

Inbetriebnahme

M2ERP - Synchronisierungsmiddleware

Voraussetzungen

- Windows 10 (Version 1803)
- .Net Framework 4.7.03056
- Node Js Version 8.10.0
- Npm version 6.5.0
- Microsoft SQL Server Express (64-bit)(Version 14.0.1000.169)
- Neueste CouchDB für Debugging
- Visual Studio
- Microsoft SQL Server Manager Studio (optional)
- Zugriff zu Gitlab Repository (<https://its-git.fh-salzburg.ac.at/fhs38054/M2ERP>)

Download Repository

- Folge dem Link zu <https://its-git.fh-salzburg.ac.at/fhs38054/M2ERP>
- Download des Repositories (Klonen, Download, ...)
- Wechseln in Verzeichnis /02_Implementierung
 - CouchSQLSync_v3 beinhaltet das WebInterface
 - CouchSQLSync_v4 beinhaltet die Middleware und andere Debugging Hilfe

Ausführen des Testprogrammes (1)

- Wechseln in Verzeichnis CouchSQLSync_v3\couch_sql_sync_v3
- Shift-Rechtsklick in Ordner -> Powershell/Cmd hier öffnen
- Installieren der Abhängigkeiten des Webinterfaces
 - > npm i
- Ausführen des Webinterfaces
 - > npm start

Ausführen des Testprogrammes (2)

```
PS C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3> npm i
> leveldown@3.0.0 install C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3\node_modules\leveldown
> prebuild-install || node-gyp rebuild

> uglifyjs-webpack-plugin@0.4.6 postinstall C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3\node_modules\uglifyjs-webpack-plugin
> node lib/post_install.js

> level@3.0.2 postinstall C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3\node_modules\level
> opencollective-postinstall || exit 0

Thank you for using level!
If you rely on this package, please consider supporting our open collective:
> https://opencollective.com/level/donate

npm WARN SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.4 (node_modules\fsevents):
npm WARN SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.4: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})

added 1392 packages from 782 contributors and audited 14917 packages in 35.29s
found 3 vulnerabilities (2 low, 1 high)
  run 'npm audit fix' to fix them, or 'npm audit' for details
PS C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3> npm start

> couch_sql_sync_v3@0.1.0 start C:\Users\Kuchenkiller\Downloads\M2ERP-master\02_Implementierung\CouchSQLSync_v3\couch_sql_sync_v3
> react-scripts start
Starting the development server...
Compiled successfully!

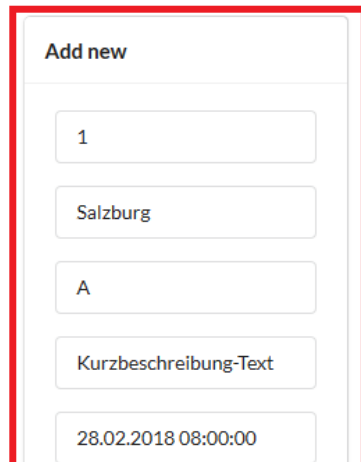
You can now view couch_sql_sync_v3 in the browser.

  Local:    http://localhost:3000/
  On Your Network: http://172.18.175.241:3000/

Note that the development build is not optimized.
To create a production build, use npm run build.
```

Web Interface (1)

- Das Web Interface besteht aus 2 Hauptelementen und der Navigation (rechts)
 - 1 - Arbeitsfläche (Add | Edit | Delete) von Tickets
 - current Page: add ermöglicht die Auswahl von Add | Edit | Delete



A screenshot of a web form titled "Add new". The form is enclosed in a red rectangular border. It contains five input fields stacked vertically: a text field with the value "1", a text field with the value "Salzburg", a text field with the value "A", a text field with the placeholder text "Kurzbeschreibung-Text", and a text field with the value "28.02.2018 08:00:00".

