

DQS step-by-step

Domain Management, Knowledge Discovery
and Matching Policies



Alexander Karl

SQL Server  Öncüleri



#359 | ISTANBUL 2014

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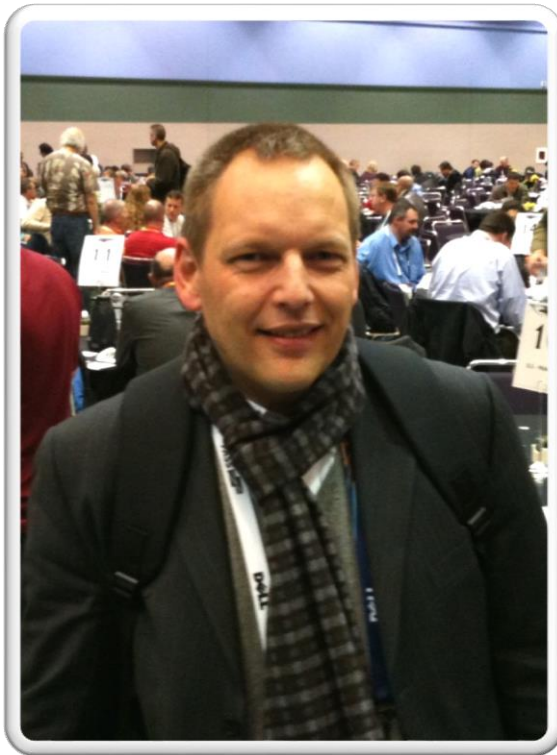
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About me



Alexander Karl

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SQL + BI Consultant

Microsoft
CERTIFIED
Trainer

Microsoft
CERTIFIED
IT Professional

Database Administrator 2008
Server Administrator on Windows Server® 2008
Database Administrator on SQL Server® 2005

SQL Server 2012 editions



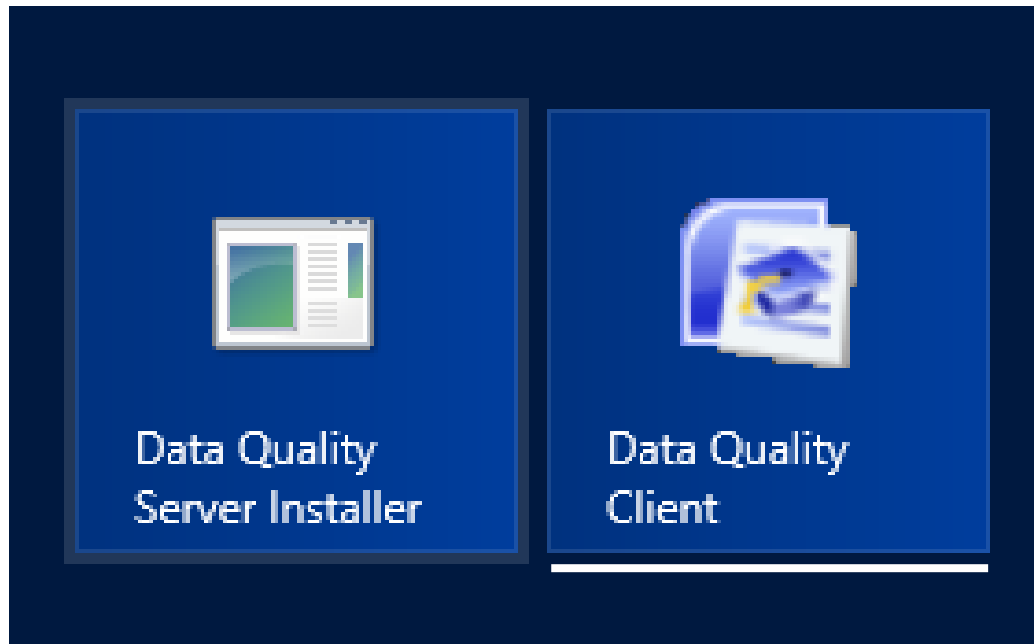
The screenshot shows a web browser window with the URL <http://msdn.microsoft.com/de-de/library/cc645993.aspx>. The page title is "Von den SQL Server ...". The left sidebar contains a navigation menu with the following items:

- Server- und Enterprise-Entwicklung
- SQL Server
- SQL Server 2012
- Produktdokumentation

Below the menu, the page title is repeated: "Von den SQL Server 2012-Editionen unterstützte Funktionen". The main content area displays a table with the following data:

Funktionsname	Enterprise	Business Intelligence	Standard
Data Quality Services	Ja	Ja	

SQL server 2012 DQS



DQS Installer

```
Untitled - Notepad
File Edit Format View Help
C:\Program Files\Microsoft SQL Server\MSSQL11.SECOND\MSSQL\Binn>DqsInstaller.exe /?
Microsoft (R) DQS Installer Command Line Tool
Copyright (c) 2012 Microsoft. All rights reserved.

[12/12/2013 4:38:34 PM] DQS Installer started. Installation log will be written
to C:\Program Files\Microsoft SQL Server\MSSQL11.SECOND\MSSQL\Log\DQS_install.log

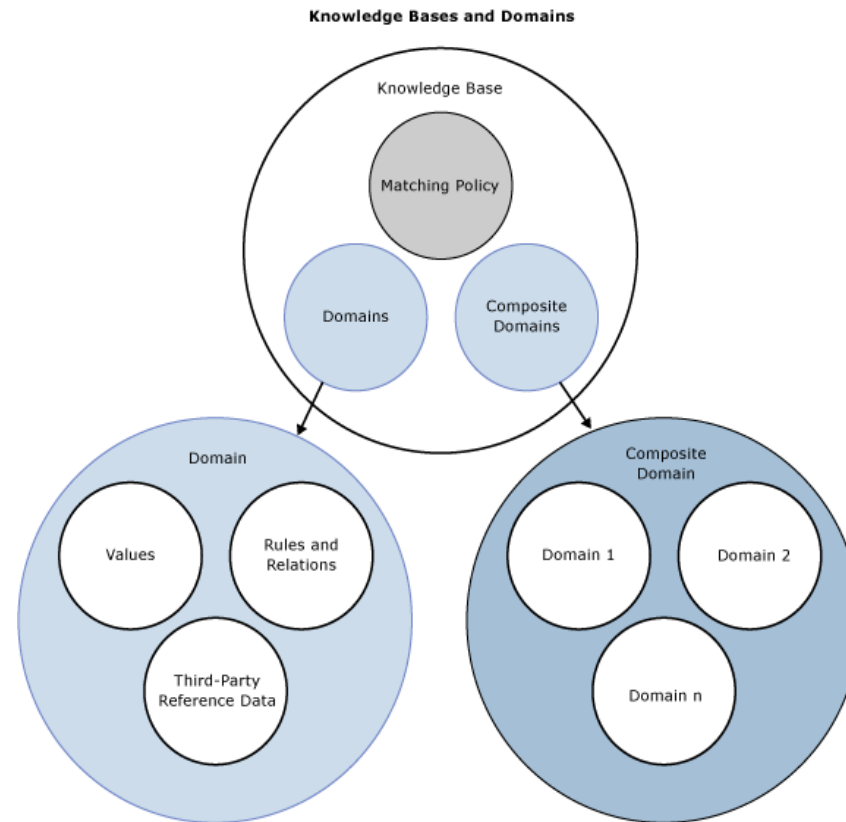
[12/12/2013 4:38:35 PM] Parsing DqsInstaller command line arguments.
usage DqsInstaller.exe [-install | -uninstall | -upgrade | -upgradedlls | -exportkbs | -importkbs] [<file name>] [-collation] | [-instance] 'instance name'

-install          - Install Data Quality Services in the provided instance. (Default)
-uninstall        - Uninstall Data Quality Services from the provided instance.
-upgrade          - Upgrade Data Quality Services for the provided instance, to current version.
-upgradedlls      - Install Data Quality Services while skipping recreating the DQS databases and
                  only upgrade DQS DLLs.
-exportkbs        - Export all server knowledgebases.
-importkbs        - Import knowledgebases file to server.
-collation        - The collation of DB catalogs to install. The collation should be case insensitive.
<file name>      - The .dqsb file name used to import/export server backup data.
-instance         - Specify the SQL Server instance name that this installer will run against.
-?               - Show this usage message.
```

