
RecordTS v4.0 Single Server Edition

Installation Guide





<http://www.tsfactory.com>

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End User License Agreement

RecordTS by TSFactory LLC is protected by an End User License Agreement. To view the agreement, visit the company website at www.tsfactory.com, under RecordTS Documentation.

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Introduction

What is RecordTS Single Server Edition?

RecordTS Single Server Edition is a remote session recorder for Windows Terminal Services. It is a complete out-of-the-box, stand-alone software product that installs all the necessary software components onto one machine. It is intended for demonstration and single-server installations only.

NOTE: Customers requiring larger configurations should install the full enterprise version of RecordTS.

Once installed on a server running Terminal Services or simply a Windows server or workstation with Remote Desktop/Remote Administration enabled, administrators will be able to record everything users are doing during their sessions for later playback and/or archiving. It's pretty much the same as watching a video on your computer! Thanks to this product you can:

- Track who is connected to the computer and see what they do on it
- View selected recordings for a specific user, during a specific time period, etc.
- Track users actions that might have caused problems on a server or workstation
- Save recorded sessions locally

Main Features

Security/Audit compliance

Instead of looking at hundreds of entries in log files, RecordTS allows you to actually see everything that was done - as it happened, in real time. You can archive all recorded sessions for later playback, and in case of an audit it is just a matter of finding a particular session and watching!

Developed for Terminal Services

Although other similar solutions do exist in the market, RecordTS is the first and only solution that works directly at the protocol level (RDP and ICA). This means increased performance and scalability, with much smaller recordings, nothing is missed. The users have no clue that their sessions are being recorded.

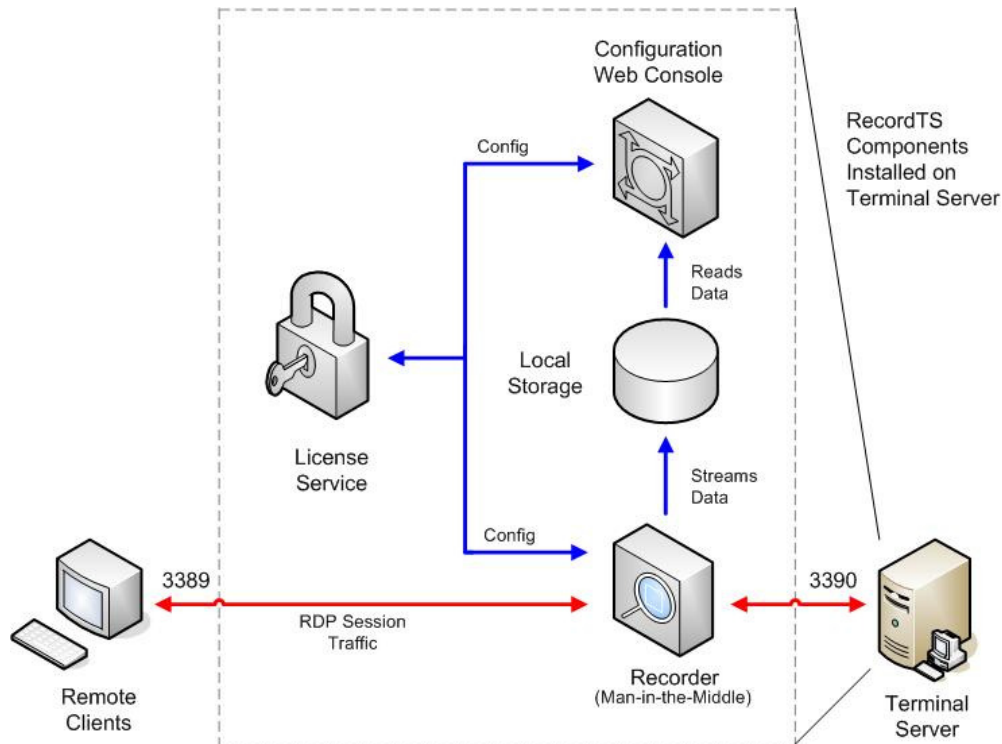
Per user session recording

Recorded sessions are saved individually on a per user basis. Recordings are stored locally for later retrieval and replay.

How does RecordTS work?

RecordTS installs locally on the Terminal Server intercepting all traffic through the RDP port 3389. It acts as a man-in-the-middle software service, passing RDP session traffic between the client and the host. Once intercepted, the RDP session stream is stored to a SQL database. As RecordTS was developed from the ground up specifically for Terminal Services, this process does not affect your Terminal Server performance, scaling easily once more users and/or servers are added to the system.

Below is a schematic diagram of the Single Server Edition configuration for RecordTS v3.



RecordTS v4 Single Server Edition - internal logical framework

The next section will discuss the individual components in detail.

Quick Overview

Below is the list of basic components of RecordTS Single Server Edition. Each component will be discussed more in depth further into the manual.

- **Recording Service (Recorder)**
- **Configuration Console**
- **License Service**
- **Data Storage**

Recorder

The basic component of RecordTS is the Recording Service or Recorder. Its main job is to record user sessions and store the recording video to a database. From the time RecordTS Recorder is installed and properly configured on the server or workstation, each user session will be recorded and saved locally in the native RecordTS video format. Recorded sessions will contain additional information about each session such as computer name, IP address, user name, connection time and duration, etc. For each individual user, recorded sessions are stored separately in the local data store.

The recorded sessions can be viewed or played as a video using the RecordTS WebPlayer and exported to a common video format that can be played in most media players.

Configuration Console

The RecordTS Configuration utility is a web-based console that allows the admin to centrally manage the recorder, licensing and stored recorded sessions. There are also statistics reports available for user and server usage.

The main purpose of the configuration console is to allow configuration of the various RecordTS modules and to view sessions.

License Service

RecordTS can be licensed for perpetual (one time payment) or subscription (pay as you go) based licensing. Software assurance can be purchased with perpetual licensing.

Subscription licensing is much less expensive alternative and allows products to be purchased for use for a period of time. Free trial subscriptions are available for download to allow advance testing of RecordTS on-site prior to purchase.

The RecordTS License Service will be installed automatically and is used to authorize RecordTS components for use. The License Service will be configured during installation and allow the customer to either run in trial mode for 30 days or enter a purchased license or subscription ID. The license or ID can always be entered later.

