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sedex Client 5.0: Installation and User Manual

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Important Notices

New sedex network addresses

The network addresses used for communication with the sedex server **changed** in version 5.0! From now on, sedex uses the same host and port for all of its outgoing communications:

- https://sedex-service.admin.ch, port: 443

For more information, have a look at section 2.1.7.

WebSocket

The sedex server uses WebSocket to notify sedex clients about new events, e.g., when a new sedex message arrived on the sedex server.
WebSocket is an outgoing connection, based on http and tcp, and should work on most network environments without problems.
However, if your network does not properly support WebSocket, you can turn it off and rely on the polling mechanism like in previous versions of the sedex client.
For more information about WebSocket, have a look at http://en.wikipedia.org/wiki/WebSocket.

RMI

Previous versions of the sedex client started an RMI registry as an external process. This external process kept running even if the sedex client was stopped.
In the new version of the sedex client, the RMI registry runs in the same process as the client, and therefore is shut down every time the client stops.

1 Introduction

Welcome to the installation and user manual for the sedex client!

This document describes the installation and configuration of the sedex client. The sedex client is a Java application that together with the sedex server implements a secure asynchronous messaging middleware. The sedex client is required on end-user systems that have to exchange messages between domain specific applications via the sedex platform. Typically, these end-user systems are hosts located at Swiss communes, cantons, and federal offices like BFS, ZAS, and Infostar.

1.1 sedex Client

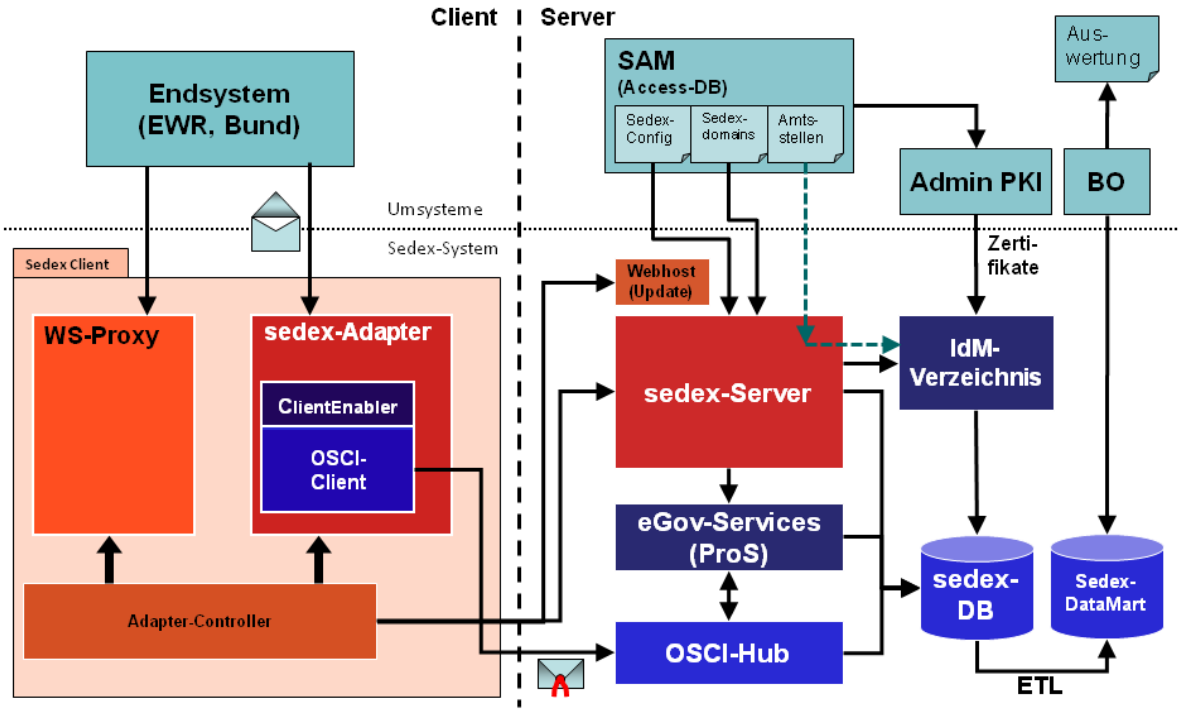
The sedex client provides the following core functionalities:

- secure transport of sensitive data (international and Swiss standard on data security level 3)
- sender-side message encryption for target recipients – only the recipients can decrypt the message (known as end-to-end security)
- message content integrity check by the means of digital signatures
- reliable transport for very large data files (1 GB or higher, compressed or uncompressed)
- sending/receiving of messages is non-repudiable
- audit trail of the message exchange (envelope information only)

Note: The sedex system is asynchronous by design. This means that in practice a message *may* reach a recipient within about 5 minutes. But generally *no guarantee can be given* about the message transfer durations to be expected. If, e.g., the recipient's client is down or offline, the message even may never reach the receiver. In such a case, after 30 days of non-delivery, an according receipt will be generated by the system to inform the sender.

1.2 Overview of the sedex system

The sedex platform is a service oriented client-server system.
The following diagram shows a brief overview of the sedex architecture:



The sedex messaging system can be divided into *client side components*, *server side components,* and *external systems*.

Components on the client side include:

- **The sedex controller** is the central steering process that controls and monitors the two other main processes of the sedex client (for details see next two components). The sedex-controller is e.g. able to control the sedex client components locally and/or remotely and to perform automatic updates of the sedex client software.
- **The sedex adapter** is the main process of the sedex client, offering the functions that enable the secure and reliable exchange of messages on the client side. The sedex adapter is controlled by the sedex controller.

  The sedex adapter has a layered design and can internally be further divided into:

  - **OSCI client** and **ClientEnabler** implement the standardized OSCI protocol for a secure message exchange based on certificates. It communicates with the OSCI hub.
  - **sedex library** uses the ClientEnabler and adds functions such as message segmentation, public keys lookup, logging, status persistency, status monitoring, and alerting.
  - **sedex adapter** is a Java standalone application that uses the sedex library and ClientEnabler to provide the secure and reliable exchange of sedex messages. It adds functions such as message envelope validation, message mapping to the subscription topic, configuration, routing, and authorization. The sedex adapter offers the interface between the sedex system and the participant end systems.
- **The sedex Webservice Proxy** is an optional process that offers the utility function of a secure proxy for SOAP web services. It is not needed for the normal sedex

message exchange. The Webservice Proxy is controlled by the sedex controller. The WebService Proxy is not covered by this manual. See the separate WebService Proxy manual for details.

Components on the server side are:

- **OSCI hub** (low level messaging hub) covers the core functions of the server for a secure and reliable exchange of messages following the OSCI standard. A sedex message is mapped to one or more such OSCI messages. The OSCI hub provides an inbox for each participant having a valid sedex certificate. The OSCI client communicates via HTTPS with the OSCI hub in polling mode. Normally, the polling interval is 5 minutes.
- **eGov Services** complement the functions of the OSCI hub with generic functions like central logging.
- **sedex server** offers services for the clients enabling the sedex message exchange (e.g. message authorization and routing). Other services allow the configuration of the system and especially the administration of the sedex participants.
- **IdM Directory** (Identity Management): Meta directory of the system participants. The certificates of the participants are published in this directory.
- **sedex database** is used to centrally store data of the server side components. E.g. the messages are stored in this DB when they are sent to the OSCI hub.
- **Update webhost** is where the update packages for remote updates of the sedex clients are stored. If locally enabled in the client, the sedex controller can download sedex client updates from this server.

External systems are:

- **Office directory** (“Amtsstellenverzeichnis”): The office directory holds data on Swiss communes, cantons, and federal offices like BFS, ZAS, Infostar. Currently, the office directory is administered by the Bundesamt für Statistik BFS (Federal Statistical Office). It will probably be superseded by the Bundeskanzlei (Federal Chancellery) office directory in the future.
- **Swiss Government PKI** (formerly known as **AdminPKI**) is the Certificate Authority of the Bundesamt für Informatik BIT (Federal Office for Information Technology and Telecommunication) that delivers qualified certificates for physical entities (persons) as well as legal entities (organizations).
- **SAM**: sedex customer care management system at the BFS. SAM takes care of the contracts with the sedex participants, and therefore their authorization and representation.
- **BO**: Business intelligence platform based on Business Objects by SAP. Allows sophisticated generation of reports, e.g., for accounting purposes. The relevant data is loaded through an ETL process into a sedex data mart.
- **End systems**: End user systems that use the sedex platform for message exchange. Typical users are communes, cantons, and federal registers.

1.3 Messaging Interface to the sedex Client for End User Systems

1.3.1 File-based Messaging Interface

An easy to understand **file-based messaging interface** is used to exchange messages between the end user system and the sedex client. The following folders together are providing this interface (`<sedex_home>` is the directory where the sedex client is installed.)

- `<sedex_home>/interface/outbox`
  Messages ready to be sent have to be placed in this folder.
- `<sedex_home>/interface/inbox`
  Messages that have been received for this participant can be found in this folder.
- `<sedex_home>/interface/receipts`
  Technical receipts for messages submitted for sending can be found in this folder.
- `<sedex_home>/interface/processed`
  Processed (i.e., sent or rejected) messages can be found in this folder.

1.3.2 Message format

A **sedex message** consists of two files:

- **an envelope file** (containing metadata of the message)
  - Format: XML
  - Must be conforming to the envelope schema definition (XSD, eCH-0090 standard)
  - Convention for the file name: envl_XXX.xml
- **a data file** (containing the payload of the message)
  - Format: arbitrary content format
  - Convention for the file name: data_XXX.YYY

The base part in the names (XXX in the example) of both envelope and data file must be identical (e.g., a unique identifier generated by the end user system). The sedex client will not send but reject a message if the envelope is not conforming to the XML schema eCH-0090 (an error receipt will be generated).

1.3.3 Sending and receiving messages

Sending a sedex message is easy: The end user system has to save (1) the data file and (2) the envelope file (in this order) in the outbox directory of the sedex client.

Receiving a sedex messages is easy, too: The end user system has to poll the inbox directory of the sedex client for (1) a new envelope file and (2) a new data file (in this order).

The detailed structure of the envelope and the interface between end user system and sedex client is specified in [1] (see references below).

1.4 References

[1] sedex-Handbuch V4.0.3 (15.11.2012)

[1] Manuel sedex V4.0.3 (15.11.2012)

2 Operational Requirements

The sedex client is a set of two Java standalone applications (or three applications when the optional web service proxy is installed).

The client has to be installed on a host in a network zone which is connected (http/https protocols only) to the sedex servers (see 2.1.7 for details).

The client can be installed either on a dedicated host or on the same host where the end user application is running, as long as the server fulfills the system requirements (see below for details).

Basically, there are two different ways how the sedex client can be installed:

- manual install from the ZIP file (covered in chapter 3)
- guided automatic install using the installer application (covered in chapter 4)

2.1 System requirements

2.1.1 Supported Platforms

The sedex client is (nearly) a pure Java application. As such it should run on all platforms supporting Java 1.7.0 or 1.8.0 (→ "Write once run everywhere."). However, the sedex client has been fully tested on the following platforms with **Java 1.7 and 1.8 only**:

- Windows Server 2003 R2 64Bit
- Windows Server 2008 R2 64Bit
- Windows Server 2012 RTM 64Bit
- Windows 7
- SuSE Linux 11.0
- Linux Ubuntu 12.04
- CentOS 6.2

2.1.2 Client needs to be autostartable (service/deamon)

In normal installations the sedex client has to run permanently.

To ensure an automatic restart of the client after a reboot of the host, the sedex controller process can be configured to run as a service (on Windows) or as a daemon from a start script (on Unix).

Alternatively, user-specific mechanisms may be used to make sure that the sedex controller process is started after a reboot of the host.

Note: Only the sedex controller process has to be made autostartable, as the other processes are started/stopped indirectly through the sedex controller.

2.1.3 CPU

As the sedex client is more an I/O intensive application than a CPU intensive one, normally any CPU capable of running one of the supported operating systems should be sufficient. The CPU performance may become a bottleneck on high traffic installations only.

2.1.4 RAM

There should be total of at least 512 MB of free memory available for all the processes of the sedex client together.

2.1.5 Disk Space

The disk space needed for the sedex client **applications files** is below 200 MB.

The **total disk space** needed for the sedex client **at runtime** heavily depends on the number and size of messages being sent and received and how fast these messages are processed and cleaned up by the end user system. More precisely, the concrete disk space consumed depends on how long messages are stored in the inbox, outbox, and processed folders, respectively how long receipts are stored in the receipts folder.

