

Data Info Leaders

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Time Dimension

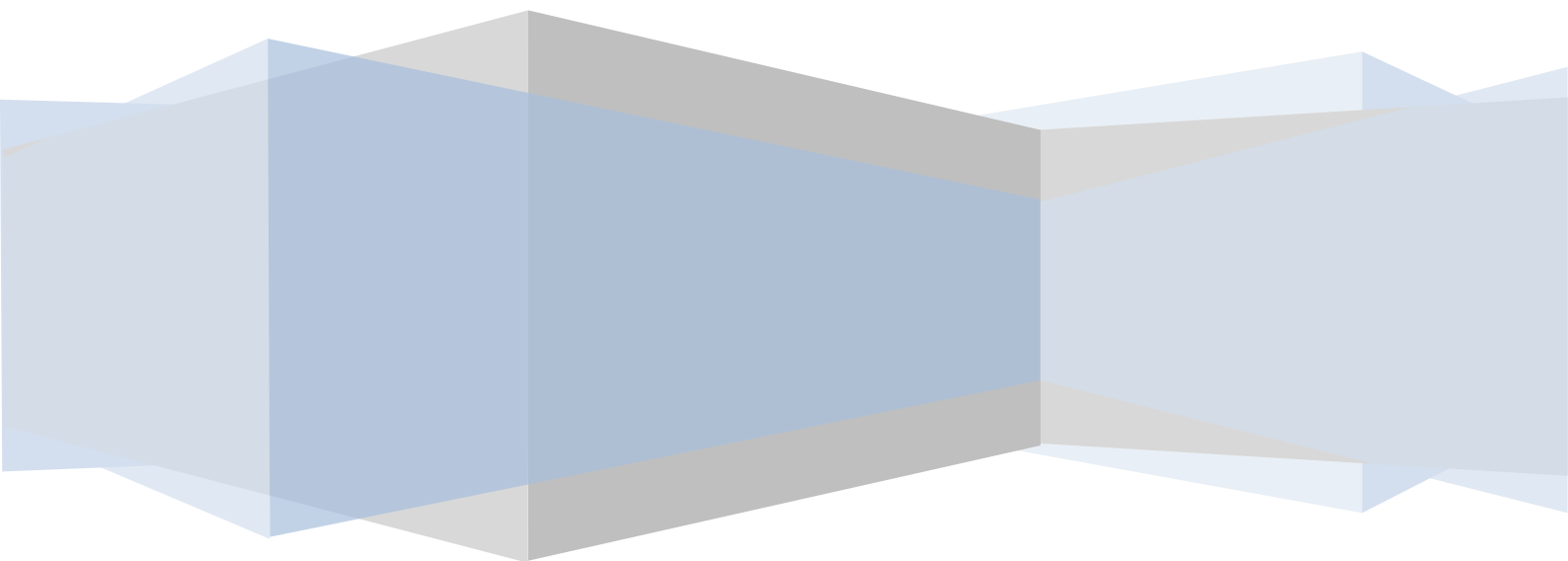


TABLE OF CONTENTS

INTRODUCTION	2
CREATE AND POPULATE THE DIMENSION	3
INSTALL THE ANALYSIS SERVICES TIME DIMENSION.....	3

INTRODUCTION

How to: Create and Load a Time Dimension.

By 'Time' we mean 'Time of Day' (Hour, Minute Second etc.) as opposed to Calendar/Date Dimension which is 'Day of Year' etc. (Calendar is the subject of design tip #2). Just about without exception, every Data Warehouse needs a Calendar Dimension. Only some need a Time Dimension. It depends on whether you want to slice your data by the time of day. For Example:

- A Road Traffic Data Warehouse could support comparison of Peak vs. Off Peak times of day.
- An Orders Data Warehouse could support analysis of the time of day orders are received.

You can download the script to create the Time dimension and populate with data [here](#).

Our Time dimension contains the following features:

- 1 member for every second of the day, that $60 \text{ seconds} * 60 \text{ Minutes} * 24 \text{ Hours} = 86400 \text{ Members}$.
- Smart Surrogate Key. The smart Time surrogate key is a 'coded' key that can be derived from the time of day it represents. Smart surrogate keys are useful in static dimensions, like Time, because you don't need to join to the Time dimension in the Fact Table Transformation processing to lookup the key. Instead you can just derive the key from the 'time' of the Fact. This makes the Fact Transformation more efficient.
- Hour, Minute, 15 Minute, and Second Levels, formatted for reporting. You can create other levels like 5 minutes, by copying the logic in the SQL Script that populates the dim_Time table.

You might want to add additional attributes to your dimension. An example is 'Shift' if you have work Shifts at set times of day.

