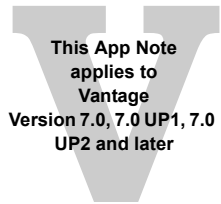




Planning and Setting Up Your Vantage Database



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Note: This guide is written for technical professionals who are familiar with the Vantage database requirements. If you aren't familiar with administering Vantage and its database, we suggest that you review the *Vantage Domain Management Guide* as needed.



Overview

Vantage 7.0 ships with SQL Express 2014. When Vantage is installed for the first time, MS SQL Server Express 2014 is also automatically installed to store the Vantage Domain Database, which contains Vantage workflows and associated components. If Vantage is being upgraded from a previous version with an older SQL version, Vantage attaches to the existing SQL version and updates the domain database contents.

When installing a Vantage Array, you may want to install the Vantage MS SQL database on a separate server from the Vantage services and client applications to ensure best performance. Additionally, your Vantage Array may contain sufficient data to warrant installing MS SQL Server Standard instead of Express. For additional data protection, you may want to install a mirrored database.

This app note explains when to put the database on a separate server from the Vantage services, when to move up to SQL Server Standard, and also discusses other database configurations, such as database mirroring.

Supported Databases, Operating Systems, and Servers

Vantage is supported on the following database systems:

- Microsoft SQL Server 2008 Standard or Enterprise
- Microsoft SQL Server 2012 Express, Standard, or Enterprise
- Microsoft SQL Server 2014 Express, Standard, or Enterprise
- Microsoft SQL Server 2016 Standard and Enterprise

The MS SQL Server for Vantage should be installed and operated only on the following operating systems (64-bit recommended for performance):

- Windows Server 2008 R2 SP1
- Windows Server 2012 R1 or R2
- Windows Server 2016

Database Server Requirements for SQL Standard

The following recommendations are for customers running SQL Standard.

Telestream recommends using “per core” SQL Standard licensing when using Vantage. In this licensing scenario, all physical cores on the server (or virtual machine) must be licensed. Please contact your IT department or Microsoft for more information about SQL Standard licensing options. For Microsoft’s discussion of licensing by cores, refer to this URL: <http://www.microsoft.com/licensing/about-licensing/briefs/licensing-by-cores.aspx>.

Telestream recommends the following hardware for dedicated database servers:

SQL Standard: 4-Core Server Recommendations

Component	Specification
CPU	64-bit, 4 physical cores, 8 MB cache, 3.0 GHz or greater. For example, Intel E3-1230 v2.
RAM	16 GB DDR minimum required, 32 GB or more recommended for high job volumes; 1600 MHz recommended
OS/Software HDD	RAID-1, 2 drive volume, minimum 7200 RPM, SSD preferred
Database HDD	RAID-5, 3 drive volume, minimum 250 GB per drive, 7200 RPM
Network	Dual 1 GbE or greater NICs
Operating System	Windows Server 2012 (R2 recommended for best performance) or Windows Server 2016

SQL Standard: 8-Core Server Recommendations

Component	Specification
CPU	64-bit, 8 physical core processors, 2.0 GHz or greater. For example, Intel ES-2640 v2.
RAM	24 GB required, 32 GB or more recommended for high job volumes; 1600 MHz recommended
OS/Software HDD	RAID-1, 2 drive volume, minimum 7200 RPM, SSD preferred
Database HDD	RAID-5, 3 drive volume, minimum 250 GB per drive, 7200 RPM
Network	Dual 1 GbE or greater NICs
Operating System	Windows Server 2012 (R2 recommended for best performance) or Windows Server 2016

Please see the following page and table for additional guidelines.

When choosing your database server, the primary consideration is how many clients will access job status views simultaneously. Real-time job status views are the largest consumer of database CPU resources.

The following table can guide you in selecting a server and configuring the system.

