

# FIX Client Simulator User Guide

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## Product overview

FIX Client Simulator is an administrative application that allows initiating and accepting FIX sessions, exchanging and editing FIX messages. The tool is based on .NET technologies and can be used to Simulate FIX buy and/or sell side end points. FIX Client Simulator built on top of the [FIX Antenna™ engine](#) and shares all its common features and benefits. FIX Client Simulator uses [B2BITS' FIXopaedia](#) as FIX reference source and provides complete support of all standard and custom FIX dictionaries.

## FIX Client Simulator features

- Allows establishing multiple acceptor/initiator sessions to local and/or remote hosts
- Supports unregistered acceptor sessions
- Supports standard FIX versions 4.0 - 5.0 SP2 and dialects
- Supports all FIX message types (pre-trade, trade, post-trade, market data, etc.)
- Supports wide range of FIX session settings including Custom Logon message
- Allows overriding Sender and Target ComplIDs for established session
- Allows manual sequence numbers definition or reset
- Allows restarting working session Allows enabling/disabling message re-sending
- Allows events monitoring:
  - sent and received messages
  - active sessions
  - sessions statuses in real-time
- Allows writing raw FIX messages, opening and editing them in the table view
- Provides ability to search for a particular character or the sequence of them in a raw FIX message
- Provides ability to load, modify and send a file containing preset message or batch of messages
- Provides ability to send messages in a defined interval
- Provides optional ability for message validation for both incoming and outgoing messages
- Provides ability to autoincrement tag values of FIX messages sent to session
- Provides ability to replay log files - send FIX messages from log file to session
- Provides ability to save application state (the application remember parameters and state of FIX Sessions that were on the moment of last application closing and use them on next startup)

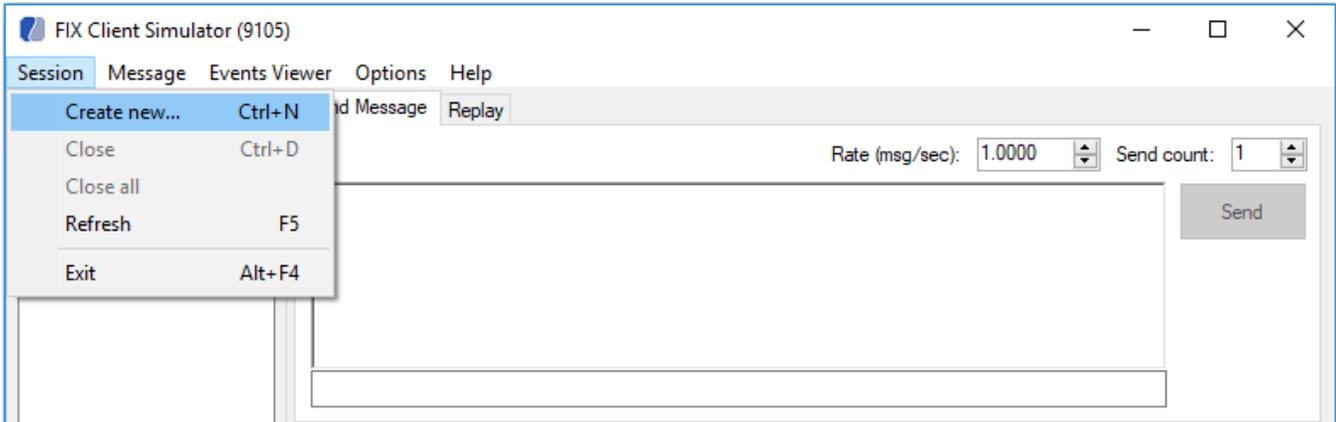
## Prerequisites and System Requirements

FIX Client Simulator is based on FIX Antenna C++/.NET FIX Engine (for more details refer to [FIX Antenna C/C++/.NET FIX Engine](#) documents). It can be installed separately or as a part of FIX Antenna .NET package.

1. Hardware:  
Any modern Intel-based server or workstation with 64 bit CPU
2. Supported operating systems:
  - Windows 7
  - Windows 8
  - Windows Server 2008 R2
  - Windows Server 2012
3. The list of packages that should be installed before FIX Client Simulator's installation:
  - VS 2010 C++ Redistributable Package (x64) <https://www.microsoft.com/en-US/download/details.aspx?id=14632>. It can be found in FIX Antenna's or Simple Client's (2.21 or higher) package \Redist directory

## Session Creation

In order to create session please choose: **Session => Create new:**



Specify session type (**Initiator** or **Acceptor**) and parameters (SenderCompID, TargetCompID, remote host and port) within **Create Session** window:

**Create Session**

Configuration  
 TRADER1

Session type  Initiator  Acceptor

SenderCompID  
 Trader1

TargetCompID  
 EXCH

Qualifier

FIX version  
 4.4

Remote host  
 localhost

Remote port  
 9105

Heartbeat interval  
 30

Encryption  
 NONE

Templates  
 none

InSeqNum  
 -1

OutSeqNum  
 -1

Use custom Logon message  
 !B=FIX.4.2!9=65!35=A!49=SenderCompID!50=1!56=ICE!34=1!52=999

