

# SEMANTIC DISCOVERY SYSTEM

SDS Installation

User Guide v6.4



*Accelerating Research™*

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# Table of Contents

<b>Introduction .....</b>	<b>1-1</b>
Intended Audience .....	1-2
Clarification of SDS product naming history .....	1-2
Related Documents .....	1-3
Document Conventions .....	1-3
The Purpose and Scope of this Document .....	1-4
SDS 6.4 Release Note .....	1-4
Additional Information .....	1-5
Reporting Problems with This Document .....	1-5
<b>Overview of the SDS Installation Process.....</b>	<b>2-1</b>
Introduction .....	2-2
Prerequisites .....	2-2
Linux and Solaris.....	2-2
Required Skills .....	2-2
Prerequisites and Assumptions .....	2-3
Windows .....	2-4
Required Skills .....	2-4
Prerequisites and Assumptions .....	2-4
Hardware Requirements.....	2-4
<b>Downloading and Installing SDS.....</b>	<b>3-1</b>
SDS License Keys.....	3-2
SDS Installation .....	3-2
For WINDOWS.....	3-8
SDS Installation Checklist .....	3-14

## Introduction

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Intended Audience	1-2
Clarification of SDS product naming history	1-2
Related Documents	1-3
Document Conventions	1-3
The Purpose and Scope of this Document	1-4
SDS 6.4 Release Note	1-4

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This chapter contains an introduction to the Semantic Discovery System (*SDS*) as well as general information about the content of this document. Also outlined in this chapter are the intended audience, layout, typographic conventions and references to other sources of information about *SDS*.

## Intended Audience

*SDS* is aimed at users that fall into two categories - 'end-users' that will use *SDS* as a semantic search tool and technical users that will prepare *SDS* for their end-users.

This document is aimed at the technical users that need to install the *SDS* server end to end such that they can deploy it.

## Clarification of *SDS* product naming history

*SDS* was created as an amalgam of concepts and technologies dealing with distributed data integration query support and Ontological query processing.

The distributed data integration query technology owes its origins to a technology that arose in the University of Pennsylvania - "Kleisli", the "K" of which later evolved into "K2" then "K3". Throughout this document, and more particularly in the javadocs and low level programming interfaces, frequent references to "K3" may be seen.

For the purposes of clarity and consistency, where the term "K3" arises, this should now be replaced by *SDS Server*.

Similarly, the K3 query language arose originally from the ODMDG OQL specification and has been historically labelled as K3SQL or OQL. These terms should now be seen as synonymous with the new *SDS SQL*.

A second query language construct used by K3 was based on the ODMDG ODL specification; this was known as Mediator Definition Language or K3MDL. This language is now known as *SDS MDL* and is described in outline in this document, and in detail in the companion *SDS Languages* document.

In the architectural descriptions of the *SDS Server*, the historical K3 component can be seen as the ‘bottom half’, i.e. that part which deals with the distributed data integration query support. This bottom half is a syntactic query processor which deals at the level of *SDS SQL* - connecting to data sources and retrieving result sets in accordance with the *SQL* logic fed to it.

The top half of the *SDS server* is a semantic query processor which deals at the level of OWL and SPARQL - displaying ontological concepts to users that formulate queries accordingly, and then generating the SPARQL and subsequently *SDS SQL* that the bottom half processes.

Our partners at Eucalypt Software Partners in Australia have contributed the Graphical Interfaces which started life as a variation on the well known “TOAD” DBA and programmers tools for accessing RDBMS - hence their name “KANE TOAD”, a charming little beast. KANE TOAD has now morphed in *SDS 6.4* to be the entire programmatic GUI for *SDS*, and will be the administrative GUI in *SDS 7.0*. KANE TOAD will also morph into providing the end user GUI (faceted tree view and network graph view of ontological data) in *SDS 7.0*.

Eucalypt have also provided the Web Services Integrator (WSI) which is described in detail later in this document.

## **Related Documents**

*SDS* involves multiple component subsystems - the best place to start understanding the system and finding all relevant documentation and ‘how to’ information is to register and join our forum - [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com)

*SDS* will be going through frequent enhancements and modifications which will be made available in regular new software ‘builds’ available for download. Changes made since the last build are documented in the *Readme* files supplied with the installation program accompanying each new download.

## **Document Conventions**

This manual uses the following conventions:

- Menu items, environment variables, dialog box names and dialog box buttons will be displayed in a ***Bold Italic*** font.
- Names of companies or products will appear in an *Italic* font.
- Examples of code that can be run from the SDS Languages> prompt appear in this font.

```
2 + 2;
```

- The result sets that appear from executing this code appear in this font.

```
4;
```

- Reserved words that are part of the SDS Languages or Server syntax appear in the body of the text in this font:

*select from distinct*

- Default values will appear between [ ].
- Important notes and warnings will appear with formatting shown below.

NOTE: This is an example of an important note.