Click to enable Dev View

current Page: add ▾

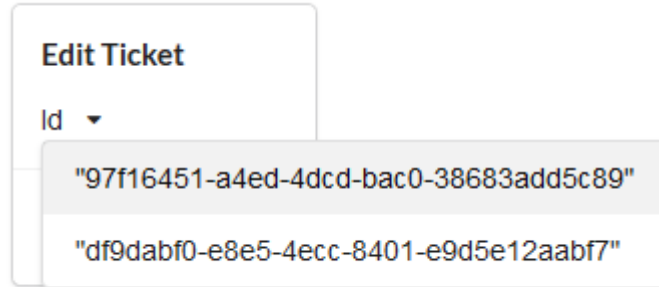
Web Interface – Arbeitsfläche Add

- Hinzufügen neuer Tickets
 - Verändern der Tickets durch Formularfelder
 - Hinzufügen der Tickets in lokale PouchDB durch Submit Button (letztes Feld, nach unten scrollen)

Web Interface – Arbeitsfläche Edit

[Edit benötigt bereits eingefügte Tickets]

- Wechseln auf Edit durch Auswahl in Navigation
- Auswahl des zu bearbeitenden Tickets über Id



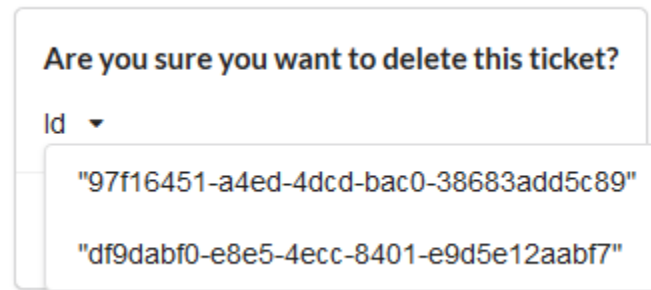
The screenshot shows a web form titled "Edit Ticket". Below the title is a dropdown menu labeled "Id" with a downward arrow. The dropdown is open, showing two options: "97f16451-a4ed-4dcd-bac0-38683add5c89" and "df9dabf0-e8e5-4ecc-8401-e9d5e12aabf7".

- Ändern des aktuellen Tickets über Formularfelder
- Absenden der Änderung über commit edit Button (letztes Feld, nach unten scrollen)

Web Interface – Arbeitsfläche Delete

[Delete benötigt bereits eingefügte Tickets]

- Wechseln auf Delete durch Auswahl in Navigation
- Auswahl des zu löschenden Tickets über Id



A confirmation dialog box with a light gray border and a white background. At the top, it asks "Are you sure you want to delete this ticket?". Below this is a label "Id" followed by a dropdown arrow. The dropdown menu is open, showing two options: "97f16451-a4ed-4dcd-bac0-38683add5c89" and "df9dabf0-e8e5-4ecc-8401-e9d5e12aabf7".

Are you sure you want to delete this ticket?

Id ▾

"97f16451-a4ed-4dcd-bac0-38683add5c89"

"df9dabf0-e8e5-4ecc-8401-e9d5e12aabf7"

- Durchführen der Änderung über Yes, delete Button (letztes Feld, nach unten scrollen)

Web Interface – Dev View

- Über Klick auf Dev View in Navigation

Click to enable Dev View
current Page: delete ▼

- ... öffnet sich die Developer View

Developer Options

Connection String

http://localhost:12345/api/Tickets

DB to Sync

Tickets

Sync

Connect DB

Get DB Info

Start Sync

Start Sync Live

Use old UseCaseDB

Web Interface – Dev View

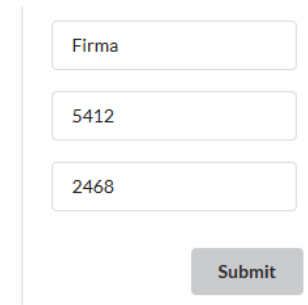
- Connection String ... URL zu Web Interface
- DB to Sync ... Welche Datenbank soll synchronisiert werden
- Connect DB
 - Setzt Connection String als aktive Datenbank (Ermöglicht Synchronisierung)
- Get DB Info
 - Anfrage um Datenbank Replikator (In diesem Fall Middleware)
Metainformation
- Start Sync
 - Ein einzelner Synchronisationsvorgang

