

SQL Server 2012: Installation and Configuration

Module 5: Post-Installation Configuration Tasks for SQL Server 2012

Glenn Berry

Glenn@SQLskills.com



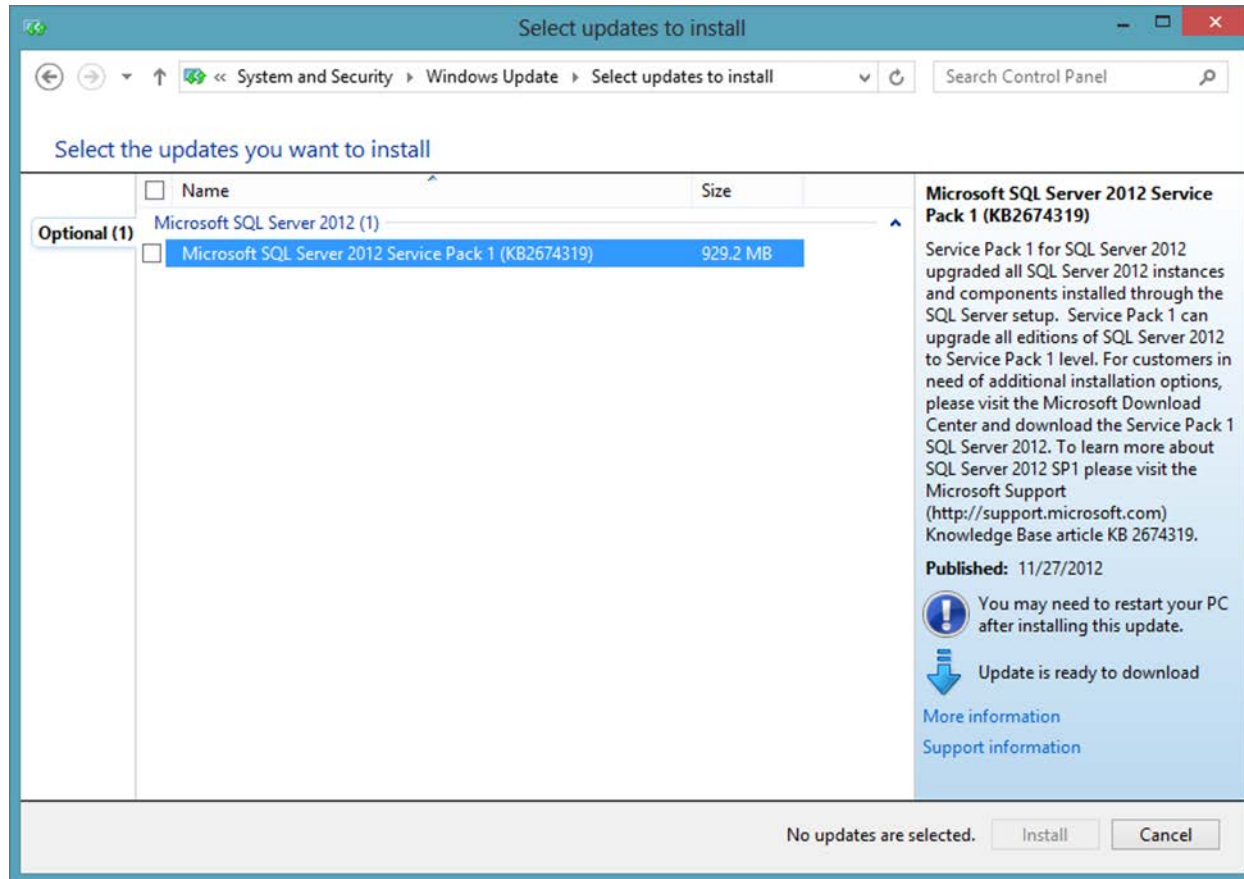
Introduction

- How SQL Server 2012 is updated
- The importance of updating SQL Server 2012
- Obtaining SQL Server 2012 Service Packs
- Installing SQL Server 2012 Service Packs
- Obtaining SQL Server 2012 Cumulative Updates
- Installing SQL Server 2012 Cumulative Updates
- Setting instance properties with SSMS
- Setting instance properties with T-SQL
- Configuring tempdb files

How SQL Server 2012 Is Updated

- **Microsoft has three primary ways to update SQL Server**
 - Hotfixes
 - Cumulative Updates (CU)
 - Service Packs (SP)
- **Hotfixes are designed to fix one specific defect**
 - You must contact Microsoft Support (CSS) to get a hotfix
- **Cumulative Updates are rollups of hotfixes (10-50 defects)**
 - They are released every eight weeks, and are not fully regression tested
 - You must request and download CUs from Microsoft
- **Service Packs are designed to fix a larger number of defects**
 - They are released about every 12 months
 - They are fully regression tested
 - You can manually download Service Packs
 - They are also available from Microsoft Update