Job Status View Clients	Database Server	Notes
1 or 2 clients	4-core server	IIS and the Workflow Designer may run on the DB server.
3-8 clients	4-core server	IIS and Workflow Designer must run on a separate server.
More than 8 clients	8-core server (or more)	Contact Telestream for guidance if you plan to have more than 20 clients.

The recommendations above ensure sufficient CPU headroom for activities such as Workflow Portal operation, running large arrays, deleting jobs, etc.

Selecting SQL Express or SQL Standard

The decision about whether to use SQL Standard or Express depends on your planned maximum database size and the expected average volume of database traffic. The following topics provide information to help you choose which database to use:

- [Comparing SQL Express and SQL Standard](#)
- [Vantage Guidelines for SQL 2014 Express](#)

Comparing SQL Express and SQL Standard

SQL Express and SQL Standard database limitations are compared in this table:

SQL 2014 Express	SQL 2014 Standard
Max. Cores: 4	Max. Cores: 16
Max. DB RAM: 1 GB	Max. DB RAM: 64 GB
Database Size: 10 GB	Max. Database Size: Unlimited

Microsoft offers additional information about SQL Server capabilities and limitations at this URL: <http://msdn.microsoft.com/en-us/library/cc645993>.

Vantage ships with SQL 2014 Express, which is suitable for single-node installations or Array installations up to four nodes. For very large installations, SQL Standard may be required.

Vantage Guidelines for SQL 2014 Express

Vantage installs SQL 2014 Express, which allows up to 10GB of database storage. Due to this storage limitation, SQL Express is not suitable for every Vantage installation.

The following guidelines indicate the maximums for using Vantage with SQL 2014 Express:

- **Transcoding:** SQL 2014 Express can support up to 15,000 Vantage jobs in the database at a time. **Note:** *This assumes that each job contains 10 actions. More actions in a job require more storage, allowing fewer jobs.*
- **TrafficManager:** SQL 2014 Express can support up to 1,500 TrafficManager commercials in inventory at a time.
- **Vantage Array:** Up to four (4) Vantage servers can simultaneously connect to SQL 2014 Express as part of a Vantage Array. This includes any redundant or backup machines.

Database Shutoff Feature for SQL Express

If a Vantage single-node or Array installation using SQL Express nears the SQL Express database size limit, Vantage stops accepting jobs. Attempts to submit jobs manually launches a warning dialog indicating that the database is at or near capacity. To release space in the database, see the procedure in the Managing a Vantage Domain chapter: *Shrinking a Full Database* in the Vantage Domain Management Guide.

Guidelines for an Array Installation with SQL Standard

For high traffic installations, Vantage performance improves when you use SQL Standard and separate the database from other services such as the operating system and Vantage services. The following guidelines provide increasing levels of performance improvement:

- Always place SQL Standard and the database on a dedicated server, separate from Vantage services, the Vantage store, and the input and output files. This approach provides the largest increase in performance.
- Place the Vantage database files on a dedicated physical drive or RAID array, separate from the operating system.

Note: Installing a Vantage domain database on a separate server does not require an extra Vantage license for that server.

When installing a Vantage array with SQL Standard, ensure that the server hardware meets the requirements described in [Supported Databases, Operating Systems, and Servers](#). To improve database availability, see [Improving Uptime with Mirroring or Availability Groups](#).

Other Database Configurations

Vantage systems can work with other special database configurations:

- For a fully redundant system, you can use SQL Standard with Mirroring. This requires professional services from Telestream with machines and licenses for two SQL Standard databases, plus a third machine running the free SQL Express.
- Large volume systems can use SQL Enterprise.
- You can use SQL with Clustering.

Improving Uptime with Mirroring or Availability Groups

SQL Server Availability Groups or database mirroring can prevent Vantage domain interruption if a single database server fails. Telestream supports mirroring for SQL Standard 2012 and SQL Standard 2014 and Basic Availability Groups for SQL Standard 2016. SQL Enterprise with Clustering may also be used for high availability.