Persistent storage type  
 Don't reset SeqNums

Use Extended properties

Extended Properties

SenderSubID

TargetSubID

SenderLocationID

TargetLocationID

UserName

Password

SourceIPAddress

IntradayLogoutToleranceMode

ForceSeqNumReset

ForcedReconnect

EnableMessageRejecting

IgnoreSeqNumTooLowAtLogon

Use SSL

SSL

SSL Protocols

SSL v2  SSL v3

TLS v1.0  TLS v1.1  TLS v1.2

Ciphers

Certificate

Private Key

Validate Peer Certificate

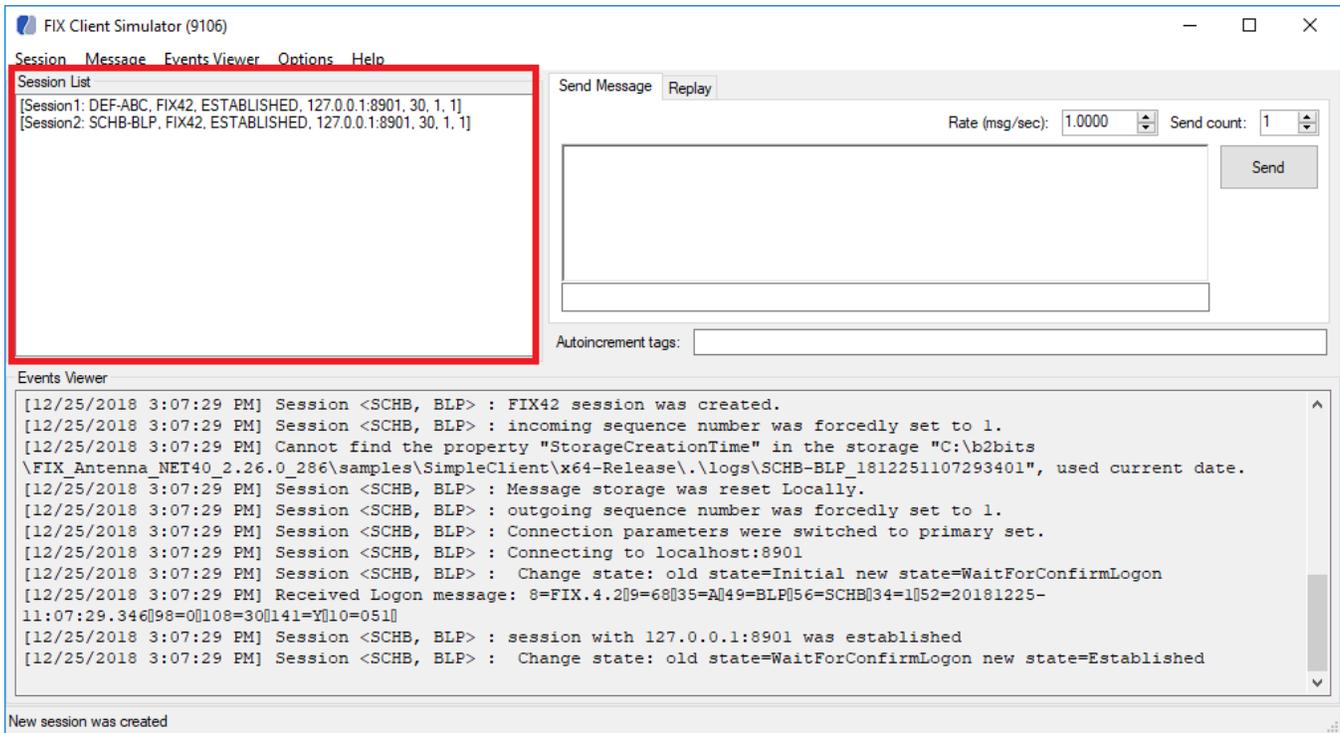
CA Certificates file

The left column of the Create Session window includes all required parameters. If at least one of them is specified incorrectly, the session will not be created.

The right column includes extended parameters that are optional.

Custom Logon messages can be used after ticking the corresponding line on the bottom of the window.

After the session is established you will see it in "Session List" section. All received messages will be displayed in the Event section below.



## Manual sequence numbers definition and reset

To define sequence numbers manually open **Create Session** window and specify values in **InSeqNum/OutSeqNum**:

**Create Session**

Configuration  
 TRADER1

Session type  Initiator  Acceptor

SenderCompID  
 Trader1

TargetCompID  
 EXCH

Qualifier

FIX version  
 4.4

Remote host  
 localhost

Remote port  
 9105

Heartbeat interval  
 30

Encryption  
 NONE

Templates  
 none

**InSeqNum**  
 -1

**OutSeqNum**  
 -1

Use custom Logon message  
 8=FIX.4.2|9=65|35=A|49=SenderCompID|50=1|56=ICEI|34=1|52=999

Persistent storage type  
 Reset SeqNums

Use Extended properties

Extended Properties

SenderSubID

TargetSubID

SenderLocationID

TargetLocationID

UserName

Password

SourceIPAddress

IntradayLogoutToleranceMode

ForceSeqNumReset

ForcedReconnect

EnableMessageRejecting

IgnoreSeqNumTooLowAtLogon

Use SSL

SSL

SSL Protocols

SSL v2  SSL v3

TLS v1.0  TLS v1.1  TLS v1.2

Ciphers

Certificate

Private Key

Validate Peer Certificate

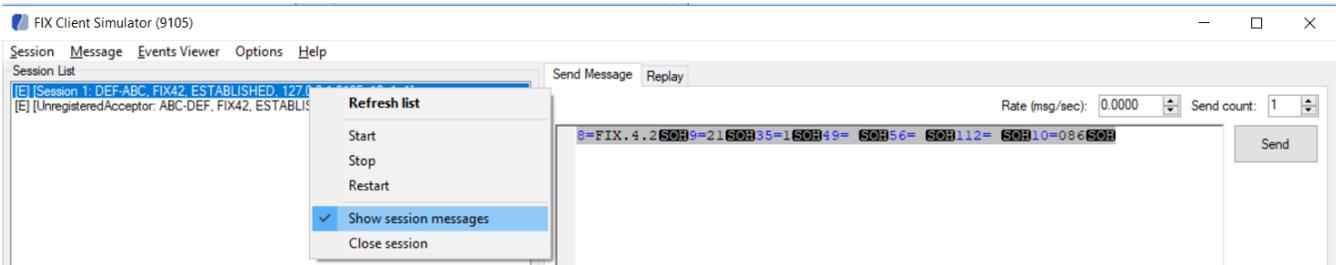
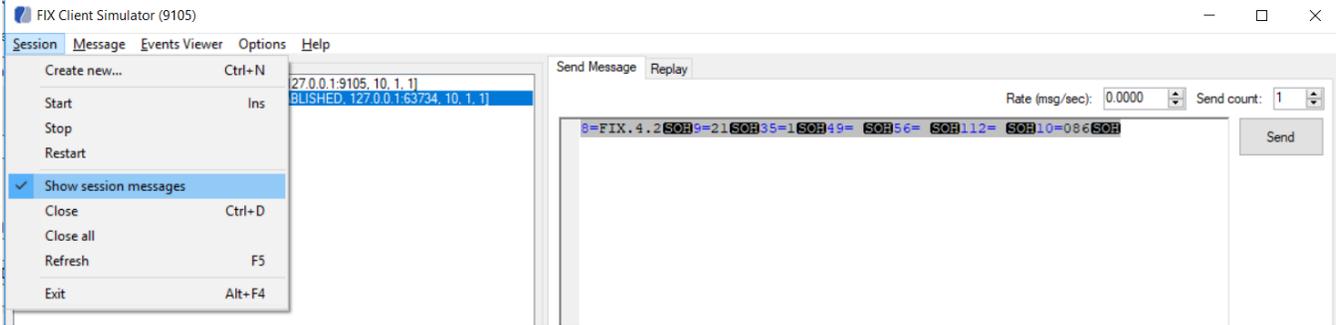
CA Certificates file

To reset sequence numbers manually open **Create Session** window and tick **Reset Sequence number**.

