Upgrade to and Installation of SQL Server 2012 in an SAP Environment
Content

1 Introduction .................................................................................................................. 5
2 General Requirements and Restrictions ...................................................................... 6
3 Upgrading SQL Server to SQL Server 2012 for an Existing SAP System ................... 10
   3.1 Introduction ........................................................................................................... 10
   3.2 General Prerequisites for Upgrading SQL Server to SQL Server 2012 ................. 10
   3.3 Upgrading SQL Server to SQL Server 2012 for an Existing Non-High-Availability SAP System ................................................................. 11
   3.4 Upgrading SQL Server Failover Cluster to SQL Server 2012 Failover Cluster ....... 14
4 Installing SQL Server 2012 for a New SAP System ................................................... 21
   4.1 Introduction ........................................................................................................... 21
   4.2 Installing the SQL Server Database Software Automatically with SQL4SAP ......... 21
   4.3 Installing the SQL Server 2012 Database Server Software Manually .................. 21
   4.4 Installing SQL Server AlwaysOn for a New SAP System .................................... 25
   4.5 Installing the SQL Server 2012 Failover Cluster .................................................. 26
   4.6 Installing the SQL Server 2012 Native Client Software Manually ....................... 32
5 Setting the SQL Server Agent Configuration .............................................................. 34
### Document History

#### Note

Before you start the implementation, make sure you have the latest version of this document.

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.91</td>
<td>2018-03-23</td>
<td>Updated version SQL Server AlwaysOn Functionality added</td>
</tr>
<tr>
<td>1.90</td>
<td>2017-11-17</td>
<td>Updated version • Updated links • Minor changes in entire document</td>
</tr>
<tr>
<td>1.80</td>
<td>2016-04-05</td>
<td>Updated version Minor changes in section [[unresolved text-ref: Installing the SQL Server 2012 Failover Cluster]]</td>
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<tr>
<td>1.70</td>
<td>2014-11-17</td>
<td>Updated version Changes in sections [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 for an Existing SAP System]] and [[unresolved text-ref: Installing SQL Server 2012 for a New SAP System]]</td>
</tr>
<tr>
<td>1.60</td>
<td>2014-07-08</td>
<td>Updated version • BW-specific SAP notes added in section General Requirements and Restrictions • Minor changes in sections [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 for an Existing Non-High-Availability SAP System]] and [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 for an Existing High-Availability SAP System]]</td>
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<td>Version</td>
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<td>Description</td>
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</table>
| 1.50    | 2014-01-10 | Updated version  
Section [[unresolved text-ref: Clustering the SQL Server 2012 Database Server Software]]: Minor changes in table for the SQL Server 2012 installation on the first node |
| 1.40    | 2013-11-04 | Updated version  
Section [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 for an Existing High-Availability SAP System]]: Minor changes in upgrade procedure |
| 1.30    | 2013-06-14 | Updated version  
Additional information about SNAC client added |
| 1.20    | 2013-05-24 | Updated version  
Section General Requirements and Restrictions: Microsoft .NET Framework 3.5 (x64) information added for SQL Server 2012 |
| 1.10    | 2013-10-29 | Updated version  
- Section [[unresolved text-ref: Clustering the SQL Server 2012 Database Server Software]]: Changes in 1st step of Procedure and in table [[unresolved text-ref: Input for the SQL Server 2012 Installation on the First Node]] column [[unresolved text-ref: Server Configuration]]  
- Sections [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 for an Existing Non-High-Availability SAP System]] and [[unresolved text-ref: Upgrading SQL Server to SQL Server 2012 Failover Cluster]]: New location for SAP tools for MS SQL Server (see SAP Note 683447) |
| 1.00    | 2012-06-28 | Initial version |
1 Introduction

This document describes the upgrade to or installation of SQL Server 2012 for an SAP system.

**Caution**

This guide contains very customized configuration settings only used by some SAP applications, not all SAP applications. Following the steps in this guide for applications other than which it is intended will cause problems, and most likely errors, in other applications. Please see General Requirements and Restrictions [page 6] for more information.

You have the following options to use SQL Server 2012 in an SAP environment:

- You upgrade an existing SQL Server 2005, SQL Server 2008 or SQL Server 2008 R2 instance that is already running an SAP system to SQL Server 2012. SAP does not support any upgrade method other than that described here. For more information, see Upgrading SQL Server to SQL Server 2012 for an Existing SAP System [page 10].

**Caution**

Before you upgrade SQL Server 2005, SQL Server 2008 or SQL Server 2008 R2 to SQL Server 2012, make sure that you import the required support package stacks [page 6] to your system. Otherwise, the upgraded system does not function correctly with SQL Server 2012.

- You install SQL Server 2012 for a new SAP system. For more information, see Installing SQL Server 2012 for a New SAP System [page 21].

You have the following options to install SQL Server 2012 for a new SAP system.

  - You install SQL Server 2012 for a non-high-availability (non-HA) SAP system
    
    You can either install the SQL Server database software using a special script named SQL4SAP provided by SAP, or you can install it manually.

    **Note**

    We highly recommend that you perform any new installation of an SQL Server 2012 instance for a non-HA system with the SQL4SAP script. The script is located on the SQL Server 2012 RDBMS medium that is shipped with the SAP products.

  - You install SQL Server 2012 for a high availability (HA) SAP system

    **Note**

    If you want to install the SQL Server database software for an HA system, you must install the SQL Server database software manually. You cannot use the SQL4SAP script.

- You perform a system copy of an SAP system. For more information, see SAP Note 1676665.
2 General Requirements and Restrictions

Required SAP Notes

Read the following SAP notes before using SQL Server 2012:

<table>
<thead>
<tr>
<th>Note Number</th>
<th>Title</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1676665</td>
<td>Setting Up Microsoft SQL Server 2012</td>
<td>Provides the latest information about the upgrade to and installation of SQL Server 2012.</td>
</tr>
<tr>
<td>1651862</td>
<td>Release planning for Microsoft SQL Server 2012</td>
<td>Provides release planning information about SQL Server 2012, including the minimum SAP support package stack levels</td>
</tr>
<tr>
<td>1252970</td>
<td>Triggers on SAP tables</td>
<td>In general, SAP does not support any triggers on SAP tables in SQL Server. If, due to application-specific requirements, you have to use triggers on SAP tables in SQL Server, follow the guidelines stated in this SAP note.</td>
</tr>
<tr>
<td>1581700</td>
<td>PAGE compression support for DDIC &amp; Hom./Het. System Copy</td>
<td>Provides SQL Server PAGE compression support for tables and indexes during a homogenous or heterogeneous system copy using the R3Load method</td>
</tr>
<tr>
<td>1488135</td>
<td>Database compression for SQL Server</td>
<td>Describes how to implement ROW and PAGE compression for SQL Server 2008 (and higher) for SAP products based on SAP Application Server ABAP</td>
</tr>
</tbody>
</table>

