Implementation Guide

SEP

VERSION 2025

ReliaSoft

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Getting Started

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Introduction

This guide describes how to implement ReliaSoft SEP by Hottinger Bruel & Kjaer Inc. for your organization. It covers tasks that typically require IT expertise.

After the SEP web portal is functional, you can manage users and configure various options via the SEP admin utility. This may require cooperation from an IT admin either to provide the application admin(s) access to run the SEP admin utility on the web server or to manage users and configure settings based on their business requirements. For information about these tasks, see SEP Admin Utility - Manage Users and SEP Admin Utility - SEP Settings in the SEP help.

Note: To view a web-based version of this guide, go to https://help.reliasoft.com/sep25/ig/.

We recommend that you read each of these topics sequentially and follow the instructions. In general, you will need to perform the following steps:

1. Prepare your database and web servers for your implementation.

2. Install the web portal and activate your license.

3. Create a ReliaSoft database, if you don't already have one that you'd like to use.

4. Update the configuration file on the web server.

5. Perform various post-installation tasks, as necessary, to ensure that the application functions properly.

6. If desired, make configuration changes to IIS to improve security.

SEP Architecture and Requirements

SEP is a web-based application that serves the needs of engineering teams of any size. Based on the .NET Framework, it is designed to be n-tier, scalable, distributable, robust and able to be deployed across multiple servers or on a single computer.

Server Requirements

If you plan to host the database and website on the same server, you will need the following:

- Windows 2016 or newer

- .NET 4.8

- IIS with support for serving ASP.NET

- SQL Server 2014 (SP3) or newer OR Oracle 18c or newer

Client Requirements

Once the website has been implemented, users can access it with any browser that supports the following doctype:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

This includes most common browsers (such as Chrome, Safari and Firefox) that are available for Windows, Mac and tablet operating systems.

If the site is private (e.g., http://InternalServer/SEP), an application administrator may need to provide instructions for accessing the site on the internal network from mobile devices (e.g., via VPN or some other method).

These are the same requirements as for the XFRACAS failure reporting, analysis and corrective action system. Both applications can be deployed together on the same database and web server (s).

Web Server (IIS and .NET)

Public or Private

Encrypted or Unencrypted

SQL Server or Oracle Database

Internet Explorer

Safari

Firefox

Chrome

Windows PC

WEB APPLICATIONS

DESKTOP APPLICATIONS
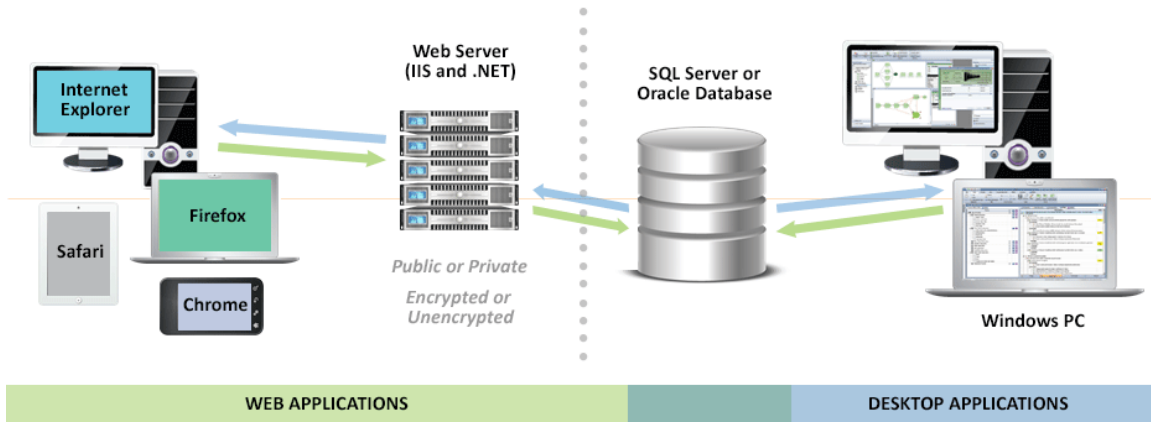
Install the Application

IN THIS CHAPTER

Prepare the Database Server (SQL Server or Oracle)

The ReliaSoft desktop applications, XFRACAS and SEP are all designed to connect with the same database on either SQL Server or Oracle.

If you need to establish a new database, the following considerations apply for preparing the database server. Later, you will use the admin utility to either create the database or connect to an existing one. (See Create the ReliaSoft Database (if Applicable) and Update the Configuration File.)

Setting up for SQL Server or Oracle

SQL Server

- **Make sure you have the latest version of SQL Server running**. To do this, run the following query in Query Analyzer: "Select @@version". This should return a value like "Microsoft SQL Server 2005 - 9.00.3042 (Intel X86)" or "Microsoft SQL Server 2008 R2 - 10.50.1617 (X64)," depending on which SQL Server service pack you have installed.