Web Interface – Dev View

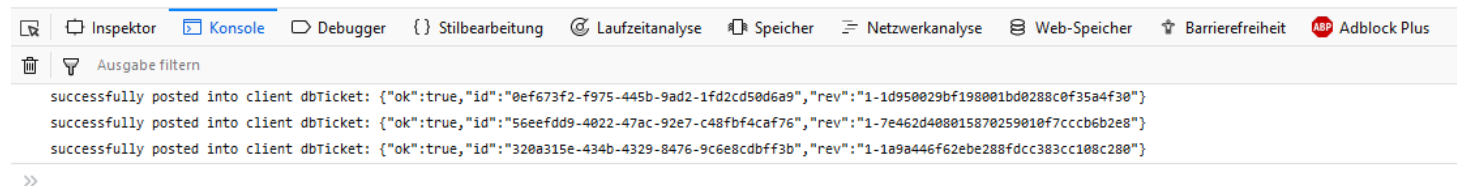
- Start Sync Live
 - Wiederholender Replikationsvorgang
- Use old UseCaseDB
 - Ändert Connection String auf eine default installierte CouchDB Instanz

Ausführen des Testprogrammes (3)

- Wechseln auf Website (localhost:3000)
- Hinzufügen mehrerer Tickets (Hier 3)
- Überprüfen über Web Entwickler Tools, Konsole



A screenshot of a web form with three input fields and a submit button. The first field is labeled 'Firma' and contains the text 'Firma'. The second field contains the number '5412'. The third field contains the number '2468'. Below the fields is a grey 'Submit' button.



A screenshot of a web browser's developer console. The 'Konsole' tab is selected. The console shows three log messages, each indicating a successful POST request to a client database. The messages are as follows:

```
successfully posted into client dbTicket: {"ok":true,"id":"0ef673f2-f975-445b-9ad2-1fd2cd50d6a9","rev":"1-1d950029bf198001bd0288c0f35a4f30"}
successfully posted into client dbTicket: {"ok":true,"id":"56eefdd9-4022-47ac-92e7-c48fbf4caf76","rev":"1-7e462d408015870259010f7cccb6b2e8"}
successfully posted into client dbTicket: {"ok":true,"id":"320a315e-434b-4329-8476-9c6e8cdbff3b","rev":"1-1a9a446f62ebe288fdcc383cc108c280"}
```

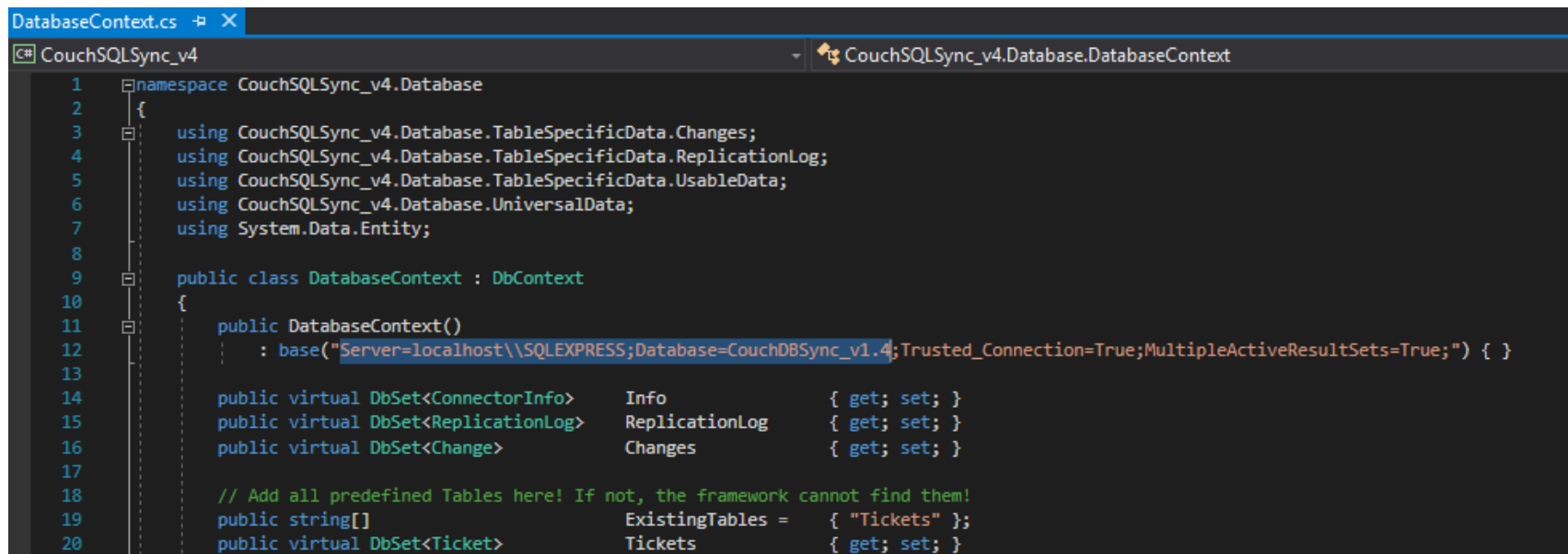
At the bottom of the console, there is a double right arrow icon (»).