As a simple heuristic, the following rules may be considered.

Sending messages:

The disk space required for all messages being sent may go up to a maximum of 4 times of the original messages size.

- The outbox directory must be capable of holding all messages.
- Internal copies of all the messages are generated.
- The internal copies may be broken into segmented copies.
- The processed messages folder must be capable of holding all messages.

Note: While the sedex client will remove the messages that have been sent/processed from the outbox folder, it will by default not remove any file from the processed folder. Therefore, the processed messages directory must be cleaned up by the end user system, or the sedex client has to be configured to do a periodic cleanup by itself (see 7.1 “Cleanup” for details).

Receiving messages:

The disk space required for all messages being received may go up to a maximum of 3 times of the received messages size.

- The inbox directory must be capable of holding all messages.
- The segmented messages are internally received and stored.
- The segmented messages are internally assembled to complete messages.

Note: The sedex client will **never** remove received messages from the inbox folder. Therefore the inbox folder must be cleaned up by the end user system.

2.1.6 Maximum Message Size

The maximum size of a single message the sedex client can send is currently limited to 10GB.

2.1.7 Firewall

The firewall has to be configured so that the sedex client can communicate with the sedex server components. Outgoing connections to the following network endpoints are created:

- sedex-service.admin.ch port 443, https protocol

2.1.8 Network Speed

sedex needs a connection that allows to upload at least **5 Megabytes data within 5 minutes**. Therefore, the **recommended minimum upload speed is 150 kbit/s**.

Note: This recommendation assumes that the whole bandwidth of the connection is available for the sedex client. If the client has to share the available bandwidth with other applications, the bandwidth needed has to be secured for the sedex client.

In practice, the minimum upload/download speed has to be adapted to the message volume being handled by the client. The following table gives an overview of the typical durations required for the transfer of messages:

		Network speed			
		150 kbit/s	**300 kbit/s**	**1'000 kbit/s**	**10'000 kbit/s**
Message Size	**5 MB**	4.5 minutes	2.3 minutes	36 seconds	3.6 seconds
	50 MB	44.5 minutes	22.3 minutes	6.6 minutes	36 seconds
	500 MB	7.4 hours	3.7 hours	1.2 hours	6.7 minutes
	1000 MB	14.8 hours	7.4 hours	2.3 hours	13.4 minutes

Table 1: Message transfer times *

*** Note:** These transfer times are calculated for one message, i.e., one data file only. If the data size is distributed over several smaller messages, the communication overhead per message has to be taken into account, especially if large numbers of very small messages are sent (messages of a few KB in size only).

2.2 Folder Structure of the sedex Client

As the sedex client has the ability to install software updates by itself, it needs write access to all folders within the base directory of the sedex client (denoted as <sedex_home>).

The following table shows the default folder structure of an installed sedex client within the base directory:

Folder	Description
/adapter	**sedex adapter component main folder**
/adapter/axis2	Web service proxy component main folder (Note: the web service proxy depends on the adapter and thus is a subcomponent of the sedex adapter component)
/adapter/bin	Scripts used for starting and stopping the sedex adapter by the sedex controller (not by the end user).
/adapter/conf	Configuration files for the adapter and the web service proxy: sedexAdapter.properties Adapter configuration adapter-logback.xml Adapter logging configuration certificateConfiguration.xml Adapter credentials (certificate and password) wsproxy.properties Web service proxy configuration wsproxykey.properties Web service proxy credentials (cert. and password) wsproxy-log4j.xml Web service proxy logging configuration
/adapter/deploy	Deploy directory for web service proxy
/adapter/internalmessages	Temporary directory for internal messages. Has to be writable by the adapter process.
/adapter/jce	Java Cryptography Extension policy files for unlimited strength. Provided for Sun-based and IBM-based Java runtime environment.
/adapter/lib	All the required Java libraries for the adapter.
/adapter/schema	All necessary XML schema files, e.g. the eCH0090 schema (sedex message envelope).
/adapter/certificate	Private PKI user keys and certificates for the secure communication.
/controller	**sedex-controller component main folder**
/controller/backup	Before a remote update is carried out, a backup is created in this folder. Has to be writeable by the controller process.
/controller/certificates	Certificate for checking author and integrity of a remote update package.
/controller/conf	Configuration files for the sedex controller: sedexController.properties Controller configuration controller-logback.xml Controller logging configuration controller-wrapper.conf Configuration of the service/daemon wrapper

/controller/download	Remote update packages are downloaded into this folder. Has to be writeable by the controller process.
/controller/lib	All the required Java libraries for the controller.
/controller/schema	All necessary XML schema files.
/controller/temp	Temporary working directory for the controller. Has to be writeable by the controller process.
/interface	**The messaging interface between the sedex client and the end user system.** Note: All these folders may be configured to exist outside of the <sedex_home> directory. See 7.2 for details on the configuration.
/interface/inbox	Default folder for incoming messages. Note: The sedex client never deletes messages from this folder. The end user system has to delete messages that are no longer needed.
/interface/outbox	Default folder for outgoing messages.
/interface/processed	Default folder for processed (i.e., sent or rejected) messages. Note: The sedex client never deletes messages from this folder. The end user system has to delete messages that are no longer needed.
/interface/receipts	Default folder for receipts. Note: The sedex client never deletes receipts from this folder. The end user system has to delete receipts that are no longer needed.
/interface/sedextempmessage	Default working folder for temporary message files.
/logs	**Default folder for all log files.** Note: All these folders may be configured to exist outside of the <sedex_home> directory. See 7.4 for details on the logging configuration.
/logs/adapter	Log files written by the adapter.
/logs/controller	Log files written by the controller.
/logs/wsproxy	Log files written by the web service proxy.
Misc folders	
/bin	User scripts for starting and stopping the sedex controller. Administrators should use these scripts to start/stop the sedex client.
/jre	Java Runtime Environment
/lib	All the required Java libraries for the service/daemon wrapper
/temp	Working directory for temporary files.

2.3 Migration

If there is already an older version of the sedex client installed, the following steps must be completed when installing the new sedex client.

2.3.1 Important note when upgrading from versions 2.x and 3.x

The new adapter's database is not compatible with that of versions 2.x and 3.x. The new adapter will ***not be able to generate receipts for messages sent by the old installation*** for which no receipts have been created by the recipients of these messages.

To minimize the risk of losing receipts, do the following before updating:
Prevent the business application which uses sedex from sending sedex messages 30 to 60 minutes before the migration takes place. This will allow the old adapter to receive receipts for all the messages that it has sent.

2.3.2 Prerequisites/Things to do before updating

To carry out a successful migration, collect the following information and stop all sedex client processes. This information will be needed when installing the new client.

1. **sedex ID**
   Locate the *adapterSedexId* identifier in the `<sedex_home>/adapter/conf/sedexAdapter.properties` file and note the sedex ID.

   Your sedex ID: _____

2. **Current organization certificate and password**
   Note the path to the organization certificate file (.p12) with the **most recent modification date** in the `<sedex_home>/adapter/certificate/prod-bit` directory.

   Your current path for the certificate file:
   _____.p12

   Locate the newest organization certificate entry in the `<sedex_home>/adapter/conf/certificateConfiguration.xml` file and note its password.

   Your current certificate password: _____

3. **Messaging interface directories**
   Note the sedex messaging interface directories configured in the `<sedex_home>/adapter/conf/sedexAdapter.properties` file.

Directory	Default Value (Client V5.0)	Your Directory Name
Inbox	`<sedex_home>/interface/inbox`	
Outbox	`<sedex_home>/interface/outbox`	

SentItemsDir	<sedex_home>/interface/processed	
Receipts	<sedex_home>/interface/receipts	

Note: Between versions 3.0 and 4.0 the layout of the messaging interface was changed. If your messaging interface directories differ from the 5.0 default directories shown above, it is important that you provide your **current** interface directories when updating your installation. If you do not, the version 5.0 default interface directories will be used and any application that depends on the previously used directories will no longer be able to send and receive messages. An alternative is to adapt the applications to use the default directories of the new installation.

4. **Stop your running sedex client processes**

   - On Windows:
     i. If the sedex client has been started as a Windows service, it must be stopped using the **Windows Service Manager**.
     ii. If not, execute <sedex_home>/bin/controller-stop.bat
   - On Unix/Linux: Execute <sedex_home>/bin/controller-stop.sh

5. If the sedex client was registered as a Windows service, that service configuration must be unregistered by executing the following script.

   - <sedex_home>/bin/controller-UninstallWindowsService.bat

6. **Kill the RMI registry**

   - On Windows: `taskkill /F /IM rmiregistry.exe`
   - On Unix/Linux: `killall -9 rmiregistry`

   Alternatively, you can kill the task with the task manager or reboot the computer.

2.3.3 Migrating from Versions 4.x and 5.x

Complete the following steps if migrating from a sedex client version 4.x. or 5.x

1. **Rename the current installation directory**

   - On Windows: `rename <sedex_home> <sedex_home>-backup`
   - On Unix/Linux: `mv <sedex_home> <sedex_home>-backup`

2. **Install new client**
   Install the new sedex client using the installer or by unpacking the ZIP into the same path as before (<sedex_home>) using the parameters you noted in chapter 2.3.2.

3. **Copy current client messaging state to new installation**
   Copy the databases containing the current client messaging state from their backup location to the new installation directory as follows.

- On Windows:
  ```
  xcopy <sedex_home>-backup/adapter/eGovTmp
  <sedex_home>/adapter/eGovTmp /E

  xcopy <sedex_home>-backup/adapter/h2db
  <sedex_home>/adapter/h2db /E
  ```
- On Unix/Linux:
  ```
  cp -R <sedex_home>-backup/adapter/eGovTmp
  <sedex_home>/adapter

  cp -R <sedex_home>-backup/adapter/h2db <sedex_home>/adapter
  ```

4. **Copy messages into the interface folders if needed**
   If the messaging interface directories (see prerequisite 3) are subdirectories within the client installation (the default), then copy them from their backup location to the new installation folder as follows.

   If you did not use the default folders, substitute your specific directory names in the following commands.

   - On Windows:
     ```
     xcopy <sedex_home>-backup/interface <sedex_home>/interface /E
     ```
   - On Unix/Linux:
     ```
     cp -R <sedex_home>-backup/interface <sedex_home>
     ```

2.3.4 Migrating from Versions 2.x or 3.x

Complete the following steps if migrating from a sedex client version 2.x or 3.x.

1. **Prevent your business application from writing new messages**
   Prevent your business application from writing new messages into the outbox for 30 to 60 minutes before migrating the client. This allows the old adapter to receive receipts for all the messages that it has sent.

2. **Rename the current installation directory**

   - On Windows: `rename <sedex_home> <sedex_home>-backup`
   - On Unix/Linux: `mv <sedex_home> <sedex_home>-backup`

5. **Install new client**
   Install the new sedex client using the installer or by unpacking the ZIP into the same path as before (`<sedex_home>`), using the parameters you noted in 2.3.2.

6. **Copy messages in the interface folders if needed**
   If the messaging interface directories (see prerequisite 3) are subdirectories within the client installation (the default), then copy them from their backup location into the new installation folder as follows:

   - On Windows:
     ```
     xcopy <sedex_home>-backup/inbox <sedex_home>/inbox /E /I

     xcopy <sedex_home>-backup/outbox <sedex_home>/outbox /E /I
     ```

```
xcopy <sedex_home>-backup/receipts <sedex_home>/receipts /E /I
xcopy <sedex_home>-backup/sent <sedex_home>/sent /E /I
```

- On Unix/Linux:

```
cp -R <sedex_home>-backup/inbox <sedex_home>
cp -R <sedex_home>-backup/outbox <sedex_home>
cp -R <sedex_home>-backup/receipts <sedex_home>
cp -R <sedex_home>-backup/sent <sedex_home>
```

2.3.5 Downgrading

It is strongly recommended **NOT** to revert to an earlier version of the sedex client. A downgrade can result in the loss of messages and receipts. If a problem arises during or with the new installation, consult the *Frequently Asked Questions (FAQ) V4.1* (25.08.2011) and **contact the BfS's Service Clientèle before attempting a downgrade**.

3 Manual Installation from ZIP File

Note: This chapter describes the manual installation of the sedex client.
See chapter 4 for an automated wizard-like installer.

