

Testimony - Installation and Setup Guide

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Basis Technologies

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Introduction

The Testimony Installation and Setup Guide takes you through setting up Testimony for use in your SAP system landscape.

It is recommended that you check the following sections so you are familiar with Testimony before starting.

[Glossary](#)

[Architecture](#)

The following sections then take you through the installation process:

[Prerequisites](#)

[Technical Setup](#)

[Validating the Installation](#)

There are also sections on uninstalling and support as below:

[Uninstallation](#)

[Software Support](#)

Whilst setting up Testimony on your SAP estate, this setup guide should be used in conjunction with the other available Testimony documentation with the other manuals available as below:

Document	Purpose
Testimony User Guide	A user oriented tour of the Testimony screens and functionality including a high level product overview.
Frequently Asked Questions	Commonly asked questions regarding the products features and use cases.

Glossary

Bot

The bot is an executable which resides on a windows machine (normally a virtual machine). During playback the bot logs on as the recorded user and executes that user's transactions. The requirements for bot setup can be found [here](#).

Central System

This is the SAP system into which Testimony is installed and from which it is operated. Testimony users log on to this system to set up Testimony, start recordings and playbacks and analyse results.

Check Steps

These are run manually before a recording or playback and the operator needs to check the results of these to see if they should continue with the recording or playback.

Dynamic IDs

These are used to link scripts which use the same data, for example a purchase order number. If the creation of a purchase order fails during the playback then Testimony recognises that there is no point running a subsequent script that approves this purchase order. Testimony will therefore cancel the execution of the order approval script.

Enhancements

To record and playback Testimony has enhancements on the source or target system to enable the recording or playback to operate correctly. These are switched on before recording or playback and are automatically deactivated at the end of the recording or playback in the "Post-Processing Steps".

Execution Queue

The execution queue is built from the repository and contains the scripts to be played back.

Filtered Recording

A filtered recording is used when you want to record a small subset of users or transactions on the source system. It is typically used for testing purposes to ensure that the setup from central to source system has been completed correctly.

Filter Sets

Filter sets have two main uses: to exclude certain objects (transactions, batch jobs, etc.) from a recording; and to provide special handling of error cases during a playback. For example, if you want Testimony to ignore all occurrences of transaction SM21 from the recording, then adding this transaction to the recording

filter set will achieve this. If you want to ignore occurrences of message E123 from a particular screen, you can set this message as an exclusion in the comparison filter set. Filter sets are also available for the transfer to repository and transfer to execution queue processes, although these are less frequently used. This topic should be further studied via the Filter Sets section here. **THIS MUST BE LINKED**

Linkages

Testimony records deeper than just the UI so that objects such as change documents and number ranges are also recorded. These can then be checked at playback to ensure that these match providing a deeper level of testing.

Playback

The playback is the playing back of the scripts in the execution queue, via the bots, on the target system.

Post-Processing Steps

These are run automatically after a recording or playback is completed. Any errors in post-processing cause a hard stop preventing the status moving to complete. If errors are found then the operator should check the errors and see if they need to manually resolve these.

Preparation Steps

These are run automatically before a recording or playback starts. Any errors cause a hard stop preventing the recording or playback starting. Errors should be resolved before restarting the recording or playback

Recording

A recording (either Filtered or Standard) is the process by which actions on the source system are captured by Testimony for later playback.

Repository

The repository is a staging post for recorded transactions. Once all recorded transactions have been stored in the Central System, they are transferred to the repository (potentially with some filtering) before being transferred to the execution queue for playback.

Source System

This is the system that is recorded and therefore acts as the source for the recording. In BAU operation of Testimony, this is usually the production system.

Standard Recording

A standard recording records everything except a small number of users or objects as defined in the "Filter Sets"

Target System

This is the regression test system into which recorded scripts are played back via the Bots.

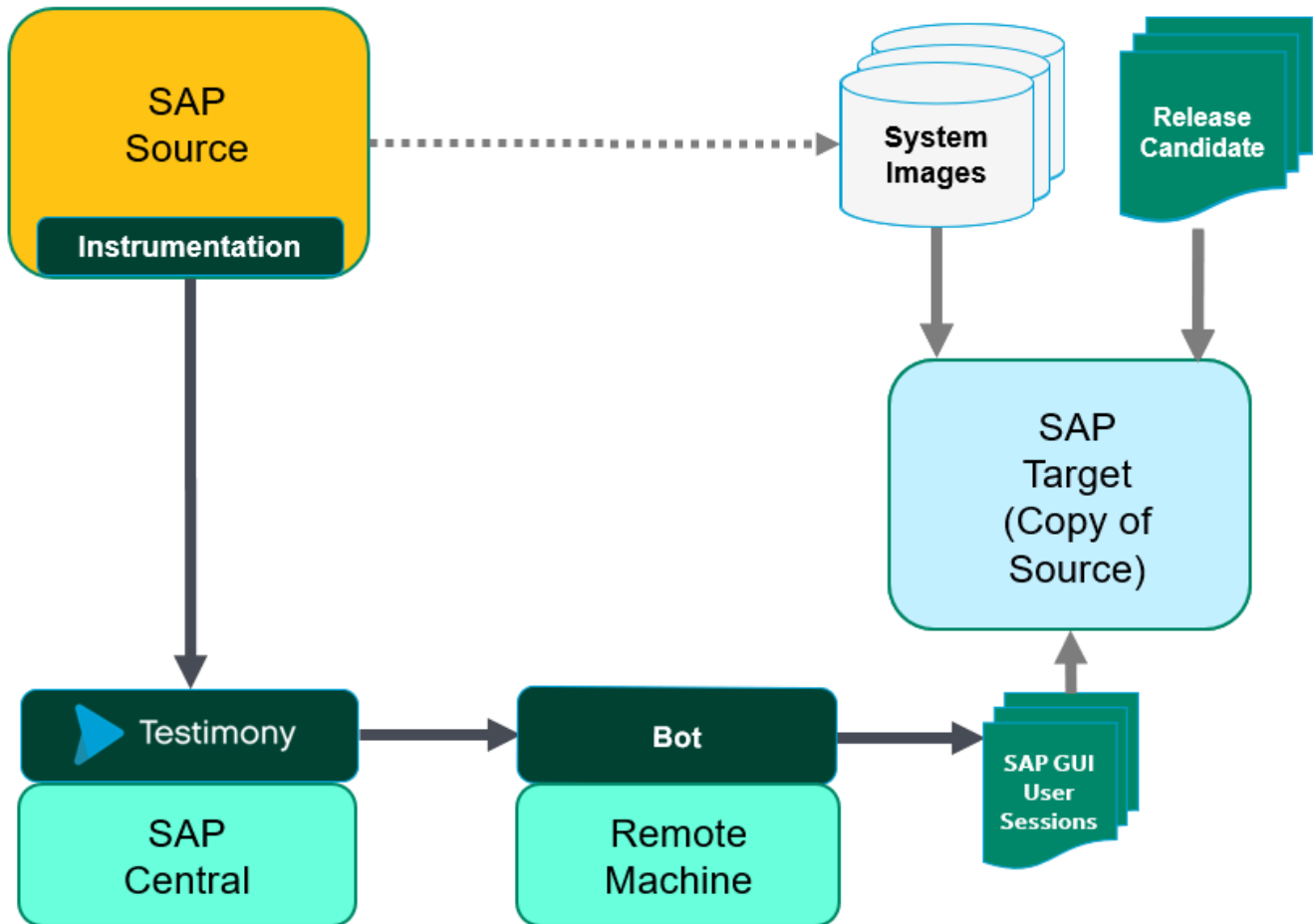
Architecture

The architecture of Testimony comprises four types of systems as below:

1. Central system (usually Solution Manager) Testimony is operated from here with recordings and playback details stored here.
2. Source system to be recorded (e.g. ECC development, test and production)
3. Target system to be played back into (e.g. Copies of ECC production)
4. Bot systems to run the bots used for playback (Windows machines)

The relationship between the systems is as per the image below:

Testimony Architecture



Prerequisites

There are five sets of activities that should be completed before Testimony is installed and configured.

1. Determine Systems

Before installing check the [Architecture](#) section and determine the “central” SAP system where Testimony will be operated from.

Testimony Central System minimum specifications

Software	SAP NW 7.01+ ABAP stack
Disk	400GB (350 GB for SAP install plus free space, 50GB available for growth with Testimony utilization)
System Memory	8GB (16 GB+ recommended)
CPU	Multi-core 64-bit processor (4 cores recommended)
Processes	20 BTC, 20 DIA, 1 ENQ, 1 SPO, 1 UPD, 1 UP2 (assumes up to 15 Bot machines defined)
Notes	Must have network connectivity to Source, Target, and BOT systems

In addition to the central system there will also be “source” SAP systems where recordings take place and “target” SAP systems into which recordings are played back. At the start of the installation Basis Technologies recommends that a sandbox system is used and it is likely that the same system will be used for both recording and playback. To playback you will also require a windows machine to host the Bot. Details on this are [here](#). Once you start recording larger systems note that the target will need to be sized sufficiently to allow for all of the source system activities being run on it.

At this stage it is important to determine which systems will be acting as “central”, “source” and “target” systems as each requires different setup. The Basis Technologies consultant will also want the detail of these systems entered into the Testimony Gameplan to assist with planning and documenting the installation.

2. Determine Administrators

Installing and maintaining Testimony requires a basic working knowledge of SAP plus an understanding of your organisation’s testing processes.


Basis Technologies recommend 1-2 resources be assigned as Testimony Administrators. These will

typically be the senior testing managers and/or basis administrators.

The proposed Testimony administrators should be determined before the installation is started.

3. Profile Parameters

The following profile parameters should be set as per the list below, note that as some of these require a system restart planning should be taken around the production system taking note of maintenance windows. These parameters will be reviewed and may be adjusted depending on your installation.

 Parameters in **bold** are expected to require a system restart to take effect (this can vary per SAP version) and they should be changed on each app server

#	Profile Parameter	System	Details
1	rsdb/esm/buffersize_kb	Source & Central	This value needs to be at least '100000' (100Mb) (the parameter is in kb).
2	rsdb/esm/large_object_size	Source & Central	This value needs be to at least '1000000' bytes (1Mb).
3	rsdb/esm/max_objects	Source	This value needs to be at least 20000
4	rsdb/esm/max_objects	Central	This value needs to be at least 2000
5	sapgui/user_scripting	Target	This value needs to be TRUE which allows the bots to perform the playback properly. Only in playback system.
6	sapgui/user_scripting_per_user	Target	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.
7	sapgui/user_scripting_set_read_only	Target	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.
8	login/disable_password_logon	Target	This value needs to be 0 which allows the bots to login to the playback system. Only in playback system.
9	login/disable_multi_gui_login	Target	This value needs to be 0 this allows multiple logons. Only in playback system.
10	rdisp/tm_max_no	Target	As Testimony will be logging on with the user load from production this should be the production setting +50% Only in playback system.
11	rdisp/gui_auto_logout	Target	This value needs to be 0. This ensures that the bots and their logged on users cannot be automatically logged off by the user due to time-limits (for example, if the playback is paused or other issues arise)

12	rdisp/max_wprun_time	Target	Ensure this value is at least the value set in the production system
13	abap/buffersize	Target	Ensure this value is at least the value set in the production system
14	ztta/parameter_area	Target	This value needs to be at least 64000. The value checked can be adjusted by changing PLAYBACK_PARAM_AREA in the General Parameters. Only in playback system.
15	snc/enable	Target	This value needs to be 0 this is required where TimeShiftX is being operated. Only in playback system.



Note some parameters will be reviewed for your system settings primarily parameters #1 #2 #3 on the source system

4. File Configuration

To enable Testimony to record and playback files then the following setup needs to be completed in each system that Testimony is intended to operate in central, source and target.

#	Activity	Details
1	Create OS Command	In each system (central, source and target) set up a new OS command called YAUT_COPY_FILE in transaction SM49 (For WINDOWS NT Operating system command is xcopy, for LINUX is cp)
2	Logical File Path	In each system (central, source and target) set up a folder for the logical path /BTI/AUT_APPSERVER_FILES using transaction FILE

5. Operating Systems

Enter into the Game Plan the operating systems for the application and database servers for the SAP systems where Testimony is to be installed. This is required for the installation of TimeShiftX which is required to keep the date and time of the target system aligned with the date and time of the recording when playing back, more details in the [TimeShiftX](#) section.

Technical Setup

After the prerequisite processes have been completed you can now begin the Testimony implementation, including configuration of the product and preparing it for use.

Basis Technologies recommends that the first recording and playback are completed on a Sandbox system and for the first recording and playback this system can operate as both a source and target if required.

This topic has been broken down into the following sections:

- [Central System](#)
- [Bot Setup](#)
- [Source System](#)
- [Target System](#)
- [TimeShiftX](#)

Central System

Follow the steps below to ensure Testimony is correctly installed on the central system.

#	Activity	Details
1	Install Testimony into Central System	Install the transports provided by Basis Technologies into your central system. This would typically be your SAP Solution Manager system.
2	Regenerate delivered roles	In each system into which transports have been deployed, go to transaction PFCG, find the /BTI/* roles and regenerate
3	Testimony administrator access	Assign the role /BTI/AUT_CENTRAL_ADMINISTRATOR to the Testimony Administrators in the Testimony central system
4	Check main transaction	In the central system, execute the main Testimony transaction /N/BTI/AUT . If this transaction does not exist then check the transports have been imported correctly
5	Install License Keys	Install the Testimony license keys provided by Basis Technologies into your central system only as per the central license section here .
6	Install Listener License Keys	Install the Testimony Listener Agent license keys provided by Basis Technologies into your central system. Separate keys for the Listener Agent will need to be installed into specific systems according to the instructions here .
7	Assign Administrators	Being the first to login to Testimony using the transaction /N/BTI/AUT you will be assigned as an administrator, you should assign the other Administrators to this roles at this point, as per the link here

Once this is complete you can move onto the next part of the installation:

#	Activity	Details
1	Bot User	Use SU01 to create a BOT_USER user (suggested name) in the central system. This user requires the following role /BTI/AUT_BOT_RFC (ensure profile role is generated) The user needs to be of type System User
2	Create Source RFC	In the central system, use SM59 to create an ABAP RFC connection to the source system. This requires the user created in the source system as per the details here then test the connection using Utilities —> Test —> Authorization Test
3	Create Target	In the central system, use SM59 to create an ABAP RFC connection to the target system. This requires the user created in the source system as per the details here then test the connection

	RFC	using Utilities —> Test —> Authorization Test
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The following parameters should have been completed in the prerequisites, however, these should be double checked to ensure installation is correct.

#	Profile Parameter	Details
1	rsdb/esm/buffersize_kb	This value should be about '100000' (100Mb) (the parameter is in kb).
2	rsdb/esm/large_object_size	This value should be at least '1000000' bytes (1Mb).
3	rsdb/esm/max_objects	This value should be at least 20000
4	rsdb/esm/max_objects	This value should be at least 2000

Source System

Follow the steps below to ensure Testimony is correctly installed on the source system.

#	Activity	Details
1	Install Testimony into Source System	Install the transports specified for the source system provided by Basis Technologies into your source system, this is the system that you want to record Note that the transports can cause short dumps for users if they are using the system at the time of the import. It is therefore important that the transports are imported when there is little or no activity taking place on the system.
2	Regenerate delivered roles	Goto transaction PFCG, find the /BTI/* roles and ensure the profiles are generate. If they are not then generate them manually
3	Install Listener License Keys	Install the Testimony Listener Agent license keys provided by Basis Technologies into your source system as per LINK HERE (needs to be added). Separate keys for the Listener Agent will need to be installed into specific systems according to the instructions here .
4	Create Source RFC User	Create a system user with the role /BTI/AUT_SOURCE_RFC (ensure profile is generated) This user is for the RFC destination defined in the central system. Checking the RFC setup with the user at this point is best practice.

The following parameters should have been completed in the prerequisites, however, these should be double checked to ensure installation is correct.

#	Profile Parameter	Details
1	rsdb/esm/buffersize_kb	This value should be about '100000' (100Mb) (the parameter is in kb).
2	rsdb/esm/large_object_size	This value should be at least '1000000' bytes (1Mb).
3	rsdb/esm/max_objects	This value should be at least 20000



Note these parameters must be changed on each application server and will be reviewed for your system settings

Target System

Follow the steps below to ensure Testimony is correctly installed on the target system.

#	Activity	Details
1	Install Testimony into Target System	Install the transports specified for the target system provided by Basis Technologies into your target system, this is the system that you want to playback into Note that the transports can cause short dumps for user if they are using the system at the time of the import.
2	Regenerate delivered roles	Goto transaction PFCG, find the /BTI/* roles and ensure the roles are generated if they are not generate the roles manually
3	Create Target RFC User	Create a system user with the role /BTI/AUT_TARGET_RFC (ensure profile role is generated) This user is for the RFC destination defined in the central system. While setting up bots for the first time you should also use the role /BTI/AUT_BOT_SIMULATION This is an optional Role that is only required for the BOT Simulation Program. This role provides auths for creating Users, assigning Roles to Users and Deleting Users, which is required during the Bot Simulation and can be removed after the simulation is complete. Checking the RFC setup with the user at this point is best practice.
4	Meta Data RFC User	Create a system user with the role /BTI/AUT_NCO_METADATA_ACCESS (ensure profile role is generated) This user is for playing back RFCs and collecting the meta data to ensure that they operate correctly the suggested user name is /BTI/AUT_RFM although this can be changed in the General Parameters.
5	Batch Job User	Before starting the playback, Testimony will verify the validity and existence of users that are present as creators of batch jobs in the recording data. If one of these users fails this check (i.e. because the user doesn't exist or is not valid), Testimony will use this user to execute the batch job, we would suggest configuring the default batch user in the General Parameters. The suggested user name is /BTI/AUT_BTC

The following parameters should have been completed in the prerequisites, however, these should be double checked to ensure installation is correct.

#	Profile Parameter	System	Details
1	sapgui/user_scripting	Target	This value needs to be TRUE which allows the bots to perform the playback properly. Only in playback system.
2	sapgui/user_scripting_per_user	Target	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.

3	sapgui/ user_scripting_set_read_only	Target	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.
4	login/ disable_password_logon	Target	This value needs to be 0 which allows the bots to login to the playback system. Only in playback system.
5	login/disable_multi_gui_login	Target	This value needs to be 0 this allows multiple logons. Only in playback system.
6	rdisp/tm_max_no	Target	As Testimony will be logging on with the user load from the source (which could be production) this should be the source setting +50% Only in playback system.
7	rdisp/gui_auto_logout	Target	This value needs to be 0. This ensures that the bots and their logged on users cannot be automatically logged off by the user due to time-limits (for example, if the playback is paused or other issues arise)
8	rdisp/max_wprun_time	Target	Ensure this value is at least the value set in the production system
9	abap/buffersize	Target	Ensure this value is at least the value set in the production system
10	ztta/parameter_area	Target	This value needs to be at least 64000. The value checked can be adjusted by changing PLAYBACK_PARAM_AREA in the General Parameters. Only in playback system.
11	snc/enable	Target	This value needs to be 0 this is required where TimeShiftX is being operated. Only in playback system.

System Copies

While for the first few playbacks there won't be any need to copy the source system to the target system when progressing to copying the source system to the target then you should adjust your current system copy process considering the steps documented [here](#).

