

SQL SERVER WITH PLEX: Strategies To Integrate PLEX With SQL Server 2008

-A Symphony of Alternatives-

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- Engineer, languages, food, sports/fitness, travel, technologies, broadcasting, and society
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Strategies To Integrate PLEX With SQL Server 2008

SQL Server is one of the most important RDBMs in the market. In this session 3 main strategies to integrate PLEX applications with SQL Server are presented:

- Use of Stored Procedures (SPs)
- T-SQL Code via EXEC SQL
- SQL Server Reporting Services (SSRS) Reports

Agenda

- Introduction: PLEX and SQL Server, a symphonic balance
- 1st Mov.
 - State of SQL Server, a refresher
- 2nd Mov.
 - Strategy 1: Use of Stored Procedures
- 3rd Mov.
 - Strategy 2: Use of T-SQL Code via EXEC SQL
- 4th Mov.
 - Strategy 3: Use of SSRS Reports
- Encore
 - Q/A



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1st Mov. SQL Server, a refresher



State of SQL Server, a refresher

SQL Server State and Main Features

- 68% of DB Sites use SQL Server (Gartner, 2008)
- MS' Elite RDBMs for Enterprise Level
- Created by Sybase then sold to/rewritten by Microsoft (MS)
- Since SQL Server 2000 it includes:
 - Enhanced Performance and IDE tools
 - ETL Tool: SSIS
 - Reporting Server: SSRS
 - Messaging Technologies: Service Broker and Notification Services
 - OLAP and Data Mining: Analysis Services



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State of SQL Server, a refresher

SQL Server Versions

- SQL Server 2008 R2 (Kilimanjaro)
 - Master Data Services, Multi Server, and Reporting/Analysis/Integration
- SQL Server 2012 (Denali)
 - Last version supporting OLE DB
 - Always On, Contained DBs, Enhanced Performance/Security/Role Management

State of SQL Server, a refresher

SQL Server Editions

■ Mainstream

- Datacenter: Full Featured, high app support and scalability (RIP, SS 2012)
- Enterprise: Core DB Engine + add-on Services and tools
- Standard: Enterprise 'light', fewer cluster nodes and availability functions
- Web: Low TCO Web Hosting
- Business Intelligence: Standard + BI Tools such as Power technologies
- Workgroup: Core DB only (RIP, SS 2012)
- Express: Scaled down free SS, Core DB only
 - Express With Tools. Includes SSMS Basic
 - Express With Advanced Services. Text Search and SSRS.



State of SQL Server, a refresher

SQL Server Editions

- Specialized
 - Azure: SAS Cloud
 - Compact (SQL CE): Embedded DB Engine based on SQL Mobile
 - Developer: Enterprise, not for Production environments
 - Embedded (SSEE): Windows Services
 - Evaluation: 180 day Trial Enterprise Edition
 - Fast Track: Enterprise Datawarehouse and BI
 - Local: Embedded on-demand DB
 - Parallel Data Warehouse (PDW)
 - Datawarehouse Appliance: Partnership with Dell and HP



SQL Server with PLEX – Integration Strategies

- Mov. 2
 - Strategy 1: Use of Stored Procedures (SPs)
- Mov. 3
 - Strategy 2: Use of T-SQL Code via EXEC SQL
- Mov. 4
 - Strategy 3: Use of SSRS Reports

2ndMov. 1st strategy, Stored Procedures



SQL Server with PLEX – Integration Strategy 1: Stored Procedures (SPs)

SPs Advantages

- Reduce Compilation Overhead
- Reduce Network Traffic
- Business Logic Encapsulation
- Access Rights Delegation
- SQL Injection Attacks Protection

SQL Server with PLEX – Integration Strategy 1: Stored Procedures (SPs)

SPs Creation

- I/O definition, existing SP
- Adjust I/O
- Write SP contents
- Adjust for parameters
- Create/Update the SP
- Test the SP

```
USE [ZSR_SETUP]
GO

DECLARE @return_value int

EXEC @return_value = [dbo].[usp_QueryCityStatePDFFormsByEffDateRange]
    @PeriodFromDate = N'01/01/2010',
    @PeriodToDate = N'10/31/2011'

SELECT 'Return Value' = @return_value

GO
```

