Telelogic System Architect and System Architect XT Installation Guide SA and SA XT Release 11.2

Before using this information, be sure to read the general information under Appendix, "Notices," on page 83.

This edition applies to **Release 11.2**, **System Architect and System Architect XT** and to all subsequent releases and modifications until otherwise indicated in new editions.

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Installing System Architect *1*

Introduction

This chapter instructs you how to install Telelogic System Architect® and related products. The chapter is partitioned into sections that cover different scenarios of installing the product.

- Installation overview
- Installation scenarios
- System requirements
- Software requirements for System Architect
- Hardware requirements
- Ports and Protocols Used for SQL Server
- System Architect installation scenarios
- I. Installations to SQL Server environments
- II. Installations to SQL Express environments
- III. Installations to Oracle environments
- Roaming User Profiles
- Step-by-step instructions to install System Architect
- Installation instructions for upgrading to V11.2
- Upgrading System Architect with upgrades and patches
- Summary of conversion instruction
- Silent installation

Installation overview

IBM provides full System Architect installations only. This means that you need to uninstall an old System Architect version before you install a new System Architect version. Periodically, service packs, patches or hot fixes are made available on the IBM Telelogic support site (https://support.telelogic.com/systemarchitect) that will update your existing version. You do not need to uninstall System Architect when you install a service pack, patch or hot fix, unless otherwise instructed on the support site.

Installation scenarios

System Architect V11 encyclopedias are created on Microsoft® SQL Server 2000, Microsoft SQL Server 2005®, Microsoft SQL Server 2005 Express® (SQL Express), and Oracle® 9*i* Database or Oracle® 10g Database. This creates a number of installation scenarios – a user may opt to use either SQL Express, SQL Server 2000, SQL Server 2005, Oracle9*i* or Oracle 10g as their repository engines. System Architect's Startup wizard enables you to install SQL Express onto your machine.

License management

System Architect uses Macrovision FLEXNET™ Licensing system. FLEXnet licenses are available as node-locked (stand-alone) licenses, which are tied to a specific machine, and floating (server) licenses, which are available anywhere on the network.

The FLEXnet licensing program must be running at all times System Architect is running. FLEXnet is automatically installed during installation of System Architect. FLEXnet retrieves the number of licenses to provide from the license.dat file. When FLEXnet runs, it reads the License.dat in a directory on the network or, for stand-alone machines, in a directory on the local machine. The licenses are distributed to SA users – System Architect queries License.dat and runs when it finds an available license slot.

If you are running System Architect on a stand-alone machine off of the network (for example, on a laptop), that machine will also have FLEXnet licensing installed and running for System Architect to be run.

For further information on FLEXnet Licensing see "Telelogic Lifecycle Solutions Licensing Guide," available in the IBM Telelogic support site (https://support.telelogic.com/systemarchitect) and in the Documentation DVD of the TLS boxed package.

Upgrading and patches

Upgrading System Architect usually requires that you uninstall your older version before installing a newer version. Consequently, some files in the root application folder that you customize may be permanently deleted when you upgrade as described above. Examples of such files are usrmatrx.xml (for user-defined matrices), usrprops.txt (copied into newly created encyclopedias), and macro files, among others.

Before you uninstall your current version of System Architect, it is recommended that you make backup copies of any files in the root application folder that you customize. After installing your upgrade, you can copy your customized files back into the root application folder (usually C:\Program Files\Telelogic\System Architect Suite\System Architect).

In addition to software upgrades, encyclopedias created with earlier versions of the product may need to be converted. For example, if you are upgrading from versions 10.0/10.1 and earlier, you will need to convert your encyclopedias for use with Version 11.0 using SAEM. You can find instructions on converting your version encyclopedias in the Conversion.pdf manual located on the Documentation DVD Volume 5.

If you are upgrading from versions of System Architect V8 or earlier, you will need to convert your encyclopedias for use with V10. Conversion instructions are provided in the manual Conversion.pdf.

If you have encyclopedias created in System Architect V9, no conversion is necessary to open those encyclopedias in V10. However, a stored procedure called GetFileSize is automatically created for the encyclopedia when you open it with V10. You should take care that the owner of the encyclopedia (the person who created it) is the first person to open the encyclopedia initially in V10 for proper access rights to this stored procedure to be granted, or you may manually grant proper access rights if this is not the case. A fuller explanation is provided in the Conversion.pdf file.

System requirements

This section contains operating system and hardware requirements for System Architect.

Note:You must have administrative privileges on the system to install System Architect (during the installation only).

Software requirements for System Architect

System Architect uses some of the newest Microsoft® Windows® features, included in the latest Service Packs and Operating System upgrades that Microsoft provides (http://www.microsoft.com/downloads). System Architect has been tested with the following Service Packs, upgrades and software products:

- Windows Vista with SP1
- Windows XP with SP2
- Windows 2000 with SP4
- Windows 2000 Server with SP4
- Windows 2003 Server Standard Edition
- Windows 2003 Server Enterprise Edition
- Microsoft Internet Explorer 6.0® or higher.
  Note: This in no way requires you to use IE as your preferred browser.
  (http://www.microsoft.com/windows/ie/downloads/default.asp)
- Microsoft Office 2000 or higher (http://officeupdate.microsoft.com)
- Java™ Runtime Environment – enables SVG graphics to be displayed via the Java-based SVG viewer applet from Batik (http://xmlgraphics.apache.org/batik); note, the Batik applet replaces Adobe's SVG viewer.
- System Architect is based in part on software from Colosseum Builders, Inc.

Installation Prerequisite

System Architect and System Architect DOORS Integration require that the Microsoft Windows Installer 3.1 Service be installed on the operating system of the target computer. If it is not present, the installation cannot continue and you are notified how to obtain and install the Windows Installer 3.1.

Hardware requirements for System Architect

The hardware requirements are as follows:

- Administrative privileges on the system (during the installation only).
- Pentium-class PC, 500 MHz or higher, minimum of 256 MB of RAM, Super VGA monitor (with the screen resolution set to at least 800 x 600, small fonts setting).
- Disk space: 600 MB during installation and 300 MB after the install is complete.

  Note: System Architect is supported by Citrix Metaframe Presentation Server 4.0 on Windows 2000 Server, Windows 2003 Server Standard, and Windows 2003 Server Enterprise.

Ports and Protocols Used for SQL Server and Oracle

The following ports and protocols have been tested with System Architect:

- SQL Server is a Winsock application that communicates over TCP/IP using the sockets network library. SQL Server listens for incoming connections on a particular port; the default port for SQL Server is 1433. The port does not need to be 1433, but 1433 is the official Internet Assigned Number Authority (IANA) socket number for SQL Server.

  For more information, go to: http://support.microsoft.com/kb/287932/

  Note: You can also use the Named Pipes protocol, but the default is TCP/IP.
- Oracle was tested with the TCP protocol, with the standard port 1521. The test configuration was done with Oracle configuration tools, which generated the TNSNAMES.ORA file.

System Architect installation scenarios

This section describes installation types available for System Architect.

Multi-User Installations: System Architect is installed to every client machine. You have the option of installing SQL Express (replaces MSDE) to every client machine. (Users do not need a local instance of SQL Express if they are always going to use an encyclopedia on the network; it is only necessary for users who will work on an encyclopedia off-line on their local machine.) FLEXnet is not installed to client machines – it is installed to a machine always running on the network. Encyclopedias are created on a SQL Server 2000, SQL Server 2005, SQL Express, Oracle9*i* or Oracle 10g servers on the network.

Stand-Alone Installations: To run System Architect from a stand-alone machine (not connected to the network), you must also have FLEXnet running, providing you with the necessary System Architect license. When using System Architect on a stand-alone machine, you work on encyclopedias on a local instance of SQL Express. System Architect's Startup Wizard provides you with the ability to install SQL Express to a machine.

In either case above, FLEXnet is automatically installed on your machine. You will not be able to run any copy of System Architect until a valid license file can be found. During installation of System Architect you are asked for a directory where the License.dat file is located. This directory is provided to you by your System Administrator.

Installing System Architect

Before installing System Architect, you should close other applications that are running.

During installation of System Architect, you may also optionally install **SQL Server 2005 Express** (SQL Express) and **System Architect Encyclopedia Manager** (SAEM). These choices are provided in System Architect's Startup Wizard.

Note: The installed version of **SQL Express** is 32 bit. You may download a 64-bit version of SQL Express from Microsoft.

To install System Architect proceed as follows:

1. Install System Architect your stand-alone machine by doing the following:

   If you have **downloaded** the evaluation software from the IBM Telelogic Web Site:

   a. Double-click on the downloaded executable file to run the installation.

   If you have received an **installation DVD** from IBM:

   b. Insert your System Architect Installation DVD into your DVD-drive.

2. The auto-run interface is launched and **The Telelogic Lifecycle Solutions** screen appears.
3. Click on the **Install** link for Telelogic Lifecycle Solutions Clients.
4. The Telelogic Lifecycle Solutions Setup runs and the **Welcome** screen appears.
5. Click **Next** to continue through the installation process. The **License Agreement** screen is displayed.
6. Select the **I accept** if you accept the terms of the License Agreement and click **Nex**t.
7. The **Select Products** screen is displayed. If you only want to install **System Architect**, clear all the other options and click **Next**. The **Choose Destination Location** screen is displayed.
8. Select where to install System Architect. The default location is C:\Program Files\Telelogic\System Architect Suite\System Architect. You can click on **Browse** to select a different folder.
9. In the **Setup Type** dialog, select one of the options below:

- **Complete** – installs all the System Architect options.
- **Custom** – installs only the features and ancillary products that you select from the **Select Features** dialog displayed when you choose this option.

10. Click **Next**.
11. In the **License Information** dialog, select one of the following options:
    - **I will supply license information later** – this enables you to continue the installation and enter the license information after the installation is complete.
    - **A Telelogic license server. Enter the location of the license server** – If you are obtaining your license from a license server, you must enter the server name in the form port@license-servername (e.g. 1296@LicenseServerName). For more information, see the "Telelogic Lifecycle Solutions Licensing Guide" on the IBM Telelogic support site (https://support.telelogic.com/systemarchitect/).
    - **A local license file. Enter the path to the local license file** – you cannot enter a drive letter path to the license file. Instead, your license file must be managed by a license server as described above.
12. Click **Next**. The **Start Copying Files** dialog is displayed, providing a summary of the products you chose to install and the installation path on which you chose to install them.
13. From the **InstallShield Wizard Complete** dialog, select **Finish**. By default, a shortcut icon is created on your desktop.

Running the System Architect Startup Wizard

The Installation Wizard automates the process of setting up your encyclopedia servers, installing sample encyclopedias, default frameworks, and other start-up options that make it easy for you to start using System Architect. If you are evaluating System Architect, you should use the Startup Wizard to install SQL Express. This creates a local server on your computer only which you can install and create encyclopedias.

On computers where System Architect has not been installed before, the first time that you run System Architect, the Startup Wizard is launched automatically. You can also run it manually as follows:

1. Launch System Architect by selecting Start, Program Files, Telelogic, Telelogic

System Architect. You can also click the System Architect icon on your Desktop (if you allowed one to be created).

2. Click **Help**, **Startup Wizard**.
3. Follow the **Startup Wizard** screens. If you are evaluating the software, you should accept the default settings and click Next to navigate through the screens.
4. Configure where encyclopedias will be stored: This screen provides you with the option to install SQL Server 2005 Express (SQL Express) to your local machine. You should choose this default setting if you are evaluating the software.
5. Configure Samples Encyclopedia Projects: This screen enables you to select one or all of the example encyclopedias provided with System Architect to be attached to your local server (SQL Express installed above). You may also select which Tutorial you wish to have opened when you first start-up System Architect.

After you have navigated all of the Startup Wizard's screens, System Architect will be ready to use. If you selected a tutorial encyclopedia, it will be opened for you when start System Architect.

I. Installations to SQL Server environments

Make sure all System Architect users have proper access rights to SQL Server

1. Use SQL Server's Enterprise Manager tool to provide users with proper access rights to SQL Server 2000 and SQL Server 2005 on the network.

   Access Rights for SQL Server 2000 and SQL Server 2005:

   Server Role: For users to be able to create an encyclopedia on a SQL Server 2000 and SQL Server 2005 server, they must have either a Server Role of System Administrator or Creators. This is granted to the user by the System Administrator through SQL Server Enterprise Manager (versions 2000 or 2005).

   Database Access: For users to be able to open an encyclopedia and read and create definitions within it, they must have Database Access of db_datareader, and db_datawriter. The db_ddladmin is required when there is a change in the schema of a database. For example, when opening up a 10.3 encyclopedia with System Architect 10.4 or later. Once the encyclopedia is opened (and therefore converted), the db_ddladmin role is no longer required for a user to read and write definitions in that encyclopedia.

   Execute on the following stored procedures:

CREATESNAPSHOT	GETHISTORYLOGGINGSTATUS
ENTITYEXISTSBYID	LOGENTITYHISTORYUPDATE
LOCKENTITYBYID	LOGFILESHISTORYUPDATE
GETNEXTID	PURGEHISTORY
GETFILESIZE	SAVEAUDITSETTINGS
DELETBYID	SAVECHANGECONFIG

   If you have not installed SQL Server 2000 SP4, you also need Execute on the extended stored procedure XP_UserLock. For more information on XP_UserLock, please see Microsoft's support Web Site:

   http://support.microsoft.com/default.aspx?scid=kb%3Ben-us%3B819829.

   This is granted to the user by the System Administrator through SQL Server Enterprise Manager (versions 2000 or 2005).