Subscription Licensing Details:

For customers interested in subscription licensing, the license server will need to be authenticated to the TSFactory license service. It is a simple process and requires a subscription ID to authenticate.

Obtaining a subscription ID

The customer will need to create a free customer account on the TSFactory website (no credit card is required). The customer account will have subscription information, links to download the software and pertinent documentation. A TSFactory partner or one of our sales associates can assist you with this process. Once you have a customer account, you will log in and locate your subscription ID. You will need to copy and paste it into the appropriate field in the Dashboard license service configuration when required.

Once the License Service is authenticated, it will authorize the RecordTS components and enable extended functionality of the Configuration console as well as other components and products when they become available. The License service will solicit the TSFactory website for subscription information based on which products the customer has purchased. If none have been purchased and a trial period has been authorized for the customer, then the License server will allow as many servers and users as needed for the trial period (usually 30 days). Once the trial expires, the system will stop recording until additional time is purchased. **NOTE: It is strongly suggested to purchase or renew subscriptions prior to expiration to avoid disruption of service.**

Storage

The RecordTS records stream session data to local storage for safe keeping. Sessions can be played back immediately once a user's session has been established. This allows real-time viewing of session activity and does not require the user to log off to view their session.

For RecordTS v4 - Single Server Edition, a file storage server engine will be installed automatically.

Session recording can be buffered in case the storage service becomes temporarily unavailable, slows down or the network becomes unstable, etc. Once connectivity to the local storage server is restored, buffered session data will be dumped to the store and normal operation will continue. If connectivity to the storage server is disrupted for extended periods of time, the buffers may fill completely and sessions will be suspended until connectivity to the storage server is restored. This behavior can be overridden in the configuraton console to permit unrecorded connections when the storage server is unavailable.

Installation

Overview

RecordTS Single Server Edition is designed to be installed completely onto one machine only, preferably a Windows terminal server.

It is made up of four major components:

- License service – handles licensing components
- Configuration console – centralized management
- File storage server – storage for session data
- Recorder service – records sessions

It is assumed that the prerequisite software and configurations have been made prior to installing this software.

Prerequisites

For all users installing the software:

- Download the product software and store to a convenient location.
- You will need a Windows Server 2008R2 or higher server-grade machine to install RecordTS, preferably with the latest updates installed, with at least 4gig of RAM and 100gig of drive space. Storage requirements are dictated by the database, so plan accordingly. RecordTS may be installed on a Windows 8.1 workstation or higher as well.
- At least one other Windows machine that can log in remotely to the RecordTS machine. (act as a remote desktop client)
- A domain or system admin account (or equiv) that has access to all machines in the test.
- Active Directory is not required for RecordTS Single Server Edition, but is recommended.

For trial software testing:

- No licensing is required for the trial period.

For customers using subscription licensing:

- Create a customer account on www.tsfactory.com.
- Locate your subscription ID – you will need this during configuration. It can be found in your customer account.

- Continuous internet connection is required to the RecordTS machine.

WARNING:

Certain programs such as antivirus and backup software can interfere with the proper installation and operation of RecordTS software, especially the recorders. It is strongly recommended to completely disable these programs on the recorded machine prior to installation. The antivirus and backup programs should be configured to ignore the RecordTS working folders and the RecordTS program processes if they are to be enabled after installation.

Installing RecordTS Single Server Edition

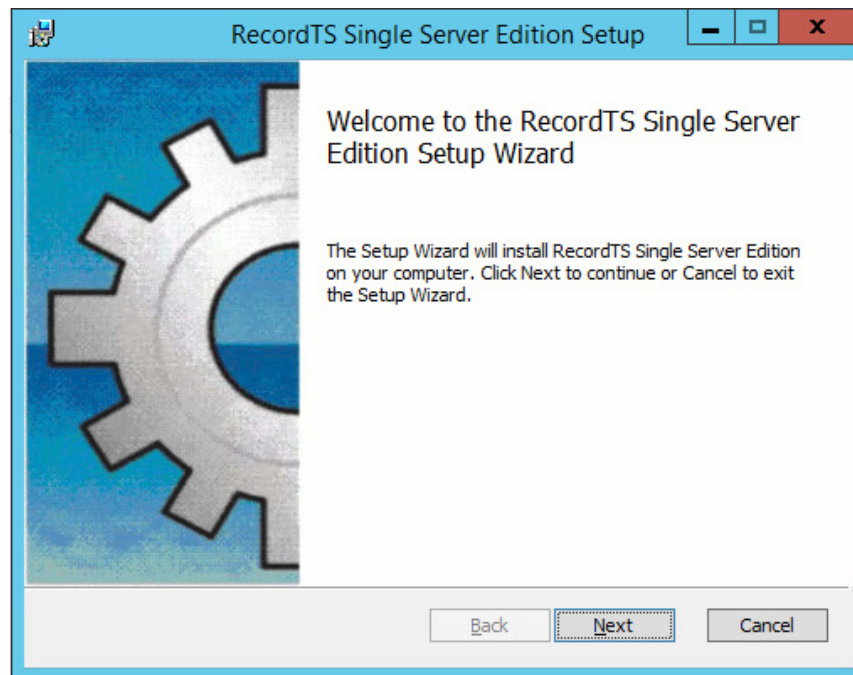
The RecordTS Single Server Edition installation file must be installed on a Windows 2008, 2012 or 2016 Server or Windows 8.1, Windows 10 Workstation machine. Best practice is to copy the installation file to a folder on the target machine and install locally.

