Calibration Web Service Interface (CWSI) Help

By Beamex

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Calibration Web Service Interface (CWSI)

CWSI is a communication link between Beamex CMX Calibration Management Software and Beamex bMobile Calibration Application or documenting calibrators.

CWSI enables communication with supported calibrators over Wide Area Networks. Supported calibrators are:

- Beamex MC6 family calibrators
- Beamex MC4 Document Process Calibrator
- Beamex MC2 Process Calibrator

For additional information on supported calibrators, contact Beamex.

Architecture

CWSI introduces two new components: the **CWSI Client**, which is locally installed on every computer that is physically connected to a calibrator and the **CWSI Server**, which is a common gateway for all CWSI Clients. In addition to this, CWSI support is implemented into the CMX Client, which enables CMX to communicate with calibrators connected to CWSI clients via the familiar Send/Receive window.

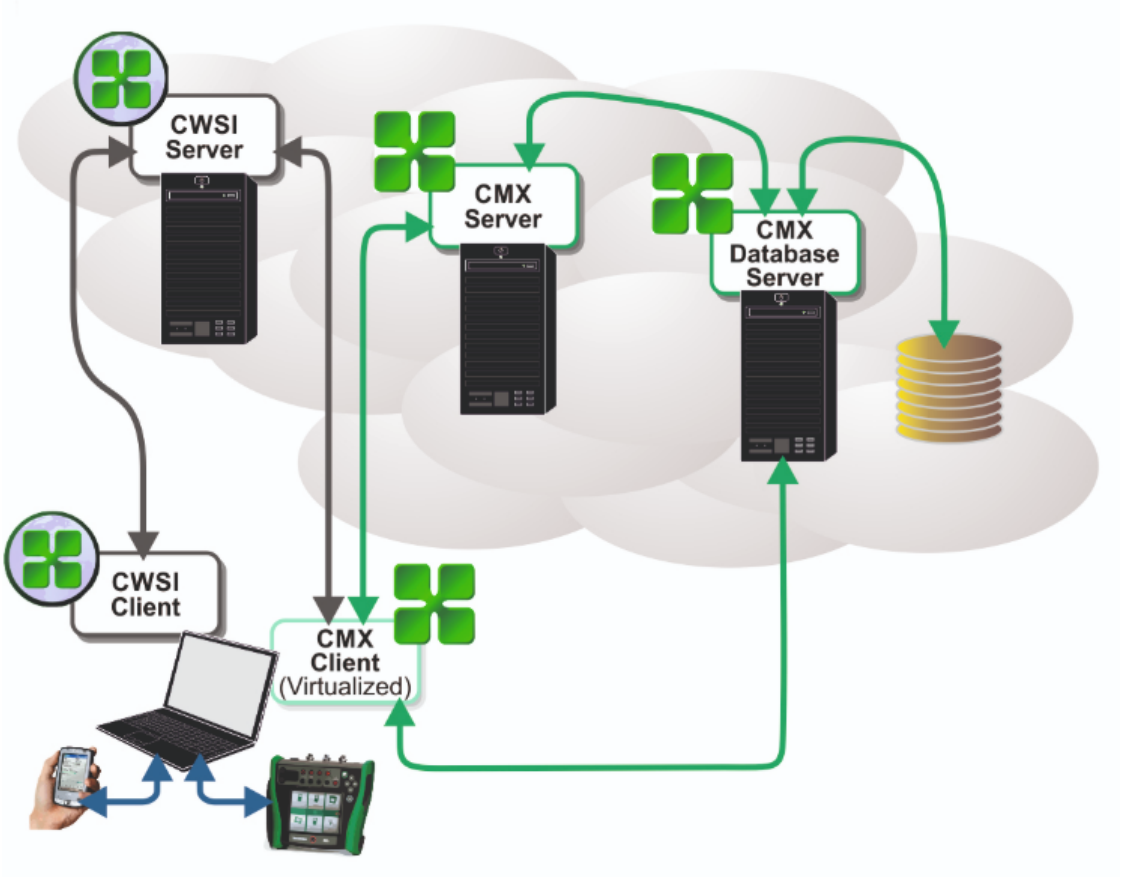


Figure 1: CWSI Client and Server

It is recommended to virtualize the CMX Client to reduce latency for database communication. While the CWSI Client must be installed on multiple computers, only one CWSI Server installation is needed. The CWSI Server can for example be installed on the same server as CMX Server. The CWSI Server is installed as a Windows Service, just like the CMX Server.

