http://iringtools.org

Installation Guide

Version 1.01.01

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Reviewers

L	Role	Organization Unit
Lee Colson	Documentation	***iRINGTools***

Revision details

Action taken (add/del/change)	Previous page no.	New page no.	Revision description
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Release Notice Reference (for release)

Rev. No.	Revision date	Revision description	Page no.	Previous page no.	Action taken	Addenda/ New page	Release notice reference

About this Manual

Purpose

iRINGTools is a set of free, public domain, open source (BSD 3 license) software applications and utilities that implement ***iRING*** protocols. ***iRINGTools*** provide users with production ready deployable solutions. ***iRINGTools*** also provides technology solution providers with usage patterns for the implementation of ***iRING*** protocols in their respective solutions. This Installation Guide provides step by step detail instructions to setup ***iRINGTools***.

Intended Audience

Intended audience for this installation guide is ***iRINGUserGroup***, an open online community of users, companies, and organizations that use, are considering using, or are developing or deploying ***iRING*** protocols. The ***iRINGUserGroup*** is also responsible for the management, enhancement, and maintenance of ***iRINGTools*** and ***iRINGSandbox.***

Organization of the Manual

Information in this manual has been organized as follows:

Table 1: Organization of this Manual

Chapter	Description
Chapter 1	This gives brief overview of ***iRINGTools*** and its components, packages involved, package dependencies, prerequisites and list of software components required for the individual package (the adaptor, the Sandbox or both) installation.
Chapter 2	This section provides detailed instructions for the installation and configuration of each prerequisite i.e. IIS, .Net Framework 3.5 SP1, Silverlight MIME extensions, Java for Windows, MySQL Server, SQL Server and ADO.Net Entity Framework Provider.
Chapter 3	This section describes the ***iRINGTools*** Sandbox components and provide detailed instructions on how to install and configure each component i.e. Sandbox Service, Reference Data Service, Reference Data Editor.
Chapter 4	This section describes the ***iRINGTools*** Adapter components and provide detailed instructions on how to install and configure each component i.e. Interface Service, Adapter Service, Mapping Editor.
Chapter 5	The final step in the installation is updating hostname in certain ***iRINGTools*** services for use with client browsers on the network

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List of Abbreviations

Acronym	Description
iRING	ISO 15926 Realtime Interoperability Network Grid
ISO	International Organization for Standardization
RDSWIP	Reference Data Service Work in Progress
SP	Service Pack
GUI	Graphical User Interface
IIS	Internet Information Services
MIME	Multipurpose Internet Mail Extensions
OLTP	Online Transaction Processing
API	Application Programming Interface
CRUD	Create, Read, Update and Delete
LAN	Local Area Network
FIPS	Federal Information Processing Standard

1 Overview

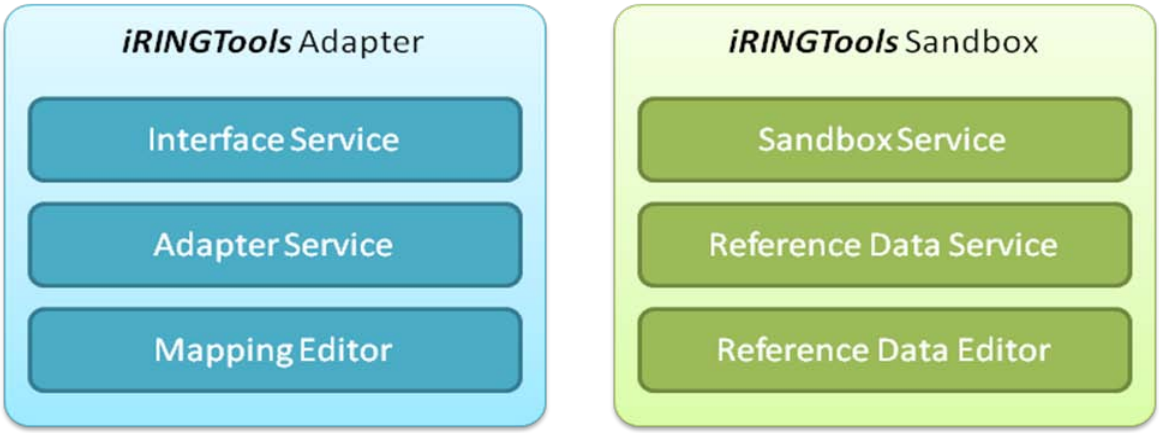
iRING is a set of information interoperability and integration protocols and reference data that are compliant with the ISO 15926, Parts 7, 8, and 9 standards, which builds and depends on ISO 15926 Parts 1 through 6.

iRINGTools is a set of free, public domain, open source (BSD 3 license) software applications and utilities that implement ***iRING*** protocols. ***iRINGTools*** provide users with production ready deployable solutions. ***iRINGTools*** also provides technology solution providers with usage patterns for the implementation of ***iRING*** protocols in their respective solutions.

This installation guide provides detailed instructions for the setup of ***iRINGTools***. Once ***iRINGTools*** is setup, it will still need to be configured. Refer to the ***iRINGTools*** Users Guide for configuration.

1.1 Packages

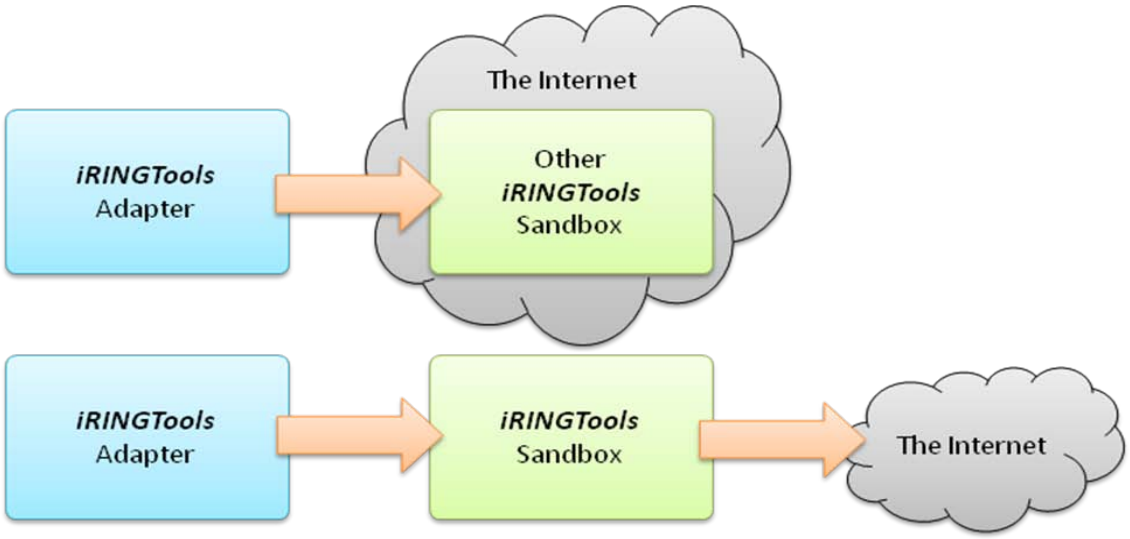
iRINGTools is deployed in two packages, ***iRINGTools*** Adapter and ***iRINGTools*** Sandbox. These packages are separated for deployment purposes. This allows implementers to only download and install the necessary components. The ***iRINGTools*** Adapter is used to map and transform legacy data to ISO 15926 representation. The ***iRINGTools*** Sandbox is used to host local Reference Data or extend the reference data hosted in the RDSWIP (http://rdswip.ids-adi.org/presentation/overview/index.html) for use with the ***iRINGTools*** Adapter. The ***iRINGTools*** Adapter uses reference data from configured Sandboxes as well as the RDSWIP.



Neither package requires the other to run. You need to determine which packages will be installed and where. For test purposes, it is recommended that both packages be installed on a single machine. Virtual machines can be used to host ***iRINGTools***, but it is not required.

1.2 Package Dependencies

Though each package is independent of the other, the ***iRINGTools*** Adapter needs access to an ***iRINGTools*** Sandbox.



If only the ***iRINGTools*** Adapter will be deployed, then it will require internet access to connect to an existing ***iRINGTools*** Sandbox (e.g. ***iRING*** community Sandbox). If both packages will be deployed, it is assumed that the ***iRINGTools*** Adapter will use the reference data in the ***iRINGTools*** Sandbox. In this case, the ***iRINGTools*** Adapter will connect directly to the ***iRINGTools*** Sandbox being deployed (e.g. a private Sandbox). The ***iRINGTools*** Sandbox will require internet access to connect to the RDSWIP.

1.3 Prerequisites

There are several prerequisites and assumptions that are made in this guide. Some instructions are provided for setting up and configuring the prerequisites, but the instructions may not handle every case. Please see the documentation links provided in the section for each prerequisite for more information.

The base assumptions made are:

- The host server is running Windows Server 2003 SP2.
- You have administrative access to the host server.
- You are able to login to the graphical user interface on the host server.
- You have basic knowledge of the Windows Operating System and Windows Security.

Older and newer versions of windows are supported, but the installation and configuration may be slightly (and subtly) different for those versions. No instructions will be given on how to properly secure the operating system or the files on the host server. However, instructions will be provided on how to use the specific features of the operating system to properly install ***iRINGTools***.

There are several essential software components required by ***iRINGTools***. These are:

- .NET Framework 3.5 SP1
- Internet Information Services 6.0
- Java for Windows Version 6 Update 16 or higher (aka Java SE Runtime Environment 1.6.0_16)

- MySQL Server 5.1 or higher
- ADO.NET Entity Framework Provider and appropriate client software for database of your legacy application (Adapter Only)

You should understand these systems and how they work before attempting to install ***iRINGTools***.

Finally, ***iRINGTools*** is built on top of other Semantic Web technologies. These technologies include:

- Jena - A Semantic Web Framework for Java (http://jena.sourceforge.net/)
- Joseki - A SPARQL Server for Jena (http://www.joseki.org/)

Although this guide will provide the instructions necessary to install and configure the software components, you need to be aware of the technologies are being used. Below is a summary of the ***iRINGTools*** and prerequisite installations.

Software Component	Adapter	Sandbox	Remarks
iRINGTools Components 1.01.00	X	X	Use for both adapter and sandbox
iRINGTools Adapter 1.01.00	X		Use if installing adapter only
iRINGTools Sandbox 1.01.00		X	Use if installing sandbox only
.NET Framework 3.5 SP 1	X	X	
Internet Information Services	X	X	
Java for Windows	X	X	Version 6 Update 16 or greater
MySQL Server 5.1	X	X	
SQL Server	X		Required only for test
ADO.NET Entity Framework Provider	X		Required only for test
Silverlight MIME Extensions	X	X	
Silverlight 3.0	X	X	

1.4 Preparing for Installation

Before beginning the installation, you need to decide which ***iRINGTools*** packages you are installing on the server: the adapter, the sandbox or both. This determines which prerequisites and downloads are needed.

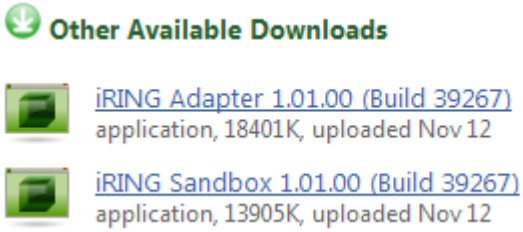
1.4.1 Downloads

Download ***iRINGTools*** Components from the **iRINGTools** web site:
http://iring.codeplex.com/Release/ProjectReleases.aspx.

iRING Components 1.01.00 (Build 39267)
application, 32155K, uploaded Nov 12

Alternately, if you are installing only the adapter or sandbox then you can download one of the following:

- ***iRINGTools*** Adapter (for adapter only installations)
- ***iRINGTools*** Sandbox (for sandbox only installations)



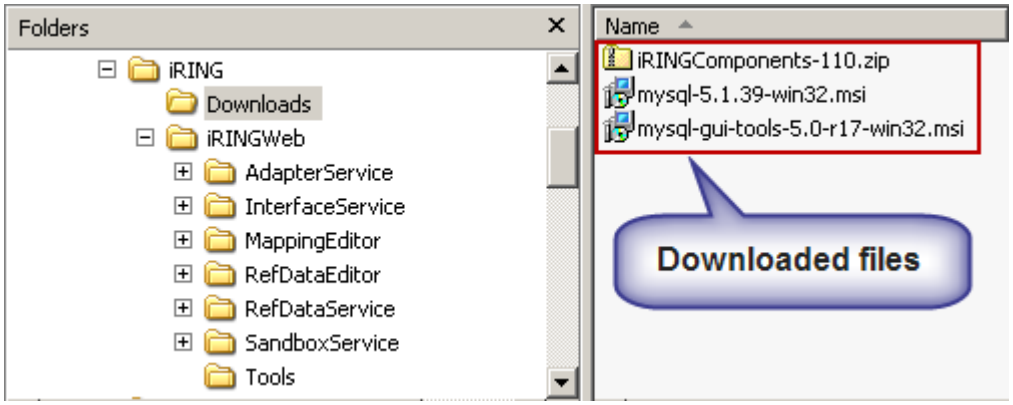
Unzip the downloaded file to a folder on the server called ***iRINGWeb***. (The target folder must be ***iRINGWeb*** to ensure files are properly merged.)

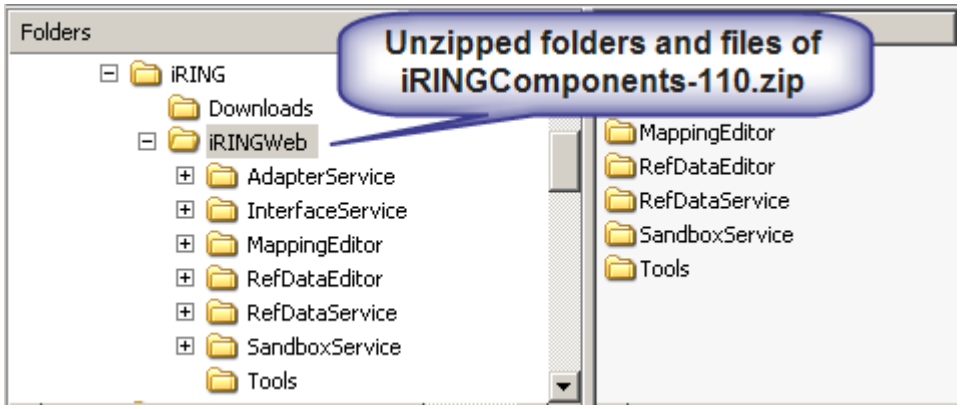
Download the following MySQL packages:

- MySQL Community Server 5.1 - http://dev.mysql.com/downloads/mysql/5.1.html#win32
- MySQL GUI Tools 5.0 R17 (Optional) - http://dev.mysql.com/downloads/gui-tools/5.0.html

The installation of the MySQL downloads will be done later. Note that MySQL GUI Tools are not required for this installation, but may be useful for managing MySQL and troubleshooting problems.

The following are example screenshots of the above steps:





Other software packages may also be required. Installation links and instructions will be provided if and when necessary.

1.4.2 Internet Access

iRINGTools is a web-enabled system and therefore requires access to the internet to work properly. If the host server is behind a firewall, the proxy server information and valid proxy credentials will be needed later in the setup.

1.4.3 RDS-WIP Access

Access to the RDSWIP (http://rdswip.ids-adi.org/presentation/overview/index.html) is required for the ***iRINGTools*** Sandbox to generate new IDs for classes, templates and roles. An identity from ids-adi.org will be needed later in the setup.

1.4.4 Sandbox Access

If there are any existing ***iRINGTools*** Sandboxes that will be used by the ***iRINGTools*** Adapter being deployed, then the URLs for those ***iRINGTools*** Sandboxes will need to be entered into the configuration later.

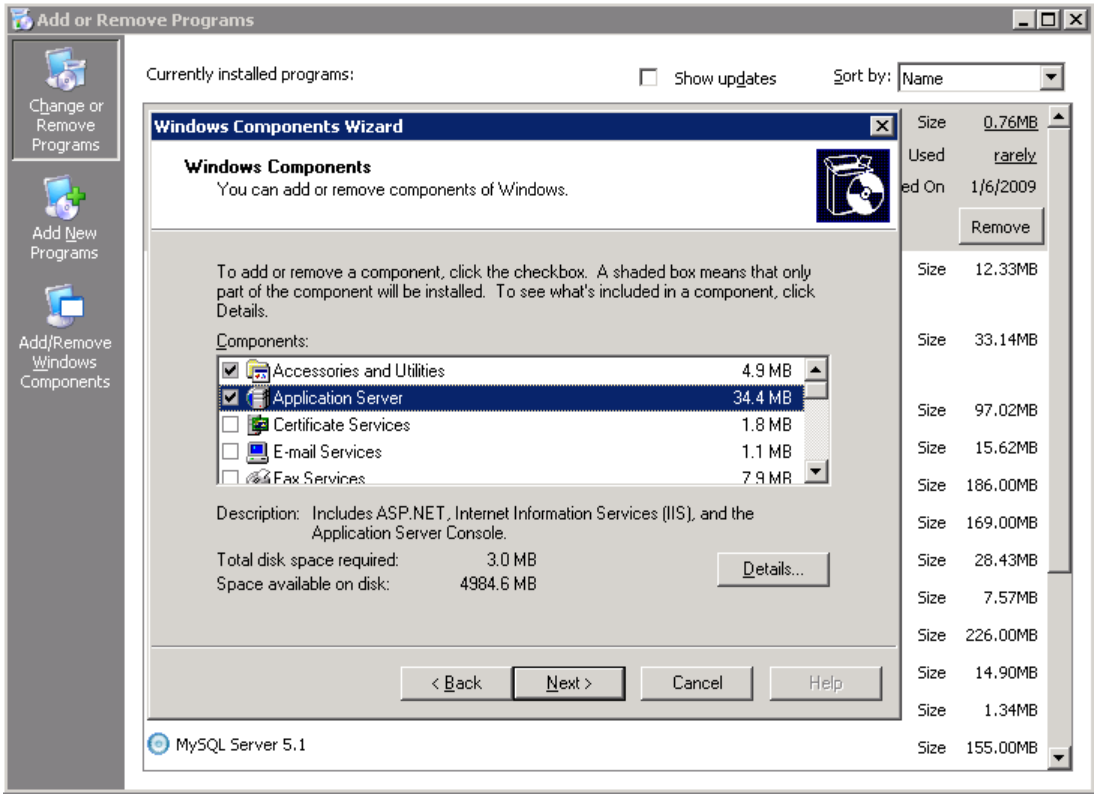
2 Installing Prerequisites

The following sections will provide detailed instructions for the installation and configuration of each prerequisite.

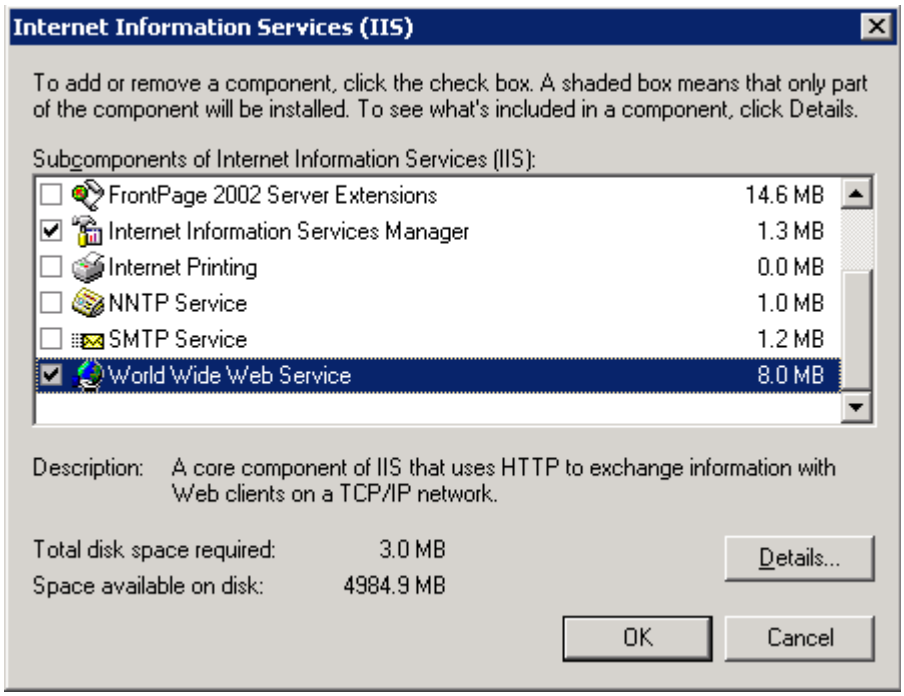
2.1 Internet Information Services

IIS (Internet Information Services) is part of the Windows Server 2003 operating system, but it is an optional component and is typically not installed by default. Perform the following steps to install or verify installation of IIS:

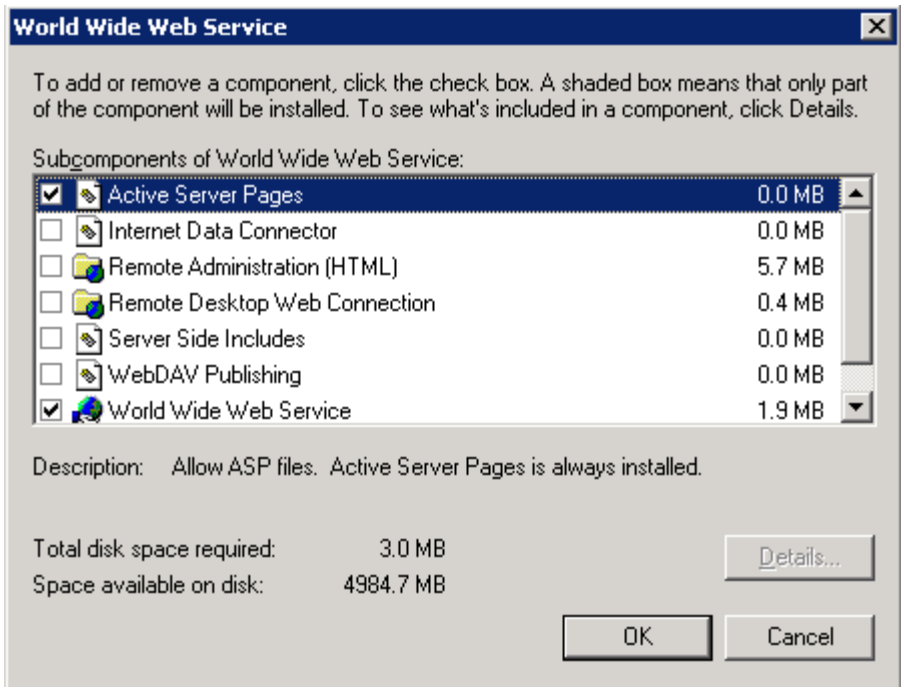
1. From the **Start** menu, click **Control Panel**.
2. Double-click **Add or Remove Programs**.
3. Click **Add/Remove Windows Components**.
4. In the **Components** list box, click **Application Server**.



5. Click **Details**.
6. Click **Internet Information Services (IIS)**.
7. Click **Details** to view the list of IIS Subcomponents.
8. Ensure that the **Common Files** (not shown), **Internet Information Services Manager** and **World Wide Web Service** are checked.



9. Click **World Wide Web Service**.
10. Click **Details**.
11. Ensure that **Active Server Pages** and **World Wide Web Service** are checked.

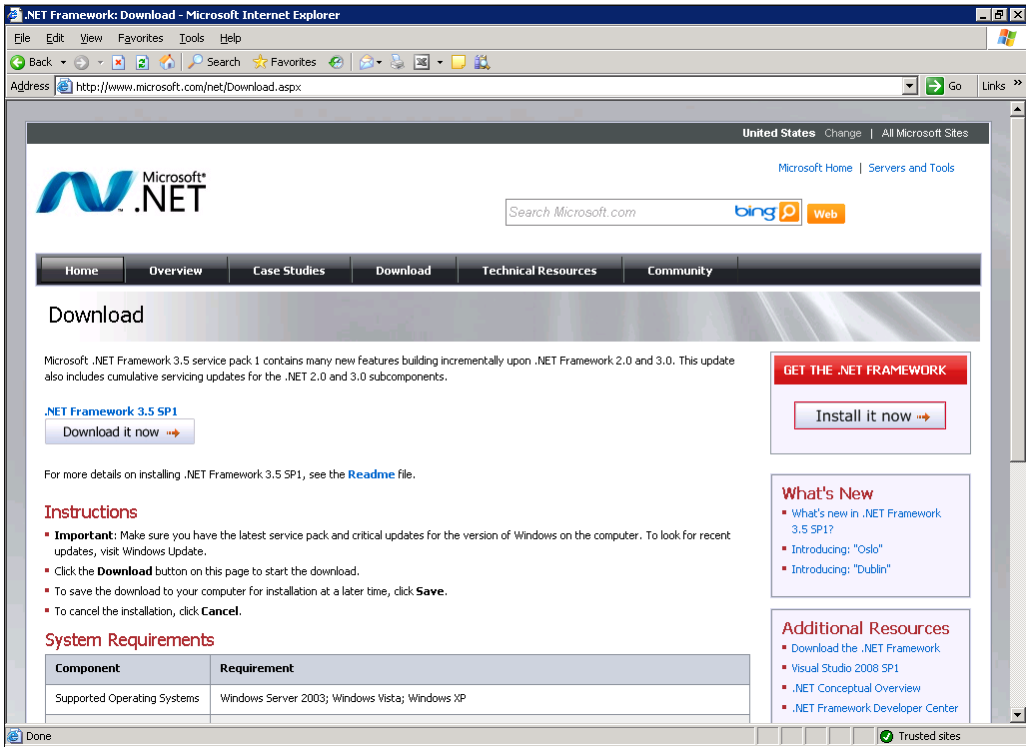


12. Click **OK** until you are returned to the **Windows Component Wizard**.
13. Click the **Next** button and complete the **Windows Component Wizard**.

2.2 .NET Framework 3.5 SP 1

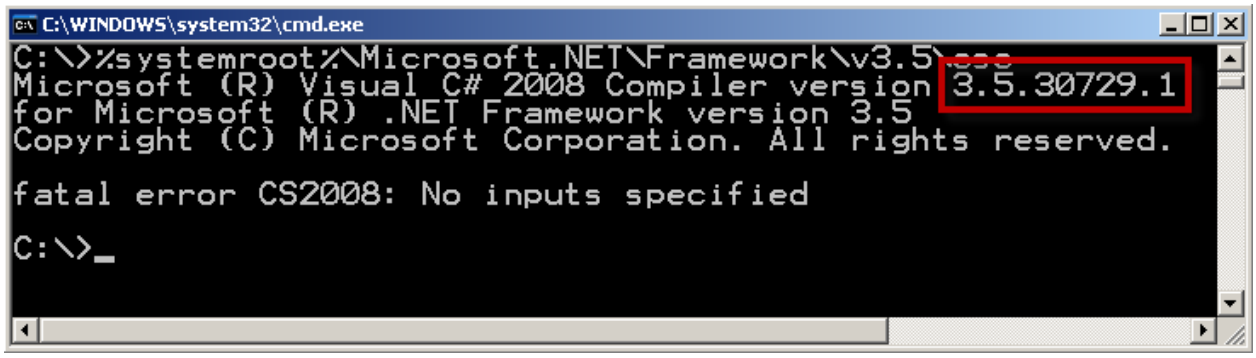
The .NET Framework is used by most of the ***iRINGTools*** components. The latest .NET Framework is version 3.5 SP1. Specifically, this version includes the Entity Framework which is used by ***iRINGTools*** as the default DataLayer. To install the .NET Framework, perform the following:

1. Download and install .NET Framework 3.5 SP1 from http://www.microsoft.com/net/Download.aspx.



2. Verify .NET Framework 3.5 SP1 installed correctly by typing the following in a command prompt:

   %systemroot%\Microsoft.NET\Framework\v3.5\csc

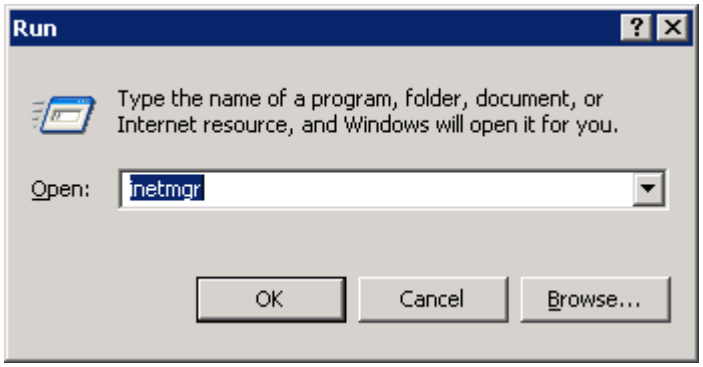


2.3 Validate IIS and ASP.NET

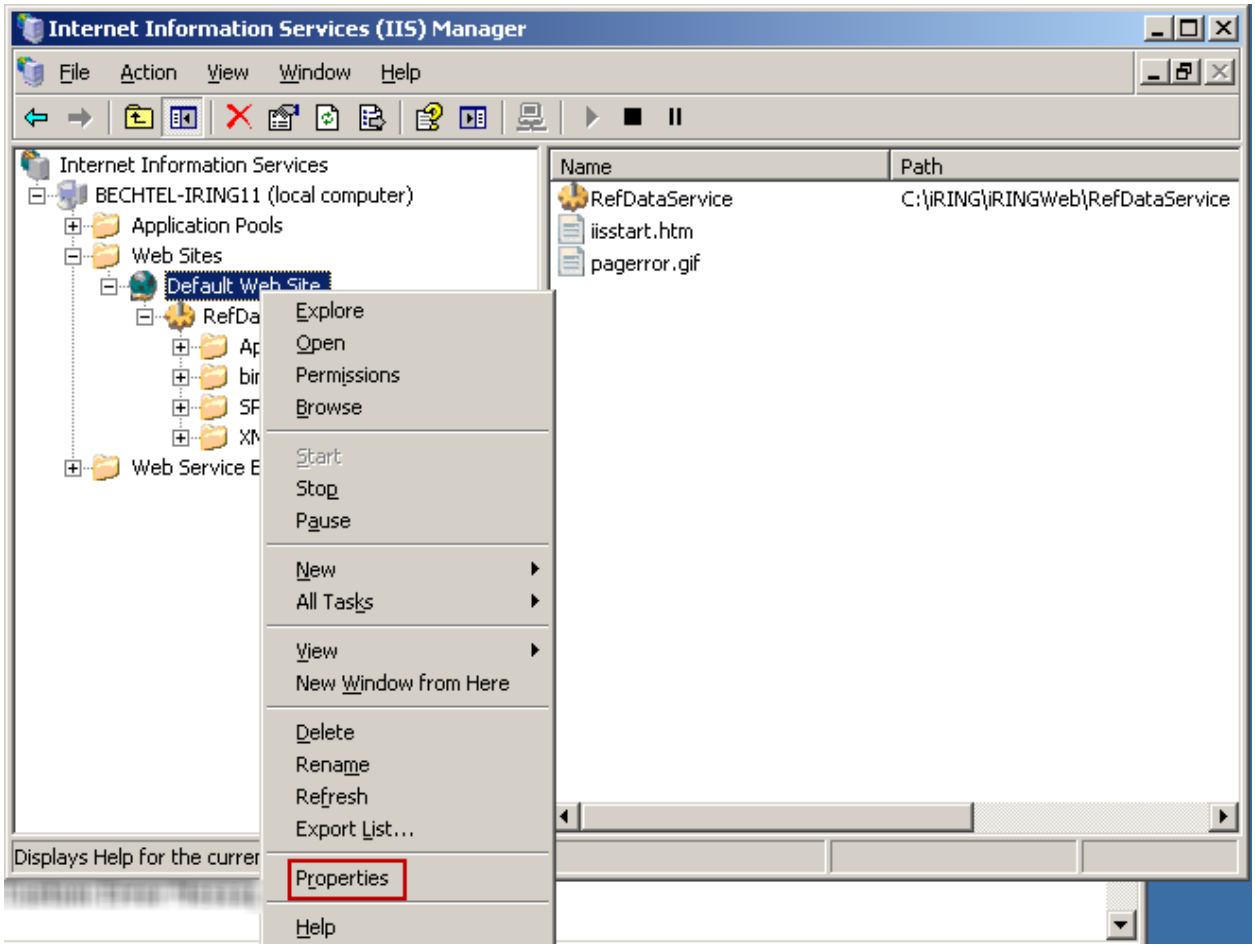
IIS combines and exposes many different technologies, and it can be a challenge to deploy. Certain subcomponents of IIS may not have been installed in the expected order. Furthermore, installing IIS after applying a Service Pack can lead to other subcomponents becoming unregistered. For this reason, the following steps are not always required, but may help if IIS is not functioning properly.

To verify ASP.NET is register and working with IIS, perform the following.

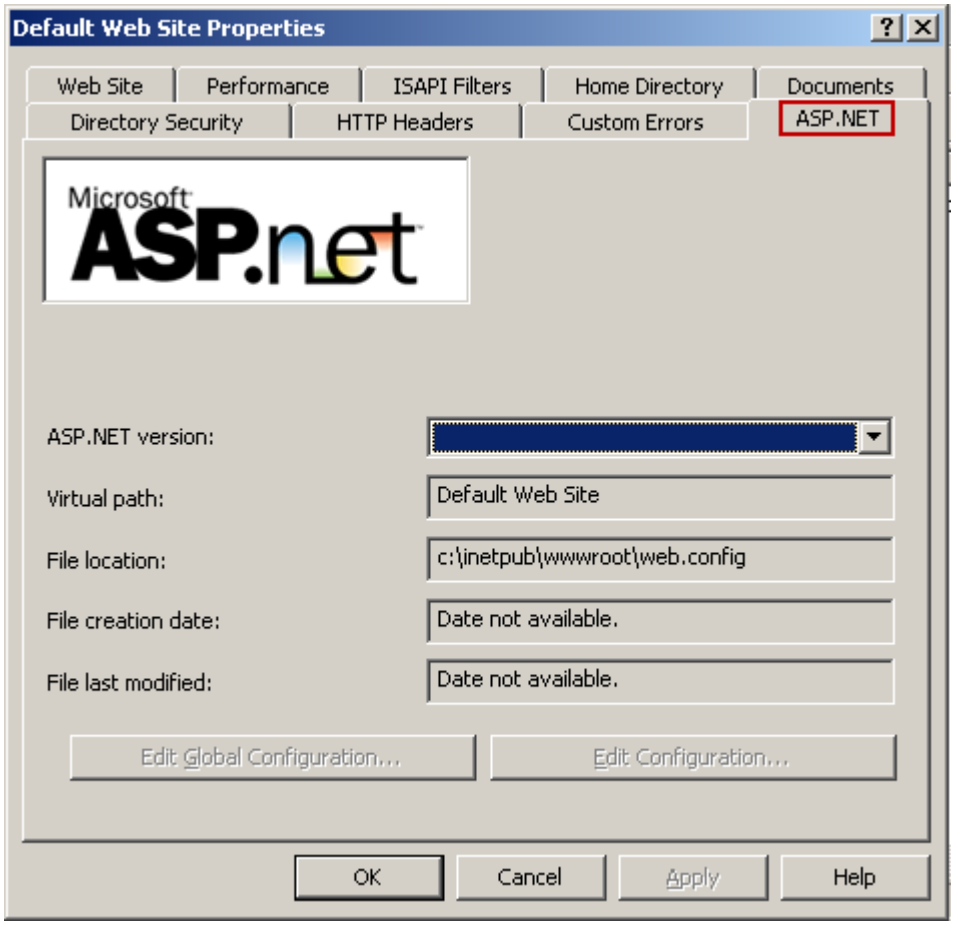
1. Start IIS Manager. One way to do this is to use Run from the Start menu. Type the command inetmgr.



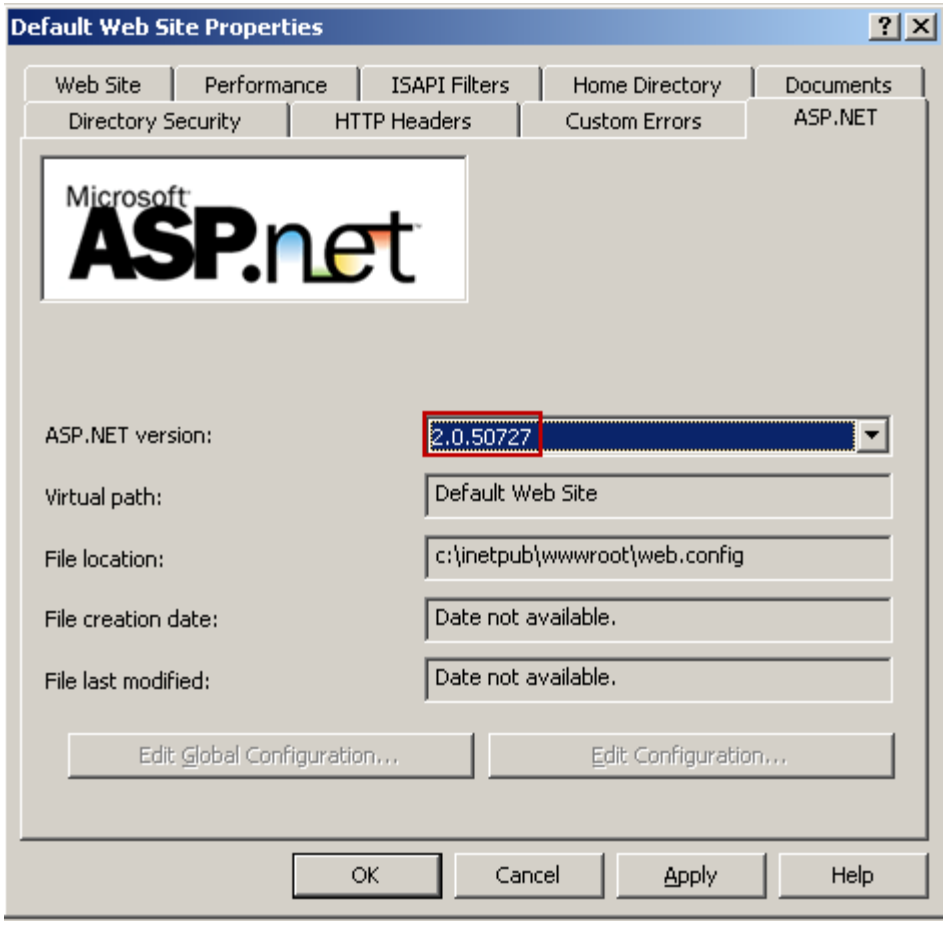
2. From the Web Sites folder, right-click on Default Web Site and select Properties.