## The Purpose and Scope of this Document

- This document is designed to give technical users sufficient information to be able to install and deploy *SDS* to their users.
- Additional information, including detailed technical data on the SDS system, is available at [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com) along with documentation provided with the SDS product download.

## SDS 6.4 Release Note

At this time, the documentation is being updated to reflect some new language features. At times, the documentation may be included in a developers release or early access build before the feature is fully in place.

## **Additional Information**

For more information about *Semantic Discovery Systems* please refer to the corporate web site which can be found at [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com)

## **Reporting Problems with This Document**

If you experience difficulties in interpreting or understanding this document or its purpose then please contact us via our forum - [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com) immediately. We will be pleased to help and all of our key developers use this forum so that we can be guided by customers - through our Early Access Program - to make *SDS* of most use to you.

**NOTE:** It is strongly recommended that you review the current *SDS* bugs and workarounds that exist by visiting our forum. We want you to avoid rediscovering problems that will arise during an early access program.



## **Overview of the SDS Installation Process**

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Introduction	2-2
Prerequisites	2-2
Linux and Solaris	2-2
Windows	2-4
Hardware Requirements	2-4

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### Introduction

This manual will guide the user through the process of installing SDS and subsequently running some simple examples.

It should leave them at the point of being able to use the provided document set to move on to the next stage of writing their own queries and connecting to new data sources.

### Prerequisites

SDS 6.4 is supported on Microsoft Windows XP and 2000 platforms, Sun Solaris and Redhat Linux. SDS should run on popular Linux and UNIX platforms, however it has not been tested on these platforms and support cannot currently be guaranteed.

### Linux and Solaris

#### Required Skills

It is expected that someone who has a moderate level of familiarization with the x86/Linux operating system, and a comfortable working knowledge of a command shell such as ksh, csh, tcsh or bash perform this installation.

Some knowledge of typical system administration practices, and use of typical system administration tools, is highly recommended. You should understand the concepts of UNIX file permissions, user and group access rights, the process and tools used for creating directories, determining available free space on a disk volume.

You will need physical access to the CDROM driver if you are installing from the CDROM media. It is assumed you know where CDROM is located and how to access it.

The installation process does not in general require you to have "root" privileges (Super User). It does require that the user ID used to run the install script have access to create and write into the desired target directory.

If you are updating an existing installation (the target directory already exists), you must be running with a user ID that has write access to the directories and files in the prior install, as the installation process overwrites the existing files.

The current installation consumes about 50MB of space on the install target volume.

## Prerequisites and Assumptions

Prior to installing the SDS system, you should have installed and properly configured:

- Perl (version 5.6 or later strongly recommended)
- Java (JDK or Java runtime, version 1.5.0 or later)

You should be able to check the version number of your installations from the command line.

To check the Perl installation, use the command *perl -v*. To check the Java installation use the command *java -version*. These must be configured in the PATH of the user you use to run the install procedure. The install procedure will attempt to verify that Perl and Java are installed.

Several interface, wrapper and support scripts assume perl is installed as:

*/usr/bin/perl*

If this is the case for your system, you should ignore the following.

If you have installed perl some place other than */usr/bin/perl*, then we suggest you create a symbolic link in */usr/bin/perl* to the perl binary you wish to use.

Decide the user and group to own the installed files. This will depend on the needs of your organization. The normal file permissions are set to allow users from other groups to access the SDS system. This is acceptable for most installations. You may, of course, alter the permissions after the install if you wish.

The script will install the SDS files with the user ID and group ID of the user who runs the script. That user ID must have read/write access to create the directory

used as a temporary working directory (by default created under /tmp), and the target directory for the installation (by default created under /opt).

If the installation is performed by the root user, the installation will automatically create links to the *SDS* executables in the local bin directory.

By default, the installer uses X windows to display the installation dialogs. The installer can still be run without this, however only in unattended mode.

### Windows

#### Required Skills

Installing SDS on windows is a simple task provided that the windows machine has been set up appropriately. The user will need experience in running setup files and selecting installation locations.

#### Prerequisites and Assumptions

If it is proposed to create custom Perl wrappers for SDS then one of the requirements for the system is Perl. We therefore strongly recommend that you have installed Perl 5.6.1 (or later) prior to using SDS. It is also important that the "File associations" be setup properly so that files named with the ".pl" extension are executed by Perl.

SDS requires a Java Runtime Environment (JRE), Version 1.5.0 or later. The installer searches for a suitable JRE installation. If one is not found, the user is given the opportunity to download and install one as part of the installation.

### Hardware Requirements

The server will install and run on a minimally configured system. Such a system is unlikely to be powerful enough, however, to run a large production server.

- A typical minimal hardware configuration would be:
- Pentium III 900MHz

- 512MB RAM
- 100MB Free disk space
- Ethernet adapter

CD-ROM (to install from CD media)



## Downloading and Installing SDS

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SDS License Keys	3-2
SDS Installation	3-2
SDS Installation Checklist	3-14

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SDS is available for download from [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com)

The download is approximately 30+MB, plus another 15MB for the JRE if required.