A mirrored database requires the following physical servers:

- A dedicated server to host the principal database
- A dedicated server (of similar capability to the principal database server) to host the mirror database
- An optional dedicated server to host the witness server.

The witness database is a lightweight service which can run effectively on a low-end server, but cannot be installed on a database server.

Basic Availability Groups require:

- A dedicated server to host the primary replica database
- A dedicated server (of similar capacity) to host the secondary replica database
- A reliable witness file share server.

Note: This guide does not provide instructions for installing or implementing a mirrored database or Availability Groups. Consult your database administrator or contact your Telestream representative regarding installation service options.

Note: Telestream strongly recommends using a dedicated server for the witness server to ensure uninterrupted operation in case of a database failover. If the witness server function is placed on a server with Vantage services, transcoding can consume too many resources and prevent timely database switchover.

Note: If a mirrored database fails over, the domain change is not reflected in Vantage client program title bars, which still show the original domain name. Users can correct this by using File > Change Vantage Domain in the clients to select the new domain.

Setting Up a Vantage Array Database

This procedure presents the steps for installing a new Vantage Array database which will serve more than one Vantage server.

Single node installations that include the automatically installed SQL Express database and all Vantage components on a single server do not require separate pre-installation of the database; Vantage and the database can be installed at the same time by the Vantage installer. However, if the single node will include a SQL Standard database, the database must be installed before Vantage in the same way as an Array database.

Note: This note does not provide instructions for installing a mirrored database and implementing mirroring. Consult your database administrator or contact your Telestream representative regarding installation service options.

Note: Removing existing MS SQL Server database software and installing a new version does not remove the Vantage domain database stored in the Program (x86) Files\Telestream\ Database folder if Vantage was previously installed. After you install the new database software as explained below, you can run the Vantage installer to install a new domain database or upgrade the existing domain database files. Upgrading preserves existing Vantage workflows and associated workflow components.

To set up the Vantage domain database, follow these procedures in the order listed:

1. [Installing SQL Server 2012 Standard](#), [Installing SQL Server 2014 Standard](#), or [Installing SQL Server 2016 Standard](#)
2. [Installing the Vantage Domain Database](#)

Installing SQL Server 2012 Standard

The following procedure explains how to install SQL Server 2012 Standard. If you are installing SQL Server 2014, please skip to the next topic, [Installing SQL Server 2014 Standard](#).

Follow these steps to install SQL Server 2012 Standard on a server:

1. Log in to the target server with a local administrator account.
2. Insert the SQL Server 2012 Standard DVD into the server's DVD drive and start the installer (*setup.exe*) if it does not run automatically.
3. SQL Server Installation Center—Click Installation in the left column, then select *New installation or add features to an existing installation*.
4. Setup Support Rules—Click OK.
5. Product Key—Enter your product key and click Next.
6. License Terms—Accept the license terms and click Next.
7. SQL Server Updates—Click Next after updates have completed.

8. Setup Support Files—Click Install, allow the installer to complete its actions, and click Next.
9. Feature Selection—Check Database Engine Services and Management Tools, and click Next. (This step applies to 2012 R1/R2 only.)
10. Instance Configuration:
 - a. Select Named instance.
 - b. Enter *VANTAGE* in the Named instance field and the Instance ID field.
 - c. Click Next to continue.
11. Disk Space Requirements—Click Next to continue.
12. Server Configuration:
 - a. For SQL Server Agent, the Startup Type should be disabled. (If the Startup Type is set to automatic, the service must be stopped before running Vantage Setup.)
 - b. For Server Database Engine, select NT AUTHORITY\NETWORK SERVICE
 - c. Click Next to continue.
13. Database Engine Configuration:
 - a. Click Add Current User.
 - b. Select Mixed Mode.
 - c. Enter the Vantage sa user password (*vantage12!*) in the Enter Password and Confirm Password fields.
 - d. Click Next to continue.
14. Continue to click through the installer windows accepting the default settings to complete installation.
15. Complete—Click Close to close the SQL Server 2012 Standard installer.
16. Select Start > SQL Server Management Studio.
17. Connect to the Vantage domain database using the following information:
 - Server type: Database Engine
 - Server name: [hostname]\VANTAGE
 - Authentication: SQL Server Authentication
 - Login: sa
 - Password: vantage12!
18. In the Object Explorer panel, right-click [hostname]\VANTAGE and select Properties.
19. In the Server Properties window, go to the Memory page.
20. Set the *Maximum server memory (in MB)* to 75% of the system's memory. For example: If the system's memory is 8 GB (8192 MB), then the maximum server memory for SQL should be set to 6 GB (6144 MB) ($8192 \times 0.75 = 6144$).
21. Click OK.
22. Close the SQL Server Management Studio.