- **Make sure you know the SQL Server Name**. This is a local server name or IP address so the IIS machine with the .NET application can connect to the database. These instructions assume that you will use a default instance of SQL Server to host the ReliaSoft database (e.g., SERVERNAME). If not, you must specify the instance when you enter the server name (e.g., SERVERNAME\INSTANCENAME).

Oracle

For easier support, we recommend installing the SQL Worksheet (available with the Enterprise edition) or Oracle SQL Developer (free to download from the Oracle website).

Replication and Backups

XFRACAS, SEP and the ReliaSoft desktop applications cannot be deployed with bi-directional (peer-to-peer or merge) database replication. They are designed for use with a single back-end database and do not handle conflict detection and resolution. It may be possible to use a ReliaSoft database with uni-directional (transactional or snapshot) replication; however, this is likely to affect performance, and you must test to evaluate the impact in your particular situation. *This type of use is not recommended or supported by ReliaSoft.*

For the purpose of disaster recovery, we recommend establishing a regular schedule for database and transaction log backups and storing these backups in a location that is protected from potential failure of the application's database server. If an issue occurs, you can restore the most recent database backup (e.g., nightly) and then restore subsequent transaction logs up to the point right before the failure.

Prepare the Web Server - IIS

To prepare the web server prior to installing SEP, make sure the IIS Web Server role and services are installed. In addition, if applicable, prepare for SSL protection.

IMPORTANT: ReliaSoft web based software cannot be installed on a server that is being used as a domain controller (i.e., a server that has Active Directory or DNS services installed). Because of security issues, domain controllers should have limited software and roles installed on them and they should not be used as a webserver.

IIS Roles and Features

Install the Web Server (IIS) role (if it is not already installed) and make sure the following role services are also installed. (*Instructions follow this table for Windows 2022, 2019 and 2016.*)

	WINDOWS 2022/2019	WINDOWS 2016
Web Server		
Common HTTP Features		
Default Document	x	x
Directory Browsing	x	x
HTTP Errors	x	x
Static Content	x	x
HTTP Redirection	x	
Health and Diagnostics		
HTTP Logging	x	x
Custom Logging	x	x
Logging Tools	x	x
Request Monitor		x
Performance		
Static Content Compression	x	x
Dynamic Content Compression	x	x
Security		
Request Filtering	x	x
IP and Domain Restrictions	x	x
Windows Authentication	x	x

	WINDOWS 2022/2019	WINDOWS 2016
Application Development		
.NET Extensibility 4.7 or 4.8	x	
.NET Extensibility 4.5 or 4.6		x
Application Initialization	x	x
ASP.NET 4.7 or 4.8	x	
ASP.NET 4.5 or 4.6		x
ISAPI Extensions	x	x
ISAPI Filters	x	x
Management Tools		
IIS Management Console	x	x

Note that if you do not already have the required version of the .NET Framework installed, you will need to have the operating system installation media available when you install the Web Server (IIS role). The required file is in the sources/sxs folder.

1. Open the Server Manager.

2. Click the **Manage** menu, choose **Add Roles and Features** and proceed through the wizard.

3. On the Server Roles page, select **Web Server (IIS)**.

   a. If the role is already installed, expand the node, review the services that are already installed and select additional services if applicable.

   b. If the role is not already installed, accept any prompts to install required features and proceed to the **Web Server (IIS) > Role Services** page, where you can select the services you need to install.

4. At the end of the wizard, click **Install**.

SSL Certificate

If you want the website to use HTTPS for secure communication (SSL/TLS), you must have a digital certificate. Later, you will use this certificate to create the binding for the site. (See Enable HTTPS for Secure Communication.)

If you don't purchase a third-party certificate, you can create your own via another method, such as by generating a self-signed certificate using IIS Manager or using the Active Directory Certificate Services role installed on the server.

Establish a Service Account for the Application (if Applicable)

If the database is on SQL Server, we recommend establishing a service account (e.g., "RSUser") that SEP will use to connect to the ReliaSoft database as well as any other external databases that may be used to create "custom connection" dashboards in the <u>Reliability Data Warehouse (RDW)</u>. This account must meet several requirements:

- It must be an Active Directory account.

- Ideally, it should have a password that does not expire (recommended).

- If the database is on SQL Server, a user should be assigned to a public server role, with at least the **db_datareader** and **db_datawriter** roles for the ReliaSoft database. (*If the database does not yet exist, you will need to add the roles via SQL Server after you create it. See <u>Create the ReliaSoft Database</u>*.)