SAP Business Warehouse (SAP BW)-Specific SAP Notes

<table>
<thead>
<tr>
<th>Note Number</th>
<th>Title</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1654613</td>
<td>SQL Server Parallelism for SAP BW</td>
<td>–</td>
</tr>
<tr>
<td>1771177</td>
<td>SQL Server 2012 column-store support for SAP BW</td>
<td>–</td>
</tr>
<tr>
<td>1951490</td>
<td>SQL Server Column-Store for SAP BW Aggregates</td>
<td>–</td>
</tr>
</tbody>
</table>
Required Support Package Stacks

For more information about the minimum support package stack levels to run on SQL Server 2012 for your SAP system, see SAP note 1651862.

**Note**

We recommend that you apply all available SAP_BASIS support package stacks before using SQL Server 2012 in a production system.

General Requirements and Restrictions for Using SQL Server 2012

Note the following general requirements and restrictions, which both apply when using SQL Server 2012 for a non-HA or a HA SAP system:

- You cannot upgrade SQL Server 2000 to SQL Server 2012 directly. You can neither attach an SQL Server 2000 database to SQL Server 2012. This means that you must perform a two-step upgrade using SQL Server 2005 or SQL Server 2008 (R2).
- SQL Server 2012 is supported on Windows Server 2008 and higher
- SQL Server 2012 is only supported on Windows x64.
- SAP releases prior to SAP NetWeaver 7.0 are not supported to run on SQL Server 2012. For more information, see SAP Note 1676665.
- Not all combinations of SQL Server 2012 and Windows are supported by all SAP products. For up-to-date information on supported releases of SAP systems with SQL Server 2012, see the *Product Availability Matrix (PAM)* at: http://support.sap.com/pam
- You must only use the SAP upgrade and installation tools according to the instructions and for the purposes described in the SAP upgrade and installation documentation. Improper use of the SAP upgrade and installation tools can damage files and already upgraded or installed systems.
- Only the SQL Server 2012 upgrade and installation procedures described in this guide have been tested by SAP. All other upgrade and installation procedures described in the SQL Server Books Online have not been tested by SAP.
- When installing or upgrading to SQL Server 2012, make sure that you have enough free disk space available on the system drive for:
  - .Net Framework
  - SQL Server client tools
  - SQL Server instance
  - Temporary space during the installation
The required disk space depends on the type of SQL Server components already installed or to be installed. It also depends on the system. You might require up to 6 GB free disk space on the system drive.

**Microsoft .NET Framework 3.5 (x64)**
Windows Server 2012:
Enable the .NET Framework 3.5 SP1 feature as follows:
Open a command prompt with administrative rights and run the following command:
```
DISM /online /enable-feature /featurename:netfx3 /all /source:<drive>:\sources\sxs /LimitAccess
```
where <drive> is the drive pointing to the Windows Server 2012 installation media.

Windows Server 2008 R2:
If the .NET Framework 3.5 SP1 feature is not installed in your system, install it as follows:
1. Log on as local administrator.
2. Enter the following command:
   ```
   DISM /online /enable-feature /featurename:NetFx3
   ```
3. Reboot your system.

Windows Server 2008:
Install or update the Microsoft .Net Framework as follows:
1. Log on as local administrator.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. For x64, run the executable dotNetFx35.exe, which is located in the prerequisites directory
5. After the installation of the .Net Framework is finished, reboot your system.

Microsoft .NET Framework 3.5 (x64) SP1 Update
This update is automatically installed if you apply the latest Windows updates to your system. To install this update, proceed as follows:
1. Log on as local administrator.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. Double-click the file Windows6.0-Kb956250.x64.msu, which is located in the prerequisites directory.
4. If required, reboot your system.

Windows Power Shell
SQL Server 2012 requires the Windows feature Power shell. On Windows Server 2008 R2, this feature is available when you install the operating system. On Windows Server 2008, you need to install this in your server if this feature is not already installed in your system. But this feature is installed in your system automatically if you install Service Pack 2 and the latest Windows updates.
1. Log on as local administrator.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. Double-click the file Windows6.0-Kb968930-x64.msu, which is located in the prerequisites directory.
4. To install the Update for windows (KB968930), click OK.
5. If required, reboot your system.

Additional Requirements and Restrictions for Using SQL Server 2012 in a High-Availability SAP System
In addition to the general requirements and restrictions listed above, the following requirements and restrictions apply for the upgrade to and installation of SQL Server 2012 in a high-availability (HA) system.
Note

For a complete list of the restrictions and more information, see:
SQL Server 2012 Books Online at:

- Make sure that you have not applied NTFS compression to the disk where you install the SQL Server software.
- Make sure that you have not installed anti-virus software on your Microsoft failover cluster. For more information, see the Microsoft KB article *Antivirus software that is not cluster-aware may cause problems with Cluster Services*, which is available at: http://support.microsoft.com/kb/250355/en-us.
- Check the system logs of the nodes for any errors before starting the installation.
- For all hardware and software requirements for installing SQL Server, check the following link http://msdn.microsoft.com/en-us/library/ms143506(v=sql.110).aspx.
3 Upgrading SQL Server to SQL Server 2012 for an Existing SAP System

3.1 Introduction

The following sections describe how to upgrade SQL Server 2005, SQL Server 2008, or SQL Server 2008 R2 to SQL Server 2012.

⚠️ Caution

The upgrade procedure in this document is only valid if the source SQL Server database software was installed by the SAP script or manually as described in the relevant Upgrade and Installation Guide.