Minimum Access Rights for SQL Server 2005, including SQL Express

There is a minimum set of rights needed to open a SQL Server 2005 encyclopedia. The security model for SQL Server 2005 limits access to the metadata stored in system tables. System Architect's encyclopedia schema checker needs access to this metadata in order for it to work properly. The additional permission needed to view this data is called VIEW DEFINITION. The permission can be granted as follows:

GRANT VIEW DEFINITION TO <principal>

Where principal is one of the following:

- user /role /application role
- user mapped to a Windows login/group/certificate
- user mapped to an asymmetric key
- user not mapped to a server principal

SAEM has been updated to include this permission in the SAUser database role, thus any users added to this role will be able to open SA encyclopedias.

2. System Administrator should tell users where the server is and what their authentication method will be to create new encyclopedias on the server.

Install System Architect to the local machine of each User

3. Install SA to each client machine. You may also choose to install SQL Express to each client machine in System Architect's Startup Wizard; SQL Express is necessary if the user ever wishes to work on System Architect models while off-line. During installation of SA, you will be asked to specify the directory that holds the License.dat license file.

Have users begin work

4. Start System Architect: For a multi-user environment, the System Administrator must run FLEXnet licensing on the network to provide an available license slot for each user to work. Users working off-line on a stand-alone machine must have a valid license of System Architect.
5. Start System Architect: Each user starts their individual copy of System Architect. (Run System Architect by selecting Start, Programs, Telelogic, System Architect.)

For machines onto which you have installed SQL Express, SQL Express should automatically run as soon as the user starts their machine. Users do not need a local instance of SQL Express running if they are using an encyclopedia on the network; it is only necessary for users wishing to work on an encyclopedia on their local machine.

6. Each user may begin by taking one of the on-line tutorials in the product, create a new encyclopedia and begin working in System Architect, or open an encyclopedia specified by the Project Leader or System Administrator.

- The Startup Wizard attaches example encyclopedias to your server. You use some of these example encyclopedias while taking System Architect's on-line tutorials. If you changed the default settings of the Startup Wizard so that it did not attach necessary example encyclopedias, you may attach them using SAEM. Each tutorial covers how to do this. Tutorials are accessed by selecting Help, Tutorials.

  or

- Create a new encyclopedia from scratch and begin work on your own. To create a new encyclopedia, consult the help – select Help, Help, and open the book System Architect – General, Using System Architect, Creating/Opening Project Encyclopedias, Creating/Opening an SQL Server Encyclopedia.

  or

- Open an encyclopedia on the network specified by the System Administrator or Project Leader.

II. Installations to SQL Express environments

Install System Architect and SQL Express to network machine

1. Install SA to a server machine on the network. During installation of SA, you will specify a directory that will hold the License.dat license file. This directory must be available to all System Architect users; it will hold the license slots.
2. When you run System Architect's Startup Wizard, specify that SQL Express get installed to the server machine (this is the default setting). The server machine must have one of the following operating systems on it: Windows 2000, or Windows XP.
3. System Administrator should tell users where the server is and what their authentication method will be to create new encyclopedias on the server.

Install System Architect to each user's local machine

4. Install SA to each client machine. When running the Startup Wizard, you have the option of installing SQL Express to the stand-alone machine; SQL Express is necessary if the user ever wishes to work on System Architect models while off-line. During installation of SA, you will be asked to specify the directory that holds the License.dat license file.

Have users begin work

5. Start System Architect: For a multi-user environment, the System Administrator must run FLEXnet licensing on the network to provide an available license slot for each user to work. Users working off-line on a stand-alone machine must have a valid license for System Architect.
6. Start System Architect: Each user starts their individual copy of System Architect. (Run System Architect by selecting Start, Programs, Telelogic, System Architect.) For machines onto which you have installed SQL Express, SQL Express should automatically run as soon as the user starts their machine. Users do not need a local instance of SQL Express running if they are using an encyclopedia on the network; it is only necessary for users wishing to work on an encyclopedia on their local machine.
7. Each user may begin by taking one of the on-line tutorials in the product, create a new encyclopedia and begin working in System Architect, or open an encyclopedia

specified by the Project Leader or System Administrator.

a. The Startup Wizard attaches example encyclopedias to your server. You use some of these example encyclopedias while taking System Architect's on-line tutorials. If you changed the default settings of the Startup Wizard so that it did not attach necessary example encyclopedias, you may attach them using SAEM. Each tutorial covers how to do this. Tutorials are accessed by selecting Help, Tutorials.

or

b. Create a new encyclopedia from scratch and begin work on your own. To create a new encyclopedia, consult the help – select Help, Help, and open the book System Architect – General, Using System Architect, Creating/Opening Project Encyclopedias, Creating/Opening an SQL Express Encyclopedia.

or

c. Open an encyclopedia on the network specified by the System Administrator or Project Leader.

III. Installations to Oracle environments

Make sure all System Architect users have proper access rights to Oracle

This section details how to create a System Architect encyclopedia on an Oracle9*i* and Oracle 10g server. There is a one-to-one correspondence between a System Architect encyclopedia and a schema object in Oracle. The schema object you create is given your user name by default, but you can also name it differently. The owning user will have a default Tablespace whose name matches the schema object name.

The user must have DBA and Connect privileges on the selected Oracle data source to create encyclopedias. These privileges are not required to read encyclopedias.

To create and access Oracle encyclopedias, a System Architect user must have the Oracle OLEDB provider installed. The provider is a bridge that enables System Architect to communicate and work with an Oracle server. System Architect has been tested with OraOLEDB.DLL version 9.2.0.4.10 for Oracle 9*i* and OraOLEDB10.DLL version 10.2.0.1 for Oracle 10g; other versions may or may not work. Contact your Oracle DBA regarding the installation of the OraOLEDB.DLL.

You can access the Oracle database through the authentication method of the Windows Operating System, or through the User Id and Password method provided by the Oracle database. Once you establish a valid connection, you can switch over to the Schema Object that contains the selected encyclopedia.

Character Set for Oracle

It is recommended that you use the NLS_NCHAR_CHARACTERSET AL16UTF16 to create encyclopedias in System Architect properly. You should use the 9.2.0.4.10 version of OraOLEDB.DLL for Oracle 9*i* and 10.2.0.1 version of OraOLEDB10.DLL for Oracle 10g; otherwise, you will receive schema validation errors upon opening an encyclopedia.

Each user will require the following minimum set of rights to access a System Architect Encyclopedia.

Select, Insert, Update and Delete on the following tables:

ENTITY
ERROR_LOG
FILES
IDGENERATOR
SAPROPERTIES
RELATIONSHIP
CRITICALREGION
SINGLETHREAD
FILES_HISTORY
ENTITY_HISTORY
ENTITY_FLAGS

Execute on the following stored procedures:

CREATESNAPSHOT
ENTITYEXISTSBYID
LOCKENTITYBYID
GETNEXTID
GETFILESIZE
DELETEBYID
GETHISTORYLOGGINGSTATUS
LOGENTITYHISTORYUPDATE
LOGFILESHISTORYUPDATE
PURGEHISTORY
SAVEAUDITSETTINGS
SAVECHANGECONFIG

In addition to the above you also need to have granted permission CREATESESSION to access an Oracle encyclopedia.

When encyclopedias are created using System Architect there are two settings that can be specified in the ADO section of the SA2001.ini file, the first setting controls the location of the file for each encyclopedias Tablespace. The second setting controls the initial size of each encyclopedia's Tablespace. If no settings are found in the SA2001.ini file then the physical file will be placed in the default location for the current Oracle database and the initial size is set to 50MB. To override this behavior add values to the sa2001.ini file as follows:

[ADO]

ADOOraxxxxxTablespacePath=C:\oracle\userdata\oracle9\

ADOOraxxxxxTablespaceSize=40

Where xxxxx should be replaced with the data source name that represents the Oracle server and database as defined in the tnsnames.ora file. The path specification should contain back slashes for Windows servers and forward slashes for Unix servers.

Note: the path specified must contain a trailing slash character or System Architect will present an error.

This is granted to the user by the System Administrator through SQL Server Enterprise Manager (versions 2000 and 2005).

1. System Administrator should tell users where the server is and what their authentication method will be to create new encyclopedias on the server.

Install System Architect to the local machine of each User

2. Install SA to each client machine. You may also choose to install SQL Express to each client machine in System Architect's Startup Wizard; SQL Express is necessary if the user ever wishes to work on System Architect models while off-line. During installation of SA, you will be asked to specify the directory that holds the License.dat license file.

Have users begin work

3. Start System Architect: For a multi-user environment, the System Administrator must run FLEXnet licensing on the network to provide an available license slot for each user to work. Users working off-line on a stand-alone machine must have a valid license of System Architect.
4. Start System Architect: Each user starts their individual copy of System Architect. (Run System Architect by selecting Start, Programs, Telelogic, System Architect.) For machines onto which you have installed SQL Express, SQL Express should automatically run as soon as the user starts their machine. Users do not need a local instance of SQL Express running if they are using an encyclopedia on the network; it is only necessary for users wishing to work on an encyclopedia on their local machine.
5. Each user may begin by taking one of the on-line tutorials in the product, create a new encyclopedia and begin working in System Architect, or open an encyclopedia specified by the Project Leader or System Administrator.

   a. The Startup Wizard attaches example encyclopedias to your server. You use some of these example encyclopedias while taking System Architect's on-line tutorials. If you changed the default settings of the Startup Wizard so that it did not attach necessary example encyclopedias, you may attach them using SAEM. Each tutorial covers how to do this. Tutorials are accessed by selecting Help, Tutorials.

   or

   b. Create a new encyclopedia from scratch and begin work on your own. To create a new encyclopedia, consult the help – select Help, Help, and open the book System Architect – General, Using System Architect, Creating/Opening Project Encyclopedias, Creating/Opening an Oracle Encyclopedia.

   or

   c. Open an encyclopedia on the network specified by the System Administrator or Project Leader.

Roaming User Profiles

System Architect supports Roaming User Profiles, which contain setting and configuration information that enables users to retain their personalized settings even when they log onto different machines on a network. SA stores user settings and connection data to a folder that roams with the user, such as %userprofile%\Application Data.

By default, Roaming User Profiles are not enabled. Therefore, the SA2001.ini file (which holds the configuration information described above) is placed in a local folder path, for example C:\Documents and Settings\<UserName>\Local Settings\Application Data\Telelogic\System Architect. Conversely, when Roaming User Profiles are enabled, the SA2001.ini file is placed in the roaming folder path, for example C:\Documents and Settings\<UserName>\Application Data\Telelogic\System Architect.

To enable Roaming User Profiles:

1. Open the System Architect installation path, usually C:\Program Files\Telelogic\System Architect Suite\System Architect.
2. Using your XML editor of choice, open the FilePaths.xml file.
3. Locate the ProfilePath Location node. The default setting is FALSE, as shown here:

   <ProfilePath Location="" UseRoamingProfile="FALSE">
4. Change the UseRoamingProfile value to TRUE, as follows:

   <ProfilePath Location="" UseRoamingProfile="TRUE">

Installation instructions for upgrading to V11.2 and later

Beginning with System Architect V10.3 new stored procedures and tables (for history) are created and changes are made to existing stored procedures in all encyclopedias (SQL Server 2000, SQL Server 2005, SQL Express, Oracle9i or Oracle 10g databases). To upgrade System Architect V11.0 encyclopedias to V11.2 you only need to open the V11.0 encyclopedias with System Architect V11.2.

However, encyclopedias created with V10.1, V10.0, or V9 of the product must be converted to V10.3 format before they can be automatically upgraded by V11.2. This is a two-stage process:

Note: SAEM cannot perform standard functions on an encyclopedia residing on a remote server.

Stage 1 – convert the data of the encyclopedia using SAEM, as follows:

1. Run System Architect Encyclopedia Manager (SAEM) (select Start, Programs, Telelogic, System Architect Suite, SAEM).
2. In SAEM, log in to the server containing the encyclopedia you wish to upgrade (select Server, Connect).
3. Choose the encyclopedia you wish to upgrade (select Database, Select Database).
4. In SAEM, select Tools, Convert to 10.3 Format. This will convert the data to the format necessary to be used with System Architect 10.3.

Stage 2 – A person with a System Administrator's role, or the owner of the encyclopedia, must open the converted encyclopedia in System Architect V10.3 or later, as follows:

5. Find out who the owner of an encyclopedia is using SAEM (for SQL Express) or Microsoft's Enterprise Manager (for SQL Server). Have that person or a person with a System Administrator's role, open the converted encyclopedia in SA V10.3 or later.
6. System Architect will automatically try to add new stored procedures and tables to the existing encyclopedia when it is initially opened with SA V10.3 or later. As long as a person with a Systems Administrator role or the owner of the encyclopedia opens converted encyclopedia, the stored procedures will be properly created with an owner of 'dbo'.

Upgrading System Architect with upgrades and patches

IBM offers various upgrades to System Architect that can be obtained by contacting your sales representative or through the IBM Telelogic website www.telelogic.com.

If you are installing an upgrade to System Architect, it is not necessary to uninstall the existing version of System Architect. The upgrade will install over the existing copy. Before downloading, please check the download page on the IBM Telelogic Web Site to make sure you have the correct System Architect version number installed for the upgrade available to download.

Important Note for Downloaded Upgrades: If you are installing an upgrade to System Architect that you have downloaded from the IBM Telelogic Web Site, you should **not uninstall** the previous version of System Architect – the download upgrade specifically looks for a previous version of System Architect on your machine, and will not install if one is not there.

Installing an upgrade

To install an upgrade to System Architect, simply follow the same installation procedures provided earlier in this chapter for the type of licenses you have purchased.

Modifying, repairing, or removing System Architect

The System Architect Installation DVD enables you to modify the original components of System Architect that you installed, repair components that are not working, or remove the program entirely. To perform any of the above tasks, do the following:

1. Insert the Installation DVD into your DVD drive.
2. Run the setup.exe executable from the DVD.
3. Select Install System Architect on the initial installation screen to launch the InstallShield Wizard.
4. On the next screen of the wizard, select Modify, Repair, or Remove, as appropriate.
5. System Architect can also be removed using standard Windows techniques to remove a program (by selecting Add/Remove Programs in the Settings, Control Panel).