### **SDS License Keys**

SDS requires a license file to run.

This is provided automatically during the SDS evaluation download period or otherwise by purchase from [www.SemanticDiscoverySystems.com](http://www.SemanticDiscoverySystems.com).

### **SDS Installation**

Separate installers are provided for Windows and UNIX platforms. In addition to installing the software, the Windows installer also builds windows program groups to support configuration of and samples for SDS.

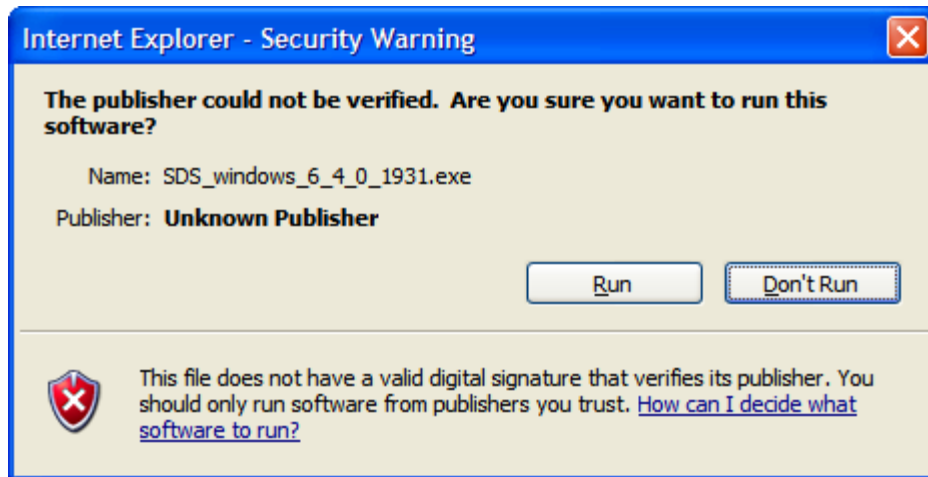
The installers run using the platform's Desktop environment. In the case of UNIX, this means 'X' windows. If 'X' is unavailable, a stripped-down unattended installation is also available.

To start the installer, double click on the installation file.

For UNIX this filename will be of the form SDS\_unix\_6\_4\_0\_1931.sh

For Windows this filename will be of the form SDS\_windows\_6\_4\_0\_1931.exe

On Windows, this warning dialog may appear:



Select 'Run' to continue.

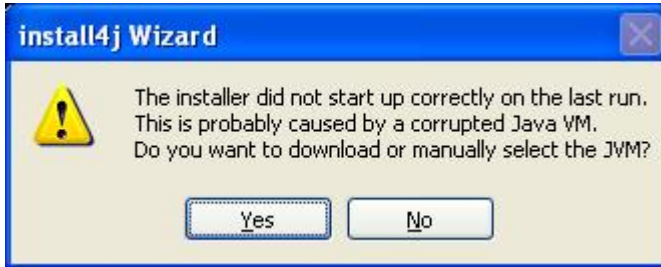
The installer will check for a suitable Java Runtime Environment (JRE) installation. If it cannot find one the following dialog will be displayed:



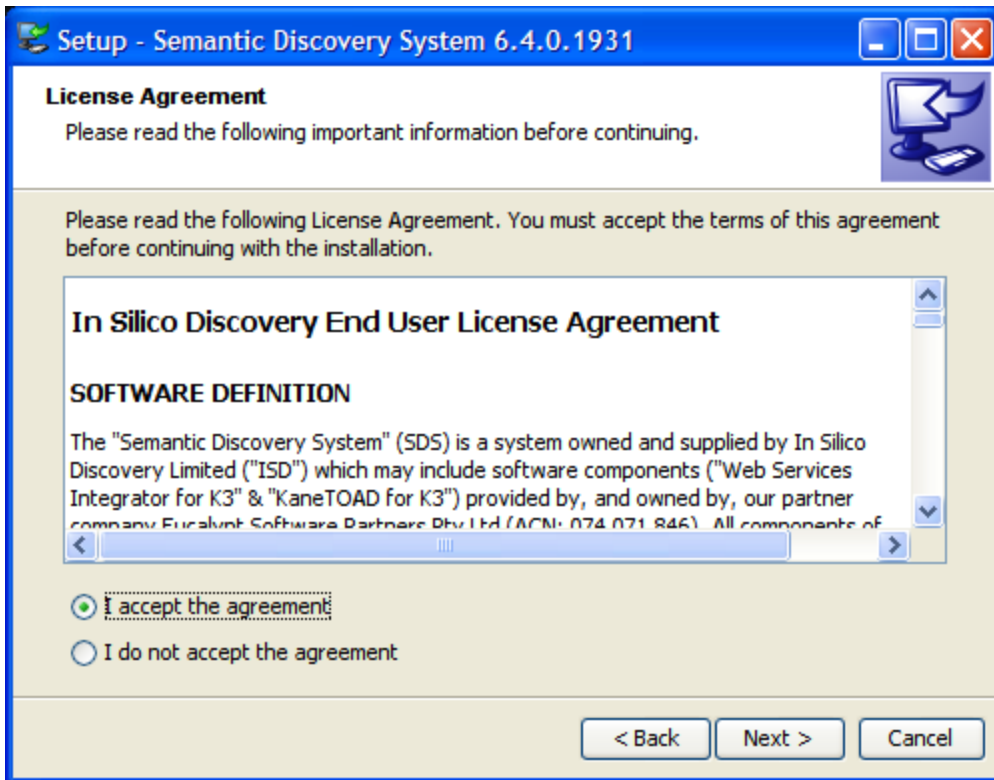
Advanced users that know the location of an installed JRE can use the 'locate' button to find it. Otherwise, the 'Download' option will cause a suitable JRE to be downloaded from our servers. If the 'Download' button is not displayed then we do not currently have a JRE download available for your platform, in which case you will need to download one from [Sun](#).

