

Virtuoso

OpenLink Virtuoso is a SQL-ORDBMS and Web Application Server hybrid (aka Universal Sever) that provides SQL, XML, and RDF data management in a single multithreaded server process. Triple Store access is available via SPARQL, SIMILE Semantic Bank API, ODBC, GRDDL, JDBC, ADO.NET, XMLA, WebDAV, and Virtuoso/PL (SQL Stored Procedure Language). The product is available in Open Source and Commercial editions (<https://www.w3.org/2001/sw/wiki/Virtuoso> - accessed February 2016).

Configuration (Windows):

1) Virtuoso Download:

- Link to download (windows 64 bits):
<http://sourceforge.net/projects/virtuoso/>

2) Configuring Virtuoso

- Follow all steps of the link:
<http://virtuoso.openlinksw.com/dataspace/dav/wiki/Main/VOSUsageWindows>
(This link illustrates how to configure the environment variables and how to create and initialize Virtuoso as a Windows service)

3) Starting Virtuoso:

- Always execute the initialization script as administrator
- If an error occurs in the initialization, delete the virtuoso.lck file (located in the directory database)

4) Accessing the triplestore:

- Conductor (Virtuoso admin interface): <http://localhost:8890/conductor> (Login: dba, Password: dba (change as soon as possible))
- Local endpoint address: <http://localhost:8890/sparql>
- There are 2 ways of running SPARQL queries:
 - Conductor -> Interactive SQL (icon in the upper-left corner)
 - Conductor -> Linked Data Tab -> SPARQL Tab

5) Grant permissions (if any permission error occurs after executing a query):

- Open isql
- Run the query `GRANT execute ON SPARQL_INSERT_DICT_CONTENT TO "SPARQL";`
- To grant permissions to the user to execute federated queries:
 - `GRANT execute ON SPARQL_SINV_2 TO "SPARQL";`
 - `GRANT execute ON SPARQL_SINV_IMP TO "SPARQL";`

Handling Graphs (Virtuoso):

1) Handling graphs:

- Visualizing the existing graphs: Conductor -> Linked Data -> Graphs
- Creating a new graph: Run the query `CREATE GRAPH <GRAPHNAME>;`
 - * If any permission error occurs, see item (4) of Virtuoso Configuration.
 - If the error persists, run the script:
`grant SPARQL_UPDATE to "SPARQL";` in iSql

2) Inserting triples in graphs:

- To insert triples from an .rdf or .ttl file: Conductor -> Linked Data -> Quad Store Upload

3) Verifying the inserted triples:

- Conductor -> Linked Data -> SPARQL
- Indicate the graph name in Default Graph IRI
- Run the following query: `select ?s ?p ?o WHERE {?s ?p ?o}`
 - This query finds all triples in a graph that match the specified pattern: ?s ?p ?o

4) Clear a graph:

- Open isql
- Run the query `sparql clear graph <GRAPHNAME>`

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