Summary of conversion instructions

You must convert encyclopedias created with previous versions of System Architect for use with V11.2. The conversion process is straightforward. The Conversion Guide manual contains complete instructions for converting and it is provided in .PDF format on the installation the Documentation DVD or in the Support Web Site. If you do not have access to the Documentation DVD, please contact your System Administrator.

Silent installation

In addition to the standard installation options described earlier, you can also perform a silent installation. A silent installation uses Microsoft Windows Installer (MSI) Technology, enabling you to install System Architect without entering the necessary input in the dialog boxes. This is helpful to a Systems Administrator who wants all the users, to whom he gives access, to carry out the same installation.

Requirement for Silent Installation of SA and SA DOORS Integration

As of this writing, to use the Silent install option for System Architect and System Architect/DOORS Integration requires that the Microsoft Windows Installer 3.1 Service be installed on the operating system of the target computer. If it is not present, the installation cannot continue and you are notified how to obtain and install the Windows Installer 3.1.

All product options available for silent installation are exposed as public properties that you can set on the Msiexec command line or through custom transform files. The properties are as follows:

```
TLDESKTOPSHORTCUT ("Yes"/"No") - create a desktop shortcut -
default is "Yes"

TLMASTER ("Yes"/"No") - called from the Master Installer - default
is "No"

TLUPGRADE (“Yes”/”No”) – called from the Master Installer – for
the auto –upgardation or to auto –uninstall and install the new
version

TLLICENSESERVER (string) - Licensing path from Master Installer
(if specified, may be null or undefined)

TLCLEAR ("Yes"/"No") - clear all user preferences, default is "No"
```

Older properties no longer supported are:

```
MASTERINSTALLDIR - (replaced by TLMASTER)

LICEENSESERVER - (replaced by TLLICENSESERVER)

CREATESHORTCUTS - (replaced by TLDESKTOPSHORTCUT)
```

The following example illustrates the use of the options listed above:

```
msiexec /i SystemArchitect_Enu_11.2.22.msi /qn
INSTALLDIR="C:\Program Files\Telelogic\System Architect Suite"
TLLICENSESERVER="C:\SALicense\license.dat" TLDESKTOPSHORTCUT="Yes"
```

Note: The value for the TLLICENSESERVER property in the example above can also be a license server (e.g. `TLLICENSESERVER="19353@server"`).

You can create MSI transforms if you need to specify many silent install options. For a complete list of Command Line options for the Windows Installer, see Microsoft's MSDN Web Site:

http://msdn.microsoft.com/en-us/library/aa367988(VS.85).aspx.

The Windows Installer uses Msiexec. For more information on Msiexec, see Microsoft's TechNet Web Site:

http://technet.microsoft.com/en-us/library/bb490936.aspx).

Installing System Architect XT 2

This chapter instructs you how to install Telelogic System Architect XT™ and related products. The chapter is partitioned into sections that cover different scenarios of installing the product.

- Introduction
- Requirements for the System Architect XT installer
- IIS server requirements for SA XT
- Requirements for the SA XT client PC
- SA XT and SA integration
- SA XT and Telelogic SA Catalog Manager™ integration
- Accessing encyclopedias with System Architect XT
- License requirements for SA XT and SA XT Web Service
- Preparing to install the System Architect XT software
- Installing System Architect XT
- Verifying SA XT Web site properties in IIS
- Editing the web.config file
- Folder permissions for the SA XT Domain Account
- Testing the System Architect XT Web site
- Adding encrypted security to the Impersonation Account
- Adding encrypted security to Oracle
- Registering the .NET Framework
- Enabling System Architect XT Web Service add-on product
- Uninstalling System Architect XT

Introduction

Telelogic System Architect XT is a web application that publishes an interactive Web site of Enterprise Encyclopedias. Users can run custom or standard reports to get real-time views of diagrams and definitions, and apply access control via role-based views, among other features. Encyclopedias published on the System Architect XT Web site are created with Telelogic System Architect®, and permissions to them are administered by SA Catalog Manager.

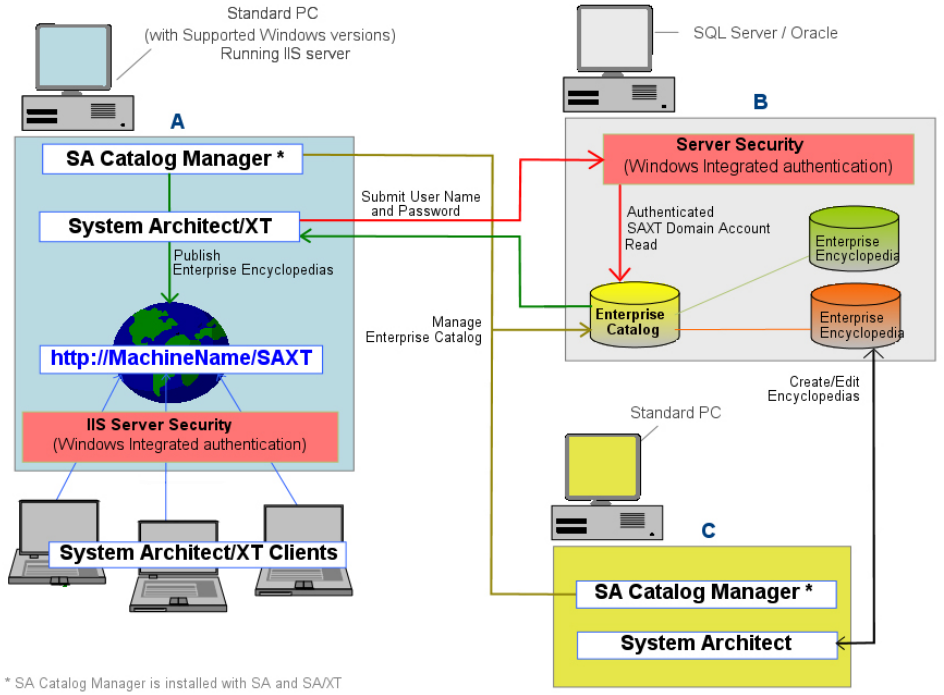
IBM provides an optional add-on product, System Architect XT Web Service, which makes it easy for clients to publish System Architect encyclopedia information on their corporate intranet. The Web Service exposes SA XT methods, providing consumer applications read-access to repository objects they can use to run System Architect reports.

SA XT installation overview

IBM provides full System Architect XT installations only. This means that you need to uninstall an old version of SA XT before you install a new version. Periodically, service packs, patches or hot fixes are made available on the IBM Telelogic support site (https://support.telelogic.com/systemarchitect) that will update your existing version. You do not need to uninstall SA XT when you install a service pack, patch or hot fix, unless otherwise instructed on the support site.

System Architect XT installation

SA XT requires that the same version of System Architect be installed on a different computer on the network, as shown in the figure below. The System Architect XT installation also installs SA Catalog Manager. SA Catalog Manager can be run from the SA XT machine (A) or from the computer in which standard System Architect is installed (C).



Note: An alternate configuration to that shown above is to install SA XT (A) on the

same computer as the SQL Server/Oracle database (B); such a configuration yields optimum performance, but is not required. It is a best practice if the connection speed between the encyclopedia server and the SA XT machine is less that 1 GB.

Requirements for the System Architect XT installer

The SA XT installer must possess administrative privileges on the computer in which he or she is installing the software. Although SA XT automates much of the installation, it cannot make the required changes without the following:

- Administrative privileges on the SQL Server or Oracle servers where encyclopedias (i.e. databases) are created. This is required for SA Catalog Manager to create users, to grant them access to encyclopedias, and to assign them roles on those encyclopedias (see below).
- Permission to create a Domain Account on the network for SA XT to use. You can also use existing account, if it has the required permissions. SA XT uses the credentials of the Domain Account to connect to servers (via Windows Integrated authentication) where the catalogs and encyclopedias reside. The Domain Account is also known as the 'impersonation account'—the SA XT application "impersonates" the Domain Account (see pg. 45 for more information).
- Permission to create a Domain Account on the network that SA XT Web Service can use. Note, the SA XT Web Service add-on can also use the same Domain Account that is used by SA XT, or it can use different Domain Account. Either way, the Domain Account for the SA XT Web Service has the same requirements listed for SA XT above.

IIS server requirements for SA XT

- Microsoft Internet Information Services versions 5.1 or 6.0 (this version has some unique requirements, which are described below where applicable) – System Architect XT requires an internet server to host the SA XT Web site through which users access Enterprise Encyclopedias.
- Microsoft .NET Framework version 2.0, with the latest available Service Packs. If the SA XT installation does not find the .Net Framework, or it finds version 1.1, it will automatically install the .NET Framework 2.0 without upgrading or affecting version 1.1.

Hardware requirements

- 60 Mb of memory for the first user, plus 40 Mb for each additional user.
- 37 Kb of Desktop Heap allocation for each SA XT and SA XT Web Service session. The amount of available Desktop heap in Windows is controlled by a setting in the Registry. Desktop heap allocation is dependent on the anticipated number of concurrent users. This setting lets you increase the default number of concurrent users allowed, which is twelve (see pg. 50 for more information).
- High-speed network connection between the SA XT server and the SQL or Oracle Database server.

Operating System and Software requirements

System Architect XT requires one of the Microsoft Windows operating systems below:

- Windows Vista SP1
- Windows 2000 (with Service Pack 4)
- Windows XP
- Windows Server 2003 (32-bit version)
- Microsoft's .NET Framework version 2.0 with the latest available Service Packs (will auto-install if not present or if an older version is found).
- The Microsoft Internet Information Services – if IIS is already enabled in the operating system, SA XT configures it accordingly. Otherwise, you need to enable IIS in the operating system (see pg. 34 for more information).

Requirements for the SA XT client PC

- Microsoft Windows 2000 or XP (with Service Pack 2)
- Microsoft Internet Explorer 6
- Java Runtime Environment – the minimum version required is JRE 1.5. The JRE enables SVG graphics to be displayed via the Java-based SVG viewer applet (from Batik). At run-time, if SA XT finds that the JRE is not installed, a dialog will inform you that you need to install it and provide a link to the Web site from which you can download it.

SA XT and SA integration

System Architect XT works with System Architect. In SA, users create encyclopedias, which are databases on SQL Servers or Schemas in an Oracle database. When encyclopedias are shared among multiple users, access to them is controlled via SA Catalog Manager. Such encyclopedias are classified as Enterprise Encyclopedias. An SA XT Web site publishes Enterprise Encyclopedias. An encyclopedia that is *not* attached to an Enterprise Catalog is classified as a Professional Encyclopedia; this type may be shared amongst users, but cannot be published by SA XT.

SA XT and SA Catalog Manager integration

The SA Catalog Manager utility is installed by SA and System Architect XT. SA Catalog Manager controls access to Enterprise Encyclopedias. On each server, SA Catalog Manager creates an Enterprise Catalog. The catalog administrator who creates the catalog becomes its owner, can add users to the catalogs, and determine which encyclopedias users can view. Optionally, the admin can select the encyclopedia artifacts a user can view.

When a user on a client machine browses the SA XT Web site, he or she must select an encyclopedia server. The SA XT server (on IIS) then reads the catalog on the selected server. The catalog detects the encyclopedias the user is allowed to view on that server and displays them in a drop-down list. When the user selects an encyclopedia, the catalog filters the encyclopedia artifacts that that user can view based on his or her assigned role.

See chapter 3 of this installation guide or SA Catalog Manager's online help for more information on Enterprise Catalogs.

Accessing encyclopedias with System Architect XT

To view or edit encyclopedias through the System Architect XT Web site, you need the same permissions as you do with standard System Architect. In other words, an individual must exist as a user in the catalog, and at login, supply his or her DomainName\UserName combo and password to view encyclopedias. If you are already logged into the domain when you launch SA XT, you will not be prompted to enter your log in credentials.

Another requirement to access an encyclopedia through the SA XT Web site is that its property configuration files are up-to-date. This is achieved by simply opening an encyclopedia with a System Architect version that is the same version as SA XT. Doing

so compiles the property file and brings it up to date. If you do not perform this step, the encyclopedia is considered out-of-date, and users will be unable to open it. Therefore, opening encyclopedias with a standard copy of System Architect should be considered a part of any installation, upgrade, or service pack that you apply.

Server Roles and Permissions

The SA XT Domain Account (i.e., impersonation account) needs connection privileges to the server containing encyclopedias and to the Enterprise Catalog on that same server. Therefore, you must grant the Domain Account appropriate rights on each server you wish to access. An Enterprise Catalog is a database on the same server as Enterprise Encyclopedias, which enables a System Architect user with administrative privileges to enforce access control to encyclopedias.

See "Chapter 3 - Installing SA Catalog Manager and Implementing Access Control" for detailed information.

License requirements for SA XT and SA XT Web Service

SA XT does not support node-lock licensing. You must use a license from a License Server because SA XT limits the number of user sessions that it runs based on the number of licenses purchased. A License Server is required to keep count of the number of licenses in use at any one time.

The default SA XT login page contains a radio button where you choose to login as a Reader or as an Updater. A Reader uses one "SA-XT" license, plus one "SA-XT Read Only" license. An Updater uses one "SA-XT" license, plus one "SA-XT Read-Write" license. An SA XT Web Service session uses one `SA-XT` license plus one `SA-XT-WebService` license. This is summarized in the table below.

Product	License(s) used
SA XT Read Only	`SA-XT` + `SA-XT-Read`
SA XT Read-Write	`SA-XT` + `SA-XT-Read-Write`
SA XT Web Service	`SA-XT` + `SA-XT-WebService`

See the System Architect Installation Guide for more detailed information on setting up and accessing licenses from a license server. You can find the System Architect Installation Guide on the Documentation DVD of your installation package, or you can download it from the IBM Telelogic support site—https://support.telelogic.com/systemarchitect.