DQS “*work items*”

- Domain Management
- Knowledge Discovery
- Matching Policy

Domain Management



<http://technet.microsoft.com/en-us/library/gg524799.aspx>

DQS workflow



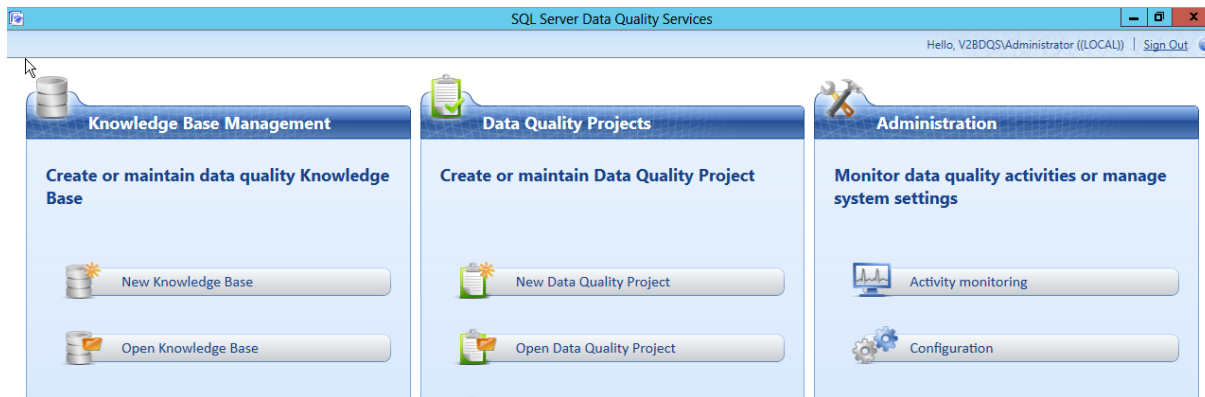
MAIN



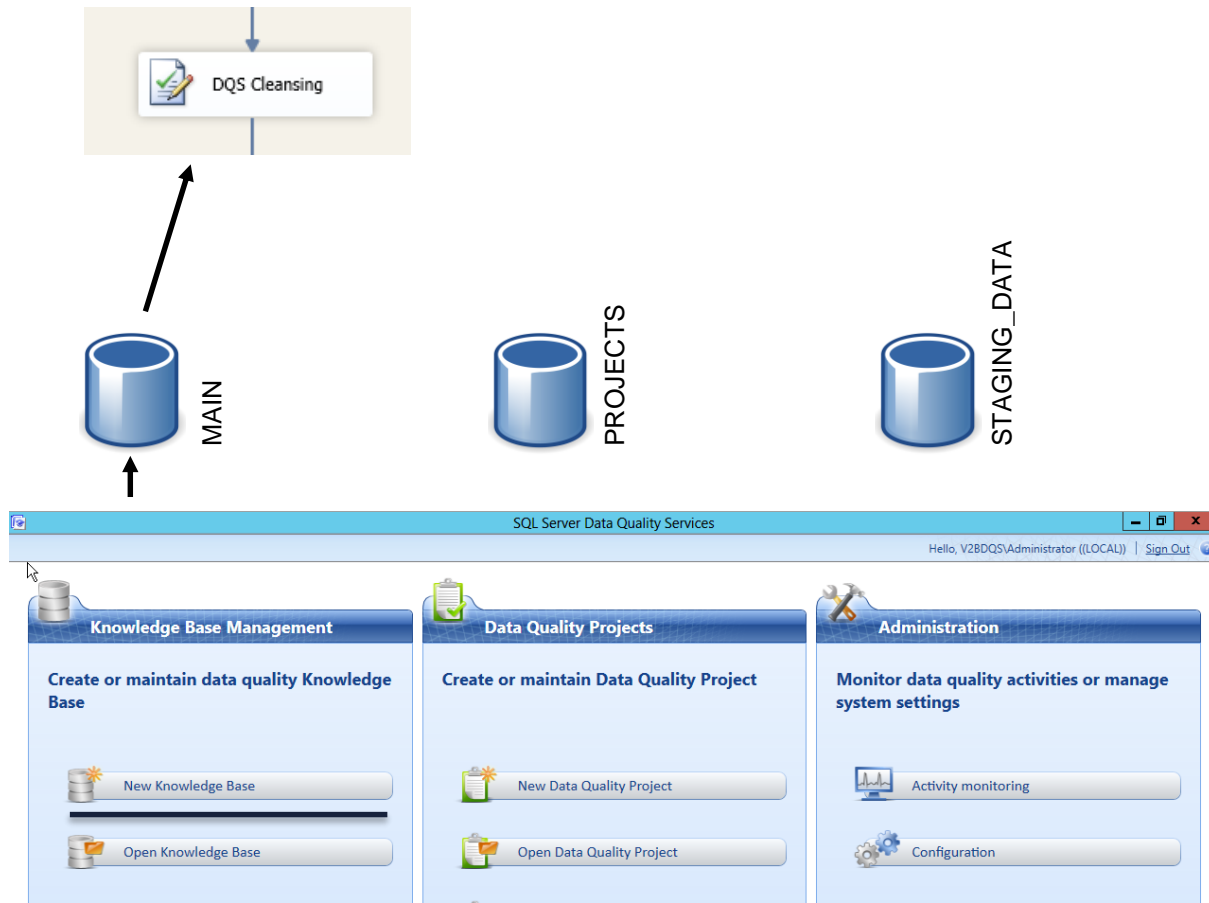
PROJECTS



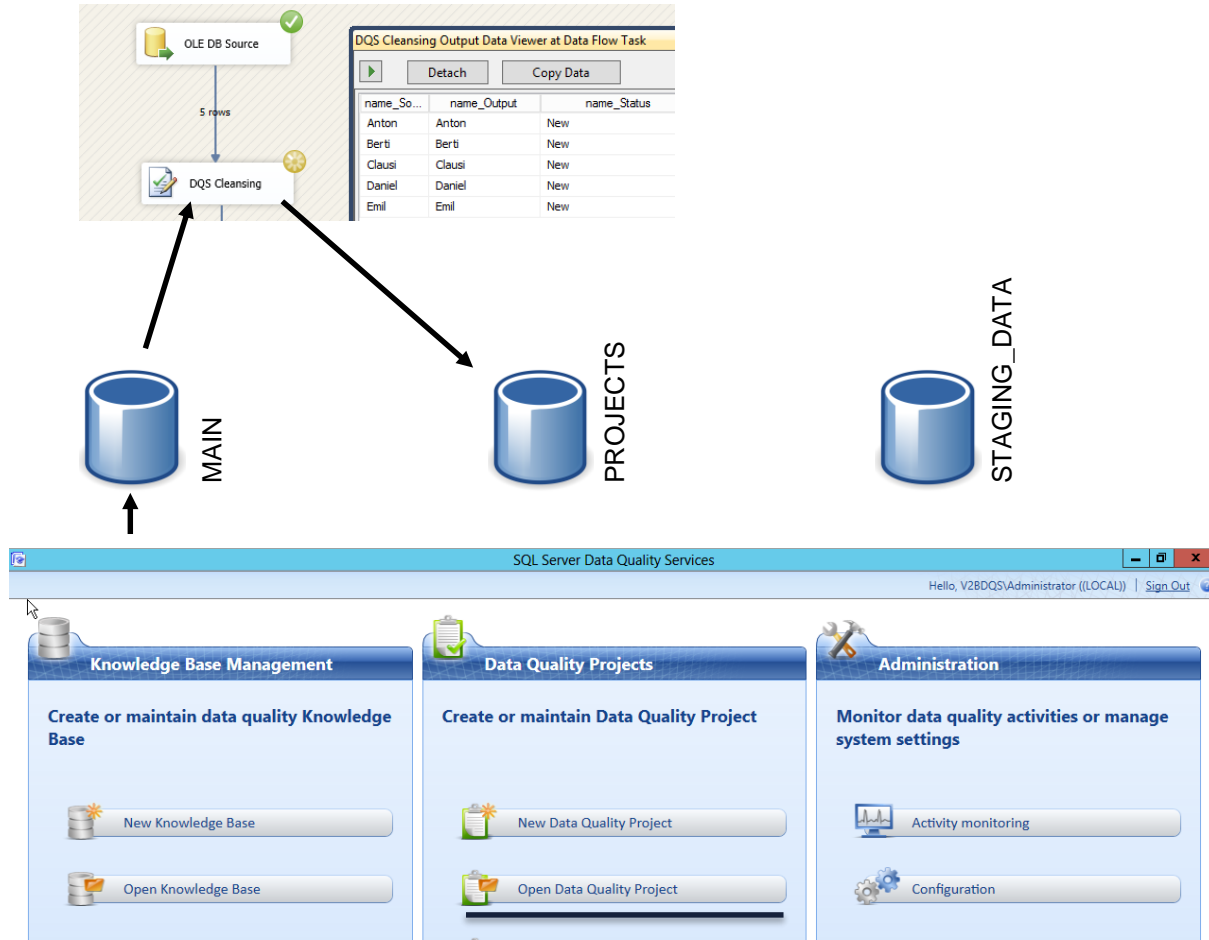
STAGING_DATA



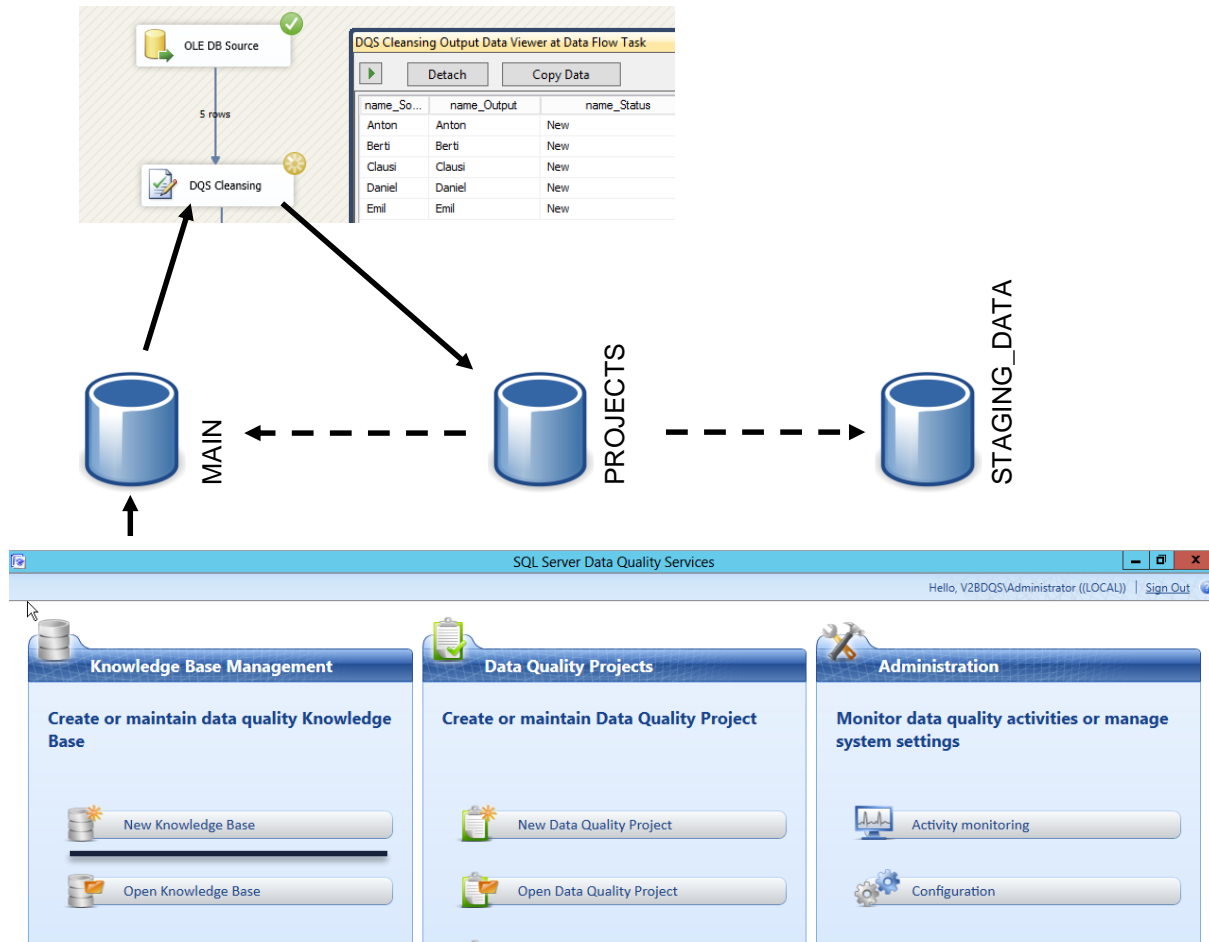
DQS workflow



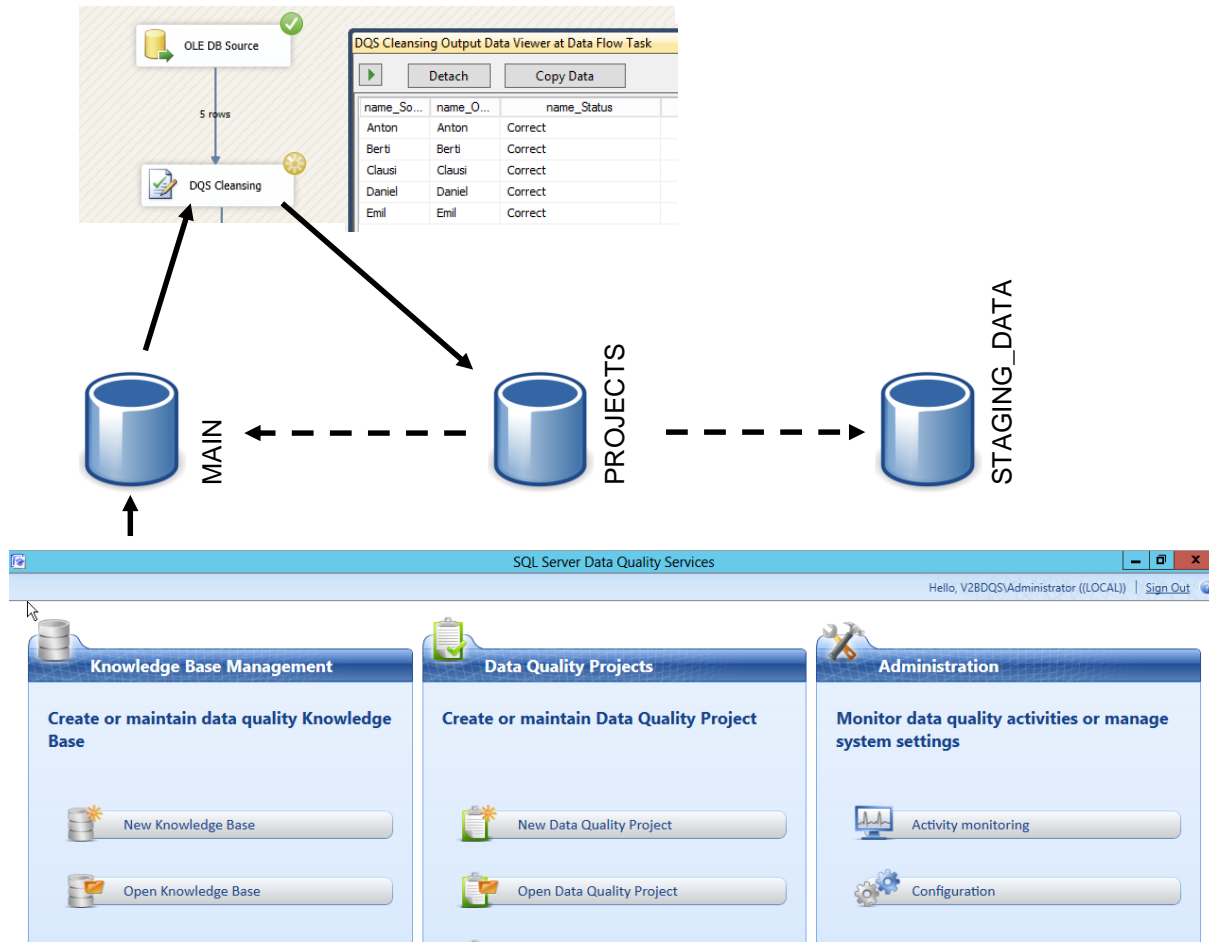
DQS workflow



DQS workflow



DQS workflow



DEMO

Demo result

The screenshot displays the 'Domain Management' application interface. The top navigation bar includes a database icon, the title 'Domain Management', and the text 'Knowledge Base: SQLsat' and 'Activity: Domain Management'. On the left, a sidebar lists domains: 'authorsName', 'bookISBN', and 'booktitle', with 'booktitle' selected. The main area shows