Ausführen des Testprogrammes (4)

- Starten des Middlewareservers
- Wechseln in Verzeichnis `..\CouchSQLSync_v4`
- Starten der Solution in Visual Studio

Ausführen des Testprogrammes (5)

- Anpassen des Connection Strings in Database/DatabaseContext (Gefunden im Solution Explorer)



```
DatabaseContext.cs
CouchSQLSync_v4
namespace CouchSQLSync_v4.Database
{
    using CouchSQLSync_v4.Database.TableSpecificData.Changes;
    using CouchSQLSync_v4.Database.TableSpecificData.ReplicationLog;
    using CouchSQLSync_v4.Database.TableSpecificData.UsableData;
    using CouchSQLSync_v4.Database.UniversalData;
    using System.Data.Entity;

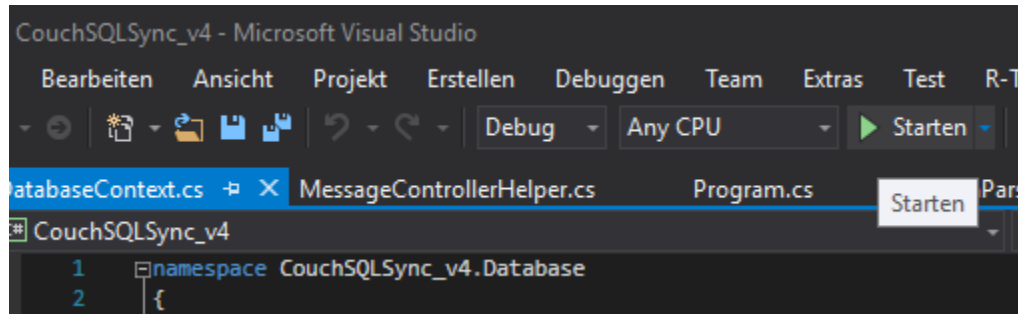
    public class DatabaseContext : DbContext
    {
        public DatabaseContext()
        : base("Server=localhost\\SQLEXPRESS;Database=CouchDBSync_v1.4;Trusted_Connection=True;MultipleActiveResultSets=True;") { }

        public virtual DbSet<ConnectorInfo> Info { get; set; }
        public virtual DbSet<ReplicationLog> ReplicationLog { get; set; }
        public virtual DbSet<Change> Changes { get; set; }

        // Add all predefined Tables here! If not, the framework cannot find them!
        public string[] ExistingTables = { "Tickets" };
        public virtual DbSet<Ticket> Tickets { get; set; }
    }
}
```

Ausführen des Testprogrammes (6)

- Solution Starten (links starten, rechts erfolgreich gestartet)
 - Erstes Starten kann etwas länger dauern, da Entity Framework, SQL Server Express initialisiert)



```
Configuration Result:
[Success] Name Web Api
[Success] Description Web Api for JSON communication
[Success] ServiceName Web Api
Topshelf v4.0.0.0, .NET Framework v4.0.30319.42000
The Web Api service is now running, press Control+C to exit.
```


Ausführen des Testprogrammes (7)

- Im Browser können nun die neu hinzugefügten Daten über Start Sync (Live) synchronisiert werden

