

Caplin Trader 1.5

How To Troubleshoot Client Connection Problems

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1 Preface

1.1 What this document contains

This document describes some typical problems that Caplin Trader users might experience when Caplin Trader Client is attempting to communicate with the Caplin Trader servers, such as the Application Server and Caplin Liberator. It describes the symptoms of each problem, lists the possible diagnoses, and gives guidance on possible solutions to the problem according to the applicable diagnosis.

It does not contain an exhaustive list of what can go wrong, but addresses the most common fault situations that Caplin's customers might encounter. It assumes that the client communicates with Liberator via the StreamLink for Browsers (SL4B) library, as is the case with Caplin Trader Client.

About Caplin document formats

This document is supplied in three formats:

- ◆ Portable document format (*.PDF* file), which you can read on-line using a suitable PDF reader such as Adobe Reader®. This version of the document is formatted as a printable manual; you can print it from the PDF reader.
- ◆ Web pages (*.HTML* files), which you can read on-line using a web browser. To read the web version of the document navigate to the *HTMLDoc_m_n* folder and open the file *index.html*.
- ◆ Microsoft HTML Help (*.CHM* file), which is an HTML format contained in a single file. To read a *.CHM* file just open it – no web browser is needed.

For the best reading experience

On the machine where your browser or PDF reader runs, install the following Microsoft Windows® fonts: Arial, Courier New, Times New Roman, Tahoma. You must have a suitable Microsoft license to use these fonts.

Restrictions on viewing .CHM files




You can only read *.CHM* files from Microsoft Windows.

Microsoft Windows security restrictions may prevent you from viewing the content of *.CHM* files that are located on network drives. To fix this either copy the file to a local hard drive on your PC (for example the Desktop), or ask your System Administrator to grant access to the file across the network. For more information see the Microsoft knowledge base article at <http://support.microsoft.com/kb/896054/>.

1.2 Who should read this document

You should read this document if you are providing technical support for a production deployment of Caplin Trader.

If you are about to deploy Caplin Trader for the first time, you should read the relevant parts of the document to avoid a number of common pitfalls; see

- ◆ [No users can load Caplin Trader Client](#) 
- ◆ [No Clients can connect to Liberator](#) 
- ◆ [Appendix D: Liberator Deployment Guidelines](#) 

1.3 Related documents

◆ Caplin StreamLink Overview

Gives a technical overview of Caplin StreamLink version 5.0. Includes a list of the supported RTTP connection types.

◆ StreamLink for Browsers API Reference

Reference documentation for the StreamLink for Browsers (SL4B) API. Includes information on how to set up SL4B logging in the client.

◆ Caplin Trader: Integrating Caplin Trader With A Trading System

Describes how the Caplin Trading DataSource allows you to integrate Caplin Trader with your existing trading system. Includes information on configuring Caplin Liberator for trading.

◆ Caplin Liberator Administration Guide

Explains how to install, configure, and manage the Liberator. Includes configuration reference information, and a list of Liberator's log and debug messages.

◆ Caplin Trader Client: Browser Detection Configuration XML Reference

Describes the XML-based configuration that determines how Caplin Trader Client detects and validates the browser in which it is running.

◆ Caplin Platform Guide to User Licensing

Describes the user-based licensing scheme used in the Caplin Platform version 4.5 and above.

◆ KeyMaster Administration Guide

Describes how to configure and operate Caplin's KeyMaster product to provide a secure and reliable user authentication service.

1.4 Typographical conventions

The following typographical conventions are used to identify particular elements within the text.

<i>Type</i>	<i>Uses</i>
aMethod	Function or method name
<i>aParameter</i>	Parameter or variable name
<i>/AFolder/Afile.txt</i>	File names, folders and directories
<div style="border: 1px solid black; padding: 2px;">Some code;</div>	Program output and code examples
The value=10 attribute is...	Code fragment in line with normal text
Some text in a dialog box	Dialog box output
Something typed in	User input – things you type at the computer keyboard
XYZ Product Overview	Document name
◆	Information bullet point
■	Action bullet point – an action you should perform

Note: Important Notes are enclosed within a box like this.
Please pay particular attention to these points to ensure proper configuration and operation of the solution.

Tip: Useful information is enclosed within a box like this.
Use these points to find out where to get more help on a topic.

1.5 Feedback

Customer feedback can only improve the quality of our product documentation, and we would welcome any comments, criticisms or suggestions you may have regarding this document.

Please email your feedback to documentation@caplin.com.

Also see "Improving this document" in [If you need to contact Caplin Support](#) .

1.6 Acknowledgments

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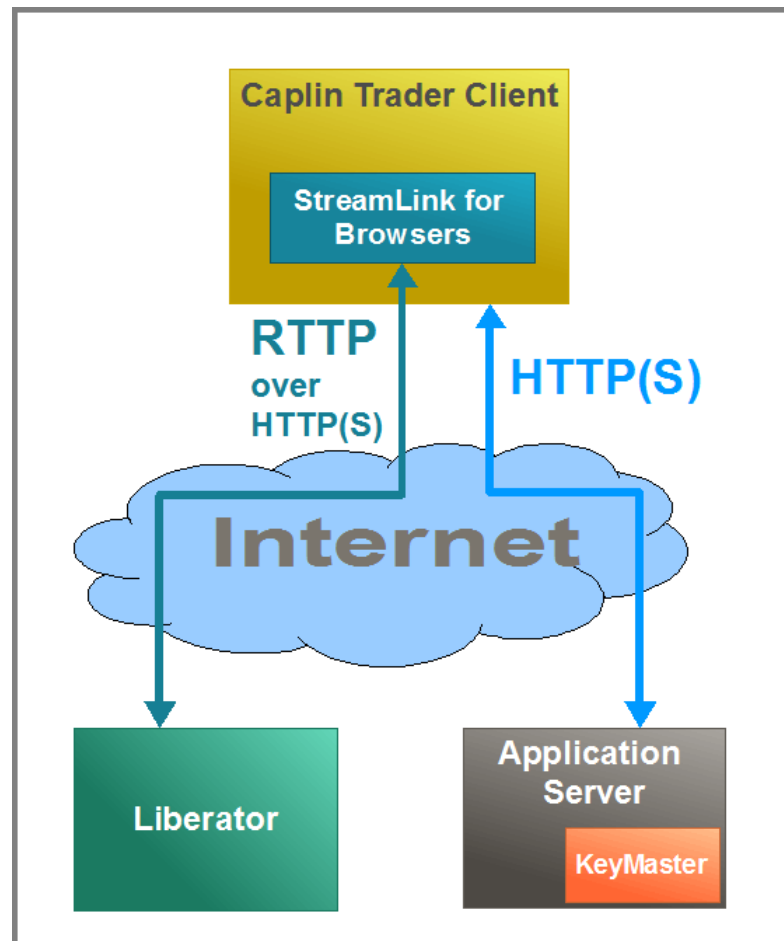
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2 Overview of client – server communications

Caplin Trader Client communicates with one or more Caplin Liberator servers that push real-time data to the client and exchange trade messages with it. This communication is handled by the RTTP protocol, usually over the Internet. Clients initiate and receive RTTP messages via API calls on Caplin's StreamLink for Browsers library (SL4B). The following diagram shows this relationship, and also shows the Application Server. The Application Server hosts Caplin Trader Client, various Services used by the client, and the Caplin KeyMaster single sign-on integration service.