Overview:

To install the adapter manually, carry out the following steps (the following sections describe the steps in detail):

1. Verify prerequisites
2. Extract the sedex client archive
3. Add executable rights (on Unix systems only)
4. Environment variables configuration
5. Install JAVA JCE unlimited strength policy files
6. sedex controller configuration
7. sedex adapter configuration
8. Logging configuration
9. Installation check

3.1.1 Verify Prerequisites

See chapter 2 for general operational requirements for running a sedex client.

Additionally, the JDK or JRE of Java 7 or 8 must be available on the target machine to run the sedex client.

Note: No Java Runtime Environment is needed during the installation process.

3.1.2 Extract the sedex Client Archive

The sedex client for manual installation is shipped as one ZIP file.

Download and **extract** the ZIP file into a new folder of your choice (e.g., folder "`SedexClient`").

Note: The new folder containing the sedex client will be denoted as `<sedex_home>` for the rest of this manual.

3.1.3 Add Executable Rights (on Unix Systems only)

When installing on a Unix based system, some additional steps are necessary after the extraction of the archive:

1. Change into the directory `<sedex_home>/bin`
2. Change the permissions of the controller start/stop scripts to executable:
   `chmod +x controller-start.sh controller-stop.sh`
3. Change into the directory `<sedex_home>/adapter/bin`

4. Change the permissions of the adapter start/stop scripts to executable:
   `chmod +x adapter-start.sh adapter-stop.sh`
5. Change the permissions of the web service proxy start/stop scripts to executable:
   `chmod +x wsproxy-start.sh wsproxy-stop.sh`
6. Change into the directory `<sedex_home>/adapter/axis2/bin`
7. Change the permissions of the Axis2 start/stop scripts to executable:
   `chmod +x *.sh`

3.1.4 Environment Variables Configuration

The following system environment variables must be set:

- `JAVA_HOME` must contain the path to the Java 6 SE installation folder

Usually, the JAVA_HOME variable is either set as a *system variable* in Windows or is set during login on Unix by adding the variable assignment to a shell startup script, for example ~/.profile.

To set the environment variable, e.g., the following CLI commands can be used:

Windows:

```
set JAVA_HOME=C:\Program Files\Java\jre1.7.0_75
```

Unix (depends on the specific Unix shell used, here shown for bash):

```
export JAVA_HOME=/usr/java/jre1.7.0_75
```

3.1.5 Install Java JCE Unlimited Strength Policy Files

Due to US export restrictions, the default Java JCE policy files bundled in JRE 6 allow limited cryptography only. As sedex needs to have really strong security, thus the “Unlimited Strength Java(TM) Cryptography Extension Policy Files” have to be installed manually in your `<JAVA_HOME>`.

The sedex client already provides the needed JCE policy files from Sun/Oracle and IBM. These files can be found in:

- `<sedex_home>/adapter/jce/sun`
- `<sedex_home>/adapter/jce/ibm`

To install these policy files, simply copy all **.jar* files contained in the corresponding folder into the following directory of your Java installation (overwrite existing files):

- `<JAVA_HOME>/lib/security` on Windows systems
- `<JAVA_HOME>/bin/lib/security` on Unix systems

Note: In Switzerland, the provided policy files can also be downloaded directly from Oracle or IBM websites.

3.1.6 sedex Controller Configuration

The sedex controller configuration file is:
`<sedex_home>/controller/conf/sedexController.properties`.

While chapter 7.1, “Controller Configuration,” describes *all* configuration values for reference purposes, the following table is narrowed down to the variables which **must be set** in order to get an operational sedex client.

Optional variables have to be set if necessary. E.g., the HTTP proxy server variables have to be set only if access to the web has to go through an HTTP proxy server in your organization.

Variable	Description
sedex.home	Path to the base directory of the sedex client. This corresponds to the root in the ZIP file. For example, “C:/Program Files/SedexClient” The value used is referred to by “`<sedex_home>`” elsewhere in this document. **Note:** It is important to use the “/” path separator, even on Windows installations.
controller.monitoring.server.port	The port for accessing the controller’s monitoring information page using an HTTP client. Is set to “8000” by default. This value has to be changed if the port is in use already.

Note: The configuration of the optional web service proxy component is not covered in this manual. If you intend to run the web service proxy component, then follow the dedicated installation and user manual for the web service proxy.

3.1.7 sedex Adapter Configuration

The sedex adapter configuration file is:
`<sedex_home>/adapter/conf/sedexAdapter.properties`.

While the chapter 7.2 “Adapter Configuration” describes *all* configuration values for reference purposes, the following table is narrowed down to the variables which **must be set** in order to get an operational sedex client.

Optional variables have to be set if necessary. E.g., the proxy variables have to be set only if access to the web has to go through an HTTP proxy server in your organization.

Variable	Description
sedex_home	Path to the base directory of the sedex client. This corresponds to the root in the ZIP file. For example “C:/Program Files/SedexClient” **Note:** It is important to use the path separator “/”, even on Windows installations.
adapterSedexId	The sedex ID of the client. Example: “1-123-1”

Further, you need to configure your sedex certificate.

Variant 1: If you already have a valid sedex certificate file (*.p12):

You need to configure the path and password to your private certificate file. The sedex adapter certificate configuration file is:
`<sedex_home>/adapter/conf/certificateConfiguration.xml`

```
 <?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<certificateConfiguration
      xmlns="http://www.sedex.ch/xmlns/certificateConfiguration/1">
      <privateCertificate>
            <location>(1)</location>
            <password>(2)</password>
      </privateCertificate>
      <transportCertificate>
            <location>${ADAPTER_HOME}/certificate/prod-
bit/transportCertificate.cer</location>
      </transportCertificate>
      <webserviceTruststore>
            <location>${ADAPTER_HOME}/certificate/prod-
bit/adaptertrust.jks</location>
            <password>trustme</password>
            <truststoretype>JKS</truststoretype>
      </webserviceTruststore>
</certificateConfiguration>
```

Replace the two placeholders (1) and (2) with the actual values:

(1) Insert the path to your private certificate file (.p12) between <location> and </location>.

You can use ${sedex_home} to specify a path relative to sedex_home, but you can also use an absolute path.

E.g. `<location>${sedex_home}/certificates/prod-bit/T501.p12</location>`

Note: It is important to use the path separator "/", even on Windows installations.

(2) Insert your password for the certificate between <password> and </password>.

E.g. `<password>myPassword123</password>`

Variant 2: Create a New sedex Certificate:

If you do not have a certificate, you can create a new one. What you need in order to do this is a certificate request ID (CRID) and a one-time password (OTP), received from your sedex domain administrator.

If you have a CRID and an OTP, do the following:

- copy the file
  `adapter\conf\certificateConfiguration.xml.certificateRequest` to
  `adapter\conf\certificateConfiguration.xml`

- Now you have to edit the new file
  `<sedex_home>/adapter/conf/certificateConfiguration.xml`