the configuration for 'booktitle' under the 'Domain Properties' tab. The configuration includes: 'Domain Name' set to 'booktitle' (marked as required), an empty 'Description' field, 'Data Type' set to 'String', and several checked options: 'Use Leading Values', 'Normalize String', 'Enable Speller', and 'Disable Syntax Error Algorithms'. There are also dropdown menus for 'Format Output to' (set to 'None') and 'Language' (set to 'Englisch'). At the bottom right, there are 'Cancel', 'Close', and 'Finish' buttons.

Demo result

The screenshot displays the SQL Server Enterprise Manager Domain Management interface. The main window is titled "Domain Management" and shows the "booktitle" domain selected in the left-hand pane. The "Domain Rules" tab is active, displaying a table of rules for the "lenght" property.

Active	Name	Description	Last Updated	Created By
<input checked="" type="checkbox"/>	lenght		12/6/2014 9:27:46 AM	V2BDQS\Administrator

Below the table, the "Build a Rule: lenght" configuration window is shown. It defines the rule for the "booktitle" domain with the following conditions:

- Length is greater than or equal to 10
- AND
- Length is less than or equal to 80

Buttons for "Discard All Changes" and "Apply All Rules" are visible at the bottom of the rule configuration area. At the very bottom of the interface, there are "Cancel", "Close", and "Finish" buttons.

Demo result

The screenshot shows the SQL Server Enterprise Manager interface for Domain Management. The main window displays the 'booktitle' domain with a list of values. The 'Domain Values' tab is active, showing a table with columns for Value, Type, and Correct to. The first row is highlighted in orange.