Caplin Trader Client communicating with Liberator and Application Server

RTTP is designed to maximize the stability of connections between clients and Liberators. It is tunneled through HTTP or HTTPS in order to pass through network devices such as firewalls and proxy servers, and has no special TCP/IP port requirements. It uses persistent virtual connections, which provide rapid and seamless recovery from transient connection loss. Additionally, StreamLink supports highly resilient operation by providing the ability to connect to alternative Liberator servers (failover), and by trying alternative types of RTTP connection.

For more information about StreamLink, including the supported RTTP connection types, see the **Caplin StreamLink Overview**.

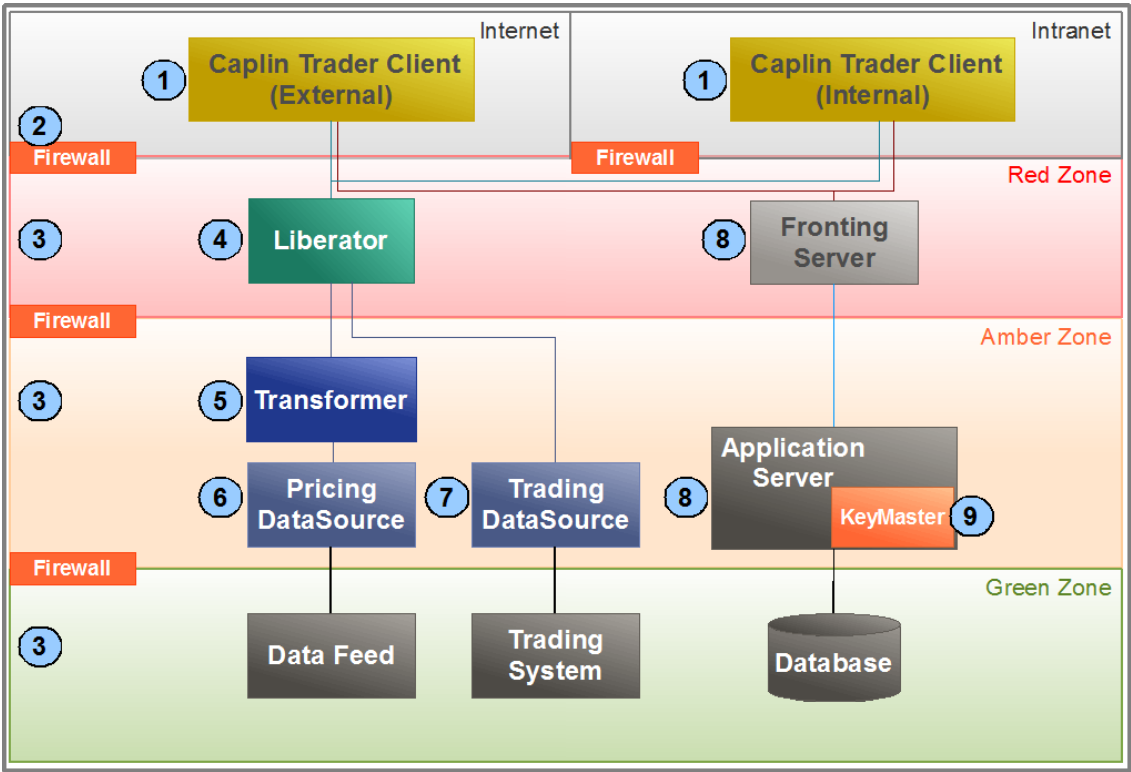
Caplin Trader relies on several supporting technologies and facilities to maintain client connections. These include: the Internet infrastructure, the Internet protocol stacks (TCP/IP, HTTP, HTTPS), various Web browsers, and your internal communications network that provides the final link in the chain between client and Liberator. Despite the resilience of the Caplin software, these external factors can occasionally cause connection problems for users, for a variety of reasons, including network hardware and software errors, and incorrect configuration of browsers, operating systems, or Caplin Trader components.

You are most likely to encounter client–Liberator connection problems when setting up a Caplin Trader development environment, or when deploying Caplin Trader for live operation for the first time. In a live system, end users can encounter problems as a result of network faults, browser problems, and software/hardware issues in the client or Liberator.

The rest of this document describes some typical client connection problems that might occur in your Caplin Trader installation. It describes the symptoms of each problem, gives possible diagnoses, and gives guidance on possible solutions to the problem according to the applicable diagnosis.

3 Problem areas

The following diagram shows a typical Caplin trader deployment and its network environment.



Typical Caplin Trader deployment showing connection problem areas

On the diagram the areas where there may be connection problems are marked by the numbers in blue circles. The following table lists each problem area, and provides a link to the sections detailing diagnoses and possible solutions.

Problem area	Description	For details see the following sections:
1	Problem at the client or at the customer's site.	<ul style="list-style-type: none"> ◆ Internet access problem at a customer's site ^[42] ◆ URL access problem ^[51] ◆ IE trusted site settings deny access ^[39] ◆ Client too slow for update rate ^[37] ◆ Client-Liberator transmission latency too high ^[36] ◆ Unsupported browser ^[50]
2	Problem at the Internet/ Intranet facing side of the Bank's network.	<ul style="list-style-type: none"> ◆ Internet interface problem ^[42] (Firewall or externally facing network elements) ◆ Intranet interface problem ^[42] (Firewall or externally facing network elements) ◆ Network devices blocking streaming data ^[45]
3	Problem somewhere in the Bank's internal network.	<ul style="list-style-type: none"> ◆ Internal network problem ^[41] (including internal Firewalls) ◆ Client-Liberator transmission latency too high ^[36]
4	Liberator problem.	<ul style="list-style-type: none"> ◆ Liberator down / not accessible ^[23] ◆ License has expired ^[44] ◆ Ports are incorrectly configured ^[47] ◆ Throttle level incorrect ^[49] ◆ Client-Liberator transmission latency too high ^[36]
5	Transformer problem.	<ul style="list-style-type: none"> ◆ Transformer down / not accessible ^[27] ◆ Ports are incorrectly configured ^[47]
6	Pricing DataSource problem.	<ul style="list-style-type: none"> ◆ Pricing DataSource down / not accessible ^[31] ◆ Ports are incorrectly configured ^[47]
7	Trading DataSource problem.	<ul style="list-style-type: none"> ◆ Trading DataSource down / not accessible ^[33] ◆ Ports are incorrectly configured ^[47]
8	Application server / fronting server problem.	<ul style="list-style-type: none"> ◆ Cannot access Application Server ^[22] ◆ Application Server session timed out ^[19]
9	KeyMaster problem.	<ul style="list-style-type: none"> ◆ KeyMaster problem ^[43]

4 Problem symptoms seen by users

When you have deployed Caplin Trader, users of Caplin Trader Client may experience connection problems with the following symptoms:

- ◆ [No users can load Caplin Trader Client](#) ⁸
- ◆ [No clients can connect to Liberator](#) ¹⁰
- ◆ [Some users cannot load Caplin Trader Client](#) ¹²
- ◆ [Users see stale prices / cannot trade](#) ¹³
- ◆ [Client has intermittent connection problems](#) ¹⁴
- ◆ [Client display freezes / data out of date](#) ¹⁸

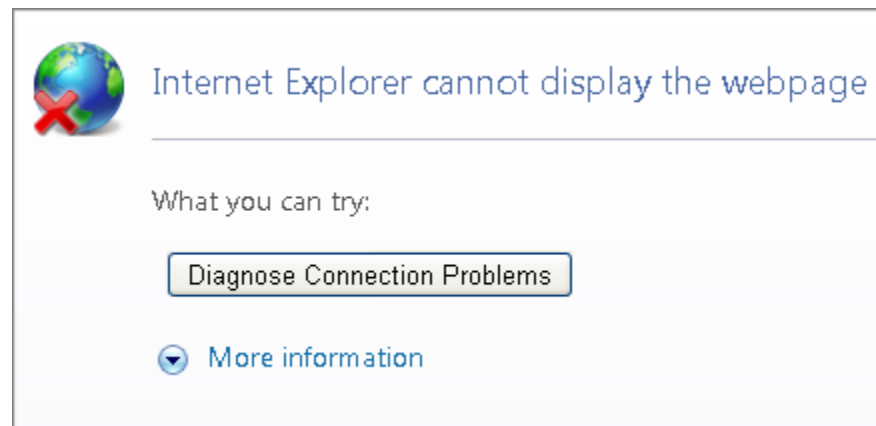
4.1 No users can load Caplin Trader Client

Symptom


No users can load Caplin Trader Client.