Communication between the CWSI client, the CWSI server and the CMX client utilizes the WebSocket protocol (RFC 6455, http://tools.ietf.org/html/rfc6455), which enables two-way communication without the need for complex Firewall rules.

Instructions on how to install the CWSI Server and the CWSI Client is included in the **CMX Installation Guide**. This document also lists information about hardware requirements and recommended operating systems for CWSI Server and CWSI Client.

CWSI Server

The CWSI Server consists of two executables:

- **Beamex.CWSI.WebSocketServer.Service.exe**, which is installed as a Windows Service (CWSI service).
- **Beamex.CWSI.Server.Configurator.exe**, which is a graphical tool to configure parameters for the Windows Service.

Configuring CWSI Server

To configure the CWSI Server service, start 'CWSI Server Configurator'. The picture below is from Windows 11.

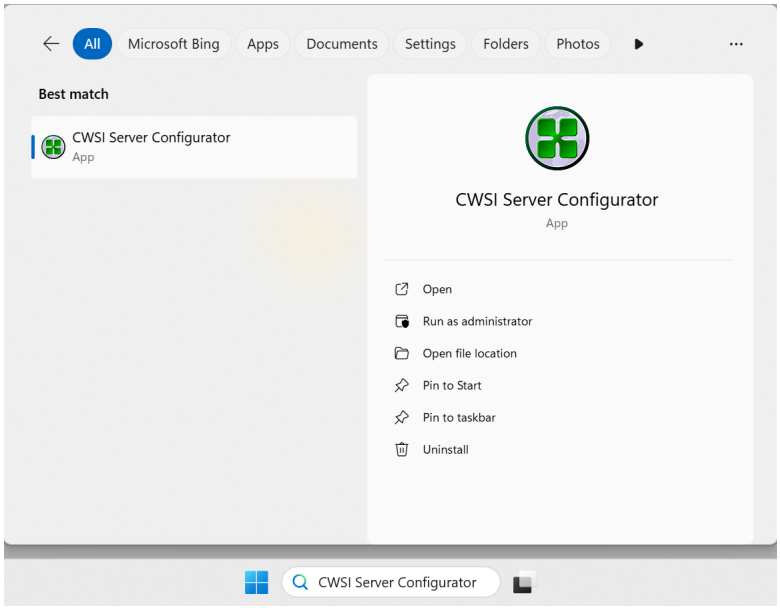


Figure 2: CWSI Server Configurator

CWSI Server's Settings

The picture below shows the configuration's setting page of the CWSI Server

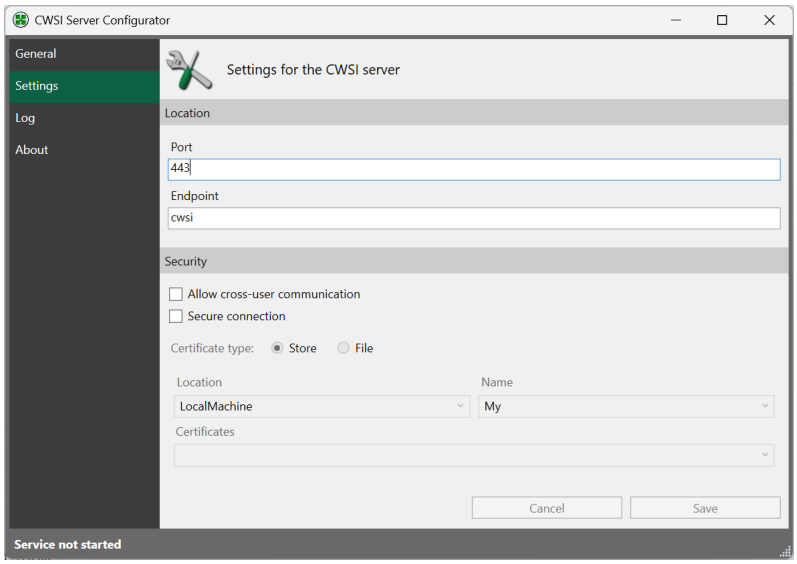


Figure 3: CWSI Server Setting Page

- **Port**, this is the TCP port that the server is listening on. Make sure that no other applications on the same machine is listening on the same port. Default port is **8080**.
- **Endpoint**, this is the endpoint that the server is listening on. Default is value **cwsi**.
- **Allow Cross-User communication**, if checked, this provides the opportunity for a user with supervisor privileges in CMX to communicate with all CWSI Clients connected to the CWSI Server.
- **Secure connection**, if checked, communication will be secured using SSL/TLS. A X.509 Certificate is required. This is highly recommended in production usage.
- **Certificate type**, if secure connection is checked, a X.509 Certificate is required. A certificate can either be loaded from a Certificate Store or from a Local File. File is recommended for test usage only.
- **Store Parameters**
  - **Location**, specifies the X.509 Certificate Store Location to be used as search parameter. Local Machine is recommended since Current User can only be used if the CWSI Server Configurator and CWSI Server Service is executed as the same user.
