Installing & Configuring UNICOM® System Architect®

Part 2 of 2: Connecting to Microsoft® SQL Server®

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Executive Summary

This is Part 2 of a 2-part series. This article guides you through the steps to connect UNICOM® System Architect® (SA) to a 'full blown' Microsoft® SQL Server® environment, whereas Part 1 guided you through installing System Architect with Microsoft® SQL Server Express®.

Installing and configuring UNICOM® System Architect® is typically straight forward with a one-click install that provides installation of the product and an underlying Microsoft® SQL Server Express database. However, Windows security can provide some challenges for installation of Microsoft SQL Server to a Windows environment. Further complexities may be encountered if you are installing System Architect to a network environment and using a separately installed version of 'full-blown' Microsoft® SQL Server. This later scenario is covered in this article, for System Architect version 11.4.4 or later. The example used is targeted for professional encyclopedias, which are one of the two types of repositories in System Architect.

Overview of System Architect

System Architect is a comprehensive enterprise architecture solution that provides fully integrated support across four keys domains: business, information, systems, and technology. It is used to capture complex knowledge about organizations and related technology.

Empowered with this knowledge, executives, decision makers, and managers can analyze and optimize current capabilities, because they will have a more thorough understanding of the organizational structures, portfolio of business strategies, business processes, information flow, applications, and technology infrastructure. The result is an enhanced collaboration between stakeholders and improvement in the organization's effectiveness to proactively respond to business changes and an enhanced ability to consider new capabilities.

In addition, System Architect is the most widely used enterprise architecture solution in support of the U.S. Department of Defense Architecture Framework (DoDAF). It provides the capabilities for building models representing U.S. Department of Defense (DoD) architectures and automatically generates DoDAF work products and reports.

System Architect includes the Federal Enterprise Architecture Framework (FEAF) that assists the U.S. Government departments and agencies in incorporating and using the U.S. Office of Management and Budget (OMB) Reference Models, as well as the subsequent creation and publishing of OMB Exhibit 300 and Exhibit 53 reports.

Preparation Tasks

This article is based on these three assumptions:

1. That System Architect is installed and configured on the workstation as described in Part 1 of this article series, *Installing and Configuring UNICOM® System Architect® – Stand-Alone Installation with Microsoft® SQL Server Express®*.

2. That a Microsoft® SQL Server® is already installed and an instance is created.

3. That Microsoft® Windows® authentication is used to access the SQL Server instance.

Connecting System Architect to a SQL server instance involves specific tasks to be completed by the network or domain administrator, the database administrator, and the System Architect administrator. The following sections describe these tasks by role.

Prerequisite Tasks

Ensure that System Architect is installed and configured on the workstations. See the following sections in Part I (*Installing and Configuring UNICOM® System Architect® – Stand-Alone Installation with Microsoft® SQL Server Express®*) to ensure proper installation and configuration:

- Section I: Install UNICOM License Server (to network server)

- Section II: Install System Architect (to network workstation)

- Section IV: Create a Shared Folder for Encyclopedia Backups

System Architect Administrator Tasks

1. Identify all or most System Architect users (you can add users later).

2. Collect their user domain login IDs.

3. Get answers to these questions:

    - Which users will be System Architect administrators? These users can create, manage, and set up user access to System Architect encyclopedias.

- Which users are standard System Architect users? These people use SA daily.

4. Provide this information to the network or domain engineer.

Network or Domain Engineer Tasks

1. Create two Windows domain groups:

   - saAdminGroup

   - saUsersGroup

2. Add the following domain users (format: <domain>\<username>) to these groups:

   - Add the System Architect administrator users to the saAdminGroup.

   - Add both System Architect Administrator users and System Architect standard users to the saUsersGroup.

3. Verify that the System Architect workstations have network access to the SQL server (hostname) and set up the exceptions in Windows Firewall to allow remote access to the SQL instance, if required.

SQL Server Database Administrator Tasks

1. Identify the SQL instance where System Architect encyclopedias (databases) will be created.

2. Provide the SQL instance name to the System Architect administrators in the form of *hostname\instance name*.

3. Provide the port number to the System Architect administrators in case SQL server is not using the standard port.

4. Ensure that the proper SQL services are running on the SQL server to allow remote access to the SQL instance.

5. Add both the **saAdminGroup** and **saUsersGroup** groups to the SQL server instance.

6. Assign the **dbcreator** server role to the saAdminGroup.

Note:

The domain users that are part of the saAdminGroup must be able to create System Architect encyclopedias (by using the System Architect Encyclopedia Manager (SAEM) tool that is included). They are, in essence, the database owners of these encyclopedias.