Developer Options

Connection String

http://localhost:12345/api/Tickets

DB to Sync

Tickets

Sync

Connect DB

Get DB Info

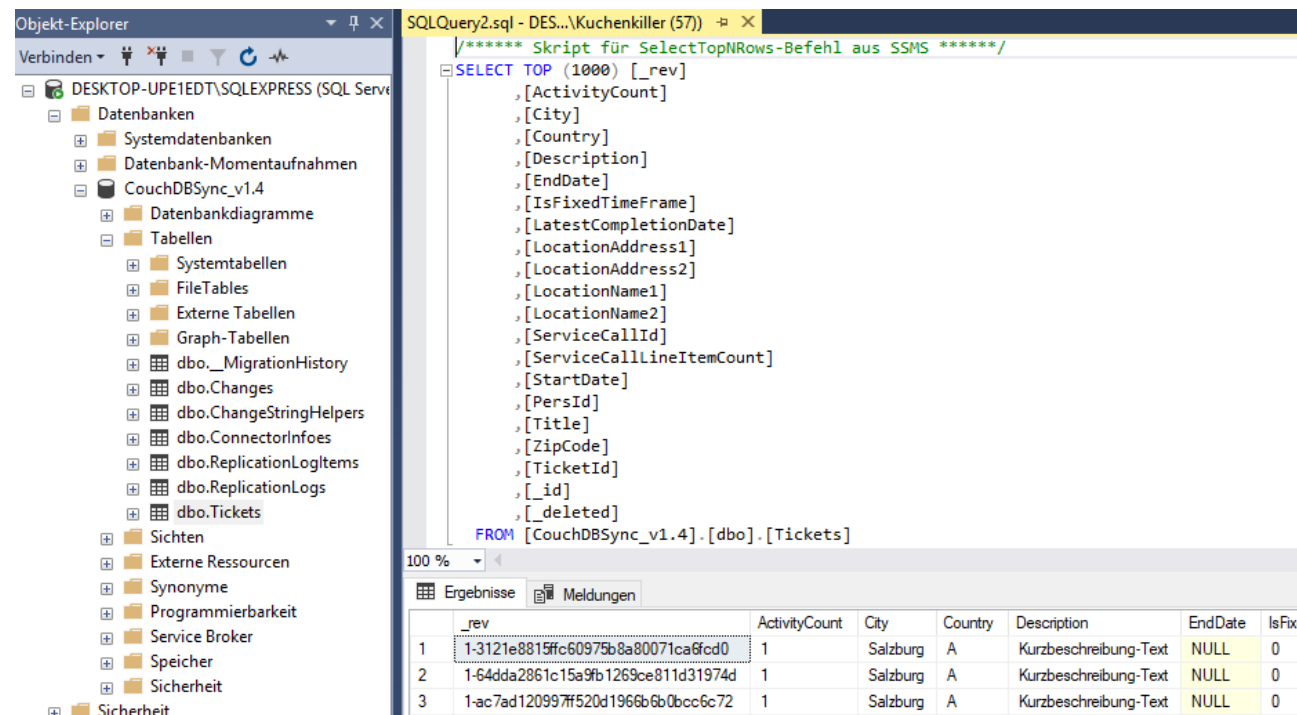
Start Sync

Start Sync Live

Use old UseCaseDB

Ticket Check

- Nun können die synchronisierten Tickets betrachtet werden (in z.B. Microsoft SQL Server Express)



The screenshot displays the Microsoft SQL Server Enterprise Manager interface. On the left, the 'Objekt-Explorer' (Object Explorer) shows the database structure for 'DESKTOP-UPE1EDT\SQLEXPRESS (SQL Server Express)'. The 'Datenbanken' (Databases) folder is expanded, showing 'Systemdatenbanken' (System Databases), 'Datenbank-Momentaufnahmen' (Database Snapshots), 'CouchDBSync_v1.4', 'Datenbankdiagramme' (Database Diagrams), and 'Tabellen' (Tables). The 'Tabellen' folder is expanded, showing 'Systemtabellen' (System Tables), 'FileTables', 'Externe Tabellen' (External Tables), 'Graph-Tabellen' (Graph Tables), and a list of tables including 'dbo._MigrationHistory', 'dbo.Changes', 'dbo.ChangeStringHelpers', 'dbo.ConnectorInfos', 'dbo.ReplicationLogItems', 'dbo.ReplicationLogs', and 'dbo.Tickets'.