  - **Name**, specifies the X.509 Certificate Store Name to be used as search parameter.
  - **Certificate**, specifies the X.509 Certificate to be used. Please note that the CN attribute specified in the certificates subject distinguished name must match the server location used by CWSI client and CMX.

- **File Parameters**
  - **File**, the absolute path to the pfx-file. Please note that the CN attribute specified in the certificates subject distinguished name must match the server location used by CWSI client and CMX.
  - **Password**, the password for the pfx-file. Please note that this password is stored in plain text on the machine running the CWSI Server. This option should therefore be used with caution.

Please note that any changes made to the configuration won’t be taken into use until the CWSI Server Service is restarted.

Starting and Stopping CWSI Server

Starting and stopping the CWSI Server service can be done either via the CWSI Server Configurator or via the Services snap-in in Microsoft Management Console.

For advanced startup configuration (startup type, logon, etc.), use Services snap-in in Microsoft Management Console. Look for 'Beamex CWSI Server Service'.

CWSI Client

The CWSI Client consists of one executable: **Beamex.CWSI.Client.exe**

Starting and Stopping CWSI Client

The **CWSI Client** system tray application needs to be started to be able to connect to the **CWSI Server**.

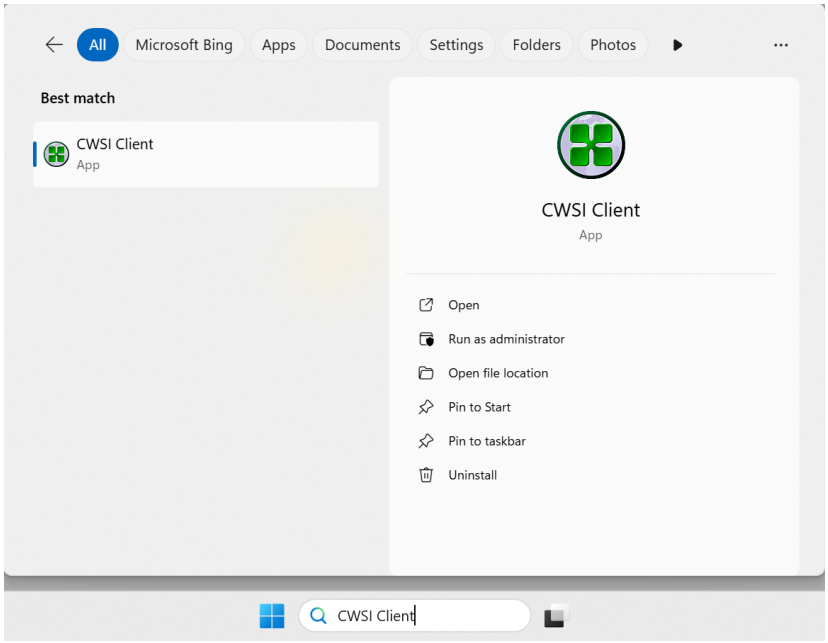


Figure 4: CWSI Client

The picture above is from Windows 11. To start the tray application, start **CWSI Client** from the programs menu.

When **CWSI Client** system tray application is started the following CMX Client icon is seen in the system tray:

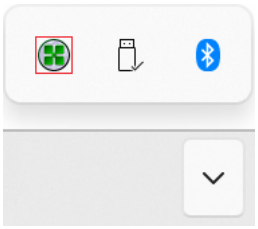


Figure 5: CWSI Client Icon

Connecting CWSI Client with CWSI Server

Connecting and disconnecting CWSI Client with CWSI Server is done via the context menu on the tray icon.

CWSI Client's Options includes a possibility to **Automatically Connect the Client** with the CWSI Server.

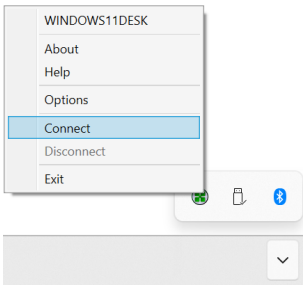


Figure 6: Connecting CWSI Client with CWSI Server

CWSI Client Options

Viewing/Editing CWSI Client options is done via the context menu on the tray icon.