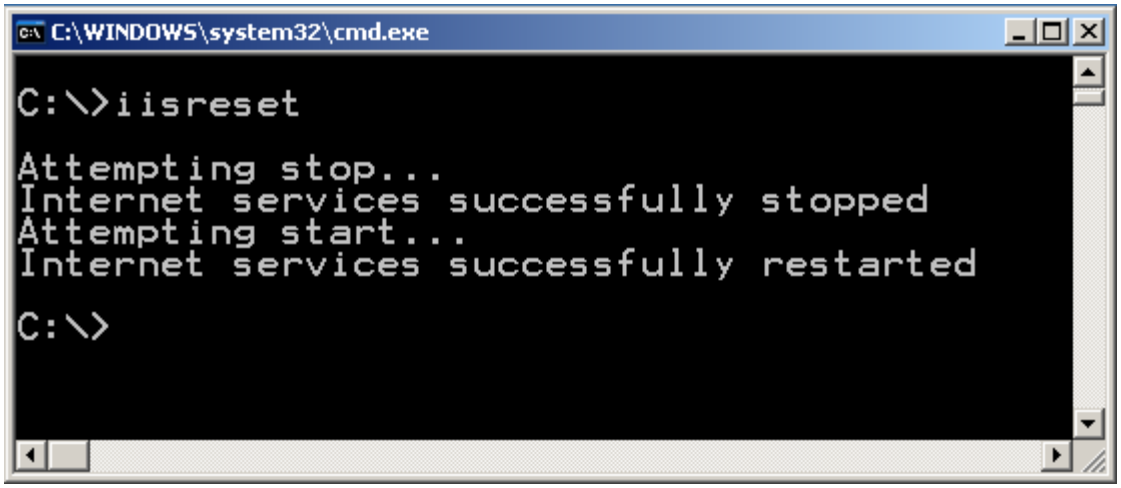
3. Select the ASP.NET tab in the Properties window.



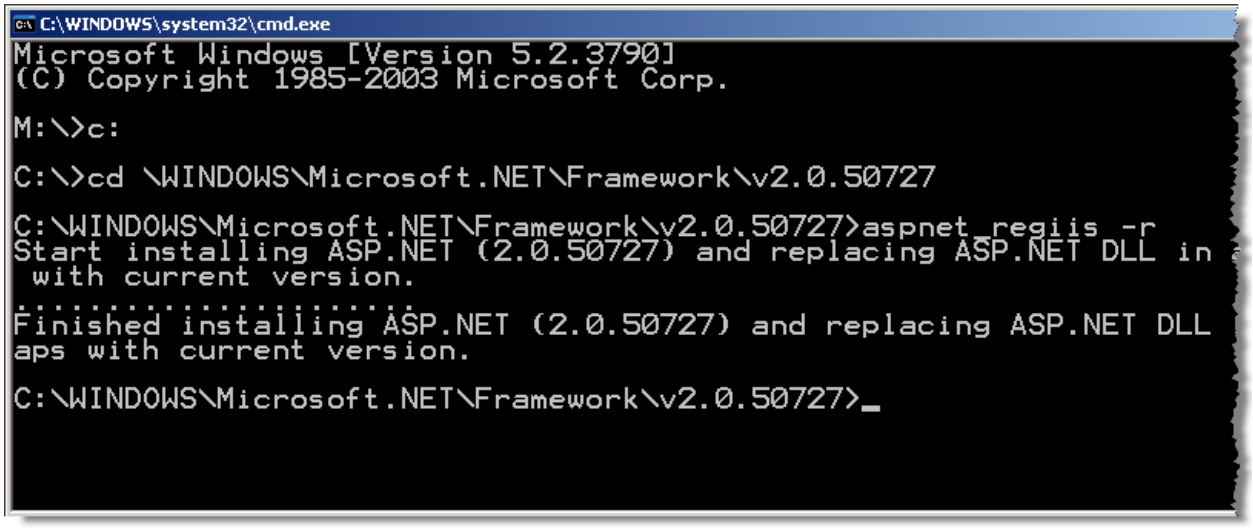
4. If an ASP.NET version is selected, then select it (the version should be 2.0). Click the OK button to complete.



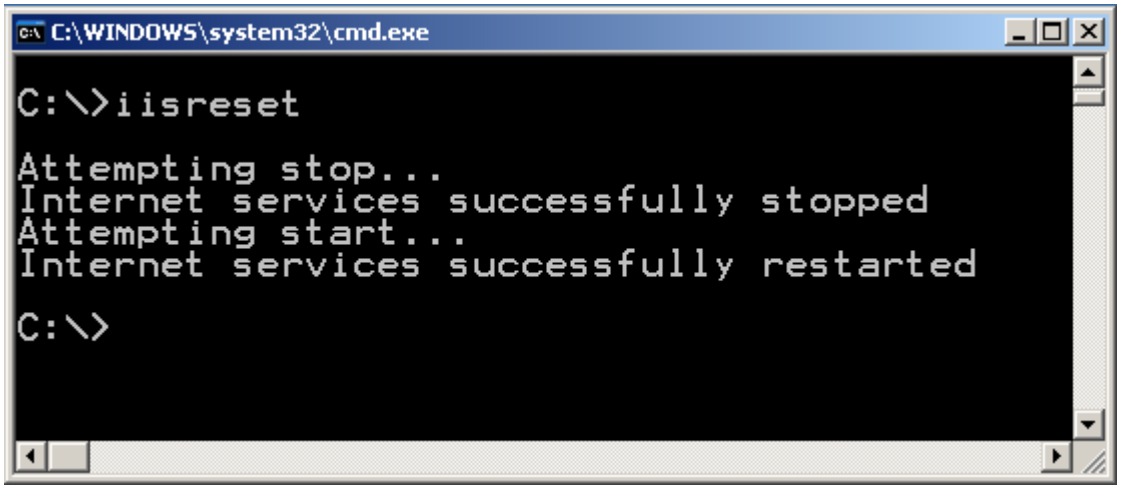
5. If ASP.NET was not selected, then IIS needs reset. Execute iisreset in a command window.



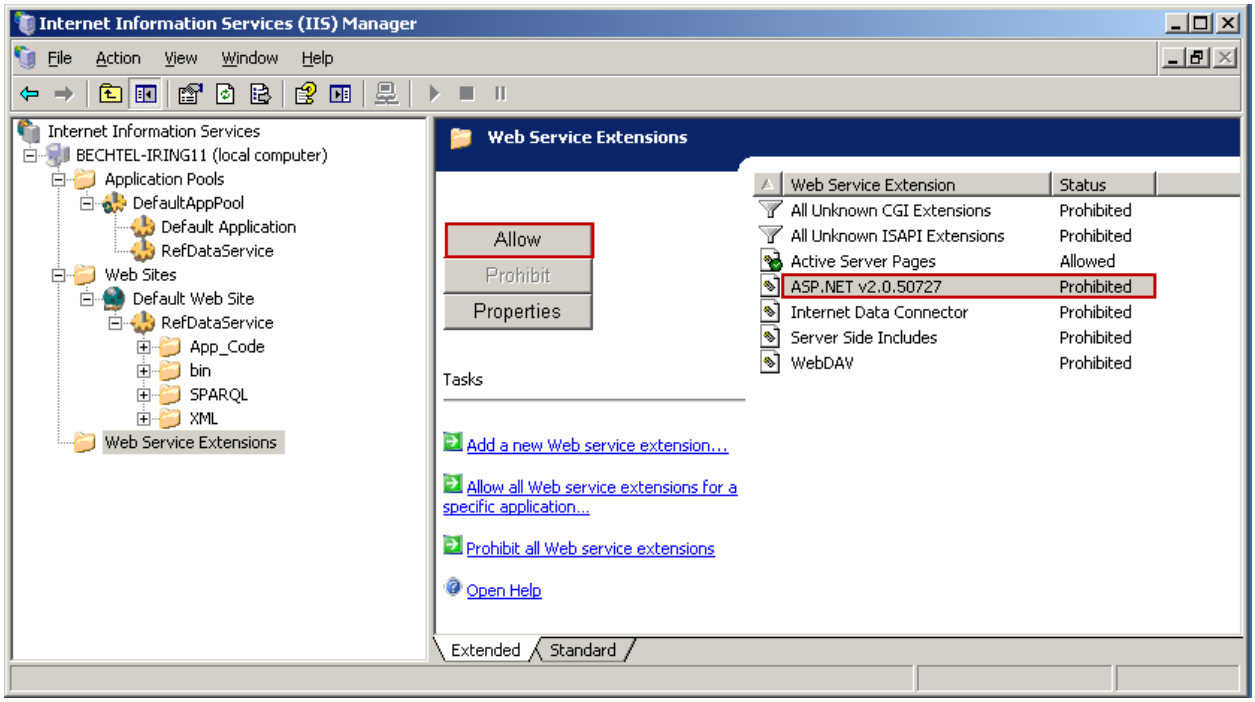
6. Additionally, ASP.NET will also need registering. Open a command window in the Windows folder WINDOWS\Microsoft.NET\Framework\v2.0.50727 and execute the command aspnet_regiis –r.



7. After registering ASP.NET, IIS needs reset again. Execute iisreset in a command window.



8. From the IIS Manger, select the Web Service Extensions folder. ASP.NET needs to be enabled. Select ASP.NET v2.0.50727 in the right pane and click the Allow button.



At this point IIS and ASP.NET should be working and synchronized.

The following Microsoft website links provide detailed instructions on this and other common IIS issues.

- Ensure that ASP.NET is installed: (http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/01563a60-038c-46d8-9a63-5104f5816767.mspx?mfr=true)
- Ensure that Dynamic Content is enabled: (http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/a9fc0395-f03b-4213-9c62-1592bcfcf53f.mspx?mfr=true)
- Ensure that ASP.NET 2.0 is registered (only do if necessary): (http://msdn.microsoft.com/en-us/library/k6h9cz8h(VS.80).aspx)

2.4 Silverlight MIME Extensions

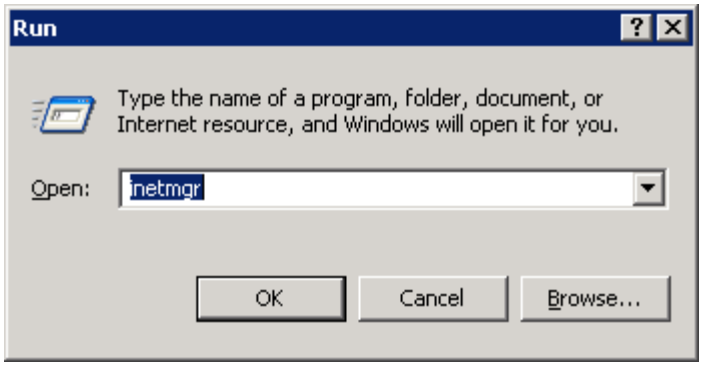
iRingtools use Silverlight for the Mapping Editor and Reference Data Editor. To host Silverlight on a web server that is not IIS version 7 (e.g., IIS version 6), you will need to add the MIME types to support the correct content type interpretation by the browser. In the case of Silverlight this is the XAML content type. IIS version 7 has these MIME types already added but if they're not there this will result in errors. There are three MIME types required:

1. .xaml application/xaml+xml
2. .xap application/x-silverlight-app

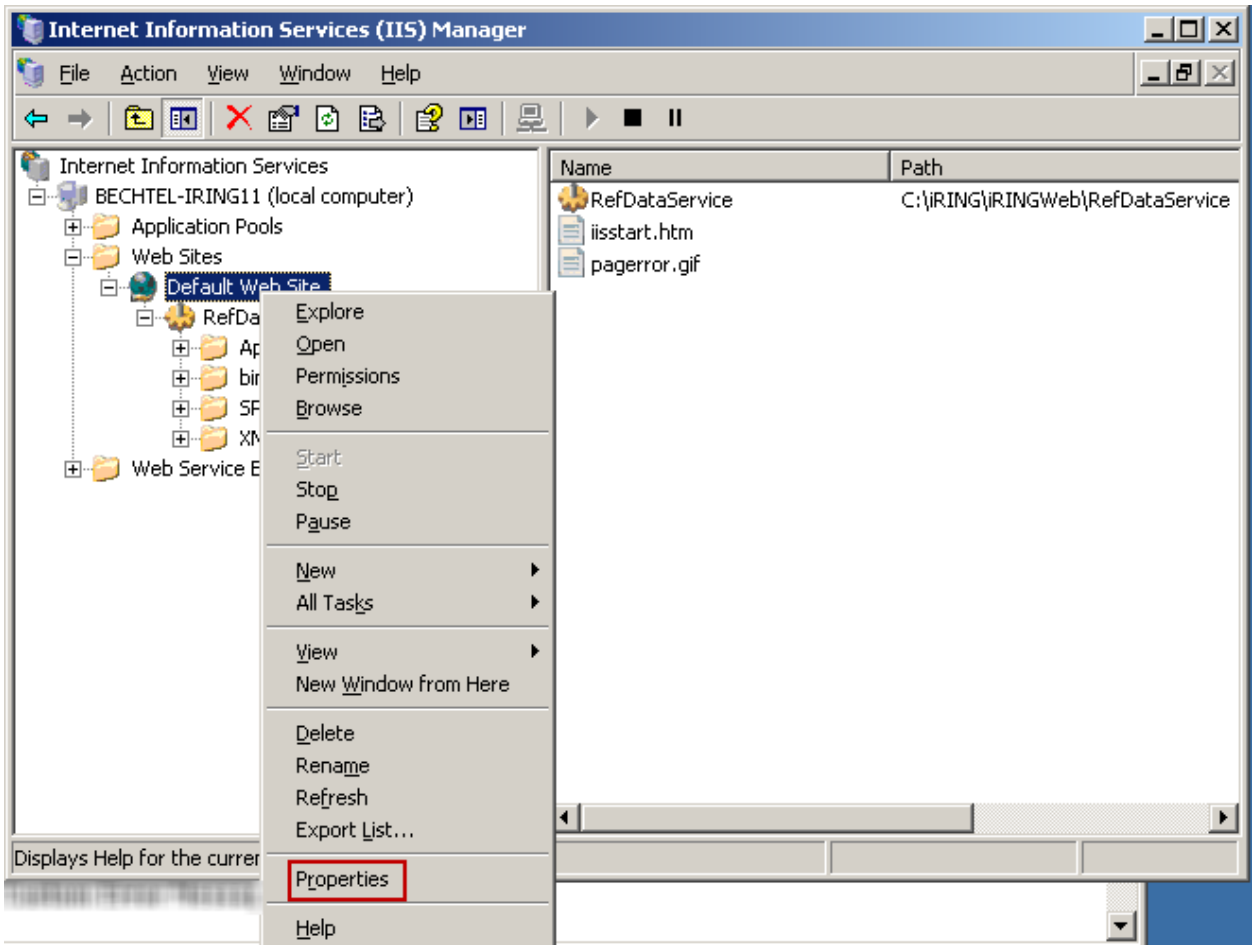
3. .xbap application/x-ms-xbap

To add (or verify) the three MIME types, perform the following steps:

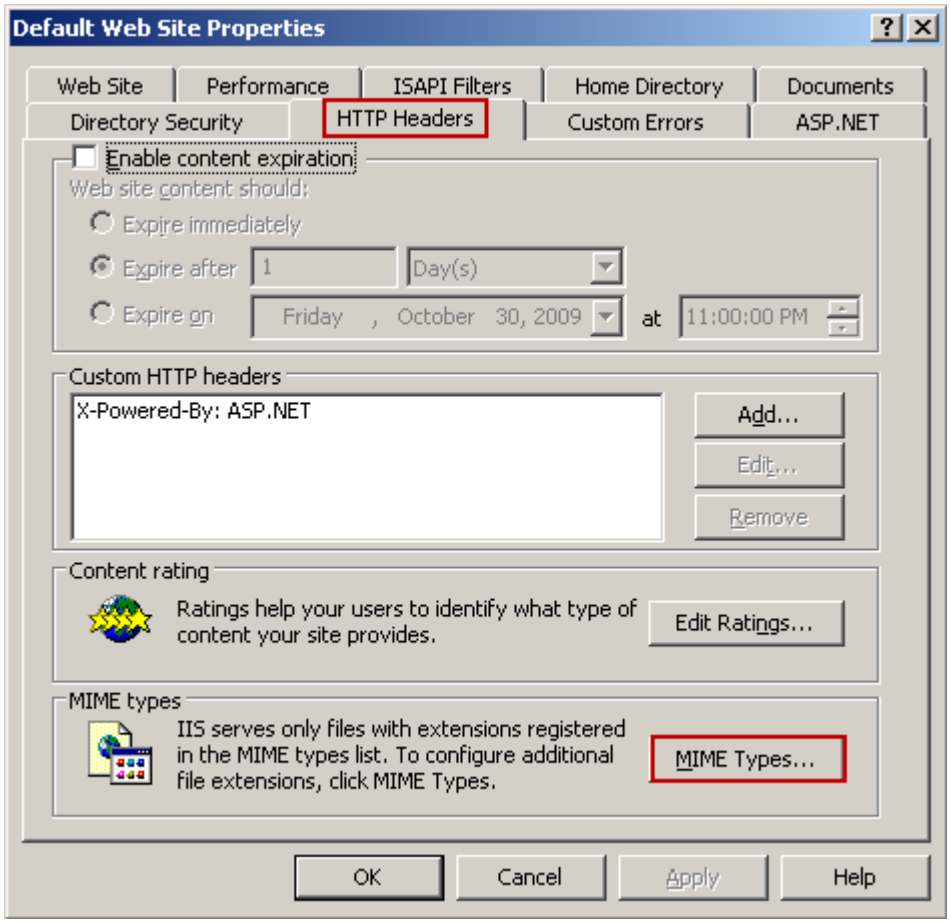
1. Start IIS Manager. One way to do this is to use Run from the Start menu. Type the command inetmgr.



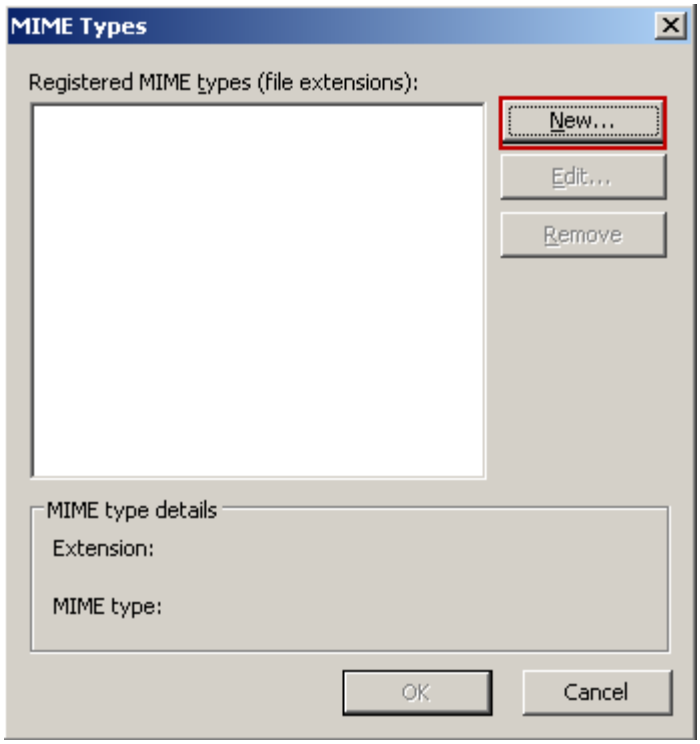
2. From the Web Sites folder, right-click on Default Web Site and select Properties.



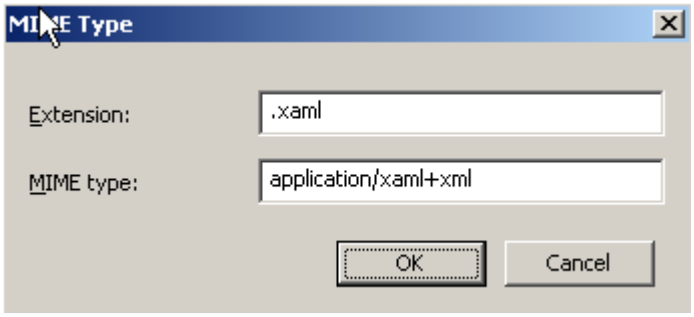
3. Select the HTTP Headers tab in the Properties window and then click on the MIME Types button.

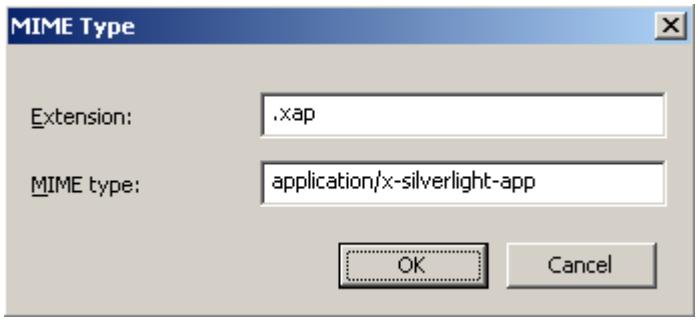


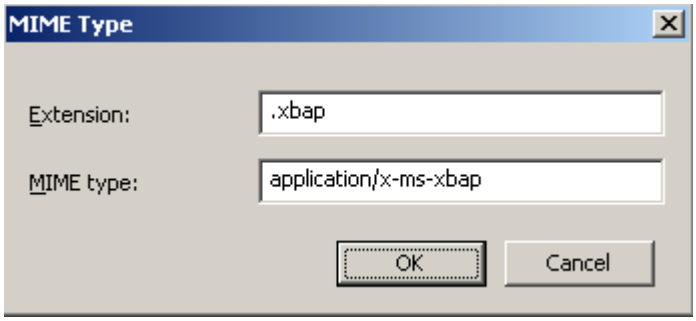
4. If one or more of the three required MIME types are not listed, then click on the New button.



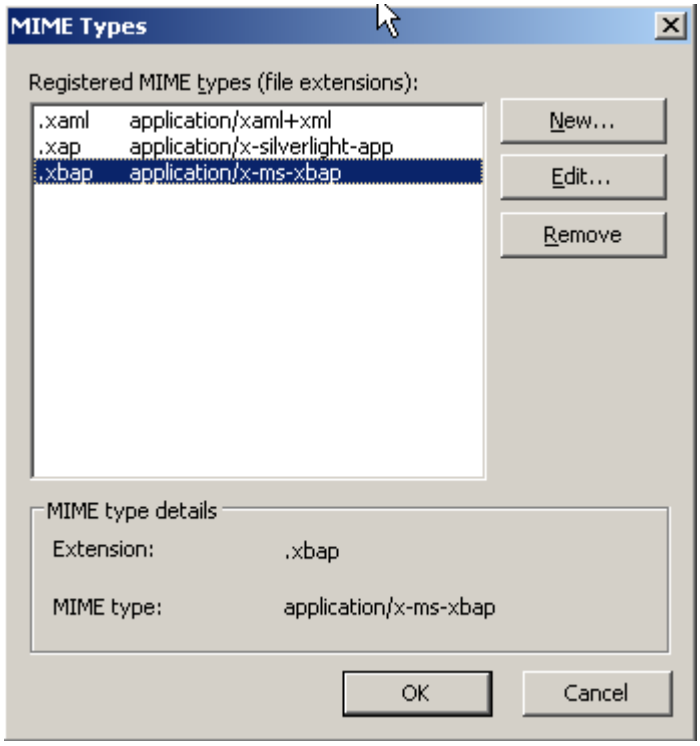
5. If necessary, enter the extension and MIME type for the three types.







6. When finished, verify the MIME types are added and then click the OK button.

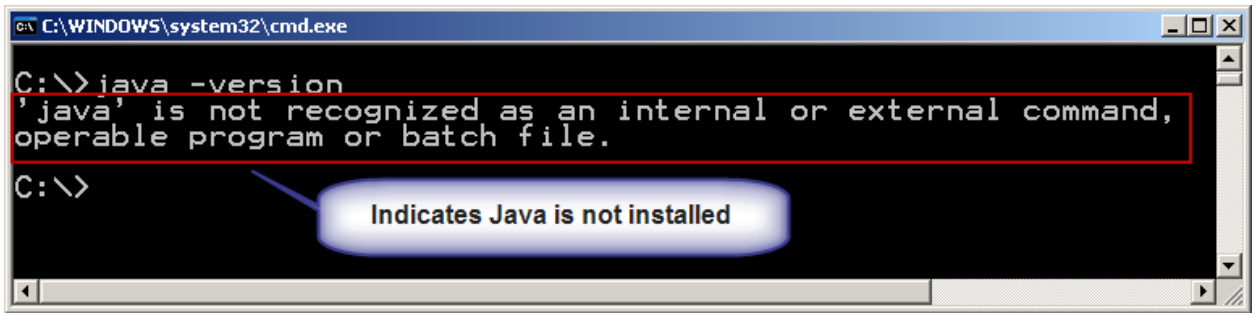


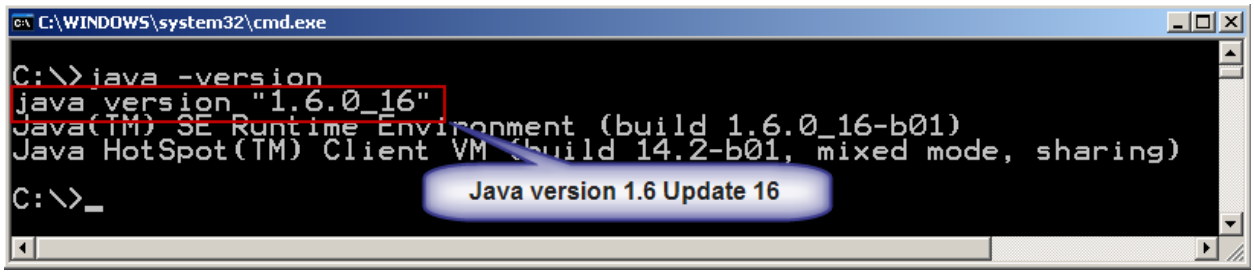
7. Close the Properties window.

2.5 Java for Windows (Required for Sandbox)

Java for Windows, or the Java SE Runtime Environment, is used by the Sandbox Service in the ***iRINGTools*** Sandbox package. To determine if and what version of Java is installed, execute the following in a command prompt:

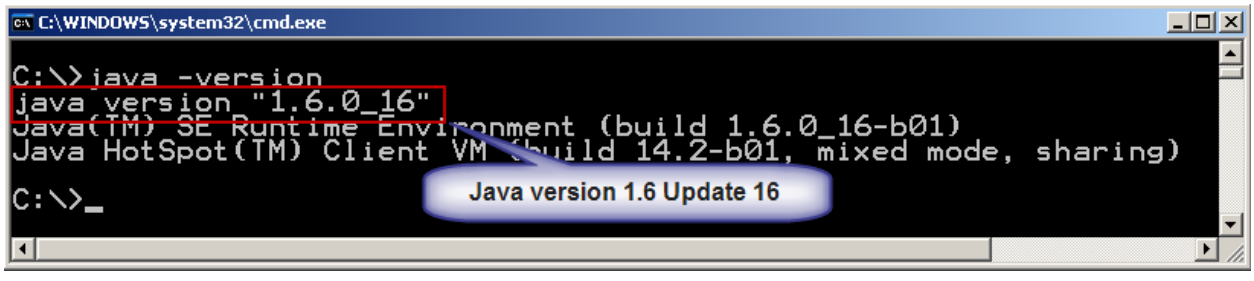
java –version





To install Java for Windows perform the following:

1. Download and run the installer for Java for Windows Version 6 Update 16 or greater located at http://www.java.com/en/.
2. From a command prompt, type **java –version** and verify the installed version.



Trouble Shooting Tip
If the version does not reflect the version downloaded, ensure that another version of Java was not previously installed in another location, which can include ORACLE databases. The PATH environment variable, which is used for many different things, also contains all paths for Java that have been installed. From the command prompt, type **set | findstr /i "^path="** *to review the PATH environment variable. Ensure that the bin directory in the path that Java was just installed into appears first in the environment variable.*

2.6 MySQL Server (Required for Sandbox)

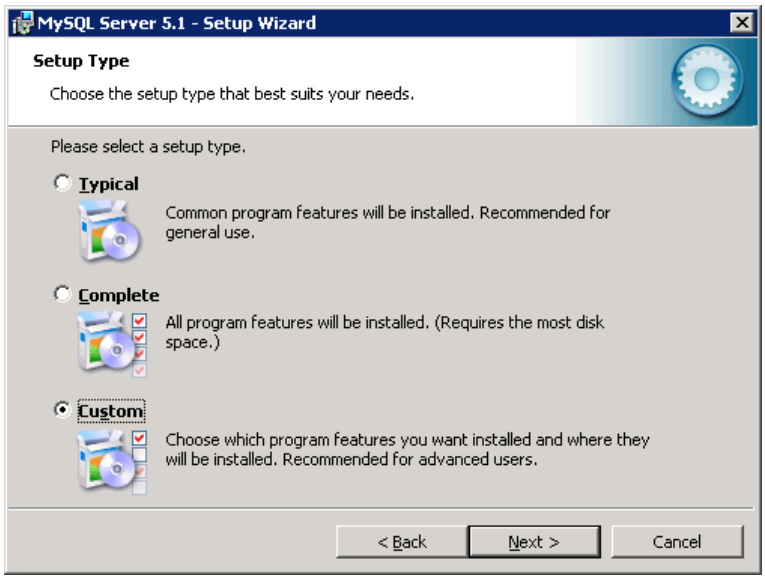
MySQL is the physical database where the Sandbox Service will store the reference data as triples. The setup process has two stages, installation and instance configuration. The installer will automatically launch the configuration tool. This guide will provide detailed instructions for both stages.

2.6.1 MySQL Server Installation

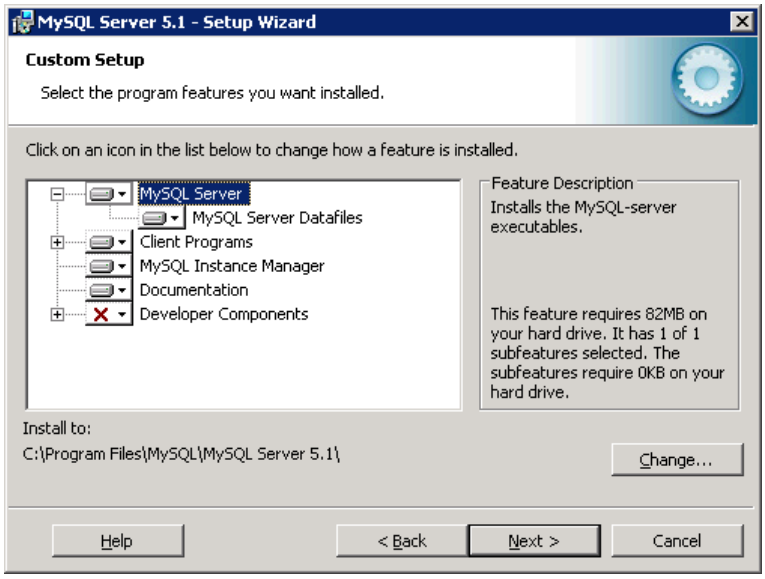
To install the MySQL database, run the downloaded MSI file for MySQL Community Server 5.1 and complete the following steps:

1. On the welcome screen click the **Next** button.

2. The **Typical** setup is generally acceptable, but you may want to change the installation location or specify other options. Select the **Custom** setup and click the **Next** button.



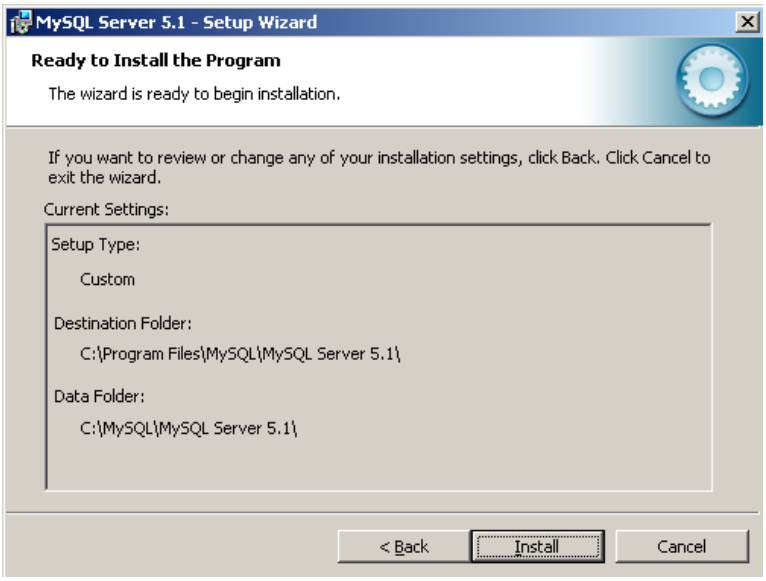
3. The typical settings will be the basis of the **Custom** setup type, but the installer will have the opportunity to change each setting along the way. Select the **Custom** setup type and click the **Next** button.
4. The **Custom Setup** screen gives lets you change the default paths for where the software components and data files will be installed. This is required in most enterprise environments. The locations that you should choose will likely be determined by your server standards. If your environment does not have any such standards, the defaults are recommended.



   a. Click on **MySQL Server** and verify the **Install To:** location.
   b. Click **Change** to change the location if necessary.
   c. Click on **MySQL Server Datafiles** and verify the **Install To:** location.
   d. Click **Change** to change the location if necessary.
   e. Click the **Next** button to continue.

   Note: record the install location as it will be needed later in the Sandbox setup.

5. Review your settings and then click the **Install** button.

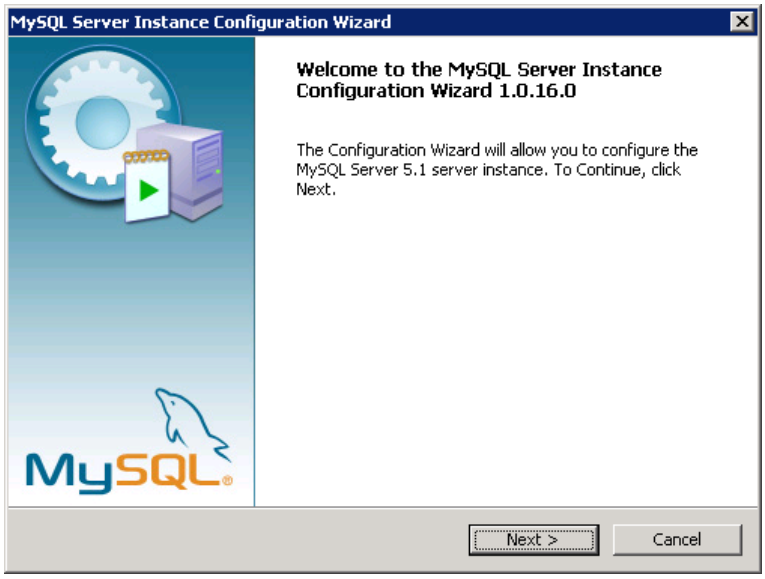


6. When the installation is complete, the **Wizard Completed** screen will appear (there are a couple of information screens first). There are two options on this screen. This guide will not cover the registering of MySQL Server. Ensure that **Configure the MySQL Server now** is checked and then click the **Finish** button.

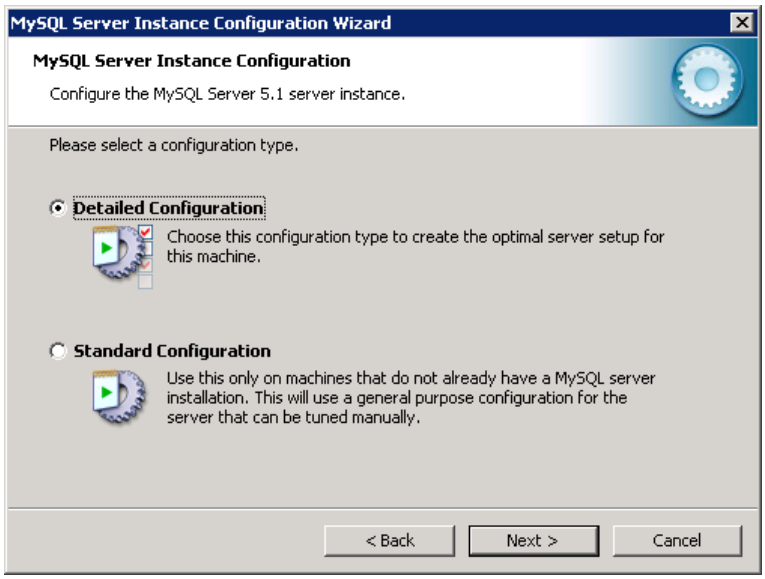
2.6.2 MySQL Server Instance Configuration

The installation should have launched the configuration tool. To configure the MySQL Server instance, complete the following steps:

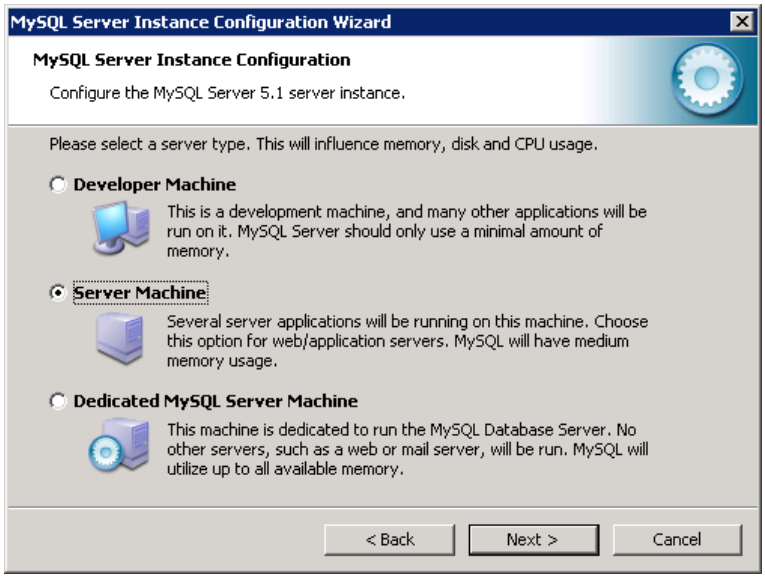
1. On the welcome screen, click the **Next** button.