Configure SA to Connect to the SQL Server

Open the Startup Wizard and configure System Architect:

1. Log in to the workstation as the System Architect administrator.

2. Start System Architect.

3. Select **Help > Startup Wizard** if the wizard did not start automatically.

4. In the Welcome screen, click **Next**.

5. Uncheck the Configure sample and tutorial encyclopedia projects check box.
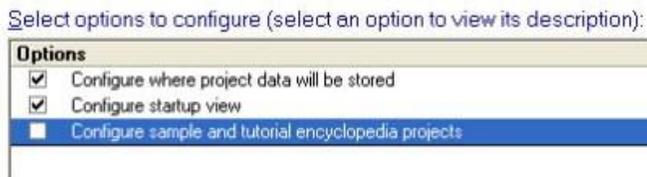
Figure 1. Select options for System Architect configuration

6. Click **Next**.

7. Select the option that says **Existing SQL Server located on the network** (Figure 2)

Figure 2. Specify where to store encyclopedia data

8. Select the SQL server instance given to you by your database administrator, in this format:

   hostname\instance name.

9. Click **Next**.

10. If asked, select **Windows Authentication** from the Connection Information window.

11. Navigate through the screens and complete the configuration.

12. Close System Architect.

Create New Encyclopedia on the SQL Server Instance

1. Log in to the workstation as System Architect Administrator (a user who belongs to the saAdminGroup).

2. Start System Architect.

3. Click **File > Open Encyclopedia.**

4. Click **New** to create a new encyclopedia.

5. Under Connection, click the browse button (three dots) to create a new connection.

6. Click **New** to create a new connection.

7. For a connection name, type the SQL server instance name.

8. Select **hostname\instance name** from the drop-down list for a server name.

9. Click **OK**.

10. In the Open Encyclopedia window, enter a name for the new Rational System Architect Encyclopedia (for example: `test`).

11. Click **OK**.

Create a Database User Role

Logins names are server-wide accounts that can be mapped to individual users or user groups. A login name for a System Architect user needs a predefined set of server roles and database access rights. To make it easy to grant Rational System Architect users the required privileges, the Encyclopedia Manager feature provides the "Create SAUser Role" function under the Tools menu. This database role is defined with the minimum rights needed by a user to access System Architect encyclopedias. Basically, it gives the user *databasereader* and *databasewriter* access (these are predefined database roles), as well as EXEC rights on any stored procedures used by System Architect.

1. From the **Start** menu select **All Programs> UNICOM Systems > UNICOM Systems Lifecycle Solutions > System Architect > SAEM for SQL Server**.

2. Click **Server > Connect** to create a connection to the SQL instance.

3. From the drop-down menu, select the SQL server instance, which is in the form of **hostname\instance name**.

4. Select **Windows** for authentication.

5. Press **OK** to create a connection to the SQL server instance.

6. Select the **test** database from the drop-down menu in the database toolbar, as Figure 3 shows.

Note: A database must be selected to be able to issue any commands in Software Architect Encyclopedia Manager.
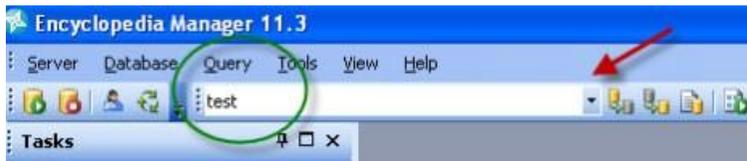
Figure 3. Select an encyclopedia