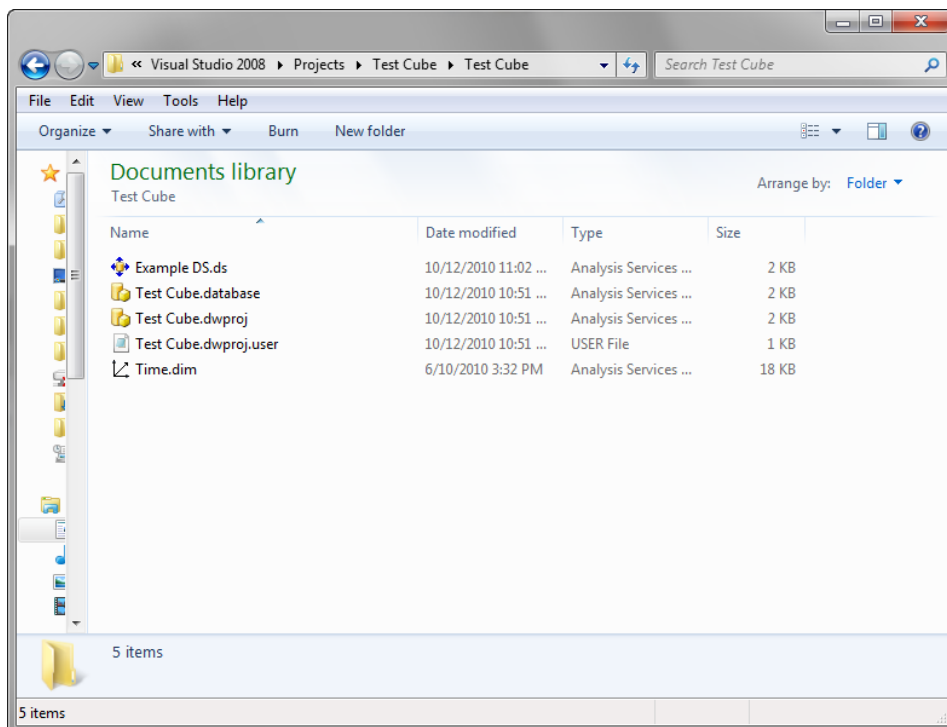
The script is designed to work with Microsoft SQL Server, but can be modified to work with Oracle or DB2.

CREATE AND POPULATE THE DIMENSION

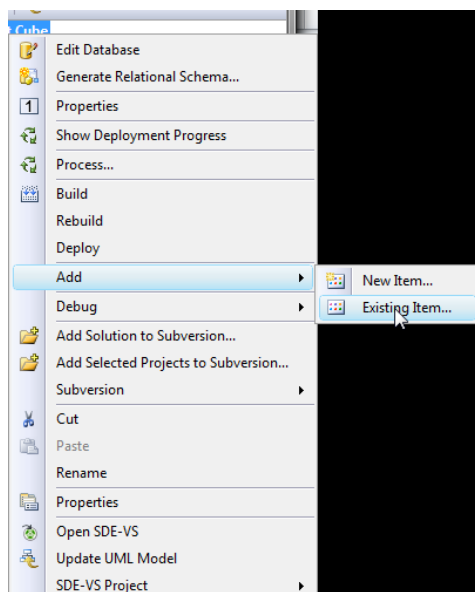
1. Open the dim_Time_create_and_populate.sql file in SQL Server Management Studio.
2. Replace the /*Your Data Warehouse Database Name*/ comment with the name of the Data Warehouse database.
3. Execute the script. The dimension table dim_Time is created and populated with data.

INSTALL THE ANALYSIS SERVICES TIME DIMENSION

The package includes a Time.dim file which is a Microsoft Analysis Services dimension file. Copy this to your Analysis Service project directory, like below.



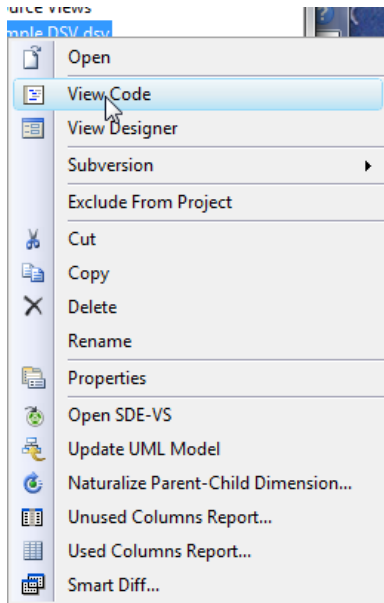
Open the project in Visual Studio, and Right Click the project node -> Add -> Existing Item.



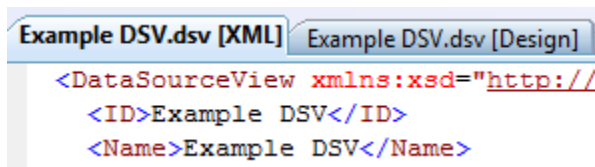
The Time dimension will appear in the Dimensions folder of the project. If you open the Time dimension you will see the following error message.

The Data Mart data source view could not be located.

This is most likely because your Data Source view has a different id to the one used by the distributed Time.dim. To fix this problem first right Click the data source view object -> View Code.



In the DSV XML, find the <ID> element.



Now, view the code of the time Dimension. Find the <DataSourceViewID> element and replace the contents with the ID from the Data Source View. This should fix the issue.

```
Time.dim [XML]* Example DSV.dsv [XML] Example DSV.dsv [Design] Time.dim [Design]* Start Page
    <Position x="387" y="20" />
  </Shape>
  <Shape Id="Hour Formatted" Expanded="false">
    <Attributes>
      <Attribute Id="Hour Formatted" />
    </Attributes>
    <Position x="571" y="20" />
  </Shape>
</Shapes>
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  <KeyDuplicate>ReportAndContinue</KeyDuplicate>
  <NullKeyNotAllowed>IgnoreError</NullKeyNotAllowed>
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