### 3 DOWNLOADING AND INSTALLING SDS

If you have had problems with this and subsequently re-started the installation, you will get a warning dialog as shown below. Just select 'Yes' to continue back to the JRE selection dialog.

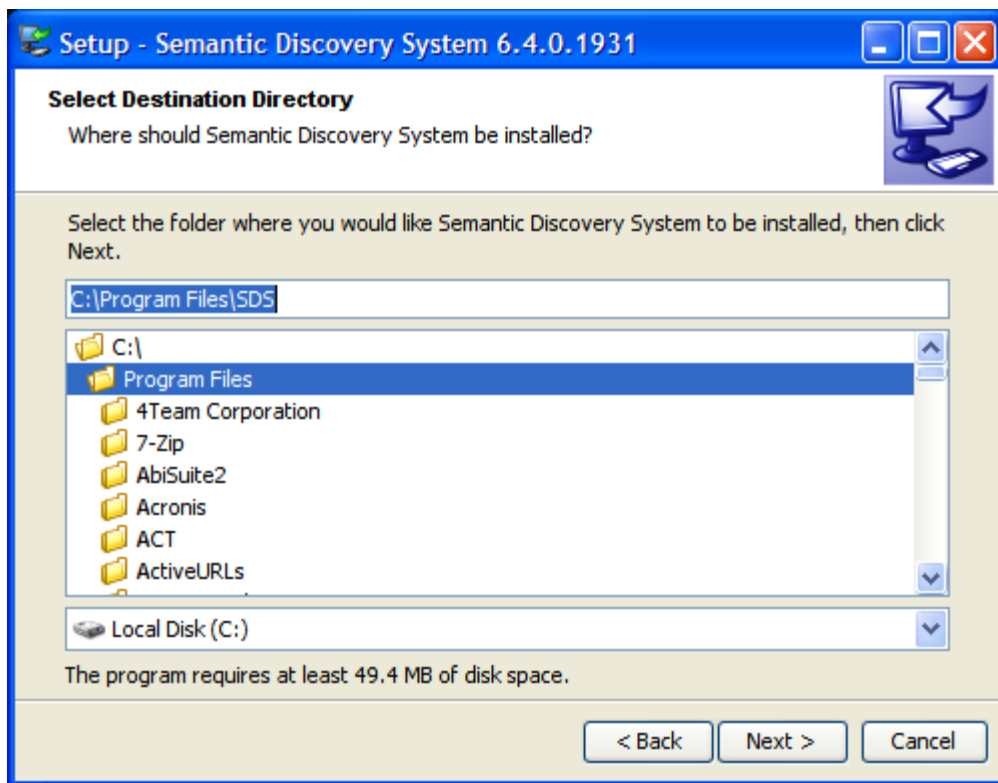


Read, and if you choose to, accept the End User License Agreement.



Choose a directory where *SDS* should be installed.

It is recommended that a directory without spaces in the name is used.