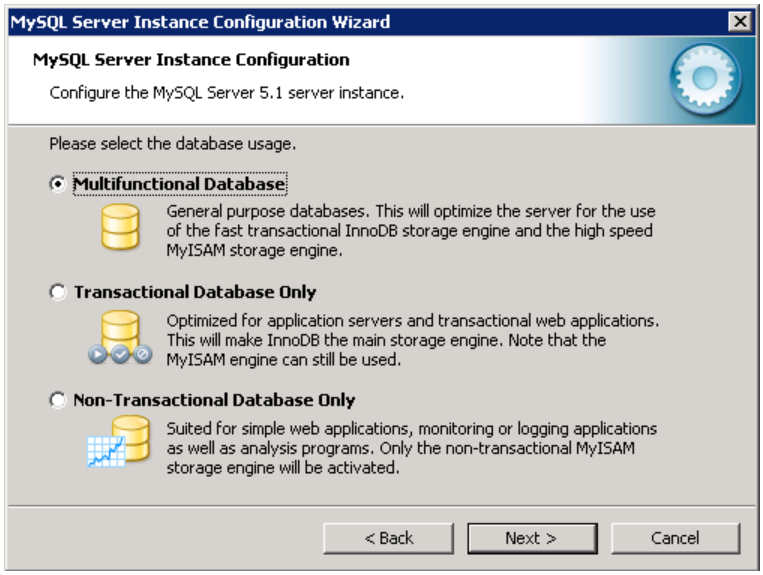
2. The standard configuration will work for the Sandbox Service, but it is recommended that you change the default configuration as follows. Select the **Detailed Configuration** type and click the **Next** button.



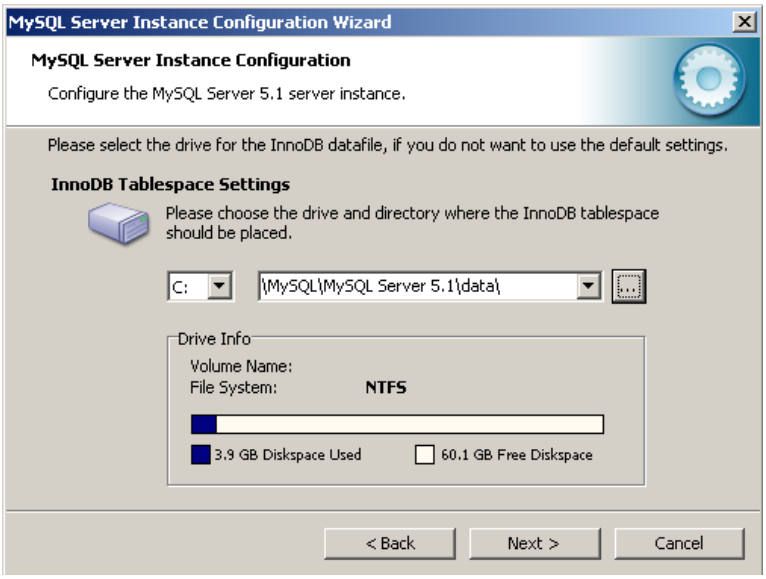
3. Choose the appropriate selection for the host environment and then click the **Next** button.



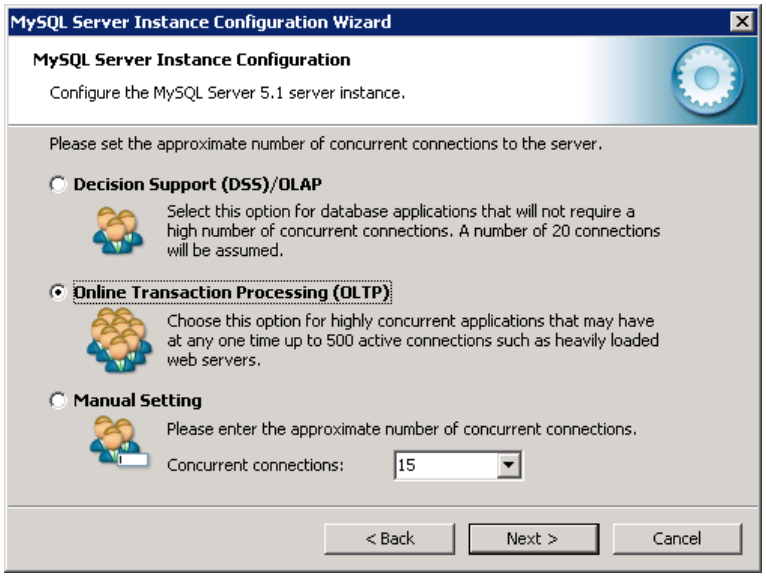
4. The default selection of **Multifunctional Database** will work for ***iRINGTools***. Click the **Next** button.



5. Ensure that the location where InnoDB tablespace data file will be created is the same as was specified during the installation. Note that the default selection of **Installation Path** does not do this. Change the location and then click the **Next** button.

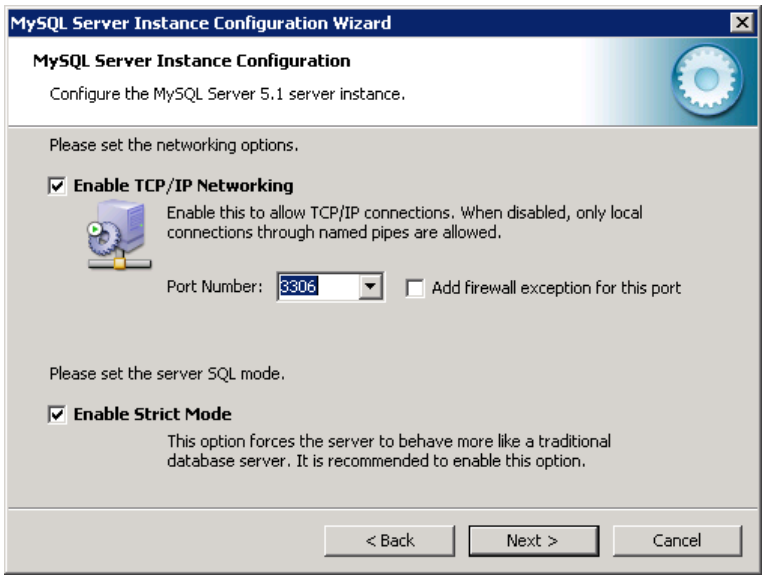


6. Since there could be many concurrent connections to enable federated search and to improve performance, select **Online Transaction Processing (OLTP)** and then click the **Next** button.



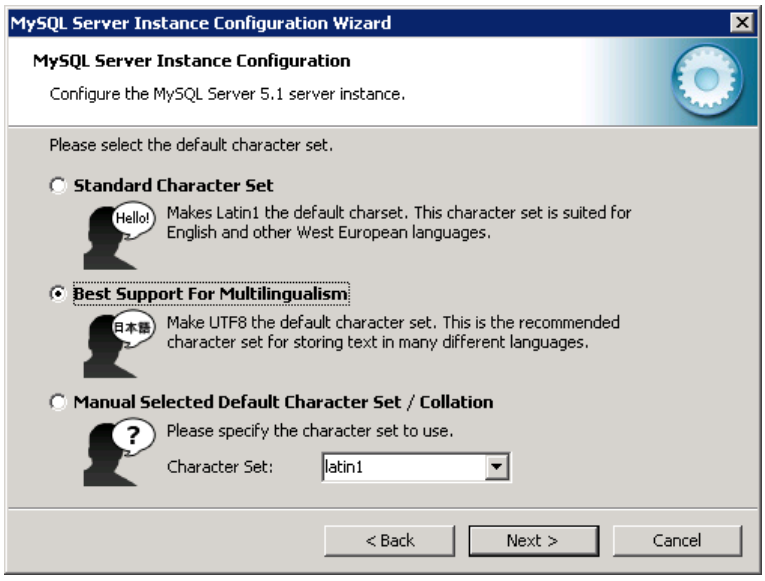
7. For most environments, the default networking options will work fine. Change the **Port Number** if necessary. Click the **Next** button to continue.

> **WARNING:** The installer cannot handle certain situations if the **Add firewall exception for this port** option is checked. This guide recommends adding any firewall rules manually with the utilities provided with the operating system.



Note: record the port number as it will be needed later in the Sandbox setup.

8. Select **Best Support for Multilingualism** option and then click the **Next** button.

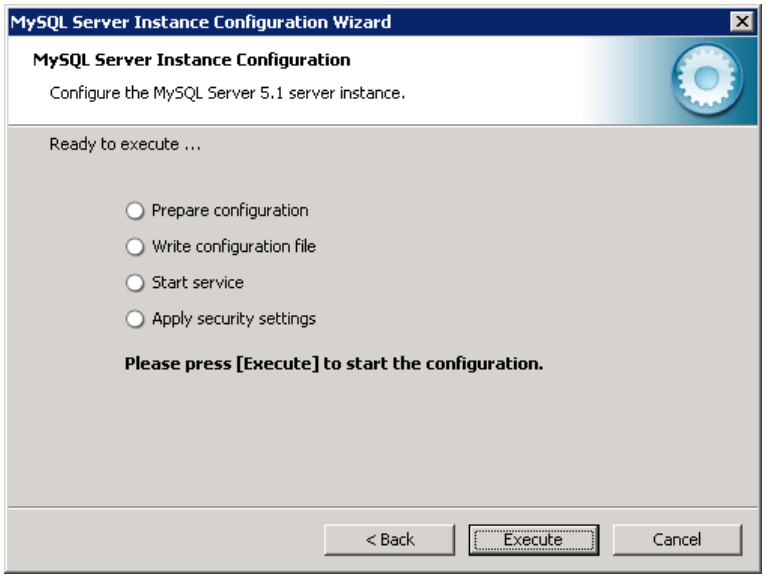


9. Use the default Windows options and then click the **Next** button.

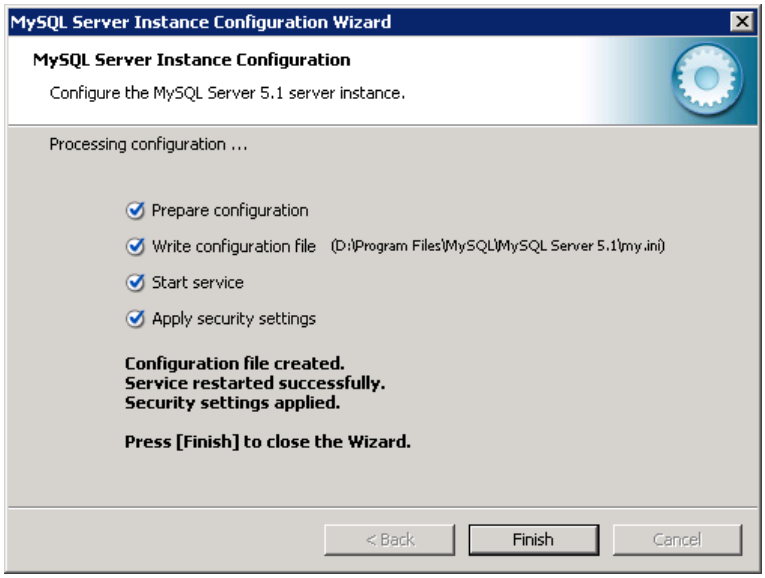
10. Enter and confirm a password for the root user account (this is the system administrator) and then click the **Next** button.

Note: record the password as it will be needed later in the Sandbox setup.

11. On the **Ready to execute** screen, click the **Execute** button.



12. When the configuration is complete, click the **Finish** button to close the wizard.



2.7 SQL Server (Adaptor Only)

A test database is needed to test and verify the ***iRINGTools*** AdapterServer. ***iRINGTools*** supports the following SQL Server database versions.

- SQL Server 2005
- SQL Server 2008
- SQL Server Express 2008

Install these databases in accordance with the database installation instructions. Later in this document, a test database (SQL Server Express 2008) will be created for testing purposes.

2.8 ADO.NET Entity Framework Provider (Adapter Only)

ADO.NET Entity Framework Provider for SQL Server is installed with .NET Framework 3.5 SP 1. For the purposes of the adapter installation in this document, that is all that is needed. If you need ADO.NET Entity Framework Provider for other database types (e.g., Oracle) then you will need to obtain it through third-party providers. The site http://msdn.microsoft.com/en-us/data/dd363565.aspx provides additional information of ADO.NET Entity Framework providers.

3 Installation *iRINGTools* Sandbox

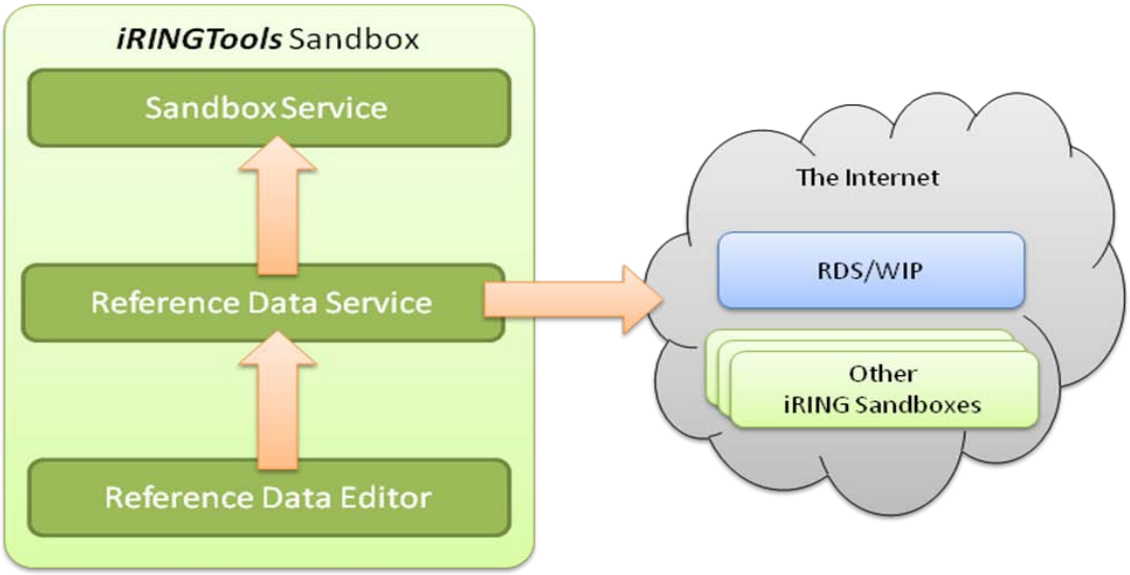
The following sections will describe the ***iRINGTools*** Sandbox components and provide detailed instructions on how to install and configure each component.

3.1 iRINGTools Sandbox Components

The ***iRINGTools*** Sandbox is comprised of three components:

1. Sandbox Service
2. Reference Data Service
3. Reference Data Editor

These components interact with each other as well as the internet to manage the Reference Data contained in the ***iRINGTools*** Sandbox and provide federated search functionality.



The Sandbox Service encapsulates the physical triple store and provides functionality for SPARQL Query and Update.

The Reference Data Service forms the core of the ***iRINGTools*** Sandbox and provides a web service API for performing federated searches across RDSWIP and other configured Sandboxes. The web service API also provides CRUD (Create, Read, Update and Delete) operations on the reference data stored within the Sandbox Service. In this way, the Reference Data Service depends on the Sandbox Service as well as access to the internet.

The Reference Data Editor provides a graphical user interface for searching, navigating, and managing (CRUD) reference data. It uses the Reference Data Service for all of its functionality.

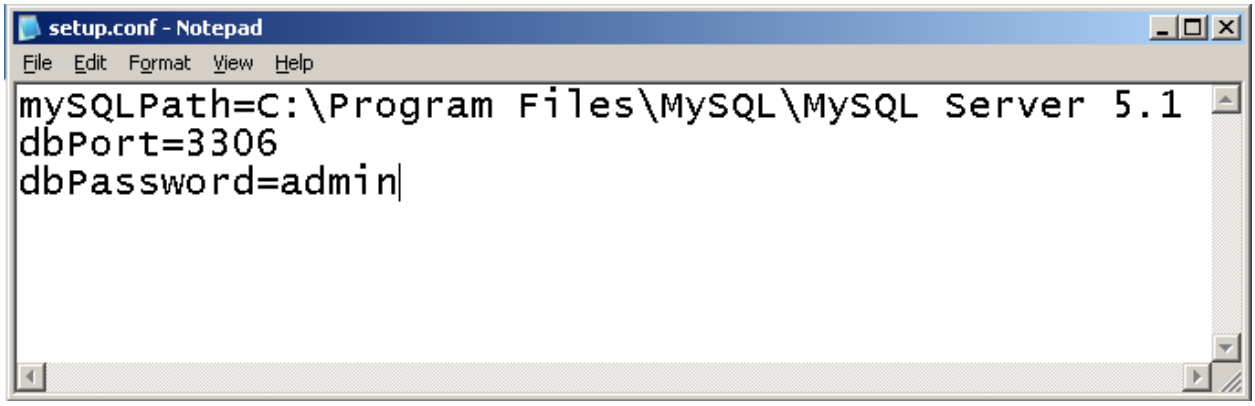
3.2 Localhost versus Server Hostname

The ***iRINGTools*** Sandbox webconfig files use localhost as the initial hostname. It is best to keep localhost as the hostname during installation to making testing easier. Instructions will be provided later in this document on where and how to change the hostname.

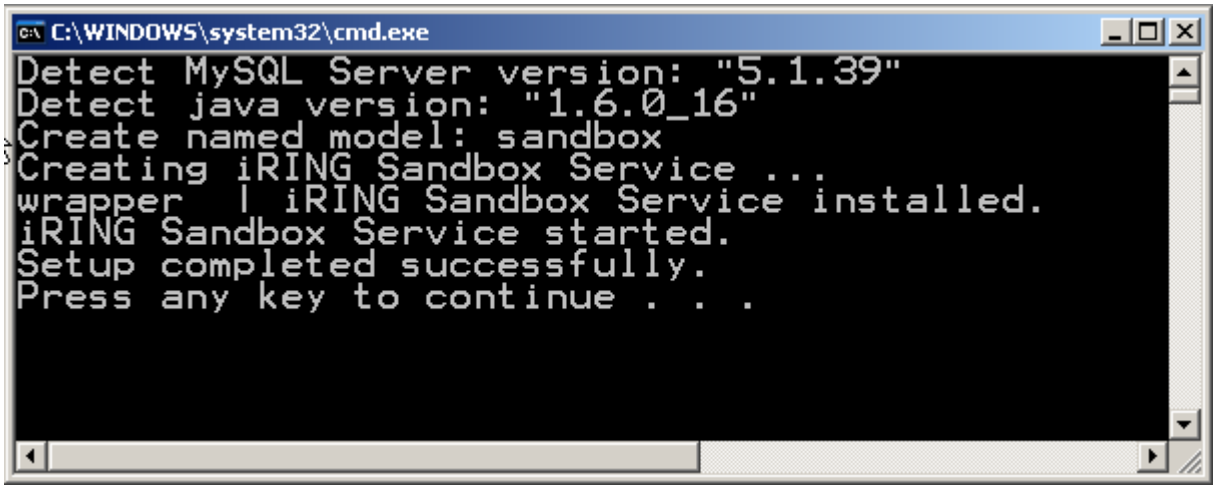
3.3 Sandbox Service Setup

To configure the Sandbox Setup service, perform the following:

1. Open the file iRINGWeb\SandboxService\setup.conf in a text editor (e.g., Notepad) and modify the contents to match your installation (i.e., MySQL path, port and password). Save the file.



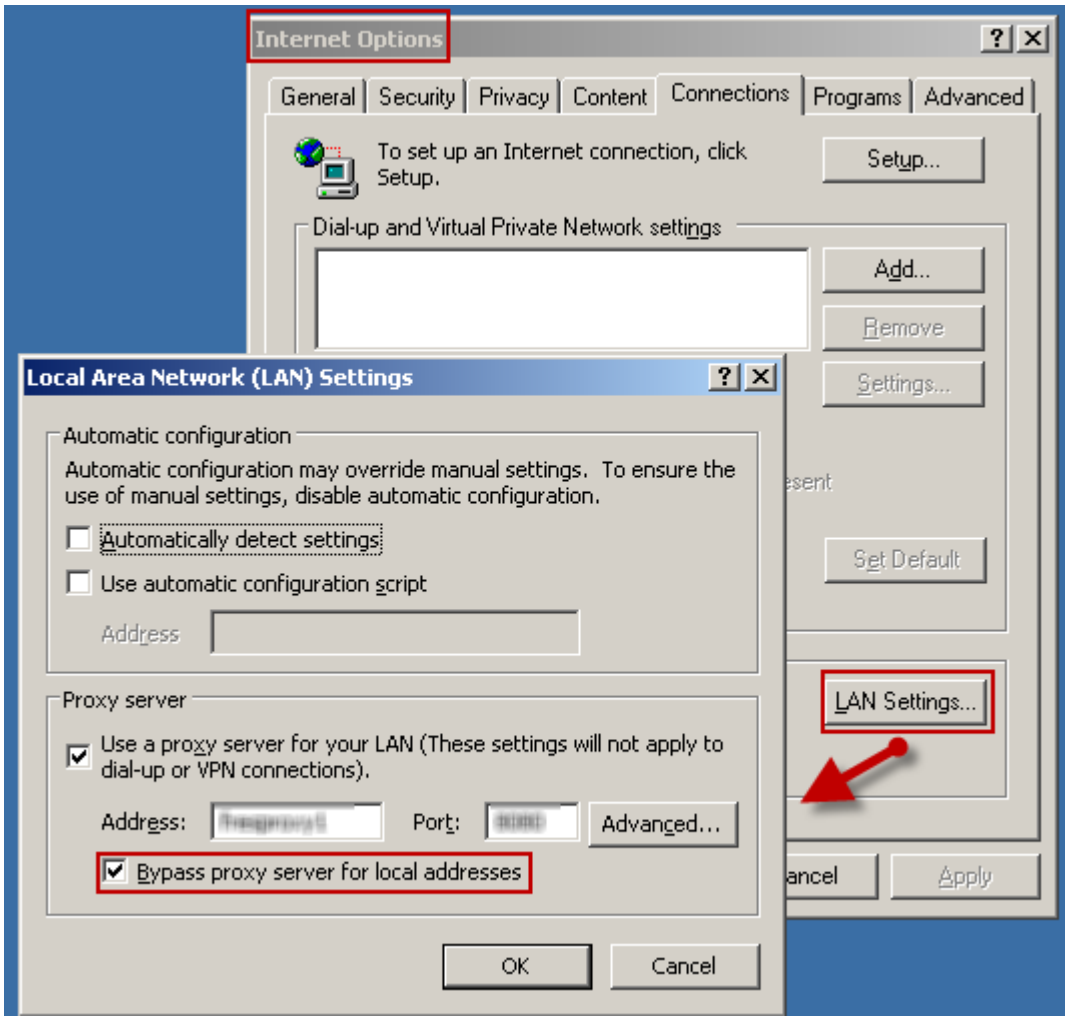
2. Open a command window and execute iRINGWeb\SandboxService\setup.cmd. This will create the MySQL database and the ***iRINGTools*** Sandbox windows service based on the settings in setup.conf.



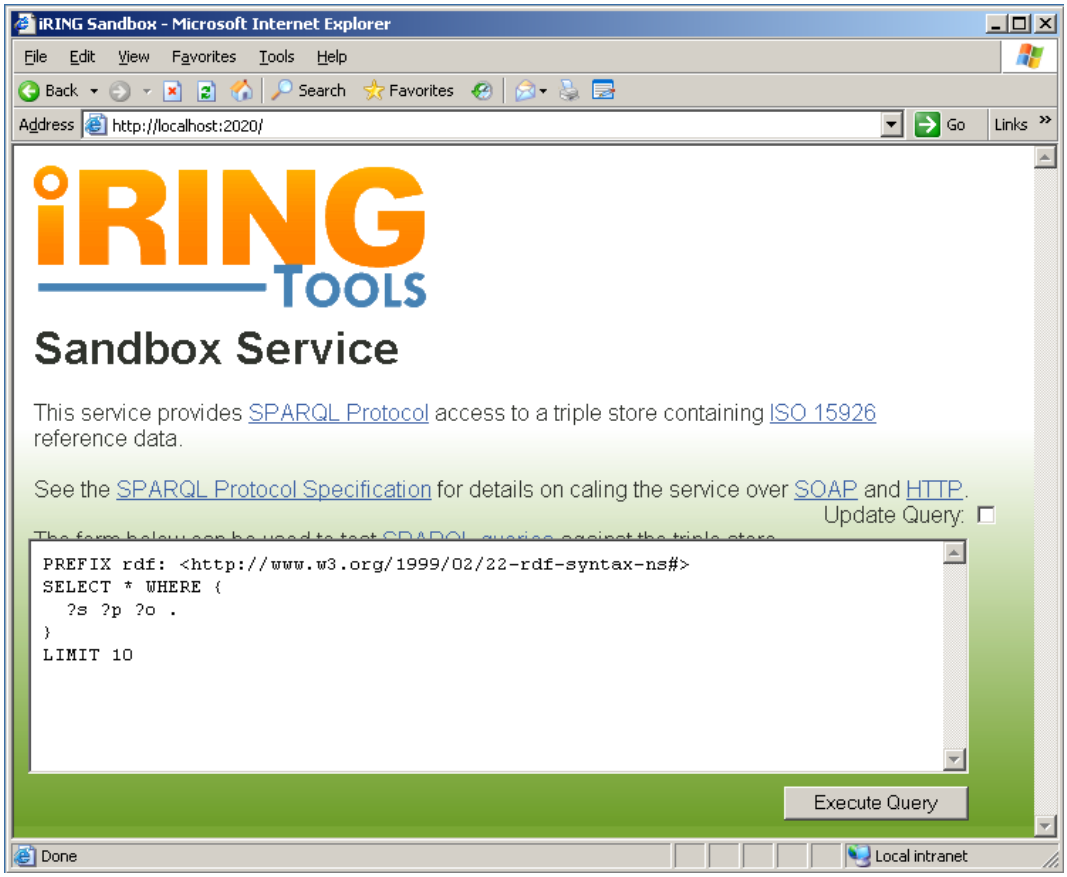
3.4 Testing Sandbox Service

To confirm the Sandbox Service installed correctly, perform the following.

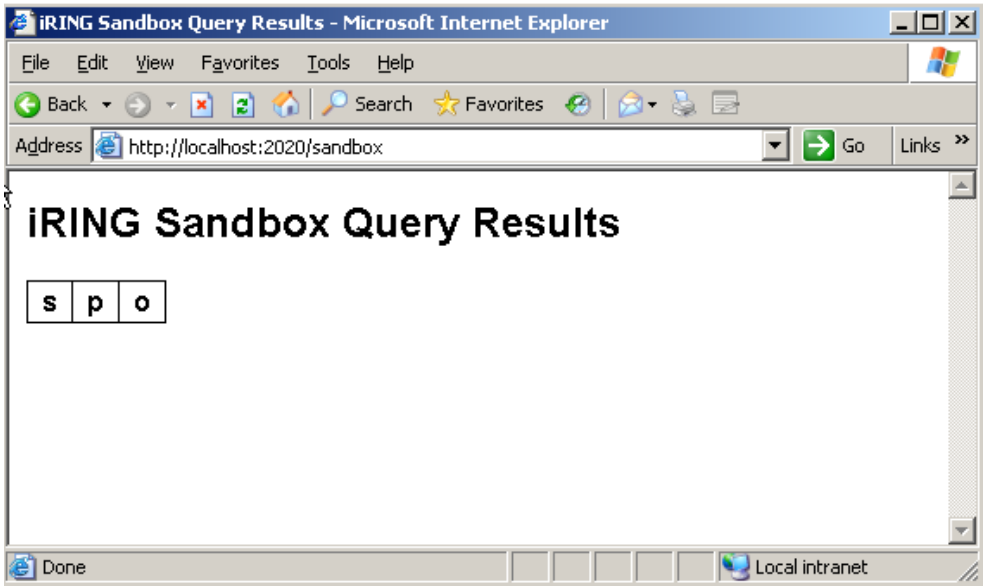
Note: To access the localhost, you may need to configure your Internet Options first. Open Internet Options, select the Connections tab, select LAN Settings and ensure Bypass proxy server for local addresses is checked. Save the settings and close the browser before proceeding.



1. In your web browser, open the address http://localhost:2020/. You should see the following (or something very similar).



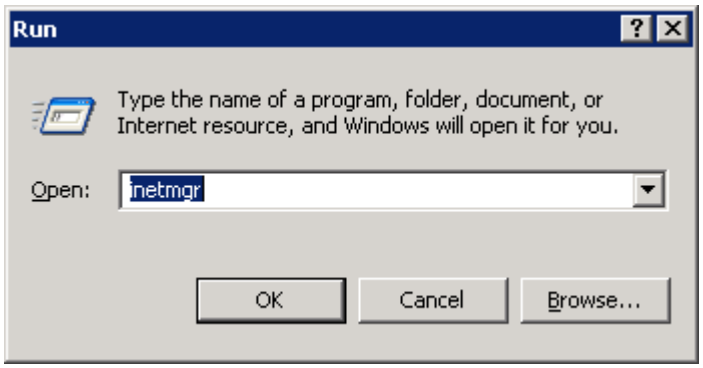
2. Click the Execute Query button. You should see the following result.



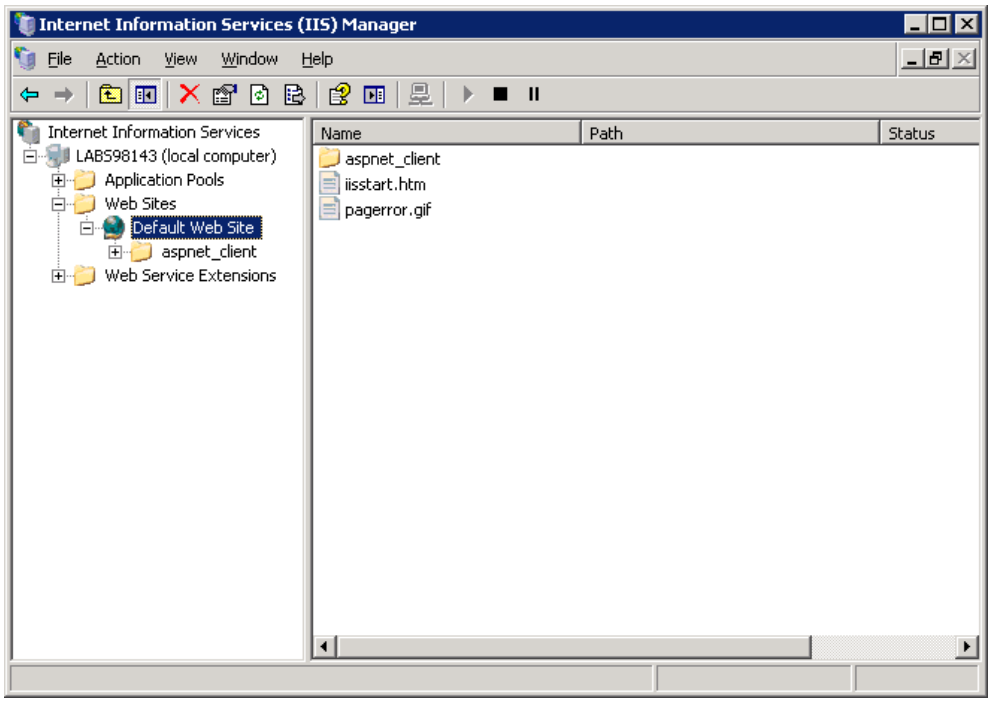
3.5 Creating Virtual Directory for RefDataService

Create the RefDataService virtual directory in IIS by performing the following steps.

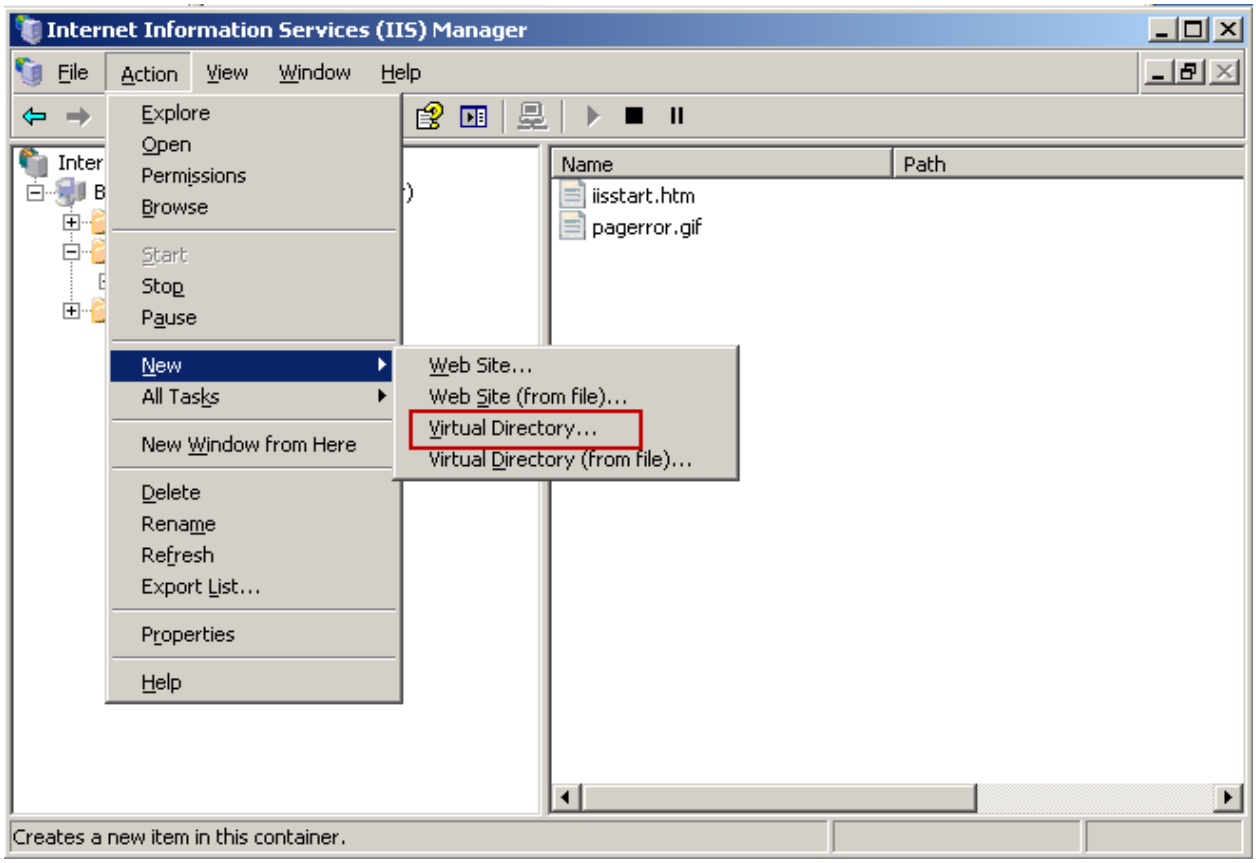
1. Start IIS Manager. One way to do this is to use Run from the Start menu. Type the command inetmgr.