- It should have at least the **db_datareader** role for any other SQL Server databases that will be used by RDW custom connections.

If you plan to use this account as a database connection for **Open** buttons, it must also meet the requirements for an "impersonation user" for all computers that will run desktop applications — specifically, it must be on a trusted domain and it cannot be a local admin, domain admin or member of any Windows admin group (see <u>Configure Remote ReliaSoft</u>).

Alternatively, you can establish a separate impersonation account for the application admin to use for **Open** buttons only. For details on other options to configure the database connection for **Open** buttons, see <u>SEP Admin Utility - SEP Settings Window</u> in the SEP help.

Install the Application and Activate the License

After you have prepared the database and web server(s), you can log in to the web server as an administrator and perform the following steps. User Account Control (UAC) can either be left on or turned off for this installation.

1. Run the SEP setup (e.g., SEP25.exe) and follow the steps in the wizard to create the website and install the activation and admin tools.

2. From **Start**, search for "SEP 2025 Activation" then run the product activation tool and follow the steps to activate your license.

The license will be registered to a specific e-mail address, which will receive the notification required to activate it. This will be the same address for all stages of license usage from development/staging to production. Choose an address that can be accessed by someone who changes the hardware on the server. If the hardware changes for any reason, the license must be reactivated to get SEP back up and running.

Create the ReliaSoft Database (if Applicable)

If you already have a database that the website will use, skip ahead to <u>Update the Configuration File</u>.

Plan for Your Implementation

To create a new ReliaSoft database, you'll need to run the SEP admin utility (which resides on the web server) from a Windows user account that has the following permissions:

- For SQL Server implementations, you must be able to create objects under the default database owner (dbo) schema. Be prepared to specify the server and database names.

- For Oracle implementations, you must be able to create a database. Be prepared to specify a port, host, service name, schema and password.

> **Note:** If you are using Oracle 19c with a pluggable database (PDB), the service name must be fully qualified — e.g., [PDBName].[db_domain].

Created Admin Accounts

During this process, the admin utility automatically creates two new user accounts for you — one for SEP and ReliaSoft desktop applications and another for XFRACAS — that use your Windows login and provide full admin permissions for those applications. The XFRACAS account is a special, IT/admin-only account for tasks such as updating database tables, rolling out new permissions to other admin users, performing bulk data imports (so imported records are not assigned to a specific user), etc. It is invisible to regular users and does not count against the number of users allowed by your XFRACAS license.

Future Upgrades and Ongoing IT / Maintenance Tasks

We recommend performing upgrades and ongoing IT/admin tasks from the same Windows account that you used to create the database (which, by default, has the database permissions required for all ReliaSoft applications). If you cannot identify a single person in your organization who will be available to perform these tasks — both now and in the future — we recommend establishing a shared service account for this purpose.

Note that, even if you created the database from a personal user account, you can still create a shared account to use for future upgrades:

- For SEP and desktop applications, use the admin utility to create additional accounts that are assigned to the "admin" security group.

- For XFRACAS, use the website's **Admin** tools (**Admin > Configure > Security > Users**) to change the domain\username of the account that was created automatically.

Instructions for upgrading SEP are provided in the Install Update guide that comes with your upgrade package.

Create or Upgrade the Database

1. Log in to Windows with an appropriate account for your implementation. (Alternatively, you can run the admin utility as that account in step 2).

2. From **Start**, search for "SEP 2025 Admin" and open the admin utility.

3. Click either **New Enterprise Database** or **Upgrade Enterprise Database** and enter the details required to create or upgrade the database.

Assign Roles in SQL Server for the Application Service Account

Finally, if you created a new database on SQL Server, you must make sure the application service account (i.e., the account that the application will use to connect to the database) has the required roles assigned in SQL Server. For requirements, see Establish a Service Account for the Application.

Update the Configuration File

After you have installed the website, activated the license and established a database, the next step is to update the configuration file on the web server.

From **Start**, search for "SEP2025 Admin" and open the admin utility. Then click **Update SEP Configuration File**.

IMPORTANT: Incorrect settings on either tab of this window can cause problems connecting to the database. If you encounter errors such as "There's a problem with the page you requested" when connecting to the website or errors stating that "an error occurred during the login process" when performing admin tasks, double-check all settings on both tabs.

1 - On the Connection Tab:

- **Connection Info** - Enter the required details for the database that the application will connect to. If you used the admin utility to create the database, the connection information will appear in the fields automatically.

  Note: If you are configuring SEP for use with an Oracle database, you must specify a valid service name. Entering an SID may result in slow performance.

  Select **Encrypt Connection String** if you want to hide the connection string information within the web configuration file.