NOTE: a REBOOT is required after installing RecordTS Single Server Edition

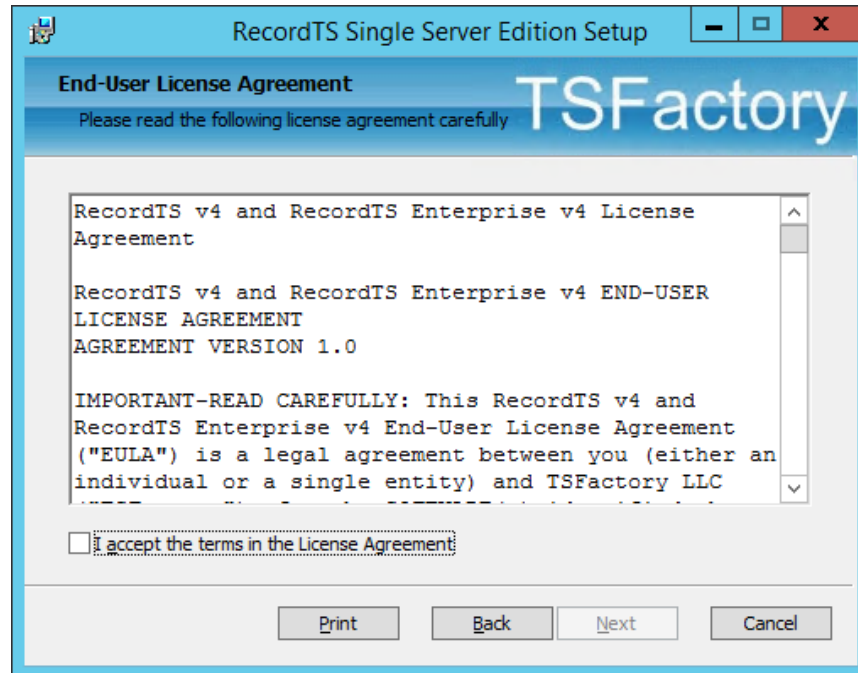
Several RecordTS services will appear in the Windows Services applet after installation.

Step by Step Instructions

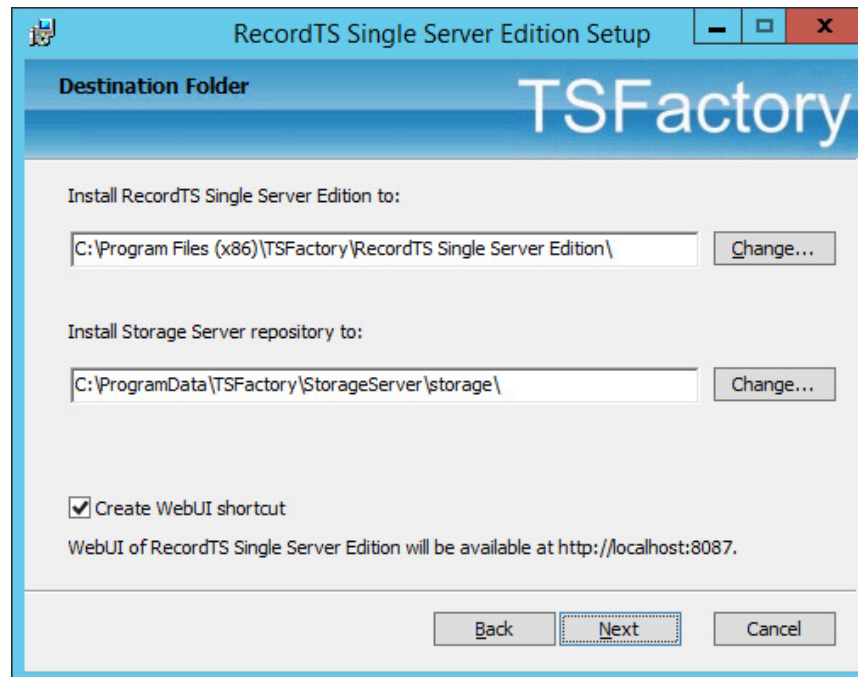
1. Download and run the RecordTS-Single-Server-Edition-4.x.xxx.msi installation file on the machine that is to be recorded. The installation wizard will appear. Close all other programs and then click Next.



2. Carefully read the license agreement. If you agree to the terms, select the check box to confirm acceptance of the agreement. Click Next to continue installing. To exit Setup, click Cancel.



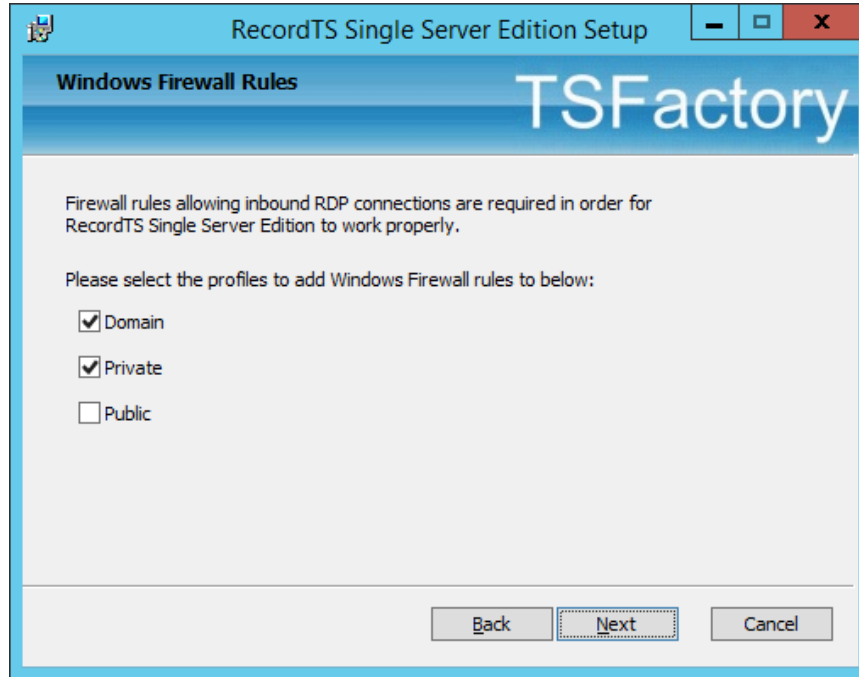
3. Select the folder where the RecordTS program files will be installed and the session data stored. Only folders on the local machine can be used. Mapped network drives will fail. If you do not want to use the default directory suggested by the installer, click Browse... to choose another directory. Then click Next.