2. In IIS Manager, select Default Web Site in the Web Site folder.

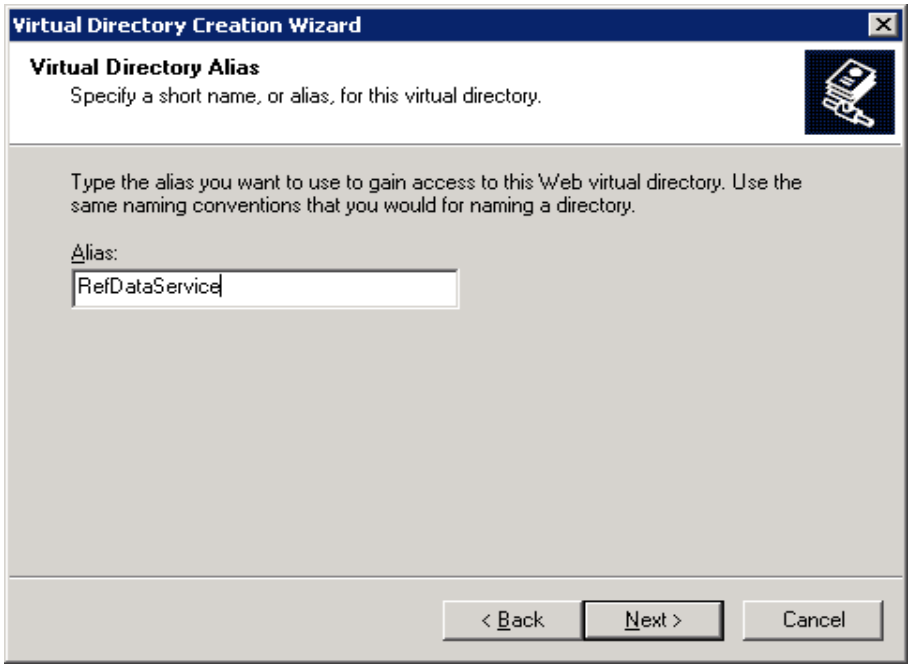


3. From the main menu, select Action > New > Virtual Directory.

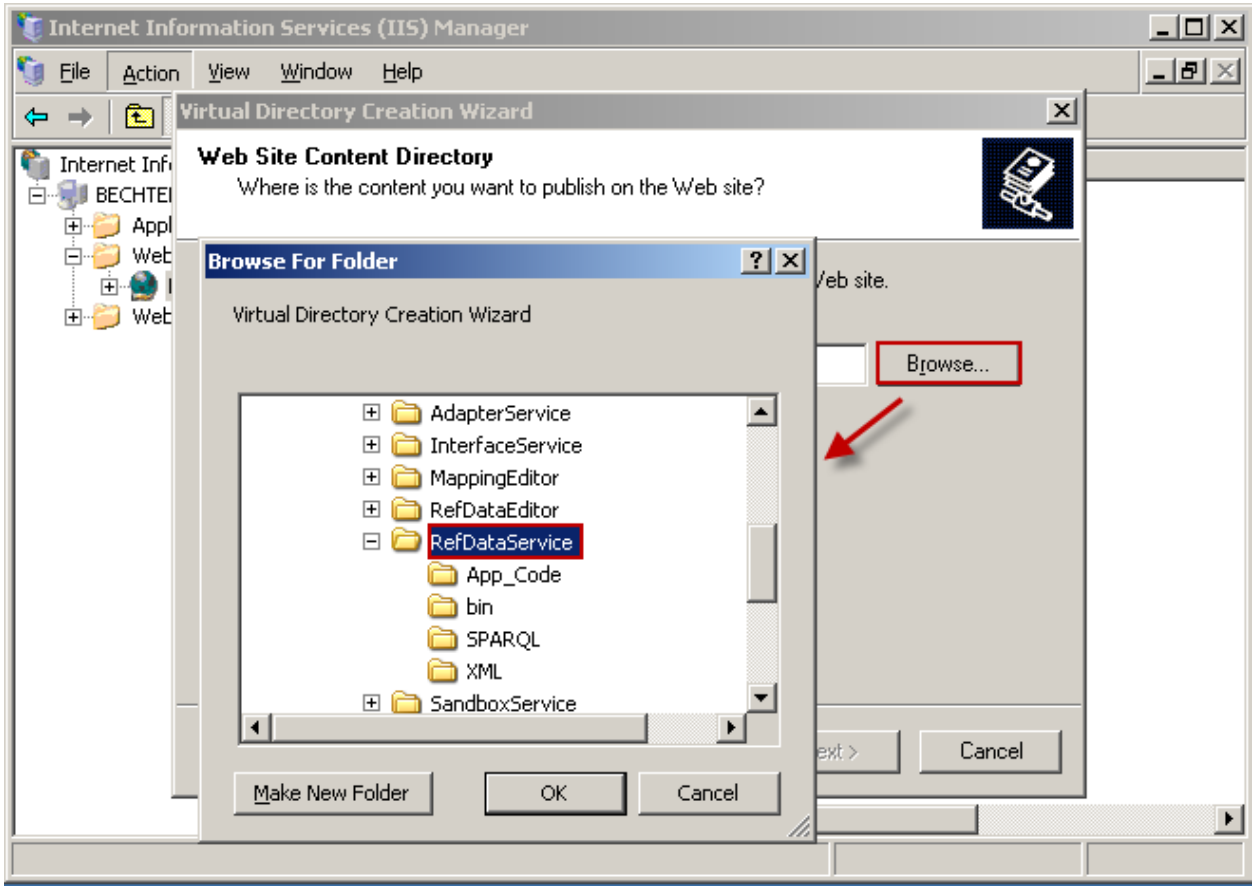


4. The Virtual Directory Creation wizard starts. Click the next button.

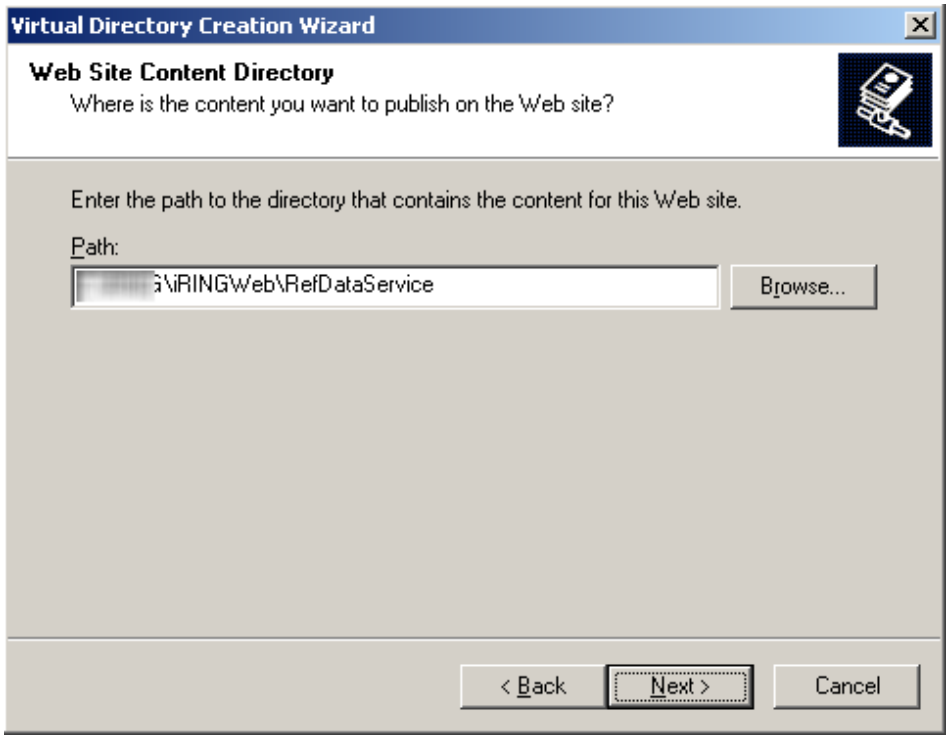
5. Name the virtual directory as RefDataService and then click the Next button.



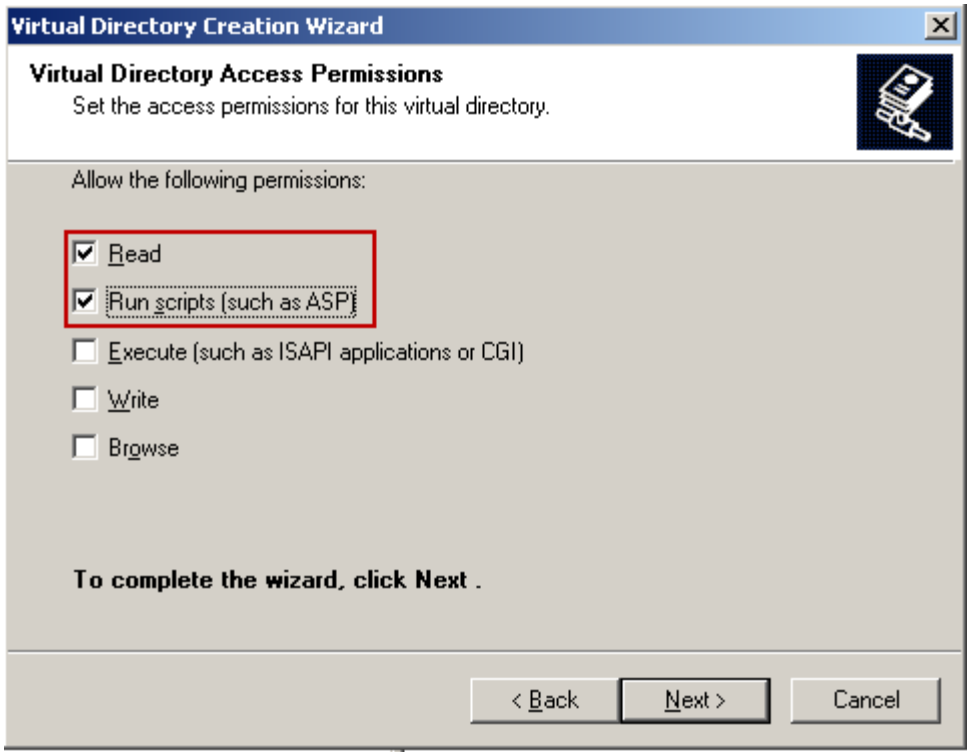
6. Browse to the iRingWeb\RefDataService folder (installed earlier).



7. Click the Next button.

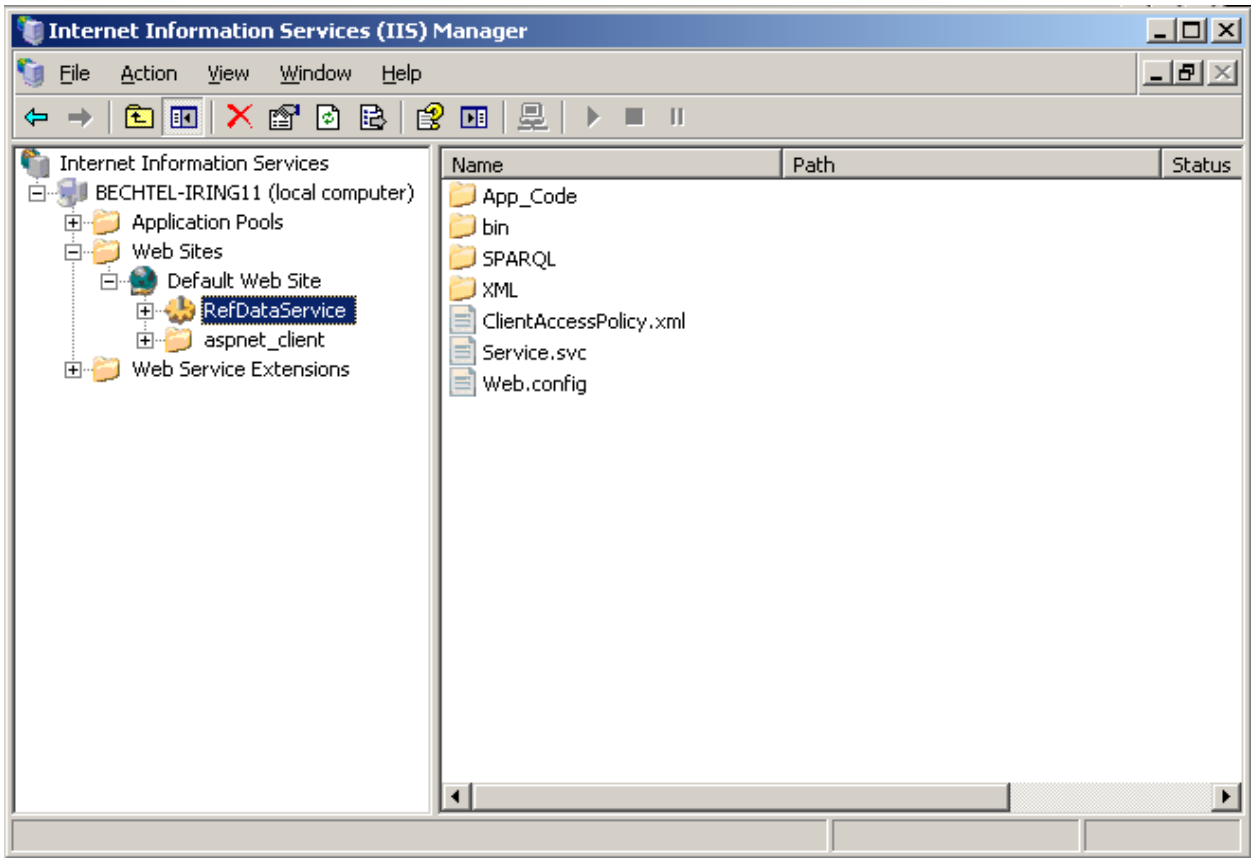


8. Select the permissions Read and Run Scripts and then click the Next button.



9. The virtual directory setup is complete. Click the Finish button to close the wizard.

10. The virtual directory appears in the Default Web Site Folder.

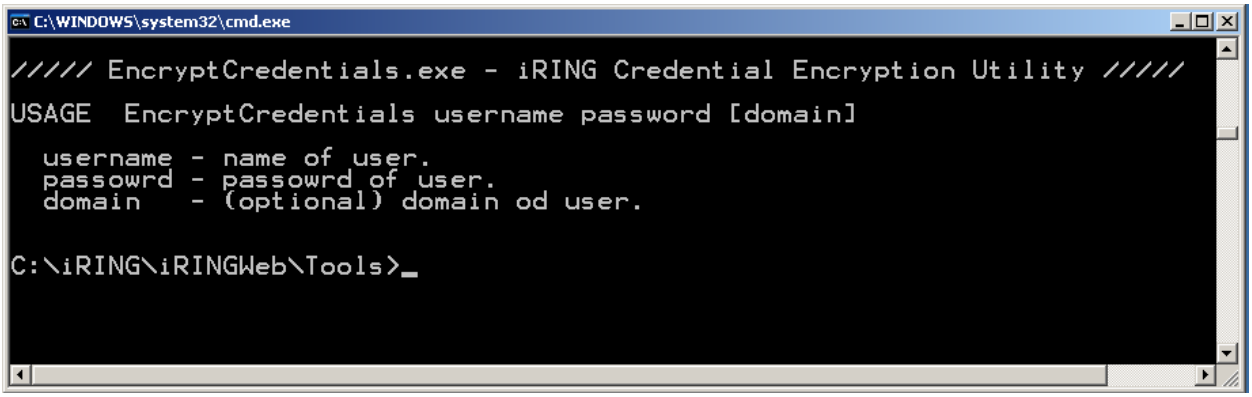


3.6 Configuring Reference Data Service

The following sections provide details for configuring the reference data service.

3.6.1 Creating Credential Tokens

The parameters RegistryCredentialToken and ProxyCredentialToken in the Web.config provide credentials needed to access the internet (if the server is behind a firewall) and to generate IDs for new ISO 15926 classes. For security purposes, this information is encrypted with a FIPS 140-2 utility. The utility is called EncryptCredentials and it is located in iRingWeb\Tools. The utility generates an encrypted string for the specified data.

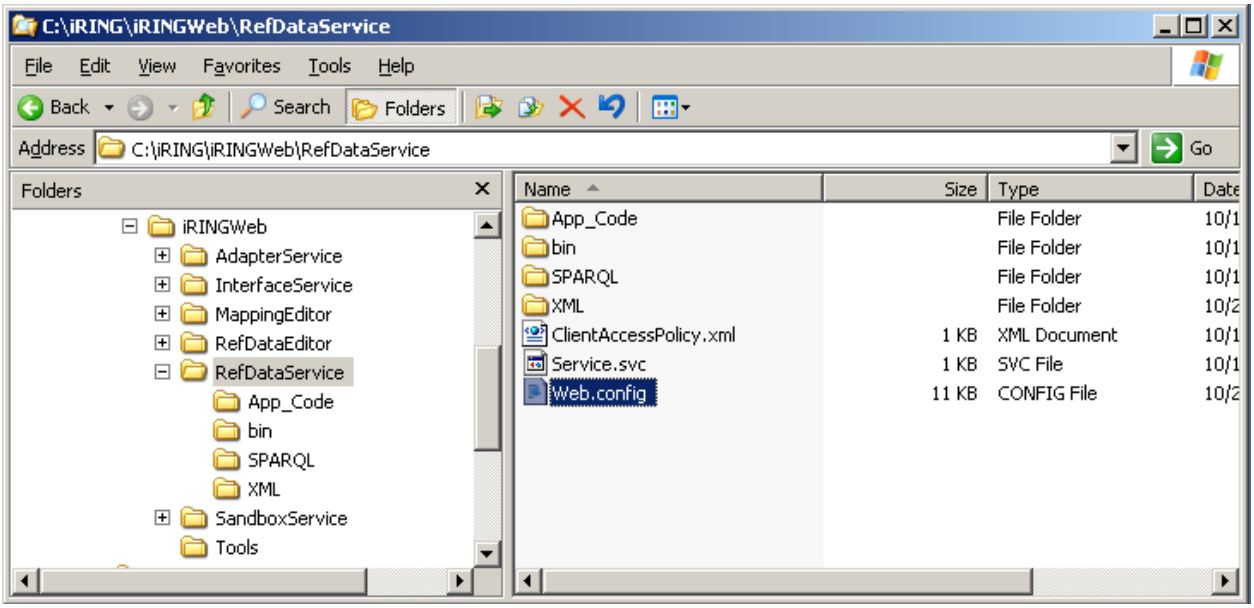


Use this utility when prompted to create encrypted tokens that will be stored in the Web.config file.

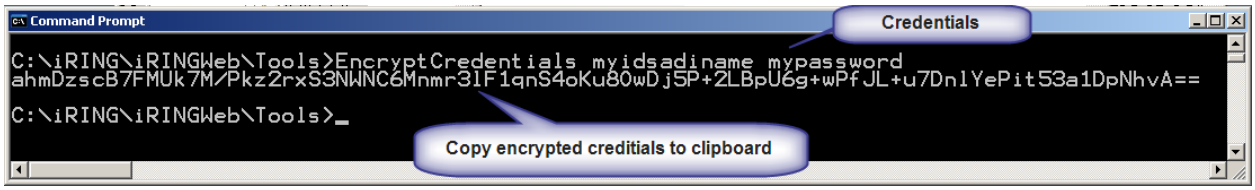
3.6.2 Modify RefDataService Web.config

Modify the RefDataService Web.config file as follows.

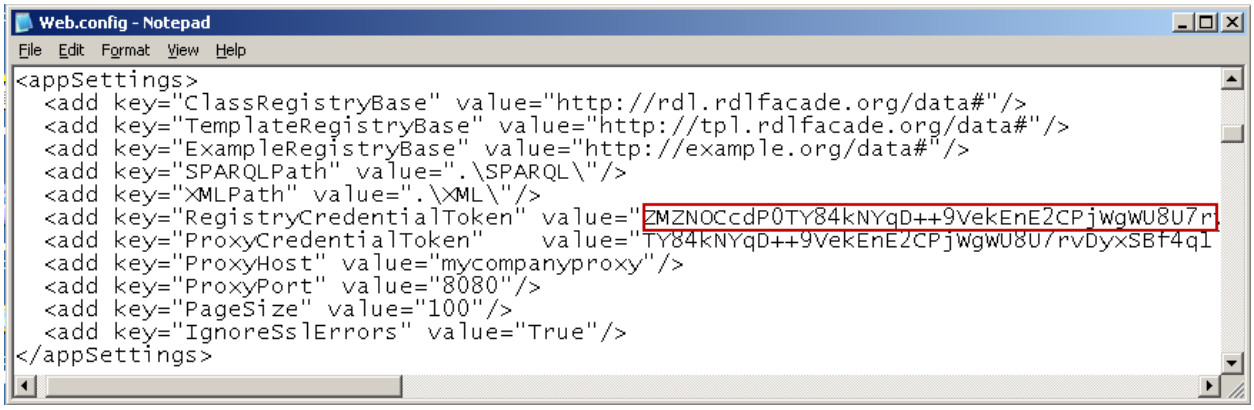
1. Open the file Web.config file located in the iRINGWeb\RefDataService in a text editor.



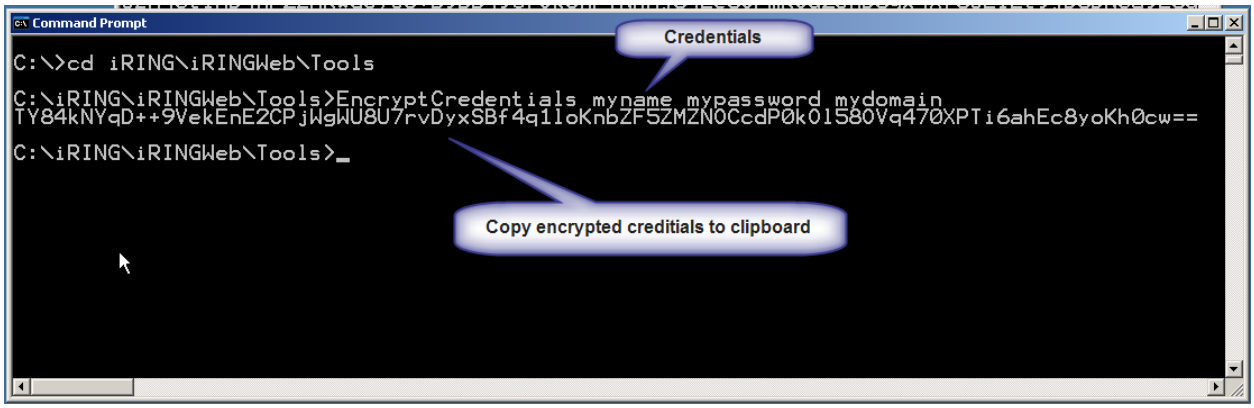
2. Credentials are needed to generate new IDs for classes, templates and roles. This requires a valid ids-adi identity. Create an encrypted token with the EncryptCredentials utility in iRingWeb\Tools. Enter the ids-adi account username and password. Copy the resulting encrypted string to the clipboard.



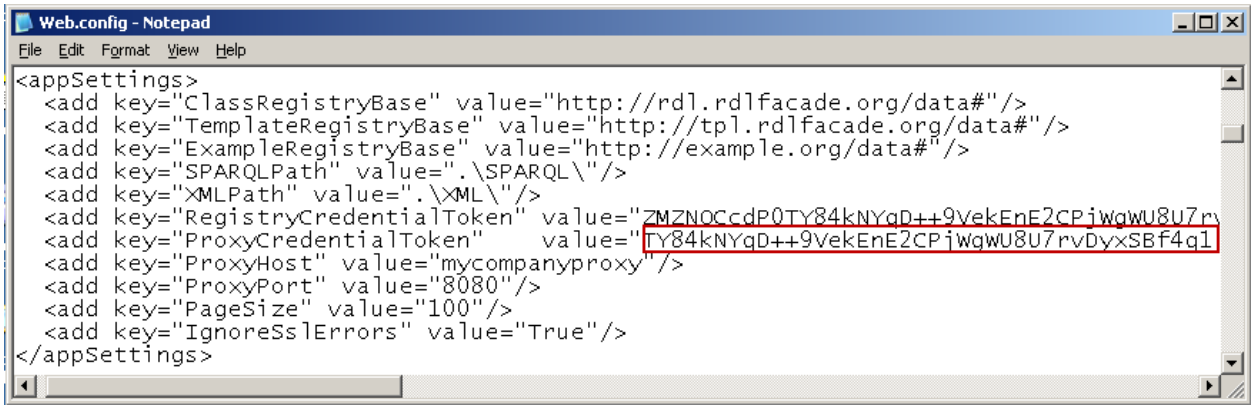
3. In the file Web.config, locate the RegistryCredentialToken key in appSettings. Paste the token in the value between the double quotes. The RegistryCredentialToken value cannot be empty.



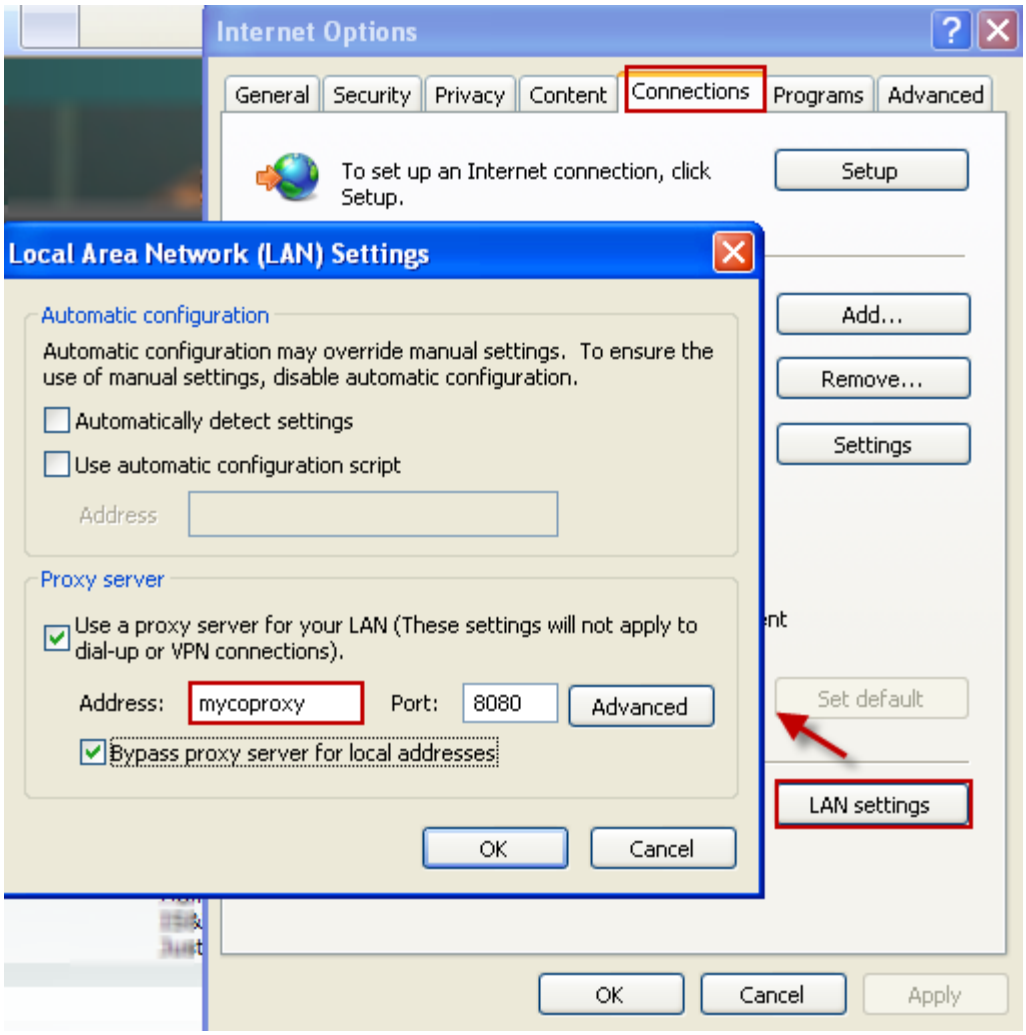
4. If your server is behind a firewall, then credentials are needed to access the internet. Create an encrypted token with the EncryptCredentials utility in iRingWeb\Tools. Enter the username, password and optionally the domain. Copy the resulting encrypted string to the clipboard.



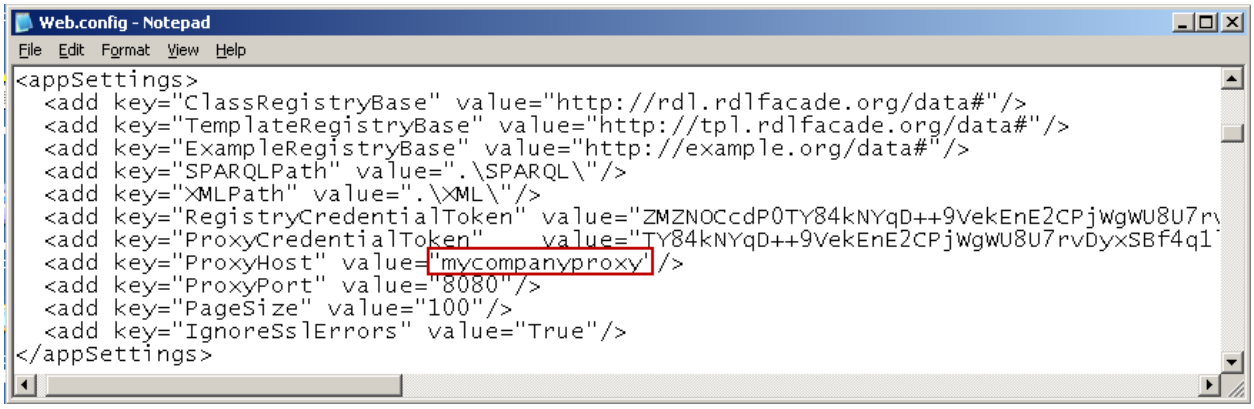
5. In the file Web.config, locate the ProxyCredentialToken key in appSettings. Paste the token in the value between the double quotes. **Note**: If proxy credentials are not required, then leave the value empty.



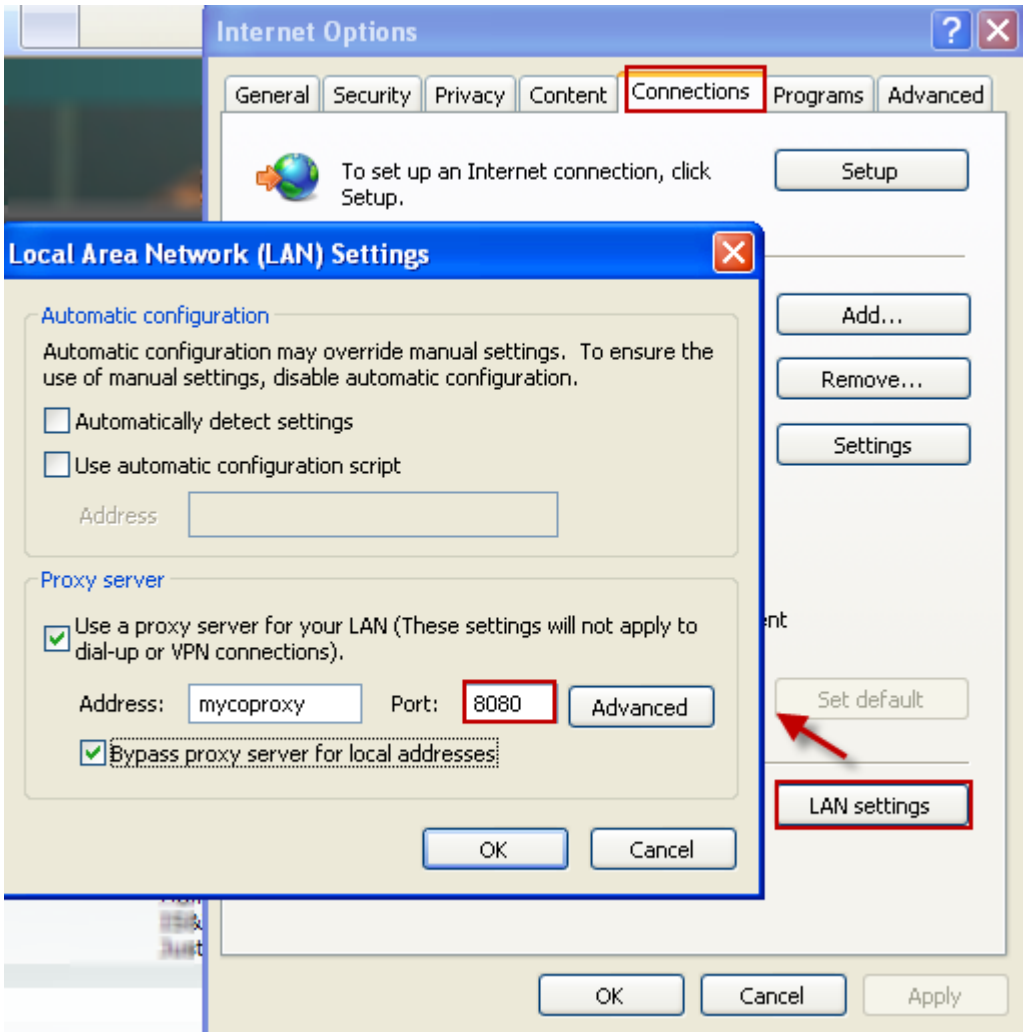
6. In the file Web.config, locate the ProxyHost key in appSettings. Enter the ProxyHost needed to access the internet. This can be found in Internet Options on the Connections tab in the LAN settings.



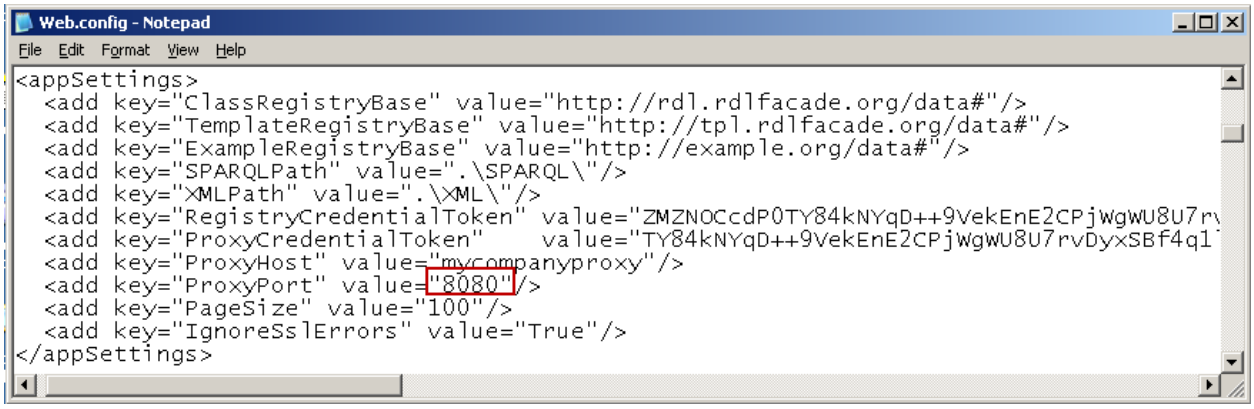
7. Enter the ProxyHost in the value between the double quotes. If there is no ProxyHost, then leave the value empty.



8. In the file Web.config, locate the ProxyPort key in appSettings. Enter the ProxyPort needed to access the internet. This can be found in Internet Options on the Connections tab in the LAN settings.



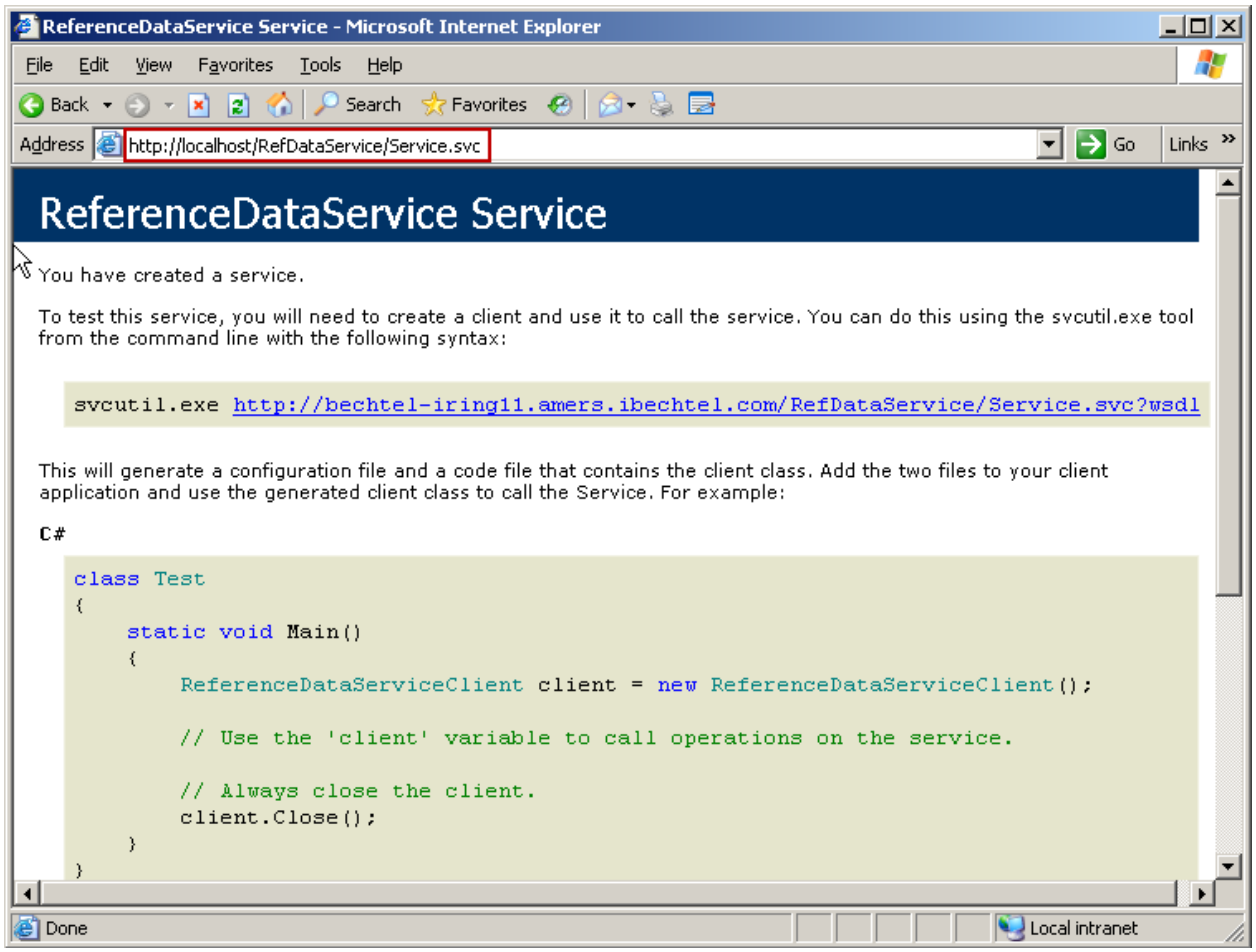
9. Enter the ProxyPort in the value between the double quotes. If there is no ProxyPort, then leave the value empty.