	Country	State	TaxAuthorityID	TaxAuthorityName	TaxFormID	PDFName	PDFDescription	Revision	EffectiveDate
1	US	AK	4131	HAINES	AK_HainesBorough	AK_Hainesborough_12-07A.pdf	Haines Borough and City of Haines Combines Sales ...	2007-12	20071201
2	US	AK	4131	HAINES	AK_HainesBoroughTran	AK_HainesBor_Trans_Lodg_8-03A.pdf	Haines Borough and City of Haines Combined Sales...	2003-08	20030801
3	US	AK	4134	JUNEAU	AK_Juneau	AK_Juneau_Multi_8-10A.pdf	Sales Tax Return Form	2010-08	20100801
4	US	AK	4134	JUNEAU	AK_Juneau_Sales	AK_Juneau_3-11A.pdf	Sales Tax Return	2011-03	20110301
5	US	AK	4134	JUNEAU	AK_Juneau_Sales	AK_Juneau_9-10A.pdf	Sales Tax Return	2010-09	20100901
6	US	AK	4134	JUNEAU	AK_Juneau_use_loc_ad	AK_Juneau_Multi_8-10A.pdf	Sales Tax Return Form	2010-08	20100801
7	US	AK	4136	KENAI PENINSULA	AK_KenaiPeninsula	AK_Kenai_6-09A.pdf	City and Borough Joint Sales Tax Return	2009-06	20090601
8	US	AK	4136	KENAI PENINSULA	AK_KenaiPeninsula_lo	AK_Kenai_6-09A.pdf	City and Borough Joint Sales Tax Return	2009-06	20090601
9	US	AK	4138	KETCHIKAN GATEWAY	AK_KetchikanGateway	AK_Ketchikan_7-11A.pdf	Combined City and Borough Sales Tax Report	2011-04	20110101
10	US	AK	4138	KETCHIKAN GATEWAY	AK_KetchikanGateway	AK_Ketchikan_1-10A.pdf	Combined City and Borough Sales Tax Report	2010-01	20100101
11	US	AK	4138	KETCHIKAN GATEWAY	AK_KetchikanGateway	AK_Ketchikan_1-11A.pdf	Sales & Use Tax Form	2011-01	20110101

Return Value

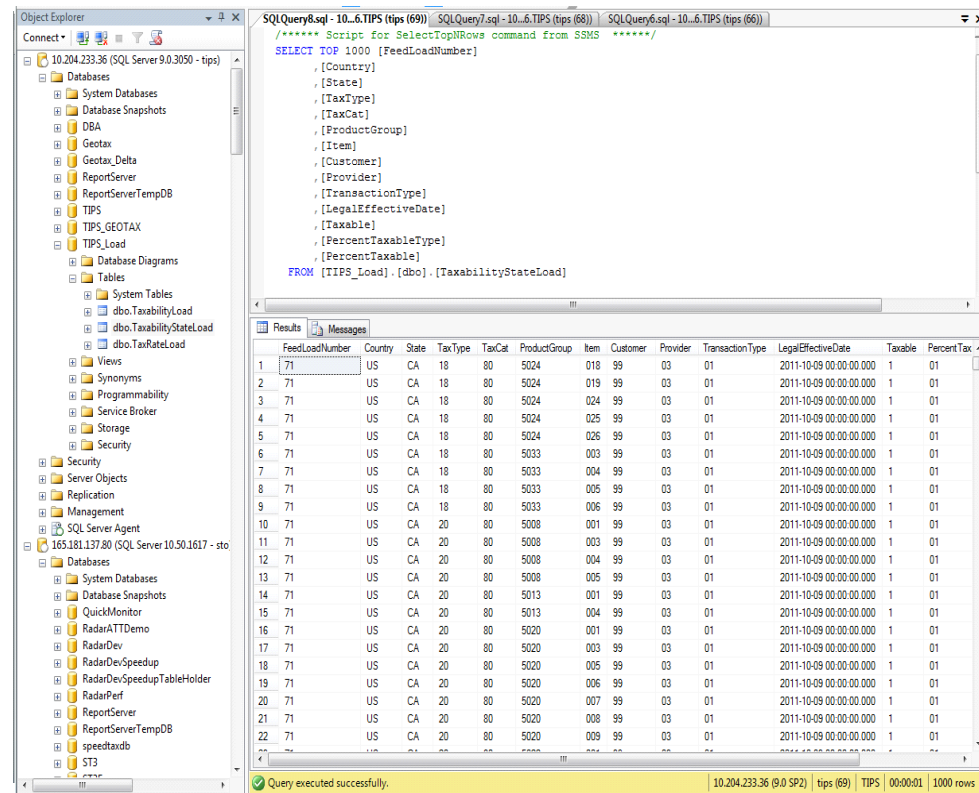
	Return Value
1	0

Query executed successfully. | 10.204.233.49 (9.0 SP3) | NAI\Lucio.Gayosso (72) | ZSR_SETUP | 00:00:00 | 759 rows

SQL Server with PLEX – Integration Strategy 1: Stored Procedures (SPs), Cont.