Domain Management Knowledge Base: SQLsat Activity: Domain Management

Domain Management

Domain

- authorsName
- bookISBN
- booktitle**

booktitle

Domain Properties Reference Data Domain Rules **Domain Values** Term-Based Relations

Statistics (All Values 32) Correct: 32 Errors: 0 Invalid: 0

Find: Filter: All Values Show Only New

Value	Type	Correct to
Business Intelligence mit Office 2007 und SQL Server	✓	
Business Intelligence und Reporting mit SQL Server 2008	✓	
Cloud Computing mit der Windows Azure Plattform	✓	
DQS_NULL	✓	
Expert Cube Development with Microsoft SQL Server 2008 Analysis Services	✓	
Implementieren und Warten von SQL Server 2008 MCTS	✓	
Internetinformationsdienste (IIS) 7.0 - Die technische Referenz	✓	
Konfigurieren der Windows Server-Virtualisierung	✓	
Konfigurieren einer Windows Server 2008-Netzwerkinfrastruktur	✓	
Konfigurieren von Windows 7 MCTS	✓	
Konfigurieren von Windows Server 2008 Active Directory	✓	
Microsoft Office SharePoint Server 2007 - Das Handbuch	✓	
Microsoft Office SharePoint Server 2007-Programmierung	✓	

Cancel Close Finish

DQS “*work items*”

- Domain Management
- Knowledge Discovery
- Matching Policy

DEMO

Demo result

Knowledge Base Management

Knowledge Base: SQLsat Activity: Knowledge Discovery

1 Map 2 Discover 3 Manage Domain Values

Choose a database sample to create new values in the mapped domains

Data Source: SQL Server
Database: Verlag_Schulung
Table/View: Buch

Mappings:

Source Column	Domain
Buchtitel (nvarchar)	booktitle
ISBN (nvarchar)	bookISBN

View/Select Composite Domains


Knowledge Base details: SQLsat

- Domains
 - authorsName
 - bookISBN
 - booktitle
- Matching Policy Rules
 - Matching Rule 1

Profiler

Cancel Close Back Next Finish

Demo result



Knowledge Base Management

Knowledge Base: SQLsat Activity: Knowledge Discovery

1 Map 2 Discover 3 Manage Domain Values

Performs data discovery analysis on the selected data source

[Restart](#)

Pre-processing Records	31/31	Start: 12/8/2014 11:22:52 AM	End: 12/8/2014 11:22:54 AM
Running Domain Rules	100%	Start: 12/8/2014 11:22:54 AM	End: 12/8/2014 11:22:56 AM
Running Discovery	100%	Start: 12/8/2014 11:22:56 AM	End: 12/8/2014 11:22:57 AM

Analysis of the data source has been completed successfully.

Profiler ▾

Source Statistics

Records: 31
Total Values: 62
New Values: 0 (0 %)
Unique Values: 62 (100 %)
New Unique Values: 0 (0 %)
Valid in Domain Values: 62 (100 %)

Field	Domain	New	Unique	Valid in Domain	Completeness
Buchtitel	booktitle	31 (100 %)	31 (100 %)	31 (100 %)	<div style="width: 100%; height: 10px; background-color: green;"></div>
ISBN	bookISBN	31 (100 %)	31 (100 %)	31 (100 %)	<div style="width: 100%; height: 10px; background-color: green;"></div>

[Cancel](#) [Close](#) [Back](#) [Next](#) [Finish](#)

SSIS



Data Profiling Task

- `<xml>` output
- Data Profiling Viewer
- Xquery für „handmade Analyse“

SSIS



Data Profiling Task

Data Profiling Task Editor

Configure the properties used to profile data sources.

General
Profile Requests
Expressions

View All Requests

Profile Type	Request ID
Column Length Distribution Profile Request	LengthDistReq
Column Null Ratio Profile Request	NullRatioReq
Column Pattern Profile Request	PatternReq
Column Statistics Profile Request	StatisticsReq
Column Value Distribution Profile Request	ValueDistReq

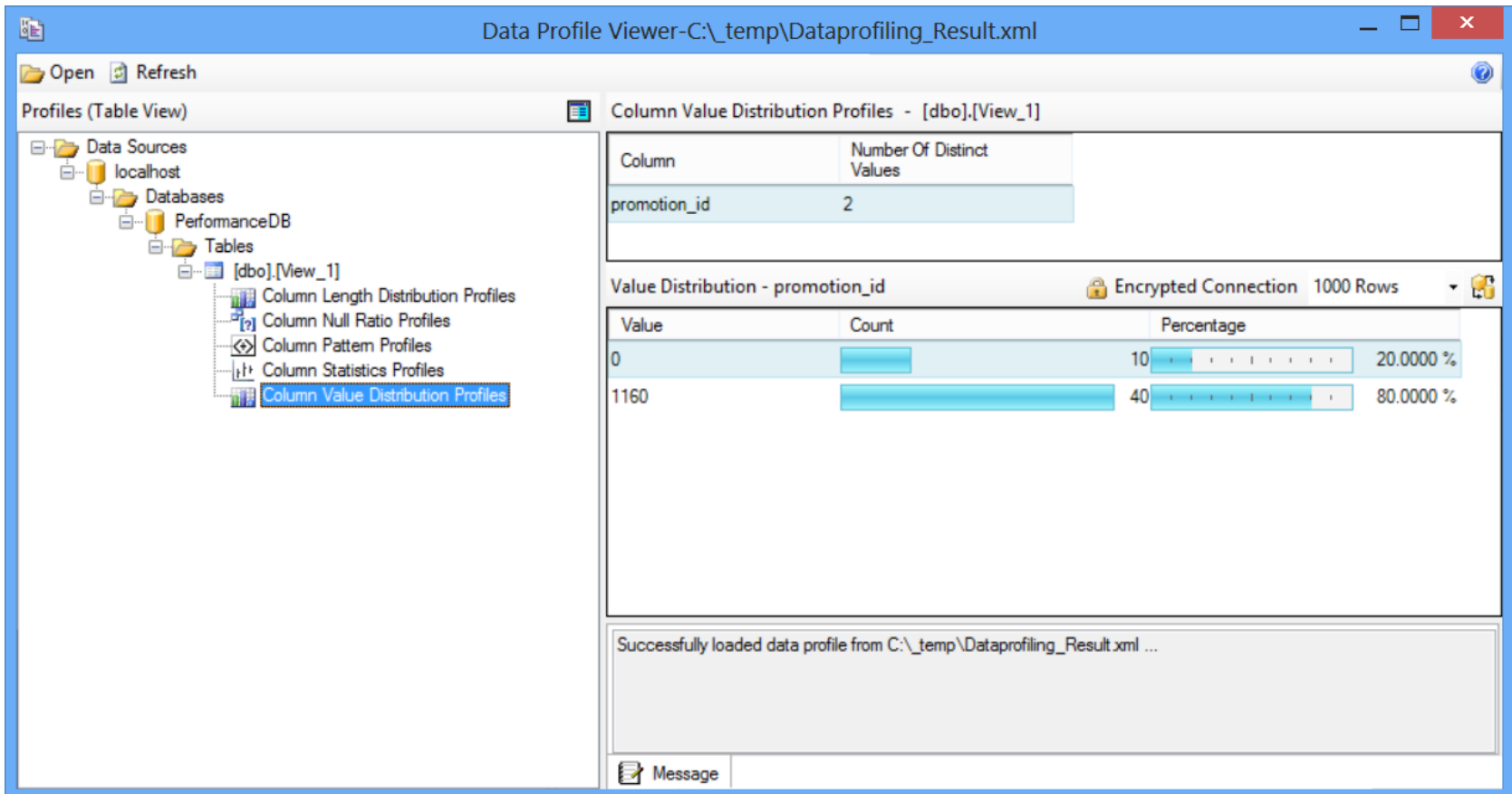
Request Properties:

- Data**
 - ConnectionManager: localhost.PerformanceDB
 - TableOrView: [dbo].[View_1]
 - Column: (*)
- General**
 - RequestID: PatternReq
- Options**
 - MaxNumberOfPatterns: 10

RequestID
Profile Request ID

OK Cancel Help

Demo result



The screenshot displays the Data Profile Viewer application window. The title bar reads "Data Profile Viewer-C:_temp\Dataprofiling_Result.xml". The interface is split into two main panes. On the left, a tree view under "Profiles (Table View)" shows a hierarchy: "Data Sources" > "localhost" > "Databases" > "PerformanceDB" > "Tables" > "[dbo].[View_1]". Under "[dbo].[View_1]", several profile types are listed: "Column Length Distribution Profiles", "Column Null Ratio Profiles", "Column Pattern Profiles", "Column Statistics Profiles", and "Column Value Distribution Profiles", which is highlighted in blue. The main pane on the right, titled "Column Value Distribution Profiles - [dbo].[View_1]", contains two tables. The top table lists the column "promotion_id" with 2 distinct values. Below it, a "Value Distribution - promotion_id" chart shows two bars: one for value 0 (count 10, 20.0000%) and one for value 1160 (count 40, 80.0000%). The chart also indicates an "Encrypted Connection" and "1000 Rows" are displayed. At the bottom of the main pane, a message box states: "Successfully loaded data profile from C:_temp\Dataprofiling_Result.xml ...". A "Message" button is located at the bottom left of the main pane.

Column	Number Of Distinct Values
promotion_id	2

Value	Count	Percentage
0	10	20.0000 %
1160	40	80.0000 %

Demo result

```
Dataprofiling_Result.xml x
1 <?xml version="1.0"?>
2 <DataProfile xmlns:xsd="http://www.w3.org/2001/XMLSchema"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xmlns="http://schemas.microsoft.com/sqlserver/2008/DataDebugger/">
5     <ProfileVersion>1.0</ProfileVersion>
6     <DataSources>...</DataSources>
14 <DataProfileInput>...</DataProfileInput>
55 <DataProfileOutput>
56     <Profiles>
57         <ColumnValueDistributionProfile IsExact="true" ProfileRequestID="ValueDistReq">
58             <DataSourceID>{33E8D61B-6415-4970-8B54-FAFD156C27DD}</DataSourceID>
59             <Table DataSource="localhost" Database="PerformanceDB" Schema="dbo" Table="View_1" RowCount="50" />
60             <Column Name="promotion_id" SqlDbType="Int" MaxLength="0" Precision="10" Scale="0" LCID="-1"
61                 CodePage="0" IsNullable="true" StringCompareOptions="32768" />
62             <NumberOfDistinctValues>2</NumberOfDistinctValues>
63             <ValueDistribution>
64                 <ValueDistributionItem>
65                     <Value>0</Value>
66                     <Count>10</Count>
67                 </ValueDistributionItem>
68                 <ValueDistributionItem>
69                     <Value>1160</Value>
70                     <Count>40</Count>
71                 </ValueDistributionItem>
72             </ValueDistribution>
73         </ColumnValueDistributionProfile>
74         <ColumnLengthDistributionProfile ProfileRequestID="LengthDistReq" IsExact="true">
```

Demo result

```
1 -- Dataprofiling
2 -- ValueDistributionProfile
3
4 Declare @file      varChar(255)
5 Set      @file      = 'C:\ <folder> \Dataprofiling_Result.xml'
6
7 Declare @charVar   varChar(max)
8           , @nameSp varChar(400)
9           , @sqlCmd varChar(400)
10          , @xmlVar  xml
11
12 Declare @tmpTable Table (col1 varchar(max))
13
14 Set @nameSp = ' xmlns:xsd="http://www.w3.org/2001/XMLSchema"
15           xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
16           xmlns="http://schemas.microsoft.com/sqlserver/2008/DataDebugger/" '
17
18 Set @sqlCmd = ' Select * From OPENROWSET ( BULK ''' + @file + ''', SINGLE_BLOB ) AS x ';
19
20 Insert Into @tmpTable
21 exec( @sqlCmd )
22
23 Set @xmlVar = ( select Top(1) CAST( Replace( col1, @nameSp, '' ) as xml ) from @tmpTable );
24 ----- select @xmlVar
```

Demo result

```
26 Declare @i int; -- idoc
27 Execute sp_xml_preparedocument @i OutPut
28     , @xmlVar
29
30 Execute SELECT *
31 FROM   OpenXML ( @i, '/DataProfile/DataProfileOutput/Profiles/ColumnValueDistributionProfile
32                        /ValueDistribution/ValueDistributionItem' )
33 WITH  ( ProfileRequest  nvarchar(100)  '..../@ProfileRequestID'
34        , SchemaName     nvarchar(100)  '..../Table/@Schema'
35        , TableName      nvarchar(100)  '..../Table/@Table'
36        , RowCnt         nvarchar(100)  '..../Table/@RowCount'
37        , ColumnName     nvarchar(100)  '..../Column/@Name'
38        , ColumnType     nvarchar(100)  '..../Column/@SqlDbType'
39        , DistinctValues nvarchar(100)  '..../NumberOfDistinctValues'
40        , Value_item     nvarchar(100)  'Value'
41        , Count_item    nvarchar(100)  'Count'
42      )
43
44 Execute sp_xml_removedocument @i
```

100 % <

Results Messages

	ProfileRequest	SchemaName	TableName	RowCnt	ColumnName	ColumnType	DistinctValues	Value_item	Count_item
1	ValueDistReq	dbo	View_1	50	promotion_id	Int	2	0	10
2	ValueDistReq	dbo	View_1	50	promotion_id	Int	2	1160	40

DQS “*work items*”