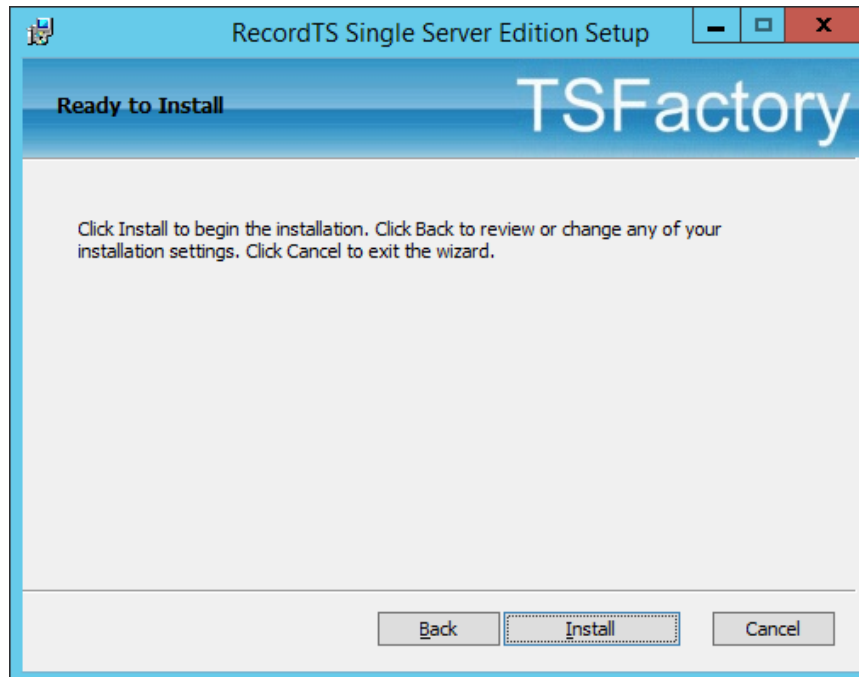
You can uncheck “Create WebUI Shortcut” to prevent installing shortcuts to each user’s application list. You can access the Dashboard webUI with this URL: <http://localhost:8087>.

Click Next to continue.

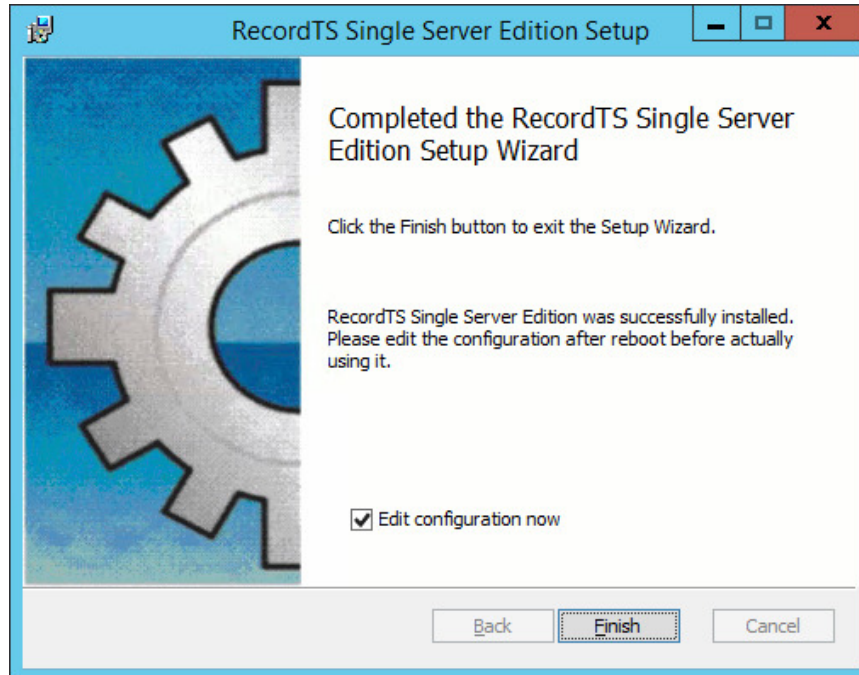
4. Select the profiles to add firewall rules for RecordTS. You can leave the default selections. Click Next to continue.



5. To start the installation program, click Install. To modify the installation options that are mentioned in the previous steps, click Back. To exit Setup, click Cancel.



Once the installation program finishes copying the necessary files to the system, the installation process has successfully completed. You may leave the “Edit configuration now” box checked to configure RecordTS after exiting. To exit the installation wizard, click Finish.



6. The RecordTS Configuration web console will appear after exiting the installation wizard (if you left “Edit configuration now” checked). If not, then you should see the reboot request window instead.

NOTE: **REBOOT** is required for the ports to be reassigned. RecordTS will not work properly until this happens. If you are logged in remotely, you may lose connection during the reboot. You may reboot after configuration if you prefer.

FOR SUBSCRIPTION USERS ONLY:

You may see a yellow warning message indicating failure to allocate a server lease. This is normal if you have entered a subscription ID license and can be fixed by logging onto your online customer account, locating your subscription and authorizing this server by clicking on the Authorize button.

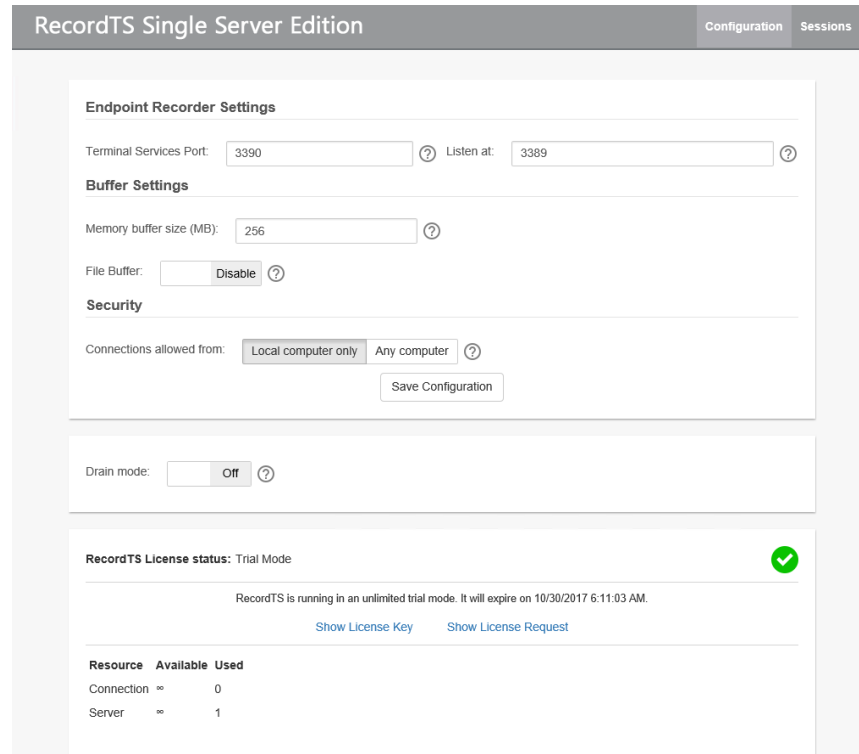
NOTE: It can take up to 5 minutes for the license service to **update** during the authorization process. You can refresh the Configuratin web console often to check the status.