System Refresh Steps

✿ Note that parameters should be changed on each app server

#	Description	Required	Notes
1	Activate recording on the source system	Yes	
2	Put the source database into online backup mode	Yes	
3	Perform a full database copy of the source database	Yes	
4	Once source database copy is complete, deactivate online backup mode	Yes	
5	Note the exact timing of the copy so that the transfer to repository step can use this date and time	Yes	
6	Do not apply re-do logs to database copy once complete	Yes	
7	Setup SAP target system (system profiles etc)	Yes	
8	Optionally setup the target system in a "ring-fenced" network	Optional	
9	Install TimeShiftX onto app server(s) on the target system	Yes	
10	Ensure batch jobs are deactivated when target SAP system is started (profile setting)	Yes	The recommended option is to run btctrns1 (in SE38) to set all batch jobs to Released/Suspended mode, and then go and delete them all from SM37. Only exception should be the event-dependent RDD* jobs, as without these the transports for the release (line 24) won't work.
11	Start-up SAP target database and app server(s)	Yes	
12	Check parameter sapgui/	Yes	This value needs to be TRUE which allows the bots to perform

	user_scripting		the playback properly. Only in playback system.
13	Check parameter sapgui/ user_scripting_per_user	Yes	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.
14	Check parameter sapgui/ user_scripting_set_read_only	Yes	This value needs to be FALSE which allows the bots to perform the playback properly. Only in playback system.
15	Check parameter login/ disable_password_logon	Yes	This value needs to be 0 which allows the bots to login to the playback system. Only in playback system.
16	Check parameter login/ disable_multi_gui_login	Yes	This value needs to be 0 this allows multiple logons. Only in playback system.
17	Check parameter rdisp/ tm_max_no	Yes	As Testimony will be logging on with the user load from the source (which could be production) this should be the source setting +50% Only in playback system.
18	Check parameter rdisp/ gui_auto_logout	Yes	This value needs to be 0. This ensures that the bots and their logged on users cannot be automatically logged off by the user due to time-limits (for example, if the playback is paused or other issues arise)
19	Check parameter rdisp/ max_wprun_time	Yes	Ensure this value is at least the value set in the production system
20	Check parameter abap/ buffersize	Yes	Ensure this value is at least the value set in the production system
21	Check parameter ztta/ parameter_area	Yes	This value needs to be at least 64000. The value checked can be adjusted by changing PLAYBACK_PARAM_AREA in the General Parameters. Only in playback system.
22	Check parameter snc/enable	Yes	This value needs to be 0 this is required where TimeShiftX is being operated. Only in playback system.
23	Disable/deactivate recording enhancements on the target using program /BTI/ AUT_DEACT_ENH via SE38 on the copied system	Yes	
24	Run post-processing steps such as RFC destination re-pointing, file system re-pointing, printer re-pointing etc.	Yes	
25	Do not delete/remove source SAP users from the target system	Yes	Testimony requires the users from the source system to playback correctly
26	Optionally run BDLS if system ID is to be renamed (e.g. PRD to PRE)	Optional	

27	Optionally use Basis Technologies System Copy GT if BDLS takes quite a long time	Optional	
28	Deploy changes that form regression test (transport requests or perform upgrade) to target system	Yes	
29	Deploy Testimony playback enhancement transport to target system	Optional	If the Testimony playback enhancements transport was not applied to the source system you will need to apply that transport here
30	Ensure Target RFC User exists	Yes	<p>Ensure a system user with the role /BTI/AUT_TARGET_RFC (ensure profile role is generated) This user is for the RFC destination defined in the central system.</p> <p>While setting up bots for the first time you should also use the role /BTI/AUT_BOT_SIMULATION This is an optional Role that is only required for the BOT Simulation Program. This role provides auths for creating Users, assigning Roles to Users and Deleting Users, which is required during the Bot Simulation and can be removed after the simulation is complete.</p> <p>Checking the RFC setup with the user at this point is best practice.</p>
31	Ensure Meta Data RFC User exists	Yes	Ensure a system user with the role /BTI/AUT_NCO_METADATA_ACCESS (ensure profile role is generated) This user is for playing back RFCs and collecting the meta data to ensure that they operate correctly the suggested user name is /BTI/AUT_RFM although this can be changed in the General Parameters.
32	Ensure Batch Job User is correct	Yes	Before starting the playback, Testimony will verify the validity and existence of users that are present as creators of batch jobs in the recording data. If one of these users fails this check (i.e. because the user doesn't exist or is not valid), Testimony will use this user to execute the batch job, we would suggest configuring the default batch user in the General Parameters. The user name defaulted into the general parameters is /BTI/AUT_BTC
33	Set the workflow batch users password	Yes	Use the transaction SWU3 to set the RFC workflow user (WF-BATCH) to the Testimony password as set in the general parameters under the CHECK_DEFAULT_PWD parameter.
34	Take a backup of the target system	Yes	It is recommended to take a backup as this means the target system can be easily restored back to this state for a second run which means if anything goes wrong the system can be quickly restored and a second playback run, without having to

			repeat all of the above steps again.
35	Check the SAP system for time inconsistencies	Yes	Use the program RSDBTIME via transaction SE38 to check time inconsistencies between the SAP servers
36	Check current time travel status	Yes	Use the TimeShiftX command "tsx list" to check the current time travel status of your system this will avoid running multiple TimeShiftX commands which might lead to unexpected times on systems and might cause systems to shutdown.
37	Shut-down SAP target system	Yes	
38	Set SAP time and date or use TimeShiftX as below	Yes	
39	Setup virtual clock and users in TimeShiftX on target app servers.	Yes	
40	Ensure TimeShiftX virtual clock is set close to start of recording time just before playback commences	Yes	It is recommended to use the offset option rather than set a specific time to make life easier for multiple app servers. It is also recommended to slow time down to ensure that there is time in case there is a delay starting playback or playback is slower than expected, time can be sped up if the midnight boundary is imminent or Testimony will pause and wait.

Bot Setup

After completing the preparation and installation activities on the Central system, the bots can now be configured.

The following sections will take you through the bot setup

- [Installing the Bot](#)
- [Config File Maintenance](#)
- [SAP GUI Configuration](#)
- [Bot Testimony Setup](#)

There is also a section for [trouble shooting](#) should you still have issues.

Note the Bot machine requirements and architecture below.

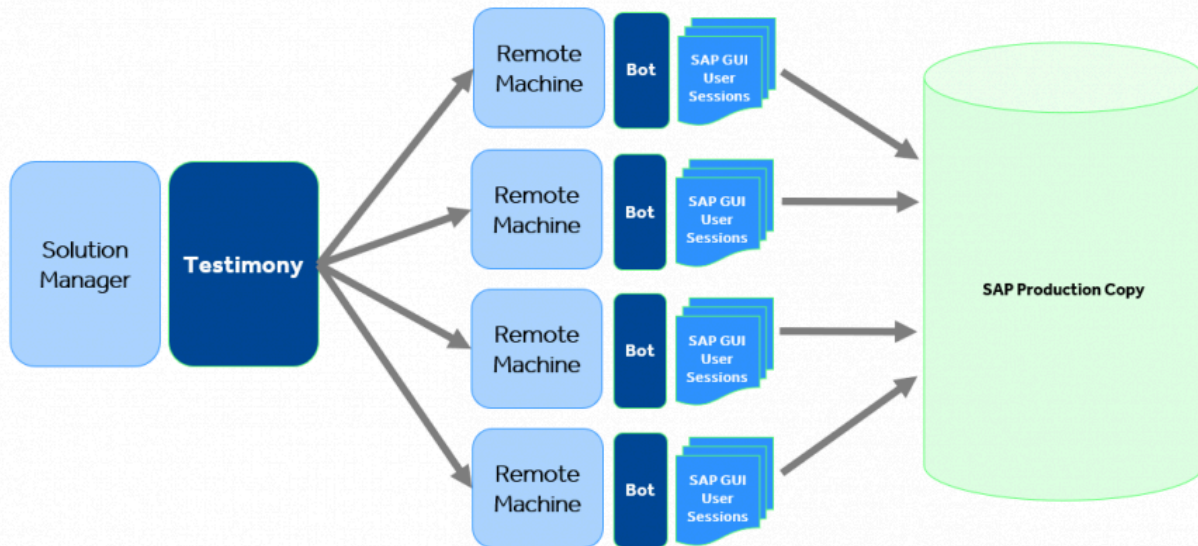
Remote Desktop/Virtual Machine Requirements for the Bot

Operating system	64-bit Windows System (Windows 10, Server 2016)
Authorizations	Windows administrative access for setup
Network access	Access to the Central and Target systems
SAP Software	SAP GUI (ideally most recent version, but 7.40 or above is acceptable)
BOT software	As supplied by BTI, Save the executable in a directory on a local drive. (i.e. C:\BTI_BOT\)
Other Software	Windows .Net (usually installed with Windows 10, Server 2016), MS Office, Web Browser, PDF Viewer
RAM	4+ GB
CPU	2+ GHz dual core
Disk	50 GB free space
User sessions	Expected around 50 active user sessions
Notes	Must have network connectivity to Central and Target systems

The Testimony bot architecture is shown in the diagram below. You can have many physical or virtual desktop machines each running one bot, with each bot launching multiple SAP user sessions. Each bot can handle around 90 concurrent SAP user sessions. Note you will also require one worker (background) job to

run each bot.

Testimony Bot Architecture



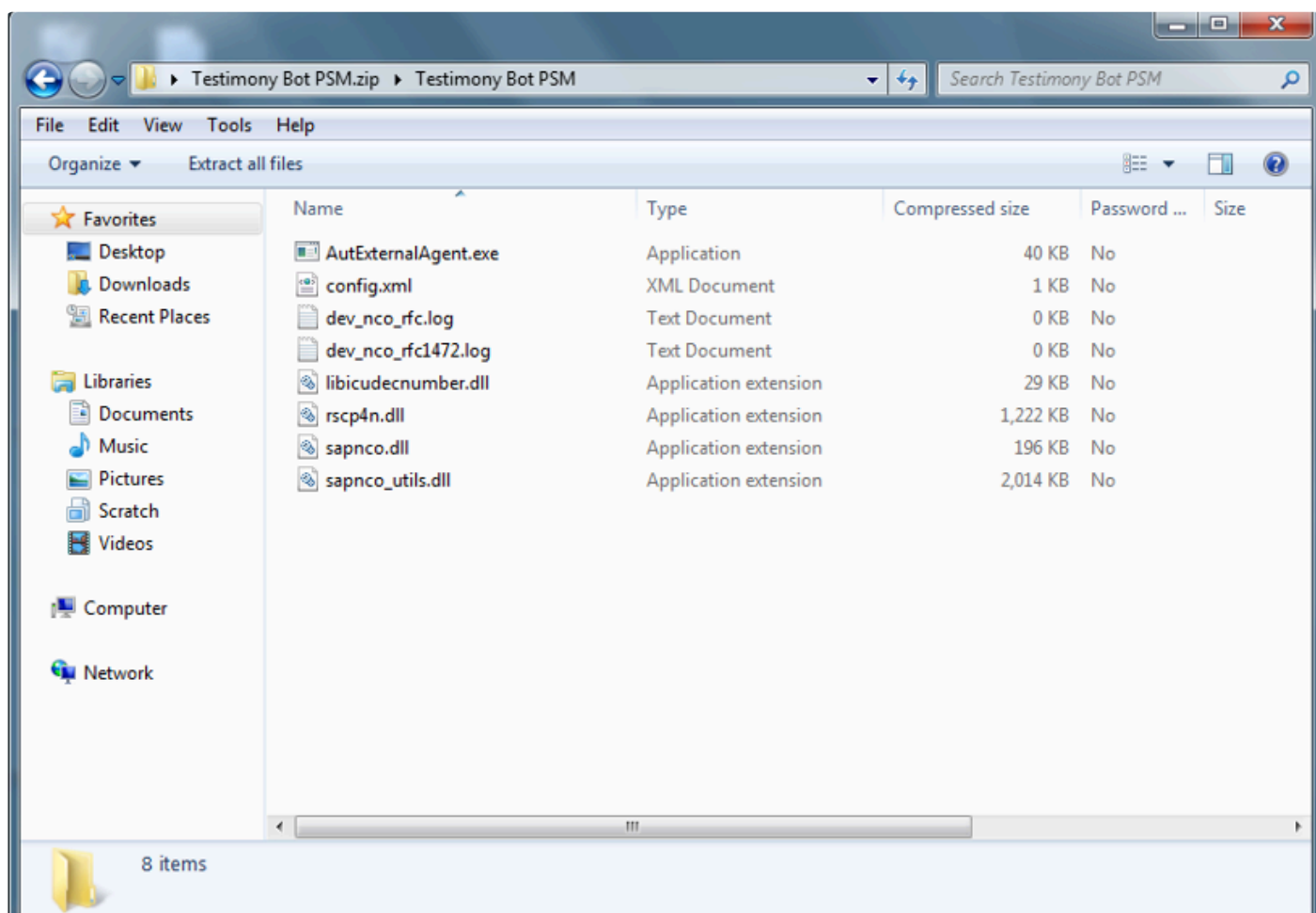
Installing the Bot

Installing the Bot

A link to the bot software should have already been supplied so you can simply download the folder on to the machine where you want to install the bot. The contents should be as per the example below:

The config file can now be maintained as per the [Config File Maintenance](#) section.

Example Screen-shot



✿ Because SAPGUI needs to know the location of the bot executable (see [here](#)) it is important that you don't create "version-specific" folders for the bot software. Instead, create a central folder on each local machine for the bot software. When upgrading the bot software, if you

want to keep the old version then you can copy it to another folder before upgrading the files in the central folder.

Setup for Internet Explorer

The following setup is required to ensure that the bot is trusted in Internet Explorer with the settings required as below:

1. Go into IE, go to Settings -> Internet options
2. Go to Security tab
3. Trusted Sites
4. Click on Sites
5. Add new entry "about:security_AutExternalAgent.exe"
6. Untick checkbox "Require https for this zone"

Config File Maintenance

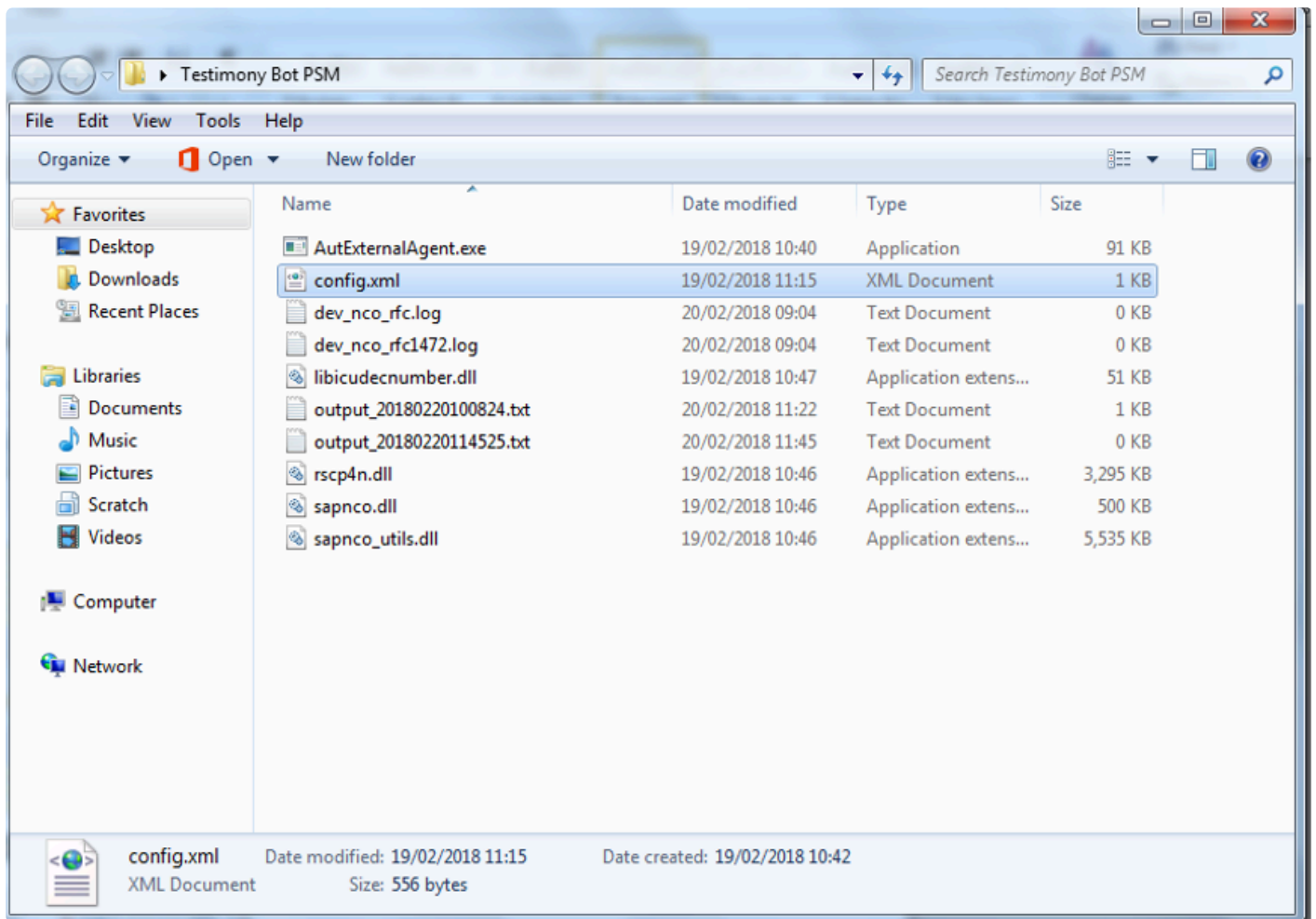
When installing for the first time or changing the Central system where Testimony is operating, each bot's main config file will need to be updated.

To build the config file that allows the Bot to connect to the SAP central system where Testimony is deployed, most of the information will be on the sap logon pad but you will also require the bot users logon and password and the client where Testimony is being operated from. Please note there is a separate section [here](#) for Config file specialisations for example for Central systems with multiple app servers.

The regular elements for the bot is as below:

Tag	Element
ID	The system ID of the central system
Instance Number	The instance number of the central system
Application Server	The app server for the central system
SAProuter String	If one exists for the central system
User	The sap user name of the bot user setup on the central system
Password	the password for the user above
Client	The client of the central system where Testimony is deployed
Gateway Host	The same as the application sever above
Gateway Service	sapgw + the the instance number (example sapgw00)

To access the config file go to the bot folder as below and right click on the config file selecting the option to edit.



The config file should appear as below:

```
<?xml version="1.0" encoding="UTF-8"?>
- <ExternalAgentConfiguration xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <ID>DS0</ID>
  <InstanceNumber>00</InstanceNumber>
  <ApplicationServer/>
  <SAPRouterString/>
  <Language>EN</Language>
  <User>BOT_USER</User>
  <Password>password</Password>
  <Client>100</Client>
  <GatewayHost/>
  <GatewayService>sapgw00</GatewayService>
</ExternalAgentConfiguration>
```

Config File Specialisations

Config File – Specialisations

SAP GUI Location

The bot may be running in an environment where SAP's SAPGui.exe files are not in the standard location.