Automated System Architect XT installation tasks

System Architect XT is based on Microsoft's ASP.NET technology, which is part of the .NET Framework. To create the Web site and manage access to it, the SA XT installation enables and configures those Windows services and components that it needs to publish the SA XT Web site. The components SA XT configures are as follows:

- Microsoft Internet Information Services (IIS) 5.1 or higher - creates and configure a Virtual folder for the SA XT Web site.
- Directory Security - enforces security for the SA XT Web site through Integrated Windows authentication. This checks the identity credentials that users submit before they are allowed to access the secured Web site content.
- Enables .SVG graphic support by configuring IIS and installing the Java applet to view .SVG files. Installation of the Java applet requires that the Java Runtime Environment be installed; if it is not, you can install the JRE and configure .SVG support manually.
- Creates a Windows User Account (also referred to as the "Domain Account"). At installation time, you can choose the name (in the form DomainName\UserName) and a password for this account. The account is granted permissions to select folders. You can use an existing account, as long as it has required permissions.

Preparing to install the System Architect XT software

Before your install System Architect XT, it is recommended that you backup and are able to restore the following Windows components, which the SA XT installation may modify:

- IIS Metabase -- the installation process may update the IIS Metabase.

  To find IIS Metabase backup documentation go to:

  http://www.microsoft.com/windowsserver2003/community/articles/art_iismetabak.mspx

- Windows Registry – if you need to increase the number of concurrent users, or to add encrypted password security after the installation completes, you will need to edit registry.

To find Registry backup documentation go to:

http://support.microsoft.com/kb/322756

Checking that Internet Information Services is installed

If the Windows IIS component is not enabled in the computer where SA XT is to be installed, you can enable it manually as follows (provided you have the proper privileges).

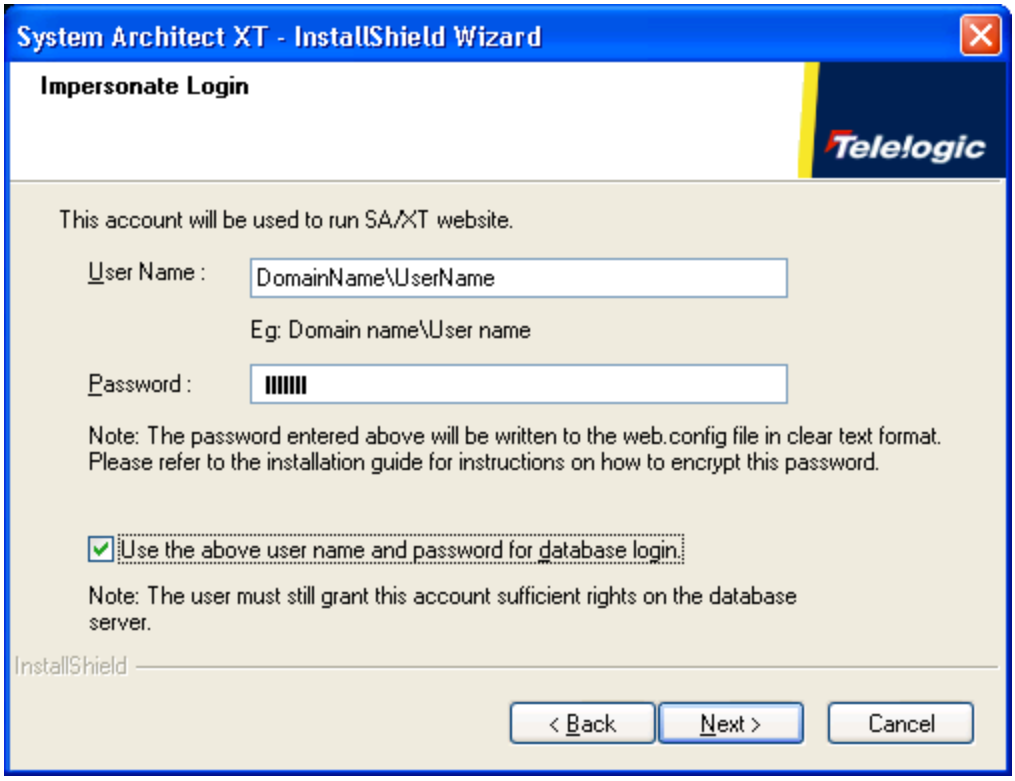
1. Click Control Panel and select Administrative Tools.
2. Click the **Internet Information Services** icon, and go.
3. If you see the **Internet Information Services** icon, it means that the computer has IIS installed and enabled.
4. If you do not see the **Internet Information Services** icon, you need to install it as follows.
5. Click on the **Control Panel**.
6. Click on **Add or Remove Programs** icon.
7. Click **Add/Remove Windows Components**.
8. Toggle on **Internet Information Services** (IIS), and click **Next** to complete the Wizard.

Installing System Architect XT

IMPORTANT: You cannot install System Architect XT on the same computer where System Architect is installed.

To install System Architect XT proceed as follows:

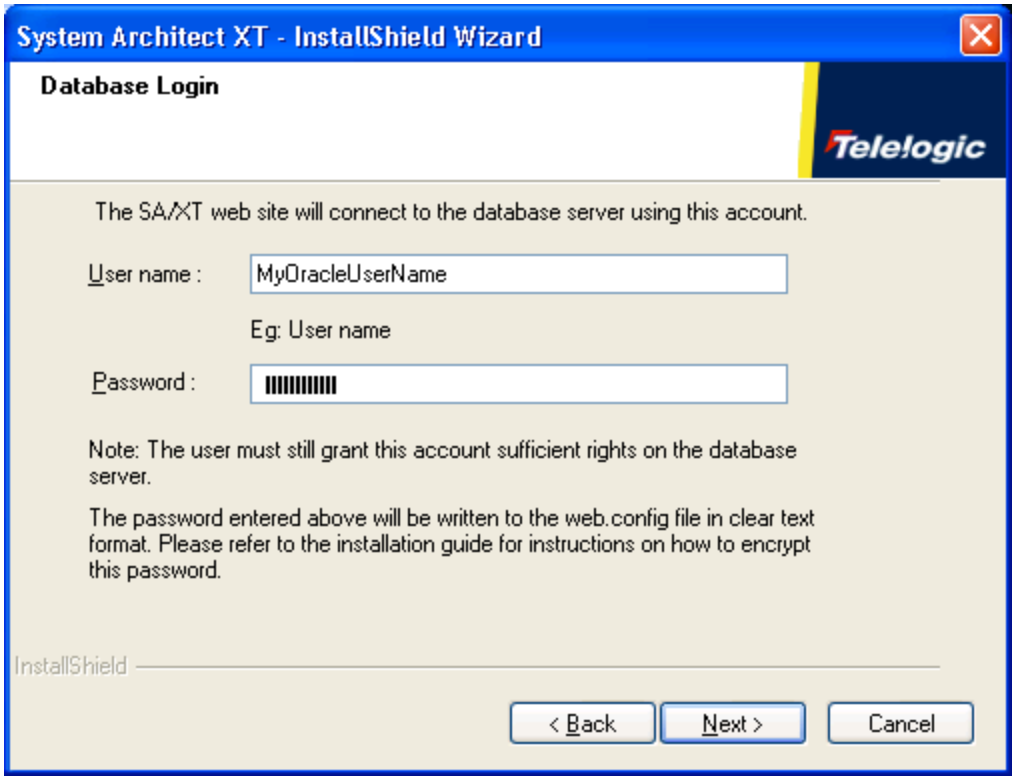
1. Run the System Architect XT installation wizard.
2. Click **Next** in the **Welcome** dialog.
3. In the **License Agreement** dialog, select **I accept terms of the license agreement**, and click **Next**.
4. Enter your **User Name** and **Company Name** in the **Customer Information** dialog.
5. Select an option for the **Install this application for** field and click **Next**. The default is **Anyone who uses this computer (all users)**.
6. In the **Choose Destination Location** dialog, click **Next** to select the default destination folder or **Browse** to choose a different folder.
7. In the **License Information** dialog, select one of the following options:
    - I will supply license information later – this enables you to continue the installation and enter the license information after the installation is complete.
    - **A Telelogic license server. Enter the location of the license server** – an SA XT license must be hosted on license server. You must enter the server name in the form `port@license-servername` (e.g. 1296@LicenseServerName). For more information, see the "Telelogic Lifecycle Solutions Licensing Guide" on the IBM Telelogic support site (https://support.telelogic.com/systemarchitect/).
    - **A local license file. Enter the path to the local license file** – you cannot enter a drive letter path to the license file. Instead, your license file must be managed by a license server as described above.
8. Click **Next**.
9. Enter your **User Name** and **Password** values, in the **Impersonate Login** dialog, as shown below. SA XT submits these values to login to SQL or Oracle encyclopedia servers.



The **Use the above user name and password for database login** option works as follows:

If you enable the option, SA XT submits the same credentials to login to Oracle databases as it does to login to SQL servers.

If you do enable the option, and click Next, the Database Login dialog is displayed, as shown below. In this dialog, enter the User Name and Password credentials to login to Oracle databases, and click Next.


System Architect XT - InstallShield Wizard
Database Login
Telelogic
The SA/XT web site will connect to the database server using this account.
User name :
MyOracleUserName
Eg: User name
Password :
Note: The user must still grant this account sufficient rights on the database server.
The password entered above will be written to the web.config file in clear text format. Please refer to the installation guide for instructions on how to encrypt this password.
InstallShield
< Back
Next >
Cancel

10. Click **Next**.
11. In the **Start Copying Files** dialog, click **Next**.
12. Click **Finish** in the **InstallShield Wizard Complete** dialog.

If you purchased either the DoDAF-ABM or DoDAF (c4isr) features, open the installation folder (`C:\Program Files\Telelogic\System Architect Suite\System Architect`) and perform the appropriate file copy operation as follows:

- For **DoDAF-ABM**, copy:
  `sadeclar.abm to sadeclar.cfg`
  `autoexec.abm to autoexec.sty`
  For **DoDAF(c4isr)**, copy:
  `sadeclar.c4 to sadeclar.cfg`

Verifying SA XT Web site properties in IIS

Before users logon to the SA XT Web site, or if they are having problems viewing the Web site, you can verify that your Web site properties in IIS are set up as required.

1. Click on Start > Settings > Control Panel > Administrative Tools > and select Internet Information Services.
2. Expand the **local computer** node. This is usually indicated by your computer name, for example ComputerName (local computer).
3. Expand the **Web Sites** folder and then the **Default Web Site** node.
4. Right-click on the new **SAXT** Web site and select **Properties**.

You can use the procedures below to verify that your SA XT Web site is setup correctly.

1 - Checking and configuring ASP.NET mapping
2 - Setting directory security manually
3 - Set the default page for SA XT Web site
4 - Verifying that the .SVG MIME type is present

The procedures above are detailed in the sections that follow.

1 – Checking and configuring ASP.NET mapping

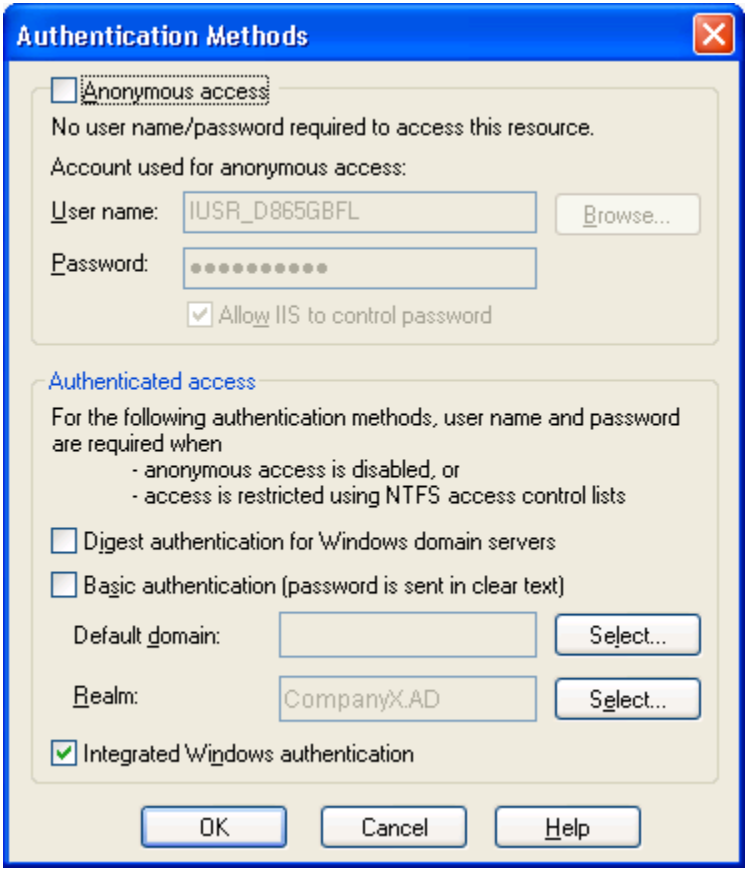
1. On the **Virtual Directory** tab, click the **Configuration…** button.
2. On the **Mappings** tab, locate the **.aspx** entry in the **Extension** column. The **Executable Path** column for this entry should display

```
C:\Windows\Microsoft.NET\Framework\
v2.0.50727\aspnet_isapi.dll.
```

If the **.aspx** entry appears and it contains the above values for the **Executable Path**, then click **OK** and proceed to next section "Setting directory security manually." If the **.aspx** entry does *not* appear, it means SA XT is not mapped to the correct ASP.NET version. In this case, click **Cancel** to return to the **Virtual Directory** tab. You need to map SA XT to the correct version of ASP.NET as described in the "Registering the .NET Framework" section on page 56.