3.2 General Prerequisites for Upgrading SQL Server to SQL Server 2012

If you want to upgrade SQL Server 2005 or SQL Server 2008 (R2) for an existing SAP system, you must meet the following prerequisites:

- You use an SAP system based on SAP NetWeaver with the minimum recommended support package stack level for SQL Server 2012.
- If your SQL Server release is SQL Server 2008 R2, make sure that you apply SP1 to the system before you upgrade to SQL Server 2012.
- If your SQL Server release is SQL Server 2008, make sure that you apply SP2 to the system before you upgrade to SQL Server 2012.
- If your SQL Server release is SQL Server 2005, make sure that you apply SP4 to the system before you upgrade to SQL Server 2012.
- You have imported the latest SAP kernel patches, dbsl library, and support package stacks, making sure that you apply at least the minimum level mentioned above. You can find these patches on SAP Service Marketplace. For more information, see SAP Note 19466.
- If you use a Java system, you have updated the JDBC driver as described in SAP Note 639702.
- If you installed the SQL Server 2005 or SQL Server 2008 (R2) database software with the SQL4SAP script or manually, only the SQL Server features that are required for the operation of the SAP application were installed. If you installed additional SQL Server features, for example, Analysis Services, Report Services, Integration Services and SQL Server Replication, check the SQL Server Books Online for any upgrade restrictions and steps.
- You have backed up your SQL Server database.
- You have shut down the SAP system.
3.3 Upgrading SQL Server to SQL Server 2012 for an Existing Non-High-Availability SAP System

Use

This section provides information about the upgrade of SQL Server 2005 or SQL Server 2008 (R2) system to SQL Server 2012 in an existing non-high-availability system.

Prerequisites

You have met the general prerequisites mentioned above.

Procedure

1. Upgrade the SQL Server 2005 or SQL Server 2008 (R2) instance to SQL Server 2012 as follows:
   1. Log on to the host as a local administrator.
   2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
   3. Change to the directory:
      x86-x64\EnterpriseEdition.
   4. Start the installation program with one of the following:
      ○ setup.exe
         (if you want to upgrade to the SQL Server RTM build)
      ○ setup.exe /Action=Upgrade /UpdateSource="<Drive>:\<Upgrade_Source_Directory>"
         where <Upgrade_Source_Directory> is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is
a_zip.exe file. Make sure that you unzip the package and copy the executable .exe to the Update Source directory.

**Note**

You can upgrade your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in SAP Note 62988, or with all the latest Service Packs and currently released Cumulative builds for the SQL Server product you want to upgrade. For more information on how to set up the UpdateSource directory, see [http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx](http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx).

5. Enter the required information as specified in the table below:

**Note**

The installation writes the log files to the directory `%ProgramFiles%\Microsoft SQL Server \110\Setup Bootstrap\LOG\YYYYMMDD_HHMM`. You find the summary of the setup log in Summary.txt in the same directory.

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| **SQL Server Installation Center** | 1. Choose *Installation*.  
2. Select *Upgrade from SQL Server 2005, SQL Server 2008 or SQL Server 2008 R2*. |
<p>| <strong>Setup Support Rules</strong>       | If there are no failed operations or warnings, choose <em>OK</em>. Otherwise, first check the failed operations and warnings. |
| <strong>Product Key</strong>               | If this window appears, enter the product key and choose <em>Next</em>.     |
| <strong>License Terms</strong>             | Accept the Microsoft software license terms and choose <em>Next</em>.       |
| <strong>Install Setup Files</strong>       | Choose <em>Install</em>.                                                     |
| <strong>Setup Support Rules</strong>       | If there are no failed operations or warnings, choose <em>Next</em>. Otherwise, first check the failed operations and warnings. |
| <strong>Select Instance</strong>           | Select the SQL Server instance you want to upgrade and choose <em>Next</em>. |</p>
<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select Features</td>
<td>Choose Next. You cannot change the SQL Server features to be upgraded.</td>
</tr>
<tr>
<td>Instance Configuration</td>
<td>Specify the instance ID for the instance of SQL Server. By default, the instance name is used as the instance ID. Choose Next.</td>
</tr>
<tr>
<td>Disk Space Requirements</td>
<td>Review the disk space requirements and choose Next.</td>
</tr>
<tr>
<td>Server Configuration</td>
<td>Leave the default values unchanged and choose Next.</td>
</tr>
<tr>
<td>Full-Text Upgrade</td>
<td>Select your option (see SQL Server Books Online for additional information) and choose Next.</td>
</tr>
<tr>
<td>Error Reporting</td>
<td>Select the required error reporting and choose Next.</td>
</tr>
<tr>
<td>Upgrade Rules</td>
<td>If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings.</td>
</tr>
<tr>
<td>Ready to Upgrade</td>
<td>Check the summary list and choose Upgrade.</td>
</tr>
<tr>
<td>Upgrade Progress</td>
<td>Displays the upgrade progress</td>
</tr>
<tr>
<td>Complete</td>
<td>After the upgrade has been completed, the setup displays the status and a link to the log files... Choose Close to finish the installation.</td>
</tr>
</tbody>
</table>

6. When you have finished the upgrade, check that the TCP/IP protocol in the SQL Server Configuration Manager is enabled.
If required, enable it as follows:

1. Choose Start ➔ All Programs ➔ Microsoft SQL Server 2012 ➔ Configuration Tools ➔ SQL Server Configuration Manager.
2. Expand SQL Server Network Configuration and select one of the following:
   ○ For a default instance, select Protocols for MSSQLServer
   ○ For a named instance, select Protocols for <SAPSID>
3. In the right-hand pane, under Protocol Name, right-click TCP/IP, and select Enable.

7. Restart SQL Server.

8. If you upgraded SQL Server to the RTM build, install the latest Service Pack and Cumulative Updates. For more information, see SAP Note 62988.

2. Run the SAP tools for MS SQL Server.
The SAP tools for MS SQL Server perform the post-upgrade steps that are required for SAP ABAP products running on SQL Server 2012.
For more information about how to use and where to download them, see SAP Note 683447.

3. Start the SAP system.
5. Open a new query window and execute the following commands:
   ```sql
   use <SID> -- where <SID> is your SAP database
   go
   EXEC sp_updatestats
   go
   ```
   It takes some time to replace the old SQL Server index statistics with new SQL Server 2012 statistics. You can execute this while the SAP system is online.
6. Change the page verify option with the following commands:
   ```sql
   use master
   go
   alter database <SID> SET PAGE_VERIFY CHECKSUM;
   go
   ```
7. Set the configuration for the SQL Server Agent [page 34].
8. If your system landscape is distributed and SAP application instances are installed on hosts other than the database instance host, you need to install SQL Server 2012 SNAC client on these hosts as described in Installing the SQL Server 2012 Native Client Software Manually [page 32].

3.4 Upgrading SQL Server Failover Cluster to SQL Server 2012 Failover Cluster

Use

This section provides information about the upgrade of SQL Server 2005 or SQL Server 2008 (R2) failover cluster to SQL Server 2012 failover cluster in an existing high-availability (HA) system.

⚠️ Caution

As of SQL Server 2008, SAP no longer supports 32-bit database servers or 32 bit application servers. Therefore, we do not support upgrading a 32-bit SQL Server 2005 database server to SQL Server 2012.