SP Without A Return Dataset

- Create the SP
- Create Abstract Template
- Instantiate Template
- SP Caller Wrapper
- Client Caller
- Runtime Example



The screenshot displays the SQL Server Enterprise Manager interface on the left, showing the database structure of 'tips'. The right pane shows a SQL Query window with a script for 'SelectTopNRows' and its execution results.

SQL Query Script:

```
/****** Script for SelectTopNRows command from SMS ******/
SELECT TOP 1000 [FeedLoadNumber]
, [Country]
, [State]
, [TaxType]
, [TaxCat]
, [ProductGroup]
, [Item]
, [Customer]
, [Provider]
, [TransactionType]
, [LegalEffectiveDate]
, [Taxable]
, [PercentTaxable]
, [PercentTaxableType]
FROM [TIPS_Load].[dbo].[TaxabilityStateLoad]
```

Query Results Table:

FeedLoadNumber	Country	State	TaxType	TaxCat	ProductGroup	Item	Customer	Provider	TransactionType	LegalEffectiveDate	Taxable	PercentTax	
1	71	US	CA	18	80	5024	018	99	03	01	2011-10-09 00:00:00.000	1	01
2	71	US	CA	18	80	5024	019	99	03	01	2011-10-09 00:00:00.000	1	01
3	71	US	CA	18	80	5024	024	99	03	01	2011-10-09 00:00:00.000	1	01
4	71	US	CA	18	80	5024	025	99	03	01	2011-10-09 00:00:00.000	1	01
5	71	US	CA	18	80	5024	026	99	03	01	2011-10-09 00:00:00.000	1	01
6	71	US	CA	18	80	5033	003	99	03	01	2011-10-09 00:00:00.000	1	01
7	71	US	CA	18	80	5033	004	99	03	01	2011-10-09 00:00:00.000	1	01
8	71	US	CA	18	80	5033	005	99	03	01	2011-10-09 00:00:00.000	1	01
9	71	US	CA	18	80	5033	006	99	03	01	2011-10-09 00:00:00.000	1	01
10	71	US	CA	20	80	5008	001	99	03	01	2011-10-09 00:00:00.000	1	01
11	71	US	CA	20	80	5008	003	99	03	01	2011-10-09 00:00:00.000	1	01
12	71	US	CA	20	80	5008	004	99	03	01	2011-10-09 00:00:00.000	1	01
13	71	US	CA	20	80	5008	005	99	03	01	2011-10-09 00:00:00.000	1	01
14	71	US	CA	20	80	5013	001	99	03	01	2011-10-09 00:00:00.000	1	01
15	71	US	CA	20	80	5013	004	99	03	01	2011-10-09 00:00:00.000	1	01
16	71	US	CA	20	80	5020	001	99	03	01	2011-10-09 00:00:00.000	1	01
17	71	US	CA	20	80	5020	003	99	03	01	2011-10-09 00:00:00.000	1	01
18	71	US	CA	20	80	5020	005	99	03	01	2011-10-09 00:00:00.000	1	01
19	71	US	CA	20	80	5020	006	99	03	01	2011-10-09 00:00:00.000	1	01
20	71	US	CA	20	80	5020	007	99	03	01	2011-10-09 00:00:00.000	1	01
21	71	US	CA	20	80	5020	008	99	03	01	2011-10-09 00:00:00.000	1	01
22	71	US	CA	20	80	5020	009	99	03	01	2011-10-09 00:00:00.000	1	01

Query executed successfully. 10.204.233.36 (9.0 SP2) | tips (69) | TIPS | 00:00:01 | 1000 rows



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SQL Server with PLEX – Integration Strategy 1: Stored Procedures (SPs), Cont.

SP With A Return Dataset

- Create the SP
- Create Abstract Template
- Instantiate Template
- Client Caller
- Runtime Example

Taxability Feed Errors

Feed Load Number: 74

Discrepancy	Tax ID	Group	Item	Customer	Provider	Trans Type	Overridden for	Effective Date	
2 Duplicates	27953	S100	010	33	33	02	33	1/1/1999	*One
Customer Key Violation	27953	S100	010	33	33	02	33	1/1/1999	*One
Provider Key Violation	27953	S100	010	33	33	02	33	1/1/1999	*One

Taxability State Feed Errors

Feed Load Number: 90

Discrepancy	Country	State	Tax Type	Tax Cat	Group	Item	Custome	Provider	Trans Type	Effective Date	axab
Country Ke	XX	AR	02	01	S110	010	99	99	01	1/1/1999	*Or 100.0%
Country.St	XX	AR	02	01	S110	010	99	99	01	1/1/1999	*Or 100.0%