Now that SQL Server Standard is installed and configured for Vantage, install the Vantage domain database as explained in this topic: [Installing the Vantage Domain Database](#). The Vantage installer will detect that SQL Standard is already installed, will not install SQL Express, and will attach to the installed instance.

Installing SQL Server 2014 Standard

Follow these steps to install SQL Server 2014 Standard on a server (skip this topic if you already installed SQL Server 2012 Standard):

1. Launch setup from the SQL Server 2014 Standard installation media.
2. In the *SQL Server Installation Center*, go to *Installation* on the left.
3. Select *New SQL Server Stand-alone installation or add features to an existing installation*.
4. On the Product Key page, enter a product key and click Next.
5. Accept the license terms and click Next.
6. Click Next on the Microsoft Update page.
7. On the Setup Role page, select *SQL Server Feature Installation* and click Next.
8. On the Feature Selection page, enable *Database Engine Services, Management Tools – Complete* and click Next.
9. On the Instance Configuration page, select *Named instance*, enter *VANTAGE* and click Next.
10. On the Server Configuration page, click the cell for the account name of the *SQL Server Database Engine* service. After selecting the cell, click the drop-down list and select *<<Browse...>>*.
11. In the *Enter the object name to select* field, type *NETWORK SERVICE* and click OK. Then click Next on the Server Configuration page.
12. On the Database Engine Configuration page, select *Mixed Mode (SQL Server authentication and Windows authentication)*. Enter *vantage12!* for the password and click the *Add Current User* button.
13. (Optional) If you would like to specify a non-default location for the database files, go to the Database Engine Configuration page, select the Database Directories tab, and change the Data root directory path.
14. Click Next on the Database Engine Configuration page.
15. Click install on the Ready to Install page.
16. When installation completes, click Close and close the SQL Server Installation window.
17. From the Start menu, launch the SQL Server 2014 Management Studio.
18. In the *Server name* field, enter *.\vantage* as the server name.
19. Set authentication to *SQL Server Authentication*.
20. Enter *sa* for the login and *vantage12!* for the password.
21. In the Object Explorer panel, right click *.\vantage (SQL Server 12.0.2000 – sa)* and select *Properties*.
22. From the Select a page panel, go to *Memory* and set *Maximum server memory (in MB)* to 75% of the host system's memory. For example, if the system's memory is 8 GB (8192 MB), then the maximum server memory for SQL should be set to 6 GB (6144 MB) ($8192 \times 0.75 = 6144$).

23. Click OK to close the Microsoft SQL Server Management Studio window.

Now that SQL Server Standard is installed and configured for Vantage, install the Vantage domain database as explained in this topic: [Installing the Vantage Domain Database](#). The Vantage installer will detect that SQL Standard is already installed, will not install SQL Express, and will attach to the installed instance.