## Display administrative messages in console

To see or hide administrative messages in console open **Create Session** window and tick a checkbox **Show session messages**, by default the checkbox is empty.

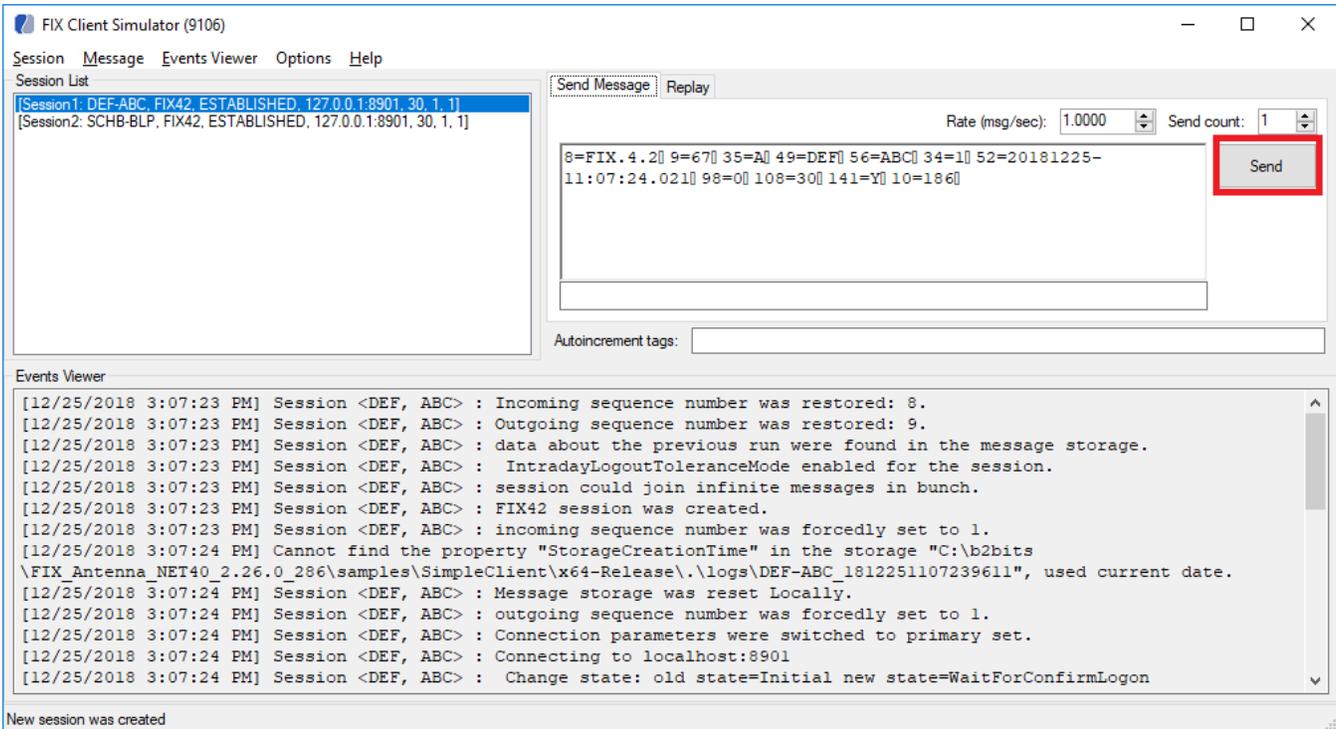
You can select a session and click on **Show session messages** in **Session** menu or in context menu of session window.



This setting stored as other session settings and restored after session restart.

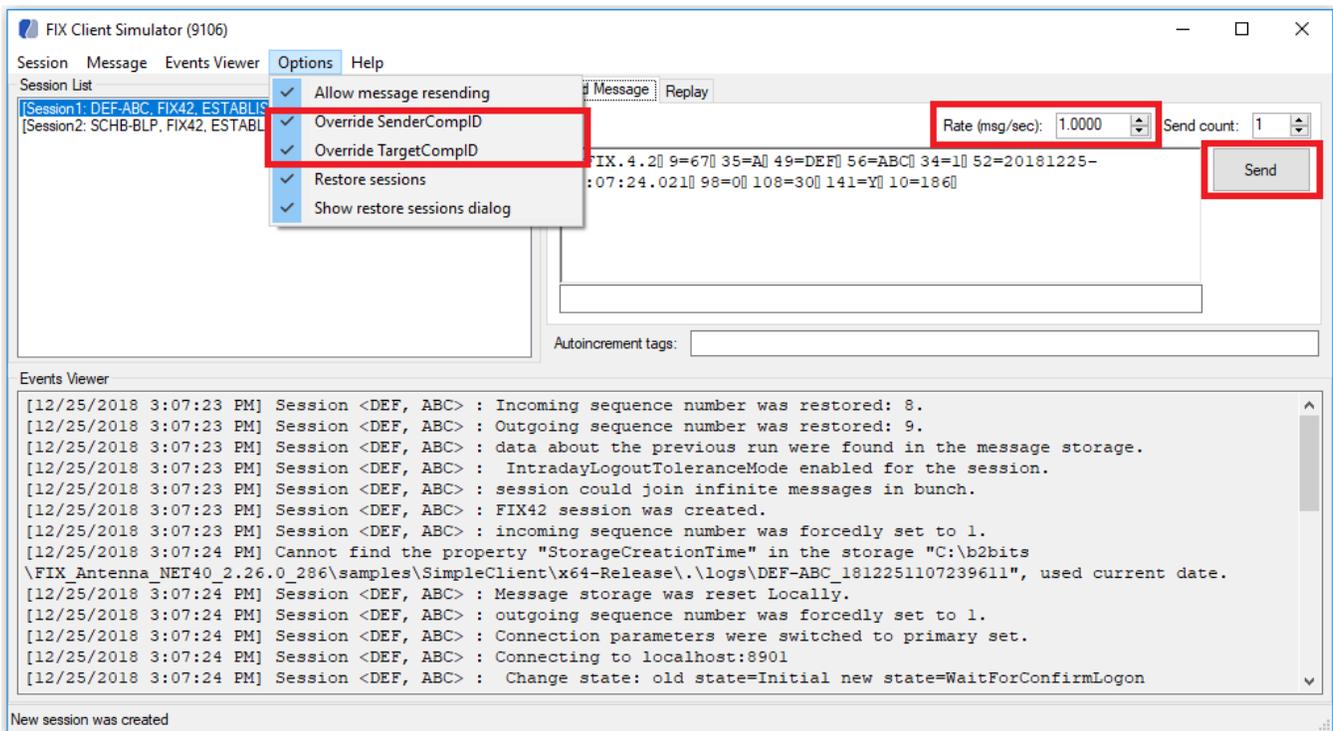
## Sending Messages

In order to send a message, please specify it in **Send Message** tab, choose session and press **Send** button. Please note that Sequence number and sending time will be set automatically:



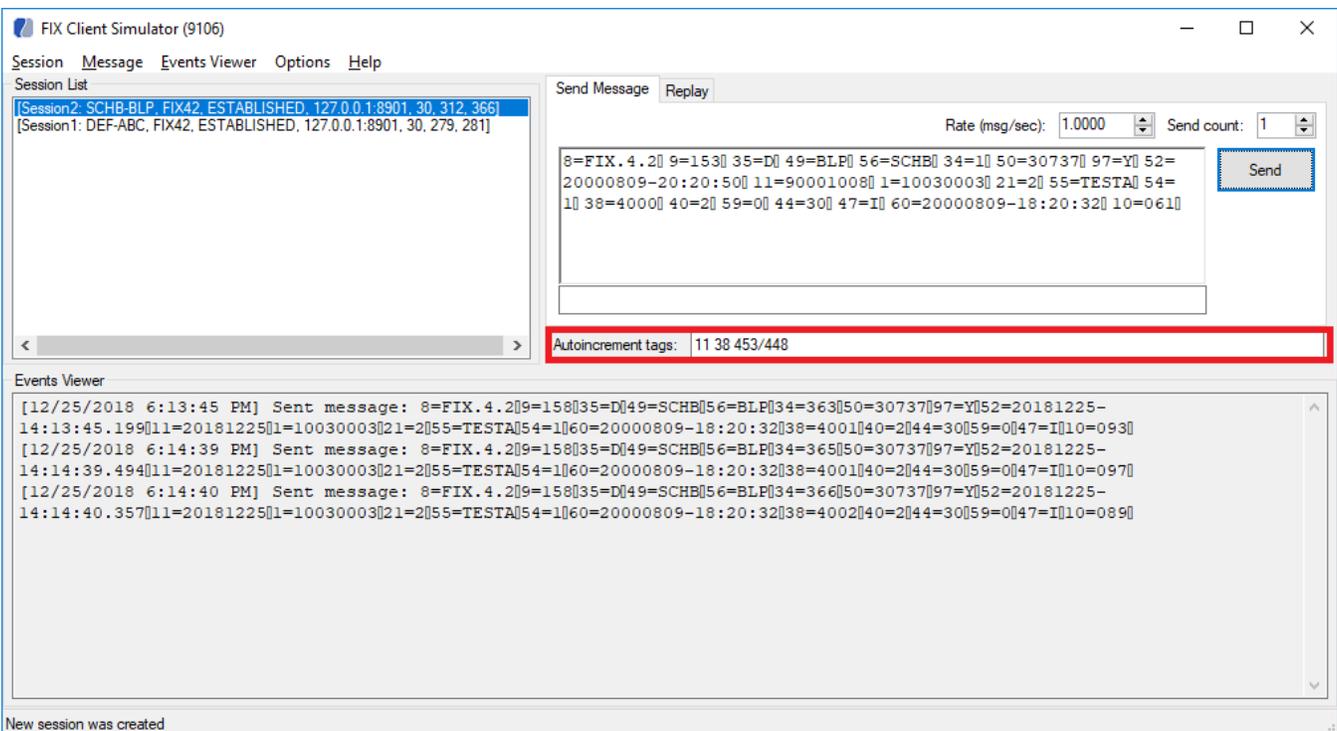
To override Sender and Target CompIDs tick **Override SenderCompIDs** or **Override TargetCompID** in the main menu of the application in the **Options** section

To specify message sending rate enter the value in **Rate(msg/sec)** input field in **Send Message** tab.



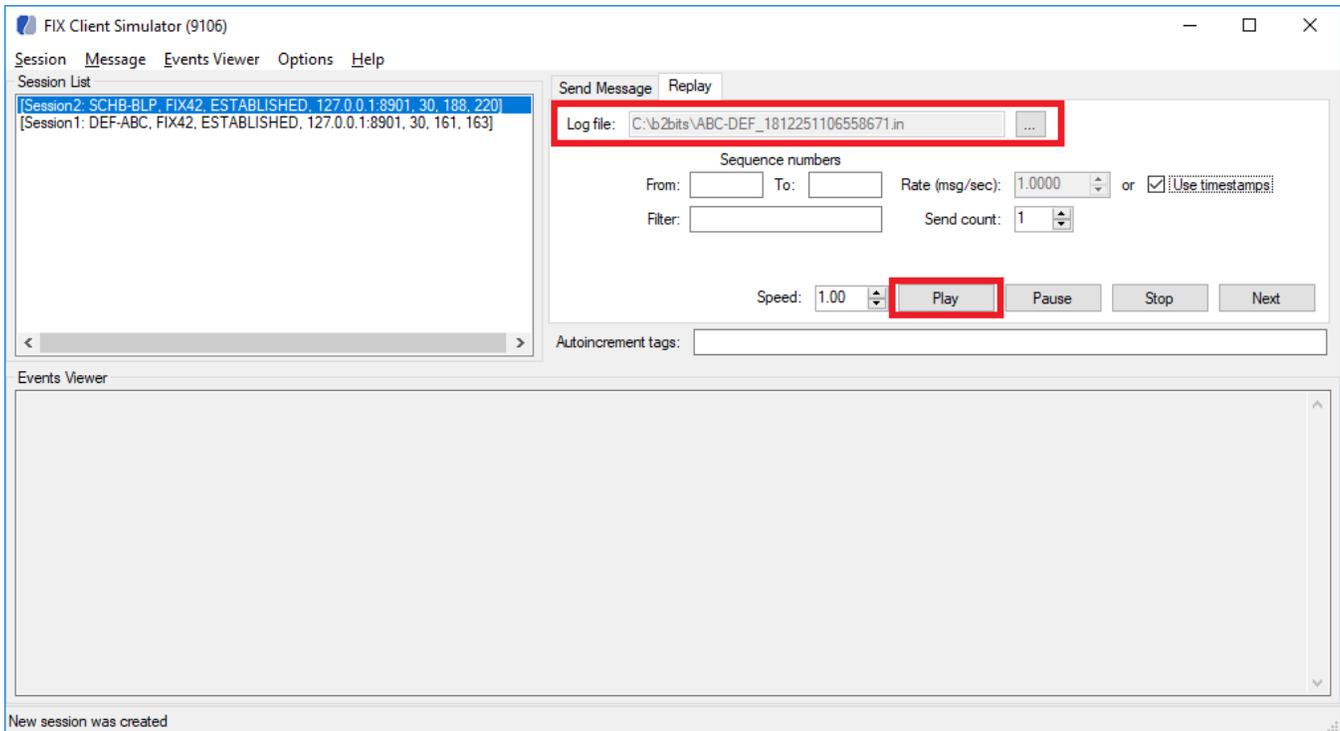
## Autoincrement tag values

When sending messages, the values of the specified numeric tags can be automatically increased with each sending. Tag numbers that must be changed are set in the **Autoincrement tags** field. If you want to change the values of several tags, their numbers must be separated by a space. If the tag is included in the Repeating group, the root tag must go first then slash symbol and then tag as shown on the figure below:



## Replay Log

To send messages from log file to session (replay log file), please specify log file in **Replay** tab, choose session and press **Play** button.



Also provides ability:

- to suspend sending messages from the log (**Pause** button)
- to stop sending messages from the log (**Stop** button)
- to send messages one by one (just after Loading file, after Pause, after Stop. **Next** button)

To send a certain range of messages it is possible to specify a filter by **Sequence numbers** or/and types of messages (**Filter**).

The log can be replayed several times. The number of replays is set by the **Send count** parameter.

 The **Send count** parameter is ignored if messages are sent one by one

To specify message sending rate for message sending enter the value in **Rate(msg/sec)** field in **Replay** tab. Also the interval can be calculated based on the timestamp in the log file (**Use timestamps** tick).

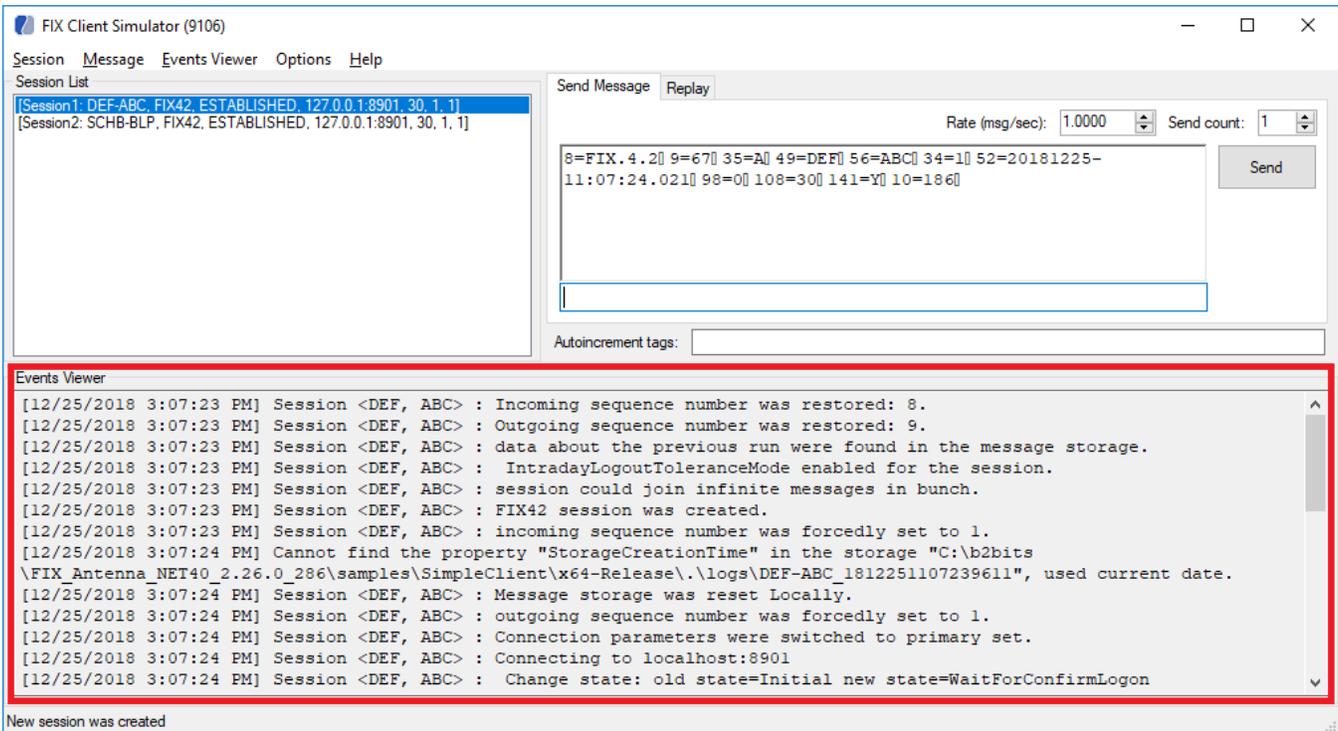
In addition, the interval for sending messages is changed by setting a multiplier other than one (**Speed** parameter).

## Events Monitoring

The upper part of the Simple Client window displays the message to be sent.

The middle part shows the list of active sessions.

And the lower part is an event log, each record corresponding to one event and consisting of the event time, name and description:

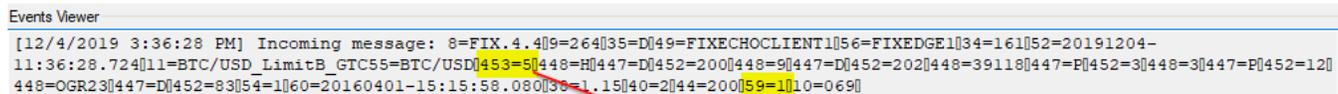


## Tag Order

FIX Client Simulator changes the tags' order in Event Viewer according to the dictionaries' structure.

It happens when the dictionary used by the Simple Client, has not the same tag order as it is in counterparty's specification. In the Event Viewer, the messages are represented according to the dictionary's structure. The original tag order may be seen in incoming log files.

In Event Viewer:



In incoming log:

```
20191204-11:36:28.725 :
8=FIX.4.4[SOB9=264[SOB35=D[SOB49=FIXECHOCLIENT1[SOB56=FIXEDGE1[SOB34=161[SOB52=20191204-11:36:28.724[SOB11=BTC/USD_LimitB_GTC5
5=BTC/USD[SOB54=1[SOB60=20160401-15:15:58.080[SOB38=1.15[SOB40=2[SOB44=200[SOB59=1[SOB453=5[SOB448=H[SOB447=D[SOB452=200[SOB448=9
SOB447=D[SOB452=202[SOB448=39118[SOB447=P[SOB452=3[SOB448=3[SOB447=P[SOB452=12[SOB448=OGR23[SOB447=D[SOB452=83[SOB10=069[SOB
```



If you want to keep the order the same as in the received message, the dictionary should be updated according to counterparty's specification.