- **User Impersonation (SQL Server)** - If the database is on SQL Server, enter the credentials that SEP will use to connect. For requirements, see Establish a Service Account for the Application.

  Select **Encrypt Impersonation Identity** if you want to hide the credentials within the web configuration file.

2 - On the Settings Tab:

- **Request timeout** sets how long IIS waits for a request to the application to finish processing. Typically, this will not need to be changed for an SEP implementation.

- **Content-Security-Policy Header** determines which types of dynamic resources are allowed to load on the site. This policy is required to detect and prevent cross-site scripting (XSS) and other code-injection attacks. Typically, it will not need to be changed; however, if you decide to modify this policy, you must include the following directives to ensure that the site functions properly:

  - `'unsafe-inline'`

  - `'unsafe-eval'`

  - `img-src 'self' data:`

- If a Secure Socket Layer (SSL) certificate has been implemented for SEP, select **Yes** for **HTTP Cookies Require SSL** if you also want the browser cookies to require SSL (an additional level of security).

- For a SQL Server implementation,

  a. Select **Encrypt communication** to encrypt the connection between the application and the database. Do not select this option if the database server does not support an encrypted connection. If you do so, you will not be able to connect to the database server and you will receive an error when trying to do so. Note that starting in Version 2024, this option is selected by default.

  b. Select **Trust server certificate** if the server has a self-signed certificate.

Note: To encrypt the connection for an Oracle implementation, set the encryption type to either "requested" or "required" for the Oracle database. To learn more, consult the Oracle documentation (e.g., https://docs.oracle.com/cd/B19306_01/network.102/b14268/asoconfg.htm#i1007808).

Perform Post-installation Tasks, if Applicable

IN THIS CHAPTER

Set up User Accounts and Permissions

After the database has been created, you can use any of the desktop applications or the SEP admin tool to create user accounts and set access permissions. You must create an account for anyone who will be able to edit or view data in the ReliaSoft desktop applications or SEP. (User accounts for XFRACAS are managed separately.)

- In the SEP admin tool on the web server, click the **Manage Users** button.

- In the ReliaSoft desktop applications (e.g., Weibull++, XFMEA, etc.), first open the database and then **choose File > Manage Database > Users and Security**.

If your organization uses Microsoft Active Directory, you can save time by importing user information from the directory to create the user accounts. Active Directory authentication

should be configured to lock accounts if incorrect passwords are entered a certain number of times, in accordance with your organization's best practice for security settings.

For more information, consult the "Security Options" topics in the desktop application help files

After the accounts have been created, you can use the SEP admin utility running on the web server to specify which users can access SEP. (See SEP Admin Utility - Manage Users in the SEP help.)

Start the ReliaSoft Service

The ReliaSoft Service is an optional utility that is installed with SEP. If the application admin(s) want to use the service to send alerts for actions based on calendar date (e.g., when the action is due in X days), you will need to make sure the service is running on the web server. *(For instructions on how to configure the settings, see SEP Admin Utility - SEP Settings in the SEP help.)*

To start the ReliaSoft Service on the SEP web server:

1. From **Start**, search for "Services" and open the Services window.

2. In the list of local services, right-click **ReliaSoftService** and select **Properties**.

3. On the Log On page, enter the credentials for an account that the service can run as. We recommend using an account that does not expire, such as the application service account (see Establish a Service Account for the Application).

4. On the General page, set the **Startup type** to either **Automatic** or **Automatic (Delayed Start)**. Then click **Start**.

The current status of the service (Running, Not Running or Not Found) will be displayed on the SEP Admin page.

*   By default, this service is configured to not run from 8 to 10 p.m. each day that can be used for routine database maintenance and backups (**StopProcessingTime** = 20:00:00 and **MinutesToHoldProcessing** = 120). To change these settings, edit serviceConfig.xml on the web server.

*   By default, this file is installed in the "bin" folder for the SEP website (e.g., C:\inet-pub\wwwroot\SEP\bin).

Create an Application Pool Identity

The application admin(s) may determine that SEP needs to display RDW dashboards based on custom connections to external Access databases (or to external SQL Server databases if the ReliaSoft database is on Oracle). If so, you may wish to set a service account (e.g., "SynUser") as the IIS application pool identity (see Establish a Service Account for the Application). This is not recommended if your website is public.

1. In the **Connections** pane of the IIS Manager, click **Application Pools**.

2. Right-click the website's application pool and choose **Advanced Settings** on the shortcut menu.

3. For the **Identity** property, click the **...** button to open the Application Pool Identity window. Select the **Custom account** option and click **Set** to open the Set Credentials window. Enter the account credentials (domain\username) for the service account and click **OK**.