Once the license service has received subscription information from your customer account, all warning and error messages should go away. The license server status should change to “License server up and running” and the licenses should be listed below it.

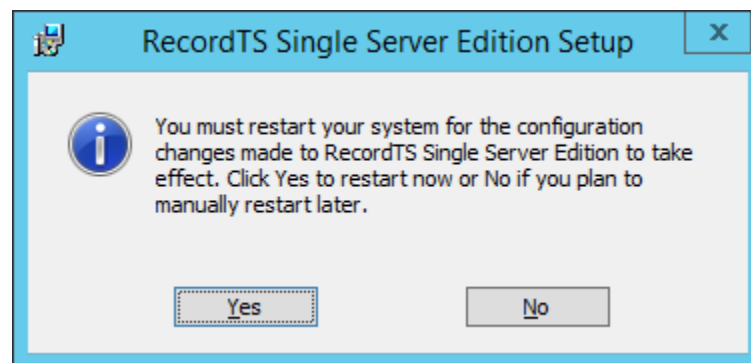
If the warning message does not clear: this is most likely due to a firewall blocking communication between RecordTS and the TSFactory webservers out on the internet. RecordTS License Service needs to be able to talk to the TSFactory certificate

license authority (CLA) server “cla.tsfactory.com” on port 27280. Even though your local firewall rules to allow this traffic, your perimeter or exterior firewalls may not.

The following diagram shows what the Configuration console should look like when once the license service has successfully been initialized: (your resource amounts may differ)



7. If you have not rebooted at this point, you may do so now.



Configuring RecordTS

Overview of Configuration Console

The RecordTS Configuration Console is used to configure the RecordTS license service and various other components to do the following:

- ✓ Authorize RecordTS software components for use, such as the recorders, remote user connections along with future RecordTS integrated products and components.
- ✓ Display a list of recorded sessions for the user to browse and play back.
- ✓ Display statistical data.
- ✓ Display licensed resources and usage information.
- ✓ Display reports.
- ✓ Allow custom configuration of key features in RecordTS.
- ✓ Connect to the TSTFactory website servers to obtain subscription license information using a subscription ID supplied from your online customer account (you need to create one if you plan on using subscription licensing)

RecordTS Configuration Console:

RecordTS Single Server Edition

Configuration Sessions

Endpoint Recorder Settings

Terminal Services Port: ? Listen at: ?

Buffer Settings


Memory buffer size (MB): ?

File Buffer: Disable ?

Security

Connections allowed from: Local computer only Any computer ?

Drain mode: Off ?

RecordTS License status: Trial Mode 

RecordTS is running in an unlimited trial mode. It will expire on 10/30/2017 6:11:03 AM.

[Show License Key](#) [Show License Request](#)

| Resource | Available | Used |
|------------|-----------|------|
| Connection | ∞ | 1 |
| Server | ∞ | 1 |

Here is a breakdown of the individual settings and what they are used for:

Endpoint Recorder Settings

These are the ports that RecordTS and Terminal Services listen on. During installation, Terminal Services was moved from port 3389 to port 3390 and RecordTS was installed on port 3389.

RecordTS acts as a “man in the middle” service, intercepting traffic to port 3389 and passing it on to port 3390 (terminal services). If the RecordTS recorder service is turned off or disabled in any way, remote clients will not be able to connect.

WARNING: Changing ports may prevent recording and remote connections. Only do this under advice of TSFactory support personnel.

NOTE: A reboot is required after changing ports.

Buffer Settings

RecordTS streams session data to its local storage system. If during peak activity, the storage becomes overwhelmed, bogged down or has a problem, RecordTS will buffer session data to prevent users from experiencing delays or lag in responsiveness during their sessions. This is handled in two ways: first, session data is buffered into memory. Once the memory buffer is exhausted, then session data can be stored locally

to a file. Once the file buffer is exhausted, all sessions will be terminated to prevent non-recorded activity. Although not advised, this feature can be overridden to allow sessions to continue unrecorded.

Memory buffer size (MB)

RecordTS will buffer (temporarily store) session data to physical memory (RAM) if the local storage server becomes slow or intermittent. This can happen during times of high desktop activity amongst users and is normal. You may increase the buffer size if users are experiencing delays or latency during their sessions. Entering a value of zero will disable memory buffering.

File buffer

When enabled, RecordTS will buffer (temporarily store) session data locally to a file. This is intended for times when the storage becomes unavailable for longer periods of time. It is like an insurance policy or backup measure to ensure session reliability during times when the storage system is not responding or requires maintenance. Once the storage system is available again, buffered data will be flushed and stored, then normal operation will continue. Users should not experience any delays or session latency during this time; in fact this feature prevents this problem of latency or perceived slowness from happening.

To configure File Buffering, click on the Disable button and a more detailed menu will appear:

The screenshot shows the 'Endpoint Recorder Settings' window. It has three main sections: 'Endpoint Recorder Settings', 'Buffer Settings', and 'Security'.
- In 'Endpoint Recorder Settings', 'Terminal Services Port' is 3390 and 'Listen at' is 3389.
- In 'Buffer Settings', 'Memory buffer size (MB)' is 256, 'File Buffer' is set to 'Enable', 'Size (MB)' is 1024, and 'File buffer path' is 'C:\ProgramData\TSFactory\RecordT'.
- In 'Security', 'Connections allowed from' has 'Local computer only' selected.
- A 'Save Configuration' button is at the bottom.

The file buffer size defaults to 1 gigabyte (1024 MB). You can change this value by entering another number in the Size (MB) box. The file name for the file buffer is displayed in the File buffer path box and can be changed if necessary (although not recommended). Click on Save Configuration to save your changes.

