Install R and Qlik Sense Advanced Analytics Integration Demos

V1.0.0 - June 2017

One-time Install and Configuration

1. Install Qlik Sense June 2017

Qlik Sense June 2017 is required to support engine extensions. Both Qlik Sense Server and Qlik Sense Desktop are supported.

Important: These instructions will only work with the June 2017 Release of Qlik Sense. ID you are trying this with earlier versions (e.g. Qlik Sense 3.2) this will not work.

License Qlik Sense Server and allocate a User Token to one or more users.

Verify that Qlik Sense June 2017 is up and running and that you can view the default installed apps before proceeding to step 2 below.

2. Download the Open Source SSEtoRserve extension, examples files and documentation

Follow the download instructions found on the Advanced Analytics Integration page on QlikCommunity to download the SSEtoRserve plugin and the example QVF files listed there.

3. Download and Install R

Visit: https://cran.r-project.org/bin/windows/base/

Select Download for the latest version of R for Windows

> These instructions refer to version 3.4.1 of R, what if there is a newer version of R released at the time I'm downloading?:
> Depending on what changes were made to R in the newer version, these instructions will likely still work for the upcoming R versions. If you do decide to use a newer version, simply replace every reference to the path "\R-3.4.1" found below with the path for the newer version as "\R-3.{x}.{x}". Alternatively, you should still be able to download the R 3.4.1 release and simply use these instructions as written.

Run the Installer

- Select "English"
- Click Next
- Click Next to accept the terms
- Change the installation location to:

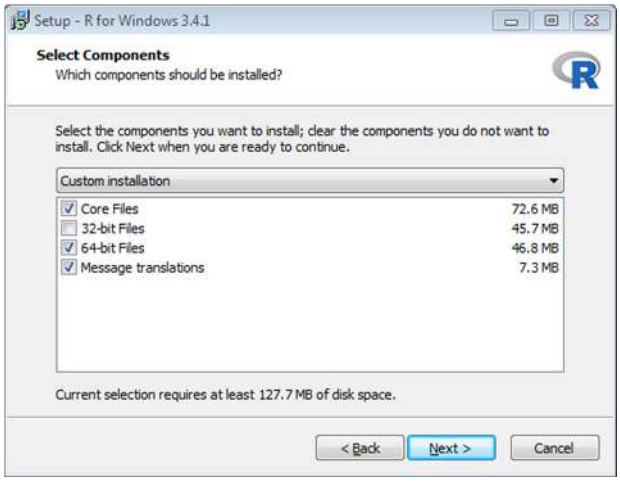
`C:\R\R-3.4.1`

i.e. Remove this "Program Files" from the path, this is very important to make running other components properly later.

Why am I changing the default install path for R?:
The goal is to install R for use by all users, not just the current user. This will facilitate things like running from a service account later. The default install path (i.e. in "Program Files") requires Administrator permissions to install needed libraries (see below) for all users rather than the default for just the current user. To avoid this complication we install R outside of "Program Files".

- Click Next

- Select "64-bit User Installation" from the selection menu (deselect 32-bit Files).
- Click Next



- Click Next

- Click Next
- Click Next

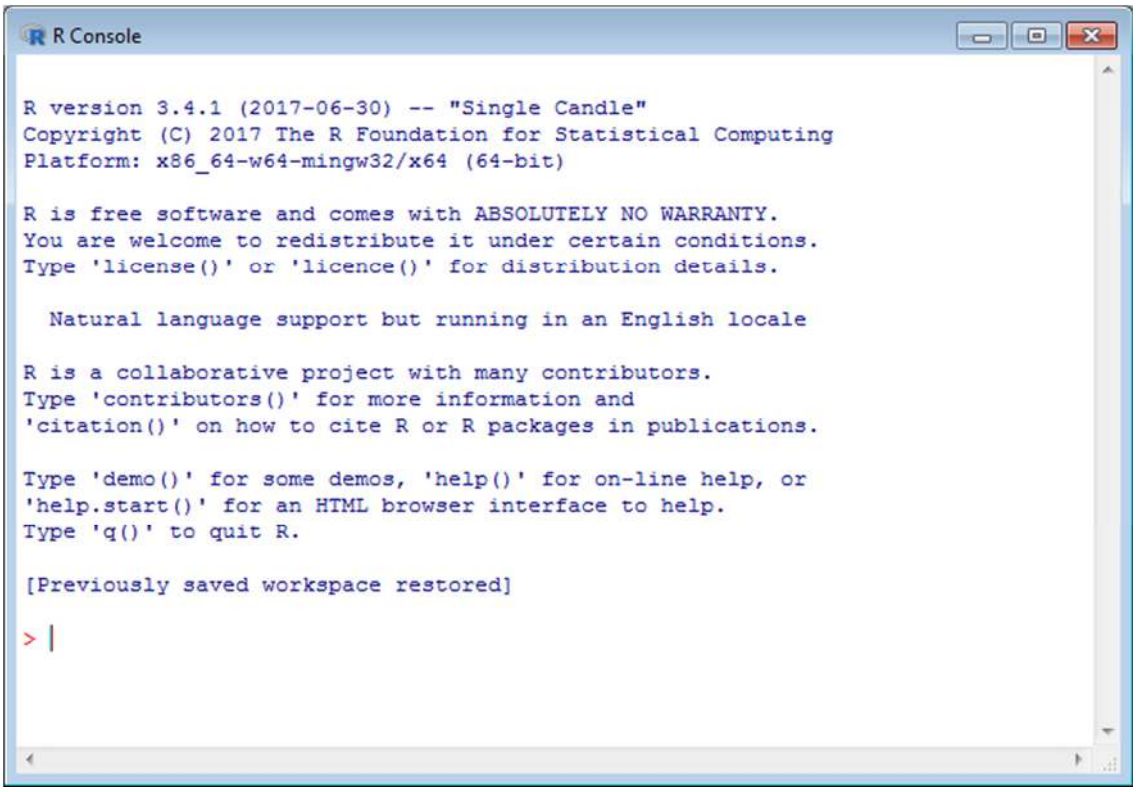
Installation should run and complete.