This problem is most likely to occur when deploying Caplin Trader for the first time.

Users typically see the following in their browsers:



Internet Explorer 8 cannot connect to Caplin Trader




Server not found

Firefox can't find the server at www.examplexxx.com.

- Check the address for typing errors such as **ww**.example.com instead of **www**.example.com
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.

Try Again

Firefox 3.5 cannot connect to Caplin Trader (1)



The connection was reset

The connection to the server was reset while the page was loading.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.

Try Again

Firefox 3.5 cannot connect to Caplin Trader (2)

Possible causes

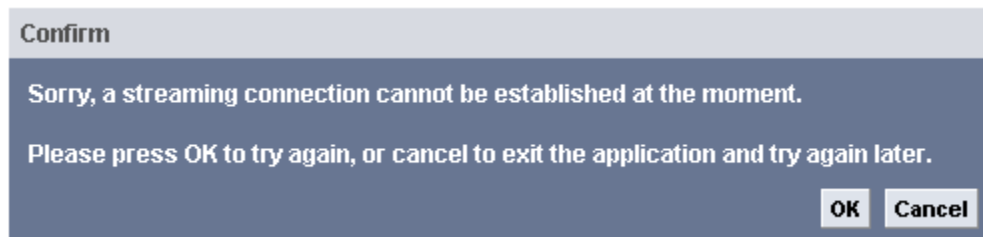
- ◆ [URL access problem](#)^[51].
- ◆ [Cannot access Application Server](#)^[22].
- ◆ There is an [Internet interface problem](#)^[42]
(only external users are denied access to Caplin Trader Client).
- ◆ There is an [Intranet interface problem](#)^[42]
(only internal users are denied access to Caplin Trader Client).
- ◆ There is some other [internal network problem](#)^[41]
(no users can access Caplin Trader Client).

4.2 No clients can connect to Liberator

Symptom

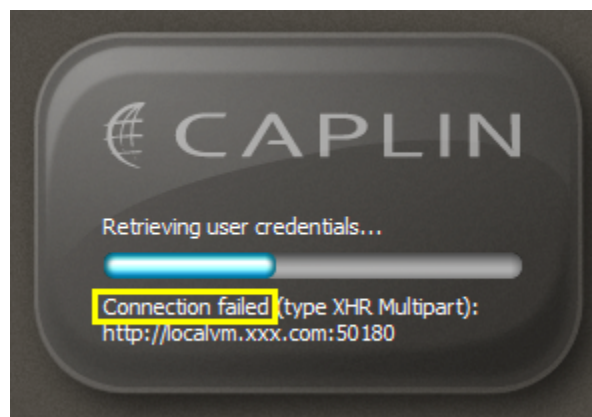
Users can load Caplin Trader Client, but the clients cannot subsequently connect to the Liberator(s). This problem is most likely to occur when deploying Caplin Trader for the first time.

Users will typically see the following in their browsers when they attempt to log on to Caplin Trader Client:

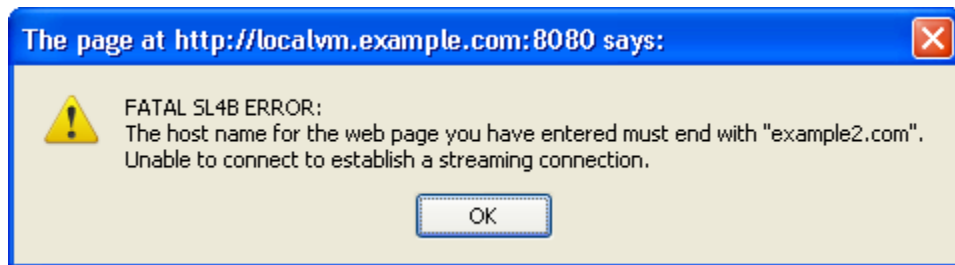


(1) Caplin Trader Client cannot connect to Liberator

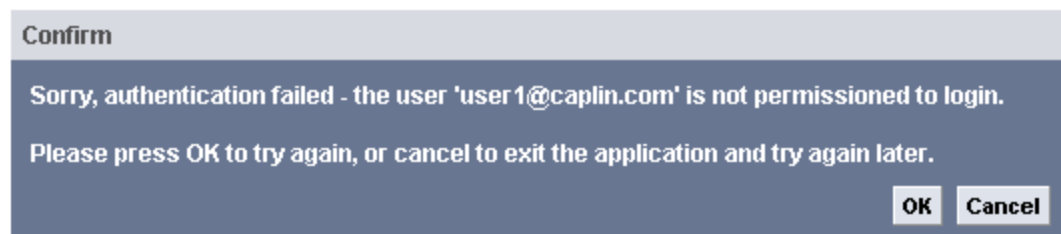
Or they may see one of the following:



(2) SL4B connection to Liberator hangs



(3) SL4B detects common URL domain is wrongly configured



(4) KeyMaster authentication problem

Possible causes

- ◆ [URL access problem](#)^[51] (including message 3).
- ◆ [Liberator down / not accessible](#)^[23].
- ◆ [License has expired](#)^[44].
- ◆ [KeyMaster problem](#)^[43] (see message 4).
- ◆ [IE trusted site settings deny access](#)^[39].
- ◆ There is an [Internet interface problem](#)^[42] (only external users are denied access to Liberator).
- ◆ There is an [Intranet interface problem](#)^[42] (only internal users are denied access to Liberator).
- ◆ There is some other [internal network problem](#)^[41] (no users can access Liberator).

4.3 Some users cannot load Caplin Trader Client

Symptom

Some users, usually all those in a particular location, cannot load Caplin Trader Client. For example, clients located in one of your customer's offices cannot load the application, or no clients in Paris can load it from your London-based service.

Possible causes

- ◆ If the browser error seen by the user is the same as that shown in [No users can load Caplin Trader Client](#)⁸, the cause is likely to be an [internet access problem at the customer's site](#)⁴².
- ◆ If the user sees an error message like the following, the browser is not supported – see [Unsupported browser](#)⁵⁰.

<Browser name & version> is not approved to run this application.