Security

This setting by default restricts viewing of sessions and forces administration by local admins only. Selecting “Any computer” will allow remote computers to view sessions and allow remote configuration.

NOTE: Remote users will need to have security access to view sessions.

Drain Mode

This setting is used to allow all users to gracefully log off before the system reboots.

Using RecordTS

Once RecordTS has been properly configured and the server has been rebooted at least once, users may begin logging in remotely. Their sessions will be recorded and viewed immediately.

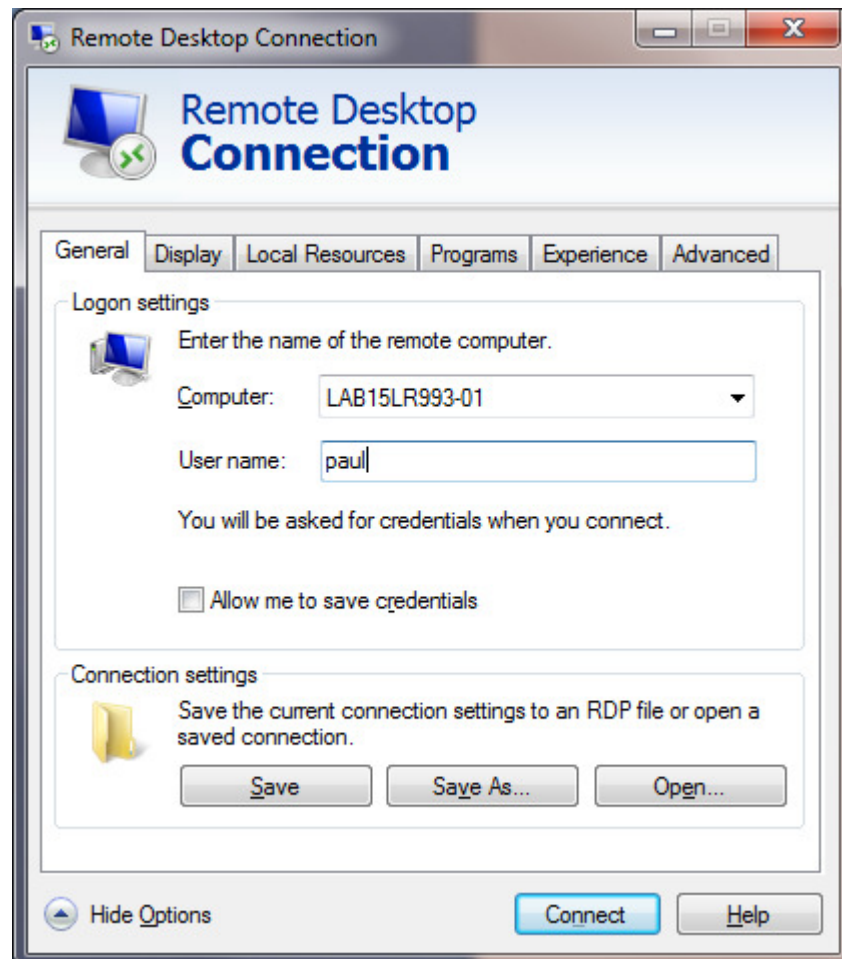
NOTE: Users will not know that they are being recorded.

Connecting Remotely

Users may connect to the machine remotely using most any client that supports RDP (remote desktop protocol).

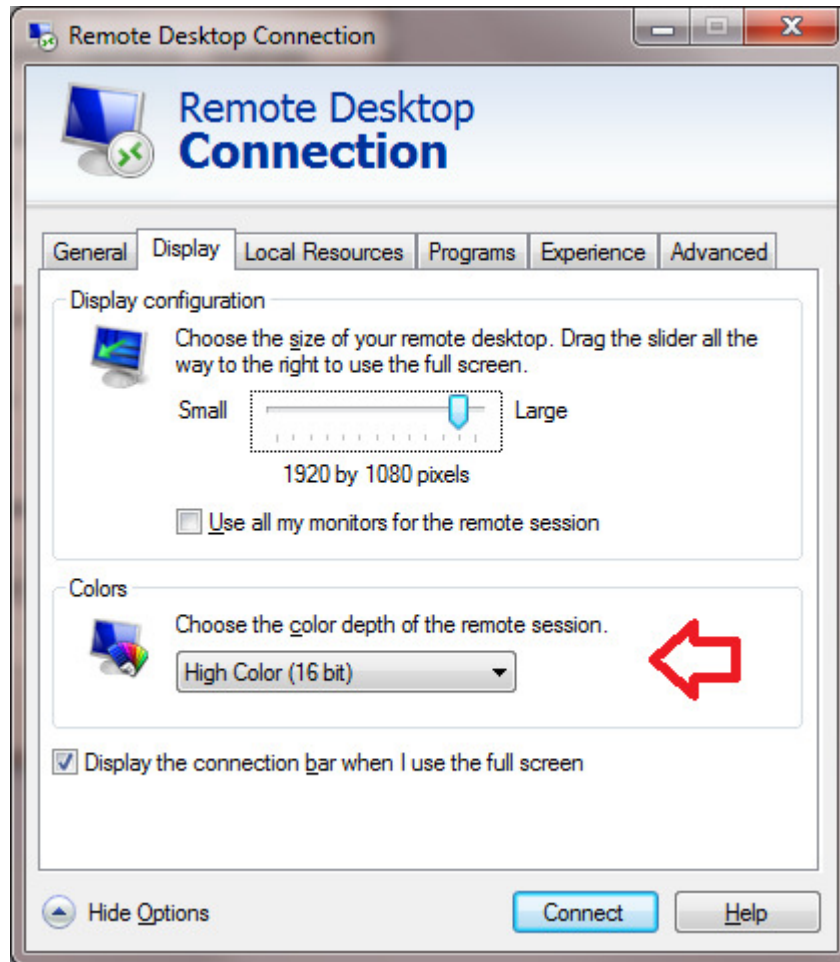
Configuring the RDP client

The standard Windows remote desktop client is pictured below. Enter the recorded machine name or IP address in the Computer field, along with the username to log on with. Set the color depth by click on the Display tab and using the drop down box to select High Color (16 bit). See next page for more details.



Setting color depth

The display color depth must be set to 16 bits or lower. See figure below for example of how to set this parameter in the remote client.