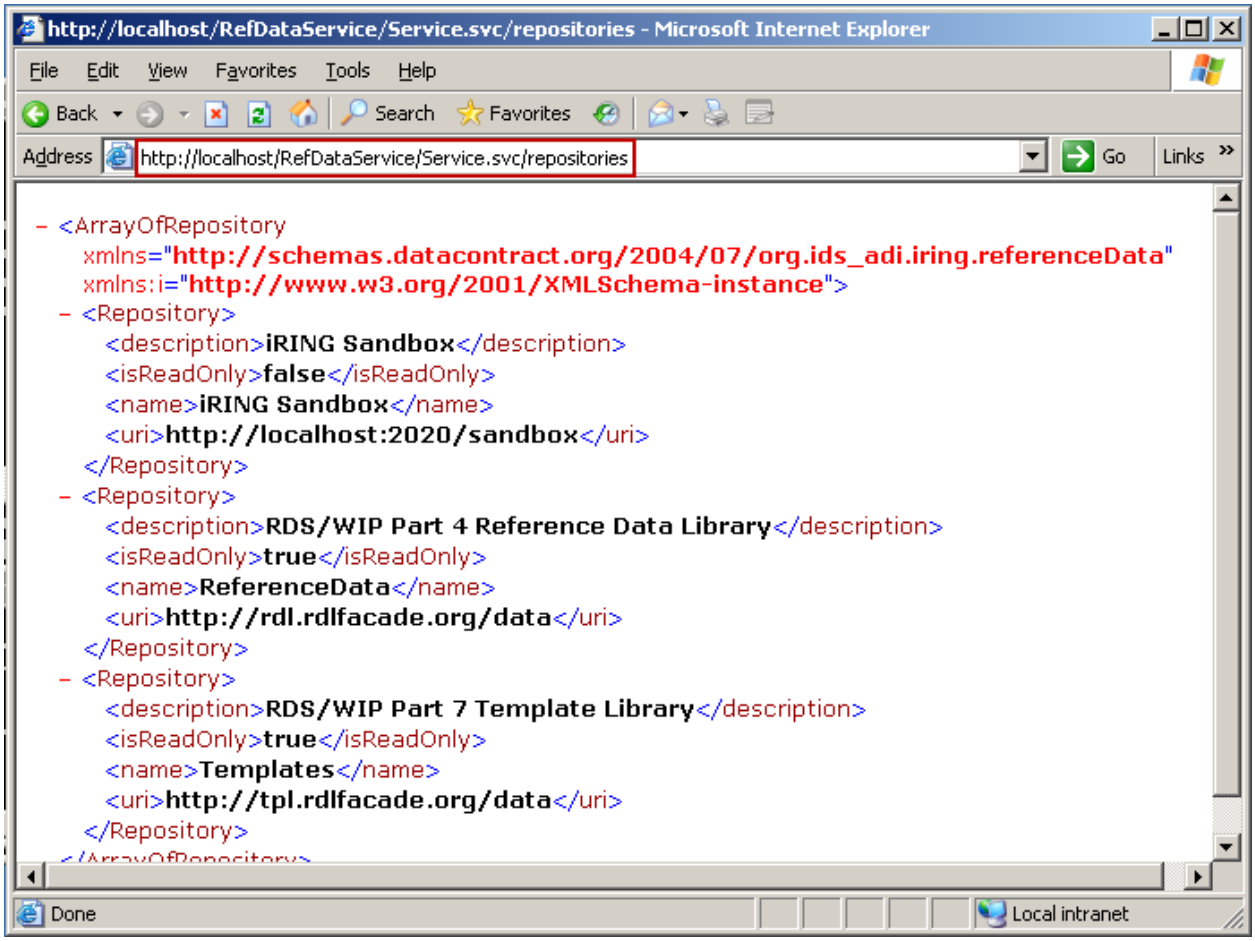
10. Save the changes to the file Web.config and close it.

3.7 Testing Reference Data Service

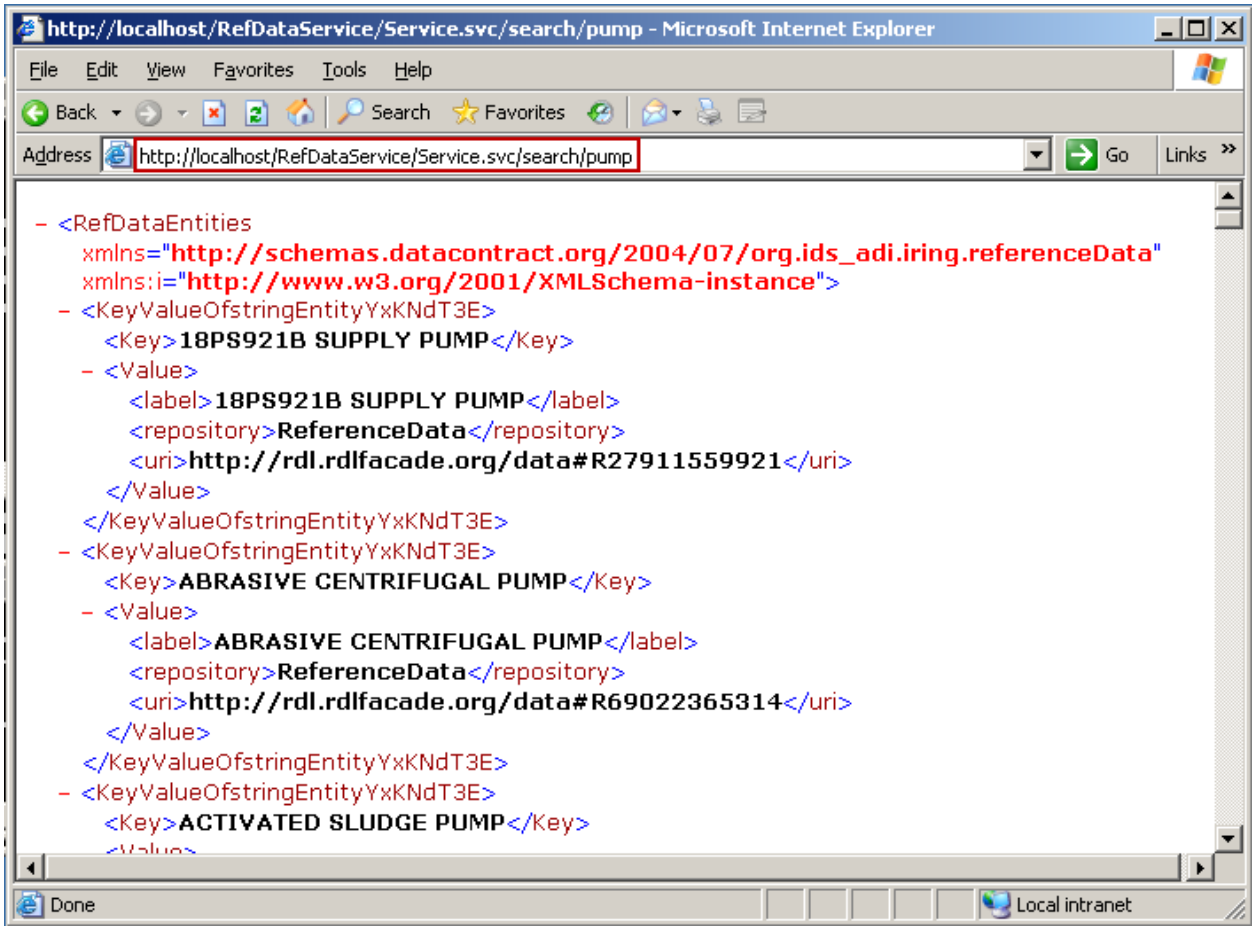
Test the Reference Data Service for IIS and compilation by opening your browser on the server and entering the address http://localhost/RefDataService/Service.svc. You should see the following.



Test the Reference Data Service basic configuration, file paths and identities by opening your browser on the server and entering the address http://localhost/RefDataService/Service.svc/repositories. You should see the following (or some other XML content very similar).



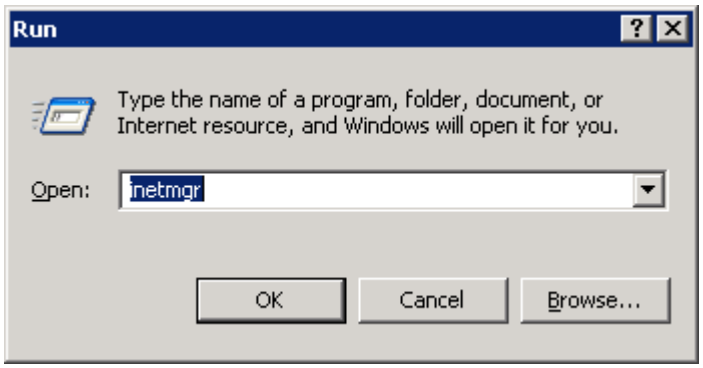
Test the Reference Data Service with each repository and federate the results by opening your browser on the server and entering the address http://localhost/RefDataService/Service.svc/search/pump. You should see the following.



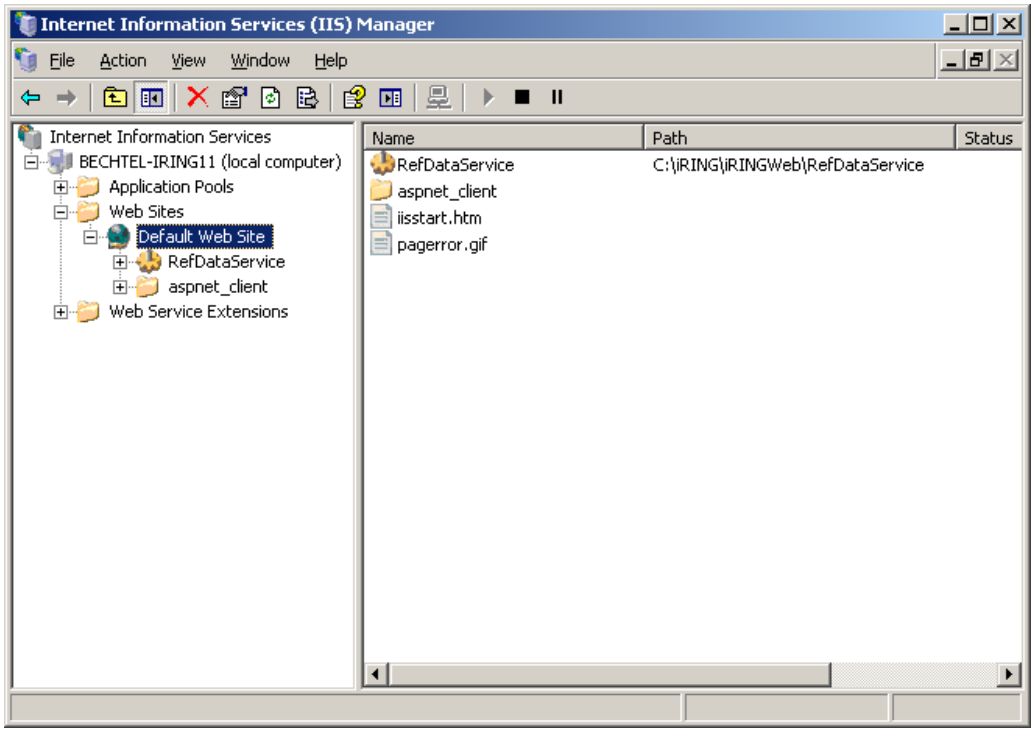
3.8 Creating Virtual Directory for Reference Data Editor

Create the RefDataEditor virtual directory in IIS by performing the following steps.

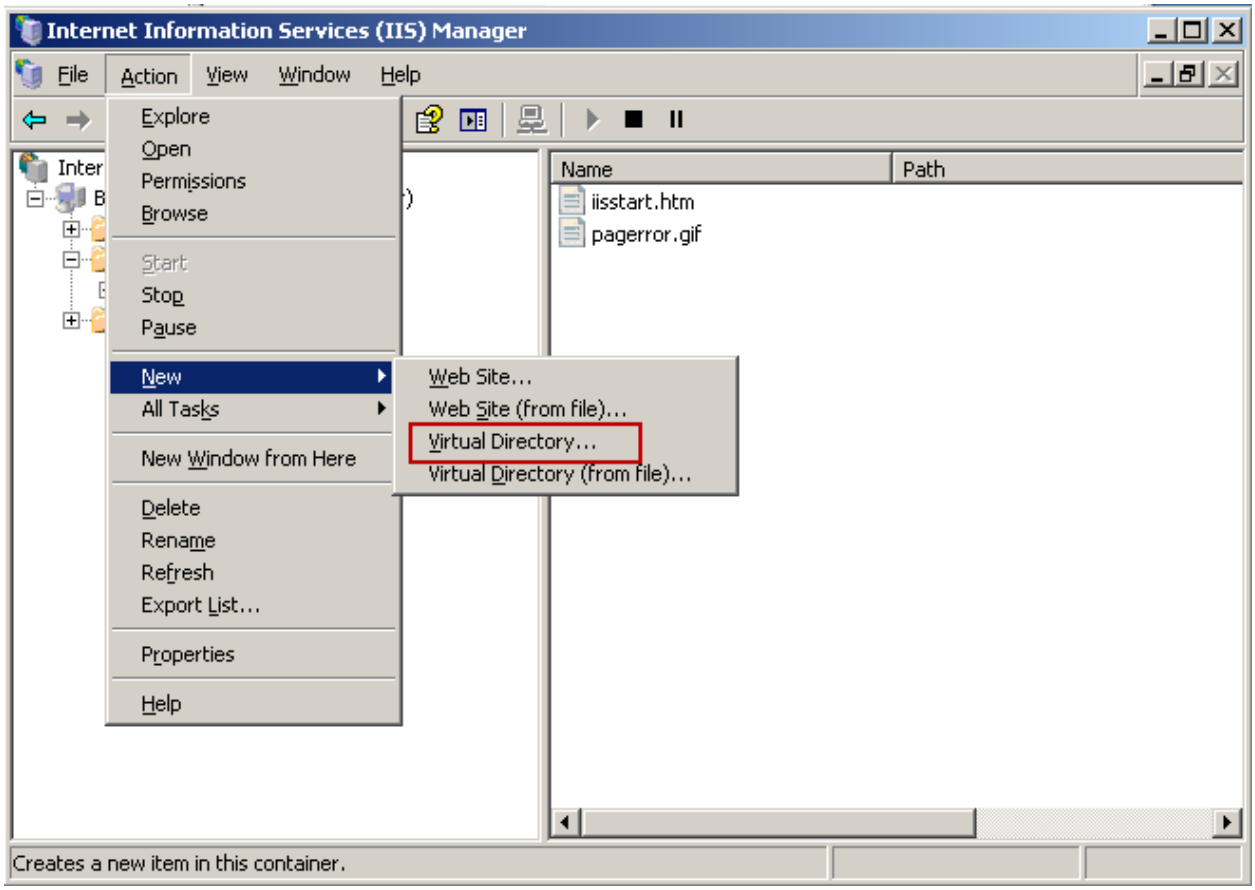
1. Start IIS Manager. One way to do this is to use Run from the Start menu. Type the command inetmgr.



2. In IIS Manager, select Default Web Site in the Web Site folder.

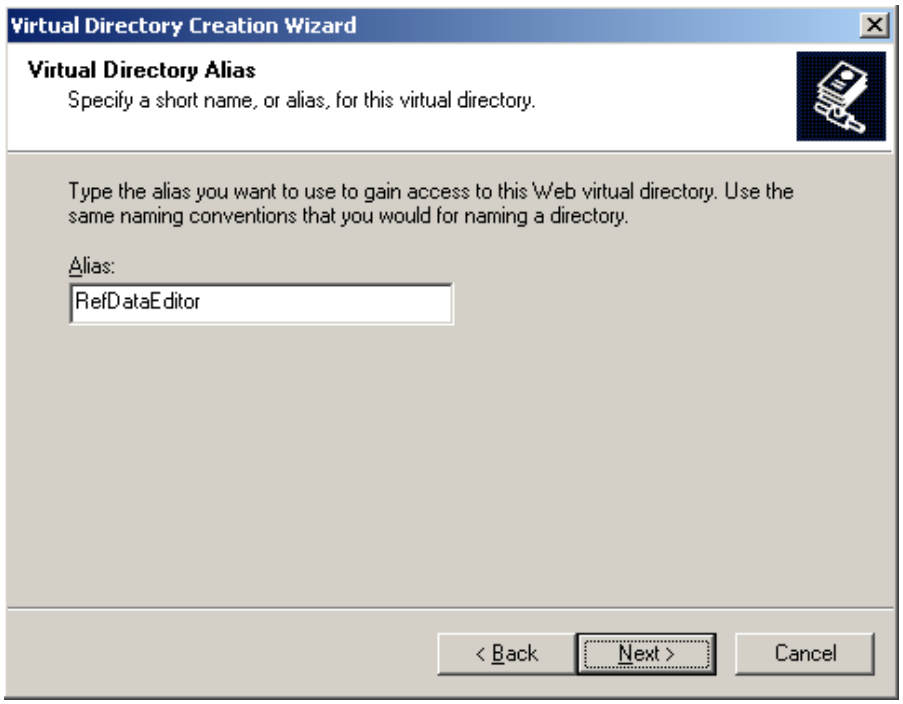


3. From the main menu, select Action > New > Virtual Directory.

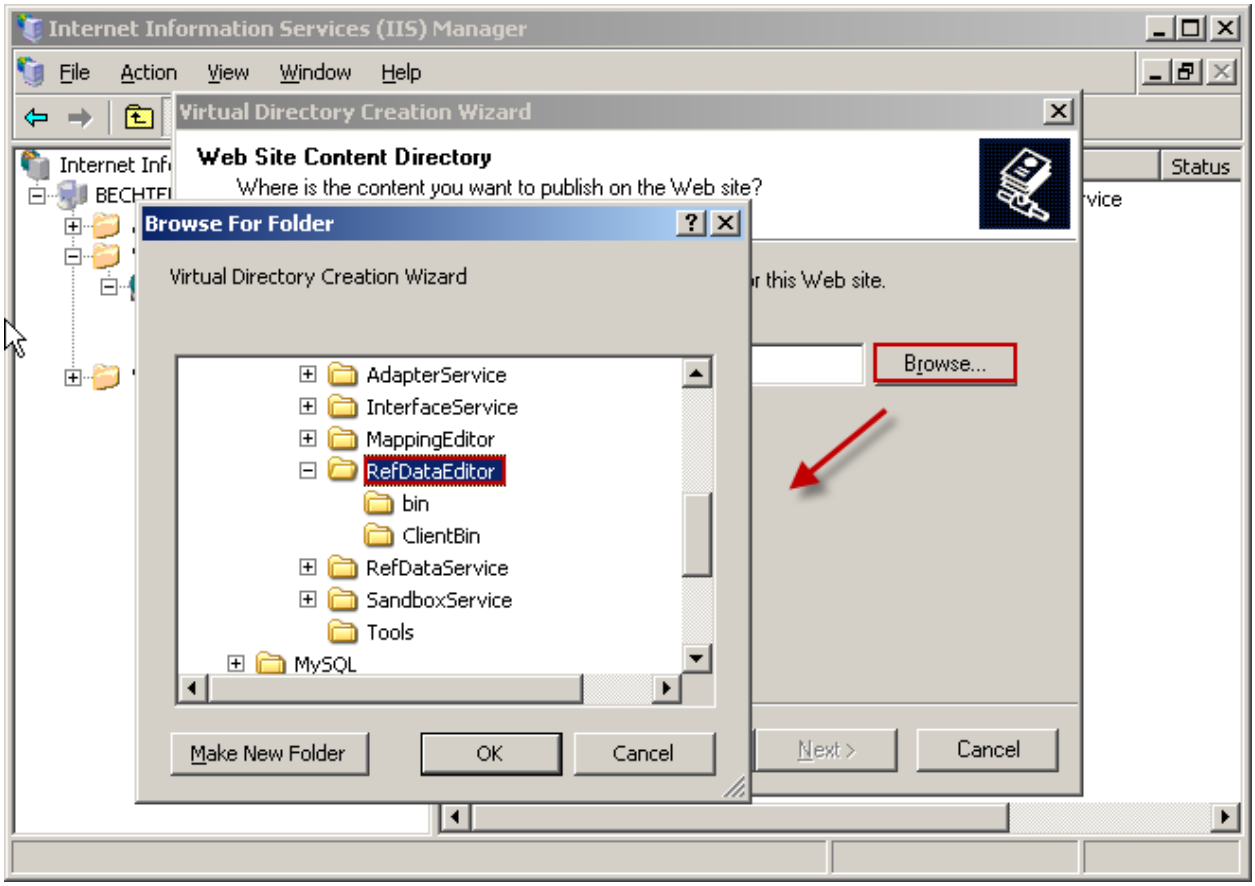


4. The Virtual Directory Creation wizard starts. Click the next button.

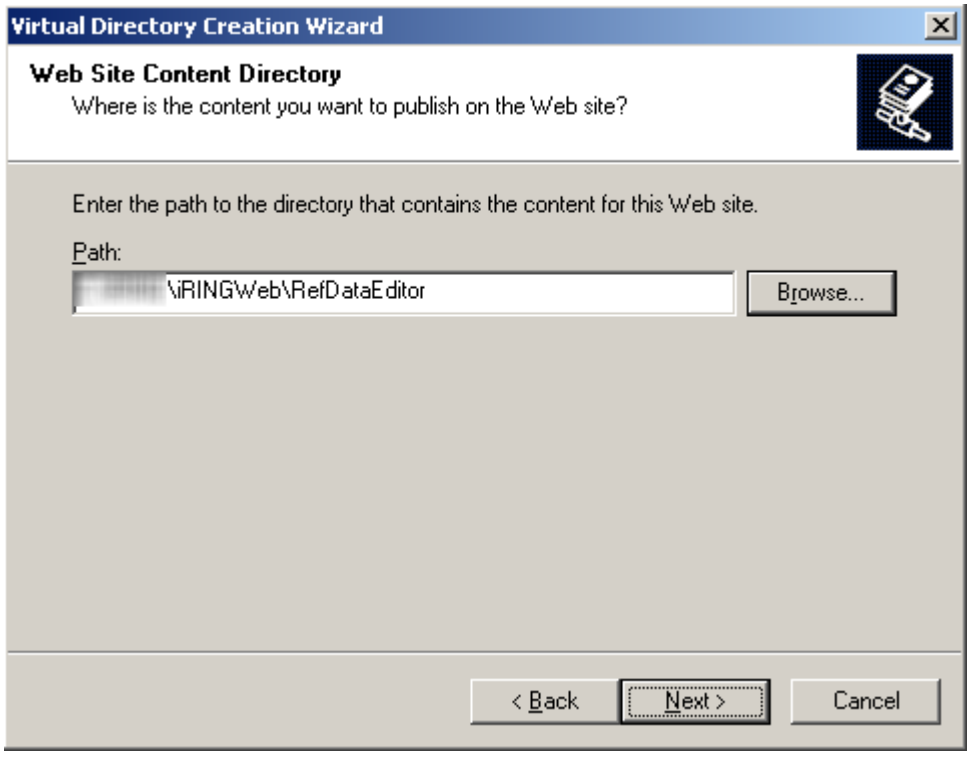
5. Name the virtual directory as RefDataEditor and then click the Next button.



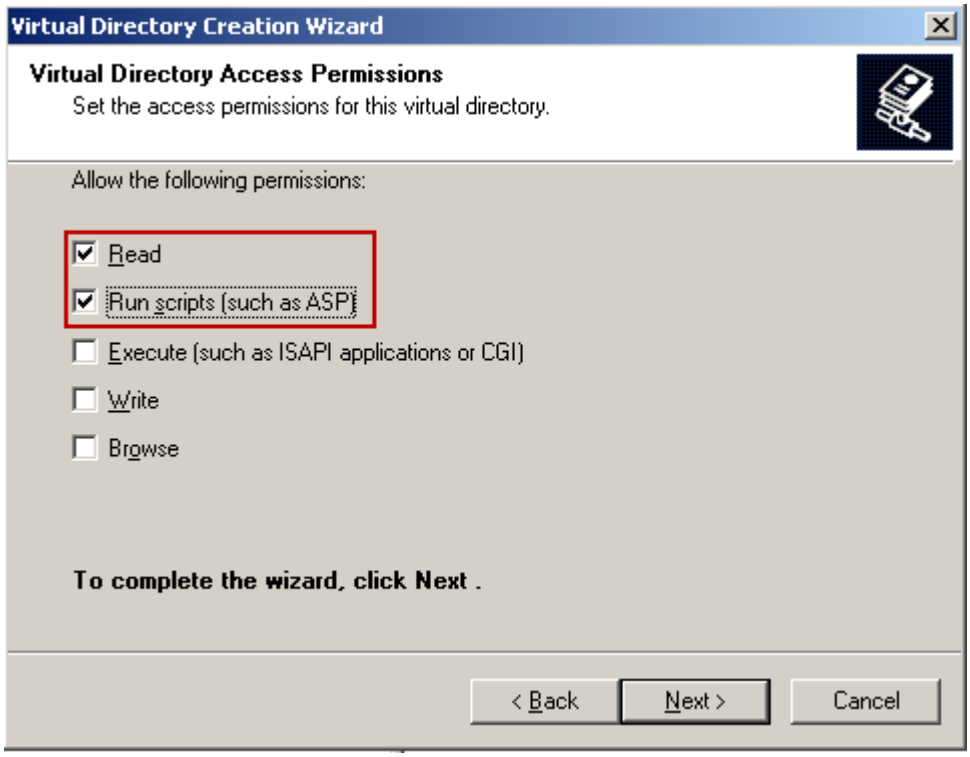
6. Browse to the iRingWeb\ RefDataEditor folder (installed earlier).



7. Click the Next button.

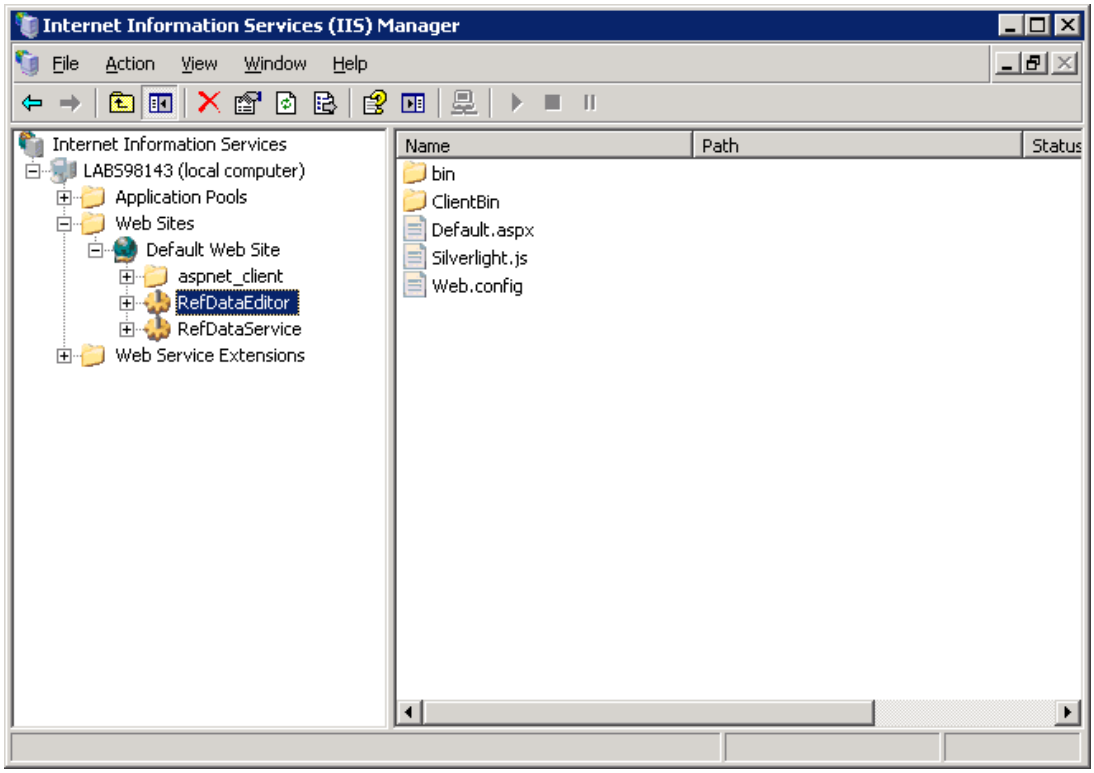


8. Select the permissions Read and Run Scripts and then click the Next button.



9. The virtual directory setup is complete. Click the Finish button to close the wizard.

10. The virtual directory appears in the Default Web Site Folder.



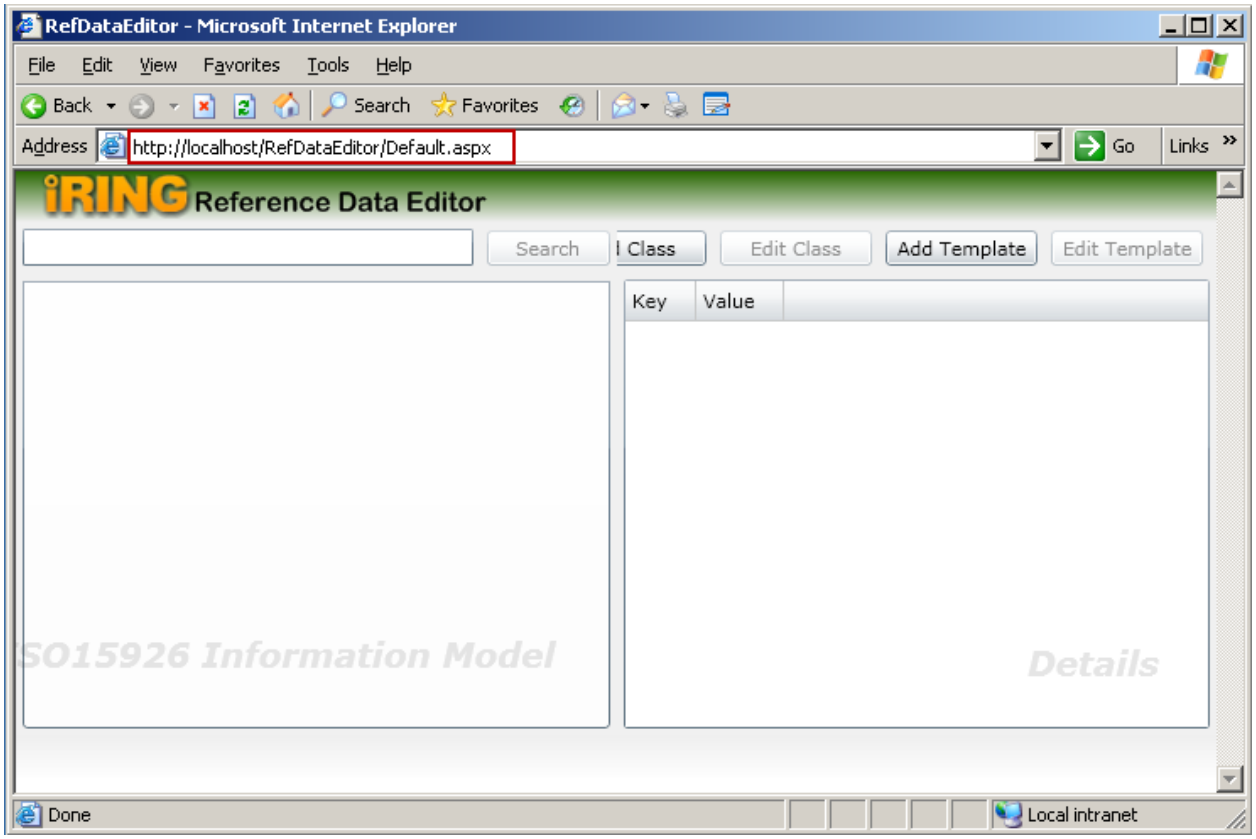
3.9 Configuring the Reference Data Editor

As long as the ***iRINGTools*** adapter and sandbox are on the same server, then no additional configuration is required. Otherwise the RefDataEditor Web.config file will need modifying. It is similar to what was done for the RefDataService. Consult the ***iRINGTools*** User Group for details on this advance setup.

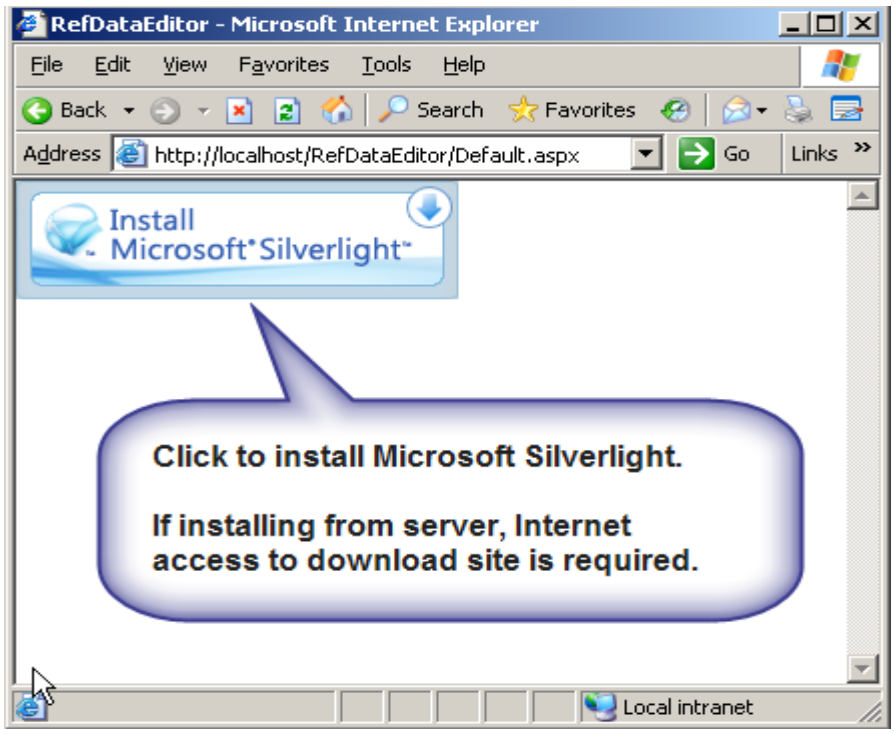
3.10 Testing Reference Data Editor

The Reference Data Editor can be tested either from the server or a client computer. Whichever is used will require Microsoft Silverlight. If Microsoft Silverlight is not installed, a prompt will be provided to install it.

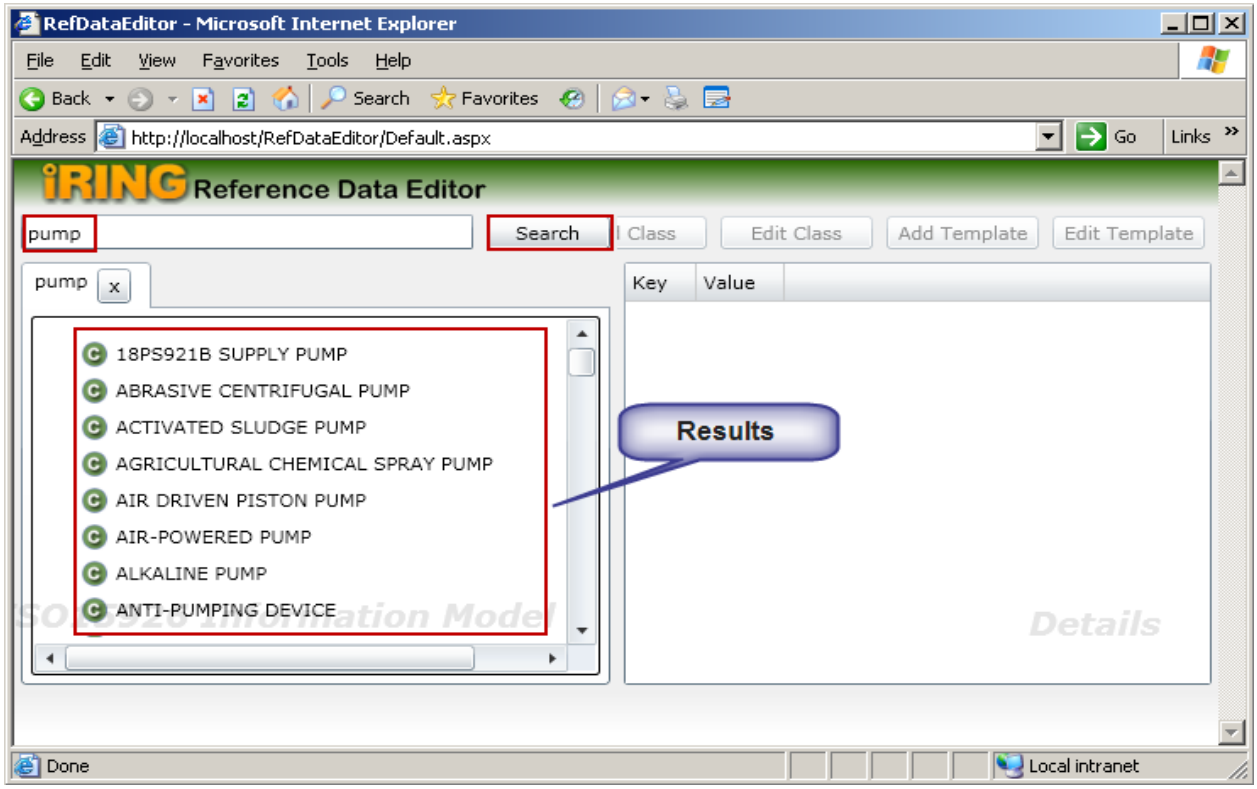
Test the Reference Data Editor by opening your browser and entering the following address http://localhost/RefDataEditor/Default.aspx. You should see the following (or something very similar):



If Microsoft Silverlight is not installed, you should see the following. Install Microsoft Silverlight if necessary.



Finally, to verify the iRingSandBox with connection to the RDS-WIP, enter search criteria in the Reference Data Editor (e.g., Pump) and click on the Search button. You should see the following (or similar):



This completes the installation of iRingSandBox.

4 Installing *iRINGTools* Adapter

The following sections will describe the ***iRINGTools*** Adapter components and provide detailed instructions on how to install and configure each component.