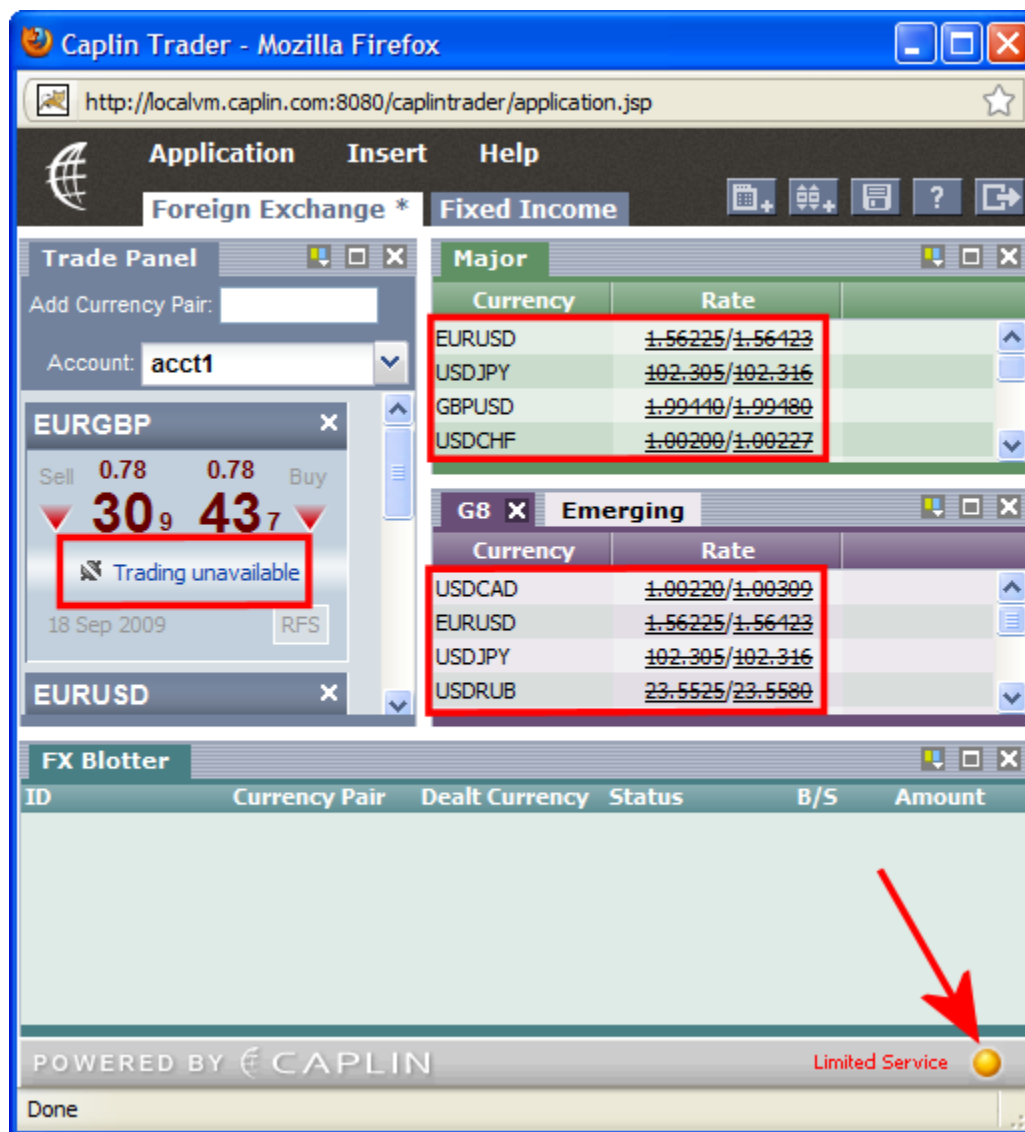
The browsers we recommend are Mozilla Firefox 3.0
and Internet Explorer 8.

4.4 Users see stale prices / cannot trade

Symptom

Users see stale prices (or no prices) for some or all instruments, and/or users are told that trading on some or all instruments is unavailable.

A typical screen showing these symptoms is:




Stale prices and trading unavailable

When the connection indicator at the bottom of the screen is orange ("Limited Service"), the client still has a connection to Liberator, so the problem is with the connection(s) between the Liberator and other Caplin components, such as DataSources.

Tip: The picture shows the Caplin Trader Reference implementation. Depending on how you have customized Caplin Trader, your users' screens may have a different appearance, the stale prices may have a different appearance, the message displayed on the Trade Tile may have different wording, and the status indicator may be different.

Possible causes

- ◆ One or more [Caplin components are down / not accessible](#) .
- ◆ [Ports are incorrectly configured](#) .

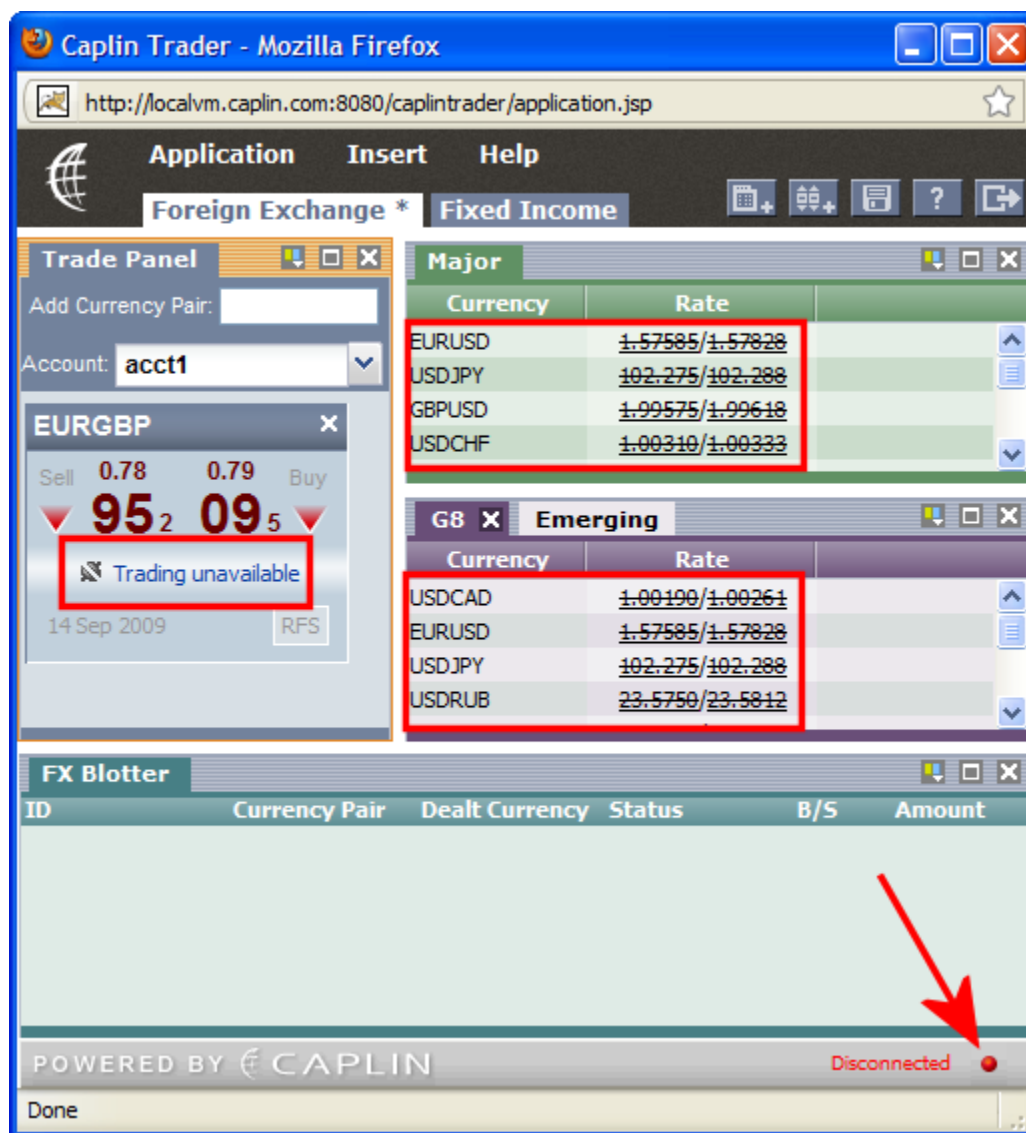
4.5 Client has intermittent connection problems

Symptom

The Caplin Trader Client is receiving streaming data from a Liberator and then disconnects from the Liberator at random. The client may disconnect and reconnect at random intervals.