Note: For Access databases with the *.accdb file type, the RDW dashboard can only be displayed if the database was created with the same version of Microsoft Office (32-bit or 64-bit) that is installed on the web server (for SEP) or on the individual user's computer (for ReliaSoft desktop applications). To ensure that the RDW dashboard will display regardless of which version of Microsoft Office is installed, use the *.mdb file type instead.

Release and Recycle Memory

For large systems or systems with a high transactional load, an "Out of Memory" error can occur when the request for pages exceeds the system's capability to release and recycle the memory with the default IIS settings. The settings provided below will force IIS to recycle the memory usage and handle it better so that the "Out of Memory" error does not occur.

Note that overly aggressive settings can slow the response of the system. Typically, memory is recycled when the application pool and server are not busy. Forcing memory to recycle more often can consume processor cycle time when the application is still busy, thus slowing system performance. The following settings have been tested to prevent the error from occurring, while posing the minimum possible impact on performance.

1. In the **Connections** pane of the IIS Manager, click **Application Pools**.

2. Right-click the system's application pool and choose **Recycling** on the shortcut menu.

3. In the Application Pool Recycling Settings window that appears, specify the following settings and then click **Next**:

- In the **Fixed Intervals** area, select **Regular** time intervals and enter **1740**.

- In the **Memory Based Maximums** area, select **Private memory usage** and enter **1,024,000**.

4. Select to log the following events and click **Finish**:

- **Regular time intervals**

- **Private memory usage**

- **Unhealthy ISAPI**

Enable HTTPS for Secure Communication

Enable HTTPS

If you want to use HTTPS for secure communication (SSL/TLS) and you already have a certificate for the website (see "<u>SSL Certificate</u>"), do the following:

1. In the **Connections** pane of the IIS Manager, open the **Sites** node under the server name. Click the **Default Web Site**.

2. In the **Actions** area on the right side of the window, click the **Bindings** link and then click the **Add** button in the Site Bindings window that appears.

3. Add a site binding of type `https` and specify your digital certificate. Close the Site Bindings window.

4. Return to the Connections pane and click the SEP site.

5. Under IIS, double-click the **SSL Settings** icon. Select **Require SSL** and **Ignore**, then click **Apply**.

Enable TLS 1.2 Protocol for HTTPS

If you are using HTTPS for secure communication and you wish to enable TLS 1.2, the same protocol must be enabled for the database server, the web server and .NET on the web server. (*Also note that if you are using a digital certificate, it must be SHA-256 or higher.*)

If your web server and database server are both Windows 2016 or 2019, the TLS 1.2 protocol will be enabled by default. If both servers are Windows 2022, then TLS 1.2 and 1.3 will be enabled by default. If TLS 1.2 is not working, check the following registry keys:

```
Windows Registry Editor Version 5.0

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols]

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\SSL 2.0]

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\SSL 2.0\Client]

"DisabledByDefault"=dword:00000001

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.0]

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.0\Client]

"Enabled"=dword:00000000

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.0\Server]

"Enabled"=dword:00000000

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.1]

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.1\Client]

"DisabledByDefault"=dword:00000000

[HKEY_LOCAL_
```

```
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.1\Server]

"DisabledByDefault"=dword:00000000

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.2]

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.2\Client]

"DisabledByDefault"=dword:00000000

[HKEY_LOCAL_
MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCH
ANNEL\Protocols\TLS 1.2\Server]

"DisabledByDefault"=dword:00000000
```

Enable Opening Analyses in ReliaSoft Desktop Applications

When users view published analysis summaries and FMEAs in SEP, the Open buttons make it easy for them to open the full analysis in a relevant desktop application. This can be done in two ways:

- Using ReliaSoft desktop applications <u>installed locally</u> on the SEP user's computer.

- Using ReliaSoft desktop applications <u>running on a remote server</u>, eliminating the need to install the desktop software on each client computer.

These options are not mutually exclusive; you can make both available and allow the user to choose via the <u>User Preferences page</u>. For both methods, an enterprise database connection file will be created and an environment variable name for the connection file path will be specified.

Enabling the Use of Locally Installed Software

Create the Enterprise Database Connection File

The enterprise database connection file (*.rserp) contains all of the necessary information for connecting to the enterprise database. For users opening analyses with locally installed software, this file may be saved locally on their computers, or it may be accessed at a shared network location.

1. From Start, search for "SEP 2025 Admin" and open the admin utility.

2. Click **New Database Connection File** and enter the details required for the database, then click **OK**.

3. Specify a location to save the enterprise database connection file—this can be the intended permanent location, or you can subsequently copy the file for distribution—and click **Save**.

4. Create a password for the enterprise database connection file. This password will need to be shared with all users who use the connection file.