The logfile on startup will report it as:

```
[15:18:55.8677] [success] Configuration file read: config.xml  
[15:18:55.8677] [error] Failed to setup environment variables: SAP GUI directory not found ("%ProgramFiles(x86)%\SAP\FrontEnd\SAPGui")
```

A new entry in the config.xml will allow an alternative path to be specified.

```
<SAPGuiPath>C:\Programme\SAP\FrontEnd\SapGui</SAPGuiPath>
```

Passwords

If your organisation's internal policy will not allow the password to be saved into the config file then you can remove the line below in the config file and this will prompt the password to be entered each time the Bot is started.

```
<Password>password</Password>
```

Message Server and logon Groups

If the central system uses a message server and logon group then the config file can be updated with these three elements below:

```
<MessageServerService>MessageServer</MessageServerService>
```

```
<MessageServerHost>MessageServerHost</MessageServerHost>
```

```
<LogonGroup>LogonGroup</LogonGroup>
```



Note if you use the Message Server and logon group the Gateway Host and Service below must be removed

```
<GatewayHost>GatewayHost</GatewayHost>
```

```
<GatewayService>sapgwxx</GatewayService>
```

SAP GUI Configuration

On each remote machine where the bot is installed the SAP GUI needs to be configured.



Please note that SAP GUI configuration is **user-specific** and so each Testimony administrator who will be starting the bots for playbacks will need to perform these steps.

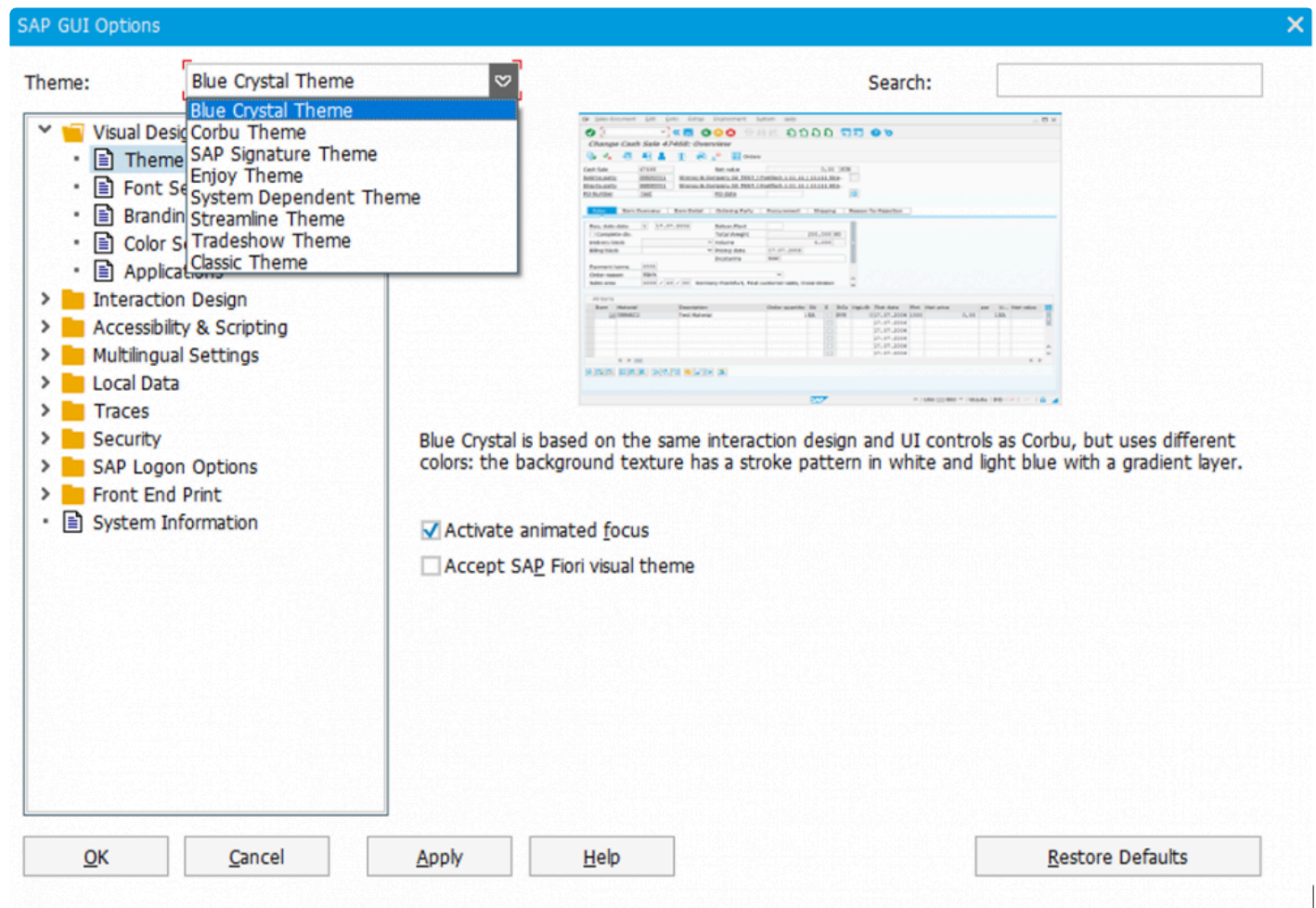
On the desktop/remote desktop launch the program SAP GUI Configuration. **Note that this is a separate program and is not run through the SAP logon pad.**

Some organisations have deleted the short cut to the program, so the application name is sapsettingshow and is usually under the file path \Program Files (x86)\SAP\FrontEnd\SAPgui

Five parts of the SAP GUI setup need to be changed.

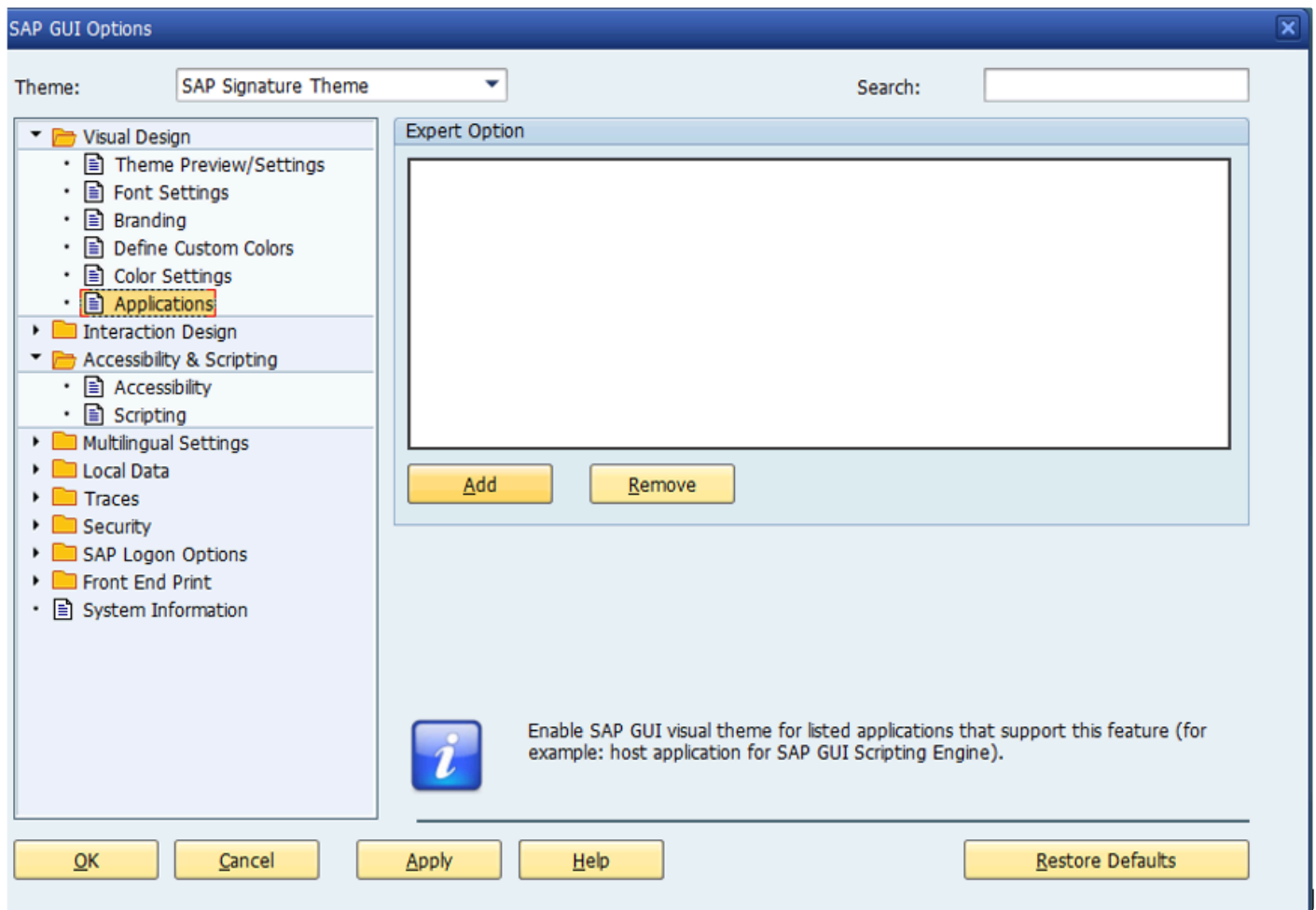
1. Default Theme

Please ensure that the default theme is selected in the configuration as “Blue Crystal”.

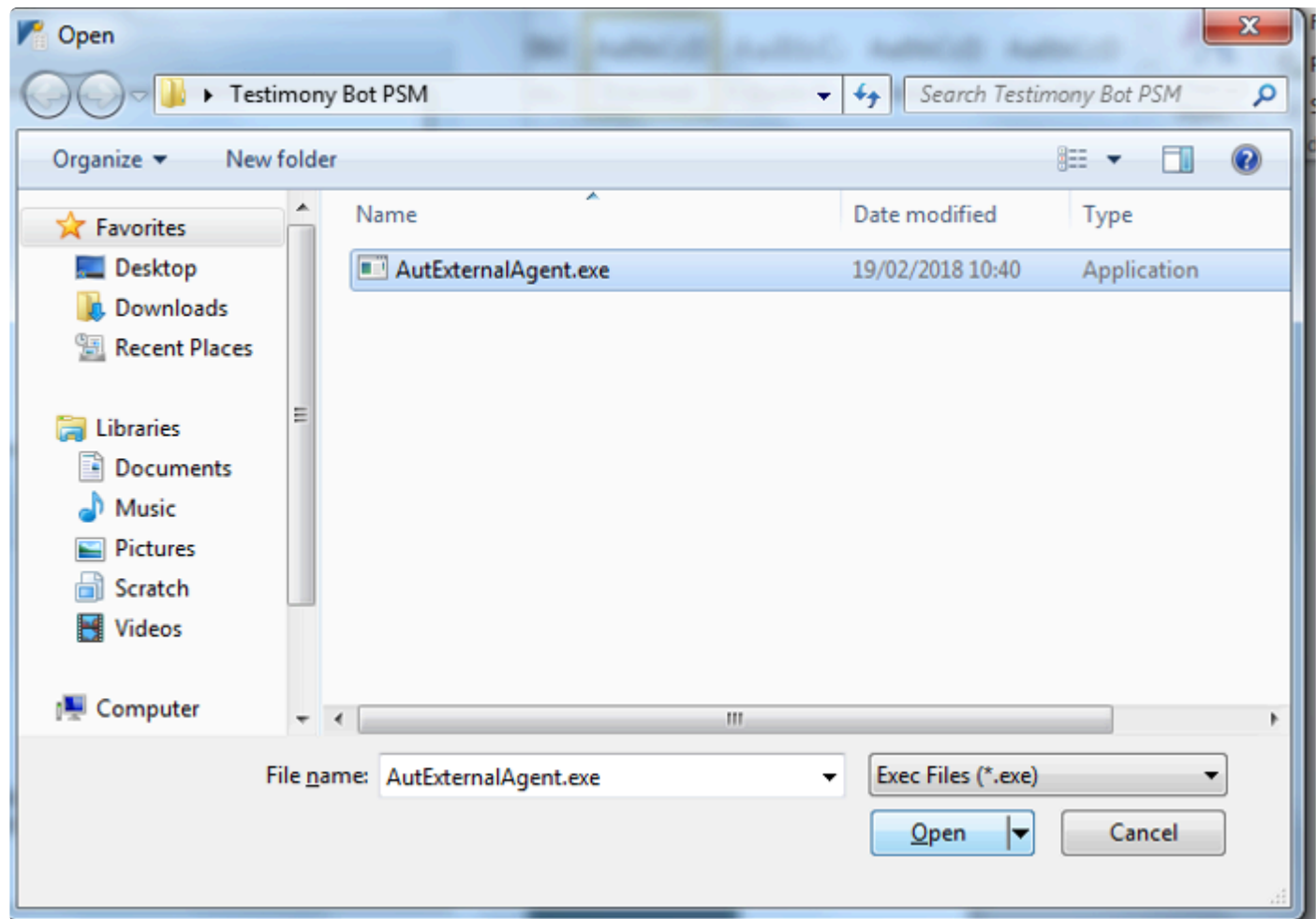


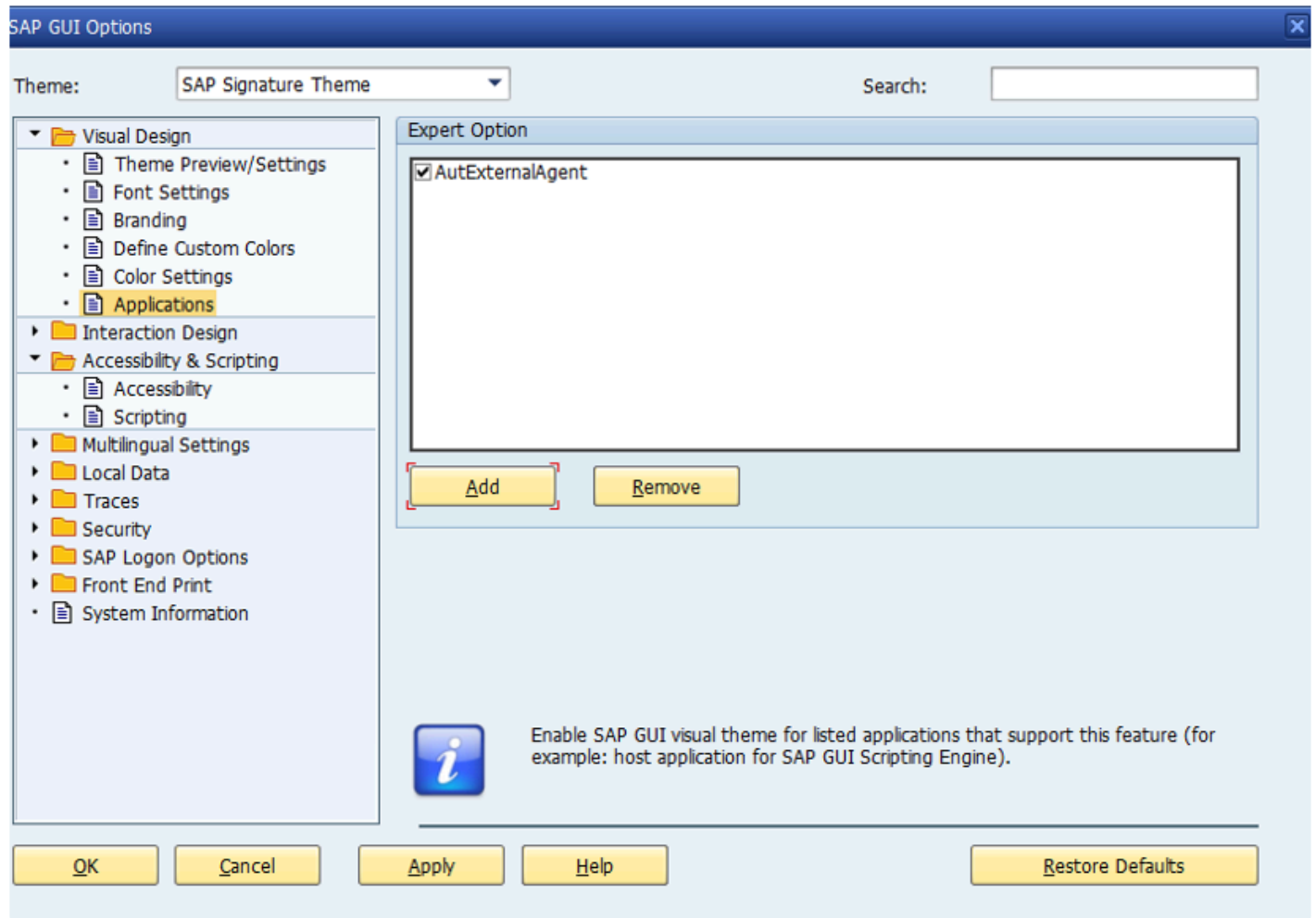
2. Visual Design

To enable the bot to take screenshot correctly, open the 'Visual Design' folder and select 'Applications', then press the add button.