When the client is disconnected, users see one or more of the following:

- ◆ Real time data being streamed from the Liberator is marked as stale and is no longer updated.
- ◆ Trade Tiles indicate that trading is unavailable.
- ◆ No quote data is returned when the user selects the Get Quote button on a Trade Ticket.
- ◆ The connection status indicator at the lower left hand corner of the page turns red, showing that the client is disconnected from the Liberator.



Caplin Trader Client disconnected

Tip: The picture shows the Caplin Trader Reference implementation. Depending on how you have customized Caplin Trader, your users' screens may have a different appearance, the stale prices may have a different appearance, the message displayed on the Trade Tile may have different wording, and the status indicator may be different.

Further checks to make before investigating possible causes:

- Enable Caplin Trader Client logging: see [Appendix A: The Caplin Trader Client console log](#)⁵⁶.

When the client loses connections, its console log typically contains the following messages (other, less relevant messages have been removed for clarity).

Log fragment A shows that the client has lost its connection with the Liberator. The client attempts to reconnect, using an RTTP type 3 (polling) connection, as defined in SL4B's failover configuration. The reconnection is successful.

A:

```
2009/09/10-16:57:31.462 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FX",
  error: Liberator connection lost
2009/09/10-16:57:31.538 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FI",
  error: Liberator connection lost
2009/09/10-16:57:31.544 WARN Connection status: Request Timeout
2009/09/10-16:57:31.551 WARN Connection status:
  Connecting to http://example.com:50180 (connection type 3)
2009/09/10-16:57:31.710 WARN Connection status:
  Connected to http://example.com:50180 (connection type 3)
2009/09/10-16:57:31.766 WARN Connection status:
  Connected and logged into http://example.com:50180 (connection type 3)
2009/09/10-16:57:31.769 WARN Connection status: All services are available
```

Log fragment B shows that a short while later the client loses its Liberator connection again, but subsequently re-establishes an RTTP type 3 connection.

B:

```
2009/09/10-16:58:22.805 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FX",
  error: Liberator connection lost
2009/09/10-16:58:22.807 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FI",
  error: Liberator connection lost
2009/09/10-16:58:22 811 WARN Connection status: Request Timeout
2009/09/10-16:58:22.816 WARN Connection status:
  Connecting to http://example.com:50180 (connection type 3)
2009/09/10-16:58:22.900 WARN Connection status:
  Connected to http://example.com:50180 (connection type 3)
2009/09/10-16:58:22.971 WARN Connection status:
  Connected and logged into http://example.com:50180 (connection type 3)
2009/09/10-16:58:22.974 WARN Connection status: All services are available
```

Log fragment C shows that the client loses its Liberator connection yet again, but subsequently re-establishes an RTTP type 4 (streaming) connection.

C:

```
2009/09/10-16:58:35.016 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FX",
  error: Liberator connection lost
2009/09/10-16:58:35.017 CRITICAL TRADE RESPONSE -
  Lost connection to trade channel "/FT/TRADE/FI",
  error: Liberator connection lost
2009/09/10-16:58:35.021 WARN Connection status: Request Timeout
2009/09/10-16:58:35.024 WARN Connection status:
  Connecting to http://example.com:50180 (connection type 4)
2009/09/10-16:58:35.119 WARN Connection status:
  Connected to http://example.com:50180 (connection type 4)
2009/09/10-16:58:35.274 WARN Connection status:
  Connected and logged into http://example.com:50180 (connection type 4)
2009/09/10-16:58:35.278 WARN Connection status: All services are available
```

■ Look in the Liberator's RTTP request log (*var\request-RTTP.log*)

If the client is frequently disconnecting from the Liberator and reconnecting, there will be a large number of LOGIN requests recorded in the log. In the following log extract the user name of the client is user1@caplin.com.

RTTP login requests in Liberator RTTP request log

```
2009/09/10-16:58:35.279 +0100: 192.168.248.1 - 0Yyf_sJvwxEqWq1n9x0-Ao
"0Yyf_sJvwxEqWq1n9x0-Ao LOGIN 0 SL4B:CaplinTraderReferenceImplementation/
RTTP/2.1 user1%40caplin.com ...
...
2009/09/10-16:59:37.571 +0100: 192.168.248.1 - 0ukzxb1TDh4Qq3MPQY4YuP
"0ukzxb1TDh4Qq3MPQY4YuP LOGIN 0 SL4B:CaplinTraderReferenceImplementation/
RTTP/2.1 user1%40caplin.com ...
...
```

■ Look in the Liberator's session log (*var\session-RTTP.log*)

If the client is frequently disconnecting from the Liberator and reconnecting, there will be a large number of session events recorded in the log with the events CLOSE and LOST followed by OPEN and LOGIN_OK. In the following log extract the user name of the client is user1@caplin.com.

RTTP session events in Liberator session log

```
2009/09/10-16:58:35.010 +0100: 192.168.248.1 3 CLOSE user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0Y5QQA2MJ1AKz-bmaRb08m EJECTED
2009/09/10-16:58:35.017 +0100: 192.168.248.1 4 LOST user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0ArB-V4lmN7exniIq61RTp CLOSE_TYPE2
...
2009/09/10-16:58:35.230 +0100: 192.168.248.1 3 OPEN 0R2KAXY92LZHJm-WomCUMg
2009/09/10-16:58:35.270 +0100: 192.168.248.1 3 LOGIN_OK user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0R2KAXY92LZHJm-WomCUMg LOGIN_OK

2009/09/10-16:58:52.108 +0100: 192.168.248.1 3 CLOSE user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0g9QY8B2U833wp_tzIv2A0 EJECTED
2009/09/10-16:58:52.229 +0100: 192.168.248.1 4 LOST user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0R8OU5AH1BVeQwoGVilzve CLOSE_TYPE2
2009/09/10-16:58:52.477 +0100: 192.168.248.1 4 OPEN 0ihSejqK9XZCDRLs7-AYe6

2009/09/10-16:58:52.532 +0100: 192.168.248.1 4 LOGIN_OK user1@caplin.com
SL4B:CaplinTraderReferenceImplementation 0ihSejqK9XZCDRLs7-AYe6 LOGIN_OK
```

■ Can the user login directly to the Liberator's Status page without subsequently losing the connection?

Possible causes:

- ◆ [Client—Liberator transmission latency too high](#)^[36].
- ◆ [Client too slow for update rate](#)^[37].
- ◆ [Application Server session timed out](#)^[19].

About RTTP type 5 connections

When the client uses an RTTP type 5 connection, in normal operation it periodically disconnects from Liberator and then immediately reconnects. *This is not a fault*, but is done to free up leaked browser memory in Internet Explorer. The Caplin Trader Client console log contains the following messages:

RTTP type 5 connections reconnect message

```
2009/10/23-12:19:30.279 WARN Connection status:
  Connected to http://localvm.caplin.com:50180 (connection type 5)
2009/10/23-12:19:30.357 WARN Connection status:
  RTTP Session ID: 0ejqQH0DL2Cnt0nkZoMCSL
2009/10/23-12:19:30.607 WARN Connection status:
  Successfully reconnected to previous session
  http://localvm.caplin.com:50180 (connection type 5)
2009/10/23-12:19:30.685 WARN Connection status:
  Connected and logged into http://localvm.caplin.com:50180 (connection type 5)
```

By default, such disconnects occur for every 10,000 messages received from the Liberator. This value is set through the SL4B configuration attribute **type5reconnectcount** in the StreamLink for Browsers configuration file *sl4b-configuration-attributes.js*.

```
oConfiguration.setAttribute("type5reconnectcount", "10000");
```

4.6 Client display slow / freezes / data out of date

Symptom

The Caplin Trader Client display runs slowly or keeps freezing up and/or displayed streaming data is frequently out of date.