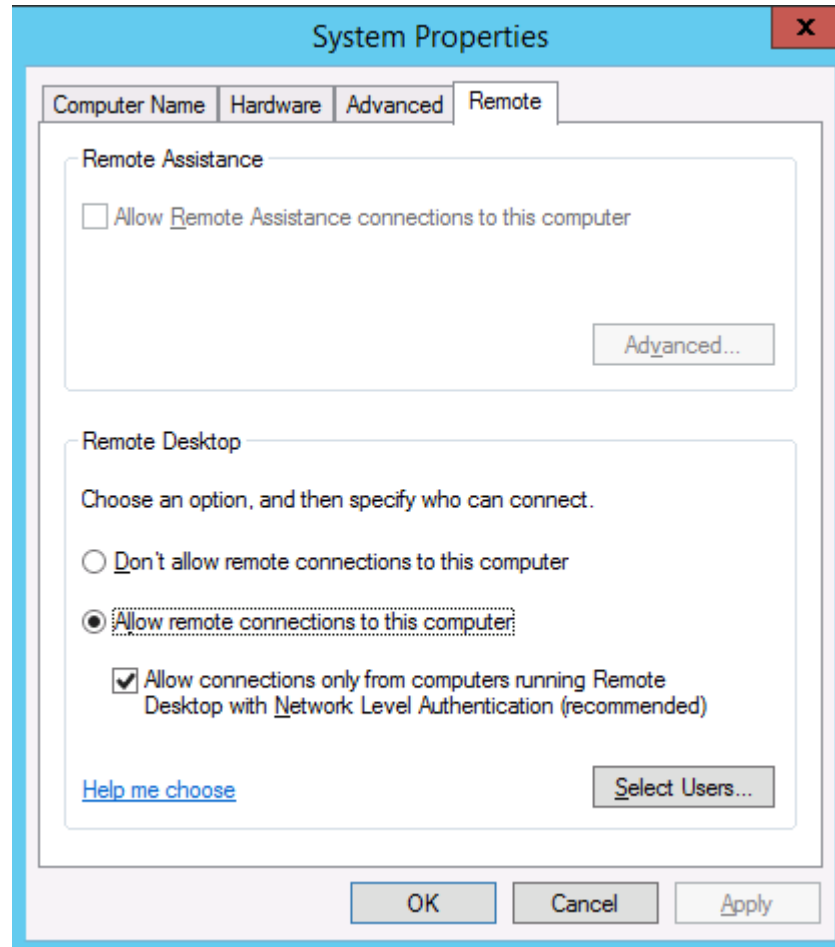
Configuring client security

RecordTS supports NLA (network level authority) security, which must be configured in both the client software and on the machine being recorded.

For the standard Windows remote desktop client, the security setting can be found under the Advanced tab, Server authentication, as pictured below.

Configuring server security

On the recorded machine, the security configuration can be found in Control panel, System and security, Allow remote access, as depicted below.




If you are using an older client that does not support NLA, then uncheck the “Allow connections only from...” box and click OK to save your changes.

This screen is also where you would allow additional users to connect remotely. Administrators are automatically included by default. Windows Server allows up to two remote connections by default and Windows Workstation allows only one. You must purchase additional user CAL's (client access licenses) from Microsoft if you plan on hosting more desktops.

NOTE: RecordTS will not work properly when installed on home versions of Windows. The home versions do not allow remote access, but you can connection remotely *from* a home version of Windows, just not *to* it.

Licensing

RecordTS limits the number of users that can log in remotely by the amount of user licenses listed in the RecordTS Configuration found under the Configuration tab. (see below)

RecordTS License status: Trial Mode 

RecordTS is running in an unlimited trial mode. It will expire on 3/17/2017 1:09:33 AM.

[Show License Key](#) [Show License Request](#)

| Resource | Available | Used |
|------------|-----------|------|
| Connection | ∞ | 1 |
| Server | ∞ | 1 |

In the diagram above, RecordTS is licensed for infinite servers and users where only one server is registered (used) and one user is currently remotely connected. This is trial mode and is used only for demonstration purposes. Your license/subscription may be different from this one.

It is typical to only have one Dashboard licensed, although you can license more than one Dashboard for remote administration by separate administrators.

NOTE: RecordTS Single Server Edition is intended to record only ONE server or workstation. If you intend on recording more than one machine, then **this version is probably not for you**. Consider using one of the other RecordTS products for this purpose.

Additional licenses may be purchased at anytime and will automatically be updated to your license service if you have a subscription.

Sessions

Recorded sessions are stored in the database and are listed in the Configuration under the Sessions tab.

| Id | Start date | Start time | End date | End time | User name | User domain | Session host | Client name | Data size | |
|----|------------|------------|----------|----------|---------------|-------------|------------------|-------------|-----------|----------------------|
| 6 | 07/23/16 | 09:54:29 | | | administrator | CNSSW | SAED01.CNSSW.net | VERDE | 170.50 KB | Play |
| 5 | 07/23/16 | 09:51:34 | 07/23/16 | 09:54:16 | user1 | CNSSW | SAED01.CNSSW.net | WS01 | 763.38 KB | Play |
| 4 | 07/23/16 | 09:51:01 | 07/23/16 | 09:54:09 | user0 | CNSSW | SAED01.CNSSW.net | WS00 | 211.89 KB | Play |
| 3 | 07/23/16 | 00:52:27 | 07/23/16 | 00:54:03 | administrator | CNSSW | SAED01.CNSSW.net | VERDE | 192.72 KB | Play |
| 2 | 07/23/16 | 00:51:02 | 07/23/16 | 00:53:45 | administrator | CNSSW | SAED01.CNSSW.net | VERDE | 481.52 KB | Play |
| 1 | 07/23/16 | 00:47:00 | 07/23/16 | 00:50:32 | administrator | CNSSW | SAED01.CNSSW.net | VERDE | 1.34 MB | Play |

25 50 100

Total disk space used by the RecordTS database is 10.59 MB.

In the diagram above, there are six sessions listed. The start and end times are listed for each session, along with the user name, domain and the client machine name. The first session does not have an end date and time because it is still connected and being recorded.