Optional Update in Microsoft Update



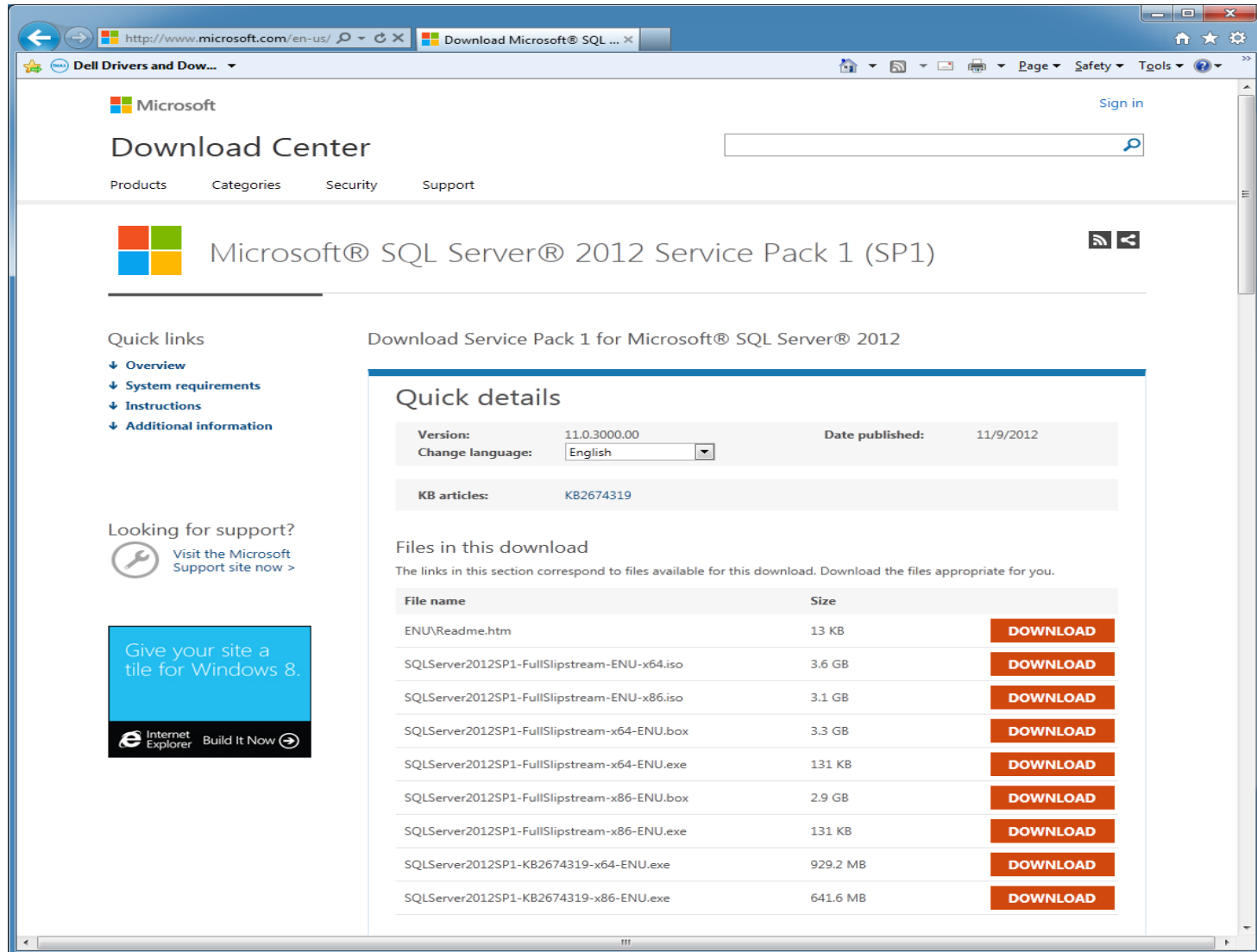
The Importance of Updating SQL Server 2012

- **SQL Server Service Packs are required in order to stay in a fully supported configuration**
- **Microsoft “retires” branches of code after certain milestones**
 - RTM branch is retired one year after SP1 is released
 - SP1 branch is retired one year after SP2 is released
- **If you are on a “retired” branch, you will get limited CSS support**
 - Basic troubleshooting until you upgrade to a supported Service Pack
- **Service Packs and Cumulative Updates fix many defects**
 - You are less likely to run into problems if you stay up-to-date
 - You should test Service Packs and Cumulative Updates
 - Testing and applying SPs and CUs is good practice for your organization
 - It forces you to exercise your testing and high-availability plans and infrastructure

Obtaining SQL Server 2012 Service Packs

- **Use this Microsoft Knowledge Base article to find the latest SP**
 - <http://bit.ly/R1VRdQ>
- **You can also use your favorite search engine**
 - There is a separate download for SQL Server 2012 Express Edition
 - There are now separate, full slipstream installs for SQL Server 2012
- **Make sure to download the correct Service Pack version**
 - Run `SELECT @@VERSION` to check the version on your instance
 - x64 is 64-bit version for Intel/AMD systems
 - Most servers should be using this version
 - x86 is 32-bit version for Intel/AMD systems
 - Most useful for older workstations and legacy support
 - You should not run the x86 version on a brand new server

SQL Server 2012 Service Pack 1



Microsoft
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Products Categories Security Support

Microsoft® SQL Server® 2012 Service Pack 1 (SP1)

Quick links

- Overview
- System requirements
- Instructions
- Additional information

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Give your site a tile for Windows 8.
Internet Explorer Build It Now

Download Service Pack 1 for Microsoft® SQL Server® 2012

Quick details

Version: 11.0.3000.00 Date published: 11/9/2012
Change language: English

KB articles: KB2674319

Files in this download

The links in this section correspond to files available for this download. Download the files appropriate for you.