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3rd Mov. Exec SQL



SQL Server with PLEX – Integration Strategy 2: USE OF T-SQL CODE

EXEC SQL

- Syntax:
 - **Exec SQL** sourcecode [, variable] [,For Update][, variable<maximumrecordsetsizefield>|value]
- Limitations:
 - Only one EXEC SQL with function with FETCHNEXT statement
 - No EXEC SQL on System I
 - Java and C#: DB column names requirement thru unprepared statements
- Use of Source Code objects where I/O variables' field match
- Parameter Substitution with **SRC parameter FLD**



SQL Server with PLEX – Integration Strategy 2: USE OF T-SQL CODE (cont.)

EXEC SQL Basic Examples

■ Delete.

- **Exec SQL** Src: Delete Currency
- **Source Code:** Delete From Currency

■ FetchNext

- **Exec SQL** Src: Select Currency, Exchange Rate
- FetchNext
- **SC:** Select Currency_Name,Exchange_Rate From Currency

■ FetchNext and Parameters

- Set View<Currency Code> = USD
- **Exec SQL** Src: Select Currency, View
- FetchNext
- **SC:** Select * from Currency where Currency_Code = '&(1:)'

	Currency Code	Currency Name	Exchange Rate
Row 1	USD	US Dollars	1.5
Row 2	FFR	French Franc	4.2
Row 3	GBP	British Pound	1.1



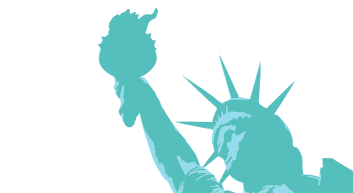
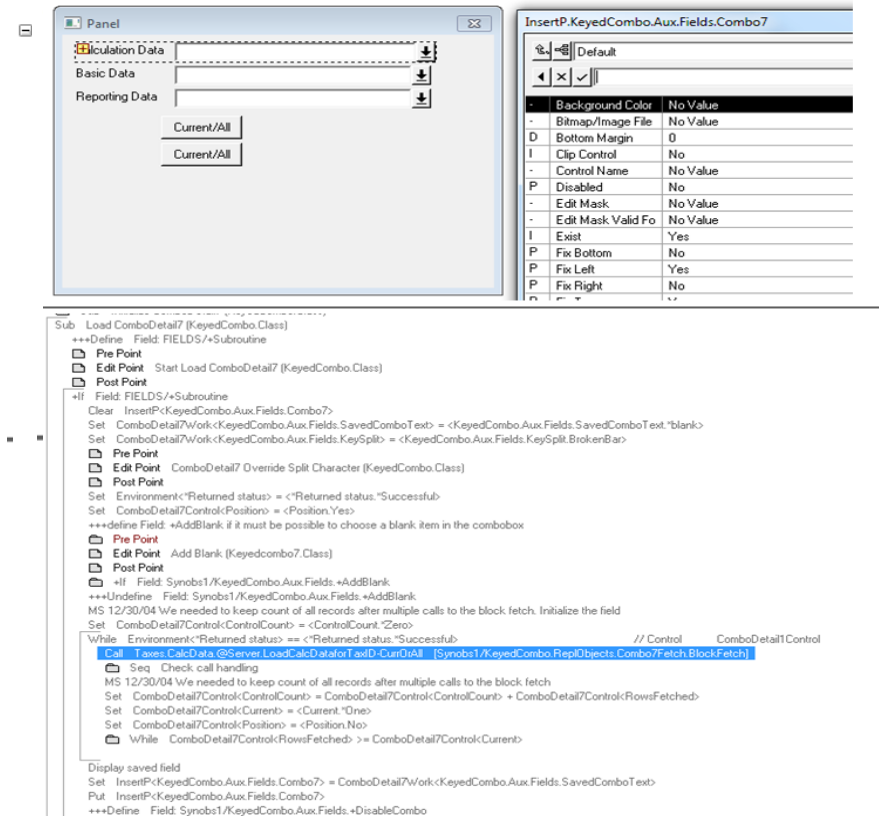
	Currency Code	Currency Name	Exchange Rate
Row 1	USD	US Dollars	1.5



SQL Server with PLEX – Integration Strategy 2: USE OF T-SQL CODE (cont.)