Prerequisites

- You have met the general prerequisites.
- You disable all trace flags set in the SQL Server.
- You check that the fail over of the existing SQL Server installed in your cluster is working by moving the SQL Server group between the cluster nodes before you perform the upgrade to SQL Server 2012.
- You review the following sections in SQL Server Books Online:
Preinstallation Checklist

- Make sure that SQL Server fails over successfully in your current release before you start the upgrade of SQL Server.

Procedure

After having met all prerequisites on all nodes, start the failover cluster upgrade of the SQL Server instance to SQL Server 2012.

Perform the following steps on all cluster nodes, beginning with the passive node:

1. Log on to the host as a domain administrator user on all nodes.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. Move all the cluster resources and groups to the first (active) cluster node.
4. Change to the directory `x86-x64\EnterpriseEdition`.
5. Start the installation program with one of the following:
   - `setup.exe` (if you want to upgrade to the SQL Server RTM build)
   - `setup.exe /Action=Upgrade /UpdateSource="<Drive>:\<Upgrade_Source_Directory>"`
     where `<Upgrade_Source_Directory>` is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is a `.zip` file. Make sure that you unzip the package and copy the executable `.exe` to the `UpdateSource` directory.

   **Note**
   
   You can upgrade your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in [SAP Note 62988](https://support.sap.com/notes), or with all the latest Service packs and currently released Cumulative builds for the SQL Server product you want to upgrade. For more information on how to set up the `UpdateSource` directory, see [http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx](http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx).

6. Enter the required information as specified in the table below.

   **Note**
   
   The installation writes the log files to the directory `%ProgramFiles%\Microsoft SQL Server 110\Setup Bootstrap\LOG\YYYYMMDD_HHMM`. You can find the summary of the setup log in `Summary.txt` in the same directory.
## Input for the SQL Server 2012 Upgrade

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| SQL Server Installation Center       | 1. Choose Installation.  
| **Note**                             | This window does not appear, if you run setup.exe with the parameters /Action and /UpdateSource. |
| Setup Support Rules                   | If there are no failed operations or warnings, choose OK. Otherwise, first check the failed operations and warnings. |
| Product Key                          | If this window appears, enter the product key and choose Next.                                  |
| License Terms                         | Accept the Microsoft software license terms and choose Next.                                   |
| Product Updates                       | This screen only appears if SQL Server product updates are available. If product updates are available, the setup downloads the product updates. |
| Install Setup Files                   | Choose Install.                                                                                 |
| Setup Support Rules                   | If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings. |
| Select Instance                       | Select the SQL Server instance you want to upgrade and choose Next.                             |
| Select Features                       | Choose Next.  
You cannot change the SQL Server features to be upgraded.                                       |
| Instance Configuration                | Specify the instance ID for the instance of SQL Server.  
By default, the instance name is used as the instance ID.  
Choose Next.                                                                                   |
| Disk Space Requirements               | Review the disk space requirements and choose Next.                                             |
| Server Configuration                  | Leave the default values unchanged and choose Next.                                             |
| Full-Text Upgrade                     | Select your option (see SQL Server Books Online for additional information) and choose Next.    |
Window | Input
---|---
**Error Reporting** | Select the required error reporting and choose Next. 

**Upgrade Rules** | If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings. 

**Cluster Upgrade Report** | Displays the upgrade status of the failover cluster nodes 

**Ready to Upgrade** | Check the summary list and choose Upgrade. 

**Upgrade Progress** | Displays the upgrade progress while adding the node to the selected failover cluster. 

**Cluster Upgrade Report** | Displays the upgrade status of the failover cluster nodes after the upgrade 

**Complete** | After the upgrade has been completed, the setup displays the status and a link to the log files... Choose Close to finish the installation. 

7. Make sure that the upgraded node is one of the possible owners of the SQL Server applications or role. To check this property, perform the following steps:

- **Windows Server 2008 R2**
  - In the Failover Cluster Manager, double-click SQL Server and SQL Server (Instance).
  - In the right-side window, right-click the resource in the Server Name field and choose Properties.
  - In the Advanced Policies tab, check that the upgraded node is on the list of the possible owners. If not, check the box for the possible owners and choose OK.

- **Windows Server 2012 (R2)**
  - In the Failover Cluster Manager, select the Roles node and select SQL Server and SQL Server (Instance).
  - In the right-side bottom window, right-click the resource in the Server Name field and choose Properties.
  - In the Advanced Policies tab, check that the upgraded node is on the list of the possible owners. If not, check the box for the possible owners and choose OK.

8. In the Failover Cluster Manager, move the SQL Server to the upgraded node. After the SQL Server is moved successfully to the upgraded node, complete the upgrade on the second node.

Start the installation program with one of the following:

- setup.exe
  (if you want to upgrade to the SQL Server RTM build)

- setup.exe /Action=Upgrade /UpdateSource="<Drive>:\<Upgrade_Source_Directory>"
  where <Upgrade_Source_Directory> is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is a _zip.exe file. Make sure that you unzip the package and copy the executable .exe to the UpdateSource directory.
You can upgrade your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in SAP Note 62988, or with all the latest Service packs and currently released Cumulative builds for the SQL Server product you want to upgrade. For more information on how to set up the UpdateSource directory, see http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx.

Make sure that you have installed or checked on the other node(s) all the prerequisites described above.

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| SQL Server Installation Center | 1. Choose Installation.  
| Setup Support Rules           | If there are no failed operations or warnings, choose OK. Otherwise, first check the failed operations and warnings. |
| Product Key                   | If this window appears, enter the product key and choose Next. |
| License Terms                 | Accept the Microsoft software license terms and choose Next. |
| Product Updates               | This screen only appears if SQL Server product updates are available.  
If product updates are available, the setup downloads the product updates. |
<p>| Install Setup Files           | Choose Install. |
| Setup Support Rules           | If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings. |
| Select Instance               | Select the SQL Server instance you want to upgrade and choose Next. |</p>
<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select Features</td>
<td>Choose Next. You cannot change the SQL Server features to be upgraded.</td>
</tr>
<tr>
<td>Instance Configuration</td>
<td>Specify the instance ID for the instance of SQL Server. By default, the instance name is used as the instance ID. Choose Next.</td>
</tr>
<tr>
<td>Disk Space Requirements</td>
<td>Review the disk space requirements and choose Next.</td>
</tr>
<tr>
<td>Server Configuration</td>
<td>Leave the default values unchanged and choose Next.</td>
</tr>
<tr>
<td>Full-Text Upgrade</td>
<td>Select your option (see SQL Server Books Online for additional information) and choose Next.</td>
</tr>
<tr>
<td>Error Reporting</td>
<td>Select the required error reporting and choose Next.</td>
</tr>
<tr>
<td>Upgrade Rules</td>
<td>If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings.</td>
</tr>
<tr>
<td>Cluster Upgrade Report</td>
<td>Displays the upgrade status of the failover cluster nodes</td>
</tr>
<tr>
<td>Ready to Upgrade</td>
<td>Check the summary list and choose Upgrade.</td>
</tr>
<tr>
<td>Upgrade Progress</td>
<td>Displays the upgrade progress while adding the node to the selected failover cluster.</td>
</tr>
<tr>
<td>Cluster Upgrade Report</td>
<td>Displays the upgrade status of the failover cluster nodes after the upgrade</td>
</tr>
<tr>
<td>Complete</td>
<td>After the upgrade has been completed, the setup displays the status and a link to the log files... Choose Close to finish the installation.</td>
</tr>
</tbody>
</table>