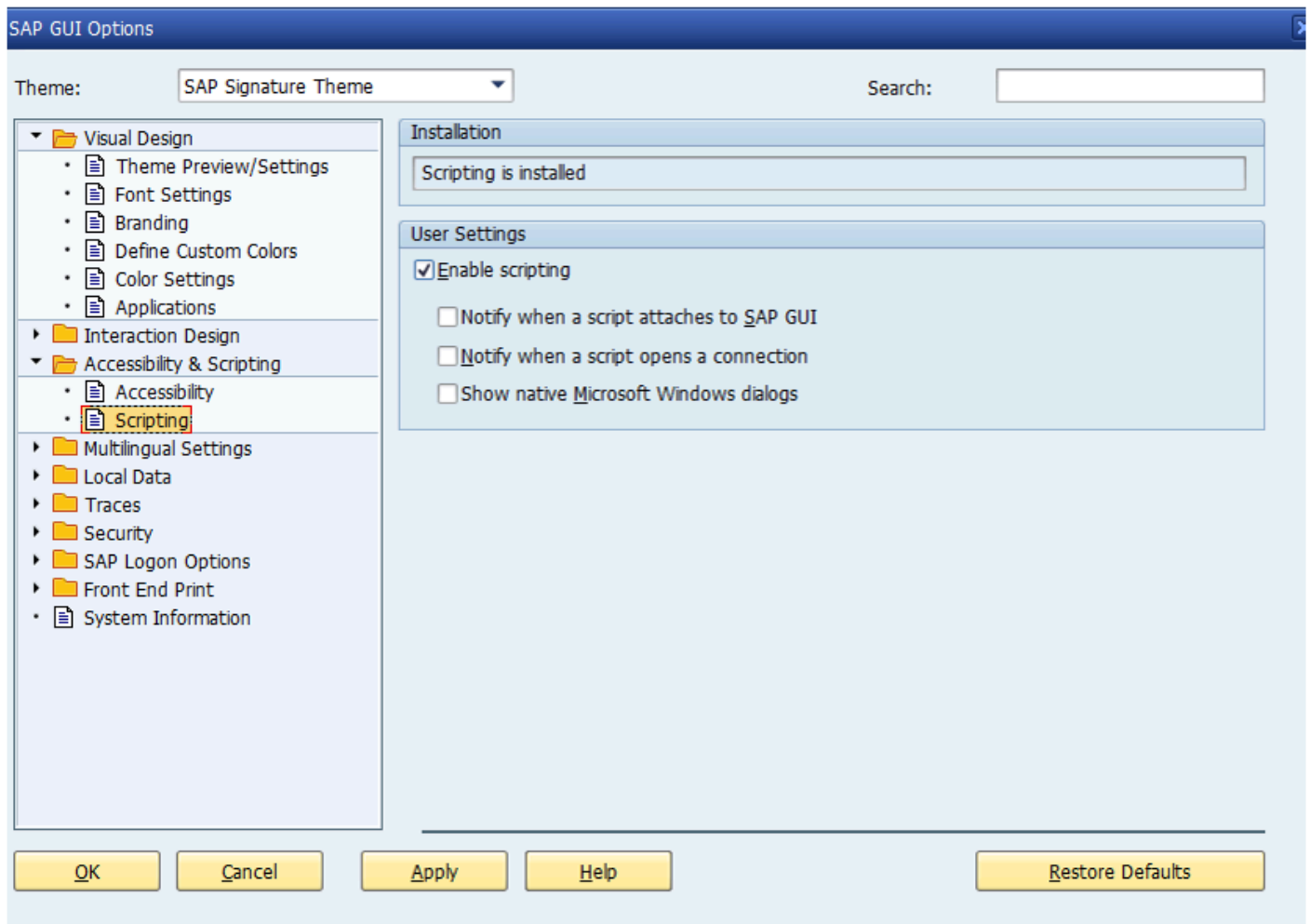
Navigate to the Bot folder and select the AutExternalAgent.exe application. The application will be added to the SAP GUI





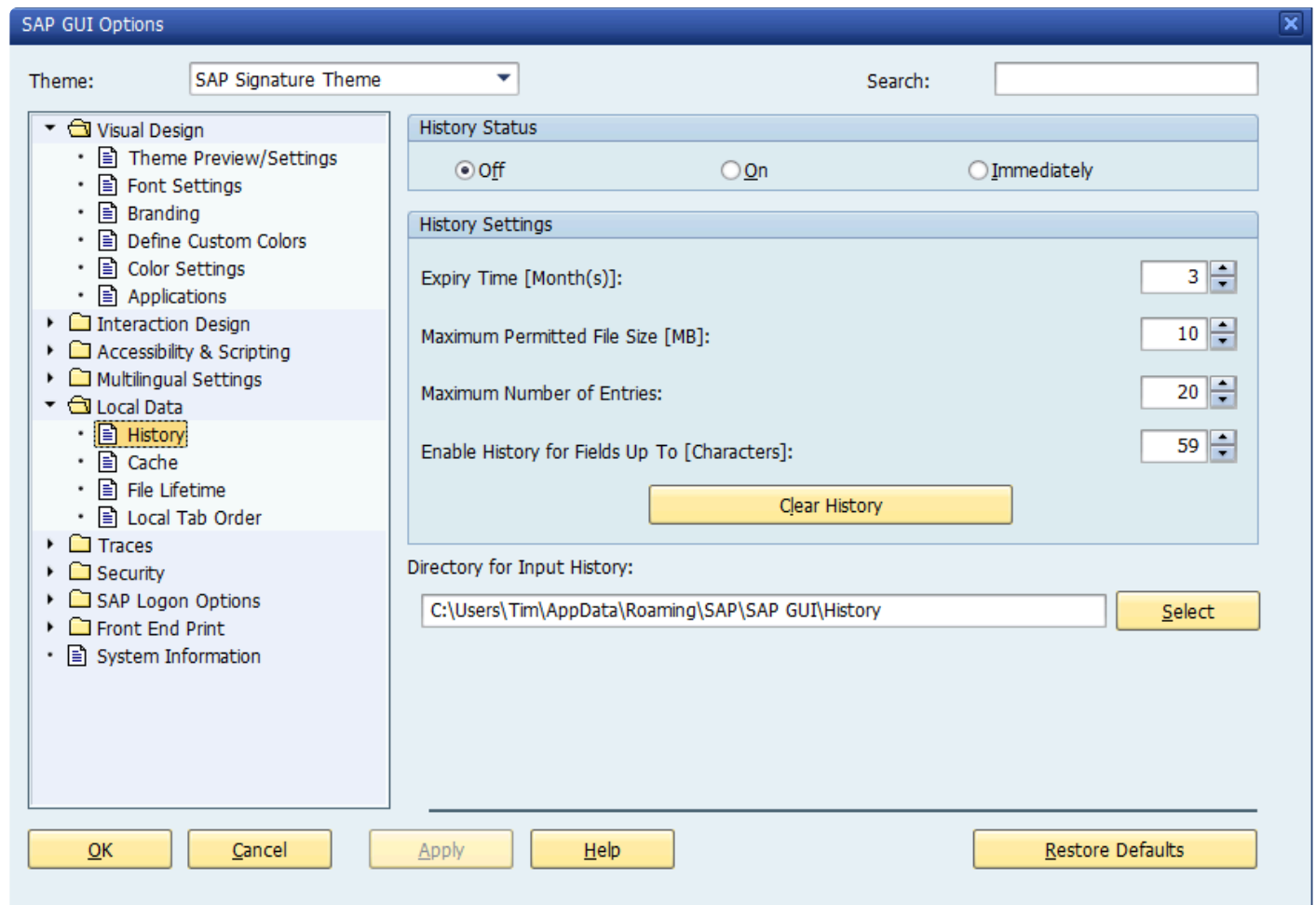
3. Scripting

To allow the bot to operate correctly scripting needs to be enabled open the 'Accessibility and Scripting' folder and select 'Scripting' as below, ensure scripting is enabled and the other checkboxes are unchecked.



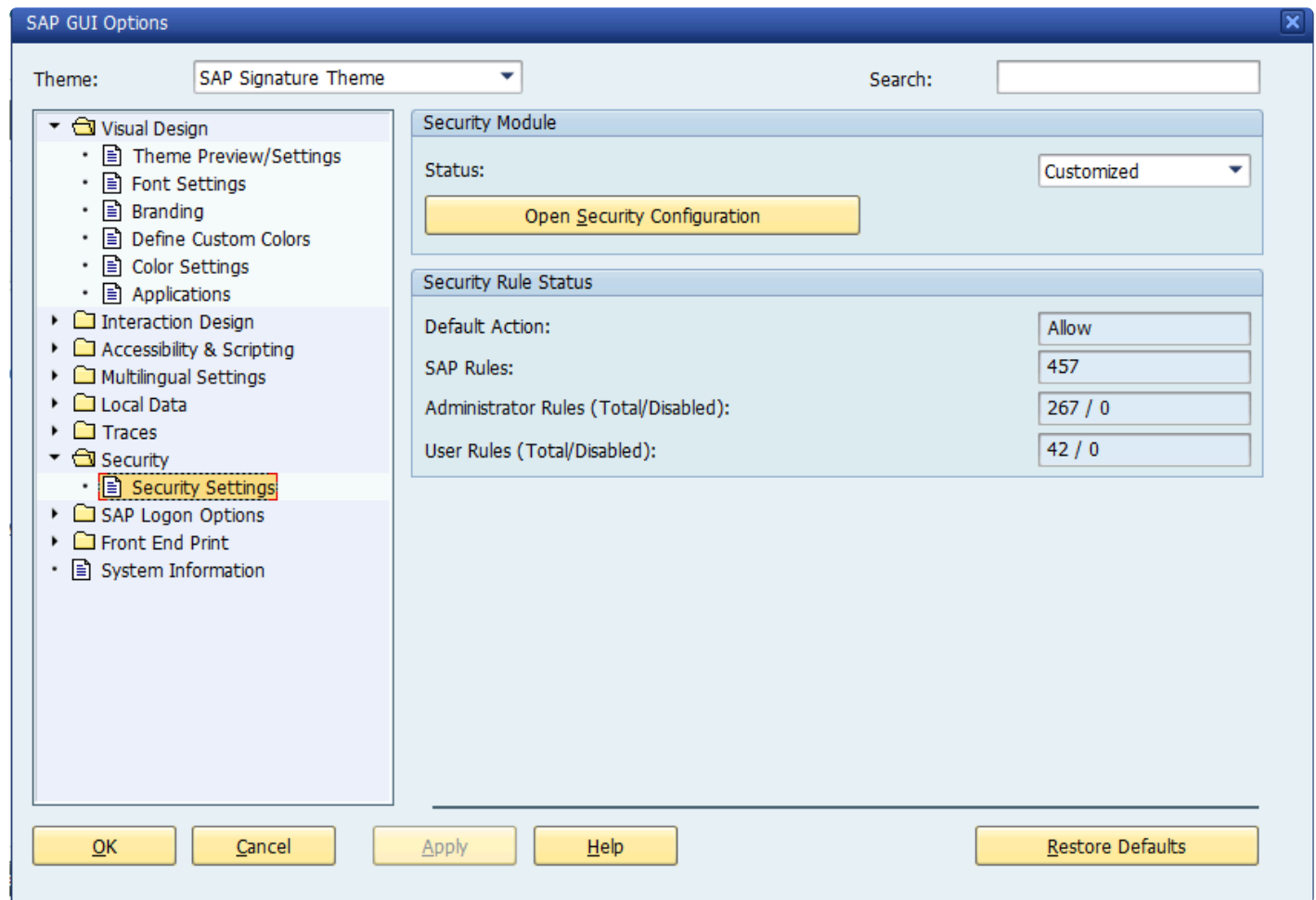
4. SAP History

Please ensure that the SAP GUI History setting (under Options -> Local Data -> History) is turned off. The playback does not require the bot to have a “history” to popup as it types.



5. Security

To prevent unexpected popups open the 'Security' folder and select 'Security Settings' as below and press 'Open Security Configuration'.



Ensure the 'Default Action' is set to 'Allow' as below:

Security Configuration

Status: Customized

Default Action: Allow

Security Rules

Filter Search

☒ Hide SAP Rules ☒ Hide Administrator Rules

Prio...	Object	Type	Access Types	Action	State	Ori
724	C:/Users/Tim/Desktop/	Directory	Write	Cont...	Enabled	User
725	C:/	Directory	Write	Cont...	Enabled	User
726	C:/Users/Tim/Desktop/	Directory	Write	Cont...	Enabled	User
727	C:/Users/Tim/Desktop/0020537154 MD2 Archive IDOC	File	Read	Cont...	Enabled	User
728	C:/TRANS/	Directory	Write	Cont...	Enabled	User
729	C:/TRANS/K900022.BTI	File	Read	Cont...	Enabled	User
730	C:/TRANS/R900022.BTI	File	Read	Cont...	Enabled	User
731	C:/Users/Tim/Desktop/	Directory	Write	Cont...	Enabled	User
732	C:/TRANS/	Directory	Write	Cont...	Enabled	User
733	C:/Users/Tim/Desktop/0020200159 SS0 Testimony	File	Read	Cont...	Enabled	User
734	C:/Users/Tim/Desktop/0020187664 PSE Testimony	File	Read	Cont...	Enabled	User
735	http://docs.basistechnologies.com/testimony-user-guide/...	File	Execute	Cont...	Enabled	User
736	C:/Users/Tim/Desktop/0020187664 PRE Testimony	File	Read	Cont...	Enabled	User
737	C:/Users/Tim/Desktop/New folder/	Directory	Write	Cont...	Enabled	User
738	C:/TRANS/	Directory	Write	Cont...	Enabled	User
739	C:/Users/Tim/Desktop/0020187664 PRE Testimony	File	Read	Cont...	Enabled	User
740	C:/Users/Tim/Documents/SAP/SAP GUI/	Directory	Write	Cont...	Enabled	User
741	C:/Users/Tim/Documents/SAP/SAP GUI/.06C371FA7E4F1...	File	Execute	Cont...	Enabled	User
742	C:/Users/Tim/Documents/SAP/SAP GUI/.06C371FA7E4F1...	File	Execute	Cont...	Enabled	User

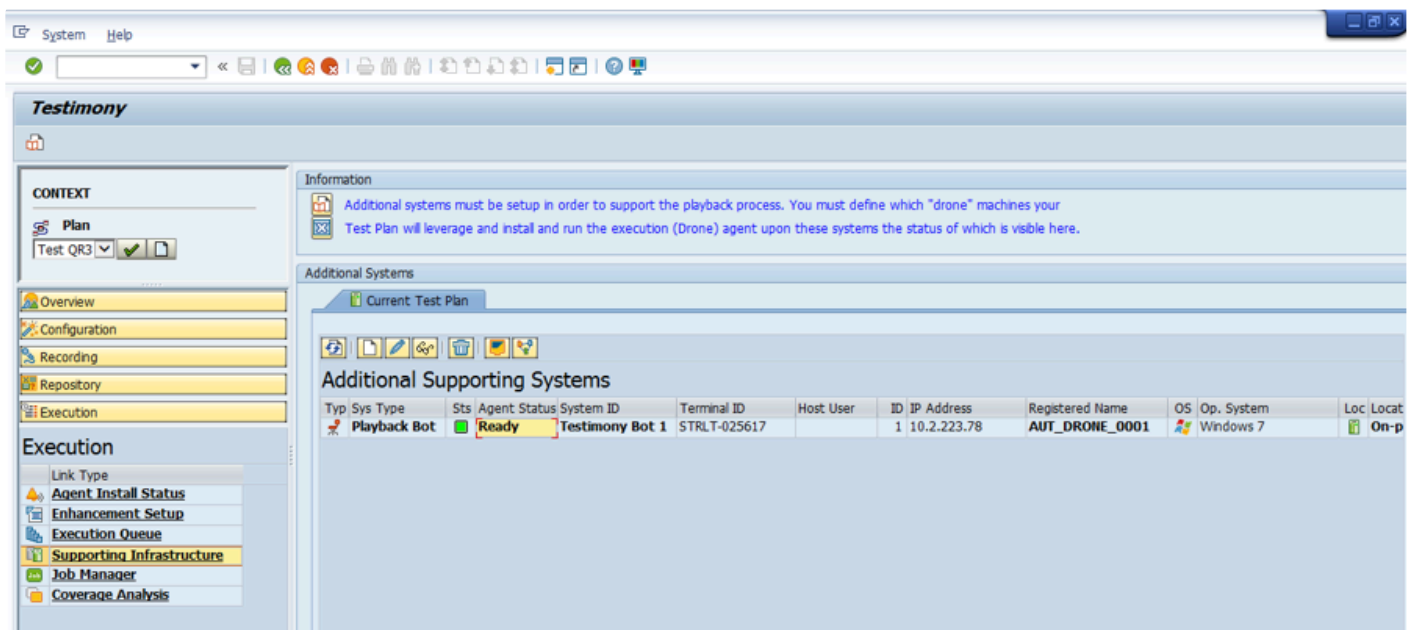
Insert View Delete Increase Priority Decrease Priority

OK Apply Cancel Help

Bot Testimony Setup

Steps to setup the Bot in Testimony

1) In the central system, execute transaction /N/BTI/AUT, navigate to the 'Execution' tray and select 'Supporting Infrastructure'. Click the create button to add a new bot.



2) Fill in the details for the desktop/remote desktop. Give the Bot a unique ID and a correct description in the short text. The Hostname is the name of the desktop/remote desktop. *Case-sensitivity is important and must be maintained.* The IP address is the IP for the desktop/remote desktop. The system type, operating system and machine location can also be added.

Creation of a new system

Identification

Unique System ID: 0002

System short text: Test Bot 22

Configuration

Hostname: HOSTNAME

IP Address: 1.1.11.11

Host Username:

Bot Instance Num:

System type: Playback Bot

Operating System: Windows 10

Machine Location: On-premise

Change log

Creation user:

Modification user:

The Bot will appear in the 'Supporting Infrastructure' as below:

The screenshot displays the Testimony application window. The left sidebar contains a 'CONTEXT' menu with 'Plan' selected, and a list of navigation options including Overview, Configuration, Recording, Repository, Execution, Results, Reporting, and Utilities. The 'Execution' section is expanded, showing sub-options like Agent Install Status, Enhancement Setup, Execution Queue, Supporting Infrastructure, Job Manager, and Coverage Analysis. The main area is titled 'Additional Supporting Systems' and contains a table with the following data:

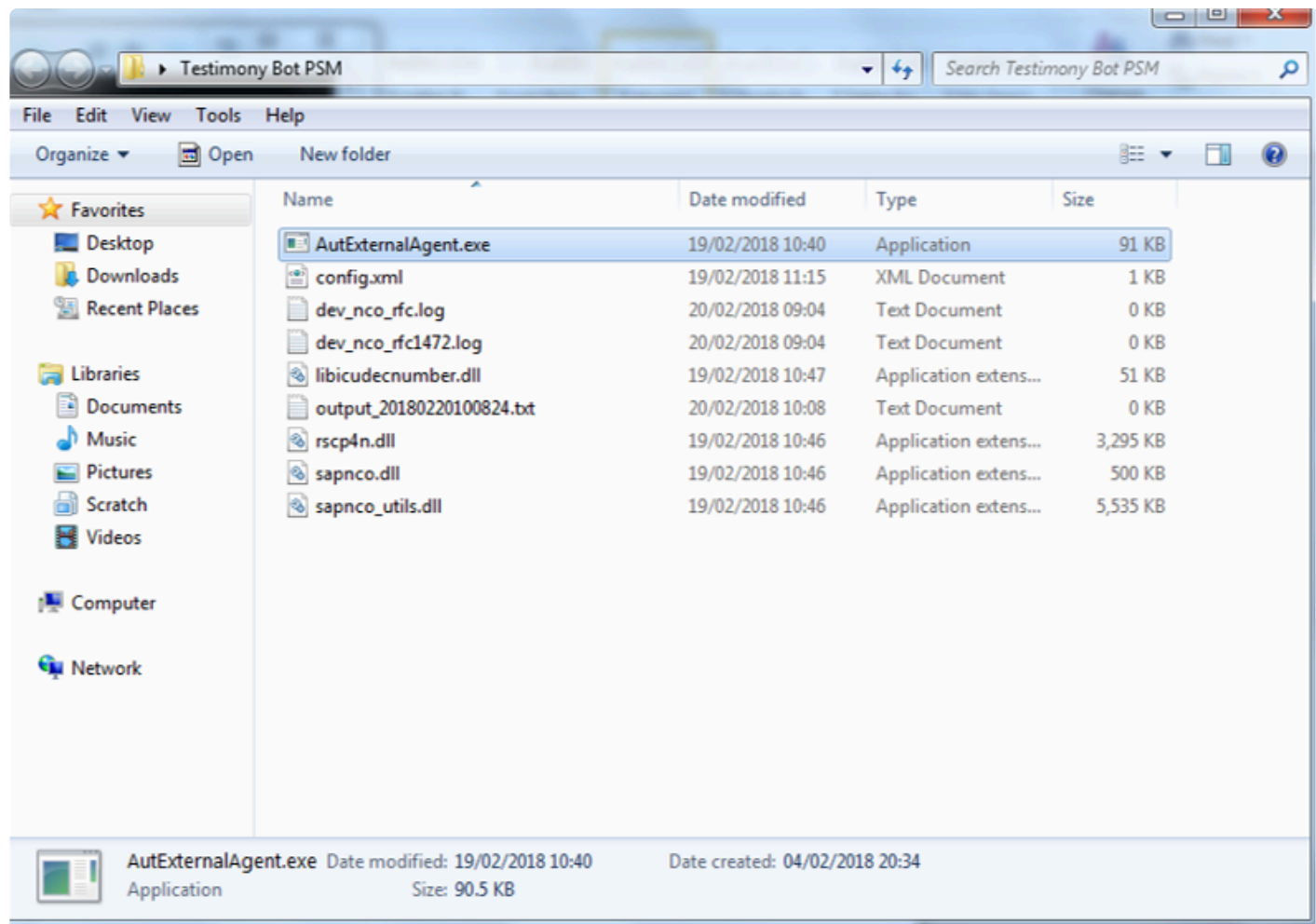
Typ	Sys Type	Sts	Agent Status	System ID	Terminal ID	Host User	ID	IP Address	Registered Name	OS	Op. System	Loc	Locat
Playback Bot	Inactive	Testimony Bot 1	STRLT-025617			1	10.2.223.78			Windows 7		On-p	
Playback Bot	Inactive	Test Bot 22	HOSTNAME					1.1.11.11		Windows 10		On-p	