- Click Finish

4. Install R Serve

Run “R”, there should be a desktop Icon

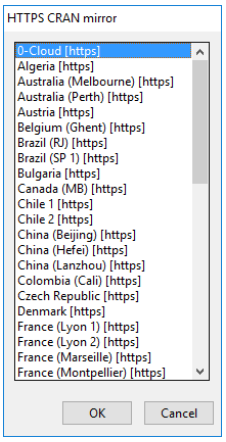
Enter to the console:




```
install.packages("Rserve", lib = "C:\\R\\R-3.4.1\\library")
```

Why am I specifying a lib path in this step?:
The default, if a lib path is not specified, is to install the libraries for the current user only (i.e. in C:\Users\{user}\Documents\R\R-3.4.0\library). Specifying this lib path above forces R to install those libraries for all users (i.e. in C:\R\R-3.4.0\library).

When asked for a mirror select the default by clicking OK



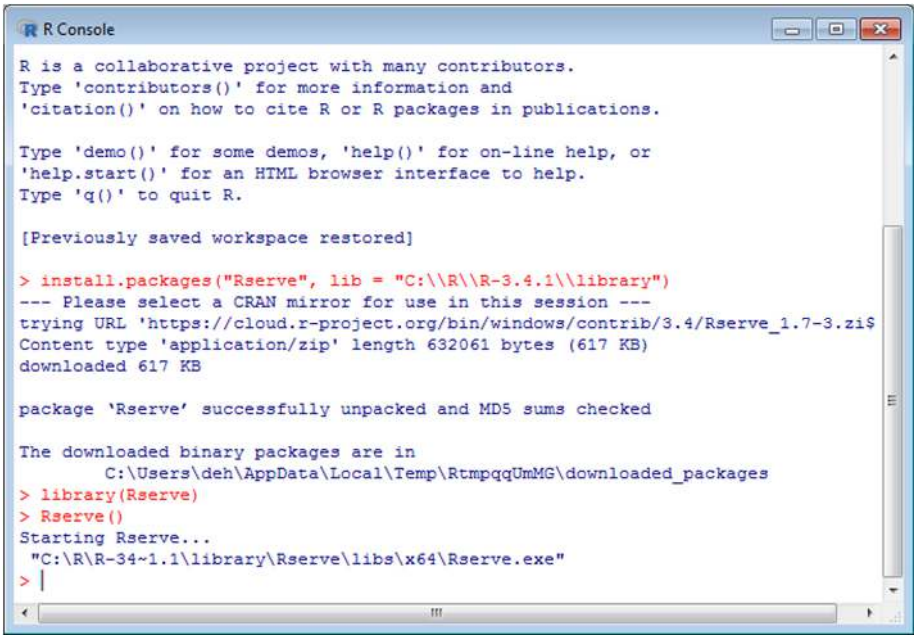
Test run R serve by typing:

```
library(Rserve)
```

Then type:

```
Rserve()
```

You should get the following message



5. Install any required R packages

The packages required will change dependent on the different demos that are being provided. The following libraries will allow you to use all the sample apps included in the SSEtoRserve archive.

```
install.packages("jsonlite", lib = "C:\\R\\R-3.4.1\\library")
install.packages("ChainLadder", lib = "C:\\R\\R-3.4.1\\library")
install.packages("forecast", lib = "C:\\R\\R-3.4.1\\library")
install.packages("rpart", lib = "C:\\R\\R-3.4.1\\library")
install.packages("d3r", lib = "C:\\R\\R-3.4.1\\library")
install.packages("partykit", lib = "C:\\R\\R-3.4.1\\library")
install.packages("tseries", lib = "C:\\R\\R-3.4.1\\library")
install.packages("colorspace", lib = "C:\\R\\R-3.4.1\\library")
```

Close R (When prompted to save workspace image, it is OK to say ‘No’).