Specify an Environment Variable Name

The environment variable will be used in the locator links that point to specific analyses, so it is important that it matches here and on all users' machines. Refer to <u>Define the Environment Variable on the Remote Server</u>.

1. In the admin utility, click **SEP Settings** and enter the details required for the database, then click **OK**.

2. On the Connection tab, under **Database connection for Open** buttons, enter an environment variable name or accept the default name, "SEPConnection."

Define the Environment Variable on User Computers

On each client computer:

1. If the enterprise database connection file was distributed, save it to a location of your choosing, then press **Shift** and right-click it and choose **Copy as Path**. If you are accessing it at a shared network location, access that location, press **Shift** and right-click the file and choose **Copy as Path**. In this latter case, you must access the location using the UNC pathname (e.g., \\SharedDrive\ReliaSoft\ConnectionFile1.rserp) and NOT using a mapped drive.

2. From Start, search for "env" and choose **Edit environment variables for your account**.

3. In the User variables section of the Environment Variables window, click **New**.

4. In the New User Variable window, enter the environment variable name created in the "Specify an Environment Variable Name" section, then paste the path that you copied in step 1 of this section as the variable value and click **OK**.

5. Restart the computer to ensure that the variable is recognized going forward.

Enabling the Use of Remotely Installed Software

Create the Enterprise Database Connection File

The enterprise database connection file (*.rserp) contains all of the necessary information for connecting to the enterprise database. For users opening analyses using software running on a remote server, this file will need to be placed in a location accessible to all users (i.e., any user accessing the software must have, at minimum, read permissions in the folder where the connection file is saved).

1. From Start, search for "SEP 2025 Admin" and open the admin utility.

2. Click **New Database Connection File** and enter the details required for the database, then click **OK**.

3. Specify a location to save the enterprise database connection file and click **Save**.

4. Create a password for the enterprise database connection file. This password will need to be shared with all users who use the connection file.

Specify an Environment Variable Name

The environment variable will be used in the locator links that point to specific analyses, so it is important that it matches here and on the <u>remote ReliaSoft server</u>.

1. In the admin utility, click **SEP Settings** and enter the details required for the database, then click **OK**.

2. On the Connection tab, under **Database connection for Open** buttons, enter an environment variable name or accept the default name, "SEPConnection."

Configure Remote ReliaSoft

Remote ReliaSoft allows you to configure SEP to run ReliaSoft desktop applications on one or more remote servers, eliminating the need to install and update software on each client computer. This section describes the minimum requirements for setting up the server(s) and generating a Remote Desktop connection file for Remote ReliaSoft.

Requirements

- A Windows server that can be configured with Microsoft Remote Desktop Services (RDS) and RDP RemoteApp, or multiple RDS servers and a "broker" that distributes the requests. When planning your hardware requirements, you can estimate the following typical memory requirements per application per session. For example, a server with 32 GB RAM could

support approximately 30 simultaneous ALTA users, or 100 simultaneous Lambda Predict users, and so on.

APPLICATION	ESTIMATED MEMORY REQUIREMENT PER SESSION (MB)
ALTA	1000
RGA	1000
Weibull++	900
BlockSim	500
XFMEA	400
RCM++	400
MPC	300
Lambda Predict	300

- Sufficient RDS license seats (purchased from your preferred Microsoft vendor).

- ReliaSoft desktop applications installed and kept up to date on the RDS server(s). Locally hosted licensing is recommended (token-based or floating). If you do not already have a locally hosted license server for ReliaSoft and nCode software, see instructions at https://www.hbkworld.com/en/services-support/support/product-documentation/locally-hosted-licensing.

Set Up the RDS Server(s) and Create a Remote Desktop Connection File

1. Note that this document provides partial instructions focused on the settings that will affect your ability to generate a Remote Desktop connection file that can be used within SEP. If you are not familiar with the steps required to install and configure RDS, you may need to consult documentation/support provided by Microsoft.

2. Install the ReliaSoft desktop applications and configure the locally hosted licensing.

3. In the Windows Server Manager, make sure the required RDS roles are installed:

WINDOWS 2016 OR 2012	WINDOWS 2008
Remote Desktop Session Host	Remote Desktop Session Host
Remote Desktop Connection Broker	Remote Desktop Services Manager
Remote Desktop Web Access	Remote App Manager

4. In Remote Desktop Session Host, configure your Remote Desktop license (CALs) and any other settings that are appropriate for your implementation.

5. Add the ReliaSoft Launcher as a published RemoteApp program.

   - In Windows 2016 or 2012, in the Windows Server Manager under Remote Desktop Services, create a Session Collection. In the collection, use Publish RemoteApp Programs and follow the wizard. In the Properties window, make sure **Parameters** is set to **Allow any command line parameters**.