9. If the latest Service Pack and the Cumulative Update are not installed during the initial upgrade, install them after the upgrade as described below.

For more information about the required Service Packs and Cumulative Update, see SAP Note 62988. Perform the following steps to install the SQL Server updates:

1. Install the Service Pack and Cumulative Update on the passive node.
2. Move the SQL Server group to the second node that was updated.
3. Verify that all SQL Server resources are online on the currently active node.
4. Install the Service Pack and Cumulative Update on the passive node.

10. Run the SAP tools for MS SQL Server.

The SAP tools for MS SQL Server perform the post-upgrade steps that are required for SAP ABAP products running on SQL Server 2012.

For more information about how to use and where to download them, see SAP Note 683447.

11. Start the SAP system.
12. Connect with a database administrator logon to the SQL Server 2012 Management Studio and execute the following commands:

```sql
use <SID> -- where <SID> is your SAP database
go
EXEC sp_updatestats
go
```

It takes some time to replace the old SQL Server index statistics with new SQL Server 2012 statistics. You can execute this while the SAP system is online.

13. Change the page verify option with the following commands:

```sql
use master
go
alter database <SID> SET PAGE_VERIFY CHECKSUM;
go
```

14. Test the failover of the SQL Server group between the cluster nodes.

Test the connection to the failover cluster from a SQL Server Management Studio query window installed on a server (which is not part of the cluster) after moving the SQL Server group between the nodes.

15. Set the configuration for the SQL Server Agent [page 34].

16. If your system landscape is distributed and SAP application instances are installed on hosts other than the database instance host, you need to install the SQL Server 2012 SNAC client on these hosts as described in Installing the SQL Server 2012 Native Client Software Manually [page 32].
4 Installing SQL Server 2012 for a New SAP System

4.1 Introduction

The following sections describe how to install the SQL Server 2012 database software for a new SAP system. The SQL Server software has to be installed on each host in the system where you intend to set up an SAP instance. Depending on the type of host involved, you either have to install the software for the database server or client.

4.2 Installing the SQL Server Database Software Automatically with SQL4SAP

For more information about the installation of SQL Server 2012 with SQL4SAP, see SAP Note 1684545. You find the SQL4SAP.BAT script on the SQL Server 2012 RDBMS medium, as well as the tool documentation SQL4SAP_docu.pdf.

4.3 Installing the SQL Server 2012 Database Server Software Manually

Use

You have to install the SQL Server 2012 database server software on the database host.

Prerequisites

Before you install SQL 2012, make sure that that you have installed or updated all the required prerequisites as described above.
Procedure

1. Log on as a user who is a member of the local Administrators group.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. Change to the directory x86-x64\EnterpriseEdition on the RDBMS medium.
4. Start the installation program with one of the following:
   - setup.exe
     (if you want to install the SQL Server RTM build)
   - setup.exe /Action=Install /UpdateSource="<Drive>:\<Upgrade_Source_Directory>"
     where <Upgrade_Source_Directory> is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is a _zip.exe file. Make sure that you unzip the package and copy the executable .exe to the UpdateSource directory.
   
   **Note**
   You can install your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in SAP Note 62988, or with all the latest Service packs and currently released Cumulative builds for the SQL Server product you want to install. For more information on how to set up the UpdateSource directory, see http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx.

5. Enter the required information as specified in the table below.

**Note**
The installation writes the log files to the directory %ProgramFiles%\Microsoft SQL Server \110\Setup Bootstrap\LOG\<YYYYMMDD_HHMM>. You find the summary of the setup log in Summary.txt in the same directory.

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| SQL Server Installation Center| 1. Choose Installation.  
  2. Select New SQL Server standalone installation or add features to an existing installation. |
  
  **Note**
  This window does not appear, if you run setup.exe with the parameters /Action and /UpdateSource.

| Setup Support Rules | If there are no failed operations or warnings, choose Next. 
  Otherwise, first check the failed operations or warnings. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Key</td>
<td>If this window appears, enter the product key and choose Next.</td>
</tr>
<tr>
<td>Window</td>
<td>Input</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>License Terms</td>
<td>Accept the Microsoft software license terms and choose Next.</td>
</tr>
<tr>
<td>Product Updates</td>
<td>Displays the latest available SQL Server updates, if available.</td>
</tr>
<tr>
<td></td>
<td>The setup downloads the product updates.</td>
</tr>
<tr>
<td>Install Setup Files</td>
<td>Choose Install.</td>
</tr>
<tr>
<td>Setup Support Rules</td>
<td>If there are no failed operations or warnings, choose Next.</td>
</tr>
<tr>
<td></td>
<td>Otherwise, first check the failed operations or warnings.</td>
</tr>
<tr>
<td>Setup Role</td>
<td>Select SQL Server Feature installation and choose Next.</td>
</tr>
<tr>
<td>Feature Selection</td>
<td>1. Select the following features:</td>
</tr>
<tr>
<td></td>
<td>○ Database Engine Services</td>
</tr>
<tr>
<td></td>
<td>○ Full-Text and Semantic Extractions for Search</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools Connectivity</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools Backward Compatibility</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools SDK</td>
</tr>
<tr>
<td></td>
<td>○ Documentation Components</td>
</tr>
<tr>
<td></td>
<td>○ Management Tools – Basic</td>
</tr>
<tr>
<td></td>
<td>○ Management Tools – Complete</td>
</tr>
<tr>
<td></td>
<td>○ SQL Client Connectivity SDK</td>
</tr>
<tr>
<td></td>
<td>For shared feature directory and shared feature directory (x86), leave the default value paths</td>
</tr>
<tr>
<td></td>
<td>The path specified for the shared components must be an absolute path.</td>
</tr>
<tr>
<td></td>
<td>The folder must not be compressed or encrypted. Mapped drives are also not supported.</td>
</tr>
<tr>
<td></td>
<td>2. Choose Next.</td>
</tr>
<tr>
<td>Instance Rules</td>
<td>Setup checks the system state of your computer. If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings.</td>
</tr>
<tr>
<td>Instance Configuration</td>
<td>1. Specify the instance name and ID you want to install.</td>
</tr>
<tr>
<td></td>
<td>Since the configuration of SQL Server is easier to handle, we recommend that you install a Default instance.</td>
</tr>
<tr>
<td></td>
<td>If you want to install a Named instance, enter the &lt;SAPSID&gt; in the Named instance field.</td>
</tr>
<tr>
<td></td>
<td>2. Leave the Instance ID and Instance root directory field to the default values.</td>
</tr>
<tr>
<td></td>
<td>3. Choose Next.</td>
</tr>
<tr>
<td>Disk Space Requirements</td>
<td>Review the disk space requirements and choose Next.</td>
</tr>
</tbody>
</table>
1. In the Service Accounts tab, perform the following steps:
   1. Enter the Local System accounts
      For the English Windows version, the user name starts with NT Authority, for example NT Authority\System.
   2. Set the Startup Type for the SQL Server Agent to Automatic.
2. In the Collation tab, for the Database Engine, set the collation to SQL_Latin1_General_CP850_BIN2.
   To change the collation, use the Customize field.
3. When you have made all entries, choose Next.