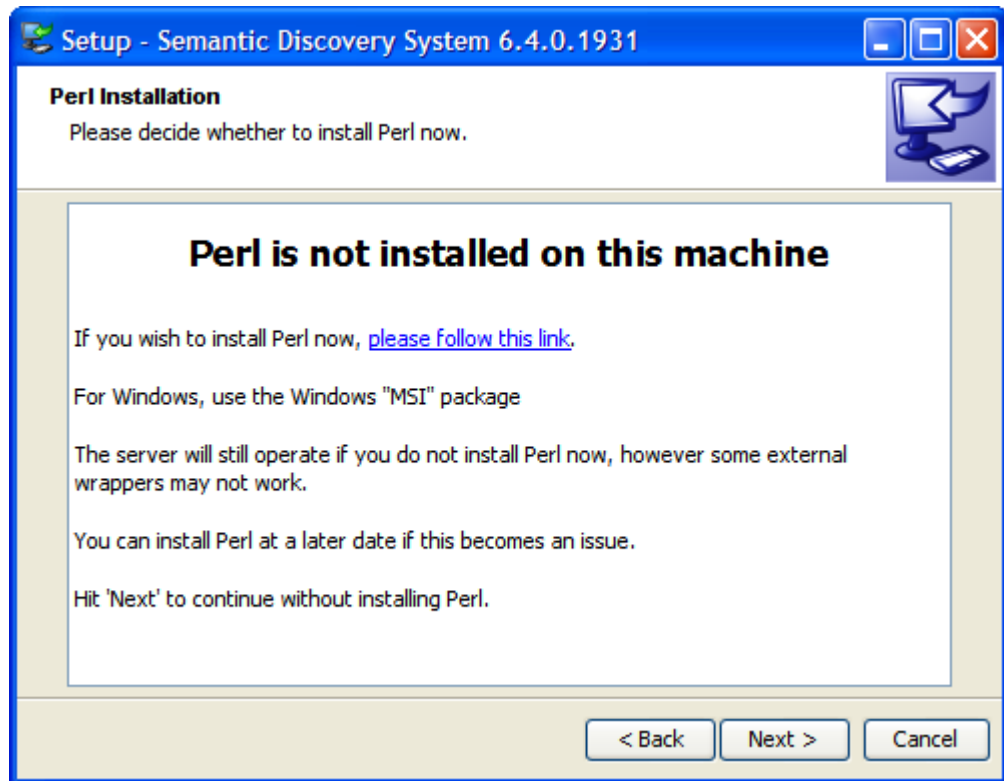
At this point, the system checks whether Perl is installed. Perl is not mandatorily required to run *SDS* - it is however often used by wrapper writers to provide access to external data sources and will be required in those cases.

If Perl is not installed, the following dialog will be displayed, providing the opportunity to download and install Perl.

Perl can be downloaded from the [ActiveState website](#). Click [here](#) to download Perl.

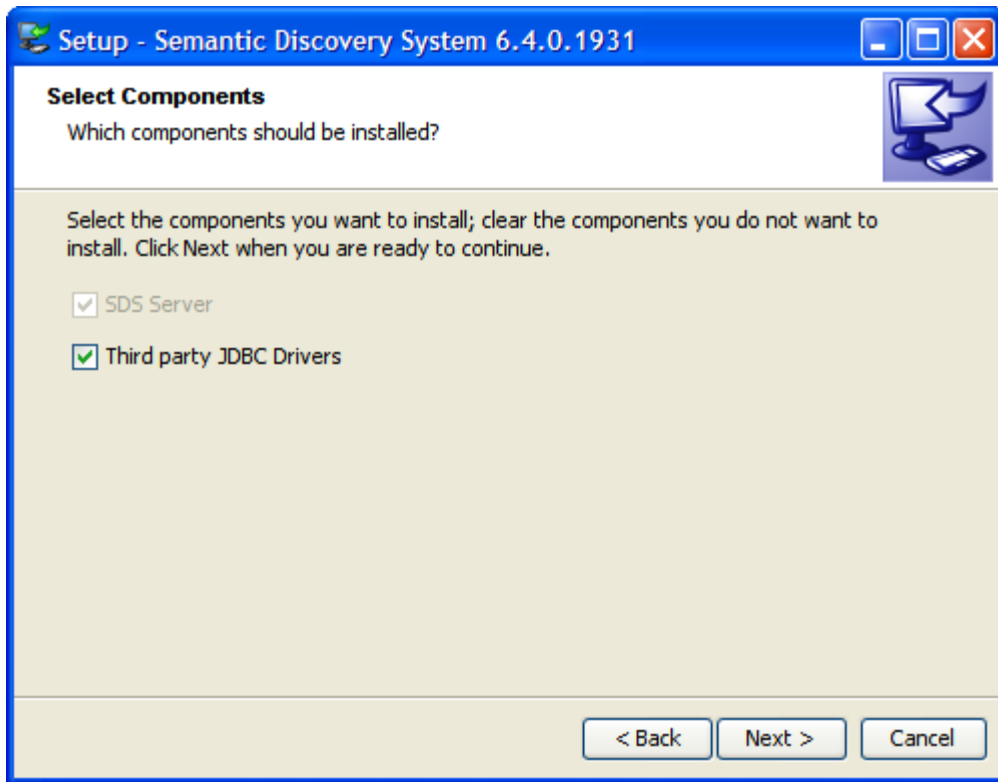
For MS Windows, choose the 'MSI' package. For other platforms, chose the appropriate download for your platform.

This dialog will be skipped if Perl is already installed.



Choose the components to install.