Possible causes:

- ◆ [Client too slow for update rate](#)^[37].
- ◆ User's Internet connection is too slow.
- ◆ [Network devices blocking streaming data](#)^[45].
- ◆ [Throttle level incorrect](#)^[49].

5 Diagnoses and possible solutions

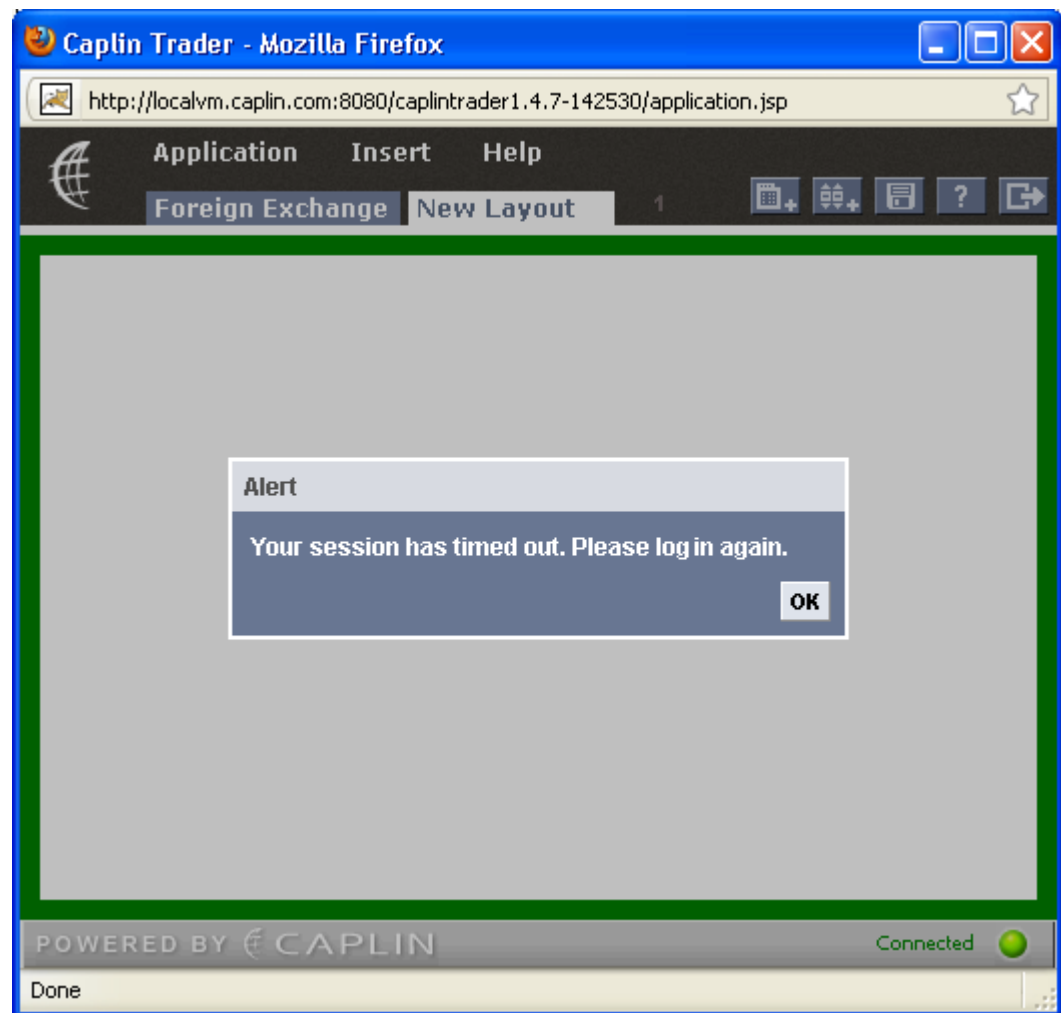
The following sections detail a number of diagnoses for symptoms encountered by users, and describe possible solutions to rectify these symptoms.

5.1 Application Server session timed out

Diagnosis

The Application Server times out the Caplin Trader Client session. This manifests at the client in various ways:

- ◆ The user may see a timeout message. In the following examples, the message appears when the user attempts to a) open a new Layout, b) open a Trade Ticket. When the user selects OK, they are taken back to the Caplin Trader log in screen.



(a) Caplin Trader Client session time out message
when requesting new Layout



**(b) Caplin Trader Client session time out message
when opening Trade Ticket**

- ◆ The user may experience unresponsive behaviour in the application; for example, images do not load, other screen refreshes do not complete, or menu requests are not actioned.

Possible solutions

The Application Server session timeout and KeyMaster keep alive interval may be incompatible.

Caplin Trader uses KeyMaster to provide sign on integration between the Application Server and Liberator. Caplin Trader Client is configured to poll the KeyMaster servlet on the Application Server at regular intervals; this keeps the Application Server session alive while the user is using the application. If the KeyMaster poll interval is longer than the Application Server timeout interval, users' sessions will time out.

- Check the value of the session timeout configured in the Application Server that serves up the Caplin Trader Client web pages. Make sure that it is greater than the KeyMaster keep alive interval.

At the time of writing, the Reference Implementation uses the default Tomcat session timeout of 30 minutes. To change the Application Session timeout, edit the Application Server configuration XML. In the Reference Implementation this is in *apps/webapps/caplintrader/applications/CaplinTrader/WEB-INF/web.xml*

For example, if the Application Server is Tomcat, add the following XML to *web.xml*:

```
<session-config>
  <session-timeout>value</session-timeout>
</session-config>
```

value is the session timeout in minutes.

- The KeyMaster keep alive interval is defined in the StreamLink for Browsers configuration attribute **keymasterkeepaliveinterval**. This is defined in milliseconds, and at the time of writing its default value is 30000 (30 seconds).

To change the KeyMaster keep alive interval, edit the file *sl4b-configuration-attributes.js*. In the Reference Implementation this file is at *apps/webapps/caplintrader/applications/CaplinTrader/conf/*

```
// KeyMaster configuration
oConfiguration.setAttribute("keymasterurl", "servlet/StandardKeyMaster");
oConfiguration.setAttribute("keymasterxhrurl", "servlet/XHRKeyMaster");
oConfiguration.setAttribute("keymasterconnectiontimeout", "60000")
oConfiguration.setAttribute("keymasterkeepaliveinterval", "300000");
```

Why does Caplin Trader Client poll KeyMaster?

Web Application Servers use a session timeout for security purposes; they detect that the user is inactive and log the user out. This also gives the Server the opportunity to release server resources. Such timeouts work on most Web sites because the most significant interaction the user has with the application is to request a new page. When the Application Server receives the page request, it restarts the session timer, so the user's session remains intact.

In Caplin Trader however, the user's interaction with the application mostly results in requests on the Liberator rather than the Application Server. It is therefore perfectly possible for Caplin Trader to not request any more pages before the session timer expires. To prevent the session from timing out in this way, Caplin Trader Client polls the KeyMaster servlet on the Application Server at regular intervals. For this to work, the poll interval must of course be shorter than the session timeout.