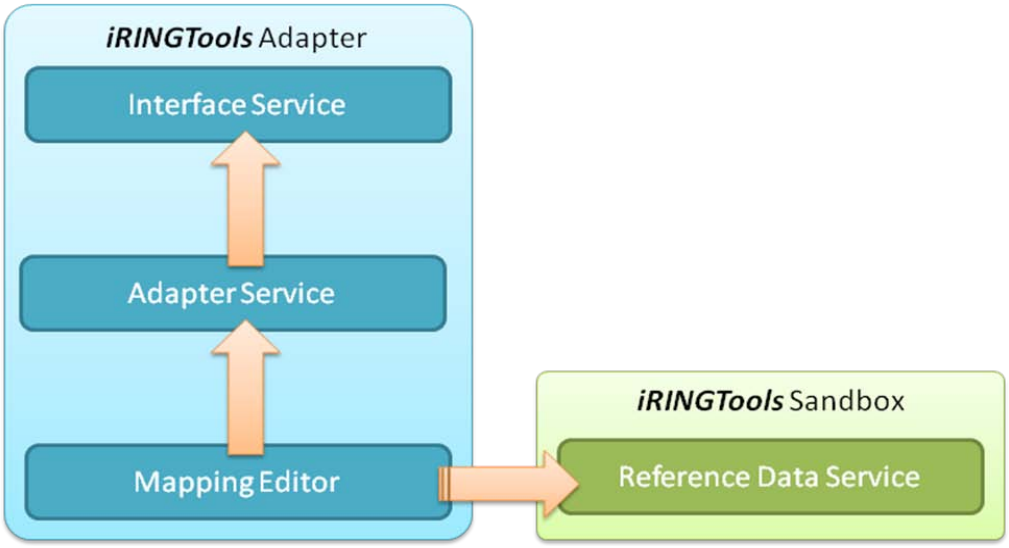
4.1 iRINGTools Adapter Components

The remaining components in the ***iRINGTools*** Adapter are all web applications that will need to be setup and configured in IIS.

The ***iRINGTools*** Adapter is comprised of three components:

1. Interface Service
2. Adapter Service
3. Mapping Editor

These components interact with each other as well as the ***iRINGTools*** Sandbox.



The Mapping Editor provides a graphical user interface for mapping your database to reference data.

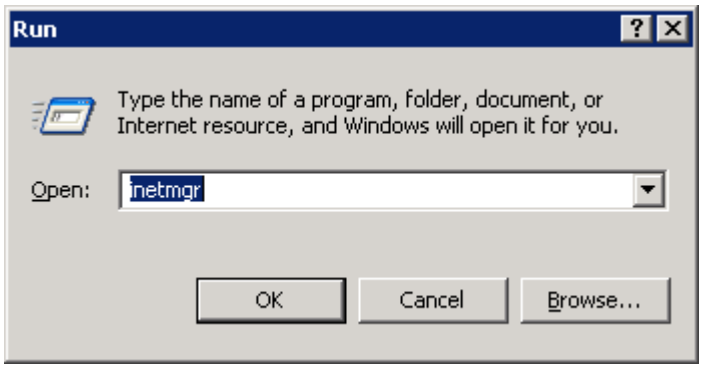
4.2 Localhost versus Server Hostname

The ***iRINGTools*** Adapter webconfig files use localhost as the initial hostname. It is best to keep localhost as the hostname during installation to making testing easier. Instructions will be provided later in this document on where and how to change the hostname.

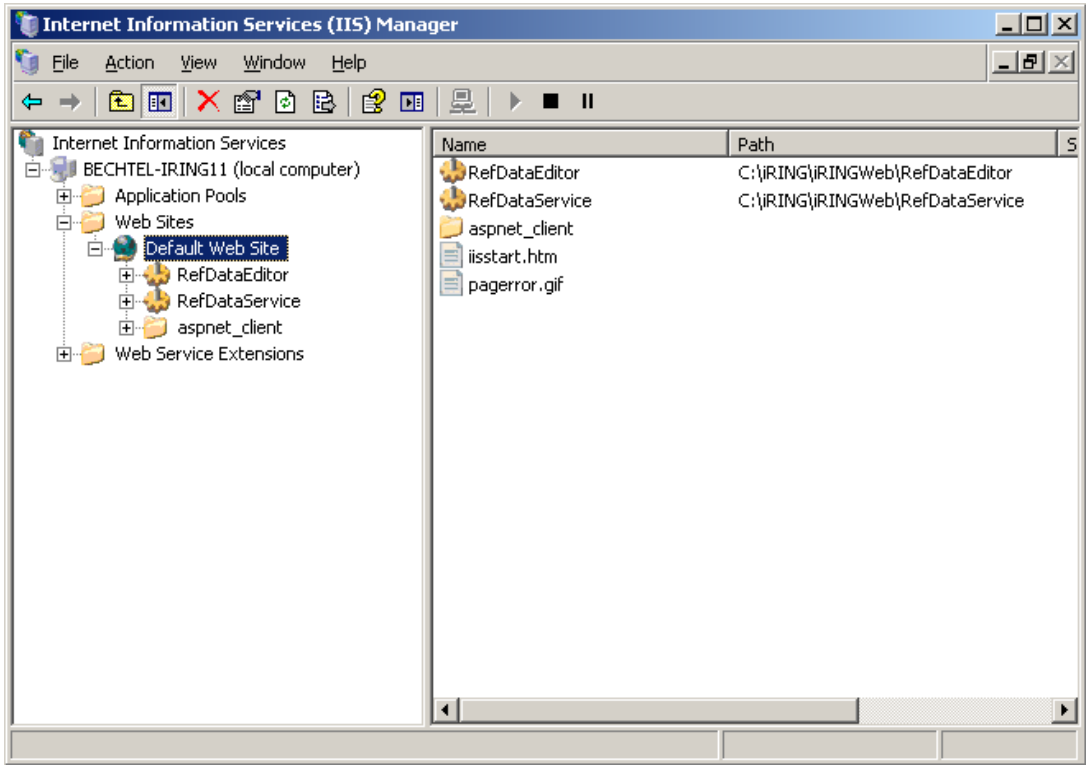
4.3 Creating the AdapterService Virtual Directory

Create the AdapterService virtual directory in IIS by performing the following steps.

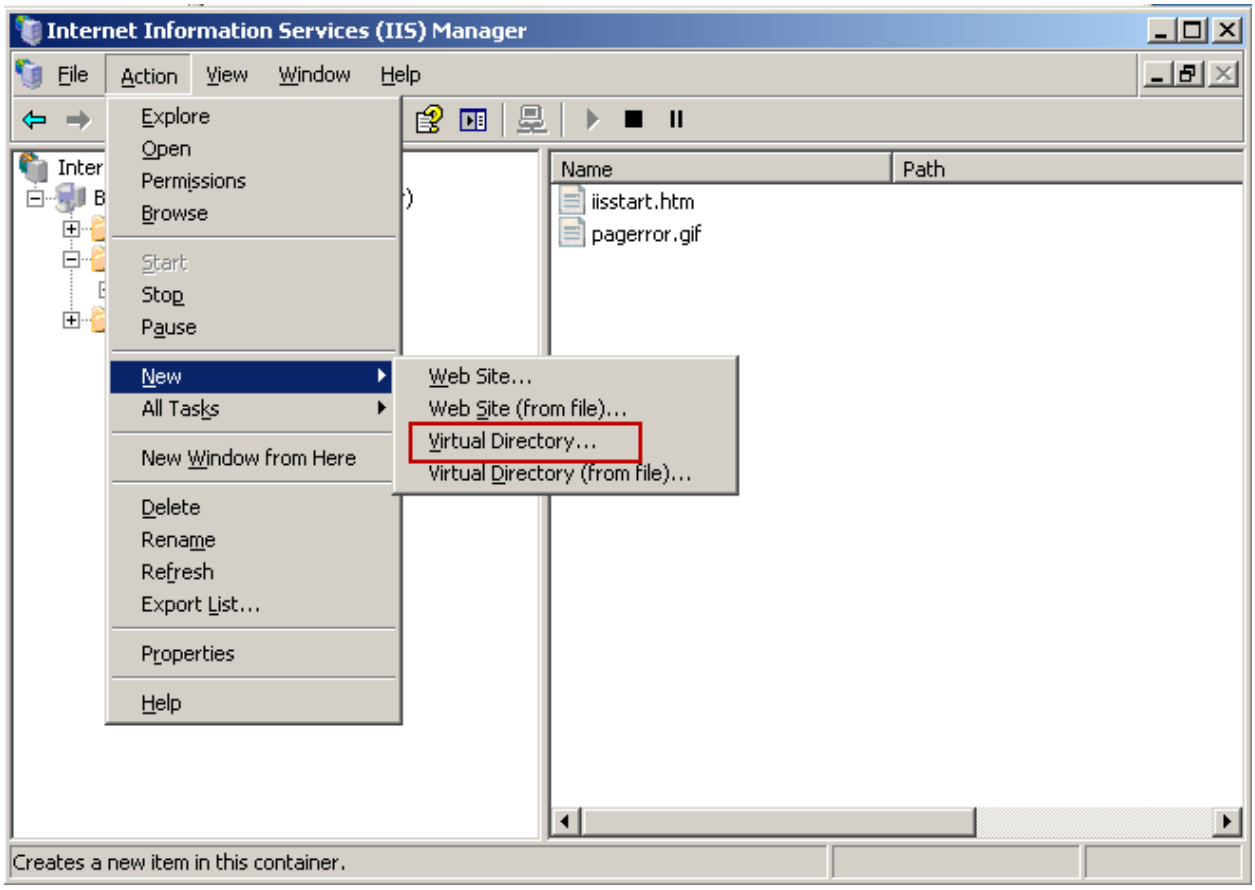
1. Start IIS Manager. One way to do this is to use Run from the Start menu. Type the command inetmgr.



2. In IIS Manager, select Default Web Site in the Web Site folder.

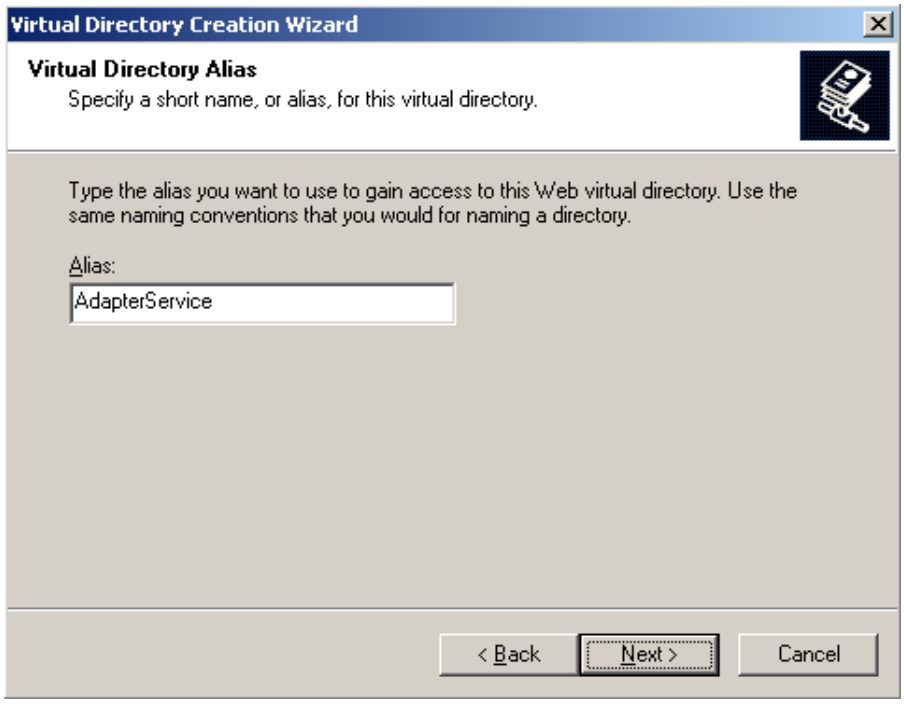


3. From the main menu, select Action > New > Virtual Directory.

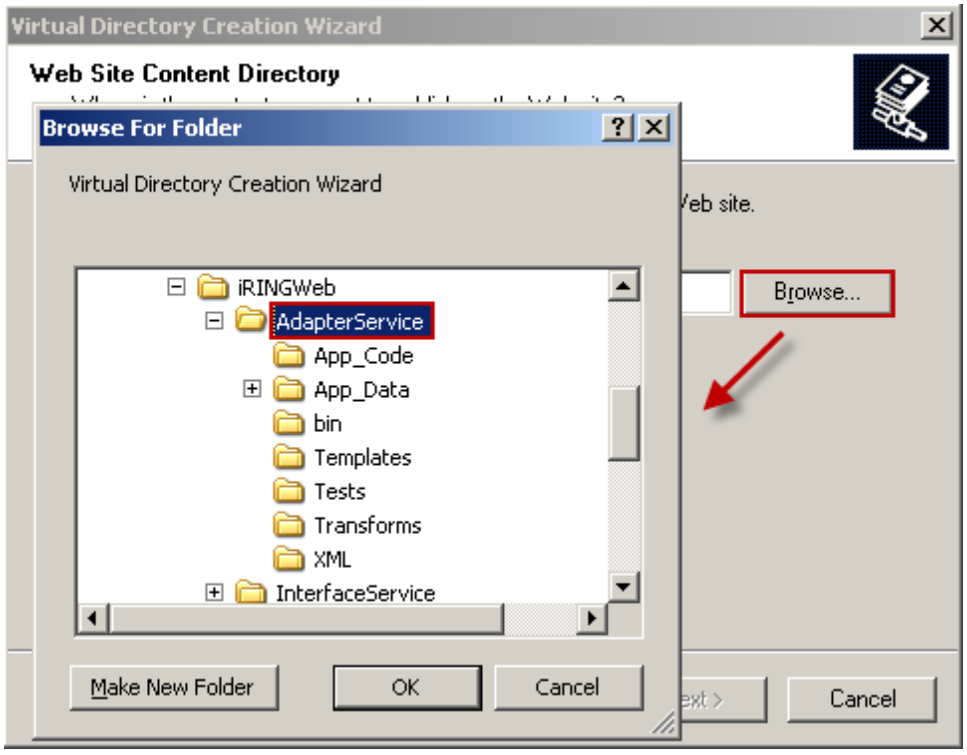


4. The Virtual Directory Creation wizard starts. Click the next button.

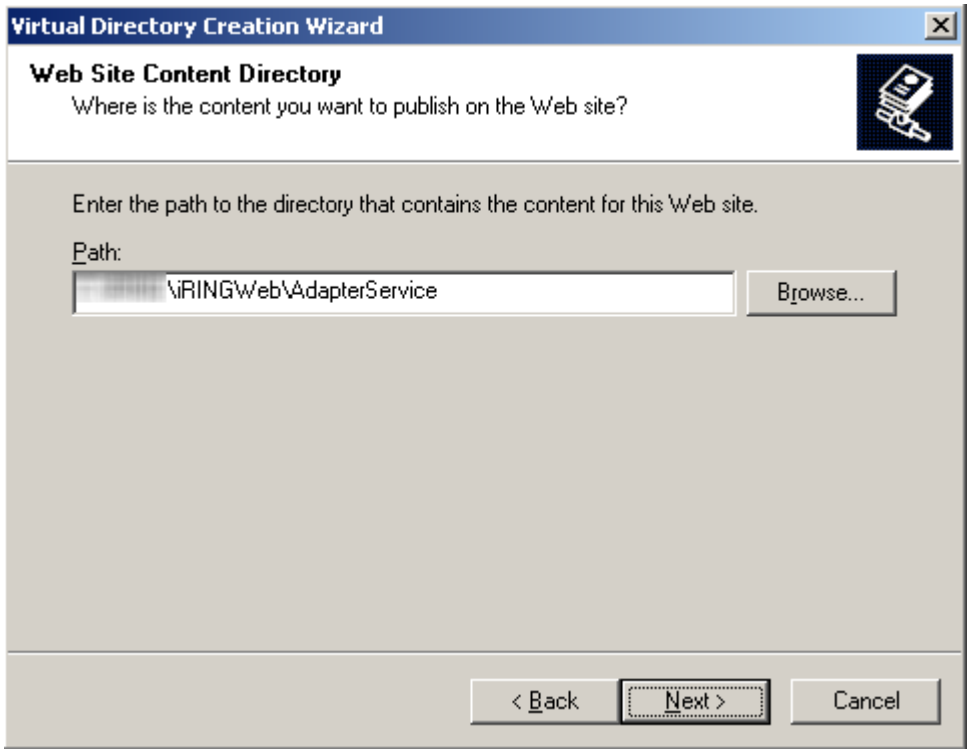
5. Name the virtual directory as AdapterService and then click the Next button.



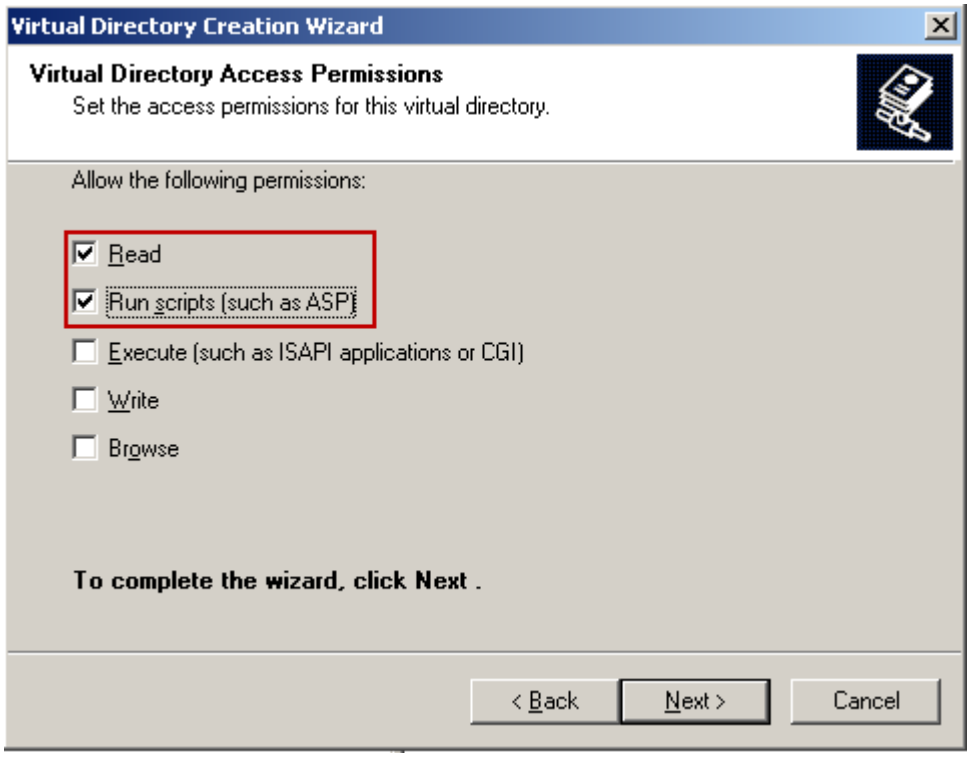
6. Browse to the iRingWeb\ AdapterService folder (installed earlier).



7. Click the Next button.

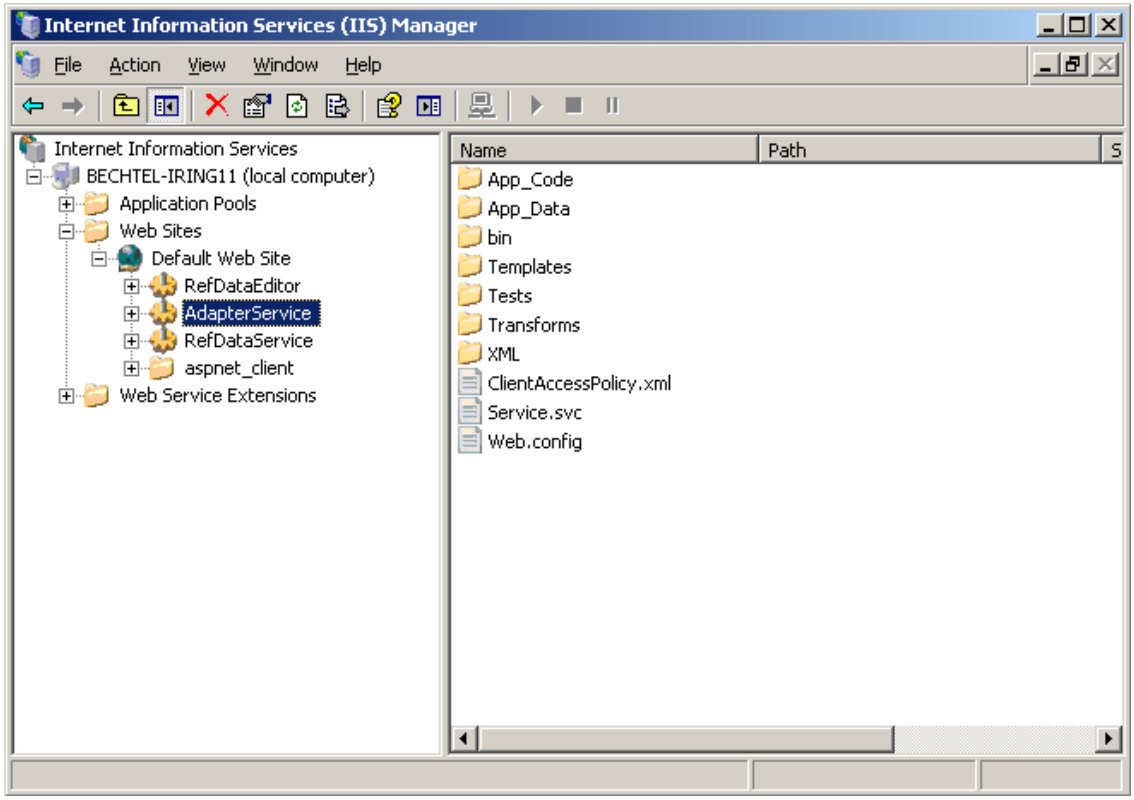


8. Select the permissions Read and Run Scripts and then click the Next button.



9. The virtual directory setup is complete. Click the Finish button to close the wizard.

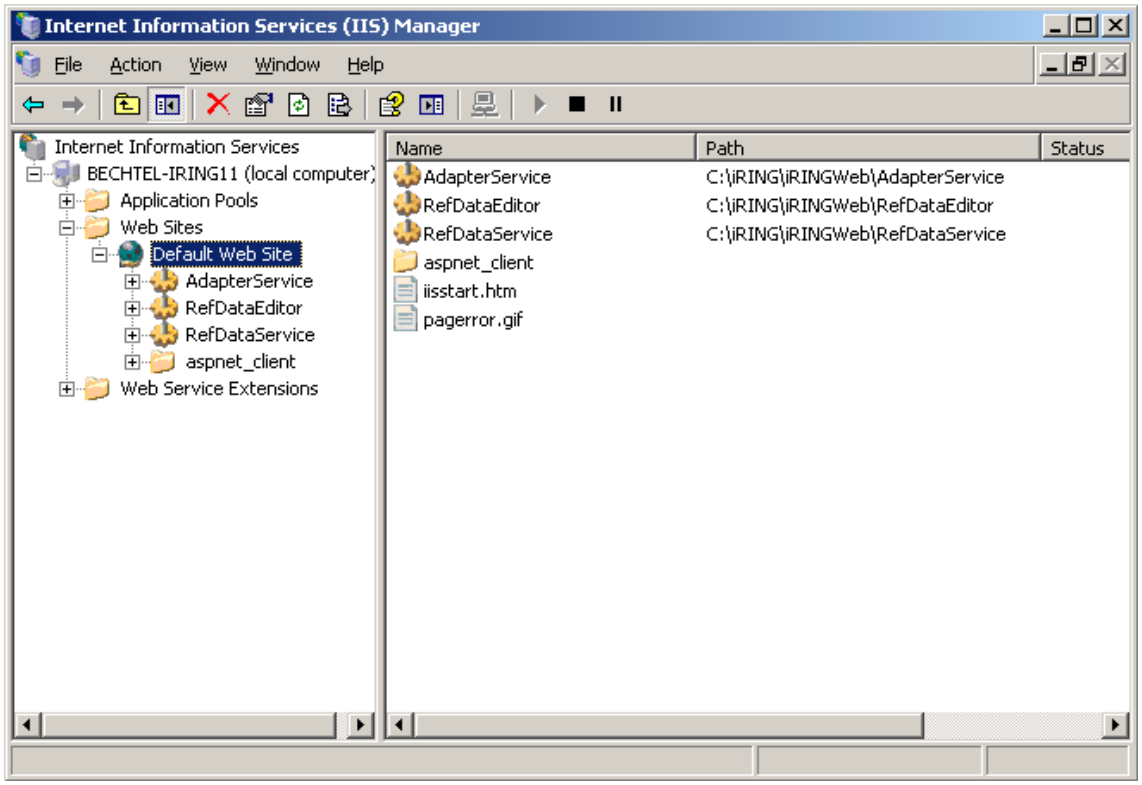
10. The virtual directory appears in the Default Web Site Folder.



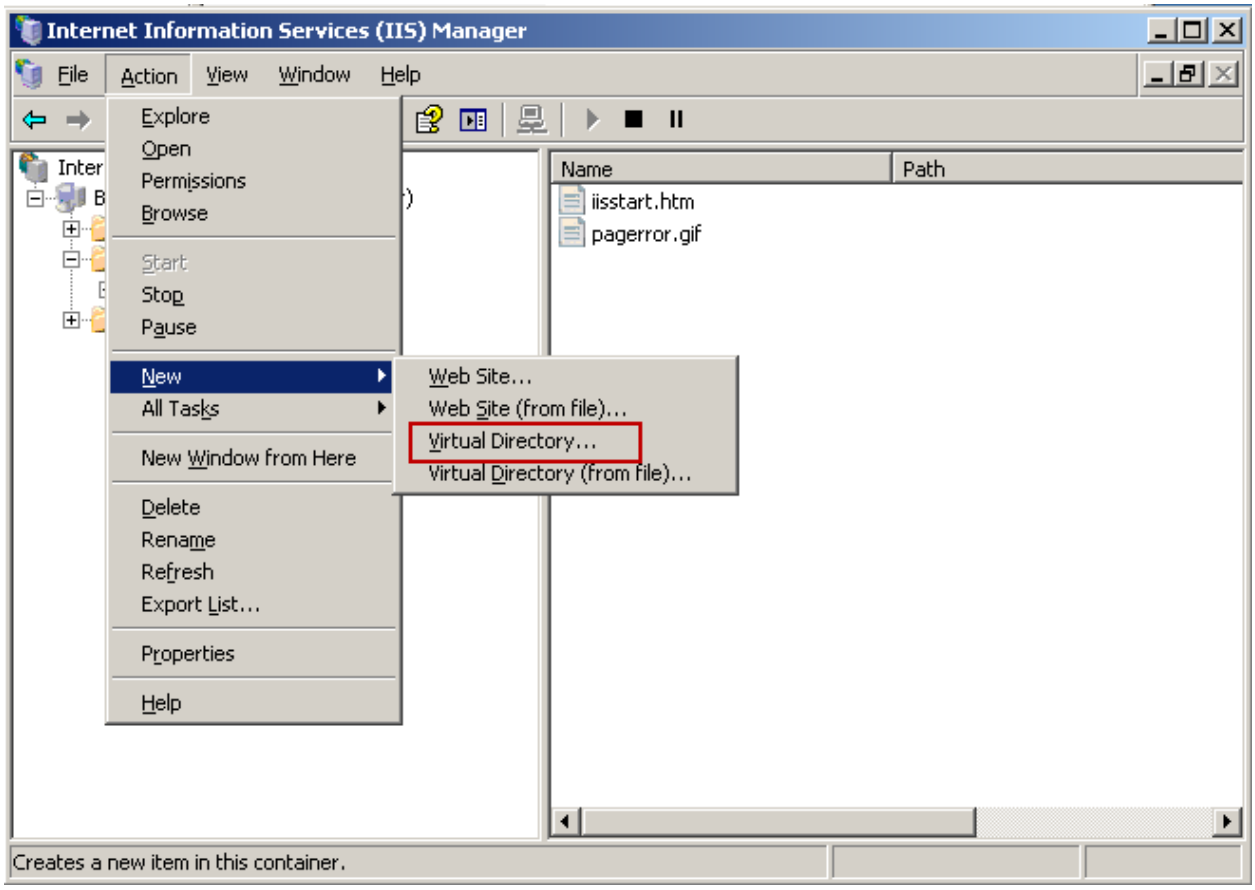
4.4 Creating the MappingEditor Virtual Directory

Create the MappingEditor virtual directory in IIS by performing the following steps.

1. Start IIS Manager. In IIS Manager, select Default Web Site in the Web Site folder.

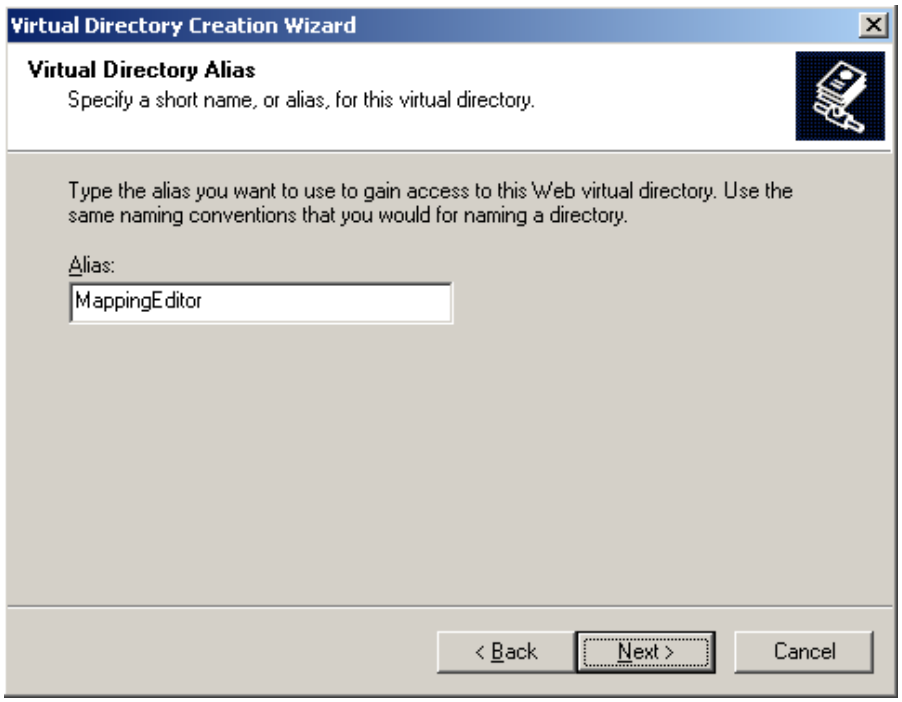


2. From the main menu, select Action > New > Virtual Directory.

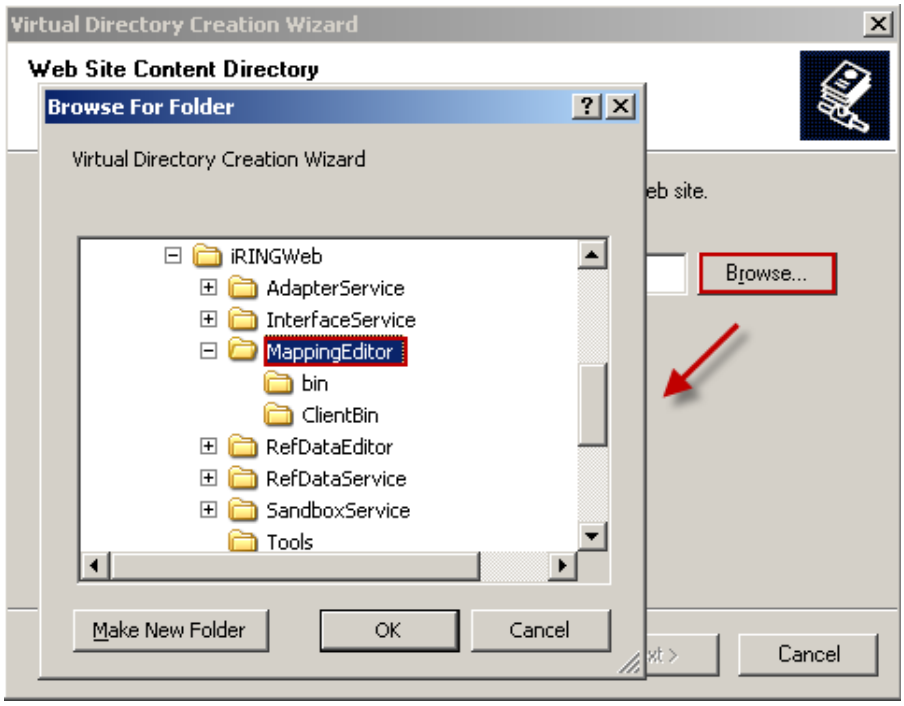


3. The Virtual Directory Creation wizard starts. Click the next button.

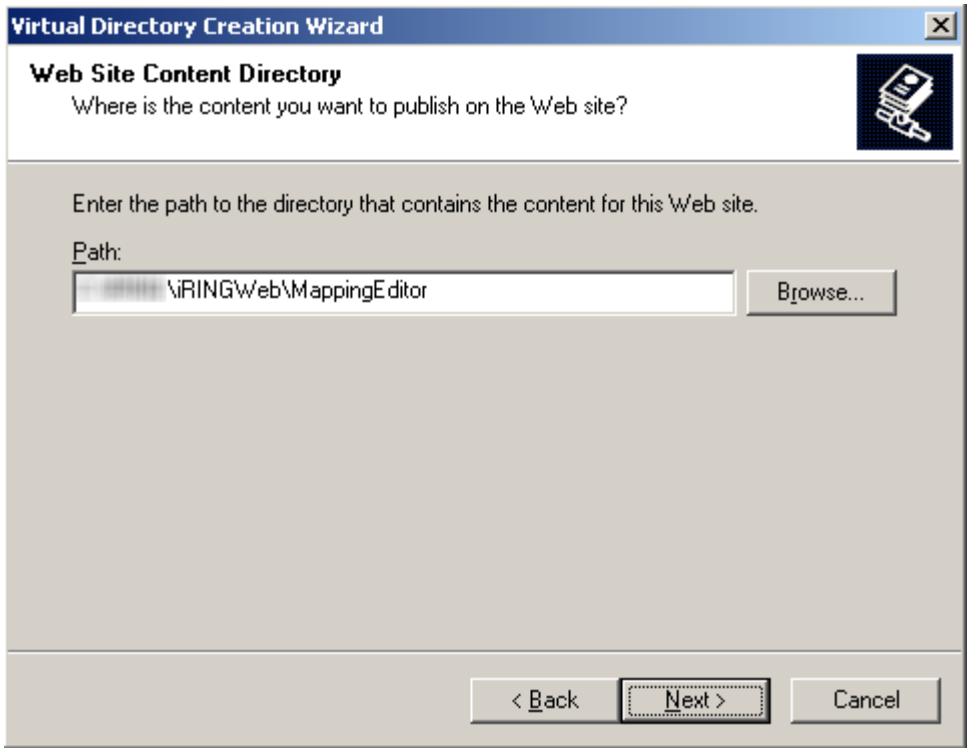
4. Name the virtual directory as MappingEditor and then click the Next button.



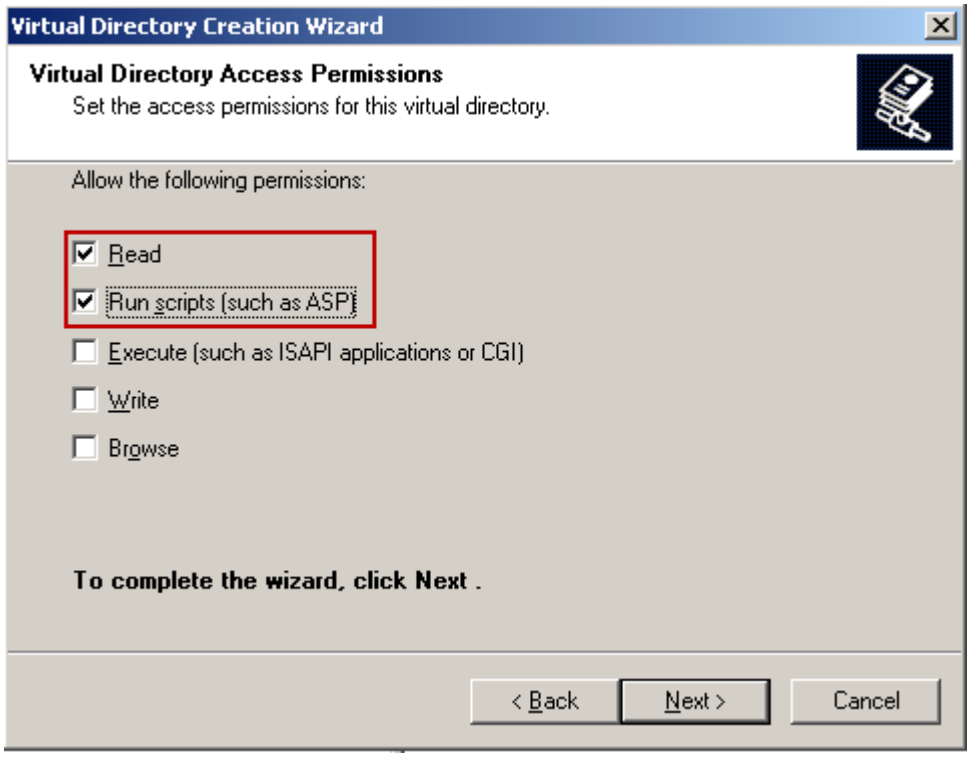
5. Browse to the iRingWeb\ MappingEditor folder (installed earlier).