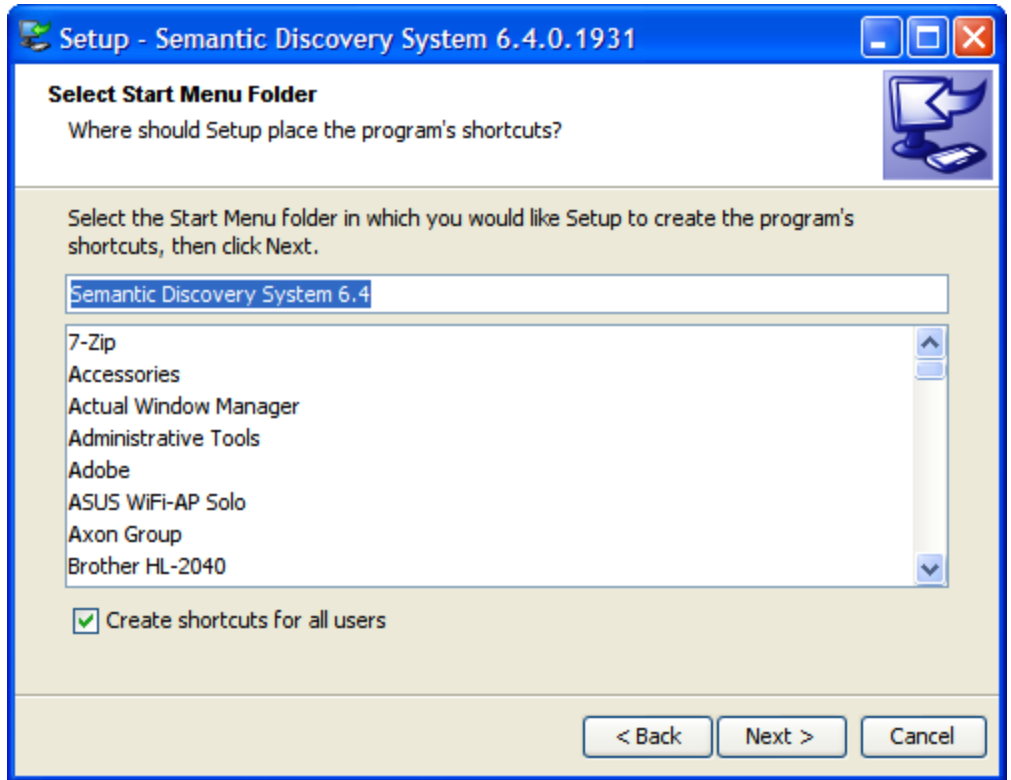
Please note that the third-party JDBC drivers option is free of charge and is distributed with SDS for user convenience to provide access to JDBC sources such as Oracle and mysql. The check box is provided as an option only for those users that may have their own pre-existent and preferred JDBC drivers.



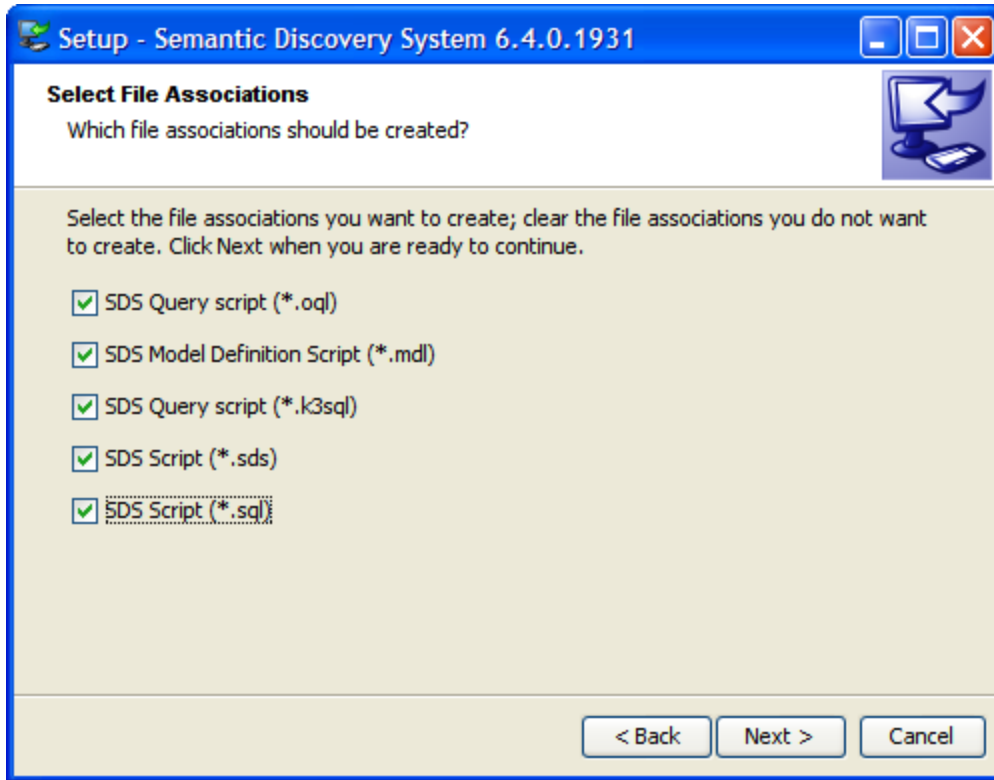
At this point, the installation offers different screens depending on the installation platform.