1. In the Server Configuration tab, select one of the following authentication modes:
   ○ Windows Authentication Mode
      We recommend that you use this mode for an ABAP system. With this mode the sa login is created, but cannot be used.
   ○ Mixed Mode (Windows authentication and SQL Server authentication)
      This mode is required for a Java or ABAP+Java system.
      If you select this mode, you have to set the password for the sa login.
      SAPinst automatically changes the authentication mode into Mixed Mode when installing a Java system.
2. If you use Mixed Mode, enter and confirm the password for the built-in SQL Server system administrator account.
   The password for the sa login must comply with the Windows password policy.
3. To specify an SQL Server administrator, choose Add
   In the Select Users or Groups window, choose one Windows account as local system administrator.
   SAP strongly recommends that you enter Administrators in the Select Users or Groups window.
4. Choose Next.

Select the required error reporting and choose Next.
If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings.
Check the summary list and select Install.
Displays the installation progress.
After the installation has been completed, the setup displays the status and a link to the log files.
choose Close to finish the installation.
6. When you have finished the installation, enable the TCP/IP protocol in the SQL Server Configuration Manager as follows:

1. Choose Start > All Programs > Microsoft SQL Server 2012 > Configuration Tools > SQL Server Configuration Manager.
2. Expand SQL Server Network Configuration and select one of the following:
   ○ For a default instance, select Protocols for MSSQLServer
   ○ For a named instance, select Protocols for <SAPSID>
3. In the right-hand pane, under Protocol Name, right-click TCP/IP, and select Enable.

7. Restart SQL Server.
8. Install the latest Service Pack and Cumulative Update. For more information, see SAP Note 62988.
9. Set the configuration for the SQL Server Agent [page 34].

4.4 Installing SQL Server AlwaysOn for a New SAP System

AlwaysOn is a new feature of SQL Server 2012 (and higher) for high-availability and disaster recovery. The AlwaysOn feature is an extension to the principles of SQL Server Database Mirroring. However, it includes enhancements that go beyond the existing high-availability solutions that Database Mirroring and Database Replication offer.

Context

Follow the manual SQL Server installation(Non-HA) steps to install SQL Server in all the nodes with the following input selection for the screens below.

Procedure

1. In the Feature Selection screen, select only the following features:
   ○ Database Engine Services
   ○ Full Text and Semantic Extractions for Search
   ○ Client Tools Connectivity
   ○ Client Tools Backwards Compatibility
   ○ Client Tools SDK
   ○ Documentation Components
   ○ Management Tools – Basic
   ○ Management Tools – Complete
   ○ SQL Client Connectivity SDK
2. In the Server Configuration > Service Accounts Screen, enter the local system account or domain account based on type of authentication you want to use for your Database mirroring endpoints.
4.5 Installing the SQL Server 2012 Failover Cluster

Use

This section describes how to install the SQL Server 2012 database server software for a high-availability system with Microsoft failover clustering.

The SQL Server 2012 database server software must be installed on the database host.

**Note**

The installation writes the log files to the directory `%ProgramFiles%\Microsoft SQL Server 110\Setup Bootstrap\LOG\<YYYYMMDD_HHMM>`. You can find the summary of the setup log in `Summary.txt` in the same directory.

To install the client software for an application server, see [Installing the SQL Server 2012 Native Access Client Software Manually](page 32).

Prerequisites

Before you install SQL Server 2012, make sure that you have installed or updated all the required prerequisites as described above.

Procedure

1. Log on all cluster nodes as a domain user who is a member of the local administrators group with the permissions to log on as a service and to act as part of the operating system.
2. Move all the cluster resources and groups to the first cluster node.
3. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
4. Change to the directory:
   ```
   x86-x64\EnterpriseEdition.
   ```
5. Start the installation program on the first cluster node with one of the following:
   ```
   - setup.exe
   - setup.exe /Action=InstallFailoverCluster/UpdateSource=<Drive>:\<Upgrade_Source_Directory>"
   ```
where `<Upgrade_Source_Directory>` is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is a `.zip.exe` file. Make sure that you unzip the package and copy the executable `.exe` to the `UpdateSource` directory.

**Note**

You can install your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in SAP Note 62988, or with all the latest Service packs and currently released Cumulative builds for the SQL Server product you want to install. For more information on how to set up the `UpdateSource` directory, see [http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx](http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx).