- Domain Management
- Knowledge Discovery
- Matching Policy

DEMO

Demo result

```
24 -- Demo 01 TSQL
25 -->> gibt es phonetisch ähnliche Einträge
26
27 SELECT b.Buchtitel, SoundEx(b.Buchtitel) as 'SoundEx_Buchtitel'
28 FROM   dbo.Buch b
29 ORDER by 2 DESC
30
31 SELECT Difference( 'Microsoft Windows Server 2008 Serveradministration'
32                   , 'Microsoft Windows Server 2008 Unternehmensadministration'
33                   ) as 'Difference'
34
35 -- http://support.microsoft.com/kb/100365
36
```

100 %

Results Messages

	Buchtitel	SoundEx_Buchti...
14	SQL Server 2008-Programmierung mit der CLR und .NET	S240
15	Microsoft Windows Server 2008 Serveradministration	M262
16	Microsoft Windows Server 2008 Unternehmensadministration	M262
17	Microsoft Office SharePoint Server 2007 - Das Handbuch	M262
18	Microsoft Office SharePoint Server 2007-Programmierung	M262
19	Microsoft Windows Server 2008 Hyper-V - Die technische Referenz	M262
20	Microsoft SQL Server 2005 - Das Entwicklerbuch	M262

	Difference
1	4

Demo result

Knowledge Base Management Knowledge Base: T1 Activity: Matching Policy

Map Matching Policy Matching Results

Create matching policy

Rule

similar_Buchtitel

Rule Details

Rule name: similar_Buchtitel

Description:

Min. matching score: 80 %

Rule Editor

Domain	Similarity	Weight	Prerequisite
Buchtitel	Similar	100 %	<input type="checkbox"/>

Matching Results Restart Overlapping clusters Execute on previous data Reload data from source

Filter: Matched 80%

Record Id	Cluster	Score	Buchtitel	Autor	ISBN	Preis
1000002	1000002		Microsoft Windows Server 2008	12	978-3-86645-946-5	79
1000004	1000002	80%	Microsoft Windows Server 2008	12	978-3-86645-947-2	79
1000016	1000016		Microsoft SQL Server 2005 - Da:	20	978-3-86063-538-4	59
1000017	1000016	91%	Microsoft SQL Server 2008 R2 -	20	978-3-86645-514-6	59
1000023	1000023		SQL Server 2008 Integration Ser	21	978-0-47024-795-2	39.8
1000025	1000023	83%	SQL Server 2008 Reporting Serv	19	978-0-47024-201-8	39.8

Profiler Matching Results

Cancel Close Back Next Finish



SSIS DQS Matching Transformation

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SSIS DQS Matching Transformation 1.0

Rating: ★★★★★ Based on 4 ratings

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Released: Jun 25, 2013

Updated: Jun 25, 2013 by [Tillmann](#)

Dev status: Stable ?

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Released | Planned

★ **SSIS DQS Matching Transformation 1.0**
Jun 25, 2013, Stable
★★★★★

Azure Datamarket

The screenshot shows the Azure DataMarket website interface. The browser address bar displays <http://datamarket.azure.com/browse?query=oh22>. The page header includes navigation links for 'Informationen', 'Anwendungen', 'Daten', 'Mein Konto', and 'Veröffentlichen', along with a search bar containing 'Marketplace durchsuchen'. The main content area shows search results for 'OH22', with 2 results found. The results are sorted by 'Datum hinzugefügt'. The first result is 'Country Codes', published by 'oh22information services GmbH'. The second result is 'German Bank Codes', also published by 'oh22information services GmbH'. The footer contains navigation links for 'START', 'DURCHSUCHEN', 'KONTO', 'VERÖFFENTLICHEN', 'ENTWICKELN', and 'SUPPORT'.

Windows Azure Marketplace

Sprache: Deutsch Region: Deutschland Support Anmelden

Informationen Anwendungen Daten Mein Konto Veröffentlichen Marketplace durchsuchen

START > SUCHE: OH22

typ

DATEN (2)

preis

KOSTENLOS (2)

kategorie

REFERENZ (1)

WIRTSCHAFT UND FINANZWESEN (1) ▶

herausgeber

OH22INFORMATION SERVICES GMBH (2)

2 Ergibt: SUCHE: OH22

Sortieren nach: Datum hinzugefügt Name Herausgeber 1

Country Codes daten
veröffentlicht von: oh22information services GmbH
Country Codes contains codes for nearly all countries of the world like ISO2, ISO3 or FIPS. In Addition to the English name the dataset contains country names in 9 different languages like German, Spain, Chinese or Russian.

German Bank Codes daten
veröffentlicht von: oh22information services GmbH
National payment service providers involved in the payment are identified after an agreement between the banking industry and the Bundesbank by bank codes. The Deutsche Bundesbank is responsible for assignment, modification, and deletion of bank codes. The bank codes and related information are original provided by the German Bundesbank. The data is offered free for personal and commercial use.

1

START
Whitepaper
Fallstudien
Videos
Dokumentation

DURCHSUCHEN
Alle
Daten
Anwendungen

KONTO
Kontoinformationen
Meine Anwendungen
Meine Daten
Kontoschlüssel

VERÖFFENTLICHEN
Veröffentlichungsportal
Onlinere Ressourcen
Videos
Data Publishing Kit
Application Publishing Kit

ENTWICKELN
Anleitung
Codebeispiele
Ihre Anwendung registrieren
Verwenden der Microsoft Translator-API
Entwicklerbereich

SUPPORT
Forum/Blog
Support zu Abrechnungsfragen
Technischer Support
IP-Verletzungsformular
Möchten Sie Datenherausgeber werden?
Möchten Sie App-Herausgeber werden?

Azure Datamarket

The screenshot shows the Azure DataMarket website interface. The browser address bar displays `http://datamarket.azure.com/browse?query=melissa`. The page header includes navigation links for 'Informationen', 'Anwendungen', 'Daten', 'Mein Konto', and 'Veröffentlichen', along with a search bar containing 'Marketplace durchsuchen'. The main content area shows search results for 'MELISSA' with 7 results. The results are sorted by 'Datum hinzugefügt'. The first result is 'Fone*Data' by Melissa Data Corporation, described as 'Match up telephone numbers to ZIP Code data.' The second result is 'Phone Check' by Melissa Data Corporation, described as 'Phone Check parses and validates U.S. and Canadian phone numbers to the 7 or 10-digit levels to improve telemarketing efficiency, reduce data entry errors, and eliminate redialing and operator assistance. It updates and corrects area codes; identifies phone number type as business, residential, SOHO, cell, landline, or VOIP; identifies and validates toll-free numbers; plus appends geographic/demographic data linked to the phone number location.' The third result is 'IP Check' by Melissa Data Corporation, described as 'IP Check identifies an Internet user's geographical information, including: country, region, city, latitude and longitude, ZIP Code; ISP; and domain name using a proprietary IP address lookup database and technology.' The fourth result is 'Name Check' by Melissa Data Corporation, described as 'Name Check splits and genderizes full, dual, inverse and mixed format names to enable personalized communications; determine overall gender makeup of a database or list; and create targeted, gender-based campaigns for greater response. Name Parser will parse names into five components (Prefix, First, Middle or Initial, Last, and Suffix), and recognizes more than 190,000 first and last names to correct misspelled'.