File name	Size	
ENU\Readme.htm	13 KB	DOWNLOAD
SQLServer2012SP1-FullSlipstream-ENU-x64.iso	3.6 GB	DOWNLOAD
SQLServer2012SP1-FullSlipstream-ENU-x86.iso	3.1 GB	DOWNLOAD
SQLServer2012SP1-FullSlipstream-x64-ENU.box	3.3 GB	DOWNLOAD
SQLServer2012SP1-FullSlipstream-x64-ENU.exe	131 KB	DOWNLOAD
SQLServer2012SP1-FullSlipstream-x86-ENU.box	2.9 GB	DOWNLOAD
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SQLServer2012SP1-KB2674319-x64-ENU.exe	929.2 MB	DOWNLOAD
SQLServer2012SP1-KB2674319-x86-ENU.exe	641.6 MB	DOWNLOAD

Installing SQL Server 2012 Service Packs

- **Confirm that you have the right version of the Service Pack**
 - x64 or x86, Express Edition or not, full slipstream or not
- **Read the release notes**
 - SQL Server 2012 SP1 <http://bit.ly/RIDRDb>
- **Schedule the installation during a maintenance window**
 - You can use a rolling upgrade technique to minimize downtime
 - You must have some high-availability technology in place to do this
- **Don't have any pending reboots of Windows**
 - The setup program will prevent the installation from running if you do
- **Don't have SQL Server Management Studio running locally**
 - This decreases the chance of the Service Pack requiring a reboot

Obtaining SQL Server 2012 Cumulative Updates

- **Use these Microsoft KB articles to find the latest CU**
 - The SQL Server 2012 builds that were released after SQL Server 2012 was released
 - <http://bit.ly/lmox6j>
 - The SQL Server 2012 builds that were released after SQL Server 2012 Service Pack 1 was released
 - <http://bit.ly/SHe25n>
- **You must obtain the latest CU for your branch of the code**
 - Examples
 - Release to Manufacturing (RTM) branch
 - Service Pack 1 (SP1) branch
 - An RTM branch CU will not work on an instance that has SP1 installed
 - An x86 CU will not work on an x64 instance of SQL Server

Requesting a Specific Cumulative Update

- **After you have identified the correct CU, you must request it from Microsoft from a link in a KB article**
 - Example: SQL Server 2012 SP1 CU1
 - <http://bit.ly/UTCIRI>
- **You must select the correct CU package**
 - This can be somewhat confusing
- **You also must request the CU package from the web page**
 - You give Microsoft a valid e-mail address and they will send you a link
- **You must enter a CAPTCHA code**
 - These are sometimes difficult to read
- **You will receive an e-mail with a download link in a few minutes**
 - You must download and extract the CU installation file

Requesting a Cumulative Update

Microsoft Support

Sign in

Hotfix Request

Important

- A hotfix is intended to correct a specific problem.
- Apply the hotfix only to systems that are experiencing the specific problem.
- Installing the incorrect hotfix can cause damage to your system.
- If you are not sure whether the hotfix is the correct one for your system, do not install it.
- Hotfixes are included in subsequent service packs that are safer to install through [Microsoft Update](#).

1 Select hotfix

This table shows hotfixes for the following platform and language.

Platform: **All**
Language: **All**

[Show hotfixes for the platform and language of your browser \(3\)](#) [Show additional information](#)

Select	Product	Language	Platform	Fix name
<input type="checkbox"/>	SQL Server 2012	All (Global)	x86	2012_SP1_PPEExcel_CU1_2765331_11_0_3321_x86
<input type="checkbox"/>	SQL Server 2012	All (Global)	x86	SQLServer2012_SP1_CU1_2765331_11_0_3321_x86
<input type="checkbox"/>	SQL Server 2012	All (Global)	x86	2012_SP1_DAC_CU1_2765331_11_0_3321_x86
<input type="checkbox"/>	SQL Server 2012	All (Global)	x64	SQLServer2012_SP1_CU1_2765331_11_0_3321_x64
<input type="checkbox"/>	SQL Server 2012	All (Global)	x64	2012_SP1_PPEExcel_CU1_2765331_11_0_3321_x64
<input type="checkbox"/>	SQL Server 2012	All (Global)	x64	2012_SP1_DAC_CU1_2765331_11_0_3321_x64


2 Request hotfix by e-mail.

A link to the hotfix will be e-mailed to you. Microsoft may contact you if the hotfix is recalled.