6. Click the Next button.

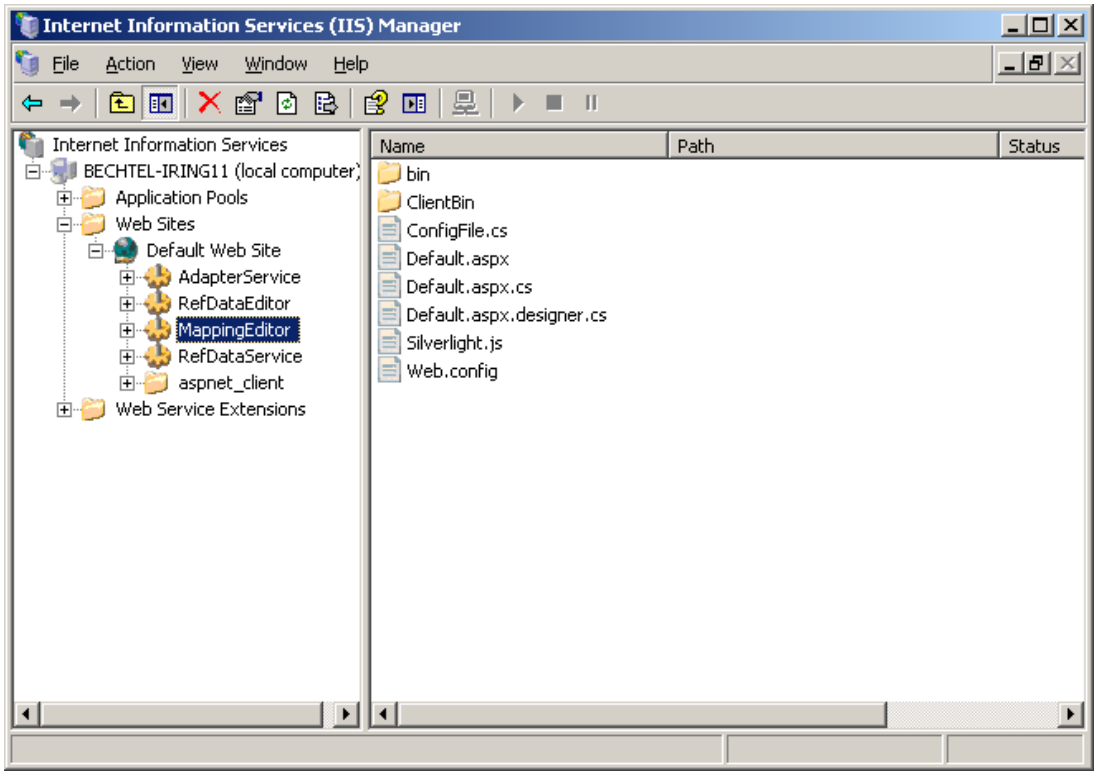


7. Select the permissions Read and Run Scripts and then click the Next button.



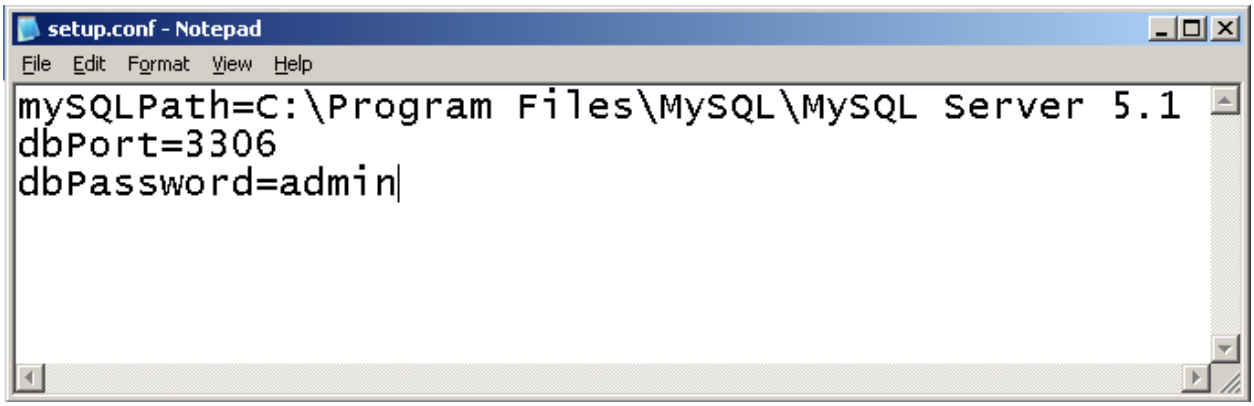
8. The virtual directory setup is complete. Click the Finish button to close the wizard.

9. The virtual directory appears in the Default Web Site Folder.

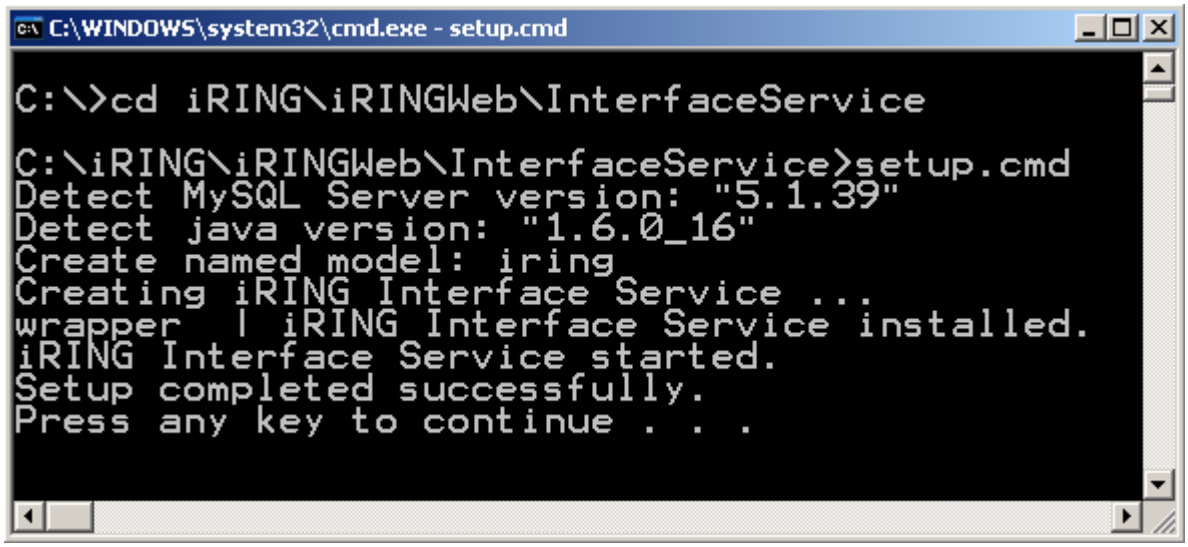


4.5 Configuring Interface Service

1. Open the file iRINGWeb\InterfaceService\setup.conf in a text editor (e.g., Notepad) and modify the contents to match your installation (i.e., MySQL path, port and password). Save the file.



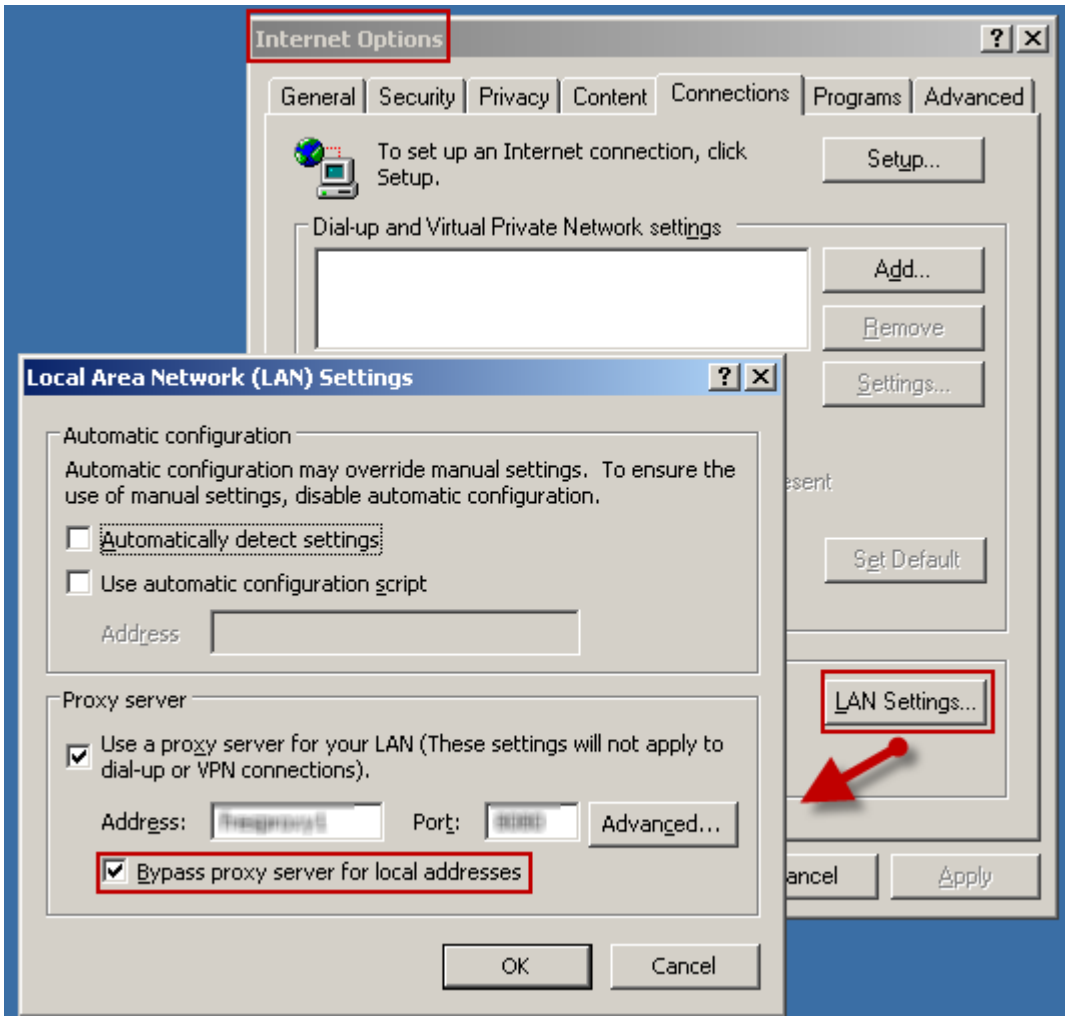
2. Open a command window and execute iRINGWeb\ InterfaceService \setup.cmd. This will create the MySQL database and the ***iRINGTools*** Sandbox windows service based on the settings in setup.conf.



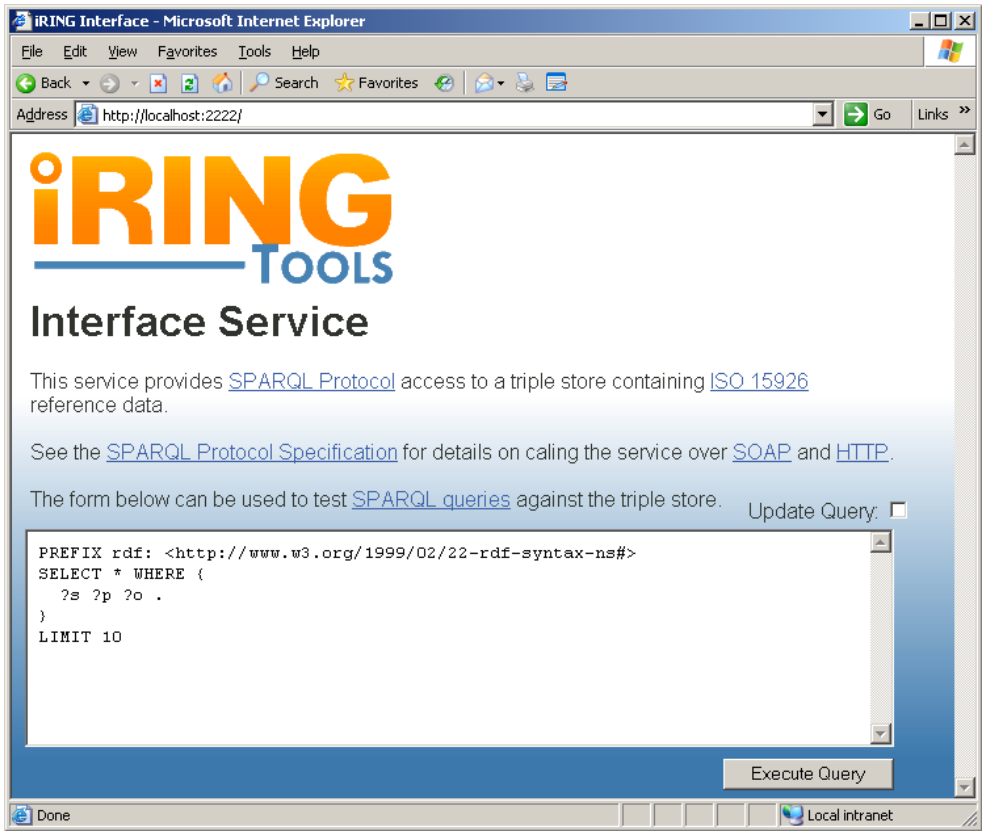
4.6 Testing the InterfaceService

To confirm the Sandbox Service installed correctly, perform the following.

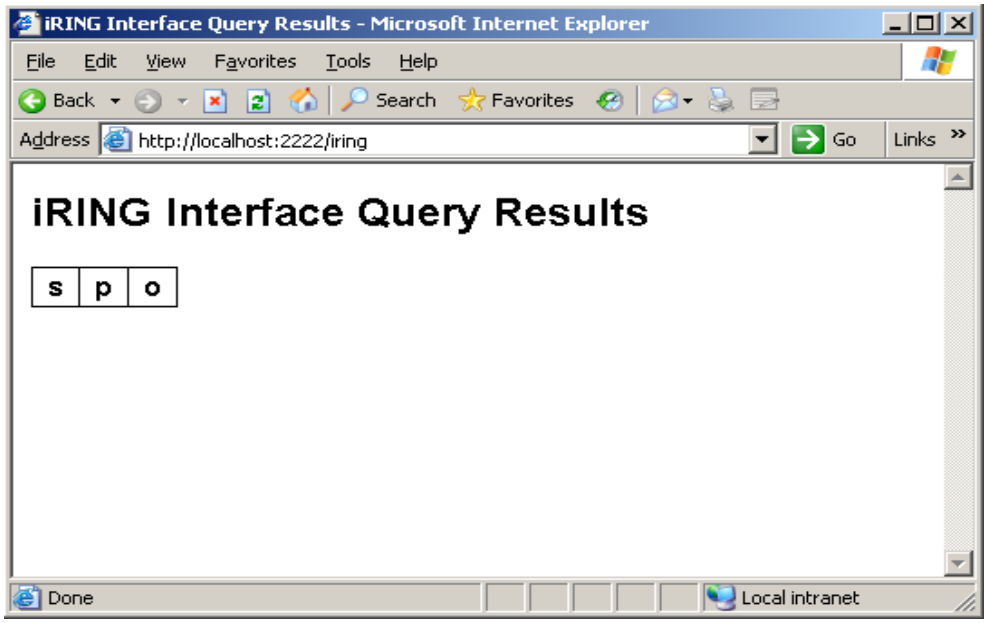
Note: To access the localhost, you may need to configure your Internet Options first. Open Internet Options, select the Connections tab, select LAN Settings and ensure Bypass proxy server for local addresses is checked. Save the settings and close the browser before proceeding.



1. In your web browser, open the address http://localhost:2222/. You should see the following (or similar).



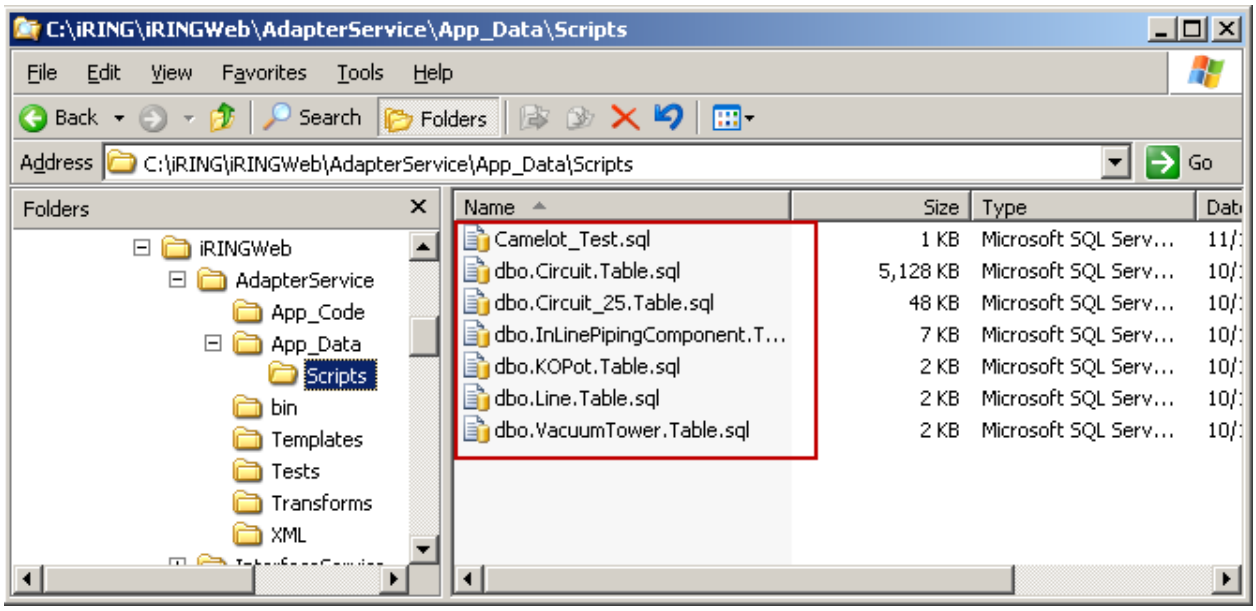
2. Click the Execute Query button. You should see the following result.



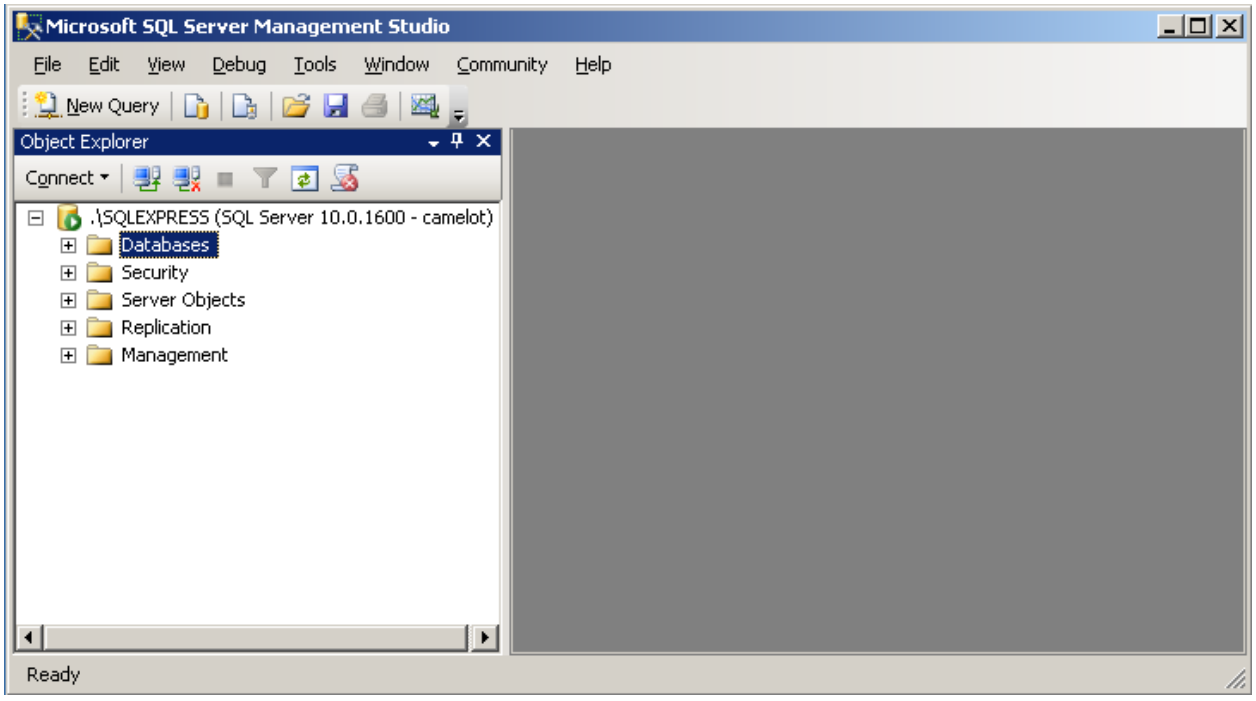
4.7 Creating the Test Database

Create a test database in SQL Server by performing the following steps.

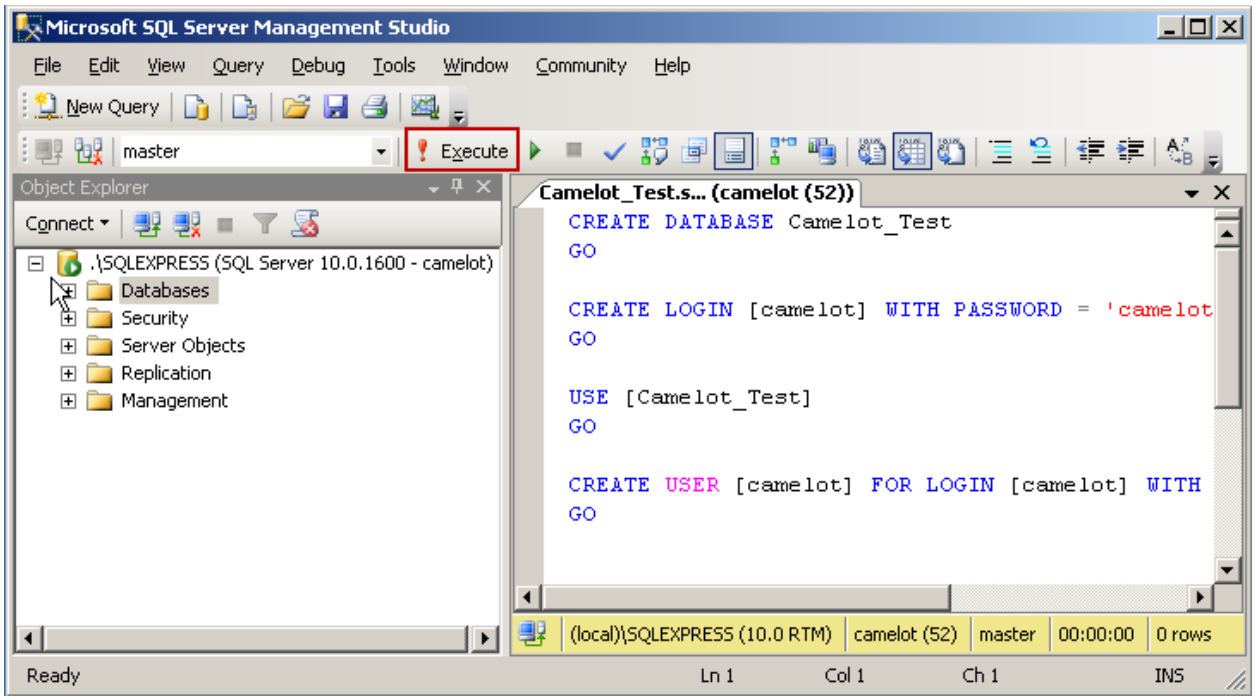
1. Open the folder iRINGWeb\AdapterService\App_Data\Scripts.



2. Open Microsoft SQL Server Management Studio.



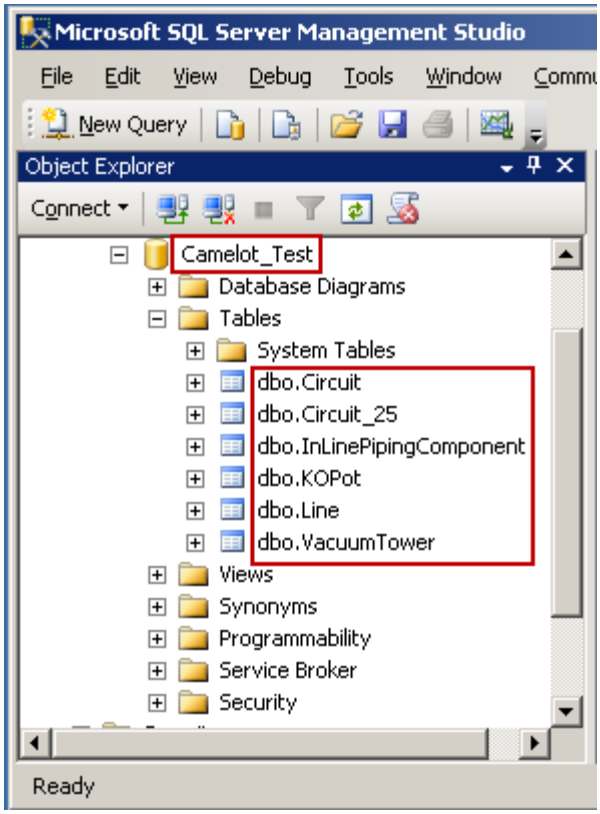
3. Drag the file Camelot_Test.sql to Microsoft SQL Server Management Studio and then click the Execute button to create the test database.



4. One by one, drag the following files from the folder to Microsoft SQL Server Management Studio and then click the Execute button to create data the database tables.

   (a) dbo.Circuit.Table.sql
   (b) dbo.Circuit_25.Table.sql
   (c) dbo.InLinePipingComponent.Table.sql
   (d) dbo.KOPot.Table.sql
   (e) dbo.Line.Table.sql
   (f) dbo.VacuumTower.Table.sql

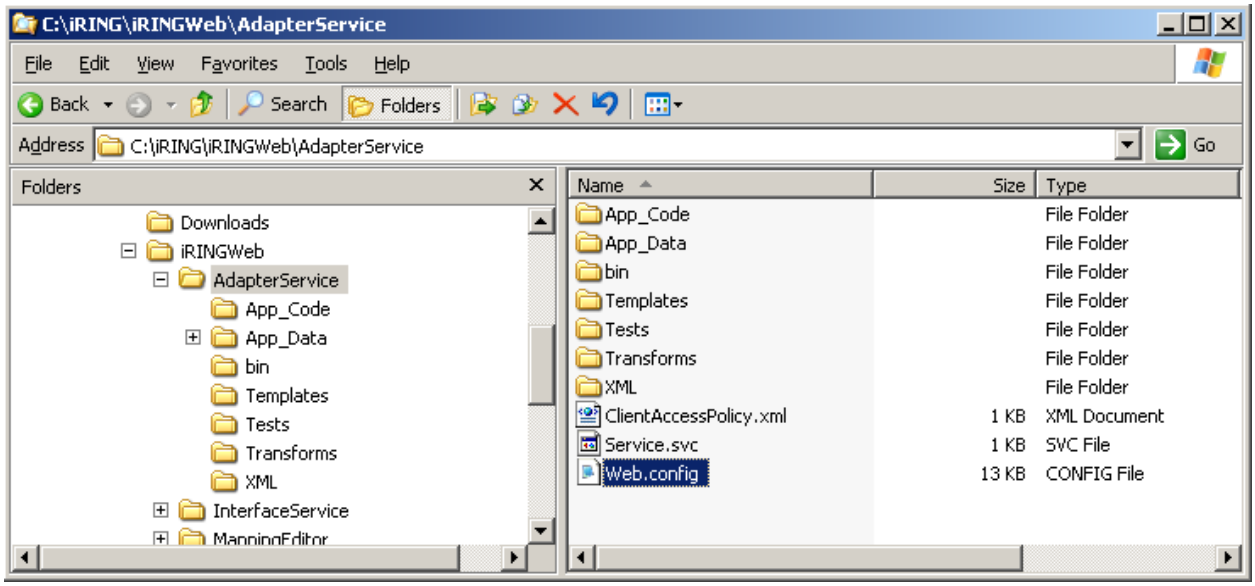
5. Verify the database, tables and data are created.



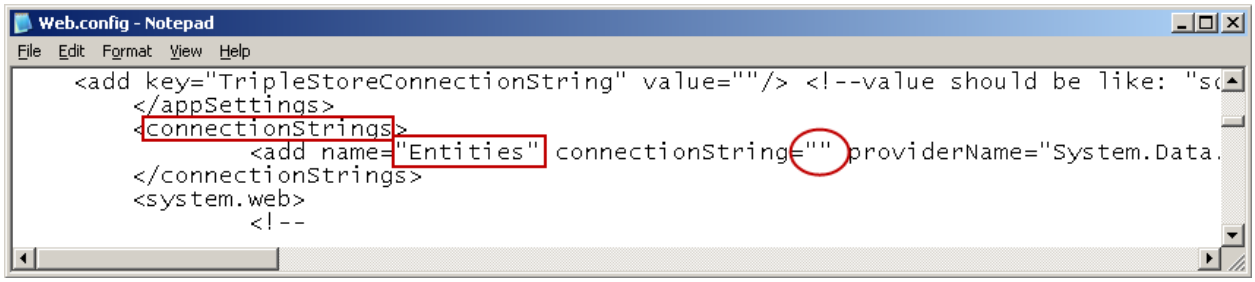
4.8 Configuring the AdapterService

Configure the adapter service by modifying the AdapterService Web.config file as follows.

1. Open the file Web.config file located in the iRINGWeb\AdapterService in a text editor.



2. In the file Web.config, locate Entities in connectionStrings.

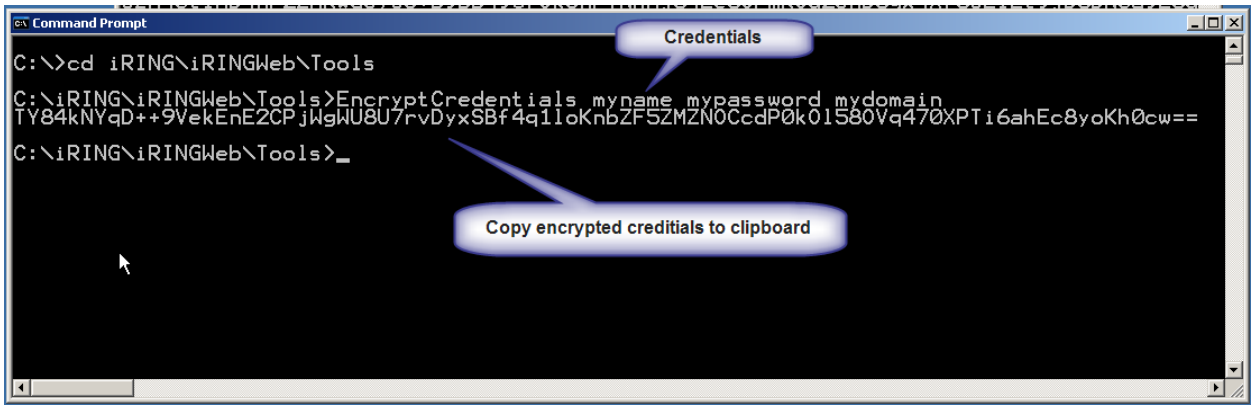


3. Enter the connection string of your source database as below. (**Note**: hard returns are in the sample below for readability which should not be pasted into Web.config file. It is best to use the example string include on the same line of the file and modify accordingly.)

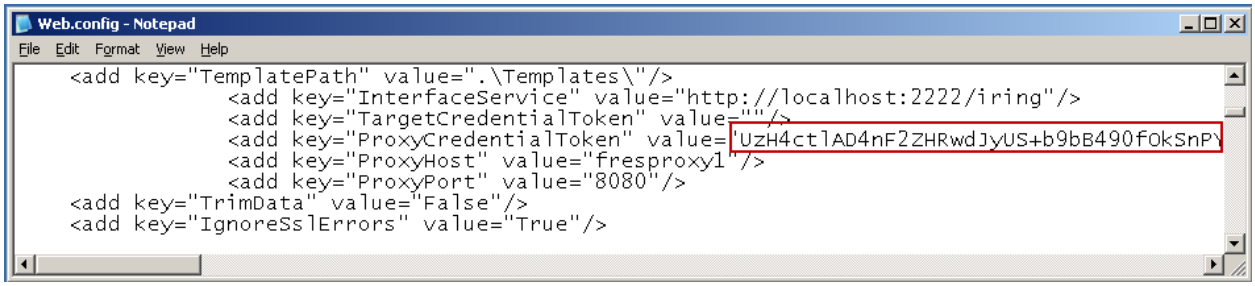
   metadata=|DataDirectory|\Model.csdl| |DataDirectory|\Model.ssdl| |DataDirectory|
   \Model.msl; provider=System.Data.SqlClient; provider connection string="
   data source=[Server]; Initial Catalog=[Database]; User Id=[User Id]; Password=[Password];"

   Where [Server] = the database server (e.g., .\SQLExpress)
   [Database] = the database initial catalog (e.g., Camelot_Test)
   [User Id] = the database user ID (e.g., camelot)
   [Password] = the database password (e.g., camelot)

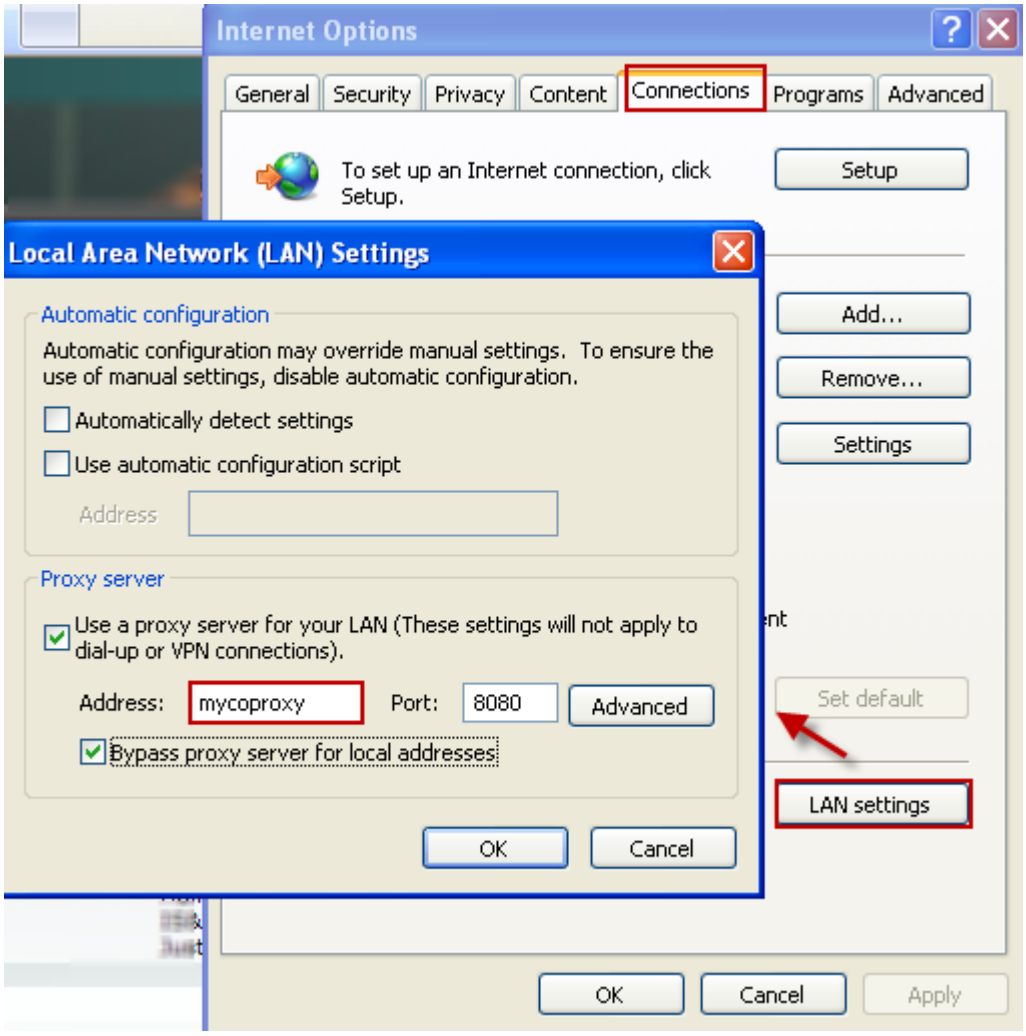
4. If your server is behind a firewall, then credentials are needed to access the internet. Create an encrypted token with the EncryptCredentials utility in iRingWeb\Tools. Enter the username, password and optionally the domain. Copy the resulting encrypted string to the clipboard.



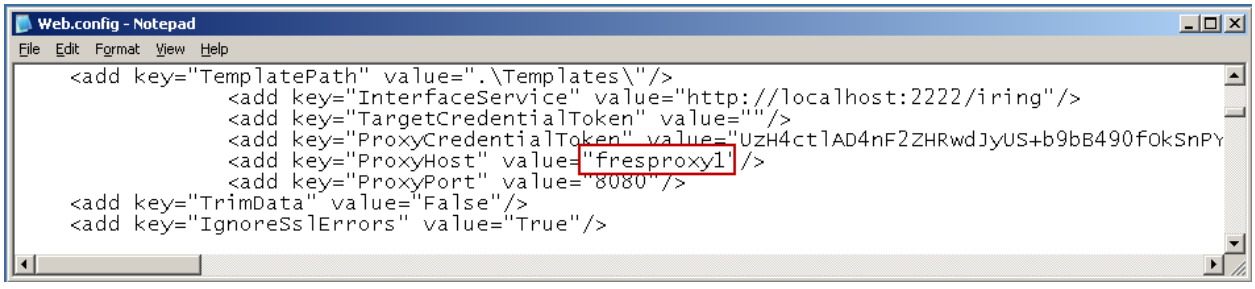
5. In the file Web.config, locate the ProxyCredentialToken key in TemplatePath. Paste the token in the value between the double quotes. **Note**: If proxy credentials are not required, then leave the value empty.