6. Enter the required information as specified in the table below.

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| **SQL Server Installation Center**         | 1. Choose `Installation`.  
                                          | 2. Select `New SQL Server failover cluster installation`.             |
| **Setup Support Rules**                     | If there are no failed operations or warnings, choose `Next`.         
                                          | Otherwise, first check the failed operations or warnings.             |
| **Product Key**                             | If this window appears, enter the product key and choose `Next`.      |
| **License Terms**                           | Accept the Microsoft software license terms and choose `Next`.        |
| **Product Updates**                         | Displays the latest available SQL Server updates, if available.      
                                          | The setup downloads the product updates.                             |
| **Install Setup Files**                     | Choose `Install`.                                                     |
| **Setup Support Rules**                     | If there are no failed operations or warnings, choose `Next`.         
<pre><code>                                      | Otherwise, first check the failed operations or warnings.             |
</code></pre>
<p>| <strong>Setup Role</strong>                              | Select <code>SQL Server Feature installation</code> and choose <code>Next</code>.           |</p>
<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feature Selection</strong></td>
<td>1. Select the following features:</td>
</tr>
<tr>
<td></td>
<td>○ Database Engine Services</td>
</tr>
<tr>
<td></td>
<td>○ SQL Server Replication</td>
</tr>
<tr>
<td></td>
<td>○ Full Text and Semantic Extractions for Search</td>
</tr>
<tr>
<td></td>
<td>○ Data Quality Services</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools Connectivity</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools Backwards Compatibility</td>
</tr>
<tr>
<td></td>
<td>○ Client Tools SDK</td>
</tr>
<tr>
<td></td>
<td>○ Documentation Components</td>
</tr>
<tr>
<td></td>
<td>○ Management Tools - Basic</td>
</tr>
<tr>
<td></td>
<td>○ Management Tools - Complete</td>
</tr>
<tr>
<td></td>
<td>○ SQL Client Connectivity SDK</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Note" /></td>
</tr>
<tr>
<td></td>
<td>In a failover cluster installation, the features SQL Server Replica­</td>
</tr>
<tr>
<td></td>
<td>tion, Full Text and Semantic Extractions for Search, and Data Quality</td>
</tr>
<tr>
<td></td>
<td>Services are mandatory and you cannot deselect them.</td>
</tr>
<tr>
<td></td>
<td>For shared feature directory and shared feature directory (x86), lea­</td>
</tr>
<tr>
<td></td>
<td>ve the default value paths</td>
</tr>
<tr>
<td></td>
<td>The path specified for the shared components must be an absolute</td>
</tr>
<tr>
<td></td>
<td>path. The folder must not be compressed or encrypted. Mapped drives</td>
</tr>
<tr>
<td></td>
<td>are also not supported.</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Note" /></td>
</tr>
<tr>
<td></td>
<td><strong>2. Choose Next.</strong></td>
</tr>
<tr>
<td><strong>Feature Rules</strong></td>
<td>SQL Server setup runs setup rules based on the features you selected to validate your configuration.</td>
</tr>
<tr>
<td><strong>Instance Configuration</strong></td>
<td>1. Enter the SQL Server network name.</td>
</tr>
<tr>
<td></td>
<td>2. Select the instance type you want to install.</td>
</tr>
<tr>
<td></td>
<td>Since the configuration of SQL Server is easier to handle, we rec­</td>
</tr>
<tr>
<td></td>
<td>ommend that you install a Default instance.</td>
</tr>
<tr>
<td></td>
<td>If you want to install a Named instance, enter the &lt;SAPSID&gt; in the</td>
</tr>
<tr>
<td></td>
<td>Named instance field.</td>
</tr>
<tr>
<td></td>
<td>3. Leave the default values Instance ID and Instance root directory field to the default values.</td>
</tr>
<tr>
<td></td>
<td>4. Choose Next.</td>
</tr>
<tr>
<td><strong>Disk Space Requirements</strong></td>
<td>Review the disk space requirements and choose Next.</td>
</tr>
<tr>
<td><strong>Cluster Resource Group</strong></td>
<td>Specify the SQL Server cluster resource group and choose Next.</td>
</tr>
<tr>
<td><strong>Cluster Disk Selection</strong></td>
<td>1. Specify the shared disk to be included in the SQL Server resource cluster group.</td>
</tr>
<tr>
<td></td>
<td>2. Choose Next.</td>
</tr>
</tbody>
</table>
1. Specify the IP type and address.
2. If you do not have DHCP addresses, enter a static IP address and subnet mask.
3. Choose Next.

Server Configuration
1. In the Service Accounts tab, enter the domain accounts and password.
2. In the Collation tab, for the Database Engine, set the collation to SQL_Latin1_General_CP850_BIN2. To change the collation, use the Customize field.
3. When you have made all entries, choose Next.

Database Engine Configuration
1. In the Server Configuration tab, select one of the following authentication modes:
   ○ Windows Authentication Mode
     We recommend that you use this mode for an ABAP system. With this mode the sa login is created, but cannot be used.
   ○ Mixed Mode (Windows authentication and SQL Server authentication)
     This mode is required for a Java or ABAP+Java system. If you select this mode, you have to set the password for the sa login. SAPinst automatically changes the authentication mode into Mixed Mode when installing a Java system.
2. If you use Mixed Mode, enter and confirm the password for the built-in SQL Server system administrator account. The password for the sa login must comply with the Windows password policy.
3. To specify an SQL Server administrator, choose Add. In the Select Users or Groups window, choose one Windows account as local system administrator. SAP strongly recommends that you enter Administrators in the Select Users or Groups window.
4. Choose Next.

Error Reporting
Select the required error reporting and choose Next.

Cluster Installation Rules
If there are no failed operations or warnings, choose Next. Otherwise, first check the failed operations and warnings.

Ready to Install
Check the summary list and select Install.

Installation Progress
Displays the installation progress.

Complete
After the installation has been completed, the setup displays the status and a link to the log files. Choose Close to finish the installation.

7. When you have finished installing the SQL Server failover cluster on the first cluster node, complete the cluster installation by restarting the installation program on the second cluster node.
Start the installation program with one of the following:

- `setup.exe`  
  (if you want to install the SQL Server RTM build)
- `setup.exe /Action=Addnode /UpdateSource="<Drive>:<Upgrade_Source_Directory>"`
  where `<Upgrade_Source_Directory>` is the directory where the Service Packs (SPs) and Cumulative Updates (CUs) are copied. For the Cumulative Update package, the initial download is a `.zip.exe` file. Make sure that you unzip the package and copy the executable `.exe` to the `UpdateSource` directory.

**Note**
You can install your SQL Server database either with all Service Packs and Cumulative Updates as the minimum required build (SPs and CUs) as specified in [SAP Note 62988](http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx), or with all the latest Service Packs and currently released Cumulative builds for the SQL Server product you want to install. For more information on how to set up the `UpdateSource` directory, see [http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx](http://msdn.microsoft.com/en-us/library/hh231670(v=SQL.110).aspx).