5.2 Cannot access Application Server

Diagnosis

Users may not be able to access Caplin Trader because there is a problem with the Application Server that hosts Caplin Trader Client.

Possible solutions

- Check that the Application Server is running.
- In a browser, navigate to the Application Server's home page to see if it is available, and that the problem is not just with the Caplin Trader Client that has been deployed.
- Check that the Application Server is configured to server up *index.jsp* as a default page.
For example, when `http://myappserver.example.com/myApp` is accessed, the Application Server should serve up `http://myappserver.example.com/myApp/index.jsp`.
- There could be an issue with the Caplin Trader web application that is being deployed, so the Application Server cannot start it up. Use the management facilities of your Application Server to check which web applications are running and which have failed.

For example, if you are using the Tomcat Application Server (supplied with the evaluation version of Caplin Trader), navigate to its manager page and enter the URL:

`http://myappserver.example.com:8080/index.jsp`

Then click on the Tomcat Manager link.

You will need to enter a user name and password. For the evaluation version of Caplin Trader these are both `admin`.

Other reasons for access to the Application Server being denied are:

- ◆ There is an [Internet interface problem](#)^[42]
(only external users are denied access to the Application Server).
- ◆ There is an [Intranet interface problem](#)^[42]
(only internal users are denied access to Application Server).
- ◆ There is some other [internal network problem](#)^[41]
(no users can access Application Server).

5.3 Caplin components are down / not accessible

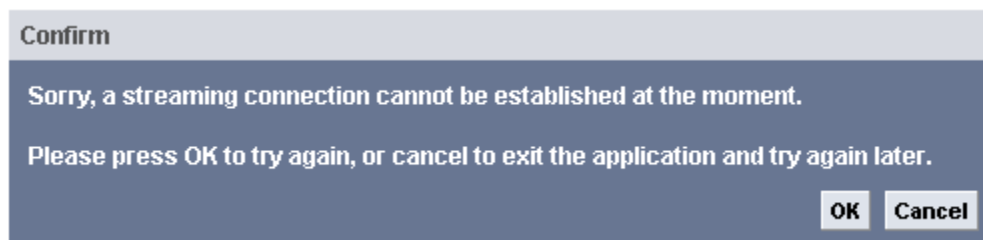
One or more Caplin components (Liberator, Transformer, DataSources) may not be accessible, may not have started, or may have failed and exited:

- ◆ [Liberator is down / not accessible](#) ²³.
- ◆ [Transformer is down / not accessible](#) ²⁷.
- ◆ [A Pricing DataSource is down / not accessible](#) ³¹.
- ◆ [A Trading DataSource is down / not accessible](#) ³³.

Liberator down / not accessible

Diagnosis

When end users cannot connect to the Liberator, they see the following message when they try to log in to Caplin Trader Client:

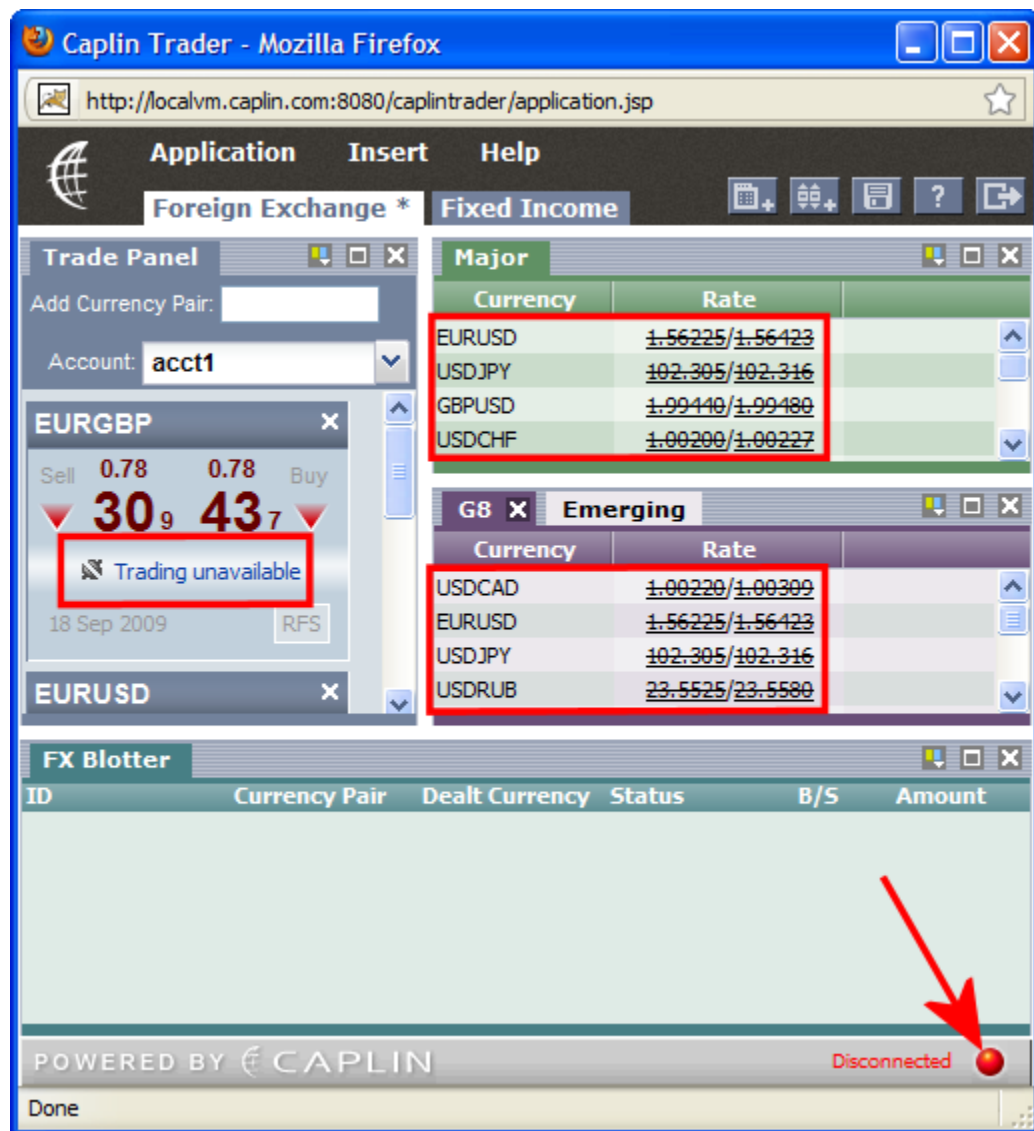


Caplin Trader Client cannot connect to Liberator

Users who are already logged in to Caplin Trader when the Liberator goes down see the following:

- ◆ Real time data being streamed from the Liberator is marked as stale and is no longer updated.
- ◆ Trade Tiles indicate that trading is unavailable and Trade Tickets do not return quotes.
- ◆ The connection status indicator at the lower left hand corner of the page turns red, showing that the client is disconnected from the Liberator.

This is shown in the following picture of the Caplin Trader Client Reference Implementation.



Caplin Trader Client detects Liberator is disconnected

Tip: The picture shows how the Caplin Trader Reference implementation responds to Liberator loss. Depending on how you have customized Caplin Trader, your users' screens may have a different appearance, the displayed message may have different wording, and the status indicator may be different.

Confirm whether the Liberator really is down:

- Try to access the Liberator's home page directly through a browser across your local intranet. If you cannot see the home page, the Liberator is most likely not running.
- Look for the Liberator process on the machine that hosts it.