EXEC SQL Advanced Example (BlockFetch, Parameters, and Override)

- Abstract BF SQL Query Template
- Instantiation
- Use like a regular BF
- Multiple Inheritance
 - Allows SQL Code Override
 - Function used as a BF but for a different purpose





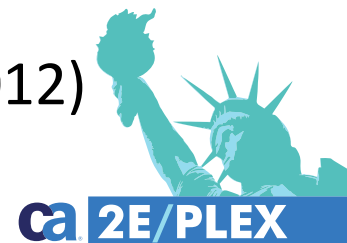
4th Mov. SSRS Reports



SQL Server with PLEX – Integration Strategy 3: SSRS Reports

SQL Server Reporting Services (SSRS)

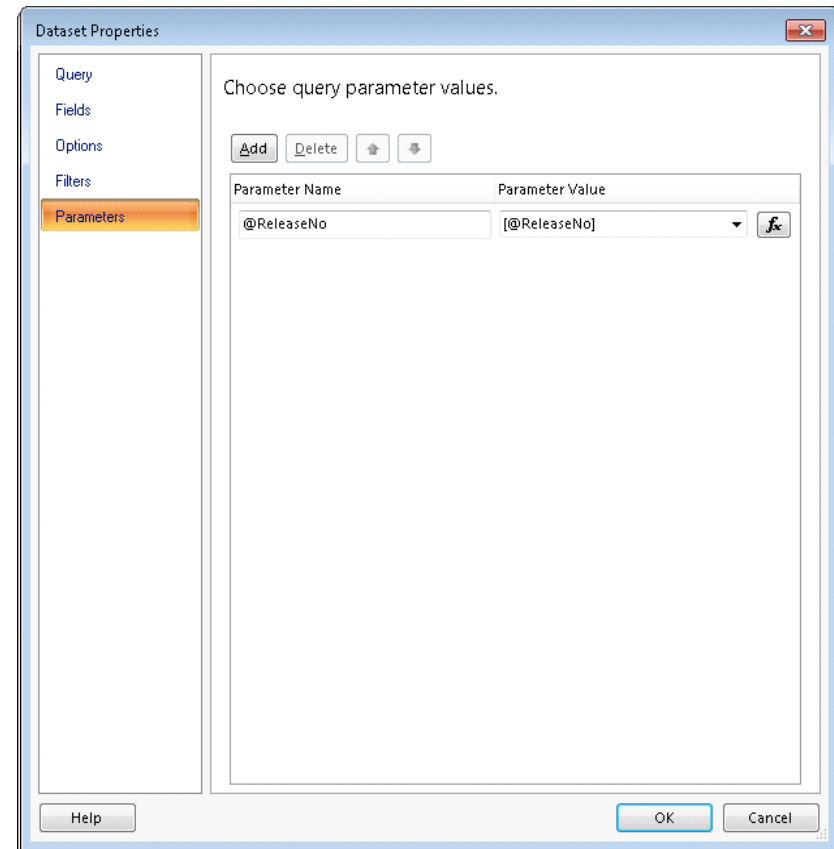
- Server SW Reporting System administered via Web Interface
- Released in 2004 as add-on to SQL Server 2000
- Report Definition Language (RDL)
- Genned as Excel, PDF, CSV, XML, TIFF, and HTML Web Archive
- Interact directly with Report Web Service or Report Manager
- Role Based security on item, folder, or site wide
- ASP.NET ReportViewer Web Control or ReportViewer WFC (S/L)
- Ad-hoc and mobile reporting capability (SS2012)



SQL Server with PLEX – Integration Strategy 3: SSRS Reports (cont.)

SSRS Reports Design Elements

- Dataset



SQL Server with PLEX – Integration Strategy 3: SSRS Reports (cont.)

SSRS Reports Design Elements

- Dataset
- SP as datasource
- Suggested: URLs DB file

BLDNTCTC108.TIPS - dbo.ReportURLs*			
SELECT TOP (200) SSRS_ID, Description, URL FROM ReportURLs			
	SSRS_ID	Description	URL
▶	1	Taxability Report	http://www.somewhere.com
*	NULL	NULL	NULL

SQL Server with PLEX – Integration Strategy 3: SSRS Reports (cont.)

SSRS Reports Launched With PLEX

- Build and launch URL
 - Report Name + parameter(s) and value(s)
- Build the URL thru format msg
 - Retrieve the URL from DB file
- Launch default browser with URL
- Runtime Example

SubID 2379 View Re

1 of 2 ? 100% Find | Next

Taxability Report

Country	Country Name	State	State Name	Tax Authority Name	Authority Type	Tax Type	Tax Type Desc	Ta
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01
US	USA	TX	TEXAS	State default		04	CITY SALES TAX	01



Encore QA

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