   - In Windows 2008, follow the wizard in the RemoteApp Manager. Make sure **Arguments** is set to **Unrestricted**.

6. Create and save an *.rdp file that contains the connection information for the ReliaSoft Launcher.

   - In Windows 2016 or 2012, open RDWeb (e.g., https://servername/RDWeb) in a web browser (other than Internet Explorer) and save the connection file.

   - In Windows 2008, click the **Create .rdp File** link in the RemoteApp Manager.

Note: SEP will use the *.rdp file that you provide as a template, and it will add settings that allow the ReliaSoft Launcher to open a specific ReliaSoft application, project and analysis. If your RDS server is configured to use digital certificates, you may need to edit the file (in Notepad or another text editor) before uploading to SEP. Specifically, if a certificate was added to the end of the file, it must be removed.

Enable Remote ReliaSoft

Remote ReliaSoft is now ready to be enabled in the SEP admin utility. (See <u>SEP Admin Utility - SEP Settings</u> in the SEP help.)

Define the Environment Variable on the Remote Server

1. Open a Remote Desktop connection to the server hosting the ReliaSoft software.

2. Save a copy of the enterprise database connection file to a location accessible to all users (i.e., any user accessing the software must have, at minimum, read permissions in the folder where the connection file is saved).

3. Test that the connection file works by double-clicking it and opening any ReliaSoft application that your license covers. Note that when you are asked for the password, you have the option of remembering the password on the computer. This affects only the user account

that is currently logged in; each user will need to provide the password at least once (when using Open in SEP) and decide whether to save it for their account.

4. Once you have confirmed that the connection file works, press **Shift** and right-click the file and choose **Copy as Path**.

5. From Start, search for "env" and choose **Edit the system environment variables**.

6. On the Advanced tab of the System Properties window, click the **Environment Variables** button.

7. In the System variables section of the Environment Variables window, click **New**.

8. In the New System Variable window, enter the environment variable name you created in the "Specify an Environment Variable Name" section, then paste the path that you copied in step 4 of this section as the variable value and click **OK**.

9. Restart the remote server to ensure that the variable is recognized going forward.

Configure IIS for Enhanced Security

IN THIS CHAPTER

IIS Settings for OWASP

This section provides recommendations to address issues that may be identified if you choose to scan your web server for Open Web Application Security Project (OWASP) security concerns.

For some of the issues listed here, you will need to install the URL Rewrite tool, available at http://www.iis.net/downloads/microsoft/url-rewrite.

- The tasks performed in the IIS Manager should be done at the default website level (i.e., in the Connections pane, open the **Sites** node under the server name and click **Default Web Site**).

- Alternatively, the model web.config code summarizes the changes made in the IIS Manager (see Default web.config Changes).

Note: If you make these changes directly in the web.config file in the root folder for your SEP website, you can skip the steps shown below in italics.

Web Server Default Welcome Page

From the wwwroot directory, remove iisstart.htm, welcome.png and the asp_client folder.

Clickjacking: X-Frame-Options Header Missing

1. *In the IIS Manager Home page, double-click **HTTP Response Headers**.*

2. *In the **Actions** area, click **Add**. Enter **X-Frame-Options** as the name and **SAMEORIGIN** as the value.*

X Content-Type-Options Header Missing

1. *In the IIS Manager Home page, double-click **HTTP Response Headers**.*

2. *In the **Actions** area, click **Add**. Enter **X-Content-Type-Options** as the name and **nosniff** as the value.*

OPTIONS Method Is Enabled

1. *In the IIS Manager Home page, double-click **Request Filtering**.*

2. *On the **HTTP Verbs** tab, click **Allow Verb** in the **Actions** area and enter **Options** in the Deny Verb window.*

Microsoft IIS Version Disclosure

1. In the following Registry key, create a dWORD entry, DisableServerHeader, and set its value to 1: `HKLM\SYSTEM\CurrentControlSet\Services\HTTP\Parameters`

2. In the IIS Manager Home page, double-click **URL Rewrite**.

3. In the Actions area, click **View Server Variables**, then click **Add** and enter **RESPONSE_SERVER** in the text box.

4. *Add an outbound rule to rewrite the RESPONSE_SERVER server variable as blank.*

   a. *In the **Actions** area, click **Back to Rules** and then click **Add Rule(s)**.*

   b. *In the Add Rule(s) window, click **Blank rule** in the **Outbound rules** category and click **OK**.*

c. *Create the outbound rule using the following settings:*

- *Name: Response Server*

- *Precondition: None*

- *Matching scope: Server Variable*

- *Variable name: RESPONSE_SERVER*

- *Variable value: Matches the Pattern*

- *Using: Regular Expressions*

- *Pattern: .+*

- *Action type: Rewrite*

- *Action Properties:*

  - *Value: <leave this field empty>*

  - *Replace existing server variable value: Selected*

ASP .NET Version Disclosure

1. In the IIS Manager Home page, double-click **URL Rewrite**.

2. In the **Actions** area, click **View Server Variables**, then click **Add** and enter **RESPONSE_ X-ASPNET-VERSION** in the text box.