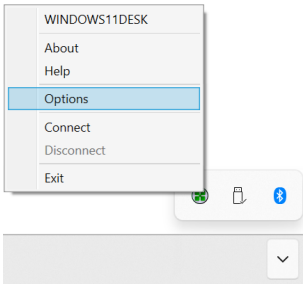


Figure 7: CWSI Client Options

General Options

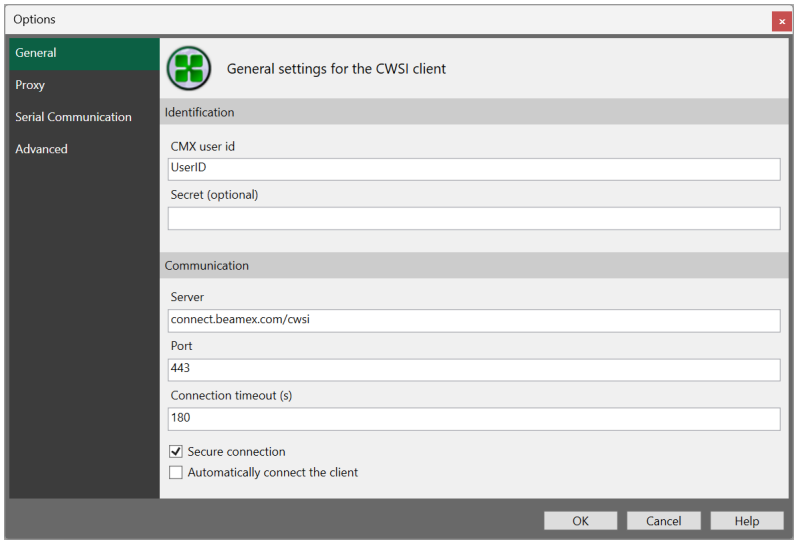


Figure 8: General Options

- **CMX user id** specifies the Id to be used when connecting to the **CWSI Server**. Please note that this must correspond with the CMX User Id used to log on to **CMX**.
- **Secret (optional)**, an optional secret that can be used to secure the CWSI Client connection. If a secret is entered, then the same secret must be entered in CMX when trying to connect to the CWSI client. This is highly recommended if the same CMX user id is used by multiple users.
- **Server** specifies the location of the **CWSI Server** (including the endpoint specified in server). If a secure connection is used, this would most likely correspond to the CN of the Certificates subject distinguished name used by the server.
- **Port** specifies the TCP port that the **CWSI Server** is listening on.
- **Connection Timeout** specifies the time in seconds the **CWSI Client** will attempt to connect to the **CWSI Server** before cancelling.
- **Secure Connection**, this specifies if the server is using secure connection (SSL/TLS). This must correspond to the **CWSI Server** settings.
- **Automatically Connect the Client**, this specifies if the **CWSI Client** should automatically try to connect to the **CWSI Server** on application startup.

Proxy Options

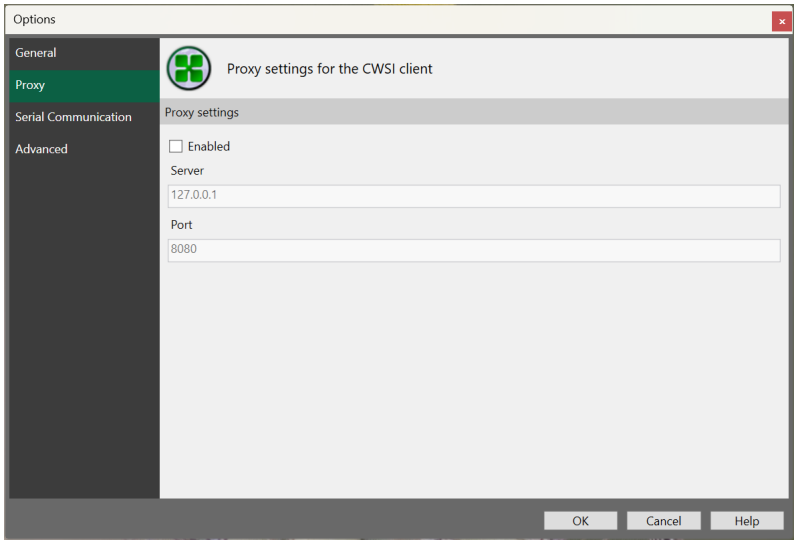


Figure 9: Proxy Options

- **Enabled** Check to enable the use of a proxy server.
- **Server** specifies the location of the proxy server. The address of the Proxy Server can be specified either as an IP address or a host name.
- **Port** specifies the TCP port of the proxy server.