[How to change the order of tags in a FIX message?](#)

[FIX Antenna C++/.NET dictionaries format](#)

[FIX and FIXML Dictionaries Customization Guide](#)

Example showing how to re-order tags for screenshot above

TimeInForce (tag 59) is located **after** block parties (tag 453)

```

<msgdef msgtype="D" name="New Order - Single">
...
  <block idref="Parties"/>
...
  <field tag="59" name="TimeInForce">
    <comment>Absence of this field indicates Day order</comment>
  </field>
...
</msgdef>

```

TimeInForce (tag 59) is located **before** block parties (tag 453)

```

<msgdef msgtype="D" name="New Order - Single">
...
  <field tag="59" name="TimeInForce">
    <comment>Absence of this field indicates Day order</comment>
  </field>
  <block idref="Parties"/>
...
</msgdef>

```

## Searching in a raw message

You can search for a particular character or the sequence of them in a raw message using the search line below the Send Message field:

The screenshot shows the FIX Client Simulator (9106) interface. The 'Send Message' field contains the following raw message:

```

8=FIX.4.2 9=67 35=A 49=DEF 56=ABC 34=1 52=20181225-
11:07:24.021 98=0 108=30 141=Y 10=186

```

The '34=1' part of the message is highlighted in red. Below the message field, there is a search input field containing '34='.

The 'Events Viewer' at the bottom shows the following log entries:

```

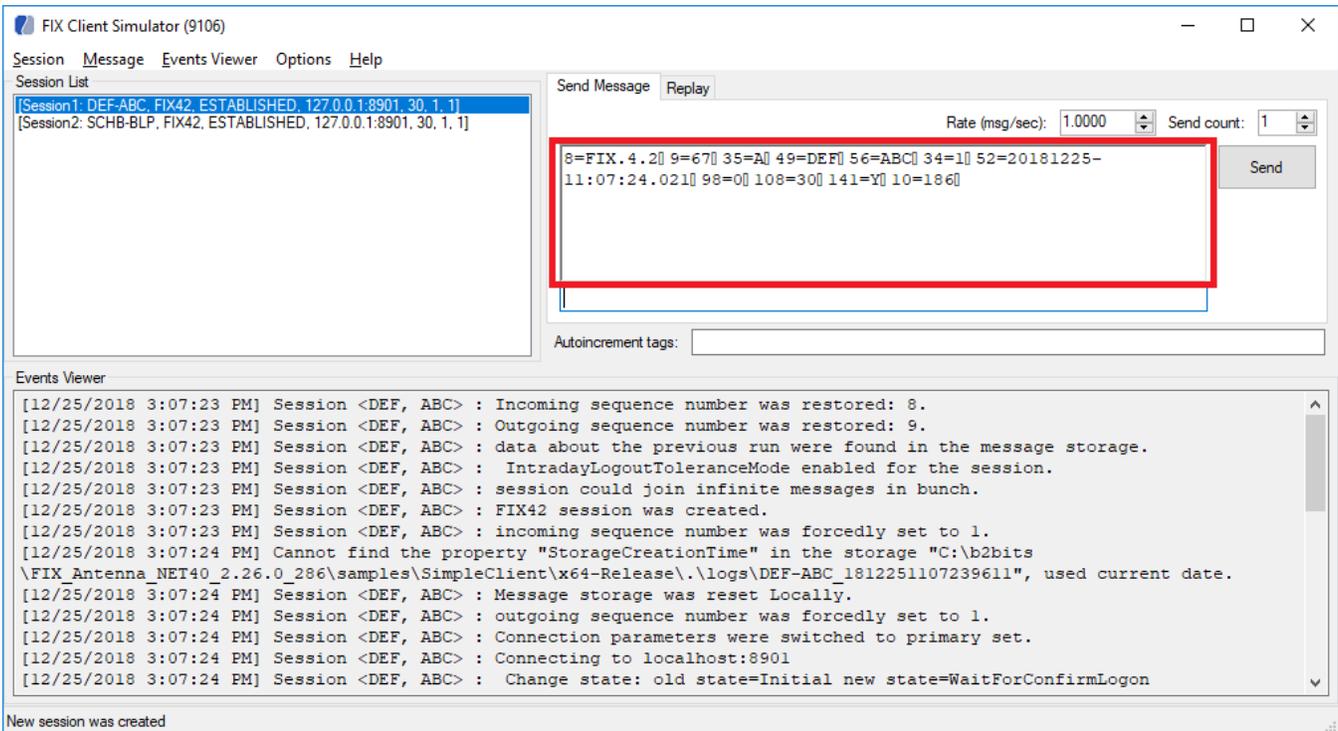
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : Incoming sequence number was restored: 8.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : Outgoing sequence number was restored: 9.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : data about the previous run were found in the message storage.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : IntradayLogoutToleranceMode enabled for the session.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : session could join infinite messages in bunch.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : FIX42 session was created.
[12/25/2018 3:07:23 PM] Session <DEF, ABC> : incoming sequence number was forcedly set to 1.
[12/25/2018 3:07:24 PM] Cannot find the property "StorageCreationTime" in the storage "C:\b2bits
\FIX_Antenna_NET40_2.26.0_286\samples\SimpleClient\x64-Release.\logs\DEF-ABC_1812251107239611", used current date.
[12/25/2018 3:07:24 PM] Session <DEF, ABC> : Message storage was reset Locally.
[12/25/2018 3:07:24 PM] Session <DEF, ABC> : outgoing sequence number was forcedly set to 1.
[12/25/2018 3:07:24 PM] Session <DEF, ABC> : Connection parameters were switched to primary set.
[12/25/2018 3:07:24 PM] Session <DEF, ABC> : Connecting to localhost:8901
[12/25/2018 3:07:24 PM] Session <DEF, ABC> : Change state: old state=Initial new state=WaitForConfirmLogon