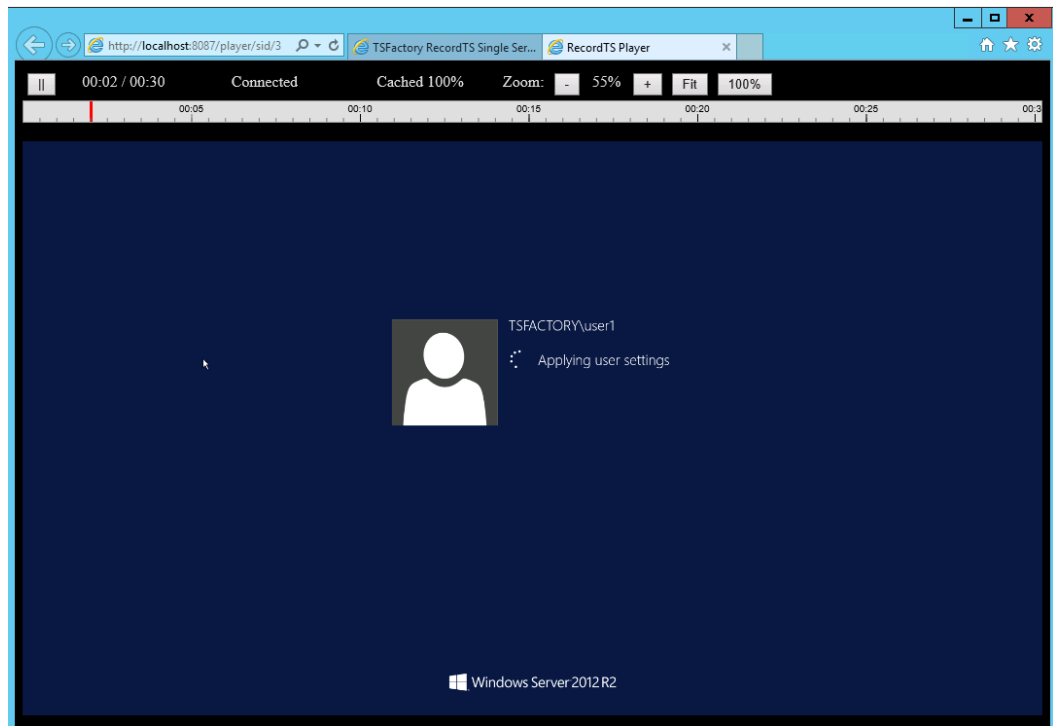
The session host is the name of the machine being recorded. In other versions of RecordTS, the session host may list other machines, but in the Single Server Edition only one machine will always be listed. The Data size column shows the size of each session as it is stored in the database.

The total disk space used in the database is listed at the bottom of the page.

The [Play](#) link will start the RecordTS WebPlayer in a new tab to view the corresponding session on the same line.

Playing Back Recorded Sessions

Selecting the Play link located next to a session listed in Dashboard will start the RecordTS WebPlayer in a new browser tab and start playing the selected session.



You can navigate by using the red slider bar at the top to move through the video. The Zoom buttons (+/-) allow magnification of the video. You can pause the video by clicking on the || button. To end viewing, simply close the tab.

Backup and Restore the Database Files

Sometimes it is desirable and recommended to backup the RecordTS database files to a remote storage for safe keeping and archival purposes. This can be easily accomplished using packaged scripts that come with the product.

Both scripts automatically stop and start recorder and storage server services to backup and restore data.

Backup Procedure

1. Choose a location for the target backup folder

The backup location should have sufficient disk space to hold the entire RecordTS database and be located on a remote storage or server. The user should have access privileges to the folder.

NOTE: Backing up data to the local drive is not considered good practice as if the drive fails then all data may be lost.

2. Run the backup script

On the machine where RecordTS is installed, open a Windows Powershell window and navigate to the RecordTS program directory, found in the Program Files (x86) folder:

```
C:\Program Files (x86)\TSFactory\RecordTS Single Server Edition\scripts
```

The script requires administrative privileges and should be performed with the privileges of a user which was used for the recorder installation.

```
Backup.ps1 [[-BackupDirectory] <Options>] [-ZipCompressionLevel <Options>]
```

Where:

BackupDirectory - Directory to save an archive with backup data.
Default directory is:

```
"C:\ProgramData\TSFactory\RecordTS SSE\backup".
```

ZipCompressionLevel - Indicates whether to emphasize speed or compression effectiveness when creating the entry.

Options - Fastest, NoCompression or Optimal. Fastest is the default.

3. Verify the backup process was successful

Check the target backup folder for the expected zip file(s).

Restore Procedure

4. Determine the path to the backup folder and backup file

The user should have access privileges to the folder and also the RecordTS program data folder.

5. Run the restore script

On the machine where RecordTS is installed, open a Windows Powershell window and navigate to the RecordTS program directory, found in the Program Files (x86) folder:

```
C:\Program Files (x86)\TSFactory\RecordTS Single Server Edition\scripts
```

The script requires administrative privileges and should be performed with the privileges of a user which was used for the recorder and database installation.

```
Restore.ps1 -RestoreFromArchive <String> [-Quiet]
```

Where:

RestoreFromArchive - Path to zip-archive containing backup file.

Quiet - Quiet mode, suppress prompt before deleting current data. (optional)

6. Verify the restore process was successful

Open the RecordTS Configuration webconsole / Sessions tab. Verify that the sessions are restored properly.

Getting Help

Use PowerShell Get-Help cmdlet to get help for the scripts:

```
Get-Help Backup.ps1
```

```
Get-Help Restore.ps1
```

Performing a Complete Uninstall

When you uninstall RecordTS, the folder containing the database and configuration files is retained in order to avoid accidental loss of data.

To completely remove all components including the database and configuration files during uninstallation of RecordTS, you will need to perform the uninstall manually using DOS commands.

There is a hidden system flag named REMOVE_DATA that controls how RecordTS gets uninstalled. If it is equal to 'yes', the installer deletes the database and configuration directories. Because this action leads to loss of data, a user needs specify this flag on uninstallation.

To perform this operation, the administrator should run the msiexec.exe tool in a Command or Powershell window:

```
msiexec.exe /x RecordTS-Single-Server-Edition-4.0.1015.msi  
REMOVE_DATA=yes
```

This command will invoke the standard Windows uninstaller and completely remove RecordTS along with all the stored session data.