Windows Azure Marketplace

Informationen Anwendungen Daten Mein Konto Veröffentlichen Marketplace durchsuchen

START > SUCHE: MELISSA

7 Ergibt: SUCHE: MELISSA

Sortieren nach: Datum hinzugefügt Name Herausgeber 1

Fone*Data
veröffentlicht von: Melissa Data Corporation
Match up telephone numbers to ZIP Code data.

Phone Check
veröffentlicht von: Melissa Data Corporation
Phone Check parses and validates U.S. and Canadian phone numbers to the 7 or 10-digit levels to improve telemarketing efficiency, reduce data entry errors, and eliminate redialing and operator assistance. It updates and corrects area codes; identifies phone number type as business, residential, SOHO, cell, landline, or VOIP; identifies and validates toll-free numbers; plus appends geographic/demographic data linked to the phone number location.

IP Check
veröffentlicht von: Melissa Data Corporation
IP Check identifies an Internet user's geographical information, including: country, region, city, latitude and longitude, ZIP Code; ISP; and domain name using a proprietary IP address lookup database and technology.

Name Check
veröffentlicht von: Melissa Data Corporation
Name Check splits and genderizes full, dual, inverse and mixed format names to enable personalized communications; determine overall gender makeup of a database or list; and create targeted, gender-based campaigns for greater response. Name Parser will parse names into five components (Prefix, First, Middle or Initial, Last, and Suffix), and recognizes more than 190,000 first and last names to correct misspelled

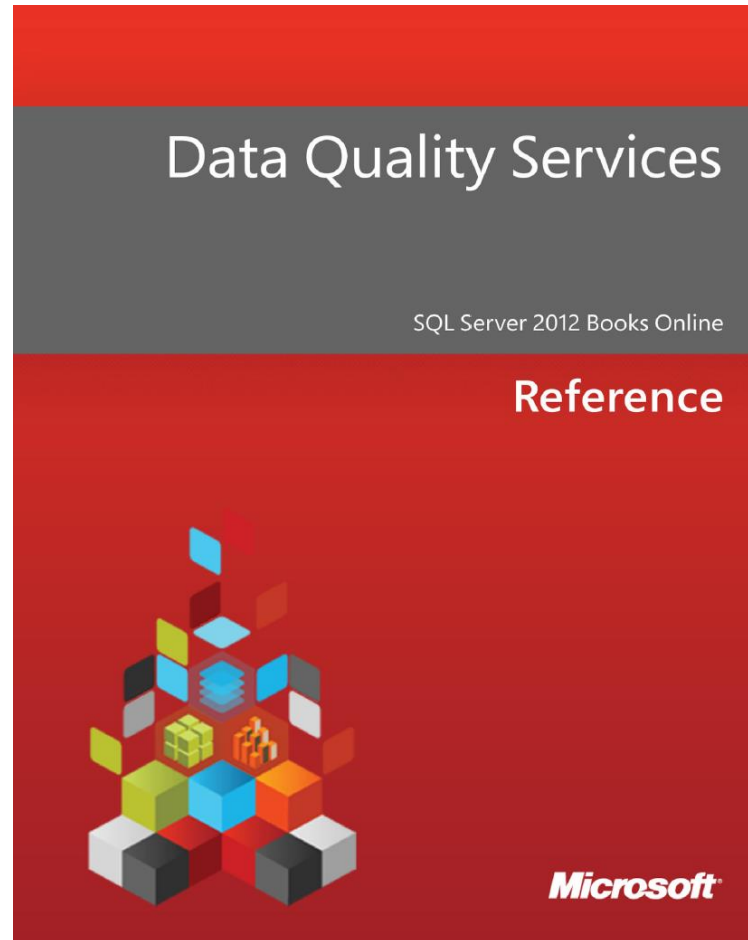
Azure Datamarket

The screenshot shows the Azure Marketplace interface for the 'Verify - worldwide address verification and cleansing' dataset. The page includes a navigation bar with 'Windows Azure Marketplace' and 'Marketplace durchsuchen' (search). The breadcrumb trail is 'START > DATEN > VERIFY - WORLDWIDE ADDRESS VERIFICATION AND CLEANSING'. The dataset details include the Loqate logo, title, and a list of purchase options:

Quantity (Datensätze/Monat)	Price (pro Monat)	Action
1.000	159,03 €	KAUFEN
5.000	278,30 €	KAUFEN
10.000	373,64 €	KAUFEN
50.000	1.749,32 €	KAUFEN
100.000	2.989,13 €	KAUFEN

Additional information includes: 'Veröffentlicht von: Loqate', 'Kategorien: Data Quality Services', 'Datum hinzugefügt: 03.06.2011', and 'Support für dieses Angebot erhalten'. A description of the Loqate Verify SDK is provided, along with a 'Like' button and links for 'Solution Overview' and 'Documentation'.

DQS recommended literature



DQS recommended literature

The screenshot shows the Amazon product page for the Kindle edition of the book "DQS step-by-step with SQL-Server: SQL-Server Data Quality Services" by Alexander Karl. The page includes the Amazon logo, navigation links, a search bar with the query "DQS step-by-step", and a "Go" button. Below the search bar, there are navigation links for "Buy a Kindle", "Kindle eBooks", "Advanced Search", "Daily Deals", "Free Reading Apps", "Kindle Singles", "Newsstand", "Accessories", "Kindle Unlimited", "Discussions", and "Manage Your Content". The main content area features a "Look inside" button, the book title, author name, and a "Kindle Price" of \$9.54. A promotional banner for the "Free Kindle Reading App" is also visible, with a form to enter an email or mobile phone number to receive the app.

amazon Try Prime [Your Amazon.com](#) [Today's Deals](#) [Gift Cards](#) [Sell](#) [Help](#)

Shop by **Department**

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(Data Quality Services)
with
SQL-Server

Alexander Karl

kindle edition

DQS step-by-step with SQL-Server: SQL-Server Data Quality Services [Kindle Edition]
[Alexander Karl](#) (Author)
★☆☆☆☆ (1 customer review)

Kindle Price: **\$9.54** includes VAT* & free international wireless delivery via **Amazon Whispernet**

- Length: 78 pages (estimated)
- Don't have a Kindle? [Get your Kindle here](#).

Free Kindle Reading App
Anybody can read Kindle books—even without a Kindle device—with the **FREE** Kindle app for smartphones, tablets and computers.

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???

Thank you

SQL Server Öncüleri

SQL Server konusunda bilmedikleriniz ve merak ettikleriniz için!