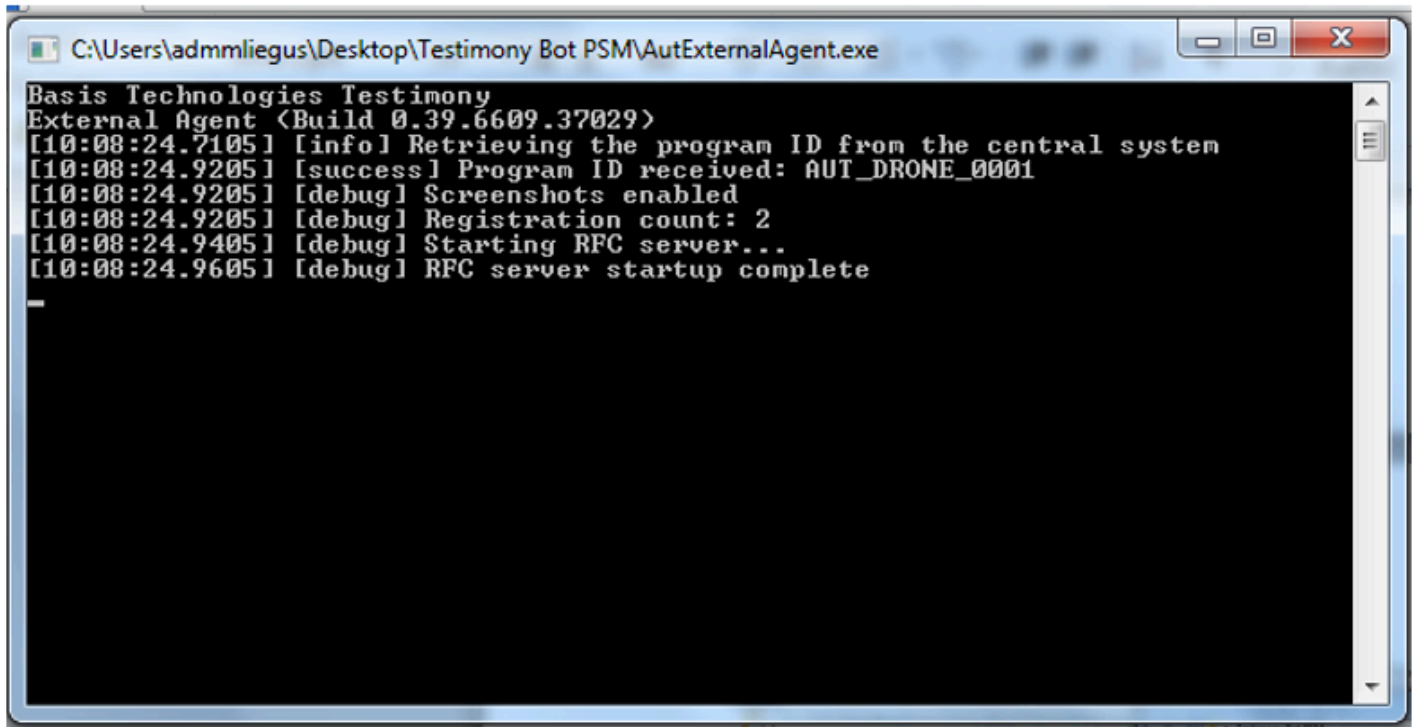
At the bottom of the window, a status bar shows 'Bot definition successfully created' and a SAP logo. The bottom right corner of the window displays 'PSM (1) 500', 'wswsap09', 'INS', and a user icon.

Checking Bot Setup

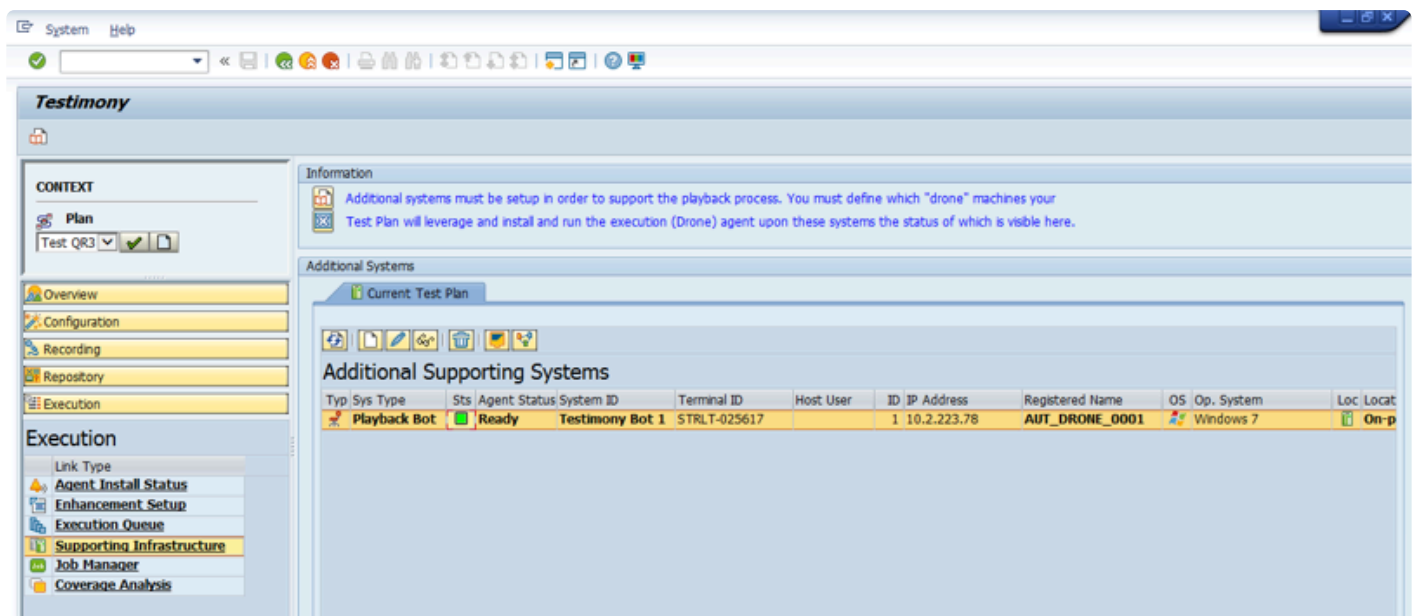
Steps to check the Correct Setup of the Bot in Testimony

1) To launch the bot simply go to the folder where the bot executable files are stored on the desktop/remote desktop and double-click the AutExternalAgent.exe application. The bot should launch and provide the details as below:





2) Execute Testimony transaction /N/BTI/AUT in SAP GUI. Navigate to the 'Execution' tray and select 'Supporting Infrastructure' and the Bot should have a status of 'Ready'



Trouble Shooting

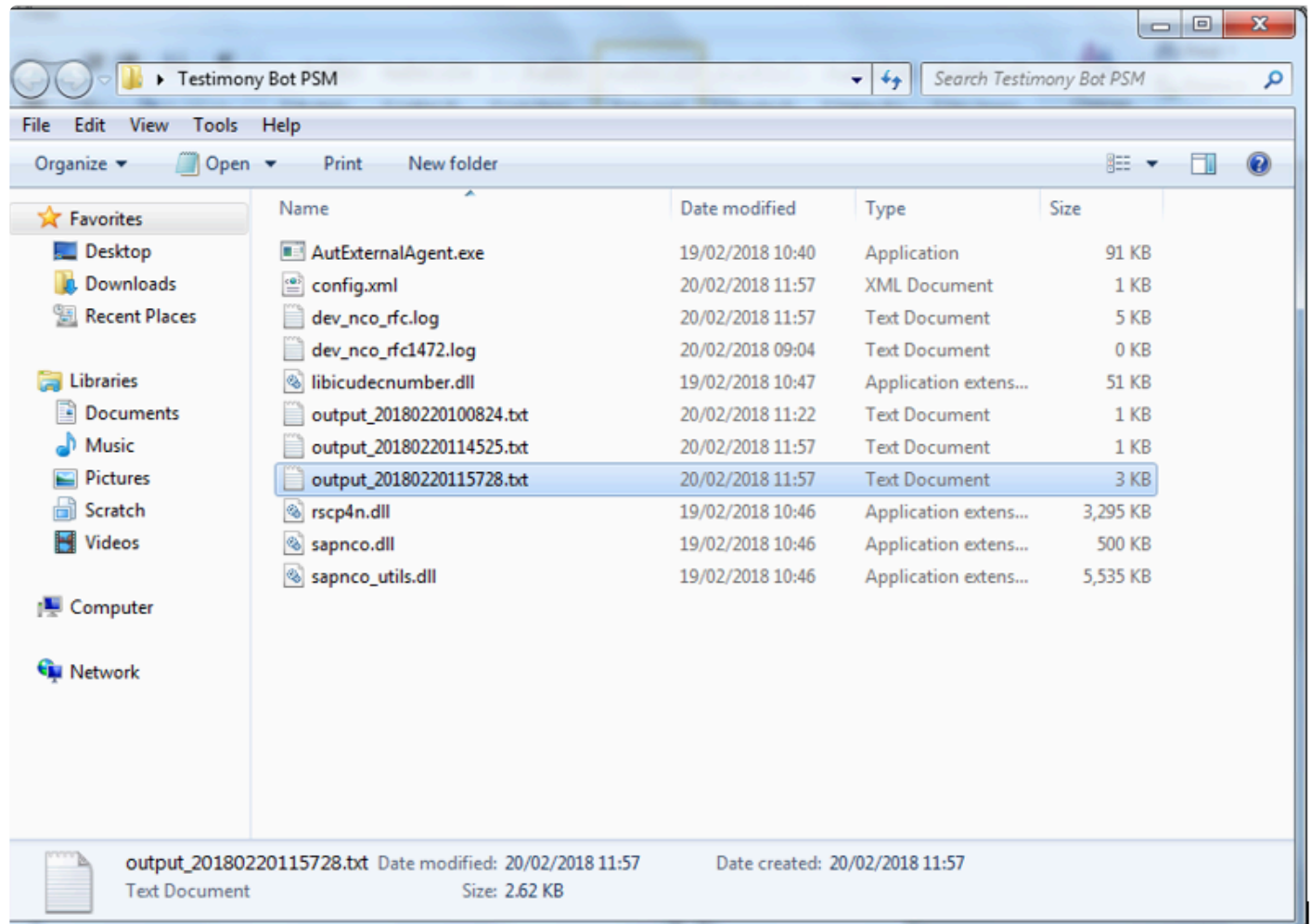
When trouble shooting issues with the bots please consider the following, most important is to check the logs and see if you can solve the issue through the details provided there.

If you are considering raising a support ticket the process is [here](#) and please attach the bot log.

- [Bot Logs](#)
- [SAP Gateway](#)

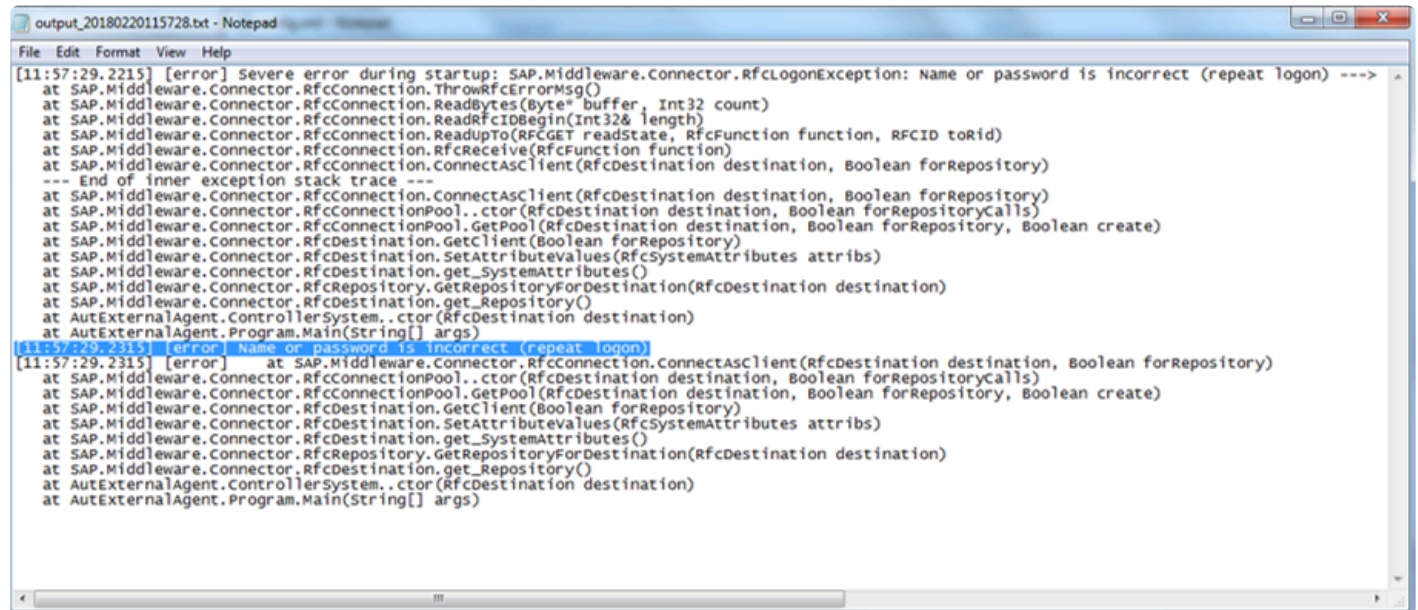
Bot Logs

If a bot is failing to connect or has an issue after being executed then make sure to check the logs. A log is stored for each run of the bot. Select the output file with the correct date and time for your error.



Name and Password

If the output log states that the name and password are incorrect please double check these details in the bot config file, see [here](#) for maintaining the bot config file.



The screenshot shows a Notepad window titled "output_20180220115728.txt - Notepad". The text inside is a log file with the following content:

```
File Edit Format View Help
[11:57:29.2215] [error] Severe error during startup: SAP.Middleware.Connector.RfcLogonException: Name or password is incorrect (repeat logon) --->
  at SAP.Middleware.Connector.RfcConnection.ThrowRfcErrorMsg()
  at SAP.Middleware.Connector.RfcConnection.ReadBytes(Byte[] buffer, Int32 count)
  at SAP.Middleware.Connector.RfcConnection.ReadRfcIDBegin(Int32& length)
  at SAP.Middleware.Connector.RfcConnection.ReadUpTo(RfcGET readState, RfcFunction function, RfcID toRid)
  at SAP.Middleware.Connector.RfcConnection.RfcReceive(RfcFunction function)
  at SAP.Middleware.Connector.RfcConnection.ConnectAsClient(RfcDestination destination, Boolean forRepository)
--- End of inner exception stack trace ---
  at SAP.Middleware.Connector.RfcConnection.ConnectAsClient(RfcDestination destination, Boolean forRepository)
  at SAP.Middleware.Connector.RfcConnectionPool..ctor(RfcDestination destination, Boolean forRepositoryCalls)
  at SAP.Middleware.Connector.RfcConnectionPool.GetPool(RfcDestination destination, Boolean forRepository, Boolean create)
  at SAP.Middleware.Connector.RfcDestination.GetClient(Boolean forRepository)
  at SAP.Middleware.Connector.RfcDestination.SetAttributeValues(RfcSystemAttributes attribs)
  at SAP.Middleware.Connector.RfcDestination.get_SystemAttributes()
  at SAP.Middleware.Connector.RfcRepository.GetRepositoryForDestination(RfcDestination destination)
  at SAP.Middleware.Connector.RfcDestination.get_Repository()
  at AutExternalAgent.ControllerSystem..ctor(RfcDestination destination)
  at AutExternalAgent.Program.Main(String[] args)
[11:57:29.2315] [error] Name or password is incorrect (repeat logon)
  at SAP.Middleware.Connector.RfcConnection.ConnectAsClient(RfcDestination destination, Boolean forRepository)
  at SAP.Middleware.Connector.RfcConnectionPool..ctor(RfcDestination destination, Boolean forRepositoryCalls)
  at SAP.Middleware.Connector.RfcConnectionPool.GetPool(RfcDestination destination, Boolean forRepository, Boolean create)
  at SAP.Middleware.Connector.RfcDestination.GetClient(Boolean forRepository)
  at SAP.Middleware.Connector.RfcDestination.SetAttributeValues(RfcSystemAttributes attribs)
  at SAP.Middleware.Connector.RfcDestination.get_SystemAttributes()
  at SAP.Middleware.Connector.RfcRepository.GetRepositoryForDestination(RfcDestination destination)
  at SAP.Middleware.Connector.RfcDestination.get_Repository()
  at AutExternalAgent.ControllerSystem..ctor(RfcDestination destination)
  at AutExternalAgent.Program.Main(String[] args)
```

Bot Appears Inactive

If the bot is active on the bot machine and the output logs look correct, however, the bot does not appear active on the Central system check if the central system has multiple app servers as the config file will need to be updated for a system using a message server to load balance, see [here](#) for maintaining the bot config file.