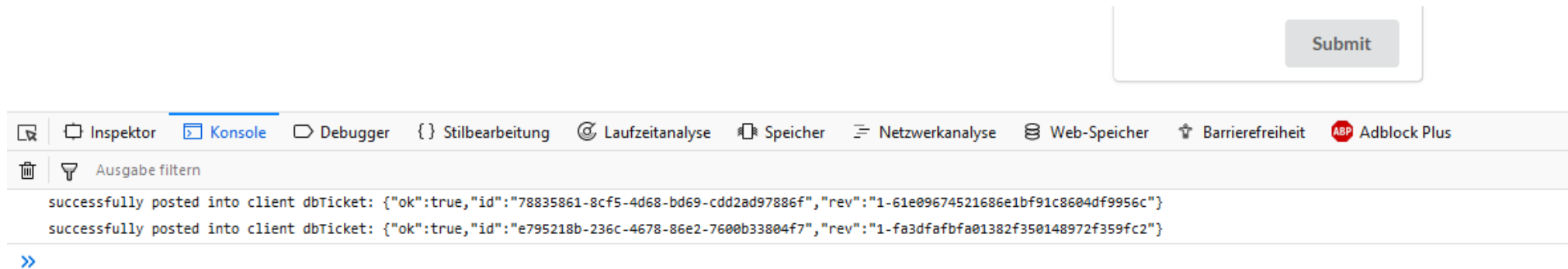
The main window shows a SQL query in the 'SQLQuery2.sql' editor. The query is a SELECT statement with a TOP clause, selecting the first 1000 rows from the 'dbo.Tickets' table. The columns selected are: '_rev', 'ActivityCount', 'City', 'Country', 'Description', 'EndDate', 'IsFixedTimeFrame', 'LatestCompletionDate', 'LocationAddress1', 'LocationAddress2', 'LocationName1', 'LocationName2', 'ServiceCallId', 'ServiceCallLineItemCount', 'StartDate', 'PersId', 'Title', 'ZipCode', 'TicketId', '_id', and '_deleted'.

The query results are displayed in a table below the editor. The table has 7 columns: '_rev', 'ActivityCount', 'City', 'Country', 'Description', 'EndDate', and 'IsFix'. The results show three rows of data, all from Salzburg, Austria, with a description of 'Kurzbeschreibung-Text' and an end date of NULL.

	_rev	ActivityCount	City	Country	Description	EndDate	IsFix
1	1-3121e8815ffc60975b8a80071ca6fcd0	1	Salzburg	A	Kurzbeschreibung-Text	NULL	0
2	1-64dda2861c15a9fb1269ce811d31974d	1	Salzburg	A	Kurzbeschreibung-Text	NULL	0
3	1-ac7ad120997f520d1966b6b0bcc6c72	1	Salzburg	A	Kurzbeschreibung-Text	NULL	0

Edit/Delete (1)

- Der selbe Prozess kann nun mit Edit und Delete durchgeführt werden. In den nächsten Abbildungen werden 2 Tickets verändert, zwei weitere hinzugefügt und 1 Ticket gelöscht.
- 1: 2 Tickets hinzufügen



Edit/Delete (2)

- Editieren von 2 unterschiedlichen Tickets

Edit Ticket

Id ▾

Id: 78835861-8cf5-4d68-bd69-cdd2ad97886f

Key:78835861-8cf5-4d68-bd69-cdd2ad97886f

Rev: 1-61e09674521686e1bf91c8604df9956c

Edit Ticket

Id ▾

Id: 9c9a96c5-bc82-4ffc-82da-bc25e409cba3

Key:9c9a96c5-bc82-4ffc-82da-bc25e409cba3

Rev:1-64dda2861c15a9fb1269ce811d31974d

Edit/Delete(3)