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<certificateConfiguration
      xmlns="http://www.sedex.ch/xmlns/certificateConfiguration/1">
      <initialCertificateRequest>
            <requestId>(1)</requestId>
            <oneTimePassword>(2)</oneTimePassword>
      </initialCertificateRequest>
      <transportCertificate>
            <location>${ADAPTER_HOME}/certificate/prod-
bit/transportCertificate.cer</location>
      </transportCertificate>
      <webserviceTruststore>
            <location>${ADAPTER HOME}/certificate/prod-
bit/adaptertrust.jks</location>
            <password>trustme</password>
            <truststoretype>JKS</truststoretype>
      </webserviceTruststore>
</certificateConfiguration>
```

Replace the two placeholders (1) and (2) with the actual values:

(1) Insert your certificate request ID (CRID) between <requestId> and </requestId>.
You may have received this ID from your sedex domain administrator.

E.g. `<requestId>c1eee6d7-8035-4513-a672-362198fd7a29</requestId>`

(2) Insert your one time password (OTP) between <oneTimePassword> and </ oneTimePassword >.

E.g. `<oneTimePassword>TJYT-LLAR-NBZN-XLCM</oneTimePassword>`

3.1.8 Logging Configuration

All components of the sedex client are writing messages to log files. By default, these log files are configured to be created in the folder <sedex_home>/logs.

Note: There is no need to edit the logging configuration unless you have to.

If you have good reasons to change the logging configuration, you can find the Logback configuration files here:

- `<sedex_home>/adapter/conf/adapter-logback.xml`
- `<sedex_home>/controller/conf/controller-logback.xml`

In these files, it is, e.g., possible to change the path to the log files and their rotation strategy.

See Logback documentation for details.

3.1.9 Final Notes

To make sure that the sedex client is started automatically after the system is rebooted, it is required to be configured as a service (Windows) or called from a start script on UNIX. See chapter 6 for the different ways to start a sedex client.

4 Automatic Installation Using the Installer

Note: This chapter describes the automatic and guided installation of the sedex client using the installer program. See chapter 3 for a manual installation from a ZIP file.

Overview:

To install the sedex client using the installer program, carry out the following steps (the following sections describe the steps in detail):

1. Choose an installer distribution
2. Verify prerequisites
3. Download one of the installer programs
4. Run the installer program
5. Additional installation tasks on non-Windows systems
6. Installation check
7. Final notes

Notes:

Always use one of the installer programs to do a fresh installation of the sedex client. Never do a new installation by copying an existing installation.

4.1.1 Choose an Installer Distribution

The automatic installer program for the sedex client is a Java based application and available in the form of **two different distributions**:

1. **Java installer (JAR) → for all operating systems**
   The Java installer (a JAR file) contains the Java installer program and can be run on any operating system offering a preinstalled Java Runtime Environment (JRE) for Java 1.7.

2. **Windows Installer (EXE) → for Windows only**
   The Windows installer (an EXE file) contains the Java installer together with an integrated Java Runtime Environment (JRE) for Java 1.7. Using this EXE installer does **not** need a preinstalled Java Runtime Environment (JRE), as it has its own.

Choose one of the two available installer program distributions:

- For Windows systems, the Windows installer program (EXE) is recommended.
- For all other systems, the JAR installer program must be used.

4.1.2 Verify Prerequisites

See chapter 2 for general operational requirements for running a sedex client.

The other prerequisites depend on the type of installer you choose:

- **Prerequisites for the Java installer (JAR)**:

  - To run the Java installer and later on the installed sedex client, a preinstalled Java Runtime Environment (JRE) for Java 1.7 is required.
    Environment variable JAVA_HOME has to be set to point to that JRE.

  - On Linux based systems, the X Window System graphical desktop has to be available.

- **Prerequisites for the Windows installer (EXE):**
  There are no further requirements to run the Windows installer.
  The Windows installer already contains an integrated Java Runtime Environment (JRE) to run the installer itself and automatically installs a dedicated JRE to run the installed sedex client.

Note: On Windows systems, both installer programs (EXE and JAR) will automatically install a dedicated JRE to run the sedex client.

4.1.3 Download one of the installer programs

Download one of the installer programs:

- For Windows systems, the Windows installer program (EXE) is recommended.
- For all other systems, the JAR installer program must be used.

4.1.4 Run the installer program

To install the sedex client, run the installer program:

- On most systems, both installer programs (JAR and EXE) can be started by a double click.
- To run the JAR installer from a command line interface, you can alternatively type:
  `java –jar [FileName].JAR`

Once running, the program will guide you through a sequence of dialogues and do the automatic installation.

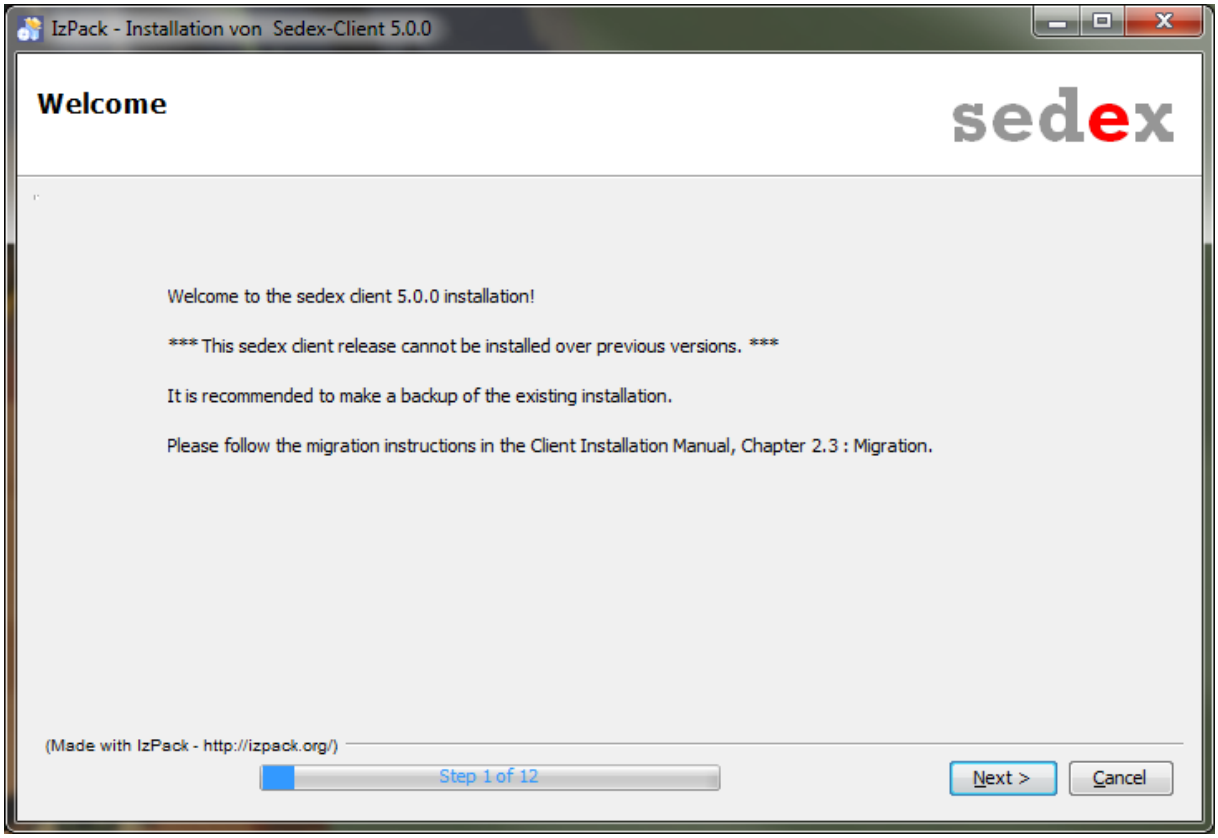
The following pages show the steps during a typical installation on Windows.

Language Selection

The first screen allows you to choose the language used to guide you through the installation:

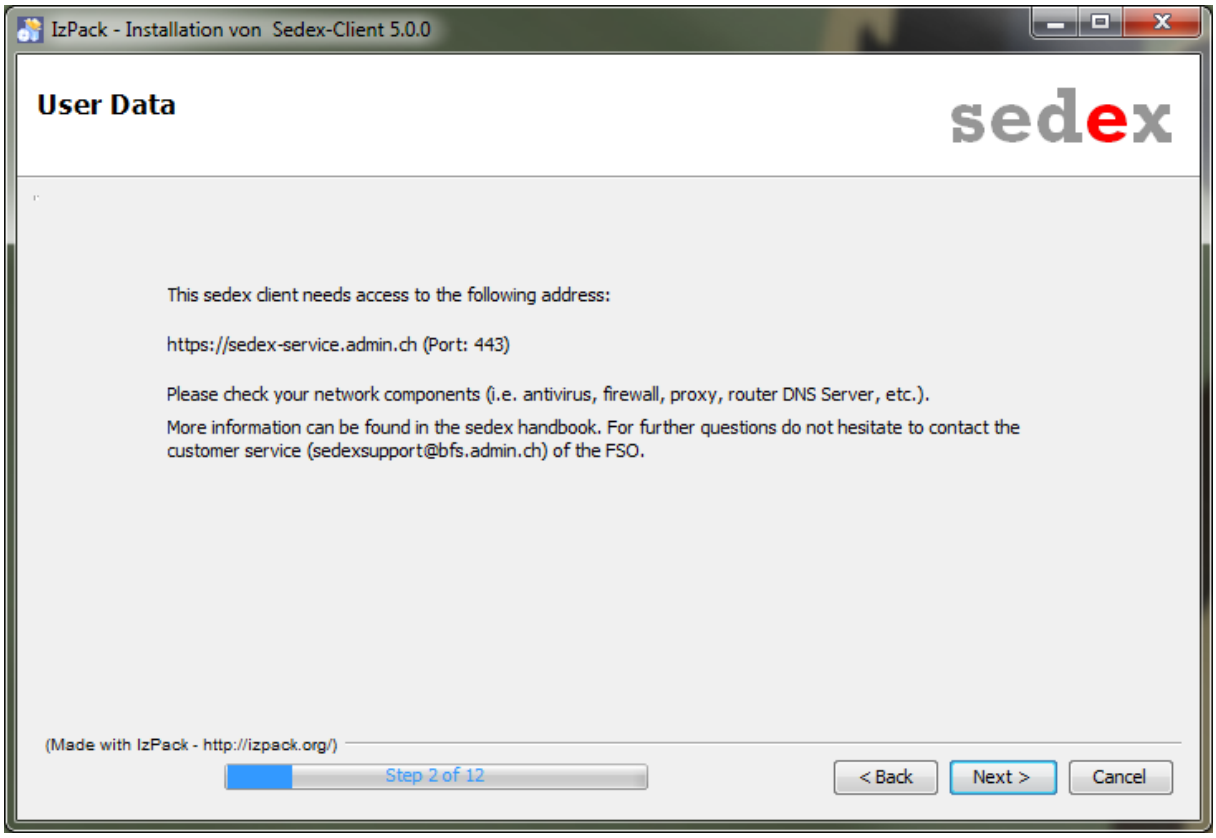
Step 1: Welcome

The following screen has no functionality but shows some important information about the installation. Please read the provided information.



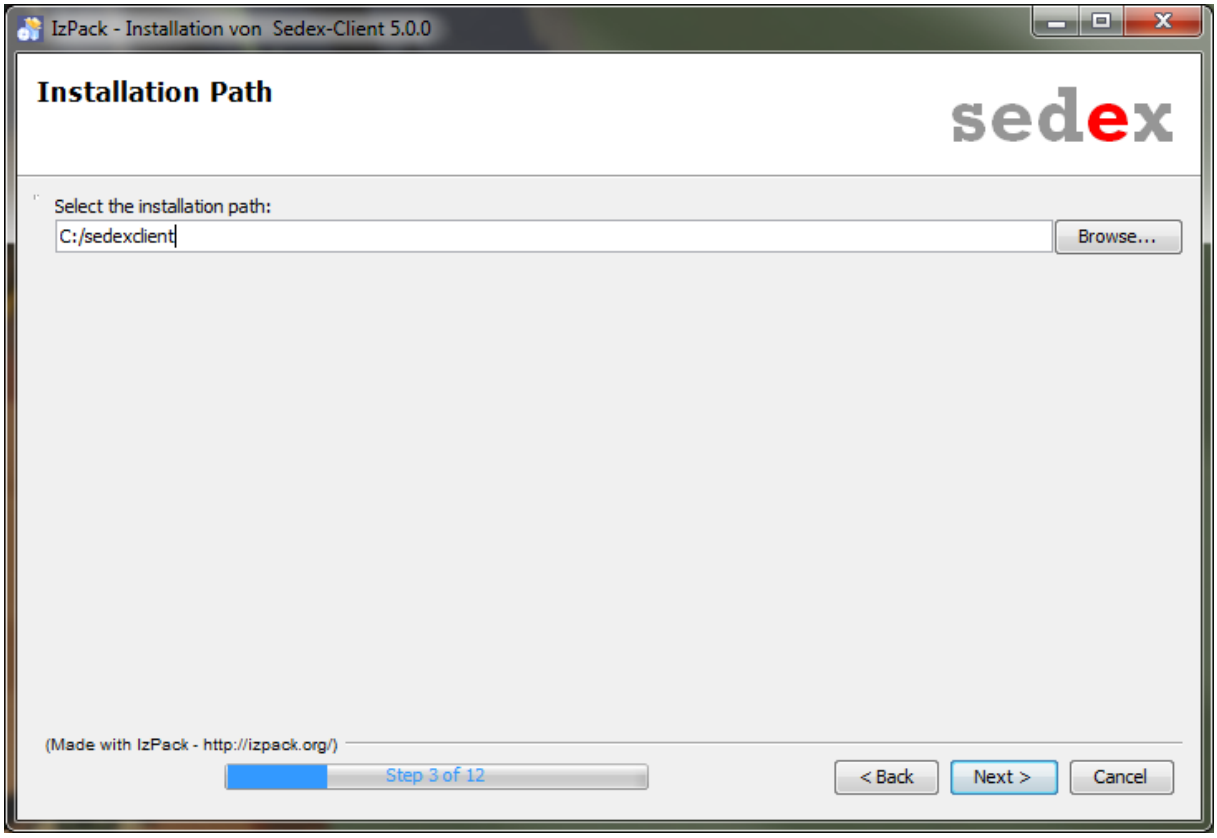
Step 2: Additional Information

The following screen has no functionality but shows some important information about the network access needed by the sedex client. Please read the provided information.



Step 3: Installation Path

The following screen allows you to choose the base directory for the installation.
You can install more than one sedex client on one system by running the installer multiple times and choosing different directories in this step.



Note: If you will be running multiple sedex clients on one host, you are required to select different installation paths for each installation!

Step 4: Select Installation Packages

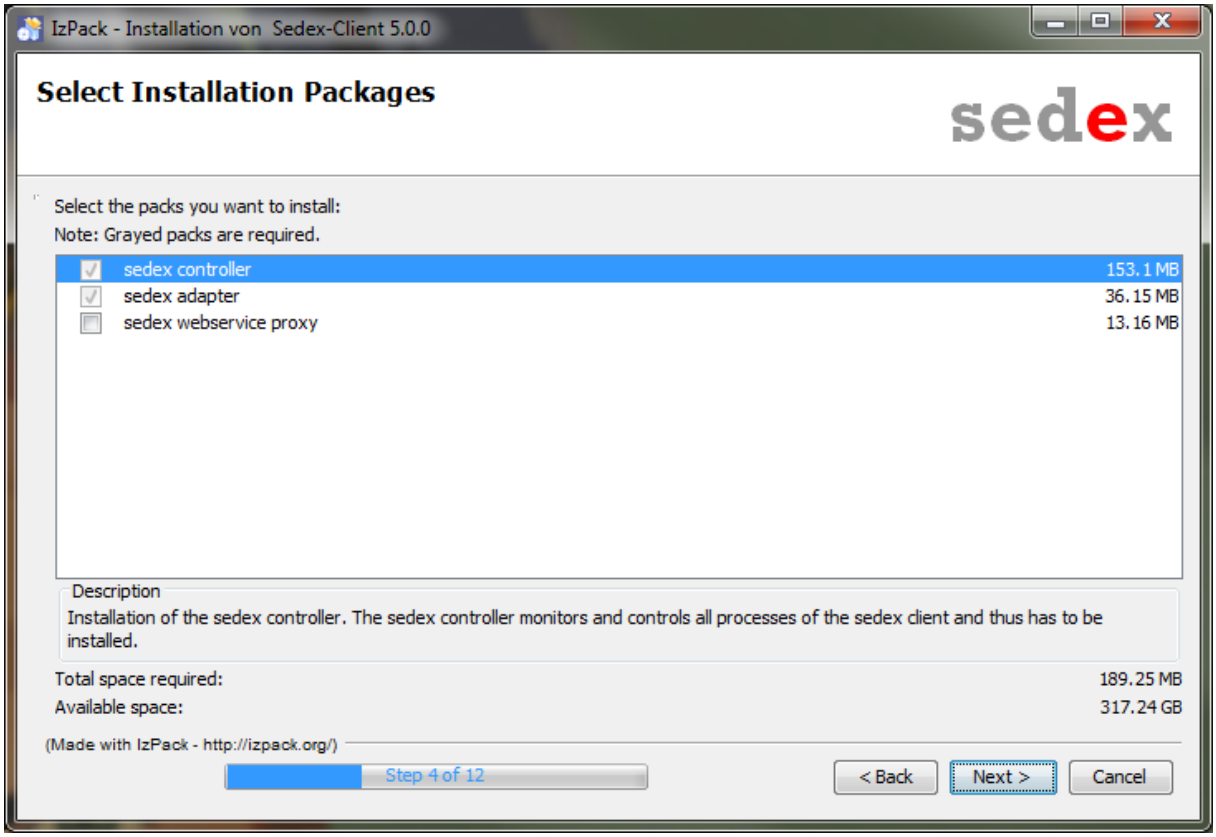
The following screen allows you to select the components to be installed.

Components:

- sedex controller.
  The sedex controller monitors and controls all processes of the sedex client and thus has to be installed.

- sedex adapter.
  The sedex adapter enables the message exchange over the sedex platform and thus has to be installed.

- sedex web service proxy.
  The web service proxy enables the access to defined web services using the sedex certificate. Normally, this functionality is not necessary and thus optional.



Step 6: sedex Client Configuration 1 (Adapter)

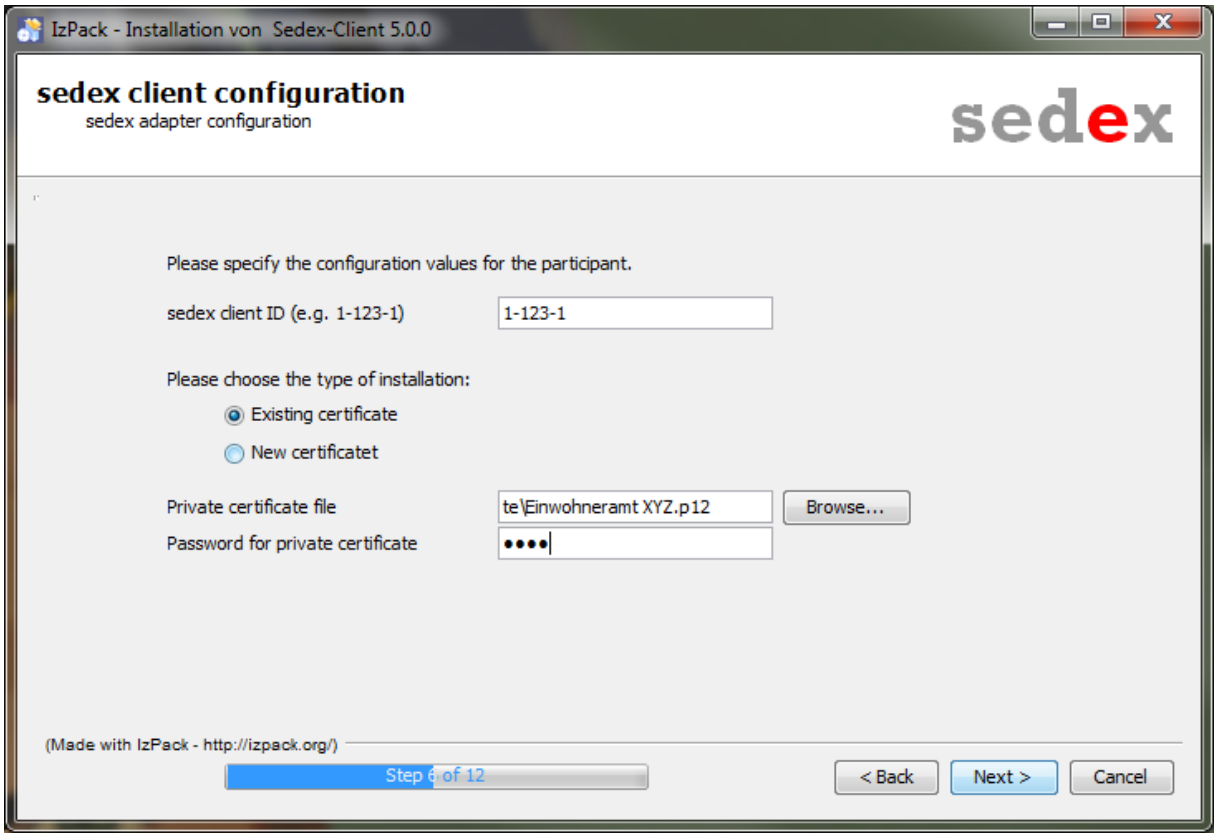
The following screen provides input fields for important adapter configuration values.

All the fields must be filled using the individual values assigned by the BFS.

- The sedex adapter ID of this client installation.
- Use an existing certificate or generate a new one.

If you have an existing certificate:

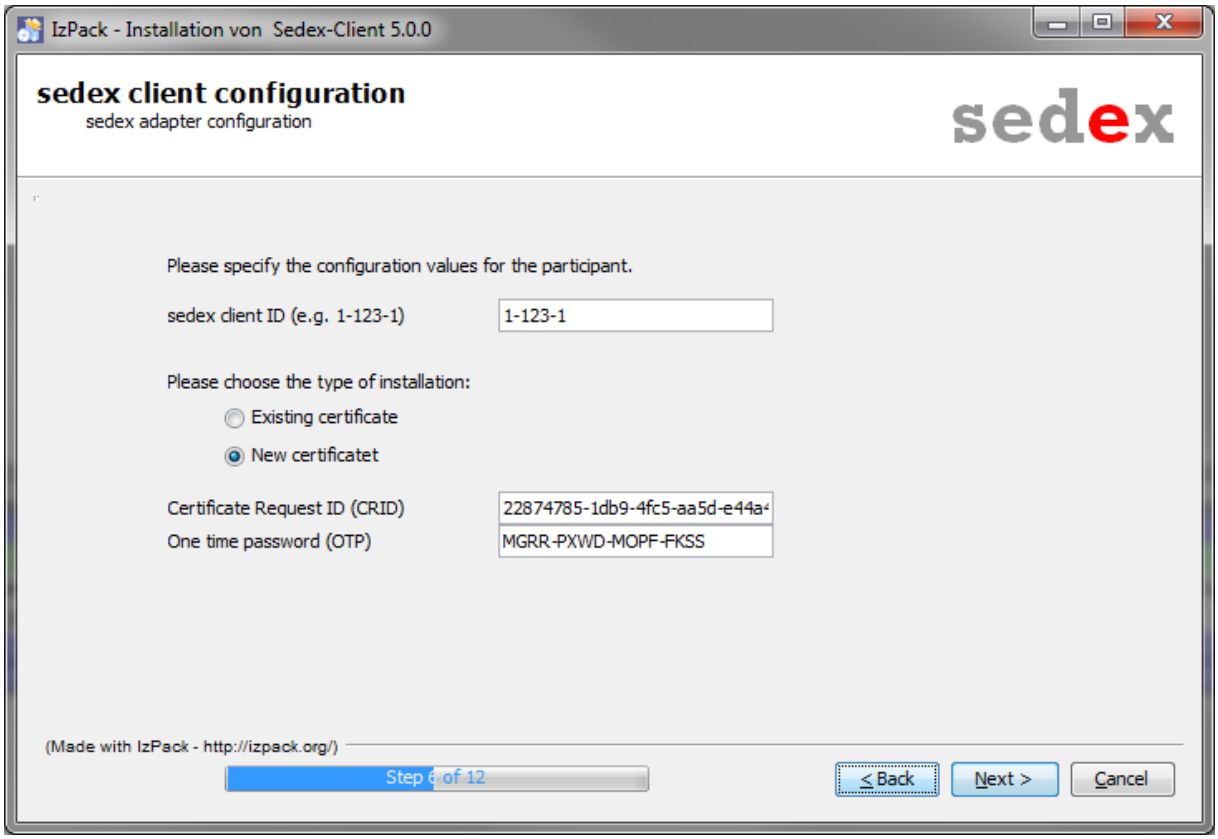
- The private certificate file used by this client.
  The file you specify here will automatically be copied into the adapter directory structure. This allows you to indicate a path to the certificate that will not be available after the installation (USB stick etc.).
  The specified file must end with the `.p12` file name extension.
- The password for the private certificate used by this client.



If you need to create a new certificate:

The sedex client can create a new sedex certificate. To do this, ask your sedex domain administrator to create a certificate request.

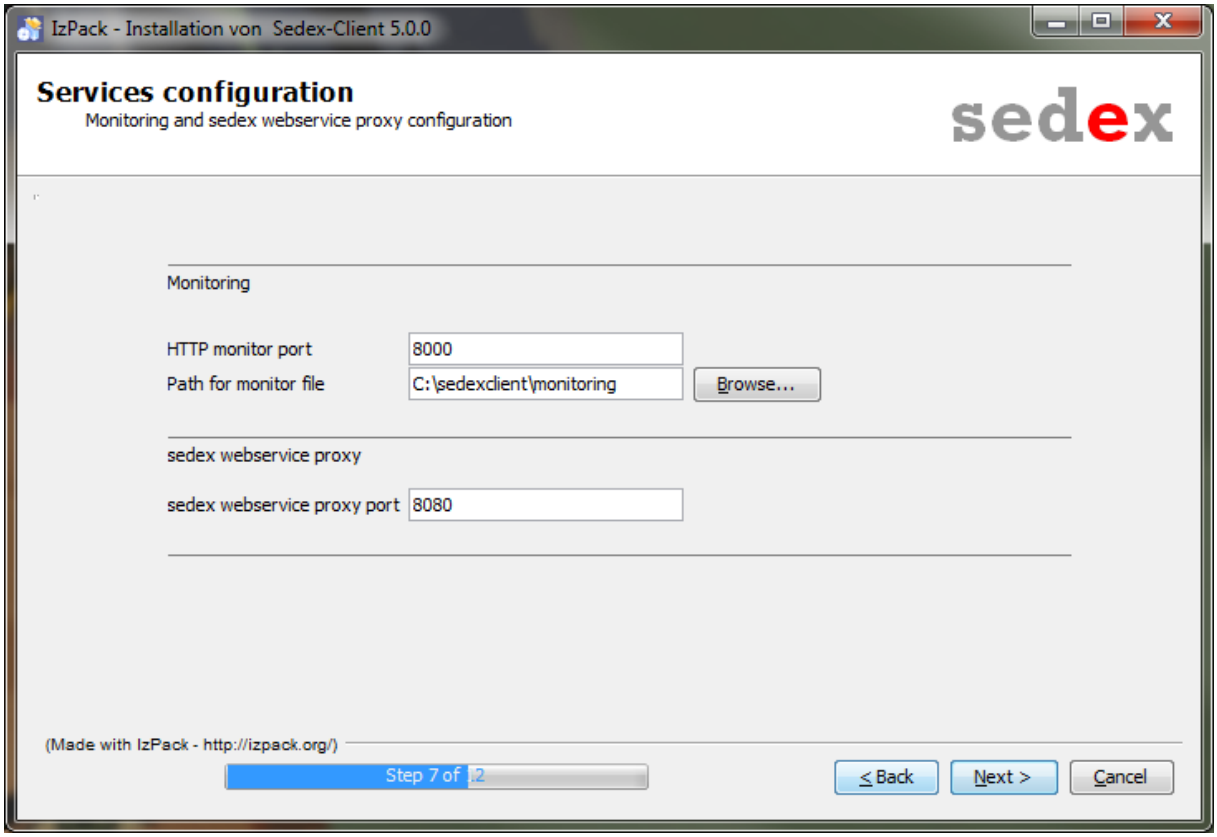
- The certificate request ID (CRID), received from your sedex domain administrator.
- The password (OTP) for the given CRID, typically received in an e-mail.



Step 7: Services Configuration 2 (Monitoring and Web Service Proxy)

The following screen allows you to specify the two services offered by the sedex client:

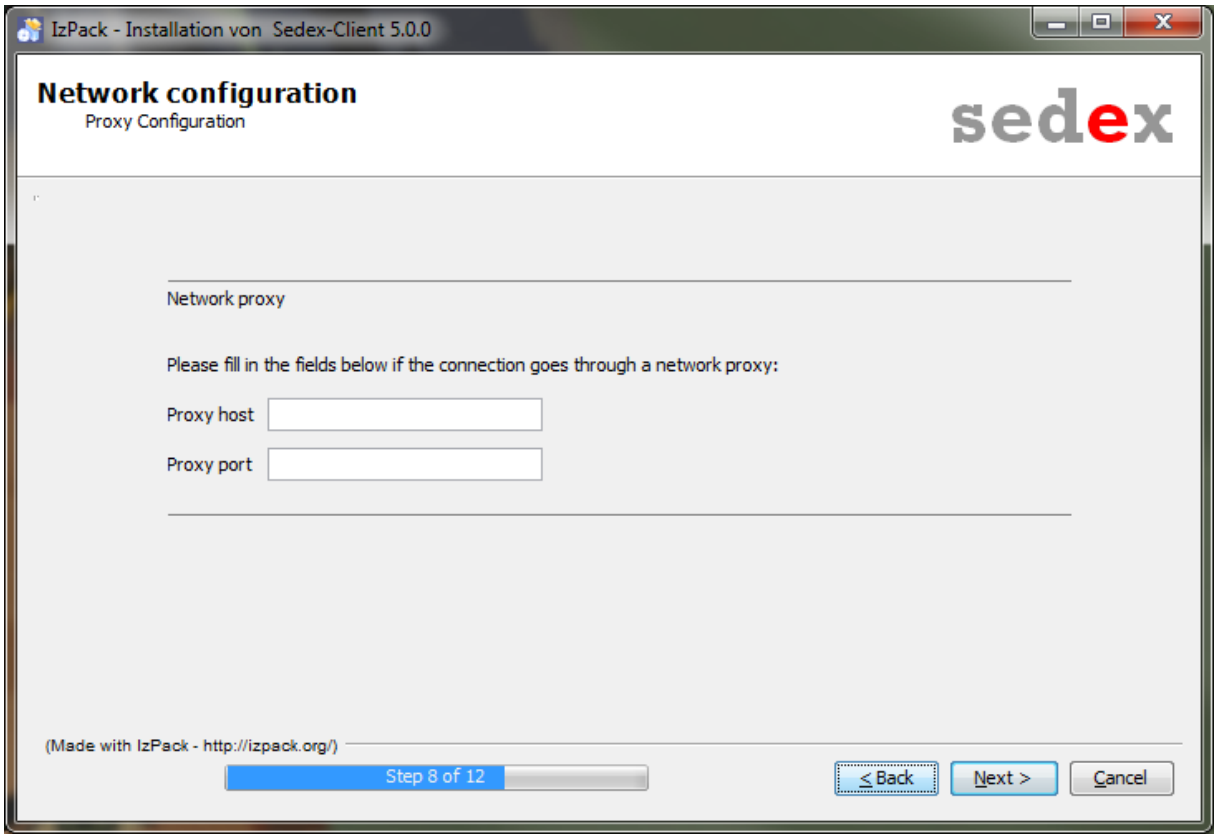
- Monitoring
  The sedex client periodically publishes its state for monitoring purposes by the administration staff maintaining the server.
  - HTTP monitor port
    At this port, a simple webpage is published showing the state of the sedex client. Default value is port 8000.
  - Path for monitor file
    At this path, a simple text file is published showing the state of the sedex client.
- Web service proxy
  Listening port of the web service proxy. Default value is 8080.
  Note: The web service proxy will only be available if selected in step 3 of the installation.



Note: If you will be running multiple sedex clients on one host, you are required to select different ports for each installation!

Step 8: Network Configuration

The following screen allows you to specify an HTTP proxy server and its service port number if the sedex client accesses the sedex system through an HTTP proxy server.

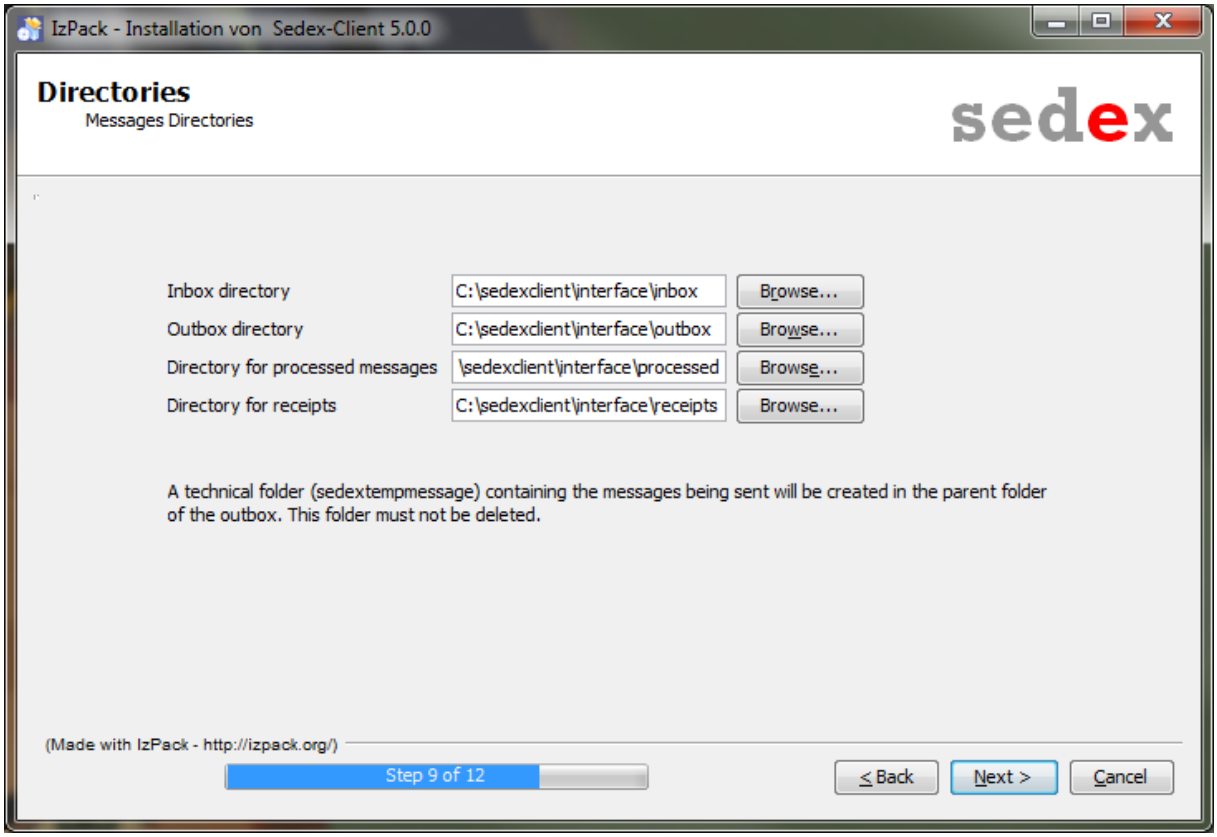


Step 9: Directories 1 (Message Directories)

The following screen allows you to specify the different message directories for the sedex client.

These folders are the interface to the end-user applications.

Note: If migrating from a previous version of the sedex client, provide the corresponding existing directories which have been used up until now. Using the default directories may prevent the end-user application from sending and receiving messages.

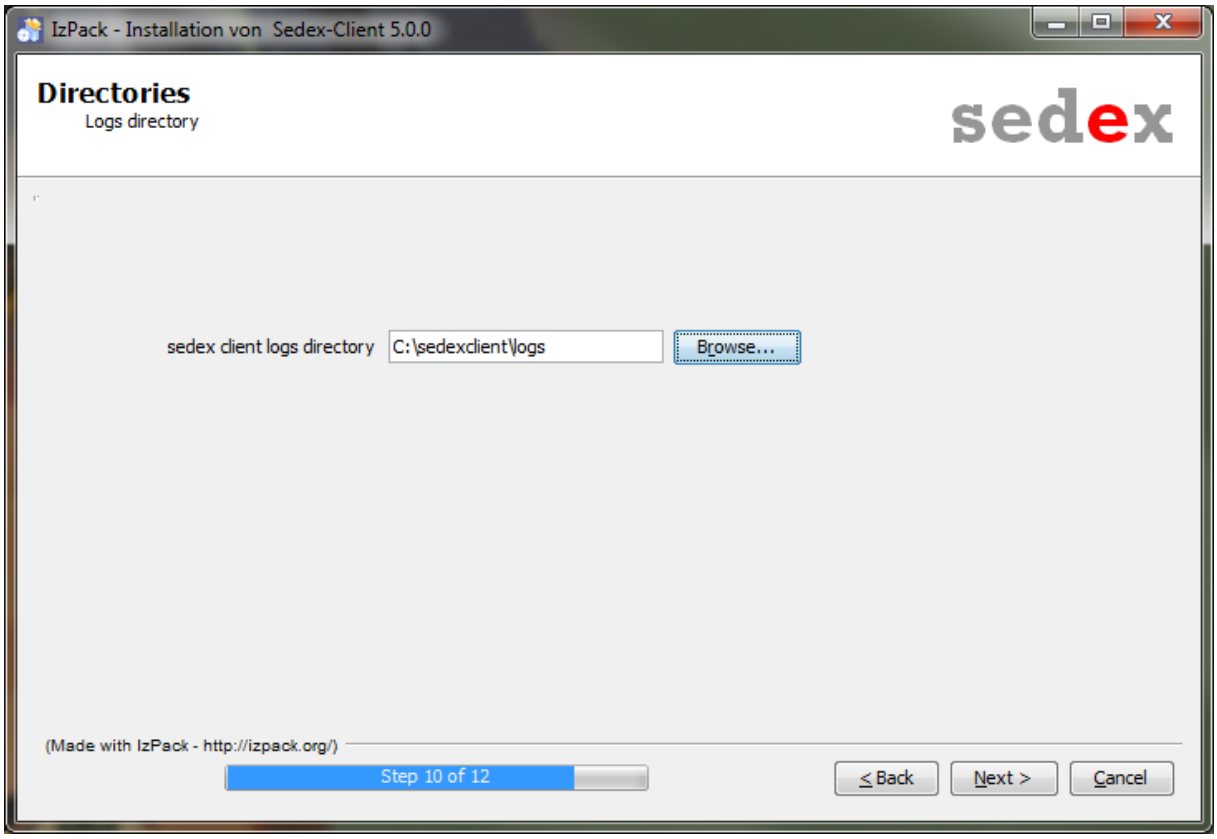


Note: A technical folder (sedextempmessage) containing the messages being sent will be created in the parent folder of the outbox. This folder must never be deleted on an active system.

Step 10: Directories 2 (Logs Directory)

The following screen allows you to specify the base directory for the log files of the sedex client.

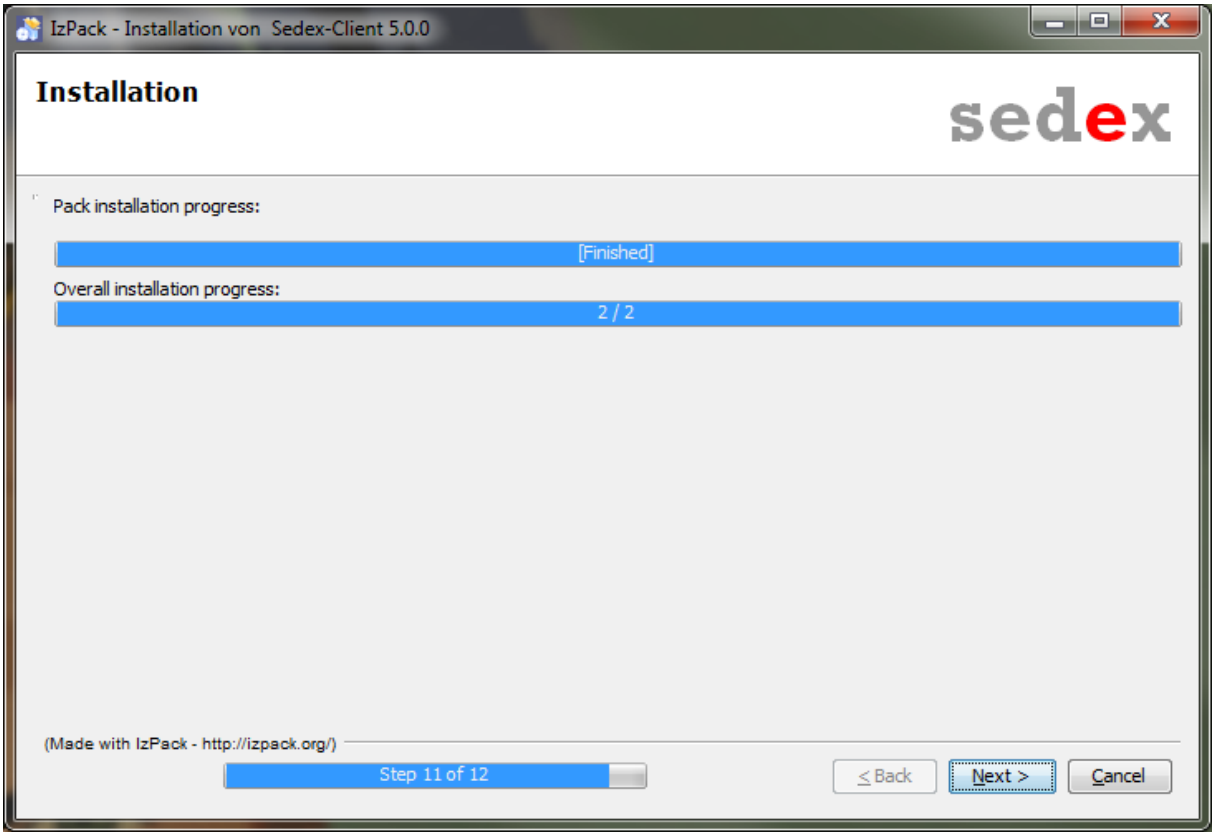
A subdirectory per component (named `controller`, `adapter`, `wsproxy`) will be generated in this folder.



Step 11: Installation

Now the main part of the installation of the sedex client is being executed and takes some time.

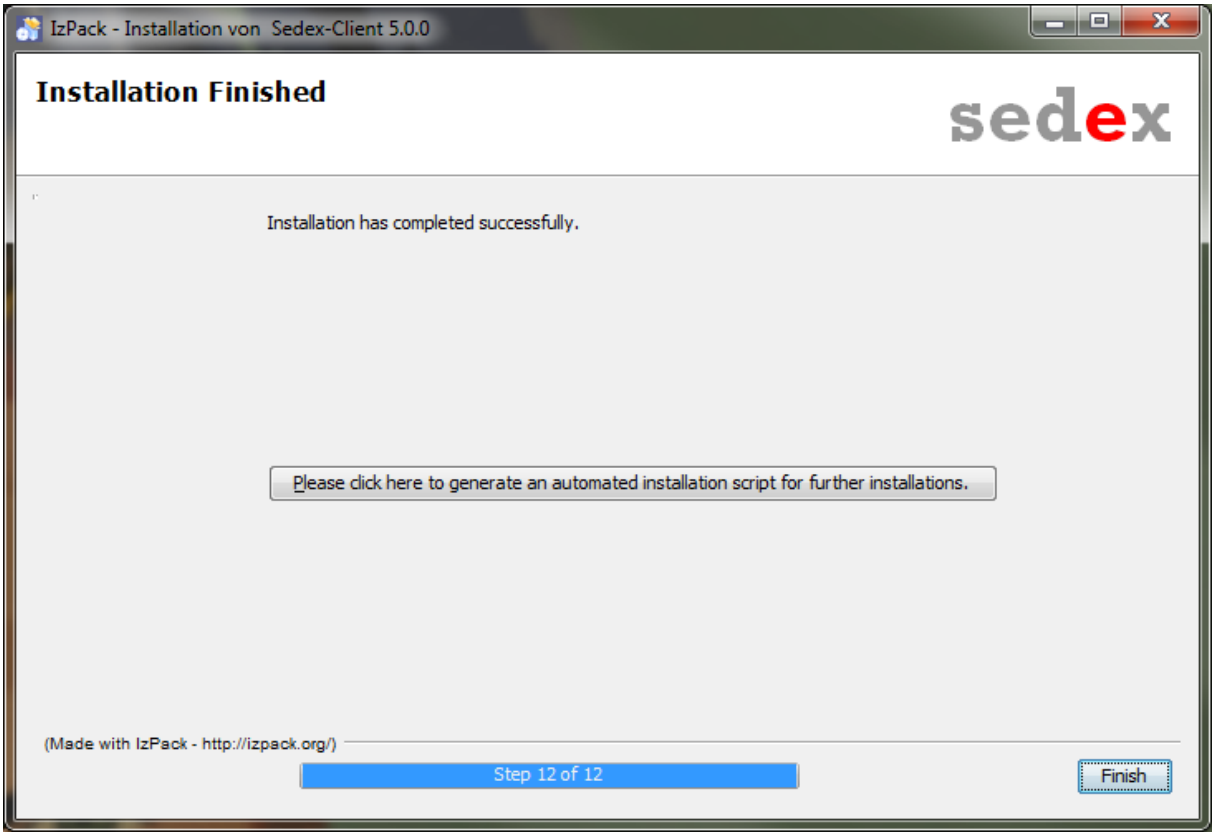
As soon as the progress bar is showing “[Finished]”, you may press the “Next” button.



Step 12: Installation Finished

At this point, you can choose to generate an XML-based script file that is describing all steps of this installation by pressing the according button. The generated script contains all user values as entered during the installation wizard.

If you choose to generate such an XML-file, it can be archived for documentation reasons or it can be used for automatic reinstallations with the same values.



Note: To reinstall the sedex client with the above generated XML file, type the following command using a command line interface:

```
java –jar [InstallerFileName].JAR [GeneratedXmlFile].XML
```

4.1.5 Additional installation tasks on Non-Windows systems (e.g., Unix)

This section can be skipped for installations on Windows systems.

On non-Windows systems, **especially on Unix based systems**, the following steps have to be done:

- Environment variables configuration
  See section 3.1.4 of the manual installation instruction for details.
- Install JAVA JCE unlimited strength policy files
  See section 3.1.5 of the manual installation instruction for details.

4.1.6 Installation Check

See chapter 5 for a check of the installation.

4.1.7 Final Notes

To make sure that the sedex client is started automatically after the system is rebooted, it is required to be configured as a service (Windows) or called from a start script on Unix.

See chapter 6 for the different ways to start a sedex client.

5 Installation Check

To verify that the sedex client has been installed and configured correctly, the following steps can be executed:

1. Start the sedex client
2. Send an echo test message
3. Check if this message has been sent and received

5.1 Start the sedex Client

To start the sedex client, execute the steps described in chapter 6.1 “Manual Start and Stop”.

For example, the Windows command to start the sedex client is:
`<sedex_home>\bin\controller-start.bat`

If the sedex client is configured correctly, the sedex controller as the main process starts up and automatically starts the sedex adapter as a new process. The sedex adapter as the messaging process should then continuously be polling for waiting inbound and outbound messages.

Open the technical log file of the sedex adapter:
`<sedex_home>\logs\adapter\adapter-technical.log`

The sedex adapter runs a connection check while starting up. If everything has been configured correctly, the sedex adapter should be able to connect to the sedex server. In this case, you will find the following lines in the technical log:

```
[...] Connection test for <https://sedex-service-r.admin.ch/sedex-clientServices-ws/clientServices?WSDL> :passed
[...] Connection test for <https://sedex-service-r.admin.ch/osci-manager-entry/externalentry> : passed
[...] Connection test finished successfully
```

As a further test, you can check if the sedex adapter was able to report its software version to the sedex server. If it was, you will find the following line in the technical log:

```
[…] ch.admin.bit.sedex.threads.AdapterInfoSendScheduler: Submitting Adapter - Version was successful
```

If this line is missing, there may be an installation or configuration error. Check the log files for error messages. Most often, the reason is a wrong configuration. Please see also chapter 9 “Common Problems and Solutions” for common configuration mistakes.

5.2 Send an echo test message

After the client (i.e., sedex controller and sedex adapter) has been started successfully, a test message can be sent.

The following procedure will send a so-called “echo message”–a message addressed to the sender. This message will be transferred from the client to the server and back to the client again.

To send the message, **create two text files** with a text editor of your choice:

1. **`data_test.txt`**

   This file contains the data of the message to be transferred.
   Simply enter some random example text in this file (e.g., “Hello Sedex”).

2. **`envl_test.xml`**

   This file contains the envelope of the message to be transferred.

In this envelope file, enter the metadata for the message as described below.

Paste the following template into the envelope file and adapt the parts that are marked in red:

```
<?xml version="1.0" encoding="UTF-8"?>
<eCH-0090:envelope version="1.0" xmlns:eCH-
0090="http://www.ech.ch/xmlns/eCH-0090/1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.ech.ch/xmlns/eCH-0090/1 eCH-0090-1-0.xsd ">
<eCH-0090:messageId>TestMessageId</eCH-0090:messageId>
<eCH-0090:messageType>Use case MessageType</eCH-0090:messageType>
<eCH-0090:messageClass>0</eCH-0090:messageClass>
<eCH-0090:senderId>Your sedex ID here</eCH-0090:senderId>
<eCH-0090:recipientId>Your sedex ID here</eCH-0090:recipientId>
<eCH-0090:eventDate>2015-06-01T11:30:00</eCH-0090:eventDate>
<eCH-0090:messageDate>YYYY-MM-DDTHH:MM:SS</eCH-0090:messageDate>
</eCH-0090:envelope>
```

Note: You must edit the marked strings before sending the message as follows.

- The value of "`TestMessageId`" has to be a unique identifier per message. Examples "TestMessage01", "TestMessage02", etc.
- The value of "`Use case MessageType`" has to be one of the message types valid for your sedex domain.
- "`Your sedex ID here`" has to be replaced with the sedex ID you have during the installation
- The value of "`YYYY-MM-DDTHH:MM:SS`" needs to be changed to the current date and time, e. g. 2015-06-19T16:00:00

Finally, copy (or save) first the data file and then the envelope file into the outbox directory (by default `<sedex_home>/interface/outbox`).

5.3 Check if this message has been sent and received

If the sedex client is configured correctly, sedex will send the message to the server, and as the message recipient is the sending adapter itself, the sent message should be fetched from server into the inbox directory (by default `<sedex_home>/interface/inbox`).

You can monitor the controller's log files (by default in `<sedex_home>/logs/controller/`) and the adapter's log file (by default in `<sedex_home>/logs/adapter/`) to see the sending progress or detect possible errors.

6 Starting and Stopping the sedex Client

6.1 Manual Start and Stop

All processes of the sedex client are started and stopped by the sedex controller process. To start the client, the sedex controller has to be started.

The sedex controller can be started/stopped by running the following commands in the `<sedex_home>/bin` folder from within a command line:

Windows:

- `<sedex_home>\bin\controller-start.bat` – to start the client
- `<sedex_home>\bin\controller-stop.bat` – to stop the client

Unix:

- `<sedex_home>/bin/controller-start.sh` – to start the client
- `<sedex_home>/bin/controller-stop.sh` – to stop the client

Note: Before starting the client, the configuration has to be done by the automatic installer or manually by an administrator.

6.2 Automatic Start (Installation as a Service/Daemon)

6.2.1 Unix

Overview

The sedex client is distributed with a service wrapper from Tanuki Software. This wrapper allows the sedex client to be run as a detached daemon process.

The wrapper supports many operating systems. The sedex client provides binaries for the following systems:

- Linux ppc / x86 / x86 64
- AIX ppc 32 / ppc 64
- OSX ppc / universal
- Solaris Sparc 32 / Sparc 64 / x86

If your system is not in this list, check http://wrapper.tanukisoftware.org to download additional modules.

Prepare the wrapper

Before you can start, you have to change permission for start script and the appropriate Unix wrapper:

```
chmod +x controller-wrapper.sh
chmod +x libwrapper-linux-x86.so
```
(choose the appropriate file)

Start the wrapper

Start the wrapper by executing script using the start command:
`<sedex_home>/bin/controller-wrapper.sh start`

To stop the application rerun the script using the stop command:
`<sedex_home>/bin/controller-wrapper.sh stop`

To check the current status, run the script using the status command:
`<sedex_home>/bin/controller-wrapper.sh status`

To start the wrapper with console output just use the command:
`<sedex_home>/bin/controller-wrapper.sh console`

Integrate the wrapper

To start the adapter automatically at boot time, just add the wrapper to your etc/init.
For more info about the wrapper visit http://wrapper.tanukisoftware.org/

6.2.2 Windows

If you want to start the adapter automatically (for example after reboot), run `controller-InstallAsWindowsService.bat` to install the sedex controller as a service.

To uninstall it, use the `controller-UninstallWindowsService.bat` script.

You can also reconfigure the service installation settings using `<sedex_home>/controller/conf/controller-wrapper.conf`.

For more information about starting a Java program as a Windows service, see http://wrapper.tanukisoftware.org.

Note: You have to configure the sedex client before installing it as service. Especially make sure that in the `<sedex_home>/controller/conf/controller-logback.xml` file the paths to the log files are absolute paths when used as Windows service (this is automatically the case if the automatic installer has been used).

6.3 Install Multiple Adapter Instances on the Same Machine

Basically you may install as many adapters on the same machine as you want–and the hardware permits.

During installation make sure:

- Every client has to be installed into its own directory.
- Every client has to have its own certificate and sedex ID.
- Every client has to have its own monitoring network port.

Multiple Windows Services

When installing under Windows as a service, each service instance is required to have a different service name. The service name is defined in the `<sedex_home>/controller/conf/controller-wrapper.conf` file.

To set a new service name, edit this file with a text editor and change the values of the following two configuration entries to a unique names:

Default:

```
wrapper.ntservice.name=SedexClient
wrapper.ntservice.displayname=Sedex Client
```

For example change to:

```
wrapper.ntservice.name=SedexClient01
wrapper.ntservice.displayname=Sedex Client 01
```

7 Client Configuration Reference

7.1 Controller Configuration

File: `<sedex_home>/controller/conf/sedexController.properties`

Property	Description	Default Value [Unit]
Basic Configuration		
`sedex.home`	Directory where sedex client is installed. For example, c:/sedexClient. **Note:** It is important to use the "/" sign as a path separator, even on Windows.	n/a
`wsproxy.enabled`	If set to true, the web service proxy is started and controlled by the sedex controller. Note: If this is set to true, the web service proxy needs to be installed and configured properly. See the dedicated web service proxy manual for this.	false
`controller.update.enabled`	If set to true, the sedex controller may execute remote update commands it receives from the server. Otherwise, it ignores update commands.	true
`controller.monitoring.server.enabled`	If set to false, the monitoring HTTP server is disabled. This service is available under http://localhost:8000/monitoring unless a different port is configured (see next setting.)	true
`controller.monitoring.server.port`	Changes the port of the monitoring service.	8000
`controller.monitoring.file.enabled`	If set to false, the monitoring file will not be generated.	true
`controller.monitoring.interval`	Defines the interval in which the controller updates its monitoring values. **Warning**: Too small values can lead to high system load.	300 [seconds]
`controller.monitoring.file.path`	Defines the file to which the controller writes the monitoring information. **Note**: It is important to use "/" as the path separator, even on Windows installations.	<sedex_home>/monitoring/monitoring.txt

Proxy		
`controller.http.proxy.host`	Proxy host *Note: you must not use "http://". The proxy host entry must look like:* `myproxy.server.ch`	n/a, by default is not used
`controller.http.proxy.port`	Proxy port	n/a, by default is not used
`controller.http.proxy.user`	Proxy user. You can also use a proxy without a user/password	n/a, by default is not used
`controller.http.proxy.password`	Proxy password. You can also use a proxy without a user/password	n/a, by default is not used

7.2 Adapter Configuration

File: `<sedex_home>/adapter/conf/sedexAdapter.properties`

Property	Description	Default Value
Basic Configuration		
`sedex_home`	Directory where the sedex adapter is installed. For example, c:/sedex_adapter. **Note:** It is important to use the "/" sign as a path separator, even on Windows.	n/a
`sendingSentToServerMsg`	If set to true, generate a receipt for each recipient after successfully sending a message to the server.	false
`inboxDir`	Location of received and already decrypted files for EWR applications. The EWR applications will read the files from this directory.	${sedex_home}/interface/inbox
`outboxDir`	Directory for files waiting for encryption and transmission. The EWR applications will place those files here.	${sedex_home}/interface/outbox
`sentItemsDir`	Sent messages will be saved here	${sedex_home}/interface/sent
`receiptDir`	Location of receipts for EWR applications. The EWR applications will read the files from this directory.	${sedex_home}/interface/receipt
`processingDir`	Directory where messages are stored during transmission. For performance reasons, it is recommended to set this directory to a location on the same disk as the outbox directory.	${sedex_home}/interface/sedextempmessage
Configuration of credentials		
`adapterSedexId`	Adapter's sedex ID	n/a
Proxy		
`ch.admin.bit.egov.egovlib.transport.osci.TransportFactoryImpl.proxy.host`	Proxy host *Note: you must not use "http://". The proxy host entry must look like:* `myproxy.server.ch`	n/a, by default is not used
`ch.admin.bit.egov.egovlib.transport.osci.TransportFactoryImpl.proxy.port`	Proxy port	n/a, by default is not used

Property	Description	Default Value
ch.admin.bit.egov.egovlib.transport.osci.TransportFactoryImpl.proxy.user	Proxy user. You can also use a proxy without a user/password	n/a, by default is not used
ch.admin.bit.egov.egovlib.transport.osci.TransportFactoryImpl.proxy.password	Proxy password. You can also use a proxy without a user/password	n/a, by default is not used
Timer		
Message.Retry.Period	Retry period for outbound messages. Defines how long the sedex adapter tries to send a message in case of connection errors.	720 [minutes]
Cleanup		
cleanProcessedFilesOlderThan	Clean processed (sent and rejected) messages which are older than the number of days specified (use -1 to disable automatic message deletion)	-1 [days]

7.3 Certificate configuration

The configuration for certificates and private keys is located in an external xml file, in <sedex_home>/adapter/conf/certificateConfiguration.xml.
The file has the following structure:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<certificateConfiguration
xmlns="http://www.sedex.ch/xmlns/certificateConfiguration/1/0">
   <privateCertificate>
       <location>(location)</location>
       <password>(password)</password>
   </privateCertificate>
   <transportCertificate>
       <location>${sedex_home}/certificates/prod-bit/AdminCA-CD-
T01.cer</location>
   </transportCertificate>
   <webserviceTruststore>
       <location>${sedex_home}/certificates/prod-
bit/adaptertrust.jks</location>
       <password>trustme</password>
       <truststoretype>JKS</truststoretype>
   </webserviceTruststore>
</certificateConfiguration>
```

The “location” field has to point to a valid p12 keystore containing the private key, the “password” field holds the appropriate password to the keystore.

An adapter is able to handle more than one certificate:

```
[…]
   <privateCertificate>
        <location>(location 1)</location>
        <password>(password 1)</password>
   </privateCertificate>
    <privateCertificate>
       <location>(location 2)</location>
       <password>(password 2)</password>
   </privateCertificate>
[…]
```

7.3.1 Initial Certificate Requests

Clients with no certificates can create one with a certificate request. Use an initial certificate request element instead of private certificate elements. The required input elements (CRID, OTP) have to be received from the sedex domain administrator.

```
[…]
   <initialCertificateRequest>
      <requestId>SETUP_REQUEST_ID(CRID)</requestId>

<oneTimePassword>SETUP_ONE_TIME_PASSWORD(OTP)</oneTimePassword>
   </initialCertificateRequest>
```

```
[…]
```

7.3.2 Optional Elements

The following elements are optional and mostly set by the adapter itself.

- **Restriction**: This element is mostly likely set by the automatic certificate renewal.

```
[…]
<privateCertificate>
        <location>(location)</location>
        <password>(password)</password>
        <restriction>READONLY<restriction>
</privateCertificate>
[…]
```

Possible restrictions are:

Restriction Type	Impact
READONLY	This certificate cannot be used for sending messages, only for receiving
DISABLED	This certificate cannot be used at all

- **Optional Info:** When the adapter updates the certificate configuration, it also adds the optional element **optionalInfo** for informational purposes.

```
<privateCertificate>
     <location>(location)</location>
     <password>(password)</password>
     <optionalInfo>
          <issuer>CN=vAdminCA-CD-T01,OU=Certification[…]</issuer>
          <serial>4545</serial>
          <expirydate>2012-06-19T13:34:50.000+02:00</expirydate>
     </optionalInfo>
</privateCertificate>
```

7.4 Logging Configuration

Logging in sedex client is based on Logback, a powerful log manager that supports the slf4j Logging Interface.

Your logging configuration files are located in:

- `<sedex_home>/adapter/conf/adapter-logback.xml`
- `<sedex_home>/controller/conf/controller-logback.xml`

See Logback configuration for details about logging options.

8 Monitoring

8.1 Windows Service

The sedex controller can be monitored like any other standard process or registered service. When registered and run as a service on Windows, the Windows Computer Management Console can be used to check or change the status of the sedex controller.

8.2 Built-In Monitoring

The sedex controller offers two ways to access basic status information:

Monitoring File

The sedex controller publishes its status information in a simple text file that can be accessed under `<sedex_home>/monitoring/monitoring.txt`.

Monitoring Web Page

The sedex controller publishes its status information on a simple web page that can be accessed under http://<HOST>:<MONITORING_PORT>/monitoring. By default, the MONITORING_PORT is set to 8000.

Example of the built-in monitoring page:

```
### sedex client monitoring ###
adapter-uptime=22:15:27
adapter-version=5.0.0
adapter-sedexId=1-500-1
adapter-profile=small
adapter-organisationCertificateExpirationDate=2012-10-21T14:42:23
adapter-interfaceFoldersPresent=OK
adapter-moveToSedexTempMessageFolder=OK
adapter-connectionToSedexServer=OK
adapter-lastConnectionCheck=2011-12-08T07:11:11
adapter-writeAccessToDatabase=OK
wsp-uptime=22:15:11
wsp-version=WSP 5.0.0
wsp-trustStoreVersion=20111215
wsp-aarVersion=checksedexws 5.0.0
wsp-aarVersion=echows 5.0.0
wsp-aarVersion=upicomparews 5.0.0
wsp-aarVersion=upiqueryws 5.0.0
wsp-lastWebServiceCall=2015-06-07T14:02:10
controller-uptime=22:15:26
controller-version=Controller 5.0.0
controller-updateCertificateExpirationDate=2017-12-02T13:09:05
monitor-lastCheckUp=2015-06-01T11:37:13
```

9 Common Problems and Solutions

The following section describes some often encountered problems and how to fix them.

1. The adapter cannot restart after a crash.

   Solution: please check and delete (if they exist) the lock files
   `<sedex_home>/adapter.lock`
   `<sedex_home>/controller.lock`

2. Message in logfile:
   `Could not start engine: **JCE is not installed properly.**`

   Solution:
   Install the JCE policy files in your local JVM as described in chapter 3.1.5 “Install Java JCE Unlimited Strength Policy Files”.

3. Message in log file:
   `The sedex-controller cannot start: Error in certificateConfiguration: **Wrong password to open keyStore** in […]`

   Solution: open
   `<sedex_home>/adapter/conf/certificateConfiguration.xml` and check the password and location to the private certificate.

4. Message in log file:
   `The sedex-controller cannot start: Error in certificateConfiguration: **KeyStore not found** in location: […]`

   Solution: open
   `<sedex_home>/adapter/conf/certificateConfiguration.xml` and fix the path the private certificate.

5. Message in log file:
   `The sedex-controller cannot start: There was an error with your **RequestId/OneTimePassword/SedexId combination.** Please update your configuration and try again.`

   Solution:

   a. open
   `<sedex_home>/adapter/conf/certificateConfiguration.xml` and check your requestId and oneTimePassword.

   b. open `<sedex_home>/adapter/conf/sedexAdapter.properties` and check your sedexId

6. A message was not received; instead a receipt containing the text "**Not allowed to send**" was written to receipts folder.

   Solution: check if the configured sedex ID is allowed to send messages for the type that has been used.

7. A message was sent by the sending adapter but was not received. No receipt arrived, no error was written in the adapter's log file.

   Solution: the receiving adapter might be down or not responsive. (Re-)start the receiving adapter.

10 Appendix

10.1 Glossary

Term	Definition
BFS	Federal Statistical Office
CA	Certificate Authority
Keystore	A keystore is a database of keys. Private keys in a keystore have a certificate chain associated with them that authenticates the corresponding public key. A keystore also contains certificates from trusted entities.
Meta-directory	Identity management component used to harmonize two different directories by mapping the meta-data describing both directories.
PKI	Public Key Infrastructure; implements an independent trusted third-party which vouches for the real identity of IKT users.
public key certificate	You can think of a public key certificate as the digital equivalent of a passport.

10.2 Receipt Versions

10.2.1 Overview

New releases may contain new message codes and may use a different XML namespace that requires changes in the application. To offer backward compatibility, the adapter can be configured to use an old message error schema with old message error codes.

10.2.2 Version 1.0

The sedex client 5.0 and later does not support receipt version 1.0 anymore.

10.2.3 Version 2.0

Since: Adapter 2.0

Receipt xml namespace: eCH0090/2

New codes since version 1.0:

Code	Remark
203	Message too old to send
204	Message expired
313	Other recipients are not allowed to receive
330	Message size exceeds limit
404	Authorization service not reachable
501	Error during receiving
601	Message successfully sent

Code	Remark
701	Message expires soon

Deprecated Codes since 1.0:

Code	Remark
320	Changed to code 204, “Message expired”

Full list of Codes:

Code	Remark
100	Message correctly transmitted
200	Invalid envelope syntax
201	Duplicate message ID
202	No payload found
203	Message too old to send
204	Message expired
300	Unknown sender ID
301	Unknown recipient ID
302	Unknown physical sender ID
303	Invalid message type
304	Invalid message class
310	Not allowed to send
311	Not allowed to receive
312	User certificate not valid
313	Other recipients are not allowed to receive
330	Message size exceeds limit
400	Network error
401	OSCI hub not reachable
402	Directory not reachable
403	Logging service not reachable
404	Authorization service not reachable
500	Internal error
501	Error during receiving
601	Message successfully sent
701	Message expires soon