#### **For WINDOWS**

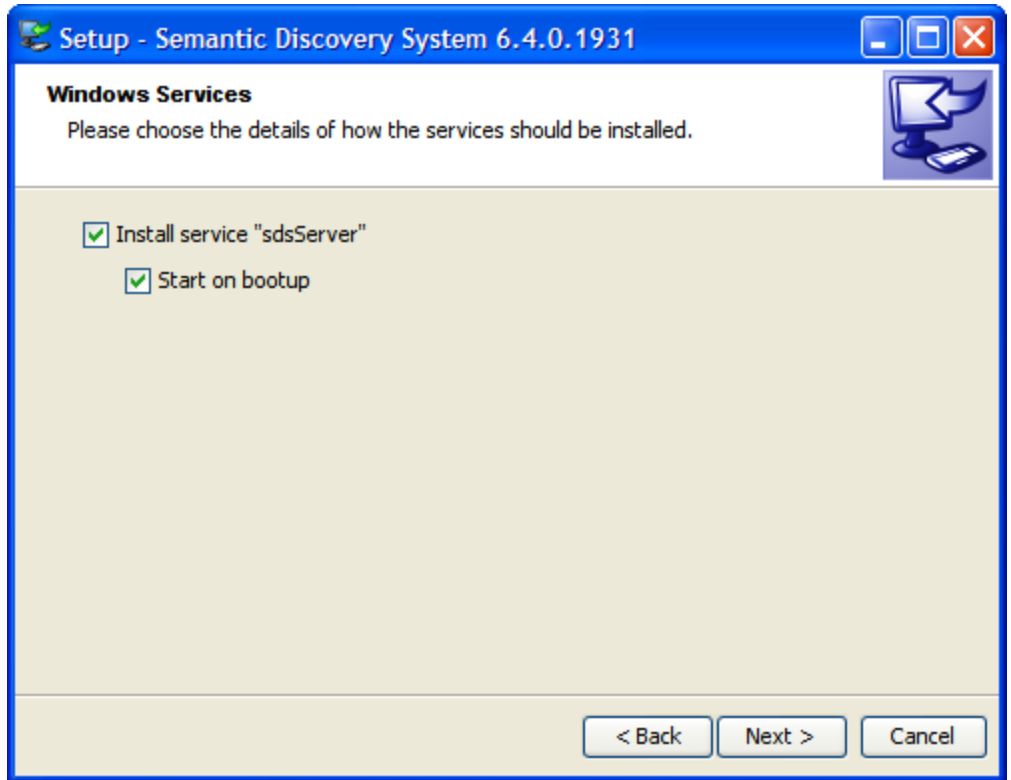
Choose the program group to use



By default, certain file extensions are associated with *SDS* as shown below - these are highlighted as defaults, with the exception of 'SDS Script (\*.sql)' which the user may wish not to accept as it may conflict with other RDBMS implementations present.