- Editieren der 2 Tickets über commit edit abschließen
 - Konsolen Ausgabe:

```
successfully posted into client dbTicket: {"ok":true,"id":"78835861-8cf5-4d68-bd69-cdd2ad97886f","rev":"1-61e09674521686e1bf91c8604df9956c"}
successfully posted into client dbTicket: {"ok":true,"id":"e795218b-236c-4678-86e2-7600b33804f7","rev":"1-fa3dfafbfa01382f350148972f359fc2"}
▶ Object { ActivityCount: 1, City: "Salzburg", Country: "A", Description: "Kurzbeschreibung-Text", IsFixedTimeFrame: false, LatestCompletionDate: "", LocationAddress1: "StraßenName
▶ Object { id: "78835861-8cf5-4d68-bd69-cdd2ad97886f", key: "78835861-8cf5-4d68-bd69-cdd2ad97886f", value: {_-}, doc: {_-} }
▶ Object { ActivityCount: 1, City: "Salzburg", Country: "A", Description: "Kurzbeschreibung-Text", IsFixedTimeFrame: false, LatestCompletionDate: "", LocationAddress1: "StraßenName
▶ Object { id: "9c9a96c5-bc82-4ffc-82da-bc25e409cba3", key: "9c9a96c5-bc82-4ffc-82da-bc25e409cba3", value: {_-}, doc: {_-} }
```

Edit/Delete(4)

- Löschen des ersten Tickets

Are you sure you want to delete this ticket?

Id ▼

Id: 4ef45b3d-5057-453e-a7d0-8e445b12ca92

Key: 4ef45b3d-5057-453e-a7d0-8e445b12ca92

Rev: 1-ac7ad120997ff520d1966b6b0bcc6c72

Service Call Line Item Count:	1
Start Date:	28.02.2018 08:00:00
Pers Id:	PersonenIdentifizierung
Title:	Firma
Zip Code:	5412
Ticket Id:	2468

Yes, delete

Edit/Delete(5)

- Die automatische Synchronisation sollte die Änderungen bereits synchronisiert haben!

The screenshot displays the SQL Server Enterprise Manager interface on the left and a SQL Query window on the right. The Enterprise Manager shows the database structure for 'DESKTOP-UPE1EDT\SQLEXPRESS (SQL Server 2008 Express Edition)'. The 'CouchDBSync_v1.4' database is expanded, showing tables like 'dbo._MigrationHistory', 'dbo.Changes', 'dbo.ChangeStringHelpers', 'dbo.ConnectorInfos', 'dbo.ReplicationLogItems', 'dbo.ReplicationLogs', 'dbo.Tickets', 'Sichten', 'Externe Ressourcen', 'Synonyme', 'Programmierbarkeit', 'Service Broker', 'Speicher', 'Sicherheit', 'Serverobjekte', 'Replikation', 'PolyBase', and 'Verwaltung'.

The SQL Query window shows a script titled 'Skript für SelectTopNRRows-Befehl aus SSMS'. The query is a SELECT TOP (1000) statement with columns: _rev, ActivityCount, City, Country, Description, EndDate, IsFixedTimeFrame, LatestCompletionDate, LocationAddress1, LocationAddress2, LocationName1, LocationName2, ServiceCallId, ServiceCallItemCount, StartDate, PersId, Title, ZipCode, TicketId, _id, and _deleted. The data is sourced from the 'dbo.Tickets' table in the 'CouchDBSync_v1.4' database.

The results pane shows the following data:

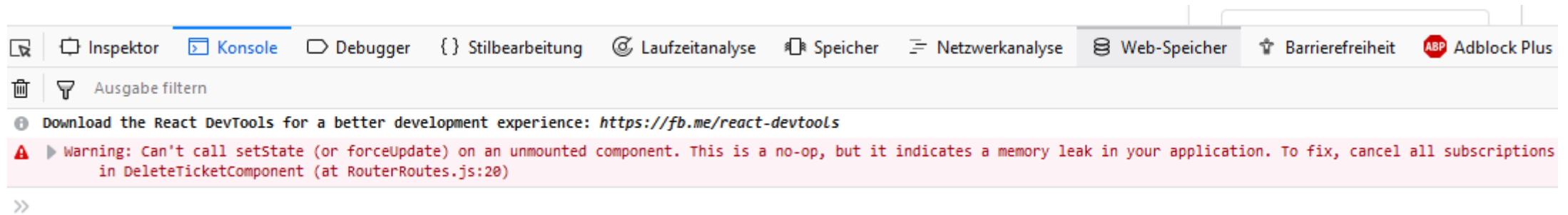
	_rev	ActivityCount	City	Country	Description	EndDate
1	1-3121e8815ffc60975b8a80071ca9cd0	1	Salzburg	A	Kurzbeschreibung-Text	NULL
2	1-64dda2861c15a9fb1269ce811d31974d	1	Salzburg	A	Kurzbeschreibung-Text	NULL
3	1-ac7ad120997ff520d1966b6b0bcc6c72	1	Salzburg	A	Kurzbeschreibung-Text	NULL
4	1-fa3dfa1bfa01382f350148972f359fc2	1	Salzburg	A	Kurzbeschreibung-Text	NULL
5	2-00e4fb680354675d6b7ef04e1cfc2506	1	Linz	A	Kurzbeschreibung-Text	NULL
6	2-cb4b6ef96ff34a366d91b531b2bd74fe	1	Graz	A	Kurzbeschreibung-Text	NULL
7	2-dca8c7c75a4a372e9904177666e1f6bd	0	NULL	NULL	NULL	NULL

Server an Client Synchronisation (1)

- Bisher wurden immer nur von Client an Server Daten gesendet
- Einfachste Möglichkeit dies in umgekehrter Weise darzustellen ist es im Browser die Daten zu löschen und diese vom Server, über die Synchronisation abzugreifen

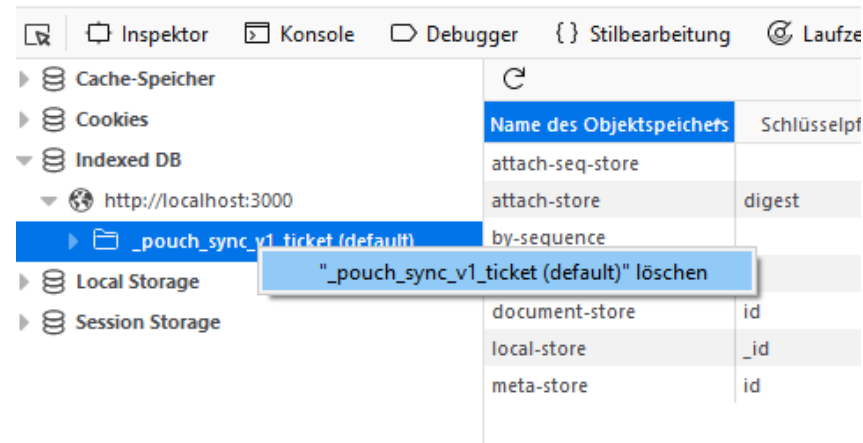
Server an Client Synchronisation (2)

- Navigieren im Browser (hier Firefox) zu localhost:3000
- Öffnen der Entwickleroptionen (F12)
- Wechseln auf Web-Speicher



Server an Client Synchronisation (3)

- Löschen aller Client Daten



- Neu Laden der Seite (f5)

Server an Client Synchronisation (4)

- In Edit/Delete Ticket sollten nun keine Tickets mehr zur Auswahl vorliegen

Edit Ticket

Id ▾

Commit edit

Server an Client Synchronisation (5)

- Über Dev View -> Neustarten der Synchronisation
 - Enable Dev View
 - Connect DB
 - Start Sync Live

Developer Options

Connection String

http://localhost:12345/api/Tickets

DB to Sync

Tickets

Sync

2 [Connect DB](#)

[Get DB Info](#)

[Start Sync](#)

3 [Start Sync Live](#)

[Use old UseCaseDB](#)

1 [Click to disable Dev View](#)
current Page: edit ▾

Server an Client Synchronisation (6)

- Synchronisation Server an Client war erfolgreich!

Edit Ticket

Id ▾

"6ebbb0ea-f5fc-47ab-bf77-3635750fbd91"
"880d2e67-7598-4584-a6b1-9805f79939c3"
"b19cf5ca-82cd-46a3-b182-1d42c29947a7"
"cebfea39-9ccd-42ec-8bff-09a75b557e32"

1

Linz

A