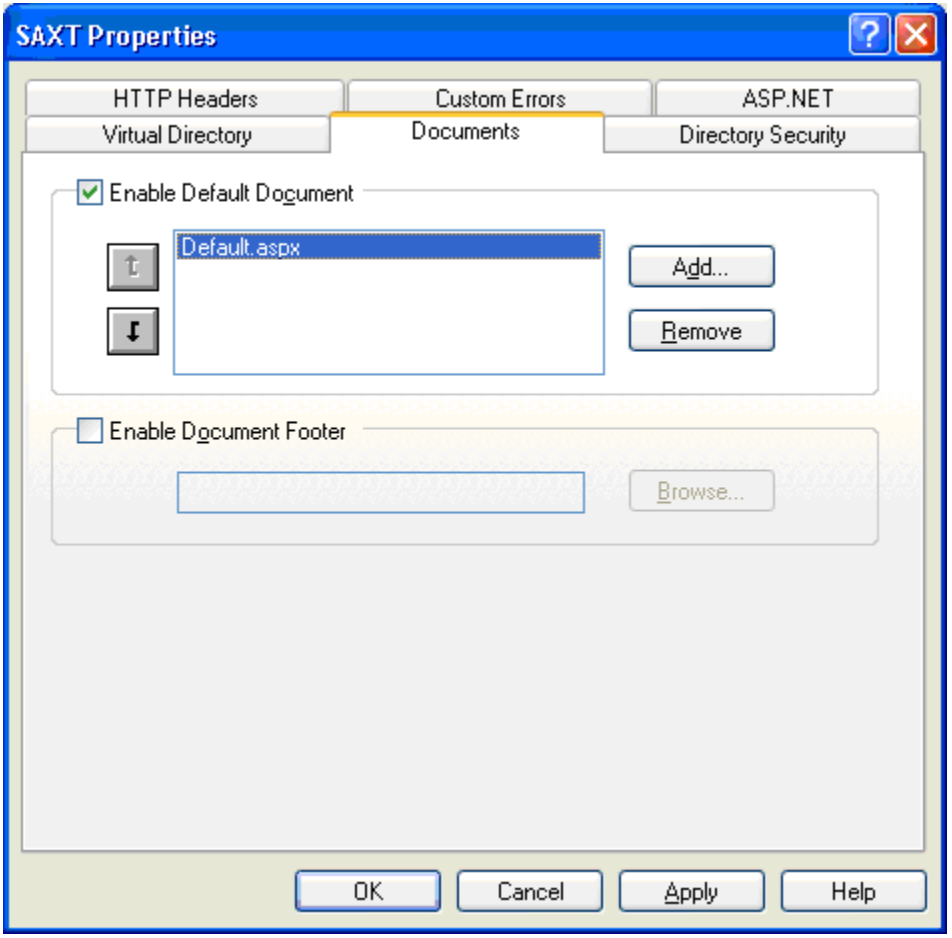
2 – Setting directory security manually

1. Click on the **Directory Security** tab.
2. In the **Anonymous access and authentication control** group box, click **Edit**.
3. Check the **Integrated Windows authentication**.
4. Uncheck all other checkboxes and click **OK**.



3 - Setting the default page for SA XT Web site manually

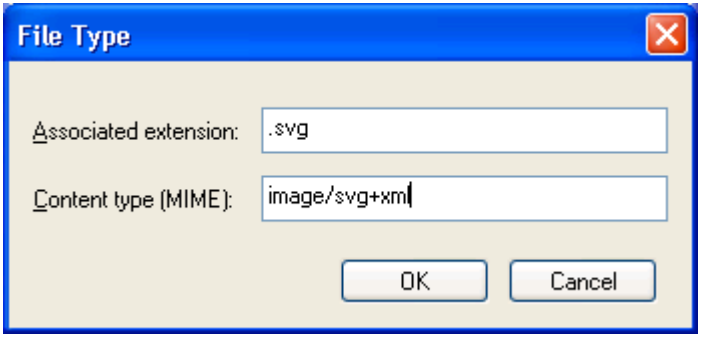
5. Click the **Documents** tab.
6. Make sure **Enable Default Document** checkbox is checked that the file name **Default.aspx** appears in the list.
7. If the **Default.aspx** does not appear on the list of files, click **Add**.
8. Enter **Default.aspx** and click **OK**.
9. Select the **Default.aspx** file and use the **Up** button to move the file to the top of the list.



4 - Verifying that the .SVG MIME type is present

SA XT uses the .SVG file format to display diagrams and charts. If diagrams do not display correctly, you can check that the SVG setting in IIS is setup properly.

1. Click on the **HTTP Headers** tab.
2. In the **MIME Map** group click the **File Types…** button.
3. If the **Registered file types** field already contains the value **.svg images/svg+xml,** click **Cancel**, and proceed to the next section. If **.SVG** is not displayed in the list, click the **New Type** button.
4. Enter **.svg** in the **Associated extension** field, and enter **image/svg+xml** in the **Content type (MIME)** field, and click **OK**.



5. In the **File Types** dialog, the **Registered file types** field should now contains the value **.svg images/svg+xml**. Click **OK.**
6. On the main **SAXT Properties** dialog, click **OK** to return to the IIS Admin tool.
7. In the IIS Admin tool, click **File > Exit**.

Editing the web.config file

Edit the web.config file to enter the User Name and Password for the SA XT Impersonation Account. You only need to do this if you want to change the User Name and password that you entered during the SA XT installation. The web.config file is located in the SA XT installation folder, usually

```
C:\Program Files\Telelogic\System Architect Suite\SAXT.
```

1. Open the **web.config** file with any text editor.
2. Update the **userName** and **password** attributes of the identity element with your new User Name and Password values. Substituting your actual values, the identity element should appear like this:

   ```
   <identity impersonate="true" userName="DomainName\UserName"
   password="password"/>
   ```

3. Save and close the **web.config** file.

Note: If you are concerned about storing the User Name and Password with clear text, see the "Adding encrypted security to the Impersonation Account" section on page 52.

IIS 6.0 only – set IIS to use NTLM authentication

You should read this section only if you are installing SA XT to an IIS 6.0 server. In such an environment, you may need to configure NTLM manually with Integrated Windows authentication as the authentication mechanism.

If you use IIS v. 6.0 and your SA XT server does not work properly, you may use the steps below to check your security settings are properly set up.

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Open the directory `C:\InetPub\Adminscripts.`
3. Type the following command and press **Enter**:

   ```
   Cscript adsutil.vbs get w3svc/NTAuthenticationProviders
   ```

   No further action is required if the command returns:

   ```
   NTAuthenticationProviders: (STRING) "NTLM."
   ```

   If it does not return the above, proceed to step 4 below.

4. From the command prompt, run the following command:
   `Cscript adsutil.vbs set w3svc/NTAuthenticationProviders "NTLM"`
5. Repeat step 3 above to confirm the setting has been corrected.

Adding Oracle authentication for SA XT and SA XT Web Service

Note: You can enter the login credentials for Oracle databases at install time through the System Architect XT Installation wizard. The information that follows is provided to enhance the usability of this installation guide. You may use as a reference or for troubleshooting purposes.

System Architect XT and the SA XT Web Service support Oracle authentication to access encyclopedias in Oracle databases. You can also use the default integrated windows authentication. To enable Oracle database security, the web.config files for SA XT and for SA XT Web Service contain two items in the *connectionStrings* section. The items are *DBUser* and *DBPassword*. If the *connectionStrings* value of the DBUser item is not empty, the system will attempt to connect to the selected server using the values provided in the *connectionStrings* fields. If the connectionStrings value of the *DBUser* item is empty, the system will continue to use windows integrated authentication when it connects to the database server.

The following example forces the SA XT or SA XT Web Service to connect to the database server with the User Name *OracleSAXTWebUser* and the password *OracleSAXTpwd*.

```
<connectionStrings>
     <add name="DBUser" connectionString="OracleSAXTWebUser" />
     <add name="DBPassword" connectionString="OracleSAXTpwd" />
 </connectionStrings>
```

You can access your Oracle encyclopedias by using the clear text settings above, or you can add another layer of security through encryption. To add encryption to Oracle authentication, see the "Adding encrypted security to Oracle authentication" section on pg. 54.

Folder permissions for the SA XT Domain Account

The account for the User Name that you enter during the installation is granted "Full Control" permission to certain folders. This allows SA XT to create temporary files for SA XT sessions. The folders and permissions that SA XT requires for them are described in the sections that follow.

System Architect temporary folders

The SA XT installation creates a folder named "System Architect" in the `C:\Program Files\Telelogic\System Architect Suite` subfolder. The System Architect folder contains a file named `FilePaths.xml`. This file contains an element named `ProfilePath`, which has a single empty attribute named `Location`. This attribute allows you to specify the path for the temp folder that should be used instead of the default path set for impersonation account, as determined by the operating system. For example, if you set the `Location` attribute value to "`C:\saxt`" System Architect creates temporary folders in the "`C:\saxt`" folder, on each user's machine. If the folder you specify does not exist, SA will create it for you.

```
<FileLocations>
    <ProfilePath Location="C:\SAXT">
    </ProfilePath>
<FileLocations>
```

System Architect XT temporary folders

The `web.config` file (located in the SA XT installation folder, usually `C:\Program Files\Telelogic\System Architect Suite\SAXT`) contains the TempFolder in the AppSettings Key. This key/value pair enables the administrator to determine the root folder that SA XT uses to create temporary files. The web.config file does not contain a value for the `TempFolder` key. By default, SA XT uses the folder returned by the operating system.

The example below forces SA XT to use "C:\SAXT" as the root folder for temporary folders:

```
<appSettings>
    <add key="TempFolder" value="C:\SAXT">
</appSettings>
```

Folders and file(s) that require the Full Control permission

SA XT grants the Full Control permission to the following folders:

C:\Documents and Settings\Default User\Local Settings\Application Data\Telelogic\System Arhcitect.

```
C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET
Files
```

```
C:\Windows\Temp
```

```
C:\Windows\System32\Config\Systemprofile (or FilePaths.xml
ProfilePath Location setting)
```

```
C:\Program Files\Telelogic\System Architect Suite\System
Architect\sa2001.log
```

```
C:\Documents and Settings\<machinename>\ASPNET\Local Settings\Temp
(or web.config TempFolder setting)
```

Note: If a .NET application has never been run on the SA XT machine, it's possible the following subfolder may not exist:

```
C:\Documents and Settings\<machinename>\ASPNET\Local
Settings\Temp
```

If it does not exist, grant permission to other folders first (as described below) then test the Web site. This will create the missing `Temp` folder. Afterwards, return to the newly created `Temp` folder and grant it the Full Control permissions, as described in the section that follows.

Granting Full Control to required folders manually

The System Architect XT installation grants the Full Control permission to the folders described above automatically. However, if you need to grant the permissions to those folders manually, proceed as follows:

1. In Windows Explorer menu, click **Tools >Folder Options >View** tab.
2. Check the **show hidden files and folders** field, if it is not checked, to ensure you can see the folders and files to which you need to grant permission.
3. With Windows Explorer, locate the folder you are granting the **Full Control** permission to, and click on it once to select it.
4. Right-click on the folder and select **Properties > Security** tab.
5. Click the **Add** button, enter the name of the Domain Account, and click **OK**. The account should now appear on the **Group or user names** field.

6. Click once on the account to select it.
7. In the **Permissions for Users** group, click on the **Allow** checkbox for the **Full Control** property.
8. Repeat steps 3-8 for each folder that needs the **Full Control** permission.

Testing the System Architect XT Web site

If your SA XT Web site is not working properly, perform the checks below. These checks help you ensure that the SA XT software is running successfully in the IIS server, that it can access encyclopedias on the SQL Server or Oracle servers, and that Windows Desktop Heap allocation are all properly configured.

Checking that SA XT starts on the IIS server

After you make changes to the Web site, IIS needs to be reset, or restarted, for the changes to take effect. It is recommended that you run the IISReset command from a DOS prompt, as follows.

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Type **iisreset**, and press **Enter**.
3. The command above stops and restarts the IIS. When completed, you should receive a confirmation message that **Internet Services Successfully Restarted**. Close the DOS window.
4. Launch Internet Explorer and enter the following URL:
   `http://<machinename>/saxt`
5. If the System Architect XT Login page is displayed, close Internet Explorer. Installation was successful.

On some servers, you may need to run SA XT executable (sa2001.exe) manually prior to using SA XT. On these servers, there appears to be a registry update that occurs when the SA2001.exe file is run for the first time on a clean machine. To ensure that SA XT will successfully start on the server, navigate to the System Architect installation folder, usually `C:\Program files\Telelogic\System Architect Suite\System Architect`, and double-click on sa2001.exe. SA XT does not present a UI when started in this manner. However, you can see if SA XT started successfully by looking in the Windows Task Manager. If started, you will see a process running for SA2001.exe. To shut down the SA XT session, select sa2001.exe process and click on End Process.

Checking that SA XT can access encyclopedias on a server

To work properly, SA XT must be able to access the SQL Servers or Oracle servers through the Impersonation Account. Use the steps that follow to confirm that SA XT can access those servers to publish the encyclopedias within them for SA XT clients.

1. Launch Internet Explorer and enter the following URL: http://<machinename>/saxt.
2. Select to login as a **Reader** or **Updater**, and click **Login**.
3. In the **Enter or select a server** page, select a server type from the **Server Type** drop-down list. You can accept the default server, SQL Server or click on the drop-down to select Oracle instead.
4. In the **Server Name** field, enter the name of the server with the catalog that has Enterprise Encyclopedias attached to it. For example, NYC\SQLServer.
5. Click **GO**. SA XT reads the catalog on that server in order to populate the encyclopedia list that users can select from.
6. Click the **Encyclopedia Name** drop-down list, select an encyclopedia, and click **Open**. You should now see the SA XT **Introduction** page, with following URL displayed in the browser's address bar: http://<machinename>/saxt/pagegen.aspx.

Windows Desktop Heap allocation

The SA XT installation sets the Windows registry to allocate enough space for twelve concurrent users. By default, each session of SA XT uses up to 37 KB of a single non-interactive Windows Desktop Heap. The SA XT installation does not change this setting, but you can change it as necessary as describe below.