In this case the config file will need to be updated with these three elements below:

```
<MessageServerService>MessageServer</MessageServerService>  
<MessageServerHost>MessageServerHost</MessageServerHost>  
<LogonGroup>LogonGroup</LogonGroup>
```



Note if you use the Message Server and logon group the Gateway Host and Service below must be removed

```
<GatewayHost>GatewayHost</GatewayHost>  
<GatewayService>sapgwxx</GatewayService>
```

SAP GUI Directory Not Found

If the bot log shows the SAP GUI Directory Not Found error below the bot may be running in an environment where SAP's SAPGui.exe files are not in the standard location. The output file on startup will report it as below:

```
[15:18:55.8677] [success] Configuration file read: config.xml  
[15:18:55.8677] [error] Failed to setup environment variables: SAP GUI directory not found ("%ProgramFiles(x86)%  
\\SAP\\FrontEnd\\SAPGui")
```

A new entry in the config.xml will allow an alternative path to be specified, see [here](#) for maintaining the bot config file.

```
<SAPGuiPath>C:\\Programme\\SAP\\FrontEnd\\SapGui</SAPGuiPath>
```

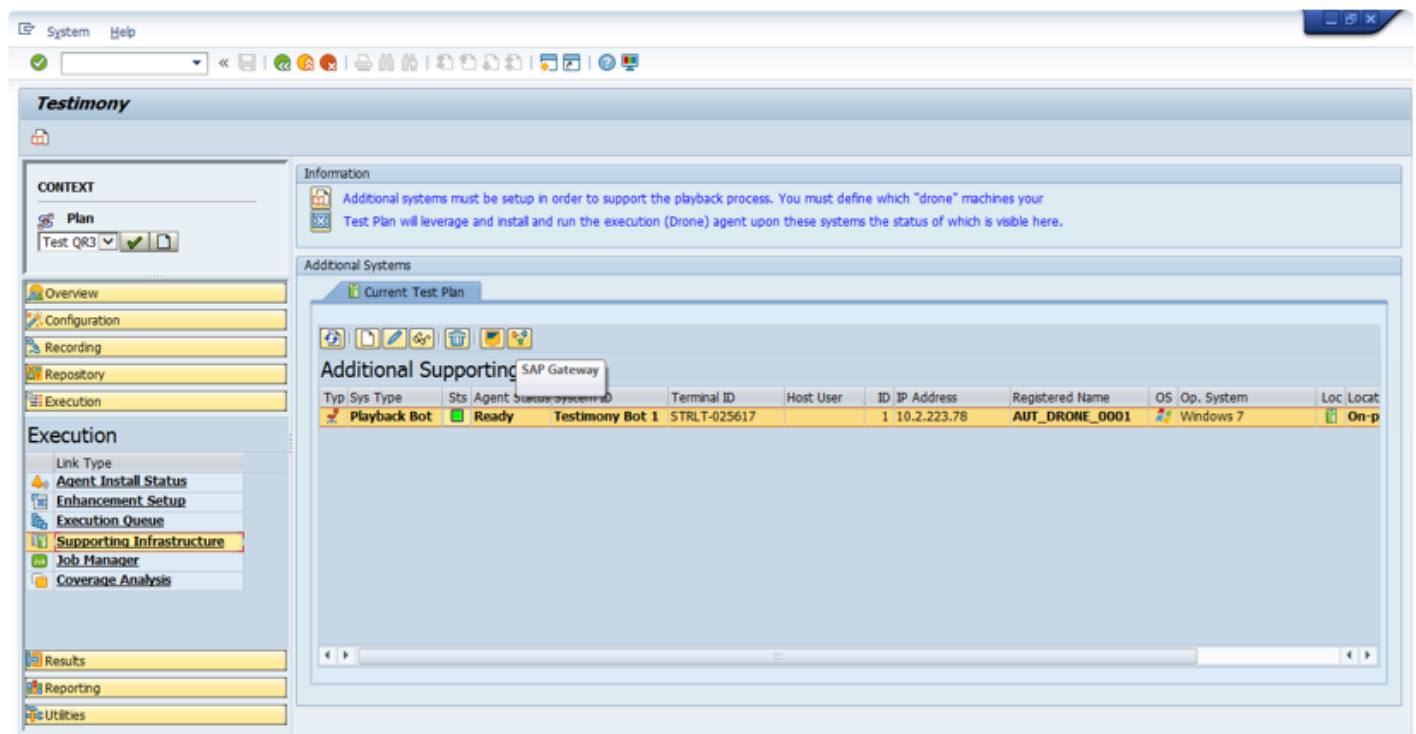

SAP Gateway

If you are having issues with the bot the SAP Gateway Monitor can also be checked. You can launch this from Testimony or use transaction SMGW.

If the SAP Gateway is causing an issue the parameter `gw/acl_mode` should be set to 0 on the central system and the central system opened up as much as possible, if the bot now connects correctly then the restriction is the SAP Gateway security settings.

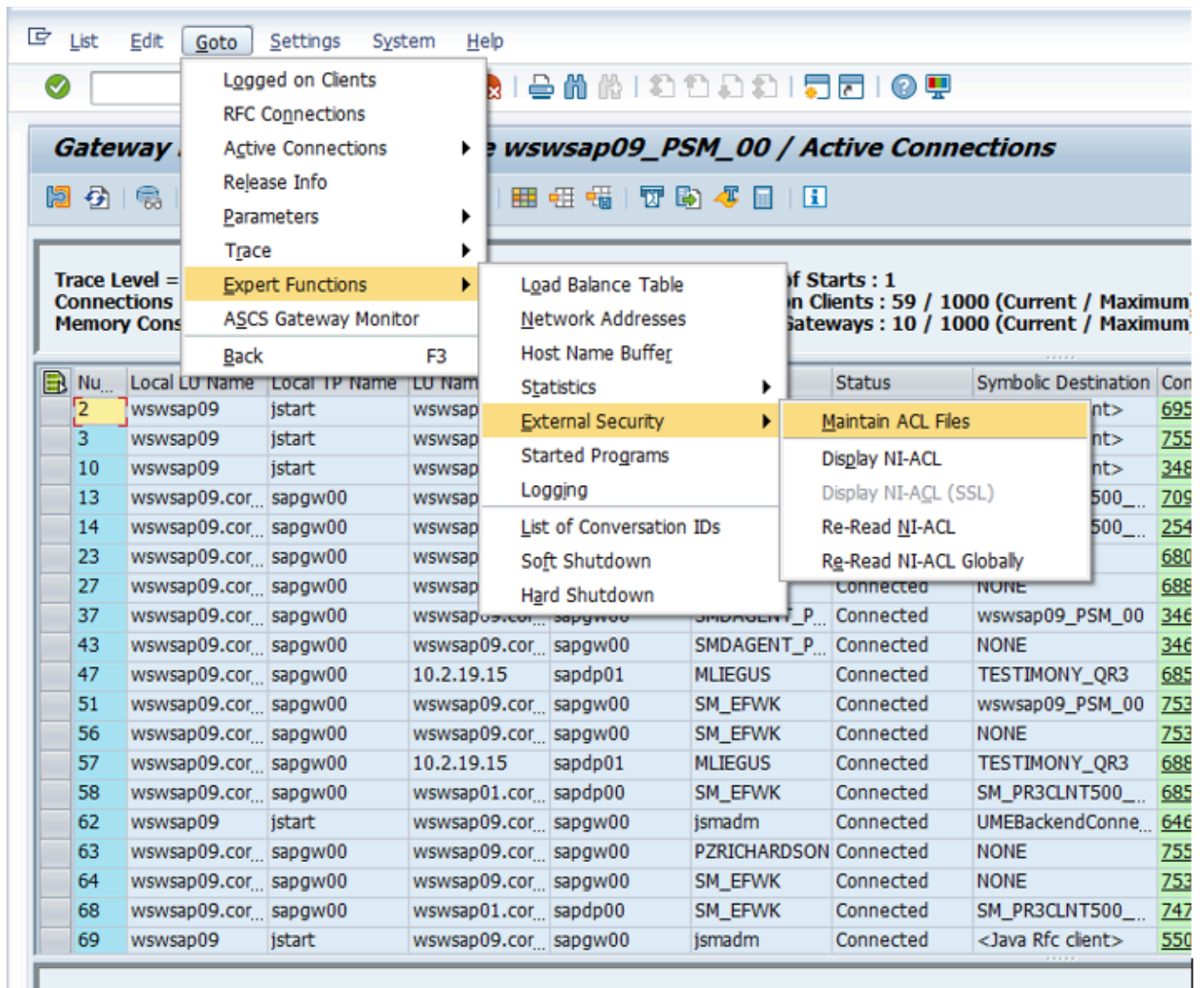
If the `gw/acl_mode` of the central system cannot be set as 0 the security files will need to be maintained in the SAP Gateway. The client is responsible for understanding how this is setup on their own SAP installation and this varies by SAP version, however, essentially this should be set as follows with a `TP=AUT_DRONE*` the bots always connect as `AUT_DRONE` with a suffix as a number to identify different bots. The other settings should be as wide as possible to allow the bot to connect, if other restrictions based on the clients network then those should also be configured by the client.

Note that if there are still issues with access through the SAP Gateway then there are links to the SAP documentation on the SAP Gateway and logging [here](#).



The external security files as well as the logged on clients can be checked as shown in the example screen-

shots below:



Gateway

Trace Level =
Connections
Memory Cons

Number of Starts : 1
Logged on Clients : 58 / 1000 (Current / Maximum)
(Current / Maximum) Remote Gateways : 9 / 1000 (Current / Maximum)

Nu...	Local LU Name	Local TP Name	LU Name	TP Name	User	Status	Symbolic Destination	ConvID	Protocol
10	wswsap09	jstart	wswsap09.cor...	sapgw00	daaadm	Connected	<Java Rfc client>	34839507	Internal Communi..
13	wswsap09.cor...	sapgw00	wswsap01.cor...	sapdp00	SM_EFWK	Connected	SM_PR3CLNT500...	70951491	Internal Communi..
14	wswsap09.cor...	sapgw00	wswsap01.cor...	sapdp00	SM_EFWK	Connected	SM_PR3CLNT500...	25424815	Internal Communi..
16	wswsap09	jstart	wswsap09.cor...	sapgw00	jsmadm	Connected	<Java Rfc client>	76514859	Internal Communi..
23	wswsap09.cor...	sapgw00	wswsap09.cor...	sapgw00	MLIEGUS	Connected	NONE	68024188	Internal Communi..
27	wswsap09.cor...	sapgw00	wswsap09.cor...	sapgw00	MLIEGUS	Connected	NONE	68816365	Internal Communi..
37	wswsap09.cor...	sapgw00	wswsap09.cor...	sapgw00	SMDAGENT_P...	Connected	wswsap09_PSM_00	34677661	Internal Communi..
43	wswsap09.cor...	sapgw00	wswsap09.cor...	sapgw00	SMDAGENT_P...	Connected	NONE	34672894	Internal Communi..

SAP Gateway Documentation

Below are links to the SAP Standard documentation for the SAP Gateway.

Making Security Settings for External Programs is [here](#).

Setting Up Gateway Logging is [here](#).

Evaluating the Log file is [here](#).

TimeShiftX

This document details the use of Vornex's TimeShiftX software with Testimony. It explains the background to why TimeShiftX is required, as well as the installation of TimeShiftX.

Go through the following steps for installation and depending on the OS being Windows or Linux following the appropriate section.

- [Background](#)
- [Windows Install](#)
- [Linux Install](#)
- [TimeShiftX Smoke Test](#)

Background

The end state of a Testimony installation is to record real user transactions executed in a production SAP system and plays them back into a copy of that system. The playback system is based on a backup of the production system as it was at the start of the recording, thus ensuring that the initial data state of the playback system matches the data state of production when the recording started. The problems that occur as a part of this are:

1. It will take some time to create the copy of production and therefore there will be a difference in the date and time the recording was made and when the playback is actually executed
2. Most production recordings will stretch over at least one “midnight boundary”, i.e., the recording starts on one day and ends on the next (or a subsequent) day.

Unfortunately, many SAP transactions are date-bound. In other words, the date entered on the screen is validated against the system date. For example, if Testimony records a financial posting on 1st May, but the playback is run on 5th May, then the posting transaction will fail in the playback with a “Cannot post in the past error” as the playback will try to post with the recorded date of 1st May.

In order to solve this problem, one option would be to set the operating system clock at the start of the playback to the date of the start of the playback. However, this is not possible in all cases because, for example, customers’ servers are linked to an NTP server which synchronises the time on all servers in the state. As a way around this, use of Testimony includes rights to use Vornex’s TimeShiftX software to enable the setting of “virtual clocks”. This software allows you to set the date and time (and also clock speed) for specific operating system users without physically changing the OS clock.

In an SAP environment, you would set virtual clocks for the SAP administration userid and the database userid. This has the effect of giving the SAP system a different date and time to the underlying operating system, allowing you to avoid the date-related errors mentioned above.

Windows Setup – TimeShiftX

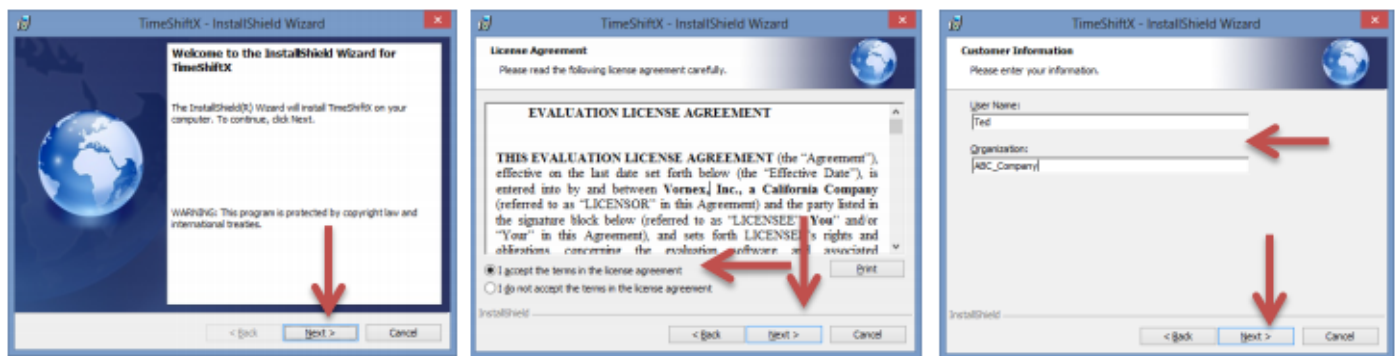
To setup TimeShiftX on a Windows OS note you will need the software which comes in a 32 or 64 bit version then please go follow through the sections below:

- [Windows Install – TimeShiftX](#)
- [Windows License – TimeShiftX](#)
- [Windows Switch On – TimeShiftX](#)

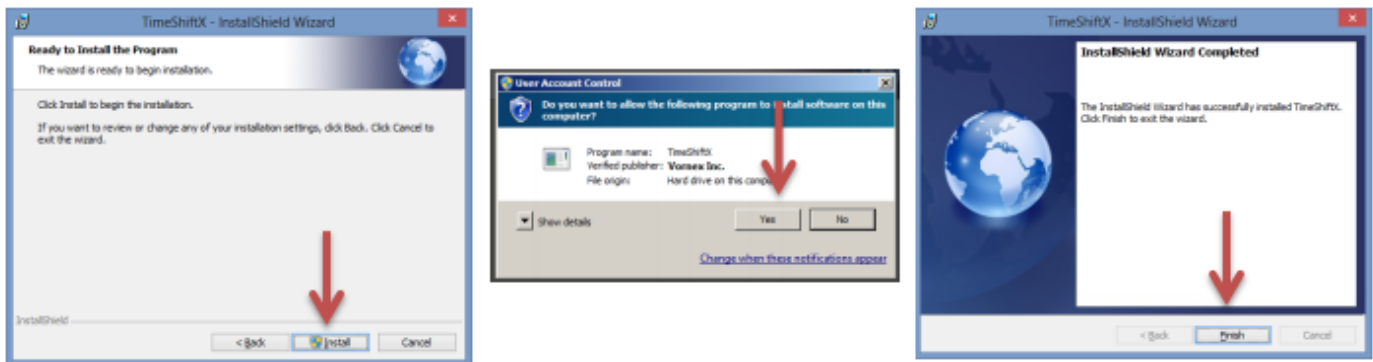
Windows Install – TimeShiftX

To install TimeShiftX on a windows OS please follow the following steps

1. Run the TSX executable. Admin rights are required to install.
2. Click Next
3. Select the top radial button “I accept the terms in the license agreement”.
4. Click Next



5. Enter your user and organization
6. Click Next
7. Click Install

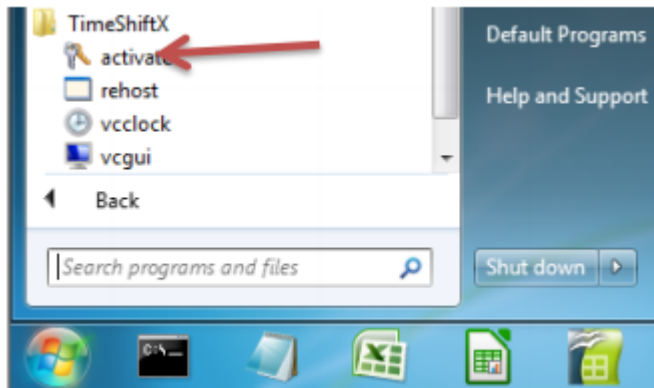


8. Click Yes if a “User Access Control” dialogue appears
9. Click Finish

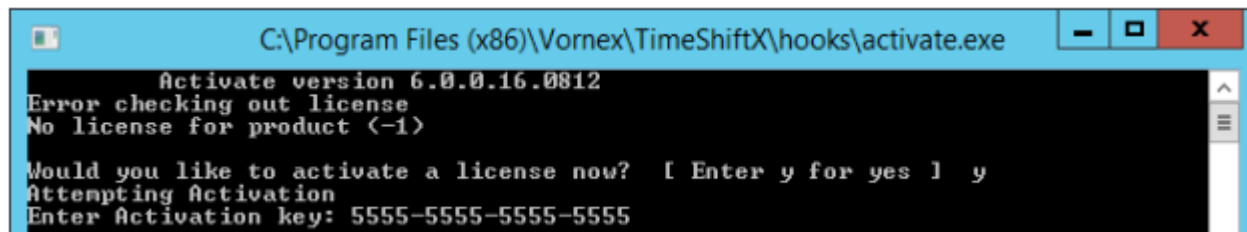
Install complete. Note: An OS restart is not needed.

Windows License – TimeShiftX

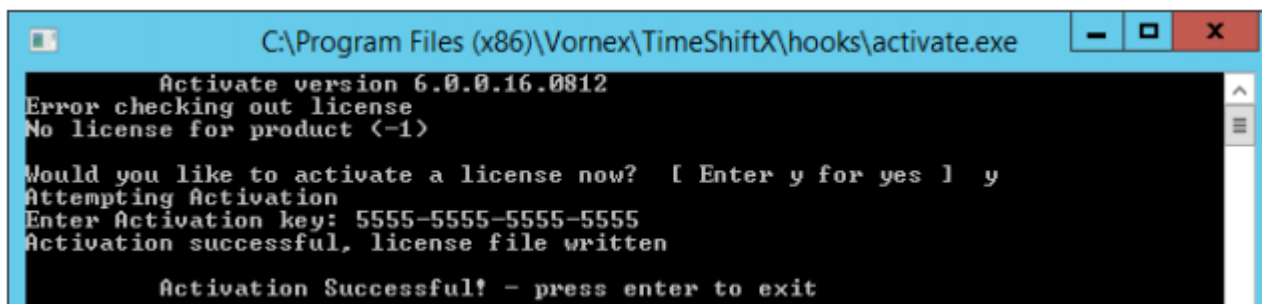
1. Click Start -> Program Files -> TimeShiftX -> activate



2. Type Y then press Enter
3. Type your 16-digit key then press Enter



4. If successful, you will see "Activation Successful". Press Enter to finish.
 - a. If behind a firewall, open port 80 and retry key.
 - b. If unsuccessful, send the server output of ipconfig /all to support@vornexinc.com

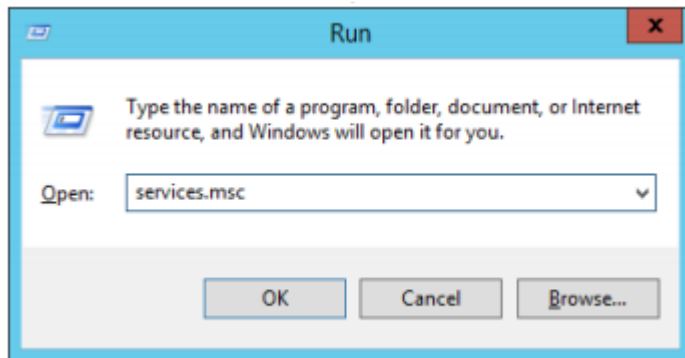


Note: Do not change the OS system clock as it will break the license.