```

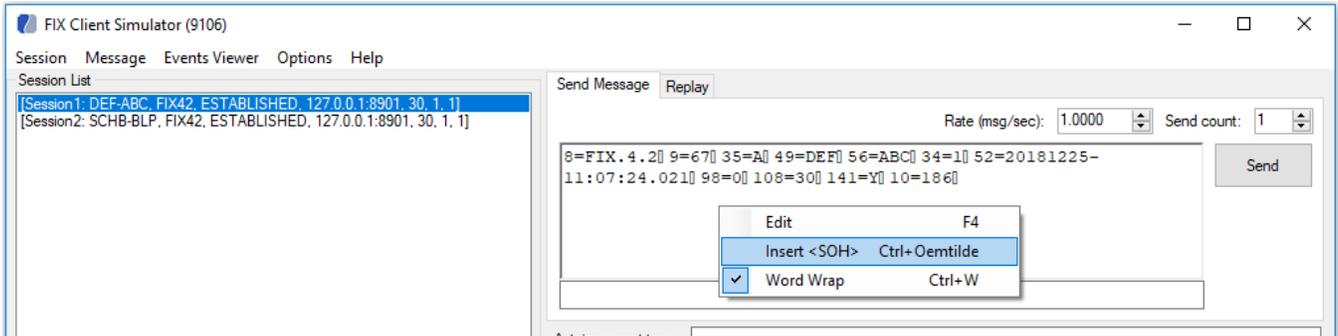
A status bar at the bottom indicates 'New session was created'.

## Writing messages

You can write a message in the **Send Message** field and edit it:



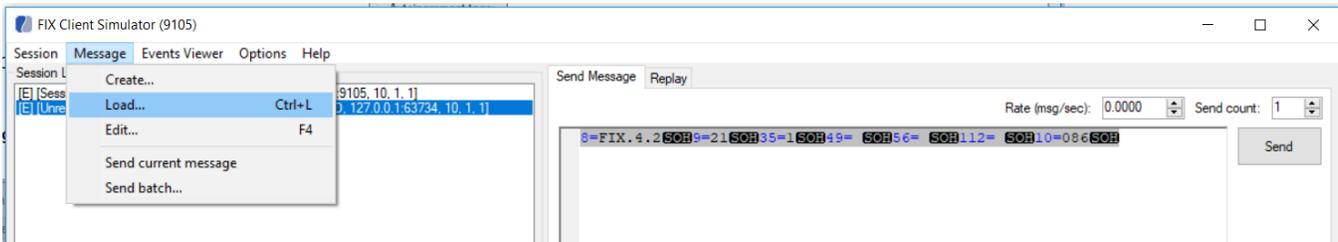
To enter a field delimiter click right button in **Send Message** field and choose **Insert <SOH>**:



## Loading predefined message or message batch

You can load a preset message and edit it before sending.

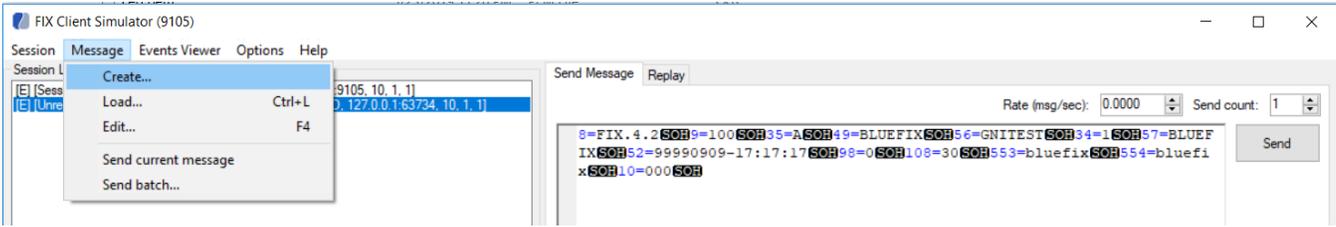
Go to **Message -> Load** to load a preset message and click the **Send** button to send it to the counterparty. Or select **Message -> Send batch** to load and immediately (without editing) send a number of preset messages from one file:



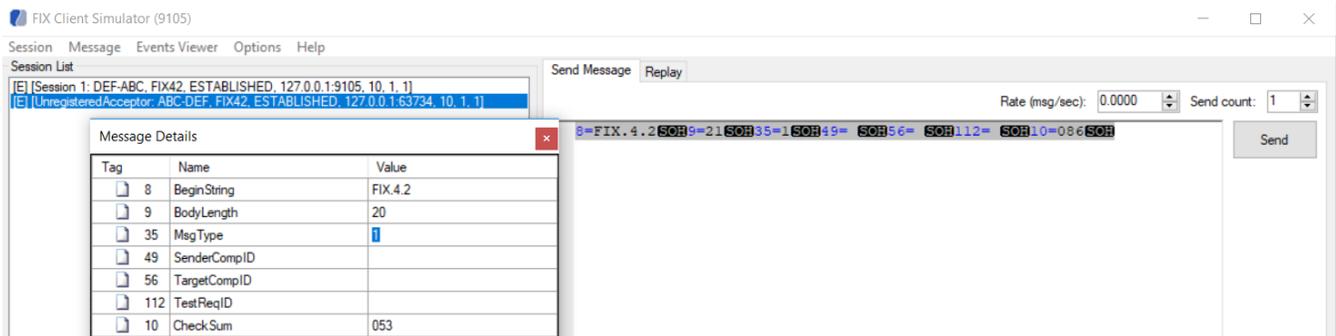
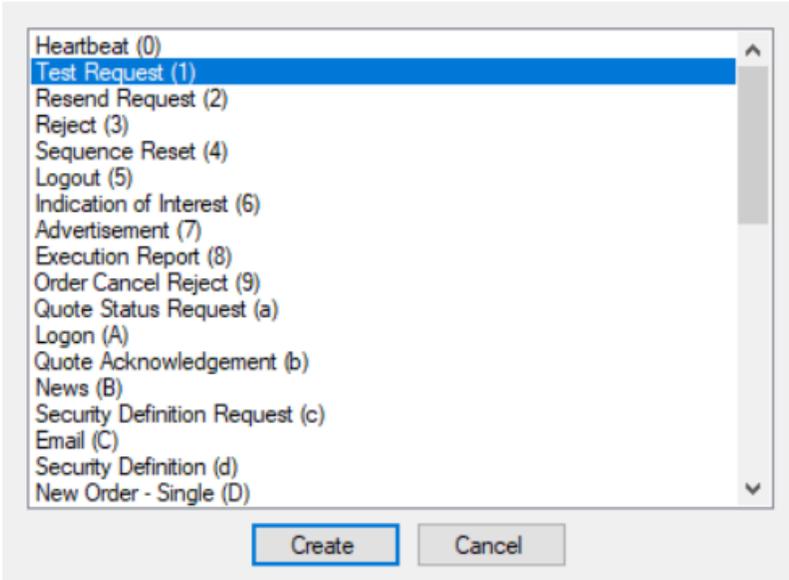
## Create messages from template

You can create a template message from a dictionary with required tags and edit it before sending.