In Windows, the amount of Desktop Heap available can be modified in the following registry subkey:

```
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Session
Manager\SubSystems\Windows
```

The default value for this subkey usually looks like the following:

```
%SystemRoot%\system32\csrss.exe ObjectDirectory=\Windows
SharedSection=1024,3072,512 Windows=On SubSystemType=Windows
ServerDll=basesrv,1 ServerDll=winsrv:UserServerDllInitialization,3
ServerDll=winsrv:ConServerDllInitialization,2 ProfileControl=Off
MaxRequestThreads=16
```

The `SharedSection` entry in this subkey controls the number of KBs allocated to each

of three different types of Desktop Heaps. SA XT uses the third value (512) in the `SharedSection`. In this example, the system will allocate 512 Kb of space for all the SA XT sessions to share, which will allow 12 sessions of SA XT to be run concurrently.

```
512 / 37 - 1 = 12
```

Modifying this value can impact other applications running on the same machine. Therefore, it is recommended that if you choose to modify the value in this subkey that you first read the following document on the Microsoft Web site:

http://support.microsoft.com/default.aspx?scid=kb;EN-US;184802

The SA XT `web.config` file (located in the SA XT installation folder, usually `C:\Program Files\Telelogic\System Architect Suite\SAXT`) contains an `appSetting` entry that must be set to match the value in the registry. The key `MaxDesktopHeap` should have its value set to the same value specified in the registry. This `web.config` entry allows SA XT to ensure that users do not attempt to start sessions that would cause this allocation to be exceeded.

```
<appSettings>
   <add key="TempFolder" value="">
   <add key="MaxDesktopHeap" value="512">
</appSettings>
```

If you use the SA XT Web Service feature, it will be allocated its own instance of the non-interactive Windows Desktop Heap. All specifications described above for SA XT also apply to SA XT Web Service. The SAXTWebService web.config file also contains an appSetting entry that must be set to match the value in the registry. The key "MaxDesktopHeap" should have its value set to the same value specified in the registry. This web.config entry allows SAXTWebService to ensure that users do not attempt to start sessions that would cause this allocation to be exceeded.

```
<appSettings>
   <add key="MaxDesktopHeap" value="512"/>
</appSettings>
```

Adding encrypted security to the Impersonation Account

The process described in this section is optional. Its purpose is to enable you to add a greater level of security to the SA XT Impersonation Account (also know as the Domain Account). By default, the account's ID and Password, as configured in web.config file are stored in clear text (in the web.config file), which is not as secure as encrypted text (see "Edit the web.config file" on page 45). Microsoft provides the ASP.NET Encryption Tool, which lets you encrypt the id and password values, making them more secure.

You can download the encryption tool, along with instructions on how to use it, from the following url:

http://support.microsoft.com/default.aspx?scid=kb;en-us;329290

Securing the Impersonation Account is a three-phase process, described in the following sections.

1 - Updating the Windows registry

Before performing this procedure, you must back up the registry and have a restore procedure if a problem occurs. This is particularly important because securing the Impersonation Account modifies the Windows registry.

To run the ASP.NET Encryption tool, proceed as follows:

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Go to the folder into which you downloaded and unzipped the **aspnet_setreg.exe** file.
3. Type the following command, substituting the "domain\username" and "password" values with your actual values:

```
Aspnet_setreg -k:SOFTWARE\saxt\identity -u:domain\username -
p:password
```

4. Press the **Enter** key. The following keys are created in the registry:

```
HKEY_LOCAL_MACHINE\SOFTWARE\saxt\identity\ASPNET_SETREG,userName
HKEY_LOCAL_MACHINE\SOFTWARE\saxt\identity\ASPNET_SETREG,password
```

2 – Updating the web.config file

Once the registry has been updated, as described above, you must update the Identity element of the web.config file to reflect the values created for this account. The web.config file is located in the installation folder, usually `C:\Program Files\Telelogic\System Architect Suite\SAXT` folder. You must modify the Identity element to appear exactly as shown here, including letter case:

```
<identity impersonate="true"
userName="registry:HKLM\SOFTWARE\saxt\identity\ASPNET_SETREG,userN
ame"
password="registry:HKLM\SOFTWARE\saxt\identity\ASPNET_SETREG,passw
ord"/>
```

3 - Granting permission to the Aspnet_wp.exe process

You must then make sure to grant read permissions to the Aspnet_wp.exe process account, which is usually <machinename>\ASPNET, as follows:

1. Click **Start** > **Run**, type **regedit** in the **Open** box, and click **OK**.
2. Expand the **HKEY_LOCAL_MACHINE >SOFTWARE > SAXT >identity**
3. Right-click **ASPNET_SETREG** and select **Permissions**.
4. Click **Add**. In the dialog box that opens, add the object name based on the servers operating system, as follows:

   If the server is on Windows XP, type

   `<machinename>\ASPNET`

   If the server is on Windows Server 2003 (which runs IIS 6.0), type:

   `<machinename>\NetWorkService`
5. Click **OK**.
6. On the **Security** tab, check on **Read** permission to the account in the step above, and click **OK**.
7. Close the **Registry Editor**.

Adding encrypted security to Oracle authentication

The information in the *connectionStrings* section can be encrypted with standard Microsoft utilities. The section below provides a summary of Machine-Level Key encryption method, which is one of the various methods available. You can find the complete text for this encryption method at the following Microsoft page:

http://msdn2.microsoft.com/en-us/library/ms998283.aspx#paght000006_step2.

The process described below can be use to encrypt the web.config of SA XT or SA XT Web Service.

Encrypting Oracle Authentication with Machine-Level Key:

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Go to the folder that contains the Microsoft **aspnet_regiis** utility and execute the following command:

   ```
   C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727>aspnet_regiis -pef
   "connectionStrings" "C:\program files\telelogic\system architect
   suite\saxt"
   ```

   You should receive the following message if the utility was successful:

   ```
   Encrypting configuration section...
   Succeeded!
   ```

When you use the Machine-Level Key encryption, the RSA machine key containers are stored in the following folder:

```
C\Documents and Settings\All Users\Application
Data\Microsoft\Crypto\RSA\MachineKeys
```

The SAXT impersonation account needs read access to the file created in the folder above. To grant the required access rights proceed as follows:

3. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
4. Go to the folder that contains the Microsoft **aspnet_regiis** utility. Substituting the "domain" and "user" values below with your actual "domain" and "user" names, execute the following command:

```
C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727>aspnet_regiis -pa
"NetFrameworkConfigurationKey" "domain\user"
```

You should receive the following message if the utility was successful:

```
Adding ACL for access to the RSA Key container...
Succeeded!
```

Decrypting Oracle Authentication with Machine-Level Key :

To decrypt the *connectionStrings* section of the web.config file proceed as follows:

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Go to the folder that contains the Microsoft **aspnet_regiis** utility and execute the following command:

```
C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727>aspnet_regiis -pdf
"connectionStrings" "\program files\telelogic\system architect
suite\saxt"
```

You should receive the following message if the utility was successful:

```
Decrypting configuration section...
Succeeded!
```

When using Machine-Level Key encryption the RSA machine key containers are stored in the following folder:

```
C:\Documents and Settings\All Users\Application
Data\Microsoft\Crypto\RSA\MachineKeys
```

To remove the access rights given to the SAXT impersonation user, switch to the folder proceed as follows:

3. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
4. Go to the folder that contains the Microsoft **aspnet_regiis** utility. Substituting the "domain" and "user" values below with your actual "domain" and "user" names, execute the following command:

```
C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727>aspnet_regiis -pr
"NetFrameworkConfigurationKey" "domain\user"
```

You should receive the following message if the utility was successful.

```
Removing ACL for access to the RSA Key container...
Succeeded!
```

You must restart IIS after updating the ACL

5. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
6. Type **IISReset**.

   You should receive the following message if the utility was successful.

```
Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
```

Registering the .NET Framework

The System Architect XT Installation Wizard automatically installs Microsoft's .Net Framework. Perform the steps below if you need to verify whether the ASP.NET version 2.0 ISAPI filter have been set up correctly.

1. Click Start > Settings > Control Panel > Internet Information Services.
2. Expand the local computer node (which is usually indicated by your computer name) and expand **Web Sites**.
3. Right click the **Web Sites** folder and select **Properties**.
4. On the ISAPI Filters tab, make sure the list contains an entry for ASP.NET_2.0.50727.42 (if the .NET 2.0 Framework has been installed). If this is present, it means that ASP.NET has been installed correctly, and that you can exit IIS.

   If ASP.NET is not present, it is possible that the .NET Framework has not been installed, or that IIS was installed after the .NET Framework. If IIS was installed after the .NET Framework, there may be a problem with script maps, which you can repair with the ASP.NET IIS Registration tool. Typically, the tool (Aspnet_regiis.exe) is located in `C:\windows\Microsoft.NET\Framework\v2.0.50727`. However, before running this tool, you should consult with your Systems Administrator and carefully read the documentation at the following Microsoft Web site: http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cptools/html/cpgrfaspnetiisregistrationtoolaspnet_regiisexe.asp

For SA XT, in a test environment where IIS was installed after the .NET Framework,

the Registration tool was used with the following command:

```
C:\windows\Microsoft.NET\Framework\v2.0.50727->aspnet_regiis -ir
```

This installed ASP.NET version 2.0.50727 without updating all script maps. After installing SA XT, the following command was run:

```
C:\windows\Microsoft.NET\Framework\v2.0.50727->aspnet_regiis -s
W3SVC/1/ROOT/SAXT
```

This installed ASP.NET version 2.0.50727 at the specified application root and its subfolders. All existing script maps in the specified path and below were updated.

For the SA XT Web Service add-on product, the Registration tool was run with the following command:

C:\windows\Microsoft.NET\Framework\v2.0.50727->aspnet_regiis –sW3SVC/1/ROOT/SAXTWebService

This updated all existing script maps in the specified path and below.

Enabling System Architect XT Web Service add-on product

The System Architect XT installation automatically installs and configures the SA XT Web Service. The service is enabled with the purchase of a license (see pg. 34 for licensing information).

Configuring the SA XT Web Service

If you need to verify or manually configure the SA XT Web Service, proceed as follows:

1. Click Start> Settings> Control Panel> Administrative Tools, and click on Internet Information Services. This launches the IIS console.
2. Expand the **Local Computer** node (which is usually indicated by your computer name).
3. Right-click on the **Default Web Site** node and select **New> Virtual Directory…**
4. Click **Next** on the **Virtual Directory Creation Wizard**.
5. On the **Virtual Directory Alias** screen enter **SAXTWebService** in the **Alias** text field and press **Next**.
6. On the **Web Site Content Directory** dialog enter the folder where SA XT Web Service is installed (usually `C:\Program Files\Telelogic\System Architect Suite\SAXTWebService)`, or click **Browse** to select it, and click **Next**.
7. In the **Access Permissions** dialog, select **Read** and **Run scripts,** and click **Next**.
8. Click Finish on the final dialog of the Virtual Directory Creation Wizard.

Verifying the SA XT Web Service properties

If you purchased the SA XT Web Service, and want to verify it is properly configured, or wish to customize settings, perform the tasks in sections describe below. To verify and configure most SA XT Web site properties, you need to launch the IIS serve as follows:

1. Click on Start > Settings > Control Panel > Administrative Tools > and select Internet Information Services.
2. Expand the **local computer** node. This is usually indicated by your computer name, for example ComputerName (local computer).
3. Expand **Web Sites** and **Default Web Site** nodes.
4. Right click on the new **SA XTWebService** Web site and select **Properties**.

Checking and configuring ASP.NET mapping

1. On the **Virtual Directory** tab, click the **Configuration…** button.
2. On the **Mappings** tab, locate the **.asmx** entry in the **Extension** column.
3. The **Executable Path** column for this entry should display

   `C:\Windows\Microsoft.NET\Framework\v2.0.50727\aspnet_isapi.dll.`

   If the **.asmx** entry appears and it contains values above for the **Executable Path**, click **OK** and go to the "Set directory security" section below.

   If it does not contain the values above, then SA XT Web Service was not mapped to the correct version of ASP.NET. In this case, click **Cancel** to return to the **Virtual Directory** tab. You need to map the SA XT Web Service as described in the "Registering the .NET Framework" section on page 56.

Setting directory security

1. Click on the **Directory Security** tab.
2. Click **Edit** in the **Anonymous access and authentication control** group.
3. Check the **Integrated Windows authentication** checkbox, uncheck all other checkboxes, and click **OK**.
4. Click **OK** in the SA XT Web Service Properties dialog to return to the IIS Admin tool.
5. Click **File** and select **Exit**.

Editing the SA XT Web Service web.config file

System Architect XT creates an Impersonation Account for the SA XT Web Service from the User Name and Password that you enter during the installation. You can change that User Name and Password in the web.config file (see "Editing the web.config file" on page 45).

Other customizations you can apply to the web.config file of SA XT Web Service include the following:

AppLogging - if set to "true" will cause SA XT Web Service to messages to the application event log.

```
<add key="AppLogging" value="false"/>
```

SessionTimeOut controls the idle time in minutes before the session is destroyed. This value is only used if the CheckSessionTimer is greater than 0.

```
<add key="SessionTimeOut" value="20"/>
```

CheckSessionTimer is the sleep time in minutes between the session idle checks. A value of "0" will prevent the timer from starting, leaving the session to run until the EndSession method is called.

```
<add key="CheckSessionTimer" value="20"/>
```

You can also add the <connectionStrings> key to enable access to Oracle encyclopedias using Oracle authentication (See pg. 46).

Checking folder permissions for the SA XT Web Service Domain Account

If the Domain Account established for SA XT Web Service is different than the account used for SA XT will need the same permissions on the folders described in the "Folders and file(s) that require the Full Control permission" (pg. 48).

