- SQL Server should have access to at least 4 GB of RAM
- Latency between the SQL and 12d Synergy servers must be less than 10 ms. Less than 1 ms is recommended for optimal performance.

1.2.2.4.3 SQL Server Stacking

SQL Server stacking, which is the practice of installing separate instances of SQL Server, is not generally recommended as SQL Server is unable to perform optimal memory management. This practice may lead to performance bottlenecks and timeouts if memory is not managed correctly.

If you do not have an experienced Database Administrator to manage and monitor your SQL Server performance, SQL Server Stacking should not be used.

For installations involving SQL Server Stacking, you must ensure you reserve enough memory for the SQL Server to operate well – at least 4 GB for SQL Server Standard.

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1.3 A Note on Server Utilisation

Note that between service restarts, 12d Synergy and SQL Server's RAM consumption will grow as more users connect and use the system. This is particularly true of SQL Server, which will attempt to utilise more RAM to speed up data access by caching results in memory.

If your server is already starved for RAM (say at 75% capacity), you will experience poor performance because many of its calculations will be paged to disk.

The more disk activity there is on a single server, the poorer your performance will be.

It is important to make sure that the servers that host these services are not over utilised.

This should all be taken into account when selecting the infrastructure for your 12d Synergy server.

1.4 Files Over the Web

12d Synergy provides the capability to deliver files to external users over HTTP/HTTPS, or for validated external parties to upload data.

This is disabled by default but if required, a port must be nominated for access.

This defaults to 8080 for HTTP and 8443 for HTTPS.

It is recommended that HTTPS is enabled, which requires the installation of an SSL Certificate.

1.5 Data Storage

You will need storage space available for the amount of data you expect 12d Synergy to be managing. You should take into account growth of this data set over time.

1.6 Service Account

The 12d Synergy server will run under a service account which:

- Can connect to the SQL Server and create a database and temporary tables
- Have full access to the aforementioned data storage areas
- Have access to Active Directory, if required (see Windows Login Credentials)
- If you are using File Publishing or Web Drops, you will need an administrative account or you will need to run NETSH to grant access to the web ports manually

1.7 Mail Server

For 12d Synergy to be able to send emails (to notify users of tasks, operations on files etc), access to a mail server via SMTP is required. The following settings are needed:

- Mail server address
- Optional mail server port, if non standard
- Mail server credentials if required
- Default mail address (who mail is delivered from – entered in the administrator utility after installation)

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1.8 Environment Variables

The following windows environment variables must be made available – but are already installed by windows:

- TEMP – pointing to a path for temporary storage (accessible by the service account)
- TMP – pointing to a path for temporary storage (accessible by the service account)

They should have significant space to handle the largest file upload.

If they do not, an additional Windows Variable can be set to change where 12d Synergy Stores temporary files.

This environment variable is: 12dSynergyTempPath

1.9 Windows Login Credentials

12d Synergy can operate in two modes for logins:

1. Windows Credentials (recommended and provides single sign on)
2. Custom logins

When using Windows credentials, 12d Synergy can either use

- Machine local logins
- Active directory

for login information.

When using Windows Credentials, 12d Synergy stores no passwords. If you are using Windows Login Credentials, it is up to the 12d Synergy administrator to configure which active directory users have access to 12d Synergy.

If you are using Active Directory, you must nominate the AD server at installation time.

Custom logins will require the use of a server side SSL Certificate for encryption and identity purposes.

1.10 Client and Server Communications

12d Synergy operates using TCP/IP, over ports **1212** for meta data and **1250** for file transfer. These ports should be opened / forwarded in any appropriate software, hardware firewalls, or routers for your LAN and WAN connections, as appropriate

For optimal performance, consider the below table of client to server latency values.

50 ms	Excellent performance
100 ms	Good performance
250 ms	Acceptable performance
250 ms or above	Low performance – some users may complain about speed

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1.11 File Replication and Server Communications

Each File Replication Server will communicate back to the Master Server over the installed File Server / Data Port – this defaults to **1250**. This port should be opened / forwarded any appropriate software firewalls, hardware firewalls, or routers for your LAN and WAN connections as appropriate.

2 12d Synergy File Replication Server Requirements

2.1 Communication

The File Replication Server communicates using TCP/IP (encrypted with SSL/TLS), over the default port 1212. This includes communication between the FRS and:

- The Master Server
- Other File Replication Servers
- Any Clients using the FRS

The installed port should be opened in any relevant software firewalls, hardware firewalls, or routers, where appropriate.

2.2 Hardware Requirements

CPU	Intel i5 or AMD equivalent processor, 2 GHz or Higher (Minimum) Intel Xeon E7 or AMD equivalent processor, 3 GHz or Higher (Recommended)
RAM	8GB minimum, 16GB recommended
HDD	5.0 GB for installation

2.3 Software Requirements

2.3.1 Operating System

Windows 7 or Later, or Server 2008 SP2 or later.

12d Synergy is installed as a 32-bit application.

2.3.2 Required Components

The following software components are required:

- Microsoft .NET 4.5
- Microsoft SQL Server
 - Minimum version: SQL Server 2012
 - Recommended version: SQL Server 2014 or later

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- Full Text Search must be enabled

2.3.3 SQL Server

It is acceptable to use the SQL Server Express edition for an FRS installation, however Standard is generally recommended if it is available.

2.4 Data Storage

You will need storage space available for the amount of data you expect 12d Synergy to be managing. You should take into account growth of this data set over time.

2.5 Service Account

The 12d Synergy File Replication Server will run under a service account which:

- Can connect to the SQL Server and create a database and temporary tables
- Have full access to the aforementioned data storage areas

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3 12d Synergy Client Requirements

3.1 Software Requirements

3.2 Operating System

The 12d Synergy Client requires Windows 7 or later

3.3 Required Components

.NET 4.5 must be installed.

3.4 Optional Components

The following components are optional:

- Microsoft Office 2010 or Later
- 12d Model 11
- 12d Model 12
- AutoCAD 2014 or later
- BricsCAD V14 or later

Document Acceptance

Signed and Accepted:

Date:

/ /

Printed Name:

Job Title: