

[MS-DPBCP]:

Bulk Copy Utility Data Portability Overview

Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation for protocols, file formats, languages, standards as well as overviews of the interaction among each of these technologies.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the technologies described in the Open Specifications and may distribute portions of it in your implementations using these technologies or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that may cover your implementations of the technologies described in the Open Specifications. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, a given Open Specification may be covered by Microsoft [Open Specification Promise](#) or the [Community Promise](#). If you would prefer a written license, or if the technologies described in the Open Specifications are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting iplg@microsoft.com.
- **Trademarks.** The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit www.microsoft.com/trademarks.
- **Fictitious Names.** The example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

Reservation of Rights. All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

Tools. The Open Specifications do not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them. Certain Open Specifications are intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it.

Revision Summary

Date	Revision History	Revision Class	Comments
6/4/2010	0.1	Major	First release.
9/3/2010	0.1.1	Editorial	Changed language and formatting in the technical content.
2/9/2011	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
7/7/2011	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
11/3/2011	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
1/19/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
2/23/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
3/27/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
5/24/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
6/29/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
7/16/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
10/8/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
10/23/2012	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
3/26/2013	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
6/11/2013	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
8/8/2013	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
12/5/2013	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
2/11/2014	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
5/20/2014	0.1.1	None	No changes to the meaning, language, or formatting of the technical content.
5/10/2016	1.0	None	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1	Introduction	4
1.1	Glossary	4
1.2	References	5
2	Data Portability Scenarios	6
2.1	Export Data.....	6
2.1.1	Data Description.....	6
2.1.2	Format and Protocol Summary	6
2.1.3	Data Portability Methodology.....	6
2.1.3.1	Preconditions.....	7
2.1.3.2	Versioning.....	7
2.1.3.3	Error Handling	7
2.1.3.4	Coherency Requirements	7
2.1.3.5	Additional Considerations	7
2.2	Import Data	7
2.2.1	Data Description.....	7
2.2.2	Format and Protocol Summary	8
2.2.3	Data Portability Methodology.....	8
2.2.3.1	Preconditions.....	8
2.2.3.2	Versioning.....	8
2.2.3.3	Error Handling	8
2.2.3.4	Coherency Requirements	8
2.2.3.5	Additional Considerations	9
3	Change Tracking.....	10
4	Index.....	11

1 Introduction

The Bulk Copy Utility Data Portability Overview document provides an overview of the components and methodologies that are used for data portability within the Microsoft SQL Server Engine system. Some common user scenarios provide examples of data import and export between a SQL Server database and another vendor's database.

SQL Server hosts user databases that contain the data for the application. In the scenarios, the vendor must use an API or tools that can consume the data within the vendor's database.

This document does not restate the details of formats that are used for data portability. These details are described in the specifications for each of the formats that are used by this system.

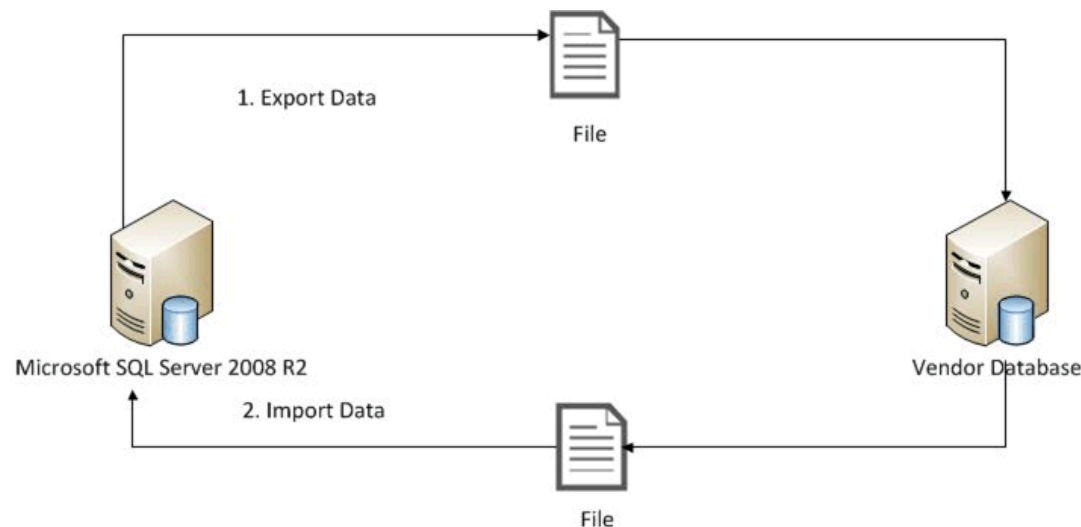


Figure 1: Conceptual overview of export and import data portability

In the export data scenario in the preceding figure, a vendor can use the bulk copy (**bcp**) utility as specified in [\[MSDN-IEBDUBU\]](#) to export data from a SQL Server database to files. This methodology is described in section [2.1](#). Data is exported in bulk copy (BCP) format [\[MS-BCP\]](#), a data structure format.

In the import data scenario in the preceding figure, a vendor can use the **bcp** utility as specified in [\[MSDN-IEBDUBU\]](#) to import data from files to a SQL Server database. This methodology is described in section [2.2](#).

1.1 Glossary

This document uses the following terms:

database object: An object such as a table, query, form, report, macro, or module that can be referenced by name in a database, database application, or database project.

schema: The set of attributes and object classes that govern the creation and update of objects.

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [\[UNICODE5.0.0/2007\]](#) provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

[MS-BCP] Microsoft Corporation, "[Bulk Copy Format](#)".

[MSDN-BCPU] Microsoft Corporation, "bcp Utility", [http://msdn.microsoft.com/en-us/library/ms162802\(SQL.105\).aspx](http://msdn.microsoft.com/en-us/library/ms162802(SQL.105).aspx)

[MSDN-DBState] Microsoft Corporation, "Database States", <http://msdn.microsoft.com/en-us/library/ms190442.aspx>

[MSDN-IEBDUBU] Microsoft Corporation, "Import and Export Bulk Data by Using the bcp Utility (SQL Server)", <http://msdn.microsoft.com/en-us/library/aa337544.aspx>

[MSDN-SFRT] Microsoft Corporation, "Specify Field and Row Terminators (SQL Server)", <http://msdn.microsoft.com/en-us/library/ms191485.aspx>

[MSDN-UUCFIED] Microsoft Corporation, "Use Unicode Character Format to Import or Export Data (SQL Server)", <http://msdn.microsoft.com/en-us/library/ms188289.aspx>

2 Data Portability Scenarios

The data portability scenarios described in the following sections describe exporting and importing data by using the **bcp** utility in Microsoft SQL Server. They describe only the export and import of data from a database in SQL Server. The portability of the database **schema** is outside the scope of this document.

2.1 Export Data

The data export scenario describes exporting customer data from a Microsoft SQL Server 2008 R2 database to files that a vendor can consume within its database. As shown in the following figure, a file containing the data can be created by using the **bcp** utility that ships with SQL Server. Data is exported in BCP format [\[MS-BCP\]](#), or the vendor can export the data in **Unicode** text file format.



Figure 2: Export data

2.1.1 Data Description

Customer Data

The customer data is a text file representation of a **database object** in a SQL Server database.

Intended User

The intended user is a vendor who can export SQL Server database objects from a SQL Server instance to consume it within another vendor's database.

2.1.2 Format and Protocol Summary

The following table provides a comprehensive list of the formats and protocols used in this data portability scenario.

Protocol or format name	Description	Reference
Bulk Copy File Format	The bulk copy file format that is output by the bcp utility.	[MS-BCP]

2.1.3 Data Portability Methodology

The data portability methodology describes the steps to export the data by using the **bcp** utility. The vendor database's consumption of the file is outside the scope of this document.

Export data from a database object

To export data from a database object, follow these steps:

1. Invoke the **bcp** utility [\[MSDN-BCPU\]](#) to export data from a database object in the customer database.
2. Specify the database object to export.

3. Use the **-out** option to export the data from the specified database object.
4. Use the **-w** option to perform the bulk copy operation using Unicode characters [\[MSDN-UUCFIED\]](#).

If the data in the database object contains special characters such as tabs or newline characters, a different field or row terminator can be used to handle the export [\[MSDN-SFRT\]](#).

2.1.3.1 Preconditions

The SQL Server database must be ONLINE as specified in [\[MSDN-DBState\]](#).

2.1.3.2 Versioning

This version of the data export scenario is applicable to the SQL Server 2008 R2 release.

2.1.3.3 Error Handling

None.

2.1.3.4 Coherency Requirements

There are no special coherency requirements.

2.1.3.5 Additional Considerations

There are no additional considerations.

2.2 Import Data

The data import scenario describes importing customer data from a vendor database that can produce files that contain data into SQL Server 2008 R2 database. As shown in the following figure, a file containing the data can be created by using the vendor's utility and imported into SQL Server. The vendor can export the data in Unicode text file format.



Figure 3: Import data

2.2.1 Data Description

Customer Data

The customer data is a text file representation of a database object in a vendor's database.

Intended User

The intended user is a vendor who can import data from files produced from a vendor database into a SQL Server database.

2.2.2 Format and Protocol Summary

The following table provides a comprehensive list of the formats and protocols used in this data portability scenario.

Protocol or format name	Description	Reference
Bulk Copy File Format	The bulk copy file format that is the output of bcp utility.	[MS-BCP]

2.2.3 Data Portability Methodology

The data portability methodology describes the steps to import the data by using the **bcp** utility. The vendor database's production of the file is outside the scope of this document.

Import data from a file

To import data from a file into a database object, follow these steps:

1. Invoke the **bcp** utility [\[MSDN-BCPU\]](#) to import data from a file produced from a vendor's database.
2. Specify the database object into which the file is to be imported.
3. Use the **-in** option to import the data from the specified file.
4. Use the **-w** option to perform the bulk copy operation using Unicode characters [\[MSDN-UUCFIED\]](#).

If the data in the file does not conform to the specifications of the **-w** option, a different field or row terminator can be used to handle the import accordingly [\[MSDN-SFRT\]](#).

2.2.3.1 Preconditions

The SQL Server database must be ONLINE as specified in [\[MSDN-DBState\]](#).

2.2.3.2 Versioning

This version of the data import scenario is applicable to the SQL Server 2008 R2 release.

2.2.3.3 Error Handling

The **-e** option enables the user to specify the full path of an error file used to store any rows that the **bcp** utility cannot transfer from the file to the database. Error messages from the **bcp** command go to the workstation of the user. If this option is not used, an error file is not created.

The **-m** option specifies the maximum number of syntax errors that can occur before the **bcp** operation is canceled. A syntax error implies a data conversion error to the target data type. The *max_errors* total excludes any errors that can be detected only at the server, such as constraint violations.

2.2.3.4 Coherency Requirements

There are no special coherency requirements.

2.2.3.5 Additional Considerations

There are no additional considerations.

3 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

4 Index

C

[Change tracking](#) 10

G

[Glossary](#) 4

I

[Informative references](#) 5

[Introduction](#) 4

R

[References](#) 5

T

[Tracking changes](#) 10