The SA XT Web Service web.config file contains an appSetting that allows the administrator to control the folder used by the SA XT Web Service for temporary files. The following example will force the SA XT Web Service to use the C:\SAXTWebService folder:

```
<appSettings>
    <add key="TempFolder" value="C:\SAXTWebService">
</appSettings>
```

By default, the web.config file does not contain a TempFolder value. Therefore, unless you change it, SA XT Web Service uses the folder set by the operating system.

Testing the SA XT Web Service feature

The System Architect XT Web Service provides a test page, SAXTWebService.asmx, which confirms your service has been configured properly. The page also lists the operations made available through the Web Service. Each operation listed in the test page links to a page where you can test the operation and view sample code. Since SA XT Web Service uses complex data types, you cannot test the methods from this page. After installing and configuring SA XT Web Service modules, test it as follows:

1. Click **Start > Run**, type **cmd** in the **Open** field, and click **OK**.
2. Type **iisreset**, and press **Enter**. This stops and restarts the services, then returns a confirmation message that **Internet Services Successfully Restarted**.
3. Close the DOS window.
4. Launch Internet Explorer and enter the following URL:

   `http://<machinename>/SAXTWebService/SAXTWebService.asmx`

Accessing Help for System Architect XT and the Web Service

The System Architect XT Web Service feature does not provide a user interface, and therefore does not provide a help system. However, you can find a summary of the Web Service modules in System Architect XT's help system. You can access this directly from SA XT. You can also access the Help manually by clicking on the **default.htm** file in the SA XT installation folder (usually `C:\Program Files\Telelogic\System Architect Suite\SAXT\Help`).

Uninstalling System Architect XT

You can uninstall System Architect XT by running the Add or Remove Programs utility from the control panel. You should delete the folders below after a successful uninstall.

```
C:\Program Files\Telelogic\System Architect Suite
C:\Windows\Microsoft.NET\Framework\v2.0.50727\Temporary
ASP.NET\SAXT
C:\Windows\Microsoft.NET\Framework\v2.0.50727\Temporary
ASP.NET\SAXTWebService
(if you receive a 'file in use' message when attempting to delete
these directories, run
the IISReset utility and try deleting them again.)
```

Installing SA Catalog Manager 3

Introduction

System Architect version 11 or higher provides access control for shared, enterprise-level encyclopedias administered and enforced by Telelogic System Architect Catalog Manager™.

This chapter provides you with instructions on how to create a catalog, and to implement access control. The chapter is partitioned into sections that cover different scenarios of installing the product.

- Overview of Access Control with SA Catalog Manager
- 1 - Acquire a server dedicated to System Architect Encyclopedias
- 2 - Install System Architect and SA Catalog Manager
- 3 - Set up User rights to Encyclopedias
- 4 - Grant 'SA Permissions' to Users within an Encyclopedia

Overview of Access Control with SA Catalog Manager

System Architect Catalog Manager is utility that provides role-based, enterprise-level access control to System Architect encyclopedias. Access control is enforced by a catalog. You attach to the catalog encyclopedias to which you want to control access. In SA Catalog Manager, you create Users, assign encyclopedias to them, and then assign Users one or more Roles that they can perform on catalogued encyclopedias. SA Catalog Manager also lets you to control the System Architect menus that are enabled, and the macros that can be executed by a role.

SA Catalog Manager is automatically installed when you install System Architect and System Architect XT. If you do not want to install SA Catalog Manager on your computer, you can perform a custom SA or SA XT install and remove SA Catalog Manager from products to install. In order to run SA Catalog Manager you need to have it listed in your license.dat file.

Enterprise Catalogs

An enterprise catalog is an SQL Server database that holds information about other databases (i.e., System Architect encyclopedias) on the same server, and that by having encyclopedias attached to it, can control who can access those encyclopedias, and what they can do in them. In Oracle, the catalog is a schema within the database.

There is a one-to-one correspondence between a server and a catalog, and one catalog can control access to multiple encyclopedias. SA Catalog Manager also controls permissions to the catalog database, enabling you to assign the Administrator role to other users. This lets you relegate some or all catalog-related tasks to others. However, as the SA Catalog Manager installer, you have ultimate control over catalogs and by extension, to all the encyclopedias you attached to them.

Overall Steps for implementing Access Control via SA Catalog Manager

The installation wizards for both System Architect and System Architect XT install SA Catalog Manager. It does not matter from where you run SA CM, as long as you do posses the required permissions. The basic steps for installing SA Catalog Manager and then implementing access control via SA Catalog Manager are as follows:

1. Acquire a SQL Server installation or an Oracle database installation dedicated to SA encyclopedias (databases).
2. Install System Architect or System Architect XT, both of which install SA Catalog Manager by default:

   a. If using a Citrix or Terminal Server installation, install SA and SA Catalog Manager to the Terminal Server or CITRIX machine. In this scenario, it is recommended, though not required, that you have a fast connection (e.g. 1 Gb) to the SQL Server or Oracle server. Check the SA XT Readme file for minimum requirements.

   OR

   b. Install SA to each person's machine and designate one machine (the System Architect administrator's machine) as the one licensed to run SA and SA Catalog Manager.

   These installation scenarios are both represented by machine C in the figure shown in the "SA XT installation overview" section in chapter 1 of this guide.
3. Set up user rights to the server and its encyclopedias.
4. Use SA Catalog Manager to create a catalog and grant permissions for access within each encyclopedia based on roles. These can be thought of as 'System Architect (SA)' permissions.

1 - Acquire a server dedicated to System Architect Encyclopedias

The first step in the process is to acquire a server that will be used to house System Architect encyclopedias.

Server Requirements

System Architect supports the following versions of these servers/databases for use as the underlying repository that you build encyclopedias on:

- SQL Server 2000 (SP3 or SP4) or SQL Server 2005.
- SQL Server Express 2005 (version shipped and installed with product) -- although you can conceivably use SQL Server Express 2005 (Microsoft's 'lite' version of SQL Server) for a network encyclopedia, it is impractical for more than five concurrent users. Microsoft has put regulators on it that degrade performance after that many users. SQL Server Express 2005 is typically used for standalone System Architect work on a local machine, work that then can be merged into an encyclopedia on SQL Server or Oracle.
- Oracle 9i (9.2.0.6) or 10g

Important server recommendation

It is highly recommended that the SQL Server or Oracle database server that you acquire will be used exclusively for System Architect encyclopedias. It is not advised to share a SQL Server or Oracle installation with other software applications. There are a number of reasons for this – first, SA users will need rights to create and modify databases on the server, rights that may not normally be granted to the typical database user. Second, if the server is being used for other database activity, SA performance will be affected.

2 - Install System Architect and SA Catalog Manager

A. Install System Architect

The complete installation instructions for System Architect are provided in the System Architect Installation Guide. In general, System Architect is typically installed using one of the following strategies:

- System Architect can be installed to a Citrix or Terminal Server environment. If so, then System Architect should be installed to a separate machine from the one that is housing SQL Server or Oracle, but with a fast (1GB) connection between it and that server machine.
- System Architect can be installed to each user's machine and used to access encyclopedias on the server via a fast network. If so, the network must be of sufficient bandwidth to enable many concurrent users (at least 100 Mb connections with a throughput of 40-60 Mbps for upstream and downstream throughput). Please see the Readme.htm file for more information on network throughput requirements and recommendations.

B. Install SA Catalog Manager as part of System Architect Install

By default, SA Catalog Manager is installed by the System Architect (and System Architect XT) installation. You may optionally turn off the SA Catalog Manager installation if you choose Custom Install while running the System Architect installation wizard.

However, only users with a valid license to use SA Catalog Manager can run the program. The SA Catalog Manager license is an option in the license.dat file. Typically, an organization should have the designated System Architect administrator granted a license to run SA Catalog Manager, so that only the administrator can grant access control for other users on encyclopedias.

Where to install SA Catalog Manager

If running System Architect in a Terminal Server or Citrix environment, then you typically install SA Catalog Manager to the Terminal Server machine along with System Architect (which again, happens by default). The System Architect administrator then uses SA Catalog Manager on the Terminal Server machine to control access to encyclopedias on the SQL Server or Oracle machine.

If running System Architect in a network configuration where System Architect is installed on each user's machine, then SA Catalog Manager is installed on the designated System Architect administrator's machine, which is typically the one licensed and used to control access to encyclopedias housed on the SQL Server or Oracle machine on the network.

Installing SA Catalog Manager

1. Insert the System Architect DVD (or double click on the System Architect executable downloaded from the IBM Telelogic support site). The auto-run interface is launched.
2. Use the Installation Wizard to guide you through the entire System Architect installation.
3. When you encounter a dialog that asks if you would like a Complete or Custom Installation, either leave the Complete Installation check box selected, or make sure SA Catalog Manager is selected in the sub-dialog if you choose Custom Installation.

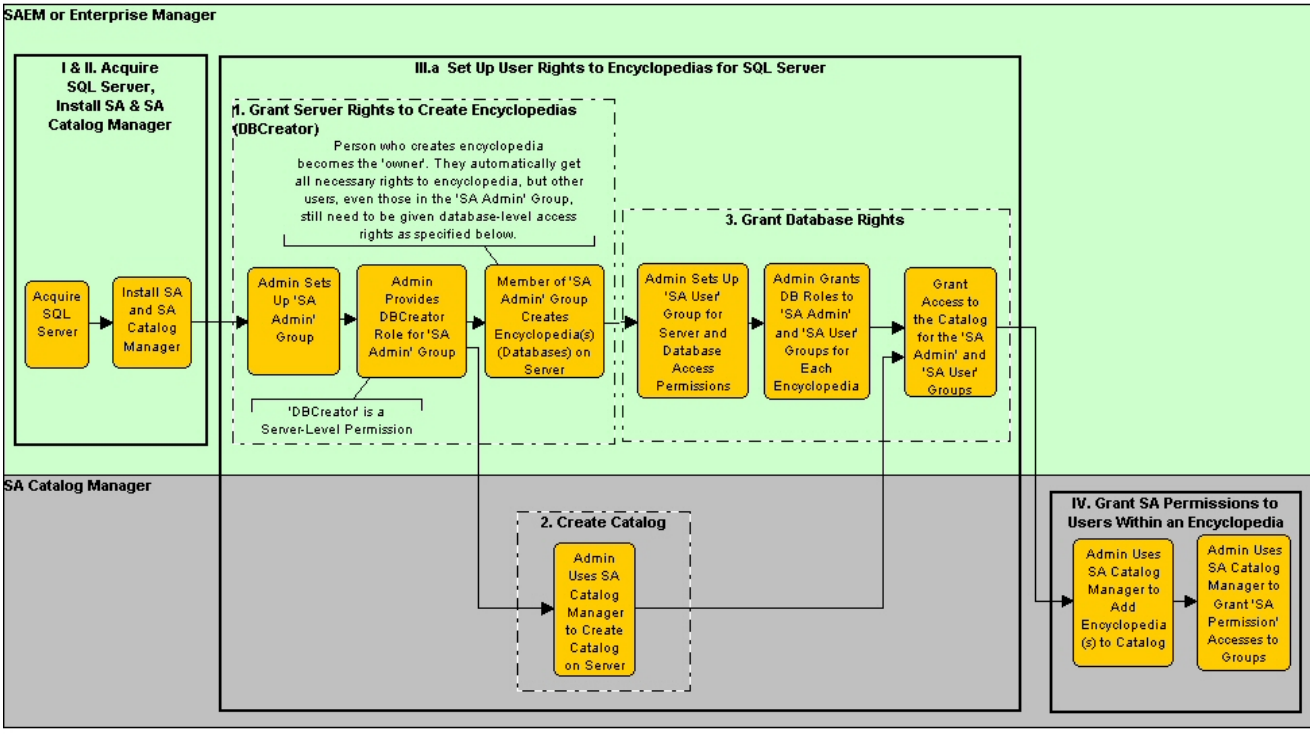
The SA Catalog Manager installation does not create a catalog. It cannot assume you want to create one, or determine where to create one. On the first run after installation, SA Catalog Manager prompts you whether to search for servers, and then prompts you whether you would like to create a catalog on one of the servers that is found.

3 - Set up User rights to Encyclopedias

Users of System Architect Enterprise encyclopedias have their permissions managed by the role they are assigned in SA Catalog Manager. Two main types of Roles can be assigned. One is the Administrator role, and the other a standard role, such as Business Modeler, Data Modeler, and so on. The main difference between these types of roles is that the Administrator role can perform tasks on the catalog (add a user, for example), while the other roles can only perform tasks on encyclopedias. These role types can be classified as the 'SA Admin' and the 'SA User' role; each of them is describe in more detail in the sections that follow.

A. Set up User Rights to Encyclopedias for SQL Server

The process flow diagram below highlights the steps you need to perform to set up user rights to encyclopedias for SQL Server. The next few sections provide written detail for these steps.



1. Grant Server Rights to create Encyclopedias (DBCreator)

On the Server, the System Administrator must provide 'DBCreator' rights to the Group of users that will **create encyclopedias** (an encyclopedia is a database on SQL Server). This is performed using Microsoft SQL Server 2000 Enterprise Manager or SAEM (System Architect Encyclopedia Manager). Typically, the System Administrator creates a Group that includes all SA users who will be granted ability to create encyclopedias. The right to create encyclopedias (databases) on the server is not necessarily given to everyone who will be using System Architect – if you did, you might get a proliferation of encyclopedias created. A recommended approach is for administrators to call this Group the 'SA Admin' group. For SQL Server and SQL Server Express, this Group needs to be given the Server Role of System Administrator or DBCreator to create databases (encyclopedias) on the server.

2. Create a Catalog on a SQL Server

It is a good idea to know the server name before creating a catalog. If you don't have the name, then SA Catalog Manager can search the network for you, but this can take a long time to complete, with the possibility that servers behind firewalls may not be found. Knowing the server name makes this procedure complete much faster because you can enter the server name manually and avoid having SA Catalog Manager search the network.