Licensing complete. Now see the section [Windows Switch On – TimeShiftX](#).

Windows Switch On – TimeShiftX

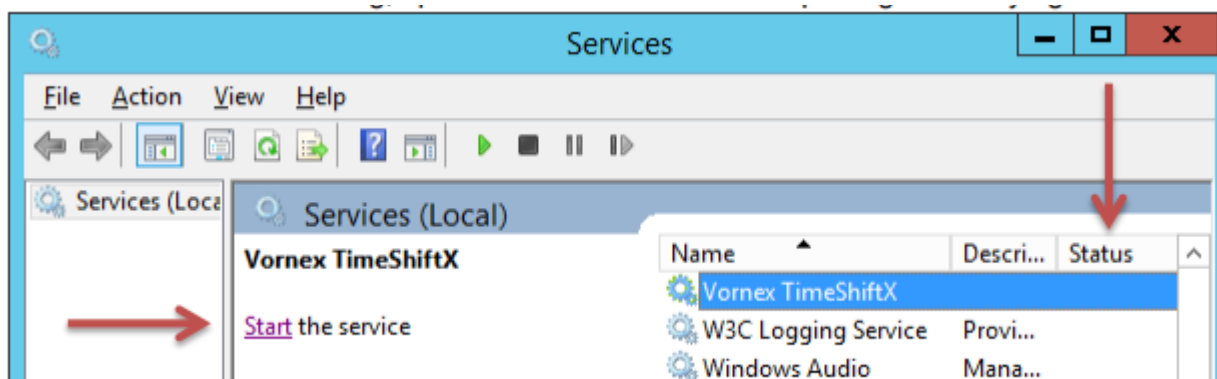
1) Click Start -> Type Run -> Press Enter -> Type services.msc -> Click OK



2) Click Vornex TimeShiftX

3) Click Start

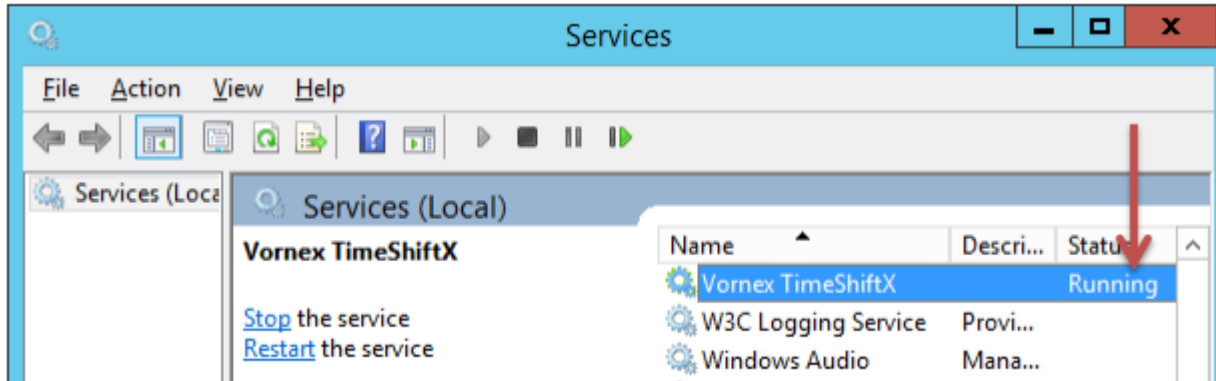
a. If "Start" is missing, open services.msc with admin privileges and try again.



4) After, it will show Running or Started in the Status column.

a. If service fails to start, re-run "activate" and send screenshot to support@vornexinc.com

b. TSX can take up to 15 seconds to fully initialize.



Now please check the installation with a [smoke test](#).

Linux Setup – TimeShiftX

To setup TimeShiftX on a Linux OS note you will need the correct TimeShiftX software for the Linux version then please go follow through the sections below:

- [Linux Install](#)
- [Linux License – TimeShiftX](#)

Linux Install – TimeShiftX

1. Untar the tsx build and as root, run our install script in the untarred tsx folder.

```
$ tar -xvf tsx-<version>.tar
$ cd tsx-<version #>
$ su -
# ./install.sh
```

2. Install complete! Now restart any current running apps one time to initially load the TSX library.

Note: You may need to close & reopen your terminal to see the TSX virtual time.

Install complete.

To license the TimeSHiftX software go to the [Linux License](#) section.

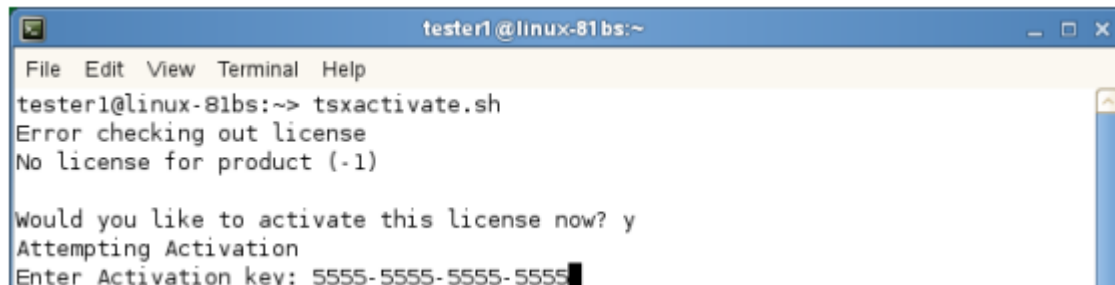
Linux License – TimeShiftX

1. As a regular non-root user, run the license utility

```
$ tsxactivate.sh
```

2. Type Y then press Enter

3. Paste your 16-digit key then press Enter



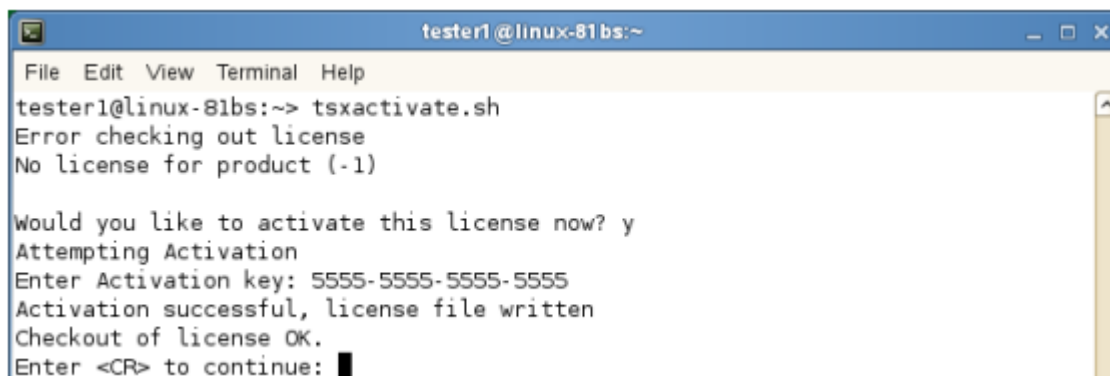
```
tester1@linux-81bs:~  
File Edit View Terminal Help  
tester1@linux-81bs:~> tsxactivate.sh  
Error checking out license  
No license for product (-1)  
  
Would you like to activate this license now? y  
Attempting Activation  
Enter Activation key: 5555-5555-5555-5555
```

4. If successful, you will see “Activation Successful”. Press Enter to finish.

- a. If behind a firewall, open port 80 and retry key.

- b. If unsuccessful, send the server output of the below to support@vornexinc.com

For Linux: # `ifconfig -a`



```
tester1@linux-81bs:~  
File Edit View Terminal Help  
tester1@linux-81bs:~> tsxactivate.sh  
Error checking out license  
No license for product (-1)  
  
Would you like to activate this license now? y  
Attempting Activation  
Enter Activation key: 5555-5555-5555-5555  
Activation successful, license file written  
Checkout of license OK.  
Enter <CR> to continue:
```

5. Run `$ tsx list` You should see “0 Virtual Clocks set”

- a. If you get an error, fix license permissions via the below, then rerun `$ tsx list`

```
$ sudo chmod 644 /etc/tsx/license/a0.lic
```

Note: Do not change the OS system clock as it will break the license.

Now please check the installation with a [smoke test](#).

TimeShiftX Smoke Test

After installation & licensing, run the below smoke test to ensure TSX is properly setup.

Note: replace bob with any local non-root user

```
# su - bob
$ tsx set -u bob -d 1
$ date
```

You should see one day in the future.

```
$ tsx reset
$ date
```

You should see the present time

If the above shows time travel on / off, TSX is working!

If the above fails, try the below.

a) Open a new shell / connection and re-try smoke test

b) If on Linux, run the below to fix file permissions and re-try smoke test.

```
$ sudo chmod a+r /etc/ld.so.preload
```

If after a) & b) the smoke test still fails, email support@vornexinc.com

Otherwise your Smoke Test is complete. TSX is fully setup. Begin time travelling!

License Keys

License keys are required on the Central system directly through Testimony and the Diffuser licenses are required in each system Central, Source and Target as per the links below:

- [Central Licenses](#)
- [Diffuser Licenses](#)

Central Licenses

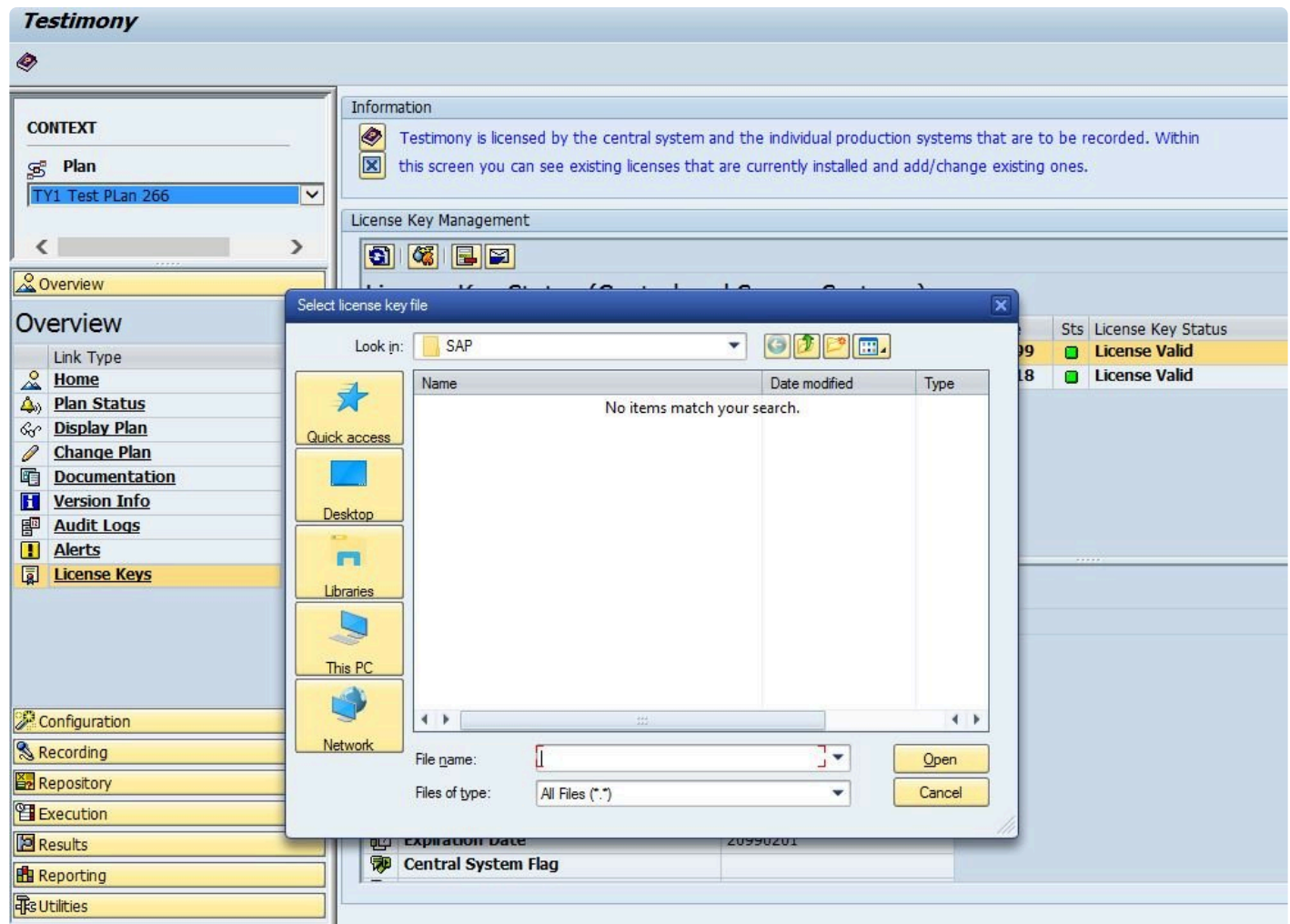
Testimony is licensed by the central system and the individual source systems that are to be recorded. Within this screen users can see existing licenses that are currently installed and add/change existing ones.

Before a central license is applied or once a central license key has expired, Testimony users won't be able to use the software and all the drawer menus will be disabled. Only the “**License Keys**” menu will be operational.

Installing a License Key

Install License Key: Click this push button to install the new supplied license key. The first operation in a new system is to install the central license key,

Source system keys are installed in the same way, although note you won't see the source systems details unless it is loaded into the current plan you have selected, if no source system is currently in the plan you won't see the status of the source system key although you will still be able to install this key.



Delete a License Key

Delete License Key: Click this push button to delete an expired license key.

Testimony

CONTEXT

Plan
TY1 Test Plan 266

Overview

Link Type

- Home
- Plan Status
- Display Plan
- Change Plan
- Documentation
- Version Info
- Audit Logs
- Alerts
- License Keys

Configuration

Recording

Repository

Execution

Results

Reporting

Utilities

Information

Testimony is licensed by the central system and the individual production systems that are to be recorded. Within this screen you can see existing licenses that are currently installed and add/change existing ones.

License Key Management

Delete License Key

License Key Management (Central and Source Systems)

System Type	System Description	Inst. Number	Expiry Date	Sts	License Key Status
Source System	TY1 TY1 Recording	0020537154		◇	No license key found
Central System	TD3 Controller / Central System	0020537154	31.01.2018	■	License Valid

License key details

Field	Value
System ID (Derived)	TY1
System ID (License Key)	TY1
Installation Number (Derived)	0020537154
Installation Number (License Key)	0020537154
Version (Major)	00
Version (Minor)	01
Maximum Number of Plans Allowed	0000
Start Date	00000000
Expiration Date	20990201
Central System Flag	
Maximum recordings allowed per year	0000
Licensed SAP Production Users	000000

Request a License Key

Click on **“Request New License Key”** push button to get a detailed explanation about how to request a new license key. A window will appear providing details to be sent in an email to Basis Technologies support via email in order to request renewal license keys.

The screenshot displays the Testimony software interface. On the left is a navigation pane with sections: CONTEXT (Plan, TY1 Test Plan 266), Overview (Link Type, Home, Plan Status, Display Plan, Change Plan, Documentation, Version Info, Audit Logs, Alerts, License Keys), and Configuration (Recording, Repository, Execution, Results, Reporting, Utilities). The main area is titled 'License Key Status (Central and Source Systems)'. It contains an 'Information' section with a note about licensing, a 'License Key Management' section with icons, and a table of system details. A modal dialog box titled 'Request new license key' is open, providing instructions and details for requesting a new license key.

CONTEXT

Plan
TY1 Test Plan 266

Overview

Link Type
Home
Plan Status
Display Plan
Change Plan
Documentation
Version Info
Audit Logs
Alerts
License Keys

Configuration

Recording
Repository
Execution
Results
Reporting
Utilities

Information

Testimony is licensed by the central system and the individual production systems that are to be recorded. Within this screen you can see existing licenses that are currently installed and add/change existing ones.

License Key Management

License Key Status (Central and Source Systems)

Request new license key

To request a new license key for Testimony from Basis Technologies, please email the following:
Recipient: support@basistechnologies.com
Subject: Request New License Key for Testimony
Email Body:
Please generate license key(s) for the following systems:
ID: TY1 INST: 0020537154 CENTRAL: 02
ID: TD3 INST: 0020537154 CENTRAL: 01

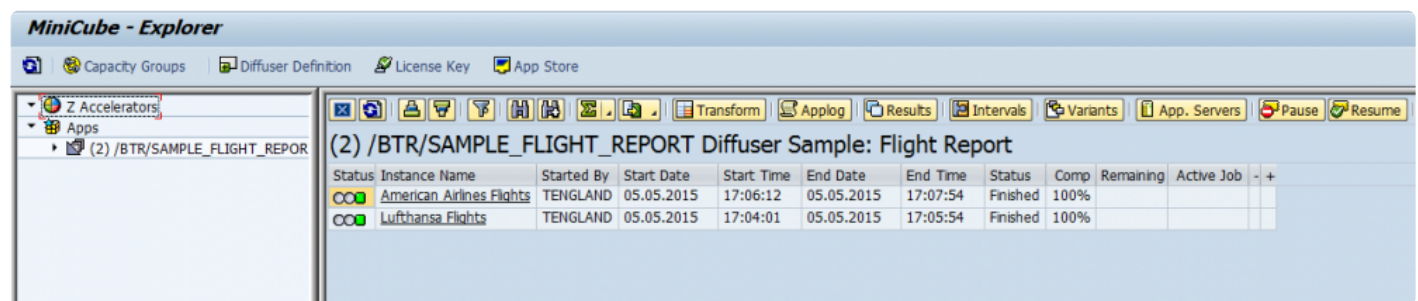
System ID (Derived)	TY1
System ID (License Key)	TY1
Installation Number (Derived)	0020537154
Installation Number (License Key)	0020537154
Version (Major)	00
Version (Minor)	01
Maximum Number of Plans Allowed	0000
Start Date	00000000
Expiration Date	20990201
Central System Flag	

Diffuser Licenses

Testimony also requires Diffuser licenses to be installed on the central and source systems.

The Transaction /N/BTR/LICENSE is used to access the License Administration for Diffuser where the 'Testimony Listener Agent' licenses can be installed.

Diffuser License Administration can also be accessed via the MiniCube transaction /N/BTR/MINICUBE after pressing the Diffuser Mode button and selecting the license key button.



The key components to managing your license are as below.