7. Click **Tools > Create SAUser Role** from the drop-down menu.

Assign the User Role to the saUsersGroup

1. Click **Server > Logins** to see a list of login groups or users that are available.

2. Select **saUserGroup** from the list.

3. Click the icon to edit the selected login group.

Figure 4. Select the saUserGroup from the list

4. Click the **Database Access** tab.

5. In the "Specify which database can be accessed by this login" pane, click the check box for the **test** database (see Figure 5).
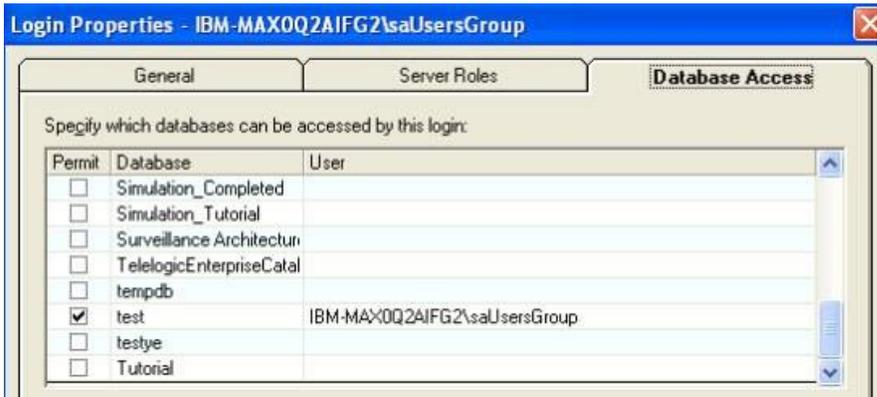
Figure 5. Database Access tab in Login Properties view

6. Click **OK** to switch to the Logins window.

7. Select **saUserGroup** from the list again.

8. Click the Edit icon to edit the selected login name.

9. Click the **Database Access** tab.

10. Click the **test** database. This time, the roles are displayed.

11. Check the **SAUser** (see Figure 6, lower part).
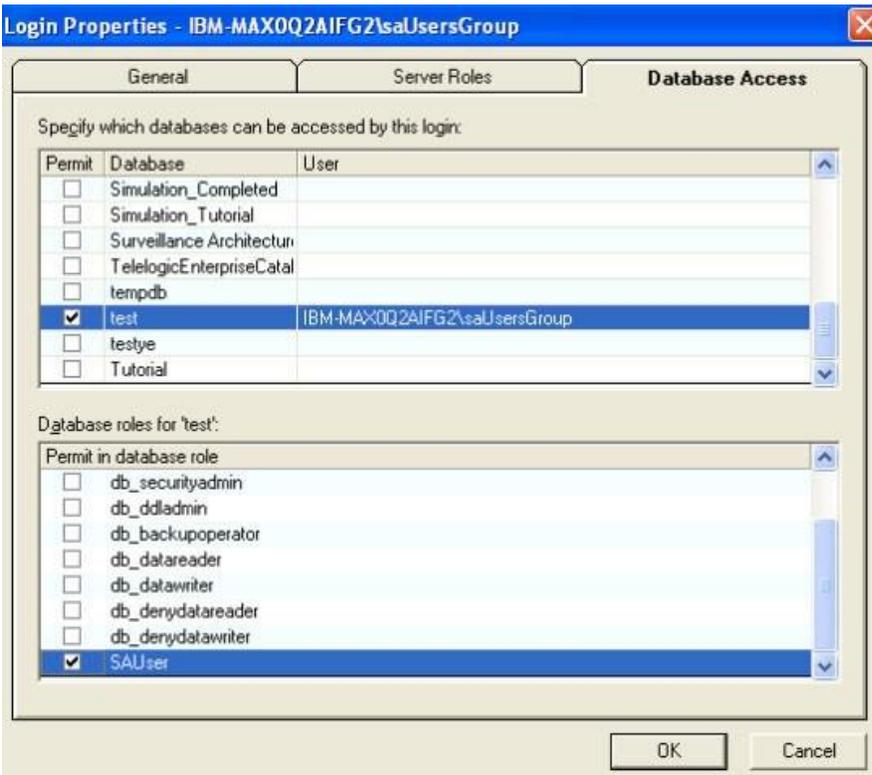
Figure 6. Select SAUser as the user group login to modify

12. Click **OK** and close the Login Properties window.

13. Click **Servers > Disconnect** to disconnect from the SQL server instance.

14. Exit the Encyclopedia Manager (SQL server) utility.

Connect System Architect to the SQL Server

1. Log off of the workstation as the System Architect administrator.

2. Log in to the workstation as a standard System Architect user (the user part of the saUsersGroup).

3. Start System Architect.

4. Click **Help > Startup Wizard** if it is not already started.

5. Click **Next** in the Startup Wizard.

6. Click **Next** to accept the default.

7. Select the option to **Existing SQL Server Located** the network.

8. Select the SQL Server **hostname\instance name**.

9. Click **Next**.

10. From the Connection Information window, select **Windows Authentication**.

11. Navigate through the rest of the screens and complete the configuration.

Configure Other Workstations

Repeat the process described here on each System Architect workstation:

1. Start System Architect.

2. Launch the Startup Wizard if it is not already started.

3. Connect to the SQL server Instance as described previously.

4. Open the existing encyclopedia.

5. Repeat the process for additional workstations.

Open an Existing Encyclopedia

1. Start System Architect if not already started.

2. Click **File > Open Encyclopedia** to get the Open Encyclopedia view.

3. Click **Existing** to view existing encyclopedias.

4. Open the encyclopedia that interests you.

Basic Troubleshooting

Instructions follow for the situations that you are most likely to use or encounter.