Go to **Message -> Create** to load a list of messages from a dictionary, which is corresponding with the selected session. Click the **Create** button to open it in editable table for further filling of tag values and sending the message to the counterparty:

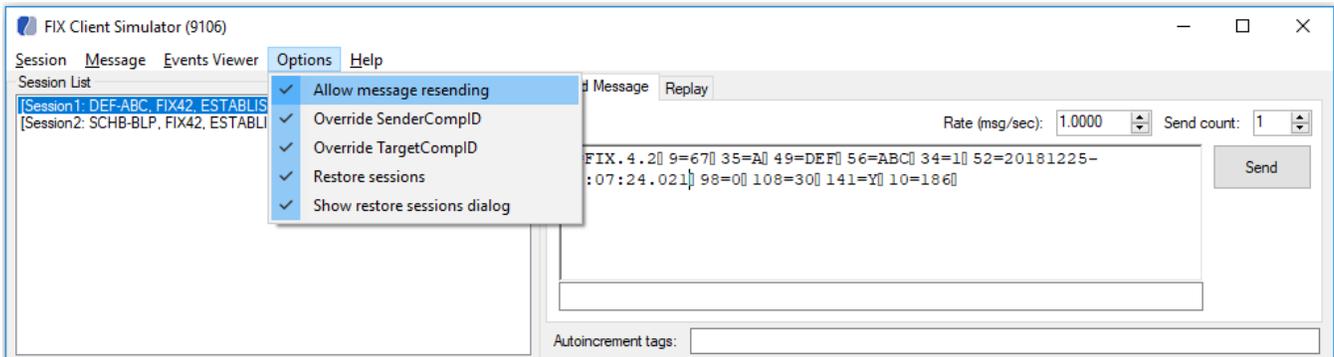


### Create new message



### Message re-sending

To enable message re-sending open **Options** from context menu and tick **Allow message re-sending**:



## Table View

You can open a message in the table view and edit its tags, although adding and removing tags is possible only in the raw view. Right-click the Send Message field and select **Edit** from the context menu or press **F4**:

Tag	Name	Value
8	BeginString	FIX.4.2
9	BodyLength	65
35	MsgType	A
49	SenderCompID	BLUEFIX
56	TargetCompID	GNITEST
34	MsgSeqNum	1
57	TargetSubID	BLUEFIX
52	SendingTime	99990909-17:17:17
98	EncryptMethod	0
108	HeartBtInt	30
10	CheckSum	sad

## Save session configuration

When creating new session, you have an option to save session parameters and use them to restore the session after disconnect:

**Create Session**

Configuration

save
delete

- TRADER1
- TRADER2
- TRADER3

SenderCompID

TargetCompID

Persistent storage type

Reset SeqNums

Use Extended properties

Extended Properties

SenderSubID

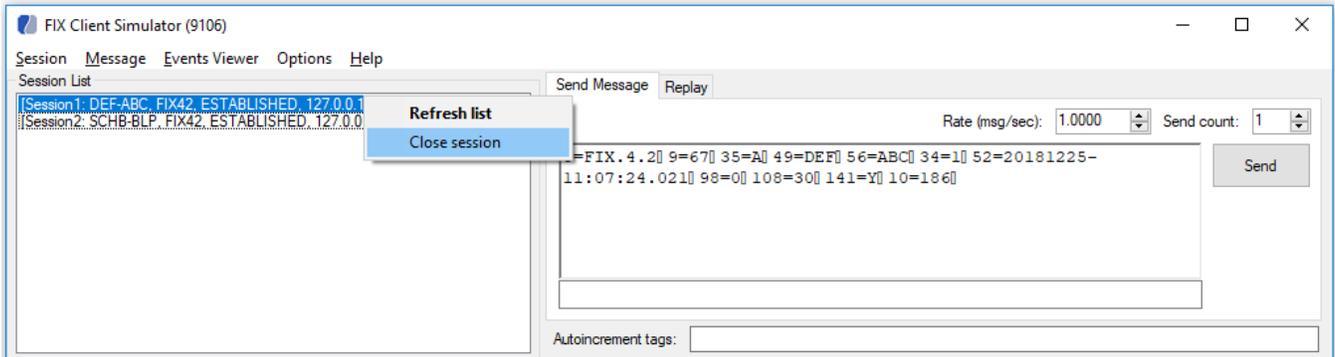
TargetSubID

SenderLocationID

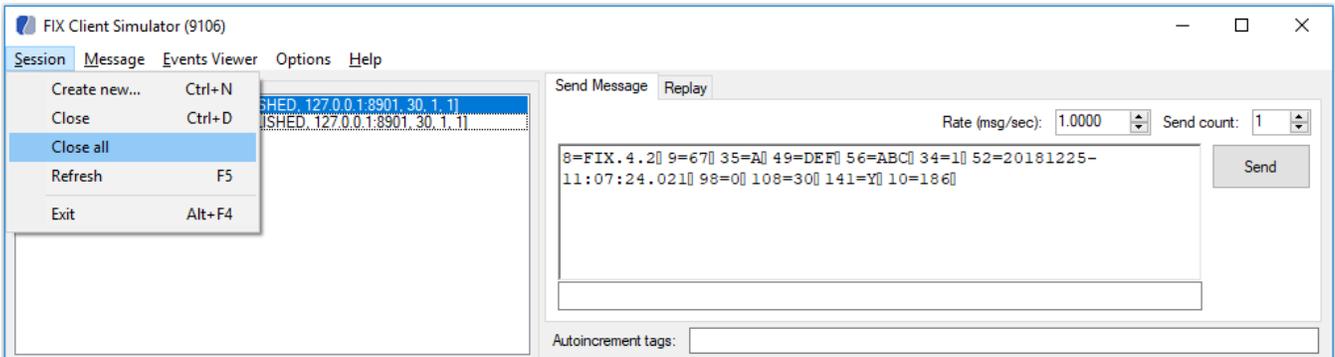
There is no limit on the number of sessions that can be stored in the list, you can save as many sessions as you need or delete unnecessary sessions.

## Closing session

In order to close session correctly, please select session and click right mouse button selecting **Close session** option:



or select **Session** from context menu and choose **Close** or **Close All**:



## Troubleshooting

Make sure that Microsoft Visual C++ 2010 Redistributable is installed. You can find it in the package: `./redist/vc10_vccredist_x64.exe`