1. The first time you run SA Catalog Manager it informs you that no catalogs are registered to you on your computer, and it asks whether you would like to search for catalogs.

   Click **Yes**, if you do not know which servers are available. This will cause SA Catalog Manager to search all servers that your computer is connected to. Some servers may not be found if they are hidden or protected by a firewall. For servers such as these, you may need to enter their path and names manually.

   OR

   Click **No**, which will let you create the catalog on a server that you specify. You should know the server path and name on which you will create the catalog.

2. Enter the path and name of the server on which to create the catalog or select one from the list. Regardless of your choice to the above step, a second dialog is presented, where you specify the server on which to create a Catalog. The dialog contains a combination text and drop-down field, in which you can type in the server name and path, or click the drop-down arrow to select a server from a list

(this method searches for servers that you're connected to and can take a long time in large scale environments).

3. Click **OK**...

3. Grant Database Rights

For each encyclopedia (SQL Server database), your System Administrator must provide rights to the Group (or each individual) that will **use** the encyclopedia – in other words open it, and create or modify diagrams and definitions within it.

Rights for 'SA User' Group

For users to be able to use an encyclopedia, the Administrator must grant them the following Database Access on **each** encyclopedia (database) within which they will be working:

- db_datareader and
- db_datawriter.

These rights are granted using SQL Server 2000 Enterprise Manager or SQL Server Express. Typically, the System Administrator creates a Group that includes all SA users who will be granted ability to work in encyclopedias, and then grants db_datareader and db_datawriter database access for this Group on each encyclopedia.

Rights to SA Catalog Manager's TelelogicEnterpriseCatalog Database

When you create a catalog with SA Catalog Manager, you actually create a special database that carries a triplet of information (access permissions per role per encyclopedia) that allows users to access information in encyclopedias based on their role. This database is called the TelelogicEnterpriseCatalog database. All users must be granted the following rights to this TelelogicEnterpriseCatalog database to work in Enterprise encyclopedias (those put under access control):

- db_datareader and
- db_datawriter

The user Group (or all users) must also be given db_datareader, db_datawriter, and EXECUTE permissions for the following stored procedures for the encyclopedia database to be allowed full access to the encyclopedia:

CREATESNAPSHOT	GETHISTORYLOGGINGSTATUS
ENTITYEXISTSBYID	LOGENTITYHISTORYUPDATE
LOCKENTITYBYID	LOGFILESHISTORYUPDATE
GETNEXTID	PURGEHISTORY
GETFILESIZE	SAVEAUDITSETTINGS
DELETEBYID	SAVECHANGECONFIG

Additionally, a user needs Select, Insert, Update, and Delete rights on the following tables of the TelelogicEnterpriseCatalog:

CATALOGPERMISSION	ROLE
ENCYCLOPEDIA	ROLESUMS
ENCYPERMISSION	USERENCYROLE
ILAC_DEFAULTCATALOGGROUPS	USERGROUPS
ILAC_DEFAULTENCYGROUPS	VERSION
OPTIONS	XTUSERENCYXML
PERMISSION	USER

Note: To view and access encyclopedias that are attached to a catalog on SQL Server 2005, you need the VIEW SERVER STATE permission, in addition to the above. This enables the sp_lock function, needed to ensure only one person at a time can open and update the catalog. An administrator can grant VIEW SERVER STATE permission in the master database by executing the following query:

GRANT VIEW SERVER STATE TO <login>, where <login> is an actual value.

Please note, for SQL Server 2000: If you have not installed SQL Server 2000 SP4, you also need Execute on the extended stored procedure XP_UserLock. For more information on XP_UserLock, please see Microsoft's support Web Site:

http://support.microsoft.com/default.aspx?scid=kb%3Ben-us%3B819829.

This is granted to the user by the System Administrator through SQL Server Enterprise Manager (versions 2000 or 2005).

Rights for 'SA Admin' Group – Users who can create Encyclopedias

All users who can create encyclopedias on the server or have created encyclopedias in the past must be given the following rights on the TelelogicEnterpriseCatalog database (the 'catalog'):

- db_ddladmin,
- db_datareader and
- db_datawriter.

The db_ddladmin right enables users to convert an encyclopedia from one version of System Architect to the next automatically. Between versions, the stored procedures for System Architect may change to improve performance. Because of this, it becomes necessary for the owner of an encyclopedia (the one who created it) to be the first one to open it with the new version, and that person needs db_ddladmin rights to the encyclopedia and to the TelelogicEnterpriseCatalog database.

The user Group (or all users) must also be given db_ddladmin, db_datareader, db_datawriter, and EXECUTE permissions for the following stored procedures for the encyclopedia database to be allowed full access to the encyclopedia:

CREATESNAPSHOT	GETHISTORYLOGGINGSTATUS
ENTITYEXISTSBYID	LOGENTITYHISTORYUPDATE
LOCKENTITYBYID	LOGFILESHISTORYUPDATE
GETNEXTID	PURGEHISTORY
GETFILESIZE	SAVEAUDITSETTINGS
DELETEBYID	SAVECHANGECONFIG

Additionally, a user needs Select, Insert, Update, and Delete rights on the following tables of the TelelogicEnterpriseCatalog:

CATALOGPERMISSION	ROLE
ENCYCLOPEDIA	ROLESUMS
ENCYPERMISSION	USERENCYROLE
ILAC_DEFAULTCATALOGGROUPS	USERGROUPS
ILAC_DEFAULTENCYGROUPS	VERSION
OPTIONS	XTUSERENCYXML
PERMISSION	USER

Note: To view and access encyclopedias that are attached to a catalog on SQL Server 2005, you need the VIEW SERVER STATE permission, in addition to the above. This enables the sp_lock function, needed to ensure only one person at a time can open and update the catalog. An administrator can grant VIEW SERVER STATE permission in the master database by executing the following query:

GRANT VIEW SERVER STATE TO <login>, where <login> is an actual value.

Please note, for SQL Server 2000: If you have not installed SQL Server 2000 SP4, you also need Execute on the extended stored procedure XP_UserLock. For more information on XP_UserLock, please see Microsoft's support Web Site:

http://support.microsoft.com/default.aspx?scid=kb%3Ben-us%3B819829.

This is granted to the user by the System Administrator through SQL Server Enterprise Manager (versions 2000 or 2005).

B. Set up User Rights to Encyclopedias for Oracle

In Oracle, like encyclopedias, the catalog is schema, which is named the TelelogicEnterpriseCatalog. The overall steps for setting up access to the TelelogicEnterpriseCatalog in Oracle are as follows:

1. Grant Access Rights for Oracle

For users to edit an encyclopedia in an Oracle server, they must have Select, Insert, Update and Delete rights on the following tables, which System Architect creates automatically:

ENTITY
ERROR_LOG
FILES
IDGENERATOR
SAPROPERTIES
RELATIONSHIP
CRITICALREGION
SINGLETHREAD
FILES_HISTORY
ENTITY_HISTORY
ENTITY_FLAGS

Additionally, to edit an encyclopedia in Oracle, a user also needs the Execute on the following stored procedures:

CREATESNAPSHOT
ENTITYEXISTSBYID
LOCKENTITYBYID
GETNEXTID
GETFILESIZE
DELETEBYID
GETHISTORYLOGGINGSTATUS
LOGENTITYHISTORYUPDATE
LOGFILESHISTORYUPDATE
PURGEHISTORY
SAVEAUDITSETTINGS
SAVECHANGECONFIG

Additionally, a user needs Select, Insert, Update, and Delete rights on the following tables of the TelelogicEnterpriseCatalog:

CATALOGPERMISSION
ENCYCLOPEDIA
ENCYPERMISSION
ILAC_DEFAULTCATALOGGROUPS
ILAC_DEFAULTENCYGROUPS
OPTIONS
PERMISSION
ROLE
ROLESUMS
USERENCYROLE
USERGROUPS
VERSION
XTUSERENCYXML
USER

2. Create a Catalog on the Oracle Server

1. The first time you run SA Catalog Manager it informs you that no catalogs are registered to you on your computer, and it asks whether you would like to search for catalogs. Click **No**, because SA Catalog Manager cannot search for catalogs on Oracle servers.
2. In the dialog presented, enter the name of the Oracle server on which you want to create the catalog.
3. Click **OK**.

4 - Grant 'SA Permissions' to Users within an Encyclopedia

This section details how to set up access control for users based on their role on a per-encyclopedia basis. The section assumes that you have already created a catalog, per instructions provided in section II.3 of this chapter.

You create and use one and only one catalog per server, whether it is a SQL Server, SQL Server Express, or Oracle server. One catalog controls access to multiple encyclopedias on the same server. A catalog on one server cannot control access to encyclopedias on a different server.

Overall steps to create a Catalog and implement Access Control

Once again, to follow the steps of this section, you must first create a catalog on the server where the encyclopedias to be brought under access control reside. The steps to create a catalog are specified in section II.3 of this chapter.

Afterwards, and in no particular order, you need to attach encyclopedias to the catalogs, create Users, assign Users to encyclopedias, and assign Users one or more Roles, per encyclopedia.

The overall steps to create a catalog and implement access control are as follows:

Create a Catalog on an SQL Server, SQL Server Express, or Oracle Server.

- Attach Encyclopedias to a Catalog.
- Add Users to the Catalog.
- Assign Users to Encyclopedias.
- Assign Roles to Users.

A. Attach Encyclopedias to an Enterprise Catalog

Attaching an encyclopedia to a catalog makes it ready for you to assign it to Users. There are two methods to attach an encyclopedia. From SA Catalog Manager, you can use the Attach Encyclopedia command. From System Architect, when you create a new encyclopedia, you can select Enterprise Encyclopedia as the type, and choose the option to make the encyclopedia available to other users. Each of these methods is described below.

To attach an encyclopedia in SA Catalog Manager proceed as follows:

1. Right click on the **Encyclopedias** node and select **Attach**.
2. Click the **Select an encyclopedia to attach** drop-down and select an encyclopedia.
3. Click OK.

To create and attach an Enterprise encyclopedia in System Architect:

4. Click **File** and select **Open Encyclopedia**.
5. Click the **New** icon.
6. Select the checkbox for **Enterprise encyclopedia**.
7. Continue creating the new encyclopedia by entering your data in these fields:

   Connection (specifies the server name, server type and security)
   New Encyclopedia name
8. Check the **Allow others to access this encyclopedia** checkbox. This makes your newly created Enterprise encyclopedia appear under the Encyclopedias node in SA Catalog Manager.

B. Create new Users

All new Users or User Groups are given the Read permission to the catalog. This enables them to see encyclopedias of the type Enterprise Encyclopedia in System Architect's Open Encyclopedia dialog. Once you create a User or a User Group, you must assign those Roles to perform on encyclopedias, per encyclopedia.

To create a New User:

1. Right-click on the root node **Users & Groups** and select **New User**.
2. In the **Name** field, enter a user name in the format DomainName\UserName, where DomainName is the name of your network domain, and the UserName is the name you use to log into your Windows operating system.
3. Enter a value no greater than seven characters in the **Audit ID** field. If you exceed this limitation, the value you enter is clipped after the seventh character. System Architect uses the Audit ID to track user activity throughout an encyclopedia.
4. Click **OK**.

C. Assign Users to Encyclopedias

A User that is assigned to an encyclopedia must also be assigned a Role to play on that encyclopedia. If you assign a User to an encyclopedia and shut down SA Catalog Manager before assigning that User a Role on the encyclopedia, the assignment of the User to the encyclopedia is dropped.

The sections that follow described two procedures you need to complete for a User to work on an encyclopedia.

To assign a User to an Encyclopedia:

1. Expand the root Users & User Groups node (click the '+').
2. Right-click on a User and select Copy.
3. Expand the root Encyclopedias node, and beneath it, expand the encyclopedia to which you are assigning the User.
4. Right-click on the encyclopedia you selected in the above step, and select Paste.
5. A node is created for the User that you pasted, and its name is displayed in a blue, italicized font, which denotes the assignment temporary. The User must also be assigned a Role for the assignment to become permanent, as described below.

D. Assign Roles to Users

6. Expand the root Roles node.

- Right-click on a Role, and select Copy.
- Right-click on the Users & User Groups node (which should still be expanded and displayed in a blue, italicized font) and select Paste.

7. Note:The blue and italicized font convert to black and normal (i.e., not italicized), denoting that the User has been successfully assigned a Role on the encyclopedia of which he or she is a User.

E. Open Catalogued Encyclopedia in System Architect

The Encyclopedia you attached to the catalog is now subject to access control as administered by SA Catalog Manager. For anyone to open a catalogued encyclopedia in System Architect, they must exist as a User in a catalog, be assigned to the encyclopedia, and be assigned one or more roles on their assigned encyclopedias.

System Architect can open both catalogued and non-catalogued encyclopedias. Catalogued encyclopedias are termed **Enterprise Encyclopedia**, and non-catalogued are termed **Professional**. In System Architect's Open encyclopedia dialog, you can select which type to open by clicking on the **Existing** icon, select the Connection name and a list will be provided with the different encyclopedias that are attached to that server.

1. Start System Architect.
2. Click **Open Encyclopedia** icon, or select it from the **File** menu.

   For existing encyclopedias, click the **Existing** icon and select the **Connection**.

   For new encyclopedias, click the New icon, then specify a Connection. (see the To create and attach an Enterprise encyclopedia in System Architect section above).
3. Click **OK**.
4. The diagrams, definitions that the user can view, and the menu commands that he or she can execute are all determined by the catalog, as configured by the Network or System Architect Administrator with SA Catalog Manager.

IBM Support 4

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- What software versions were you running when the problem occurred?
- Do you have logs, traces, or messages that are related to the problem?
- Can you reproduce the problem? If so, what steps do you take to reproduce it?
- Is there a workaround for the problem? If so, be prepared to describe the workaround.

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