Installing SQL Server 2016 Standard

Follow these steps to install SQL Server 2016 Standard on a server (skip this topic if you already installed SQL Server 2016 Standard):

1. Launch setup from the SQL Server 2016 Standard installation media.
2. In the SQL Server Installation Center, select *Installation* on the left.
3. Select *New SQL Server Stand-alone installation or add features to an existing installation*.
4. On the Product Key page, enter a product key and click *Next*.
5. Accept the license terms and click *Next*.
6. Click *Next* on the Microsoft Update page and the Install Rules page.
7. On the Feature Selection page, click *Feature Selection* on the left, enable *Database Engine Services* and click *Next*.
8. On the Instance Configuration page, select *Named instance*, enter *VANTAGE* and click *Next*.
9. Click the cell where the SQL Server Database Engine Row and Account Name column intersect. After selecting the cell, click the drop-down list and select *<<Browse...>>*.
10. In the *Enter the object name to select* field, type *NETWORK SERVICE* and click OK. Then click *Next* on the Server Configuration page.
11. On the Database Engine Configuration page, select *Mixed Mode (SQL Server authentication and Windows authentication)*. Enter *vantage12!* for the password and click the *Add Current User* button.
12. (Optional) If you would like to specify a non-default location for the database files, go to the Database Engine Configuration page, select the Data Directories tab, and change the Data root directory path.
13. Click *Next* on the Database Engine Configuration page.
14. Click *Install* on the Ready to Install page.
15. When installation completes, click *Close* and close the SQL Server Installation window.

Installing SQL Server 2016 Management Studio

Management Studio is not automatically installed for SQL Server 2016. To install and configure it, follow these steps:

1. Browse to <https://msdn.microsoft.com/en-us/library/mt238290.aspx>.

2. Click the link to “Download SQL Server Management Studio.” At the time this document was written, version 16.5.1 was used.
3. After the download completes, launch the setup and click Install.
4. Click Close when the installation completes.

After the SQL Server 2016 Management Studio has been installed, it must be used to set the maximum limit for SQL Server's memory consumption:

1. From the Start menu, launch the SQL Server 2016 Management Studio.
2. Connect to the instance using SQL Server Authentication:
Server name: .\VANTAGE
Authentication: SQL Server Authentication
Login: sa
Password: vantage12!
3. Right-click the hostname at the top of the Object Explorer tree and select Properties.
4. From the Select a page panel, go to *Memory* and set *Maximum server memory (in MB)* to 75% of the host system's memory. For example, if the system's memory is 8 GB (8192 MB), then the maximum server memory for SQL should be set to 6 GB (6144 MB) ($8192 \times 0.75 = 6144$).
5. Click *OK* to close the Microsoft SQL Server Management Studio window.

Now that SQL Server Standard is installed and configured for Vantage, install the Vantage domain database as explained in this topic: [Installing the Vantage Domain Database](#). The Vantage installer will detect that SQL Standard is already installed, will not install SQL Express, and will attach to the installed instance.

Installing the Vantage Domain Database

This task installs the Vantage domain database instance. Follow these steps:

1. Log into the database server with a local administrator account, and make sure that virus-checking software and Windows Firewall is off.

Note: To effectively operate Vantage services with other networked devices or systems, you must turn off Windows Firewall.

2. Stop the SQL Server Agent Service in Start > Services, if it is running.
3. Run the *Vantage_7.0_Setup.exe* installer and choose to install only the Domain Database for your single node or array installation.)
4. When the Vantage Domain Database Setup Wizard appears, click Next to display the license agreement.
5. License Agreement—Read the Vantage Software License Terms and Conditions, then click I Accept if you agree to the license terms. Click Next.
6. Database Install Mode—Click *Install new database* and click Next to continue.

7. Destination Folder—Accept the default folder or click Change to select an alternate folder. Click Next.
8. Ready to Install Vantage Domain Database—Click Install to begin database installation. This process takes a few minutes to complete.
9. Completed—When installation is complete, click Finish.

Completing the Installation

Once MS SQL Server and the Vantage Domain Database are installed on your database server, you can install Vantage on separate servers using the Vantage installer and connect to your database server. For Vantage installation and configuration instructions, see the *Vantage Domain Management Guide*.

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