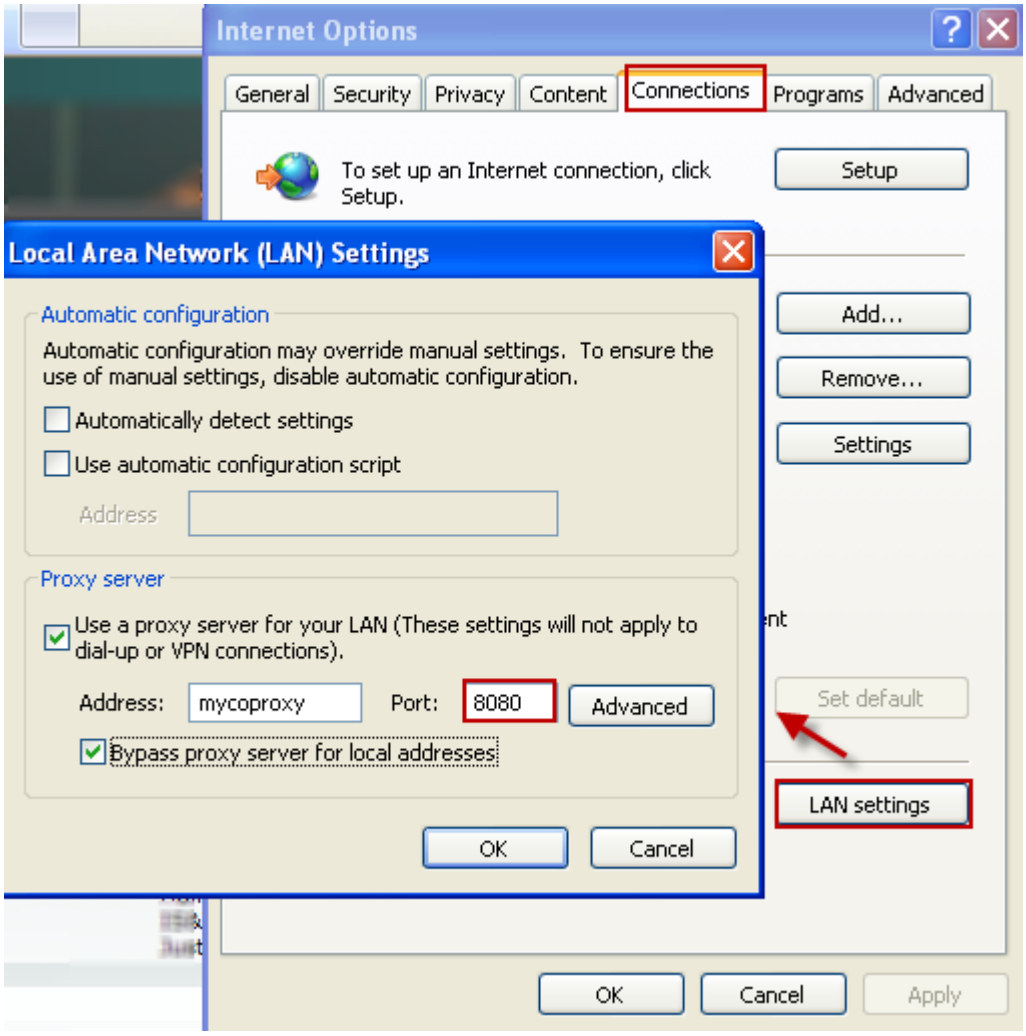
6. In the file Web.config, locate the ProxyHost key in TemplatePath. Enter the ProxyHost needed to access the internet. This can be found in Internet Options on the Connections tab in the LAN settings.



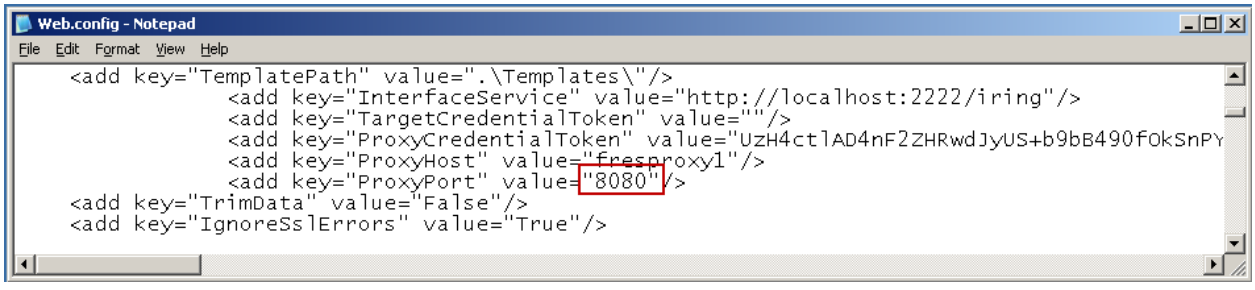
7. Enter the ProxyHost in the value between the double quotes. If there is no ProxyHost, then leave the value empty.



8. In the file Web.config, locate the ProxyPort key in TemplatePath. Enter the ProxyPort needed to access the internet. This can be found in Internet Options on the Connections tab in the LAN settings.



9. Enter the ProxyPort in the value between the double quotes. If there is no ProxyPort, then leave the value empty.

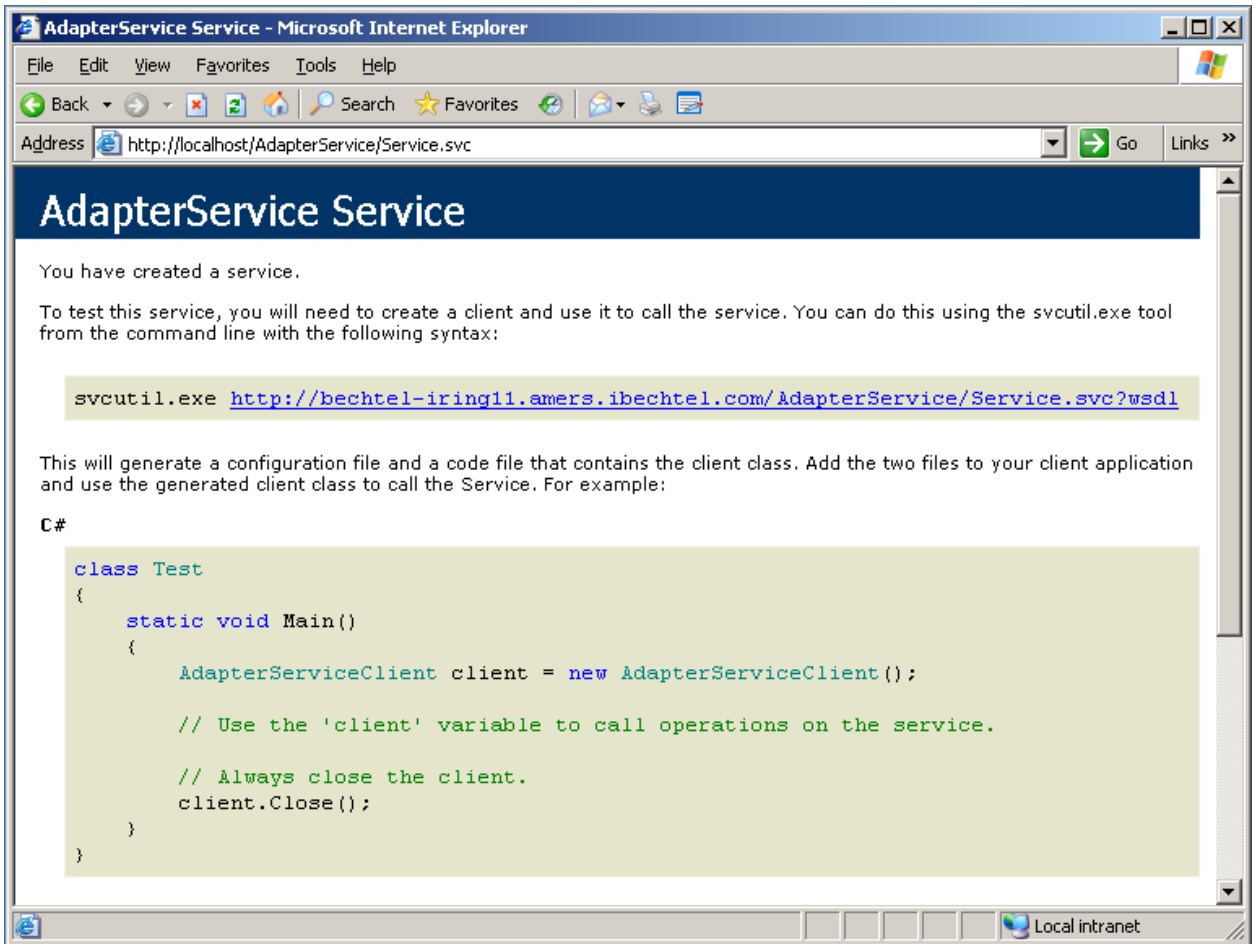


10. Save the changes to the file Web.config and close it.

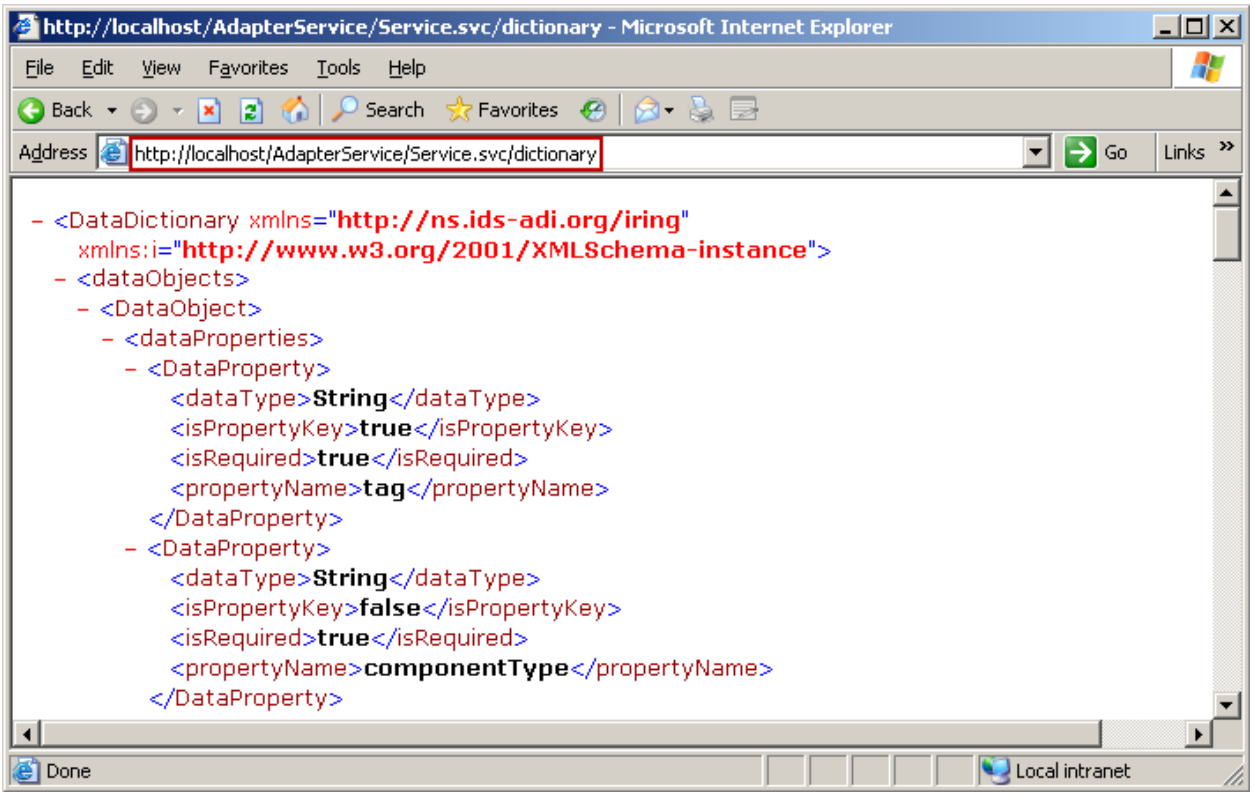
4.9 Testing the AdapterService

Perform the following tests for the ***iRINGTools*** AdapterService.

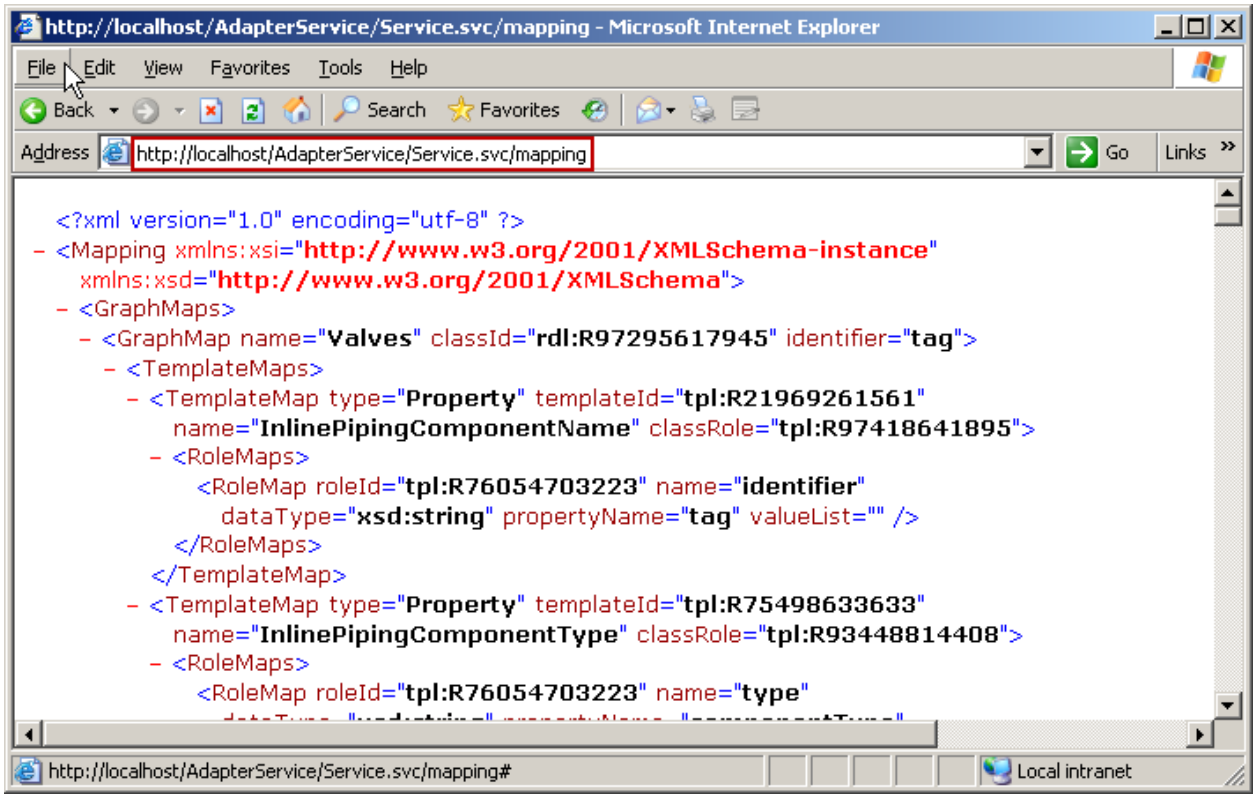
1. Test the AdapterService by opening your browser on the server and entering the address http://localhost/AdapterService/Service.svc. You should see the following.



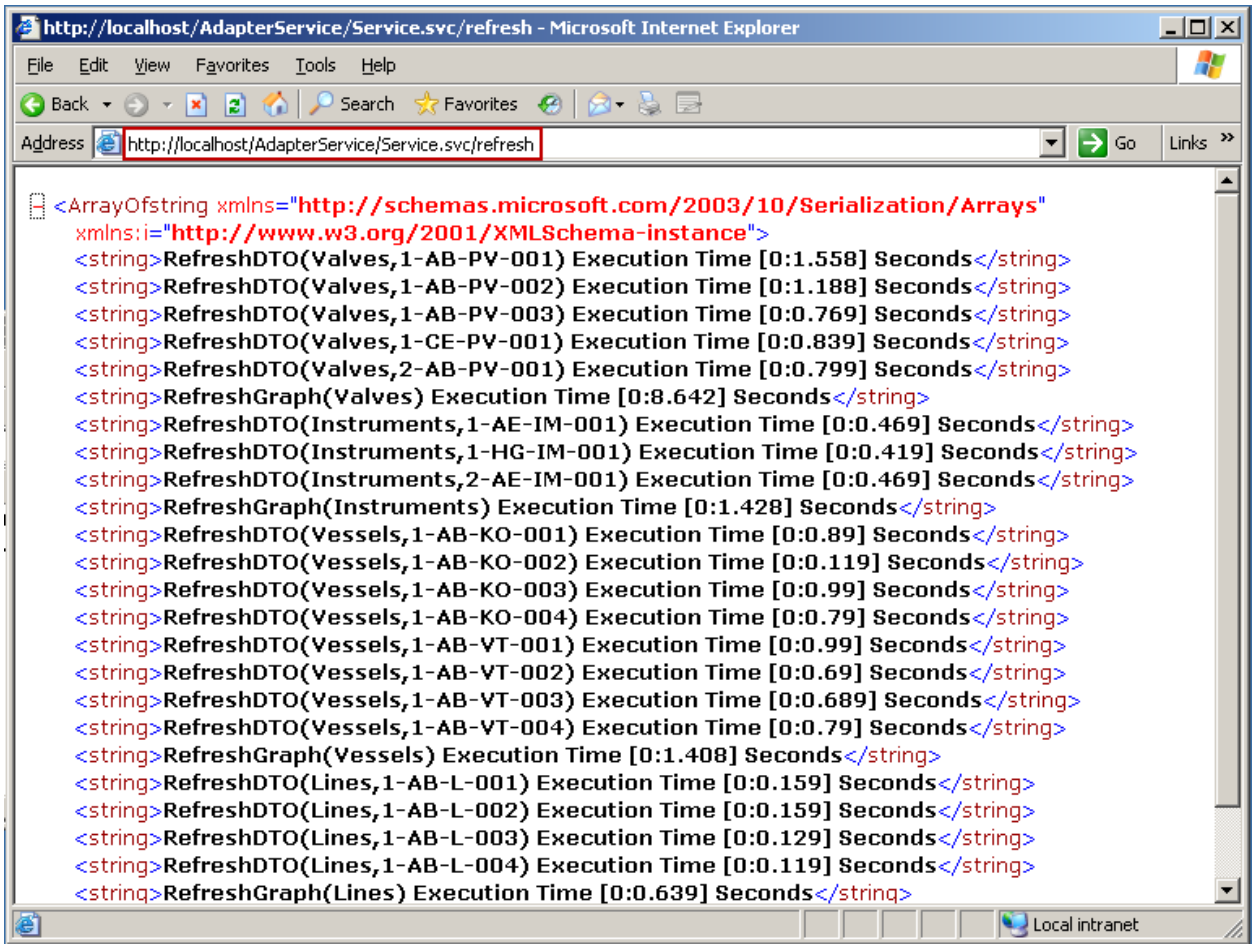
2. Test the data dictionary by entering the address http://localhost/AdapterService/Service.svc/dictionary in your browser. You should see the following.



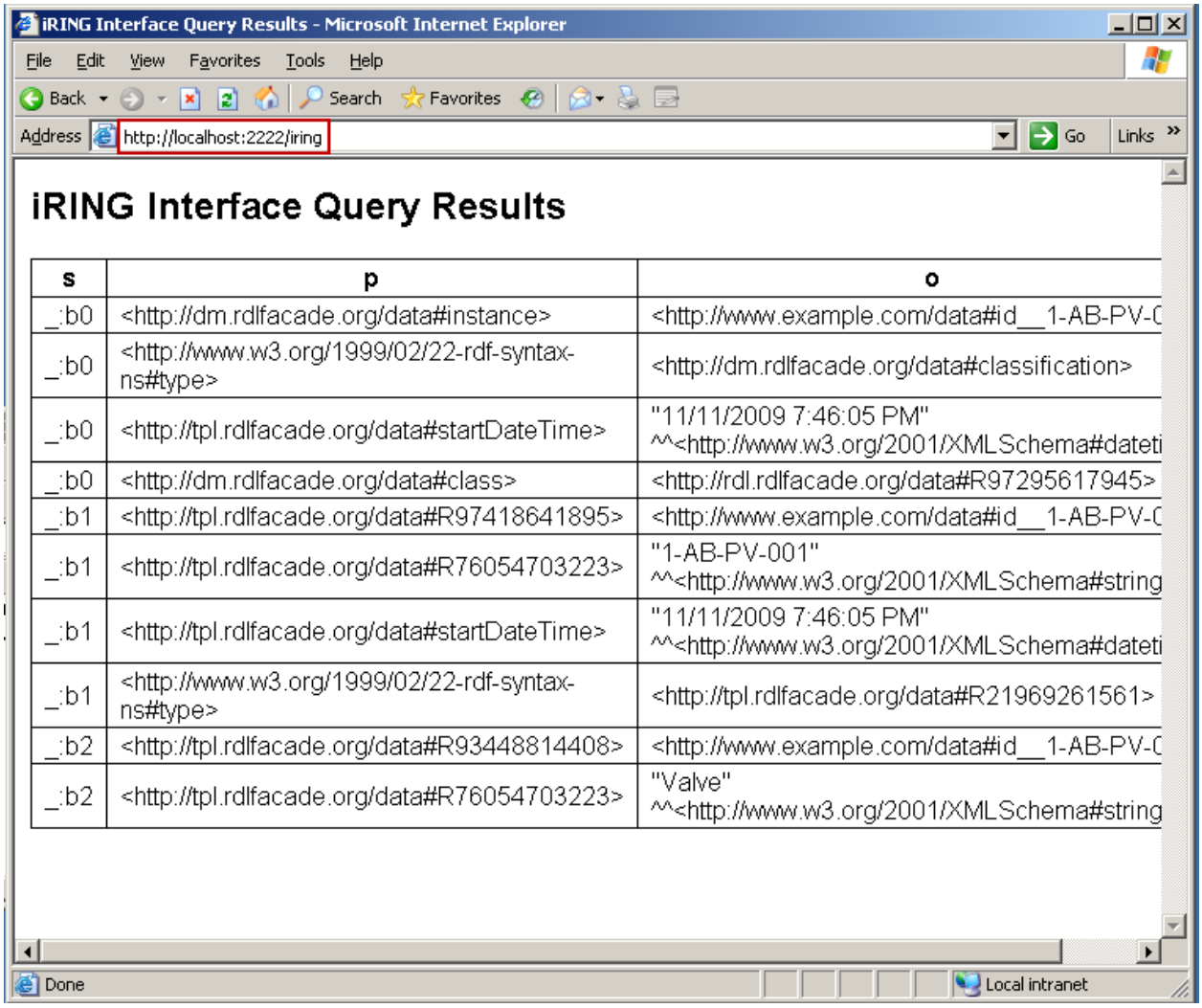
3. Test the mapping by entering the address http://localhost/AdapterService/Service.svc/mapping in your browser. You should see the following.



4. Test populating the triple store with data from the database by entering the address http://localhost/AdapterService/Service.svc/refresh in your browser. You should see the following.



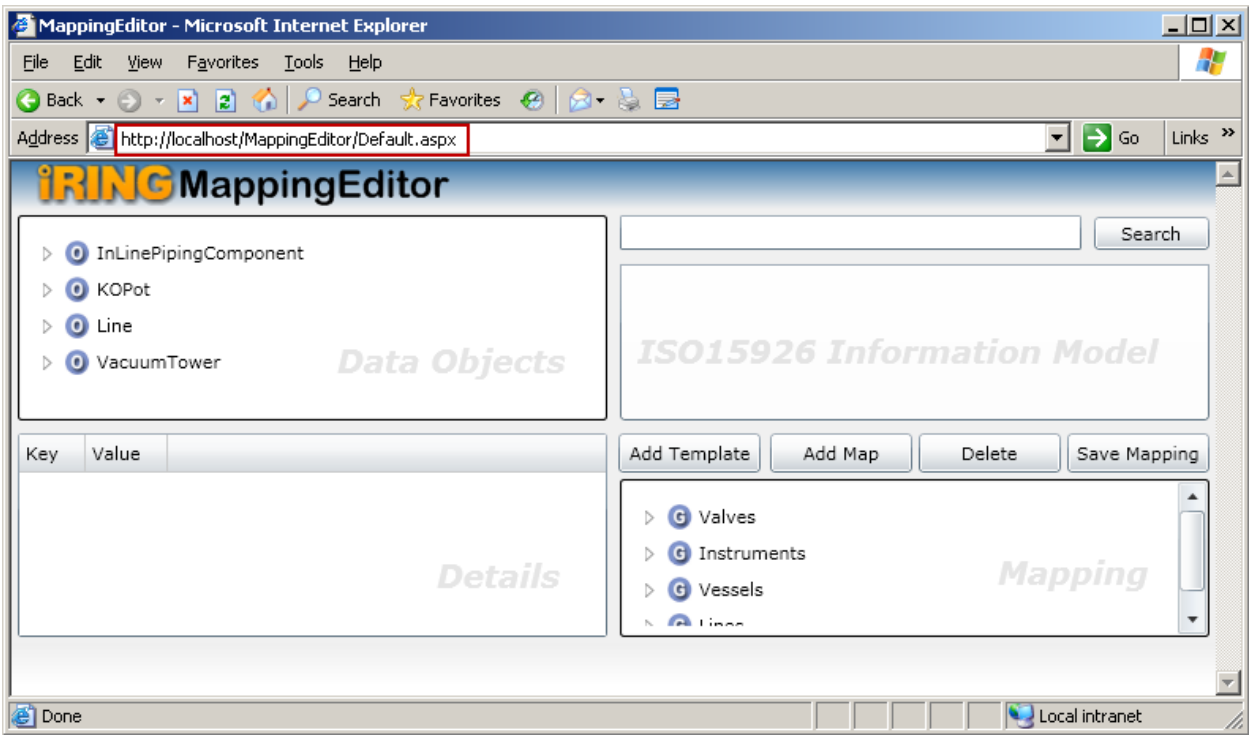
5. Verify the data in triple store by entering the address http://localhost:2222 in your browser and then clicking the Execute Query button at the bottom of the window. You should see the following.



s	p	o
_:b0	<http://dm.rdlfacade.org/data#instance>	<http://www.example.com/data#id__1-AB-PV-0
_:b0	<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>	<http://dm.rdlfacade.org/data#classification>
_:b0	<http://tpl.rdlfacade.org/data#startDateTime>	"11/11/2009 7:46:05 PM" ^^<http://www.w3.org/2001/XMLSchema#dateti
_:b0	<http://dm.rdlfacade.org/data#class>	<http://rdl.rdlfacade.org/data#R97295617945>
_:b1	<http://tpl.rdlfacade.org/data#R97418641895>	<http://www.example.com/data#id__1-AB-PV-0
_:b1	<http://tpl.rdlfacade.org/data#R76054703223>	"1-AB-PV-001" ^^<http://www.w3.org/2001/XMLSchema#string
_:b1	<http://tpl.rdlfacade.org/data#startDateTime>	"11/11/2009 7:46:05 PM" ^^<http://www.w3.org/2001/XMLSchema#dateti
_:b1	<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>	<http://tpl.rdlfacade.org/data#R21969261561>
_:b2	<http://tpl.rdlfacade.org/data#R93448814408>	<http://www.example.com/data#id__1-AB-PV-0
_:b2	<http://tpl.rdlfacade.org/data#R76054703223>	"Valve" ^^<http://www.w3.org/2001/XMLSchema#string

4.10 Testing the Mapping Editor

Test the Mapping Editor by opening your browser on the server and entering the address http://localhost/MappingEditor/Default.aspx. You should see the following.



This completes the installation of ***iRingTools*** Adapter.

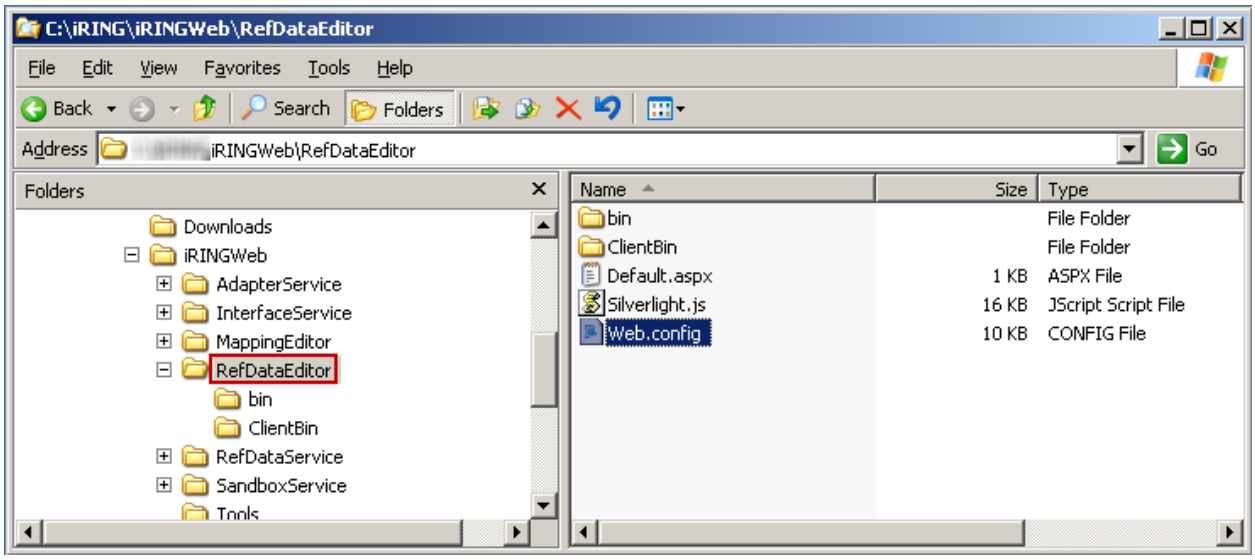
5 Hostname Setup

The final step in the installation is updating hostname in certain ***iRINGTools*** services for use with client browsers on the network.

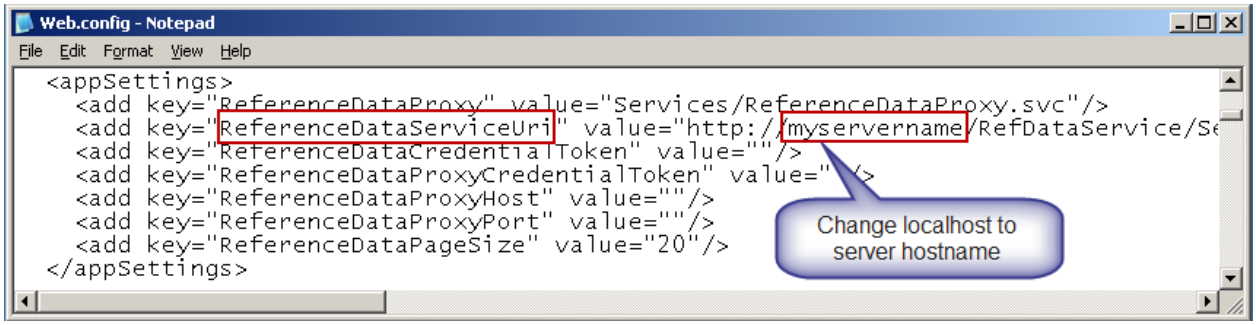
5.1 iRINGTools Sandbox

If you installed the ***iRINGTools*** sandbox, then the RefDataEditor Web.config file needs updating for the server hostname. Modify the file as follows.

1. Open the file Web.config file located in the iRINGWeb\ RefDataEditor in a text editor.



2. In the file Web.config, locate the ReferenceDataServiceUri key in appSettings. Change localhost in the value to the server hostname; preserve other portions of the value.

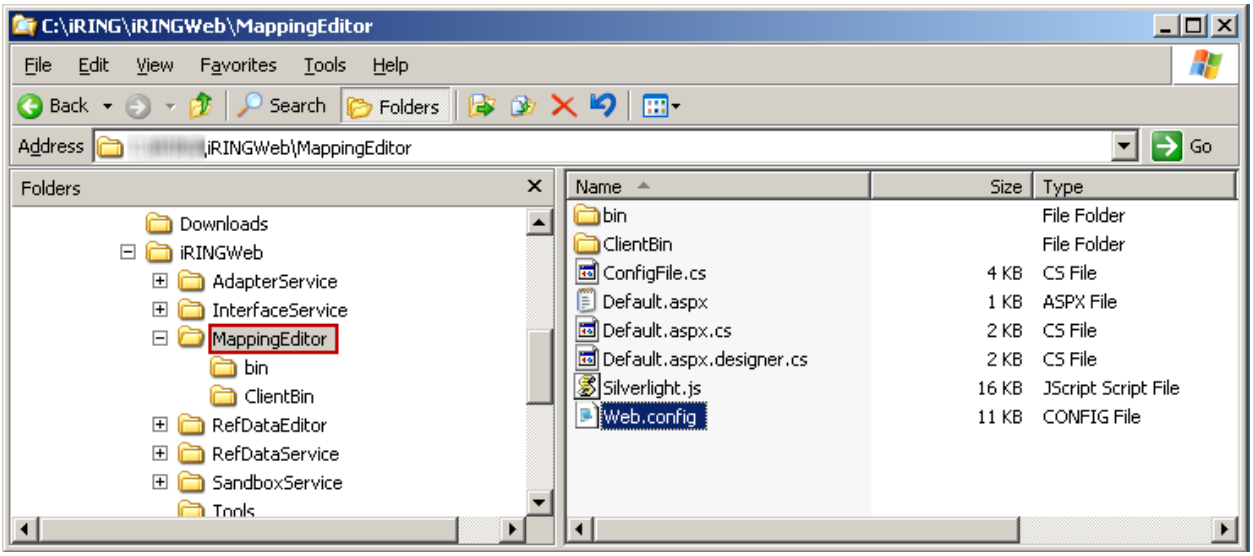


3. Save the changes to the file Web.config and close it.

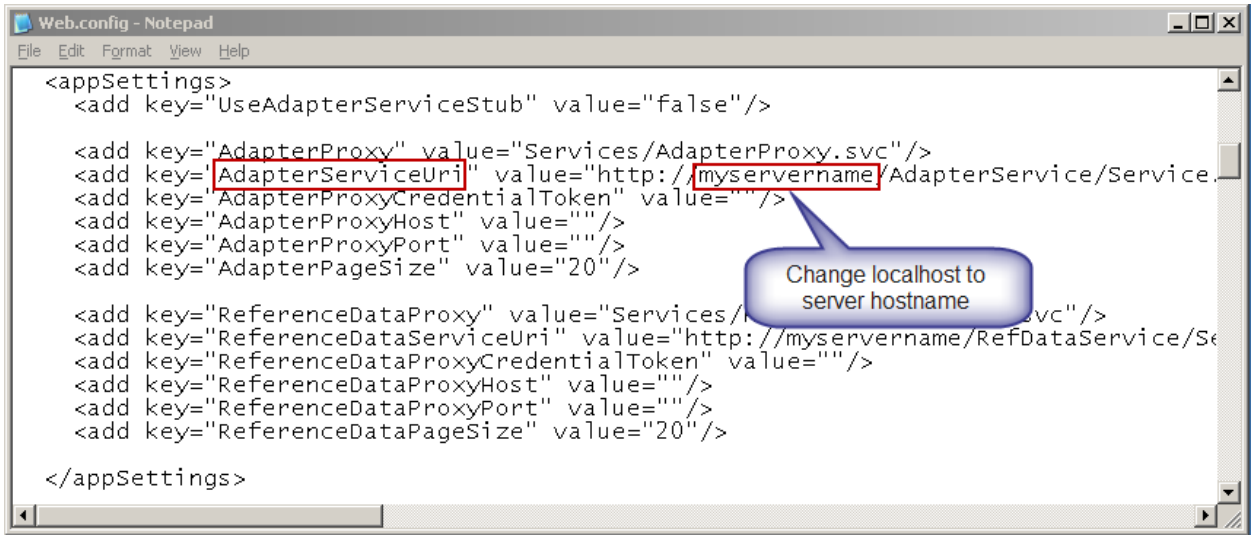
5.2 iRINGTools Adapter

If you installed the ***iRINGTools*** Adapter, then the MappingEditor Web.config file needs updating for the server hostname. Modify the file as follows.

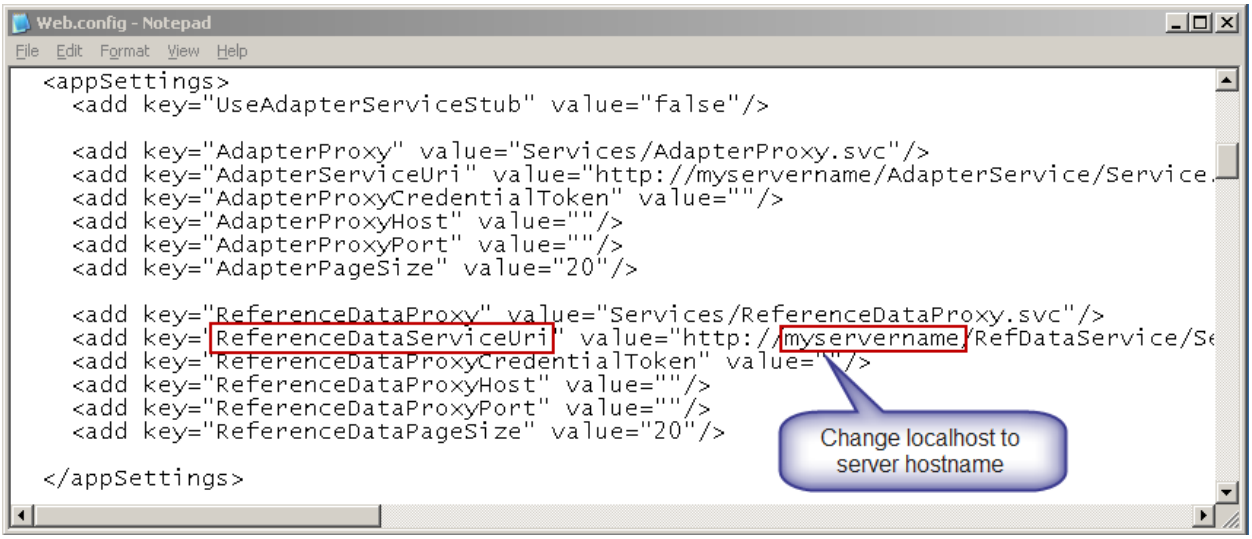
1. Open the file Web.config file located in the iRINGWeb\ MappingEditor in a text editor.



2. In the file Web.config, locate the AdapterServiceUri key in appSettings. Change localhost in the value to the server hostname; preserve other portions of the value.



3. In the file Web.config, locate the ReferenceDataServiceUri key in appSettings. Change localhost in the value to the server hostname; preserve other portions of the value.



4. Save the changes to the file Web.config and close it.

Installation of ***iRINGTools*** sandbox and/or adapter is complete.