E-mail:

Confirm e-mail:

Enter the characters you see
[New](#) | [Audio](#)

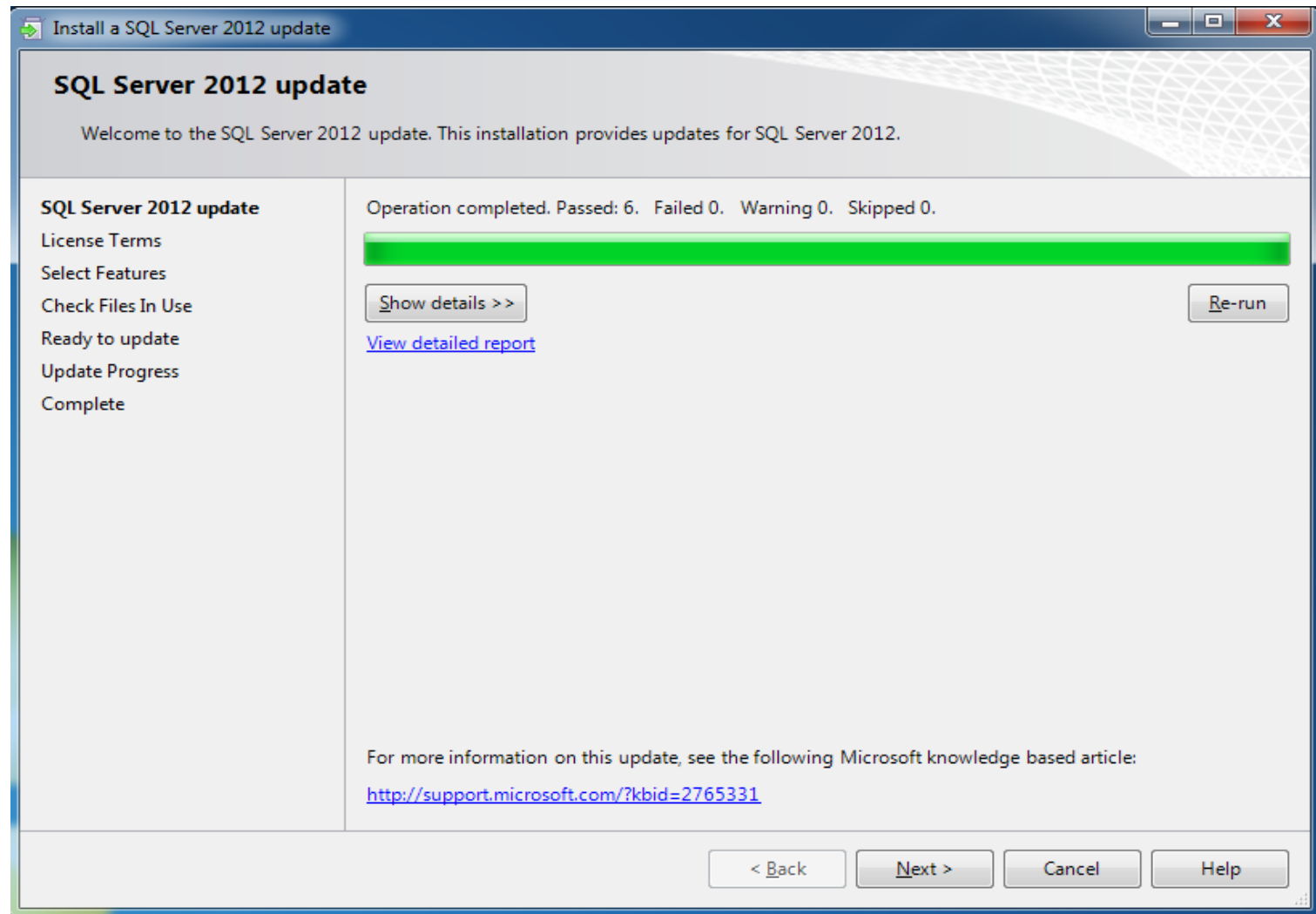


This helps to ensure that a person, not an automated program, is creating this request.

Installing a SQL Server 2012 Cumulative Update

- **After you have extracted the CU setup file you can run it**
- **Schedule the installation during a maintenance window**
 - You can use a rolling upgrade technique to minimize downtime
 - You must have some HA technology in place to do this
- **Don't have any pending reboots of Windows**
 - The setup program will prevent the installation from running if you do
- **Don't have SQL Server Management Studio running locally**
 - This decreases the chance of the CU requiring a reboot
- **Cumulative Updates usually install faster than Service Packs**
 - Installation time depends on your hardware and what SQL Server features are installed on the instance

SQL Server 2012 Cumulative Update



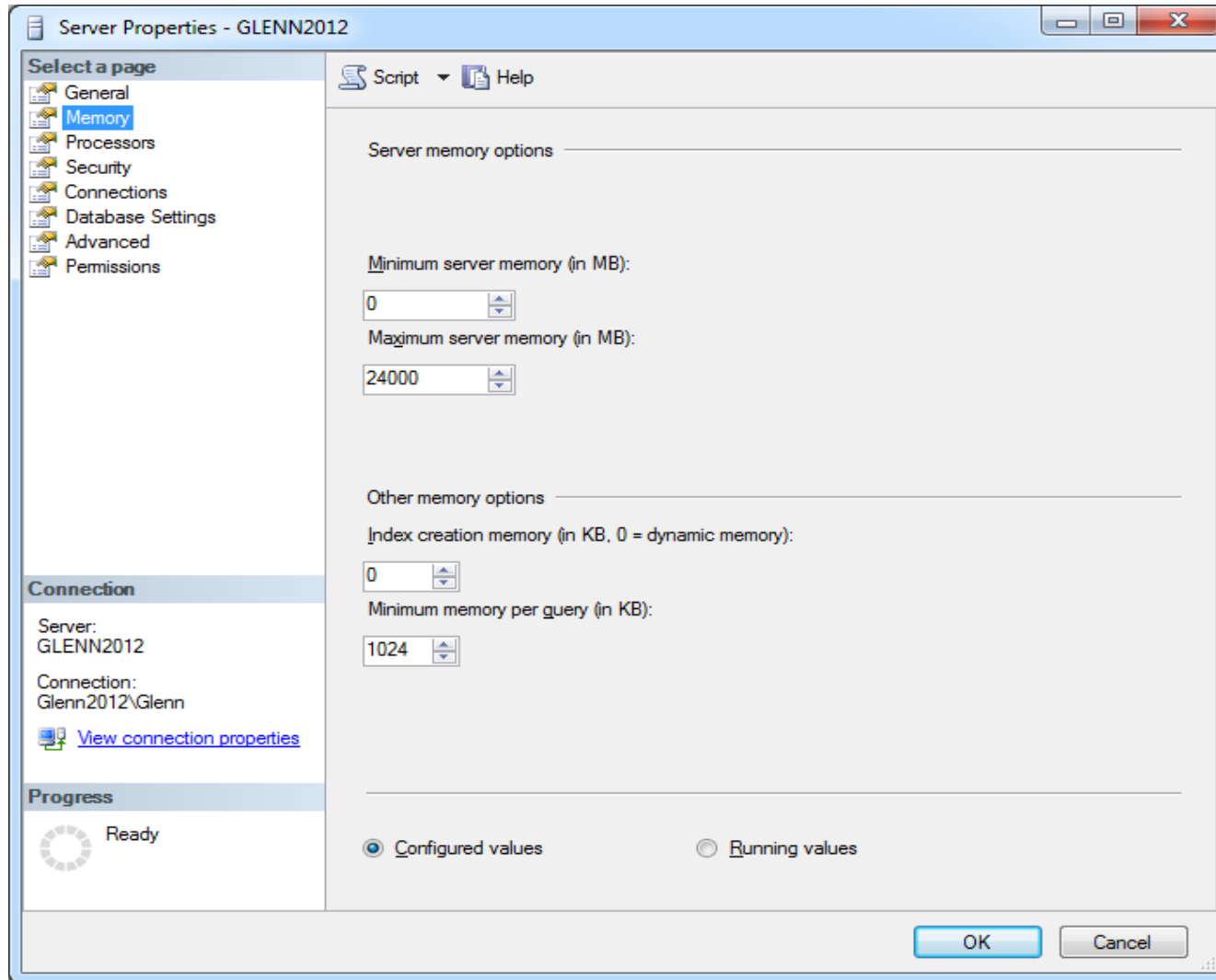
Install the Latest Service Pack and CU

- **For a brand new instance, you should install the latest SQL Server 2012 Service Pack and Cumulative Update**
 - You do not want to be running the original RTM build in Production
- **It will require some sort of outage to install them after you are in Production**
 - It is better to install them now and fully test your applications before you go into Production
 - You may not be able to easily install those updates later

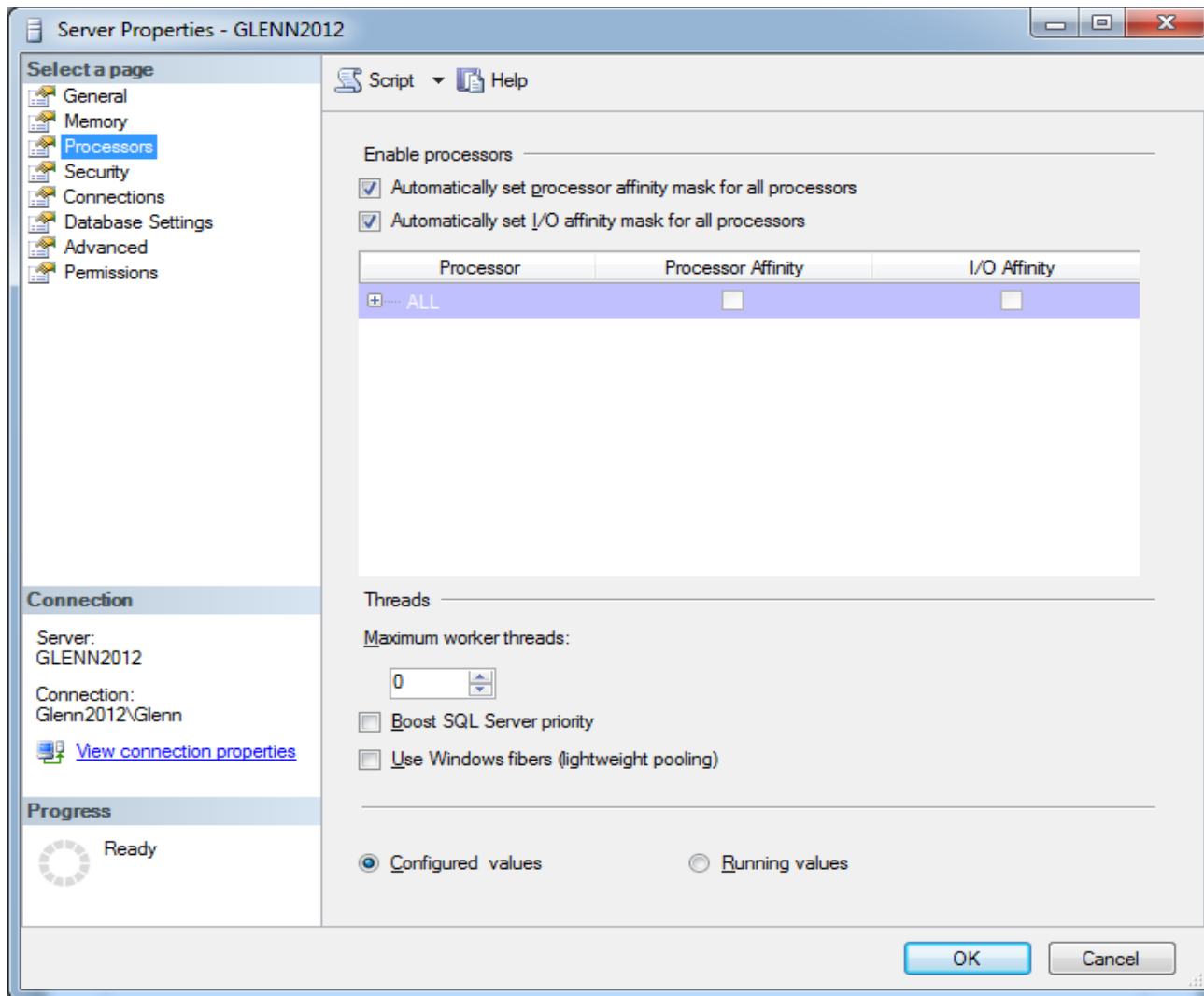
Setting Instance Properties with SSMS

- **You can right-click on the instance in Object Explorer**
 - Select Properties
- **This will open the Server Properties dialog**
 - There are eight properties pages (shown in the left-hand pane)
- **You can make a change and then use the Script button**
 - This is much safer than simply clicking the OK button
 - It will also help you learn the T-SQL commands to change properties
 - It will save you the time and trouble of typing T-SQL code
 - This will prevent many syntax mistakes

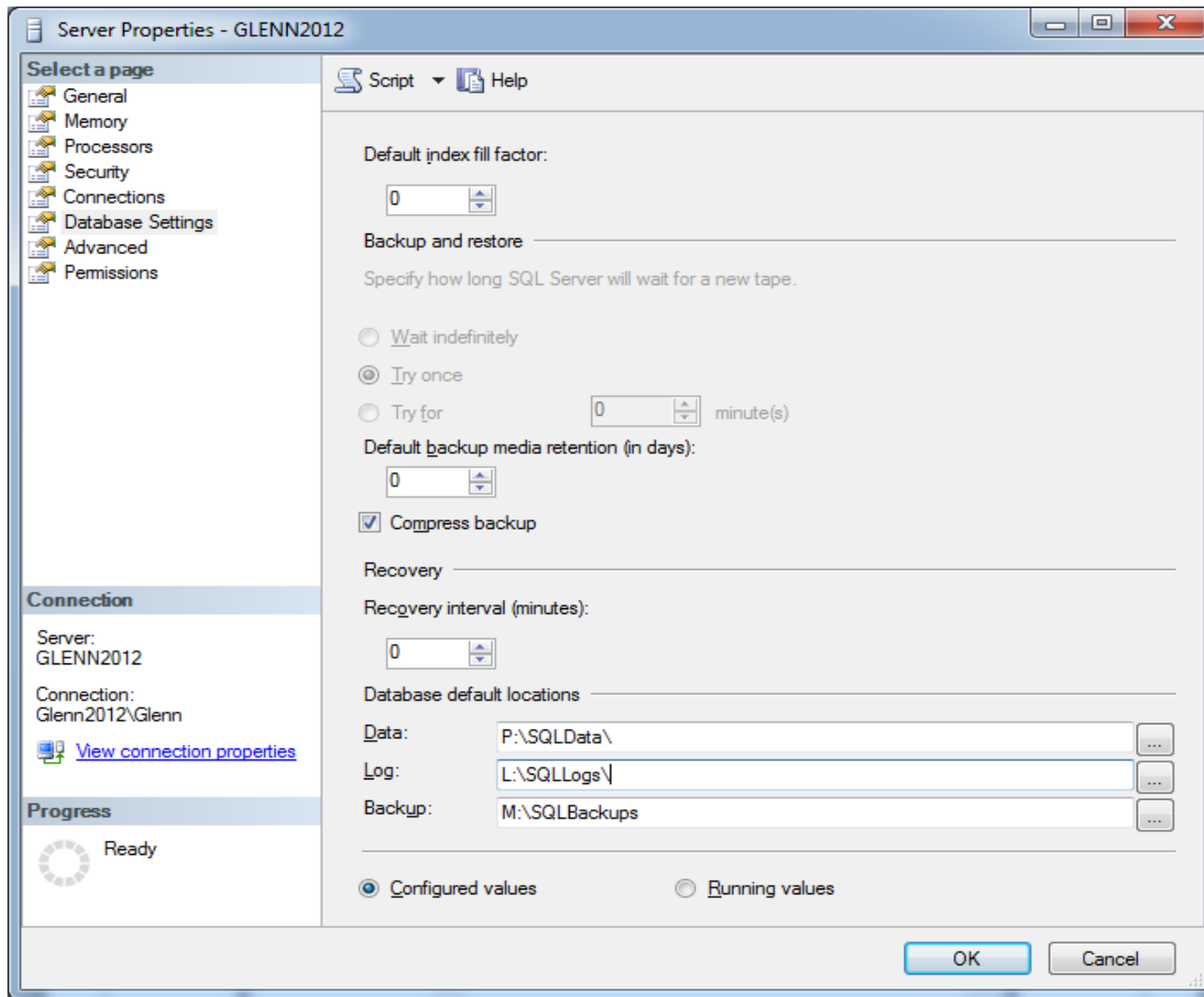
Server Properties - Memory



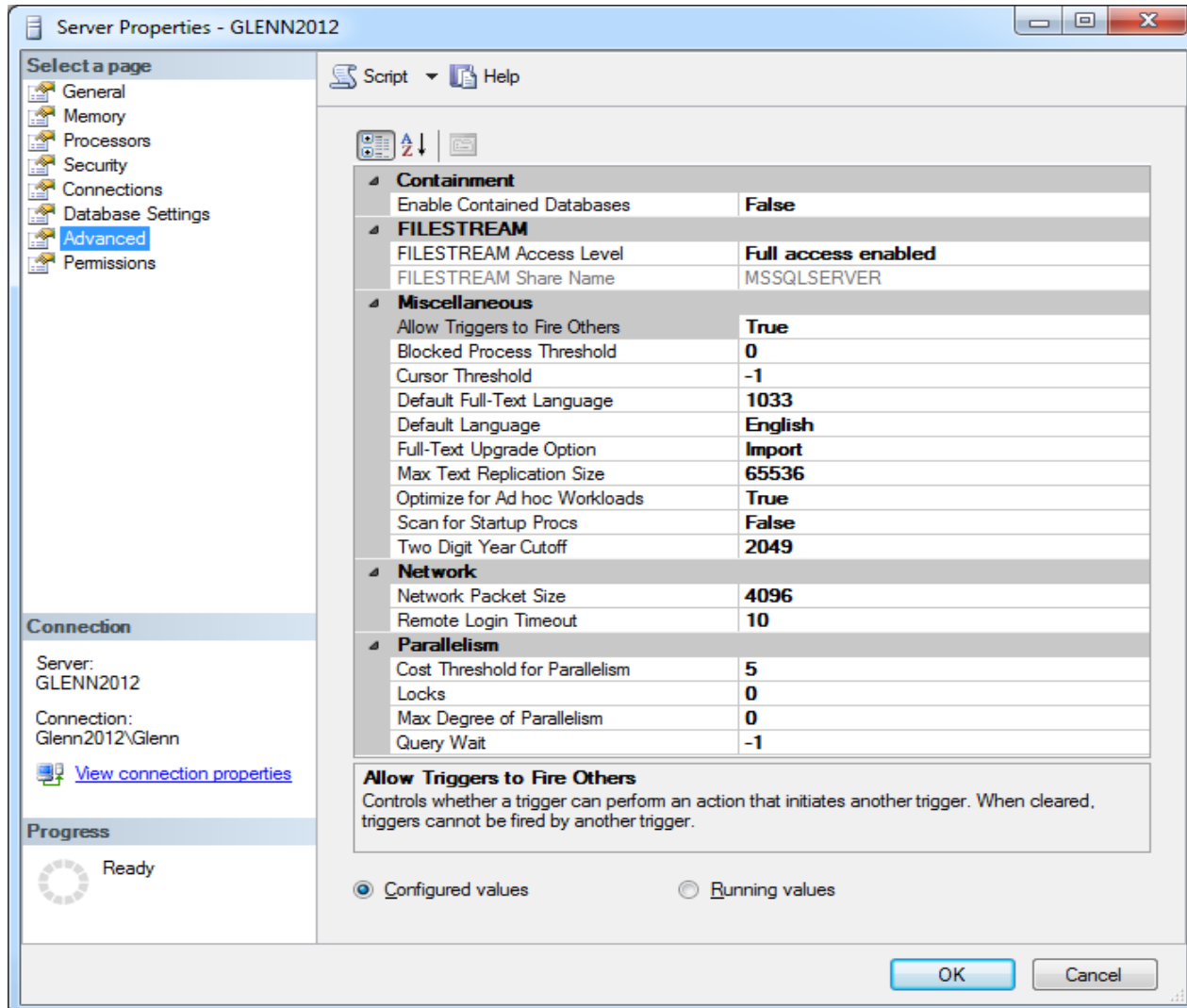
Server Properties - Processors



Server Properties – Database Settings



Server Properties - Advanced



Setting Instance Properties with T-SQL

The screenshot displays the Microsoft SQL Server Management Studio (SSMS) interface. The main window shows a T-SQL script titled "Set Instance-level options.sql" for the "master" database on the "Glenn2012" server. The script includes comments and SQL commands to retrieve current configuration values and set various instance-level options.

```
-- Get configuration values for instance
SELECT name, value, value_in_use, [description]
FROM sys.configurations WITH (NOLOCK)
ORDER BY name OPTION (RECOMPILE);

-- Set Instance-level options

-- Enable optimize for ad hoc workloads
EXEC sys.sp_configure 'show advanced options', 1;
GO
RECONFIGURE WITH OVERRIDE;
EXEC sys.sp_configure 'optimize for ad hoc workloads', 1;
RECONFIGURE WITH OVERRIDE;
GO

-- Enable backup compression default
EXEC sys.sp_configure 'show advanced options', 1;
GO
RECONFIGURE WITH OVERRIDE;
EXEC sys.sp_configure 'backup compression default', 1;
RECONFIGURE WITH OVERRIDE;
GO

-- Set max server memory to 24000
EXEC sys.sp_configure 'show advanced options', 1;
GO
RECONFIGURE WITH OVERRIDE;
EXEC sys.sp_configure 'max server memory (MB)', 24000;
RECONFIGURE WITH OVERRIDE;
GO
```

Below the script, the "Results" pane shows the output of the first query, displaying a list of configuration options with their current values and descriptions.

	name	value	value_in_use	description
1	access check cache bucket count	0	0	Default hash bucket count for the access check re...
2	access check cache quota	0	0	Default quota for the access check result security c...
3	Ad Hoc Distributed Queries	0	0	Enable or disable Ad Hoc Distributed Queries
4	affinity I/O mask	0	0	affinity I/O mask
5	affinity mask	0	0	affinity mask
6	affinity64 I/O mask	0	0	affinity64 I/O mask
7	affinity64 mask	0	0	affinity64 mask
8	Agent XPs	1	1	Enable or disable Agent XPs
9	allow updates	0	0	Allow updates to system tables
10	backup compression default	1	1	Enable compression of backups by default
11	blocked process threshold (s)	0	0	Blocked process reporting threshold
12	c2 audit mode	0	0	c2 audit mode
13	clr enabled	1	1	CLR user code execution enabled in the server
14	common criteria compliance enabled	0	0	Common Criteria compliance mode enabled