Serial Communication Options

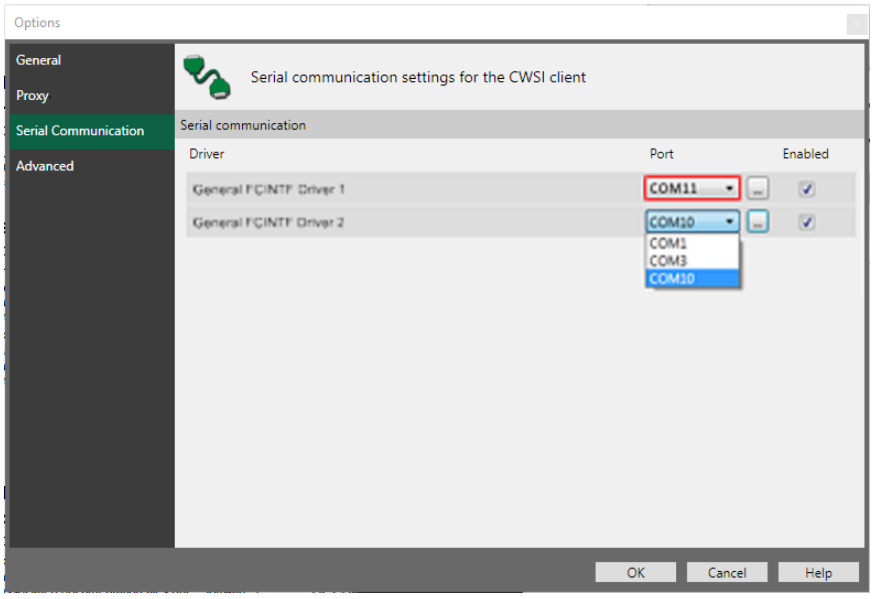


Figure 10: Serial Communication Options

Serial Communication tab is used to configure Serial Device Calibrators. Currently only FCINTF devices can be used.

Note: CMX 2.12.1, including CWSI Client 1.3.0, was the last version that was officially tested for non-Beamex calibrators.

No FCINTF drivers are shipped with the CWSI client, these drivers must be installed separately.

When you have installed applicable FCINTF drivers, connect a calibrator to the computer where **CWSI Client** resides. If needed, use an **RS232 to USB converter cable**. CWSI shows a COM port for the connected device, for example COM1, -3, -10 and -11 in the picture above.

When a communication cable is removed from a USB port, the CWSI Client's Port selection list has a red frame.

The small button with three dots allows you to check **Driver Properties** or Calibrator **Properties**. Usually there is no need to change the driver properties. The communication between CWSI Client and the calibrator should work using the default values. Calibrator properties displays Calibrator's serial number, software version number etc.

Advanced Options

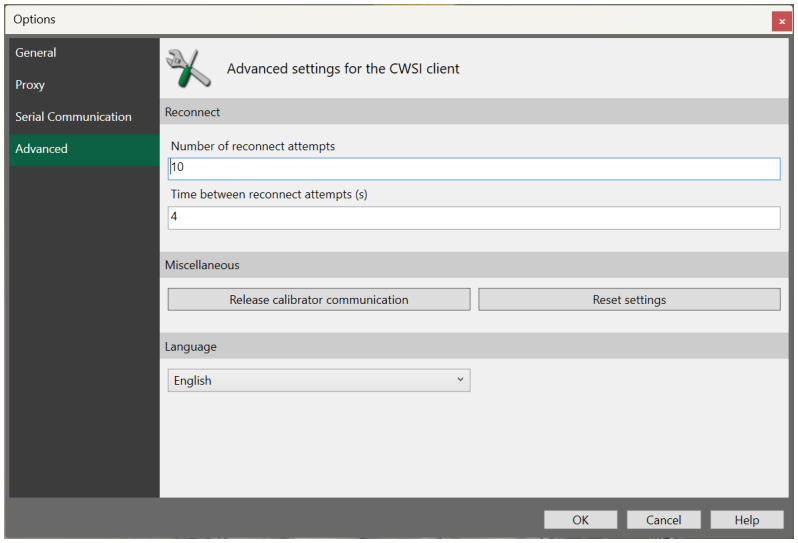


Figure 11: Advanced Options

- **Number of reconnect attempts** and **Time between reconnect attempts** settings need normally not be changed. IT specialist may want to change these if communication problems exist.
- **Release calibrator communication**, will release and close connections to all calibrators. This might be useful if a calibrator is left reserved for some reason.
- **Reset settings**, will reset all fields in the Options window of CWSI Client.
- **Language** offers a set of available User Interface languages for CWSI Client.