- [Installing a License](#)
- [Check installed keys](#)

Installing a License

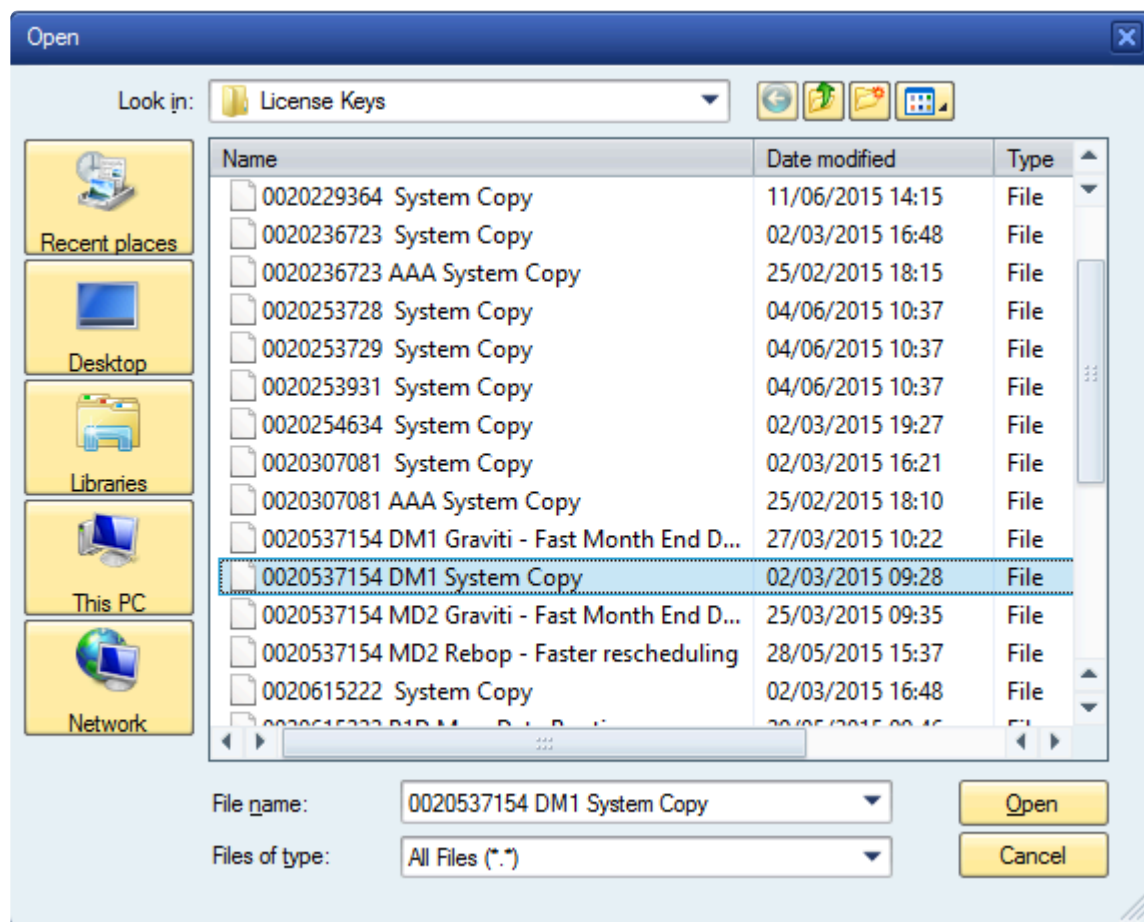
After entering the license screens through the transaction /N/BTR/LICENSE or via the button on the /N/BTR/MINICUBE as described in [Maintaining Licenses](#).

To install a license simply select the “Install key file” option as below and execute.



Select the file you want to install. The filename will contain a 10 digit number for the SAP installation number of the intended system.

There may also be the three character system ID and the product name.

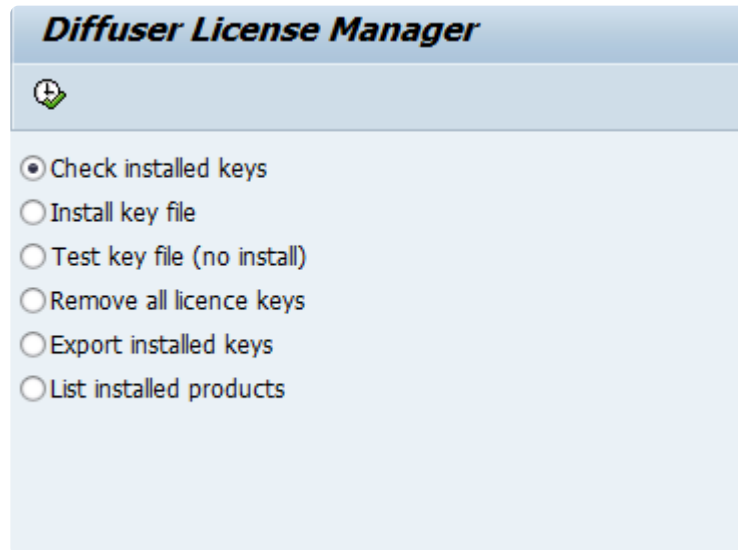


If errors are found then the problem is displayed.

Diffuser License Manager							
Prod. ID	Product Name	Consist.	Valid	Expiry Date	Sys ID	Installation	Reports
GTSC	System copy GT			30.04.2015	AAA	0020307081	

Check installed keys

To check the products you have installed in your system, select the “List installed products” option as below and Execute.



The keys installed are shown as below. Note that any red status icons indicate a problem with the key details being consistent with the system or being out of validity.

Diffuser License Manager							
Prod. ID	Product Name	Consist.	Valid	Expiry Date	Sys ID	Installation	Reports
0013	0013 DevOps - Archiving of IDOCs			31.12.2016	MD2	0020537154	
RBOP	REBOP - Rescheduling\Backorder Processing			28.05.2020	MD2	0020537154	
GTSC	System copy GT			18.02.2017	MD2	0020537154	
MDR2	Diffuser			31.01.2016	MD2	0020537154	30
0001	0001 Graviti - Fast Month End Depreciation			25.03.2020	MD2	0020537154	30
0011	0011 Javelin - Joint Venture Accounting			16.03.2017	MD2	0020537154	30
TE01	TE01 Advanced dependency check			26.02.2018	MD2	0020537154	30

Validating the Installation

To validate the installation it is compulsory to advance the installation in the order below:

1. Complete [First Recording and Playback](#)
2. Complete [QA Testing](#)
3. Complete [Production Ramp-Up](#)

First Recording and Playback

Having completed the [Technical Setup](#) the first recording and playback should be completed.

Follow the [Quick Start Guide](#) for details on how to operate a recording and playback in Testimony, essentially it will be these steps below:

1. Test Plan and System Connections

A test plan must first be created and configured prior to any recordings being performed or playbacks.

2. Performing a Recording

This is the process for activating and monitoring the recording on the source systems.

3. Review Recordings/Send to Repository

Once recording is complete, you should review the recordings that have been captured and move them to the Testimony script repository.

4. Performing a Playback

This is the process to prepare for, execute and monitor the playback of recorded activities on the target systems.

5. Review Playback Results

The end result of the process which highlights discrepancies between what was recorded from the live system and what potential issues have been identified in the test system that is played back into. Note if you playback in the same system you might get failures due to different results

With installation of Testimony confirmed [QA Testing](#) can begin or you can complete further testing in the Sandbox system.

QA Testing

Basis Technologies recommends that the Testimony setup is fully tested before operating in a production system.

When deploying to the system identified to act as the source system for QA testing ensure the source system setup is run through as defined in the technical setup [here](#).

The QA Testing of Testimony needs to take place in a system where there is a good volume of system operation can be recorded, this could be existing QA testing that is running. At this point a target system is required where playback can occur with no users logging on to change data after the copy is taken until the playback is completed, users logging on and changing data could cause unexpected failures in the playback.

The QA Phase scope and approach will be based on multi levels of testing, running Testimony recordings and playbacks with incremental complexity and volumes as per the example below. We would strongly recommend completing at least 2 high volume recordings and playbacks.

Level	Volume	Users	Filtered	Duration	No. of Bots	Dailog	Batch	RFC
1	Low	1	Yes	5 minutes	1	Yes		
2	Medium	<50	Yes	10 minutes	1	Yes		
3	Medium	<50	Yes	30 minutes	2+	Yes	Yes	
4	Medium	All	No	30 minutes	2+	Yes	Yes	
5	High	All	No	1 hour	2+	Yes	Yes	Yes
6	High	All	No	3 hours	2+	Yes	Yes	Yes
7	High	All	No	5 hours +	3+	Yes	Yes	Yes
8	High	All	No	8 hours +	3+	Yes	Yes	Yes

Verify a minimum of the following as a part of your testing

1. Impact on the Source system is within the KPIs agreed while recording
2. Verify the expected transactions are recorded with the correct data
3. Ensure the playback is executed correctly with minimal errors
4. Confirm that the playback completes within expected timings
5. Ensure that critical transactions are played back correctly
6. Ensure coverage analysis operates as expected

7. Check the results of the playback are as expected

Production Ramp-Up

When deploying to a production system run through the source system setup as defined in the technical setup [here](#).

Then schedule recordings which incrementally increase the recording time and complexity as below, while the SAP Basis team closely monitoring the system performance as per the user guide [here](#).

Level	Volume	Users	Filtered	Duration	Dialog	Batch	RFC
1	Low	1	Yes	5 minutes	Yes		
2	Medium	<50	Yes	10 minutes	Yes		
3	Medium	<50	Yes	30 minutes	Yes	Yes	
4	Medium	All	No	30 minutes	Yes	Yes	
5	High	All	No	1 hour	Yes	Yes	Yes
6	High	All	No	3 hours	Yes	Yes	Yes
7	High	All	No	5 hours +	Yes	Yes	Yes
8	High	All	No	8 hours +	Yes	Yes	Yes

On successfully completing the ramp up of recordings you can then schedule a recording along side a system copy, start the recording first then copy the system restoring the system back as per the recommended steps [here](#). prepare to start your first production playback.

Installing Testimony in new systems

When installing Testimony in new systems go back through the same steps for the type of system where Testimony is being installed as below:

[Central System](#)

[Source System](#)

[Target System](#)

[Bot System](#)



If upgrading always ensure that the enhancements are deactivated before deploying new testimony transports

Upgrading Testimony

This section summarises the key considerations and the steps involved in performing such a Testimony upgrade. The information contained within this section of the guide is version-agnostic and aims to act as a record of the high-level steps of upgrading Testimony, not in configuring new functionality contained within the latest release of the product.

Please read the following sections to be aware of the upgrade process:

- [Upgrade Considerations](#)
- [Upgrade Steps](#)
- [Upgrade Responsibilities](#)

Upgrade Considerations

The following should be considered as part of an upgrade to latest version of Testimony:

1. Latest software transports will need to be applied in the Central system plus Source and Target Systems, the Bot executable will also require an upgrade.
3. Always be aware that when applying Testimony transports to Source or Target systems there should be **no or very low activity when upgrading** as there will be short dumps for active users, the **Testimony enhancements should also be deactivated** before transports are deployed.
4. Testimony is NOT backwards compatible because of the nature of some of the new functionality. This means you have to apply the new Transports in the systems and upgrade the Bot machines at the same time.
5. As Testimony is NOT backwards compatible older recordings may not be able to be successfully played back on the newer versions, you will need to check on compatibility between versions. The best advice is always to record and playback on the same version of Testimony. Anything already executed and with results will still be stored for future reference.
6. New Authorisations roles will need to be applied to all users. If copies of roles were taken previously, these will need to be updated as part of the Upgrade.
7. Existing Testimony General Parameters won't be overwritten by the upgrade, however, you should consider that the default parameters provided, may now be best practice for the operation of Testimony.
8. Please note that if you are an existing Mass Data Runtime (MDR) / Diffuser user, this will need to be carefully managed during the upgrade. Productive use of MDR / Diffuser can be negatively impacted if an Upgrade to ActiveControl is done in isolation of it.

Upgrade Steps

The key steps to perform an upgrade of Testimony are summarised below:

Step	Activity	Other Information
01	Provision of Testimony Software	To request the latest version of Testimony, please email your Basis Technologies Account Manager
02	Verify if existing MDR/Diffuser Customer	If you are an existing MDR/Diffuser customer, please ensure you inform Basis Technologies – as upgrading to the latest version of Testimony can have detrimental impact on the existing MDR/Diffuser installation if not carefully planned.
03	Read the ReadMe	Carefully read the ReadMe file provided with the transports when upgrading.
04	Plan the impact on your current recordings	As Testimony is NOT backwards compatible older recordings may not be able to be successfully played back on the newer versions, you will need to check on compatibility between versions. The best advice is always to record and playback on the same version of Testimony. Anything already executed and with results will still be stored for future reference.
05	Plan upgrade timing over a short period of time	Testimony is NOT backwards compatible because of the nature of some of the new functionality. This means you should plan to apply the new Transports in the systems and upgrade the Bot machines in a relatively short period of time as you may not be able to record or playback with incompatible versions
06	Plan the deployment of transports	The enhancement transports can cause short dumps while being deployed to a Source or Target systems therefore choose a time of ideally no activity or very low activity to deploy the transports.
07	Deactivate Enhancements in Source and Target systems	Deactivate Testimony enhancements before deploying transports by running the program /BTI/AUT_DEACT_ENH to deactivate enhancements directly on the Source and Target systems.
08	Deploy transport to Central system	Apply upgrade transports one by one in the order specified to Central System(s)
09	Check Central system setup	Check the Central system setup section for the version of Testimony being deployed as this may have been updated.
10	Deploy transport to Source system	Apply upgrade transports one by one in the order specified to Source Systems
11	Check Source system setup	Check the Source system setup section for the version of Testimony being deployed as this may have been updated.

12	Deploy transport to Target system	Apply upgrade transports one by one in the order specified to Target Systems
13	Check Target system setup	Check the Target system setup section for the version of Testimony being deployed as this may have been updated.
14	Deploy new Bot software	Deploy new bot software as per the ReadMe with any other steps actioned while deploying.
15	Check bot machine setup	Check the bot setup is complete as per the Bot Setup section for the version of Testimony being deployed as this may have been updated.
16	Check security roles	Check Testimony supplied roles are in place for the correct users, the upgrade may have provided extra authorisations in roles provided. These roles should be re copied if the standard Testimony roles supplied were copied into the local naming conventions
17	Consider team training	If functionality has changed or there is a change of process intended as a part of the upgrade
18	Testimony Central System	Validate the Central system is setup as expected and check if any of the current General Parameter's should be updated with the new default settings provided.
19	Testimony Testing	Ensure test recordings and playbacks are run, this will ensure any steps missed in upgrading systems are picked up by running recording and playback tests
20	Review System Refresh Steps	Check the system refresh steps section for the version of Testimony being deployed as this may have been updated.
21	Carefully deploy Testimony to Production Environments	1. Find a time with no or very low activity on the system 2. Deactivate Testimony enhancements by running the program /BTI/ AUT_DEACT_ENH 3. Apply upgrade transports one by one in the order specified
22	Communicate Testimony Upgrade Complete	Ensure you update your team on the new version of Testimony and any differences in process.

Upgrade Responsibilities

Basis Technologies-led Upgrades

Basis Technologies strongly recommend that a Testimony upgrade is performed with assistance from one of our Solution Specialists. This not only ensures that the benefits of the newer functionality can be more efficiently reaped, it also helps ensure that any teething issues and questions encountered during the Upgrade process can be addressed in a more timely fashion since we are directly involved in the process.

If you are interested in upgrading to latest Testimony with assistance from Basis Technologies, please contact your Account Manager to discuss next steps.

Customers Self-Upgrades

For any customers that choose to upgrade Testimony themselves, remote support will be provided by Basis Technologies to our standard support terms. However if a customer self-upgrade causes any issues to the existing Testimony configuration or ongoing usage of the tool, then any Basis Technologies corrective actions will potentially be chargeable on a Time & Materials basis.

If you are wanting to upgrade to Testimony yourself, please still inform your Account Manager so that the software can be provided.

Uninstallation

To remove the installation of Testimony from your system there are steps to follow to ensure it is completed safely.

The tool will have been installed in Central, Source and Target systems. There are Uninstallation transports supplied for each system and they will be supplied by Basis Technologies upon request.

Uninstall Transports and Configuration

Transports

Via the Add-On Manager, you can apply the deletion Transports to remove all the objects associated with Testimony.

The transports will be provided by Basis Technologies upon request.

It is recommended that the uninstallation of any Production system objects is carried out according to your system maintenance schedule.

Note that all workbench objects will be removed via this approach and none are required to be manually handled.

Data and Configuration

Note: All Testimony-related data for recordings, playback and analysis will be removed when uninstalling.

There will be RFC connections remaining; these should be either deactivated, removed or retained if still operational for other purposes.

Security Gateway information for the bot machine and Testimony access within transaction SMGW for secinfo/reginfo will need to be removed.

System parameters, as set up in the Gameplan, can be reverted to their original settings. The parameters altered are:

- “rsdb/esm/buffersize_kb” in Source systems
- “rsdb/esm/large_object_size” in Source systems
- “rsdb/esmj/max_objects” in Source systems
- “gw/acl_mode” in Central system
- “rsdb/esm/buffersize_kb” in Central systems
- “rsdb/esm/large_object_size” in Central systems
- “rsdb/esmj/max_objects” in Central systems
- “sapgui/user_scripting” in Target system

Timing & Sequence

However since software is being removed it is best practice to conduct the removal during a planned maintenance window.

It should be noted that there is no specific order in which to uninstall the Testimony add-on as there are no inter-system dependencies between Central, Source and Target.

License Keys

Any license keys associated with your Testimony tool will become inactive at the time of uninstallation.

Dependencies

If you are operating other tools from Basis Technologies you should check with support@basistechnologies.com before uninstalling the Diffuser Framework, as it is separate from Testimony and these installations would be compromised.

Software Support

After appropriate testing on your SAP test systems, you are now ready to use Testimony within your productive landscape. Remember that Testimony is dormant in your SAP system until activated for recording. You must ensure that Testimony recordings are deactivated after the required recording period in order to ensure that Testimony returns to its dormant state.

Testimony Administrators

If you have questions or issues whilst using Testimony, you should always contact your internal Testimony Administrators in the first instance.

Support from Basis Technologies

Raising Support Tickets

To request support from Basis Technologies on any issue relating to our product sets (ActiveControl, Transport Expresso, DevOps, Testimony, Diffuser, Utilities or Transformation), a ticket should be raised via the following email address:

support@basistechnologies.com

Sending an email to this address will automatically create a ticket in Zendesk, the ticketing tool used by Basis Technologies.

To help us offer you the best service with your issue, please include as much information as possible about the issue, with particular attention to the following:

- **Customer:** Include the name of the customer you are representing, it may not always be obvious from your email address
- **Product and Version:** Include the Basis Technologies product and version that you are operating that has the issue
- **System & Client:** The system and client where the issue/fault occurred and if it's a license key issue provide the SAP system installation number (it is always ten digits long)
- **Description:** A clear description of the problem and the steps to replicate the issue, with screen shots
- **Data:** Any master or transactional data objects associated with the issue. E.g. Business Partner, BPEM Case ID, Plant
- **Error Messages:** Details of any error or warning messages given including where applicable run time errors, short dumps and error logs
- **User ID:** The User ID being used when the issue occurred
- **Authorisations:** Ensure transaction SU53 is run and results shared to help with authorisation issues
- **Contact Details:** Please include your own contact details in your email
- **Priority:** Reflect any high priority issues by including URGENT or HIGH PRIORITY at the start of the email subject

Support Escalation

If you have any concerns with the service you are getting from Basis Technologies support, or wish to escalate any high priority issues please email **supportescalation@basistechnologies.com**

Require additional Information or Services?

If additional information or services relating to any of Basis Technologies product sets is required, you can contact us via the above support@basistechnologies.com address, or alternatively by contacting your assigned Basis Technologies Account Director.