Enable remote connections for the SQL server

You must enable remote connections the SQL server instance. Follow these steps:

1. Click **Start > Programs > Microsoft SQL Server 2005 > Configuration Tools**.
2. Click **SQL Server Surface Area Configuration**.
3. On the SQL Server 2005 Surface Area Configuration page, click **Surface Area Configuration for Services and Connections**.
4. Expand **Database Engine**.
5. Click **Remote Connections**.
6. Click **Local and remote connections.**
7. Click the appropriate protocol to enable for your environment.
8. Click **Apply**.
9. Click **OK** when you receive the following message:

   Changes to Connection Settings will not take effect until you restart the Database Engine service.

10. On the Surface Area Configuration for Services and Connections page, expand **Database Engine**.
12. Click **Service**.
13. Click **Stop**, and wait until the MSSQLSERVER service stops.
14. Click **Start** to restart the MSSQLSERVER service.

Enable the SQL server browser service

Caution

By enabling SQL Server Browser service, you are increasing your security risk and making your workstation and network more vulnerable to attack by malicious users or by malicious software such as viruses. If you choose to do so anywhere, follow these steps:

1. Click **Start** > **Programs** > Microsoft **SQL Server 2005** > Configuration **Tools**.

2. Click **SQL Server Surface Area Configuration**.

3. On the **SQL Server 2005 Surface Area Configuration** page, click **Surface Area Configuration for Services and Connections**.

4. Click **SQL Server Browser**.

5. For "Startup type," select **Automatic**.

6. Click **Apply**.

7. Click **Start**.

8. Click **OK**.

Create Exceptions in Windows XP and Windows Server 2003 Firewall

To open Microsoft Windows Firewall:

1. Click **Start**.

2. Click **Run**.

3. Type `firewall.cpl`.

4. Click **OK**.

5. Click the **Exceptions** tab In Windows Firewall.

6. Click **Add Program**.

7. Click **Browse** in the Add a Program window.

8. Click the **C:\Program Files\Microsoft SQL Server** *<instance id>* **\MSSQL\Bin\sqlservr.exe** executable program or the path where the SQL server 2005 is installed.

9. Click **Open**.

10. Click OK.

Create an Exception for SQL Server Browser Service for Firewall

1. Click the **Exceptions** tab In Windows Firewall.

2. Click **Add Program**.

3. Click **Browse**.

4. Click the **C:\Program Files\Microsoft SQL Server\90\Shared\sqlbrowser.exe** executable program.

5. Click **Open**.

6. Click **OK**.

Open a Port in the Firewall for TCP access

1. In the Control Panel, open **Network Connections**.

2. Right-click the active connection.

3. Select **Properties**.

4. Select the **Advanced** tab.

5. Click **Windows Firewall Settings**.

6. In the Windows Firewall window, click the **Exceptions** tab

7. Click **Add Port**.

8. In the Name text box of the Add a Port window, type `SQL Server` *`<instance name>`*.

9. Type the port number of the database instance (for example: `1433`) for the default instance.

10. Verify that **TCP** is selected.

11. Click OK.

Open a Port in the Firewall for the Browser Service

1. Click **Add Port**, type `SQL Server Browser` in the Name text box, and then type `1434` in the Port Number text box.

2. Select **UDP**.

3. Click **OK**.

Resources

Learn

- Learn more about UNICOM® System Architect®:
    - Browse the product page UNICOM® System Architect® at http://unicomsi.com/products/system-architect/
    - Watch videos of UNICOM® System Architect® on its YouTube channel, SystemArchitectTrain.
    - Explore the UNICOM Customer Support Portal for System Architect technical resources and best practices.

Discuss

- Participate in the System Architect LinkedIn forum, where you can share information about methods, frameworks, and tool implementations. Discussions include tool-specific technical discussions about System Architect.
- Follow UNICOM® System Architect® on:

    - Facebook.com\SystemArchitect,

    - Twitter (@SystemArchitect), and

    - YouTube (SystemArchitectTrain),

    and add your comments and requests.