3. *Add an outbound rule to rewrite the RESPONSE_X-ASPNET-VERSION server variable as blank.*

   a. *In the **Actions** area, click **Back to Rules** and then click **Add Rule(s)**.*

   b. *In the Add Rule(s) window, click **Blank rule** in the **Outbound rules** category and click **OK**.*

   c. *Create the outbound rule using the following settings:*

   - *Name: x-ASPNet*

   - *Precondition: None*

   - *Matching scope: Server Variable*

   - *Variable name: RESPONSE_X-ASPNET-VERSION*

- *Variable value: Matches the Pattern*

- *Using: Regular Expressions*

- *Pattern: .+*

- *Action type: Rewrite*

- *Action Properties:*

  - *Value: <leave this field empty>*

  - *Replace existing server variable value: Selected*

X-Powered-By Header

1. In the IIS Manager Home page, double-click **HTTP Response Headers**.

2. Select the **X-Powered-By** header and click **Remove**.

3. In the IIS Manager Home page, double-click **URL Rewrite**.

4. In the **Actions** area, click **View Server Variables**, then click **Add** and enter **RESPONSE_ X-POWERED-BY** in the text box.

5. *Add an outbound rule to rewrite the RESPONSE_X-POWERED-BY server variable as blank.*

   a. *In the **Actions** area, click **Back to Rules** and then click **Add Rule(s)**.*

   b. *In the Add Rule(s) window, click **Blank rule** in the **Outbound rules** category and click **OK**.*

   c. *Create the outbound rule using the following settings:*

   - *Name: X-Powered*

   - *Precondition: None*

   - *Matching scope: Server Variable*

   - *Variable name: RESPONSE_X-POWERED-BY*

   - *Variable value: Matches the Pattern*

   - *Using: Regular Expressions*

   - *Pattern: .+*

- *Action type: Rewrite*

- *Action Properties:*

  - *Value: <leave this field empty>*

  - *Replace existing server variable value: Selected*

Cookie Missing HTTP Only and Secure Flags

Note: This setting is configured by adding the following entry to the site-level or application-level web.config file:

```
<system.web>
   ...
   <httpCookies httpOnlyCookies="true" requireSSL="true" />
   ...
</system.web>
```

Important: This setting could cause errors in the application if the application is not running over an HTTPS connection. It is a recommended security practice to require the application to use an HTTPS connection. See Enable HTTPS for Secure Communication for details on configuring the application to use HTTPS. If you choose not to require HTTPS for the application, then you can use the setting below instead of the one above. However, you should be aware that using the setting below could cause security scanning tools to raise a warning about the use of insecure cookies:

```
   <httpCookies httpOnlyCookies="true" requireSSL="false" />
```

Custom Errors

1. In the IIS Manager, open the Configuration Editor.

2. In the **Section** drop-down list, choose **system.web/customErrors**.

3. Set **Mode** to **RemoteOnly**.

Default web.config Changes

```xml
<?xml version="1.0" encoding="UTF-8"?>
<configuration>
  <system.web>
    <customErrors mode="RemoteOnly">
    </customErrors>
    <httpCookies httpOnlyCookies="true" requireSSL="true" />
  </system.web>
  <system.webServer>
    <httpProtocol>
    <customHeaders>
      <remove name="X-Powered-By" />
        <add name="X-Frame-Options" value="SAMEORIGIN" />
        <add name="X-Content-Type-Options" value="nosniff" />
    </customHeaders>
    </httpProtocol>
    <security>
      <requestFiltering>
        <verbs>
          <add verb="OPTIONS" allowed="false" />
        </verbs>
      </requestFiltering>
    </security>
    <rewrite>
      <outboundRules>
        <rule name="Response Server">
          <match serverVariable="RESPONSE_SERVER" pattern=".+"
          />
          <action type="Rewrite" />
        </rule>
        <rule name="X-Powered">
          <match serverVariable="RESPONSE_X-POWERED-BY" pat-
          tern=".+" />
          <action type="Rewrite" />
        </rule>
```

```
      <rule name="x-ASPNet">
        <match serverVariable="RESPONSE_X-ASPNET-VERSION" pat-
        tern=".+" />
        <action type="Rewrite" />
      </rule>
    </outboundRules>
  </rewrite>
 </system.webServer>
</configuration>
```

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