6. Configure Rserve to run with one click

What is Rserve and why is it important?:
Rserve is a library for R that enables external communications from R to other programs. Rserve must be running for the SSEtoRserve connector to work. In this case Rserve has been compiled as a separate .exe which makes it easy to start R & Rserve by launching a single .exe file.

For Rserve to run with a single click we need to copy some files to a different location.

Navigate to the following folder:

```
C:\R\R-3.4.1\library\Rserve\libs\x64
```

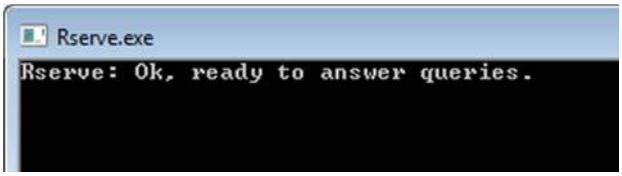
Copy the three files in this folder

Paste these files into the following folder:

```
C:\R\R-3.4.1\bin\x64
```

Run “Rserve”

You should get the following window:



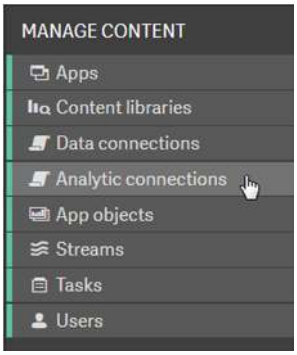
R serve is now up and running. Before you start Qlik Sense you need to have this running. The best way is to create a shortcut in a convenient location to “Rserve” or pin to the Start Menu or Task Bar in windows.

Alternatively, if you wish to see the output from the connection and use for debugging of Qlik apps then run **rserve_d.exe**.

7. Configure Server Side Extensions

For Qlik Sense Server – Register the Analytic Connection in QMC

Open the QMC and click on “Analytic Connections”



Press “Create New” and add a new connection with the following values:

Name: “R”
Host: “localhost”
Port: “50051”
Leave the other fields with their defulat values and press “Apply”.

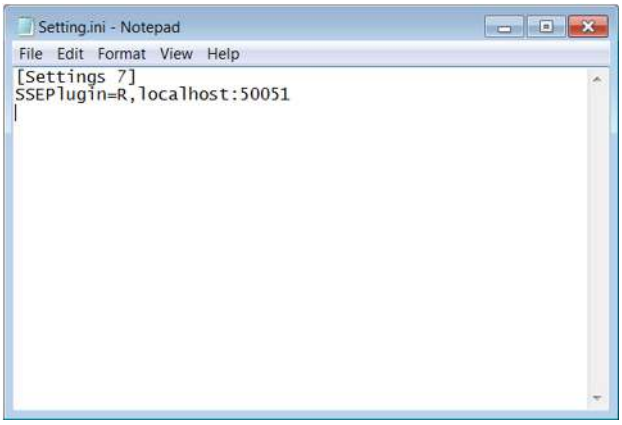
What do each of these parameters do?:
Name: is the name by which Qlik Sense will know the connection. The “R” you enter here corresponds to the “R” in the any of the chart expressions that call this connections (e.g. R.ScriptEval…). The name defined in the QMC must match the Name used in the expression.
Host: is the address of the machine where the connector is running (SSEtoRserve.exe in our case).
Port: is the port over which Qlik Sense and the connector should communicate (50051 by defualt). If you change this you must also change the port in the SSEtoRserve.exe.config file (found in the same directory as SSEtoRserve.exe).
Refer to the AAI documentation for usage of the other parameters.

For Qlik Sense Desktop - Create/Edit settings.ini file

Create/Edit the file “Settings.ini” in the following folder:
`C:\Users\<userid>\Documents\Qlik\Sense\`

Add the following lines:
`SSEPlugin=R,localhost:50051`

Ensure there is a blank line at the end of the file.



Note: these parameters are the same as described above in the section on configuring the Server in the QMC.

8. Add Sample Applications

Copy any sample applications to the Qlik Sense “Apps” folder (for Qlik Sense Desktop), or import them via the QMC (for Qlik Sense Server). Sample applications can be found on the Advanced Analytics Integration page on QlikCommunity.