15	contained database authentication	0	0	Enables contained databases and contained authen...
16	cost threshold for parallelism	5	5	cost threshold for parallelism
17	cross db ownership chaining	0	0	Allow cross db ownership chaining
18	cursor threshold	-1	-1	cursor threshold
19	Database Mail XPs	0	0	Enable or disable Database Mail XPs
20	default full-text language	1033	1033	default full-text language
21	default language	0	0	default language
22	default trace enabled	1	1	Enable or disable the default trace
23	disallow results from triggers	0	0	Disallow returning results from triggers
24	EKM provider enabled	0	0	Enable or disable EKM provider
25	filestream access level	2	2	Sets the FILESTREAM access level

At the bottom of the SSMS window, a status bar indicates "Query executed successfully." and provides details about the query execution, including the server name "Glenn2012", the database "master", and the execution time "00:00:00".

Configuring tempdb Files

- **SQL Server 2012 only has one very small tempdb data file**
- **It is a common best practice to create additional data files to reduce the chances of seeing PAGELATCH contention in tempdb**
 - These additional data files can all be on the same LUN
 - They should all be the same initial size
- **Good starting point for number of tempdb data files**
 - Less than eight processor cores: # of files = # of cores
 - More than eight processor cores: Start with eight tempdb data files
 - Monitor tempdb for signs of PAGELATCH contention
 - Add more tempdb files in groups of four if contention exists
 - See this Jonathan Keheyias article for more details
 - <http://bit.ly/NKs6c3>

Summary

- **It is important to maintain your SQL Server instance**
 - Service Packs
 - Cumulative Updates
 - Hotfixes
- **This makes the instance easier to maintain in the future**
- **Selected instance level settings should be changed**
 - Optimize for ad hoc workloads
 - Max server memory
 - Default backup compression
- **Additional tempdb data files should be added**
 - Use my guidance for the number of data files to start with

What is Next?

- **Module 6 will cover automating common maintenance tasks for SQL Server 2012**
 - Confirming network connectivity
 - Confirming SQL Server connectivity
 - Enabling Database Mail
 - Creating a New SQL Server Operator
 - Setting up SQL Server Agent Alerts
 - Adding Ola Hallengren's Maintenance Solution
 - Configuring the Maintenance Solution