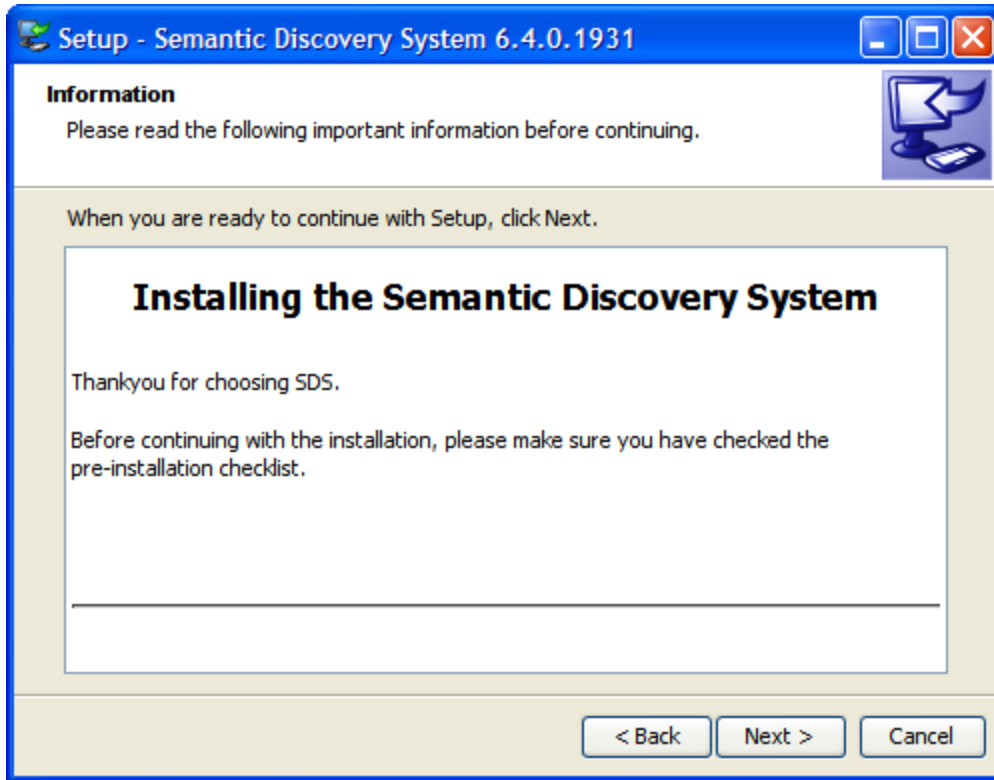


On Windows, the server default installation is to run as a Windows Service. The user has the option of running it manually instead, though this is not recommended except for advanced users.

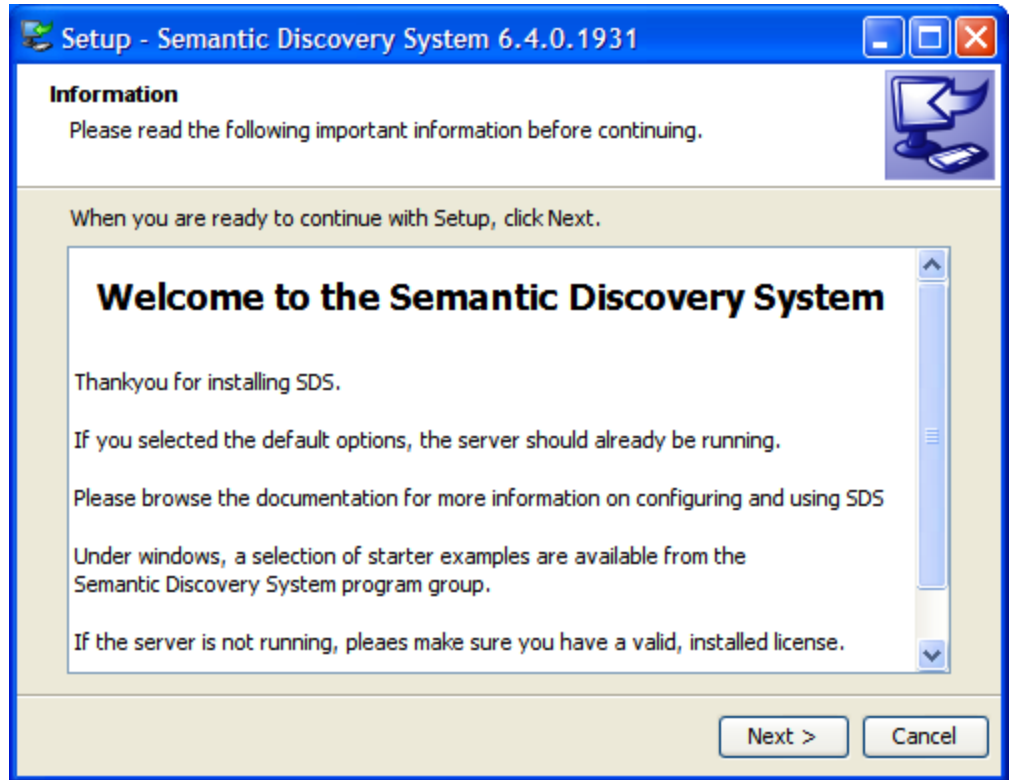


On UNIX platforms, a dialog will be displayed showing the services that will be installed.

At this point the user should read the pre-installation notes and then continue with the installation.



SDS will now be installed onto your system. Once the installation is complete the following welcome dialog will be displayed.



SDS is now installed and the server will be running.

On windows, if the server default installation was not selected (perhaps to conserve available memory on a small desktop PC) then SDS will not be running, but the server can be started by selecting, from the START menu:

Semantic Discovery System 6.4 → Administration → Start SDS Server.

To stop the server running, the reverse option should be chosen from the START menu:

Semantic Discovery System 6.4 → Administration → Stop SDS Server.

## SDS Installation Checklist

Please use this checklist when installing SDS.

Information Required	Response
Installation Machine Type	WINDOWS / LINUX / SOLARIS
Operating System Version	
Console Access	(Yes / No)
Windowing System ('X' if unix)	(Yes / No)
Available Disk Space	<i>(Min 50Mb)</i>
Memory	<i>(Min 256Mb)</i>
Perl Version Installed	<i>(Min 5.6)</i>
Java Version Installed	<i>(Min 1.4.2 JVM)</i>
Perl Install Path	
Java Install Path	
Internet Access Configured	(Yes / No)
Proxy Server	Host : Port

Proxy Server Authentication Required	(Yes / No)
SDS Username / Password	<i>(dhub/dhub)</i>
Port available to run SDS socket server, normally port 7003	
Additional Information	