CMX

CWSI is integrated as a new protocol (Web Service) in both the **Send** and **Receive** windows in **CMX**. To configure the CWSI parameters, open Send or Receive window, select CWSI as protocol and click the button with three dots next to the protocol:

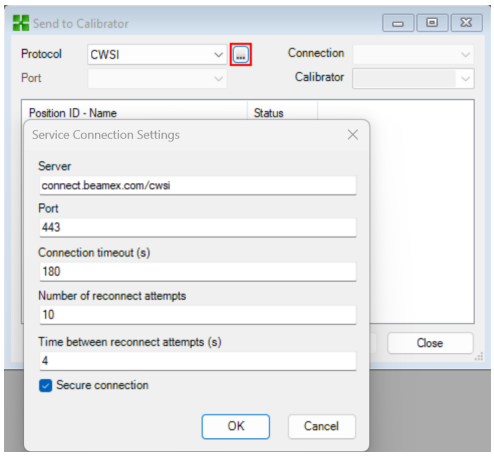


Figure 12: Configuring the CWSI Parameters

- **Server**, this specifies the location of the CWSI Server (including the endpoint specified in server). If secure connection is used, this would most likely correspond to the CN of the Certificates subject distinguished name used by the server.
- **Port** specifies the TCP port that the CWSI Server is listening on.
- **Connection timeout** specifies the time in seconds the CMX will wait before cancelling a request.
- **Number of reconnect attempts** and **Time between reconnect attempts** settings need normally not be changed. IT specialist may want to change these if communication problems exist.
- **Secure Connection** specifies if the server is using secure connection (SSL/TLS). This must correspond to the CWSI Server settings.

When CWSI is correctly configured and one or more matching CWSI Clients are found (i.e. when **CMX user id** in CWSI matches the **User ID** in CMX), they are listed in the **Connection** combo box. Each connected calibrator of the CWSI Client is listed in the Calibrator combo box. Both send and Receive window can be used normally.

If the CWSI Client have specified a secret, then the secret is prompted when selecting the client connection.

Troubleshooting

Please refer to the troubleshooting chapters if issues occur.

CWSI Server Troubleshooting

If the server is having issues loading a configured X.509 certificate. Please note that CWSI Server Configurator and CWSI Server Service might be executed as different users. By default, the CWSI Server Service is configured to be executed by the LocalSystem Account and might not have access to the configured file.

The above might also be an issue if Certificate Store Location is set to ***Current User***.

CWSI Client Troubleshooting

All configuration changes made in the CWSI Client are stored individually per user under

***%APPDATA%*\Beamex Oy Ab\CWSI\<*version*>**

Where:

%APPDATA% is currently logged user's application data directory. **<*version*>** is the current software version number of CWSI Client.

If the CWSI client for some reasons crash during startup, try to delete the settings.xml file in the folder above to load the factory default settings.

To copy CWSI settings between user profiles, simply copy the settings.xml between the user profiles.

To modify default CWSI settings, modify **BeamexClient** and **appSettings** sections in file **Beamex.CWSI.Client.exe.config** located in CWSI installation directory.

CMX Troubleshooting

All configuration changes made in the CMX are stored individually per user under

***%APPDATA%*\Beamex Oy Ab\CMX Calibration Management Software \<*version*>\ServiceConnectionSettings.xml**

Where:

%APPDATA% is currently logged user's application data directory. ***<version>*** is the current software version number of CMX.

If CMX for some reasons crashes during opening of Send or Receive window, try to delete the file above to load the factory default settings.

To copy CWSI settings between user profiles, simply copy the ServiceConnectionSettings.xml between the user profiles.

To modify default CWSI settings, modify ServiceConnectionDefaults section in file BxbMUIPD.exe.config located in CMX installation directory.

Third Party Licenses

CMX, CWSI Server and CWSI Client include a number of third party libraries that are used to provide certain features. Additional copyright and legal notices and license terms applicable to the third party libraries may apply. A list of the third party libraries included in CMX, CWSI Server and CWSI Client is provided together with the CMX installation media (see document *CMX-3rd-party-components.pdf*). By accepting the terms of the Beamex software license agreement you also accept the third party terms.