8. Enter the required information as specified in the table below.

<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
</table>
| **SQL Server Installation Center**         | 1. Choose *Installation*.  
  2. Select *Add node to a SQL Server failover cluster cluster*.  
  **Note**  
  This window does not appear, if you run `setup.exe` with the parameters `/Action` and `/UpdateSource`. |
| **Setup Support Rules**                     | If there are no failed operations or warnings, choose *Next*.  
  Otherwise, first check the failed operations or warnings. |
| **Product Key**                             | If this window appears, enter the product key and choose *Next*.       |
| **License Terms**                           | Accept the Microsoft software license terms and choose *Next*.         |
| **Product Updates**                         | Displays the latest available SQL Server updates, if available.  
  The setup downloads the product updates. |
| **Install Setup Files**                     | Choose *Install*.                                                     |
| **Setup Support Rules**                     | If there are no failed operations or warnings, choose *Next*.  
  Otherwise, first check the failed operations or warnings. |
<p>| <strong>Cluster Node Configuration</strong>              | Select the instance name and choose <em>Next</em>.                           |
| <strong>Cluster Network Configuration</strong>           | Check the values and choose <em>Next</em>.                                   |</p>
<table>
<thead>
<tr>
<th>Window</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Accounts</td>
<td>Enter the password for the SQL Server and SQL Agent Services accounts and choose Next.</td>
</tr>
<tr>
<td>Error Reporting</td>
<td>Select the required error reporting and choose Next.</td>
</tr>
<tr>
<td>Add Node Rules</td>
<td>The system configuration checker runs one or more set of rules to validate your system configuration based on the selected features.</td>
</tr>
<tr>
<td>Ready to Add Node</td>
<td>Displays the selected options to add the node to the failover cluster. Check the options and select Install.</td>
</tr>
<tr>
<td>Add Node Progress</td>
<td>Displays the installation progress of the selected features when adding the node to the failover cluster.</td>
</tr>
<tr>
<td>Complete</td>
<td>After the installation has been completed, the setup displays the status and a link to the log files. Choose Close to finish the installation.</td>
</tr>
</tbody>
</table>

9. When you have finished, enable the TCP/IP protocol in the SQL Server Configuration Manager on all cluster nodes as follows:

1. Choose Start ➤ All Programs ➤ Microsoft SQL Server 2012 ➤ Configuration Tools ➤ SQL Server Configuration Manager
2. Expand SQL Server Network Configuration and select one of the following:
   ○ For a default instance, select Protocols for <SQL Server Instance Name>
   ○ For a named instance, select Protocols for <SAPSID>
3. In the right-hand pane, under Protocol Name, right-click TCP/IP, and choose Enable.

10. Restart SQL Server.

11. After the SQL Server 2012 failover installation has finished successfully on the second cluster node, make sure that you can fail over the SQL Server group between the nodes. Test the connection to the failover cluster from a SQL Server Management Studio query window installed on a server (which is not part of the cluster) after moving the SQL Server group between the nodes.

12. If the latest Service Pack and the Cumulative Update are not installed during the initial setup, install them after the setup has finished on both the nodes as described below.
   For more information about the required Service Packs and Cumulative Update, see SAP Note 62988. Perform the following steps to install the SQL Server updates:
   1. Install the Service Pack and Cumulative Update on the passive node.
   2. Move the SQL Server group to the second node that was updated.
   3. Verify that all SQL Server resources are online on the currently active node.
   4. Install the Service Pack and Cumulative Update on the passive node.

13. Test the failover of the SQL Server group between the cluster nodes.

14. After the installation of SQL Server Failover cluster, you need to add dependencies for SQL Server on the shared disks that are used for SAP Database files. To do so, perform the following steps:
   ○ Windows Server 2008 R2
     1. On the Services and Applications node, right-click the SQL Server or SQL Server(<NamedInstance>) application and select Add Storage.
2. In the Add Storage pop-up window, select the disk you want to move to the SQL Server application and choose OK.
   On the Services and Applications node, double-click the SQL Server or SQL Server(<NamedInstance>) application.
3. In the right-side window, right-click the SQL Server or SQL Server(<NamedInstance>) resource and take the SQL Server or SQL Server(<NamedInstance>) resource offline.
4. Right-click the SQL Server or SQL Server(<NamedInstance>) resource and select Properties.
5. In the Dependencies window, use the insert button and add the shared disks that are used to store the SAP database files with the AND operator.
6. Bring the SQL Server and SQL Server Agent resources online.
   ○ Windows Server 2012 (R2)
     1. On the Roles node, right-click the SQL Server or SQL Server(Instance) role, and select Add Storage.
     2. In the Add Storage pop-up window, select the disk you want to move to the SQL Server or SQL Server(Instance) role, and choose OK.
     3. On the Roles node, select the SQL Server or SQL Server(<NamedInstance>) resource.
     4. In the right-side bottom window, right-click the SQL Server or SQL Server(<NamedInstance>) resource and take the SQL Server or SQL Server(<NamedInstance>) resource offline.
     5. Right-click the SQL Server or SQL Server(<NamedInstance>) resource and select Properties.
     6. In the Dependencies window, use the insert button and add the shared disks that are used to store the SAP database files with the AND operator.
     7. Bring the SQL Server and SQL Server Agent resources online.
15. Set the configuration for the SQL Server Agent [page 34].

4.6 Installing the SQL Server 2012 Native Client Software Manually

Use

This section describes how to install the SQL Server 2012 Native Access Client (SNAC) software.

You have to install the SQL Server 2012 client software on all SAP application servers. It enables the communication between an application server and the database.

If there are updates to the SNAC DLLs in either a Service Pack (SP) or a Cumulative Update (CU), similarly an SP or CU needs to be running on each application server to make sure that the SNAC changes are applied consistently to the database server and to the application server.

Procedure

1. Log on as local administrator to the host where you want to install an application server.
2. Insert the SQL Server 2012 RDBMS medium in your media drive or copy it locally.
3. Change to the directory <RDBMS_Medium>\SqlNativeClient<platform>\ and double-click the SNAC files.
For more information, see SAP Note 1684545.

4. Follow the instructions in the SQL Server installation setup screens.
5 Setting the SQL Server Agent Configuration

Use

After you have installed or upgraded to SQL Server 2012, you must set the configuration for the SQL Server Agent.

Procedure

1. Start the SQL Server Management Studio.
2. Right-click SQL Server Agent and choose Properties.
3. Choose History.
4. Set the value for column Maximum job history log size (in rows) to 6000 (minimum).
5. Set the value for column Maximum job history rows per job to 500 (minimum).
6. Check the column Remove agent history and set a value for this column.
7. To save the settings, choose OK.

Note

If multiple SAP systems are installed in the same SQL Server, configure the SQL Agent log history size as described in SAP note 1730470 #1730470.
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