9. Install Extension Objects Used by Sample Apps

Load any extension objects needed into Qlik Sense. At present the sample apps use only two extensions the variable/slider object, and a decision tree object. These extension objects can be found in the same archive downloaded in step 2 above. Please refer to the Qlik Sense documentation for information on how to install extensions objects.

At the moment the Titanic Decision Tree example uses the decision tree extension and several of the other examples use the variable-slider extension. Both extensions can be found on the Advanced Analytics Integration page on QlikCommunity.

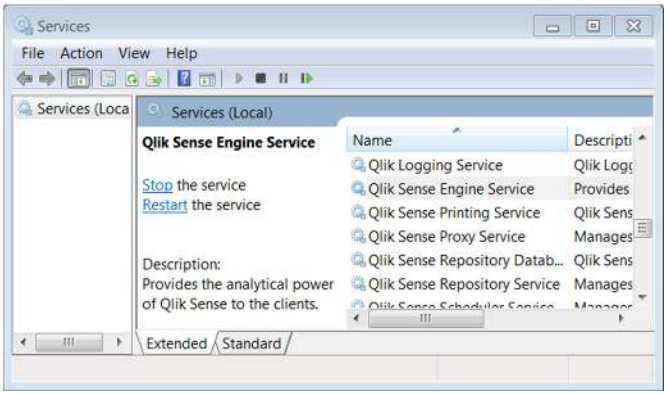
10. Start SSEtoRserve.exe

Navigate to the archive you unzipped in step 2 above and locate SSEtoRserve.exe. Double click SSEtoRserve.exe to start the connector. You should see the following window open:

SSEtoRserve is now up and running. Before you start Qlik Sense you need to have this running. The best way is to create a shortcut in a convenient location to “SSEtoRserve” or pin to the Start Menu or Task Bar in windows

11. Restart the Qlik Sense Engine

Open the Services application on Windows and restart the Qlik Sense Engine service



Alternatively, for Desktop, close and reopen Qlik Sense Desktop.

> Why do I have to restart the Qlik Sense Engine?:
> At present, analytic connections are only recognized by the engine during a restart. Thus any time you start or change an analytic connection, you must restart the Qlik Sense Engine. This behavior may change in the future.

12. Open Qlik Sense App that Calls Out to R

Open any Qlik Sense App that contains expressions that call out to R. Objects containing expressions that call out to R should now be displayed correctly. If you see an error or shaded out object, please refer to the Troubleshooting section below.

Process Following a Restart

1. Start Rserve

Double-click on the shortcut icon to rserve.exe you created in step 6 above.

2. Start SSEtoRserve

Double-click on the shortcut icon to SSEtoRserve.exe you created in step 10 above.

3. Restart the Qlik Sense Engine

Restart the Qlik Sense Engine service or Qlik Sense Desktop as described in step 11 above.

Troubleshooting

1. Ensure that Qlik Sense is running properly (i.e. you can read normal Qlik Sense aps).

2. Ensure that you have read the documentation that was bundled in the .zip archive.

3. Ensure that you have registered the connector correctly (see step 7 in the install & config instructions above):
    a. On Qlik Sense Server, you have registered the Analytic Connection in the QMC, or.
    b. On Qlik Sense Desktop, you have added the proper lines to the Settings.ini file.

4. Ensure that Rserve.exe is running.

5. Ensure that SSEtoRserve.exe is running.

6. Ensure that you have restarted the Qlik Qlik Sense Engine Service after doing all the above.

7. Ensure that you have know what R libraries are needed by the app you are trying to access and that you have installed all necessary libraries (see step 5 in the install & congig instructions above). These instructions cover all necessary R libraries needed by all the example and demo apps listed in this document, but it is possible that in the future new demos will be created that require different libraries. If so you must also load those libraries.

8. Ensure that the connector name you used in step 3 above is 'R' and not something else (all of the examples apps that connect to R refer to this connection as R.{function name} and that “R” must match the name registered in the QMC for server or in the ini file for desktop).

9. Ensure that server location you used when registering the connector in step 3 above is the same as where SSEtoRserve.exe is running (if using multiple machines).

10. Ensure that the port you used when registering the connector in step 3 above is the same as is listed in SSetoRServe.exe.config (typically 50051).

11. Ensure nothing else is also trying to use that port (run "netstat -a -b" from the command prompt).

12. If the port is in use, change to an open port number in troubleshooting steps 3 and 9 above.

13. Ensure that the Rserve port listed in SSetoRServe.exe.config (typically 6311) is the one Rserve is using and not in use by another process.

14. Ensure that the Rserve server address in SSetoRServe.exe.config is the address of the machine where Rsreve is running (if using multiple machines).

15. Ensure that none of the needed ports are being blocked by any firewalls on any machines that need those ports.

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