A simple way to do this is using the Linux® `ps` command:

```
ps -ef | grep rttpd
```

If this command returns just the process that ran the command, the Liberator is not running:

Typical ps command output when Liberator not is running

```
tester    22520  21599    0 16:40 pts/2      00:00:00 grep rttpd
```

Typical ps command output when Liberator is running

```
tester    22602      1   6 16:41 ?                00:00:04  
/home/tester/CT1.4.7/apps/caplin/Liberator/bin/rtttd -r  
/home/tester/CT1.4.7/apps/caplin/Liberator  
--preprocessor-binary=../../kits/M4/bin/preprocess.sh  
-f rtttd.conf -n rtttd -d  
tester    23021  21599    0 16:42 pts/2      00:00:00 grep rtttd
```

Tip: If you have purchased Caplin's monitoring and management software, you can also check the status of the Liberator using the Enterprise Management Console (EMC).

If Liberator appears to be running:

- Check that Caplin Trader Client is connecting to the Liberator on the correct port.

At the Caplin Trader Client end, the ports are normally defined in the StreamLink for Browsers configuration XML files, *liberator-service-configuration-http.xml* and *liberator-service-configuration-https.xml* in *apps/webapps/caplintrader/applications/CaplinTrader/conf/*.

For example:

Liberator HTTPS port configuration in SL4B configuration XML file

```
<!-- primary Liberator -->  
<primaryserver>  
  <address>localvm.caplin.com</address>  
  <connections>  
    <type5>https</type5>  
    <type4>https</type4>  
    <type3>https</type3>  
  </connections>  
  <ports>  
    <https>50181</https>  
  </ports>  
</primaryserver>
```

- Check that Liberator is listening the on same HTTP and HTTPS ports that the client is attempting to connect to. Look in the Liberator's event log for lines like the following, which show the ports it is listening on. In this example, the Liberator's HTTP port is 50180, and the HTTPS port is 50181.

Liberator event log entry showing HTTP and HTTPS ports in use

```
...  
2009/10/02-15:56:52.890 +0100: INFO: Opening port 50180 for http access  
2009/10/02-15:56:52.890 +0100: INFO: Opening port 50181 for https access  
...
```

- Use the Linux `netstat` command to check that Liberator actually *is* listening on these HTTP and HTTPS ports:

```
netstat -na | grep LISTEN
```

This shows all the listening sockets.

If the Liberator *is* listening on the correct ports, `netstat`'s output will include lines like the following. In this example, the Liberator's HTTP port is 50180 and the HTTPS port is 50181, and the IP addresses are in the form `nnn.mmm.xxx.yyy`:

netstat output showing that Liberator is listening on the correct ports

```
...
tcp      0      0 nnn.mmm.xxx.yyy:50180      0.0.0.0:*                  LISTEN
tcp      0      0 nnn.mmm.xxx.yyy:50181      0.0.0.0:*                  LISTEN
...
```

- Check that all the resources that Liberator requires are available.

When a Liberator starts up it will not accept any HTTP or HTTPS connections until all its required sources are available. Look in the Liberator's event log for entries about missing resources.

Possible solutions

If the Liberator is not running:

- Look at the Liberator logs, especially the event log, to see if there are any messages about an abnormal condition that may have caused the Liberator to stop running.
- Check whether there may be a problem with the Liberator configuration.

If the Liberator is running:

- If you have confirmed that the Liberator is listening on the same port as the one that Caplin Trader Client is attempting to connect to, the refusal to connect may be caused by an [internal network problem](#) ⁴¹.

Other reasons for access to Liberator being denied are:

- ◆ [Liberator URL access problem](#) ⁵².
- ◆ [License has expired](#) ⁴⁴.
- ◆ [IE trusted site settings deny access](#) ³⁹.
- ◆ There is an [Internet interface problem](#) ⁴² (only external users are denied access to Liberator).
- ◆ There is an [Intranet interface problem](#) ⁴² (only internal users are denied access to Liberator).
- ◆ There is some other [internal network problem](#) ⁴¹ (no users can access Liberator).

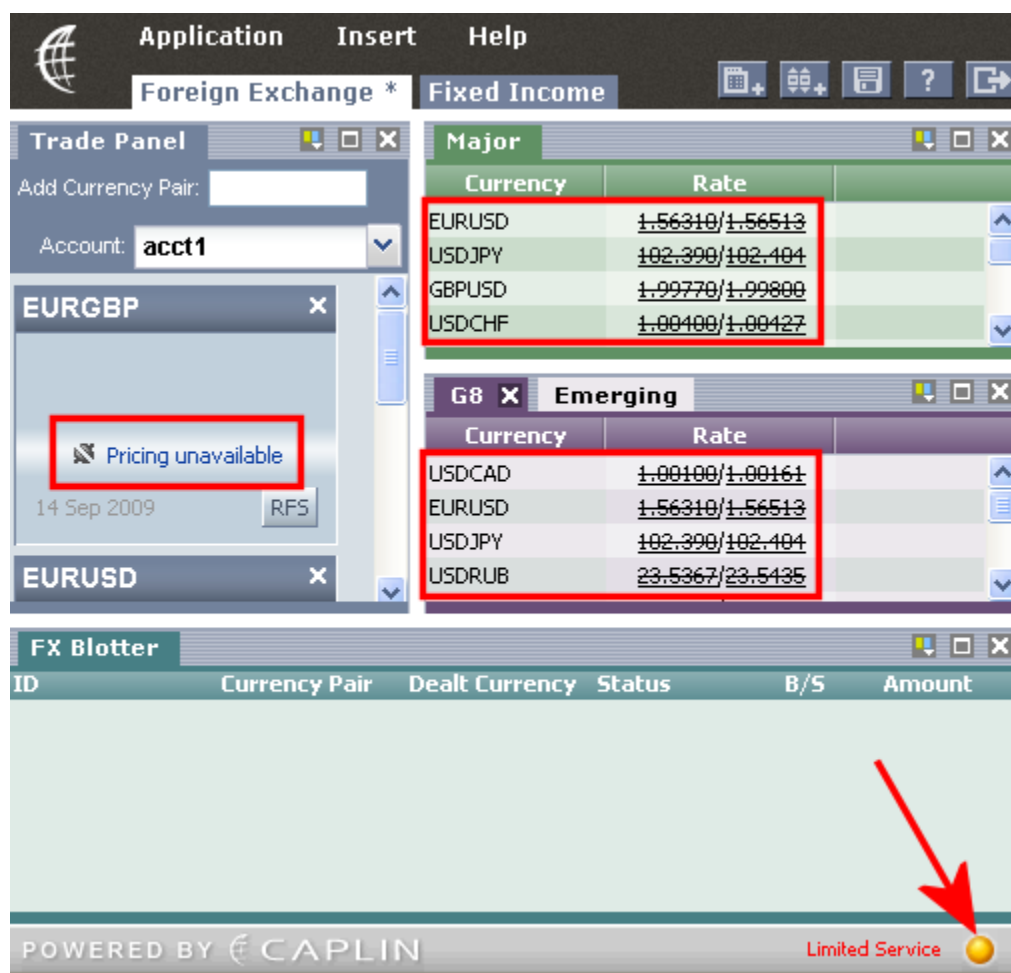
Transformer down / not accessible

Diagnosis

When Transformer is down, end users would typically see one of the following responses in Caplin Trader Client. The pictures show the Caplin Trader Reference Implementation, where price information is fed to Liberator via Transformer.

When the connection between Liberator and Transformer is lost *while Caplin Trader Client is running*:

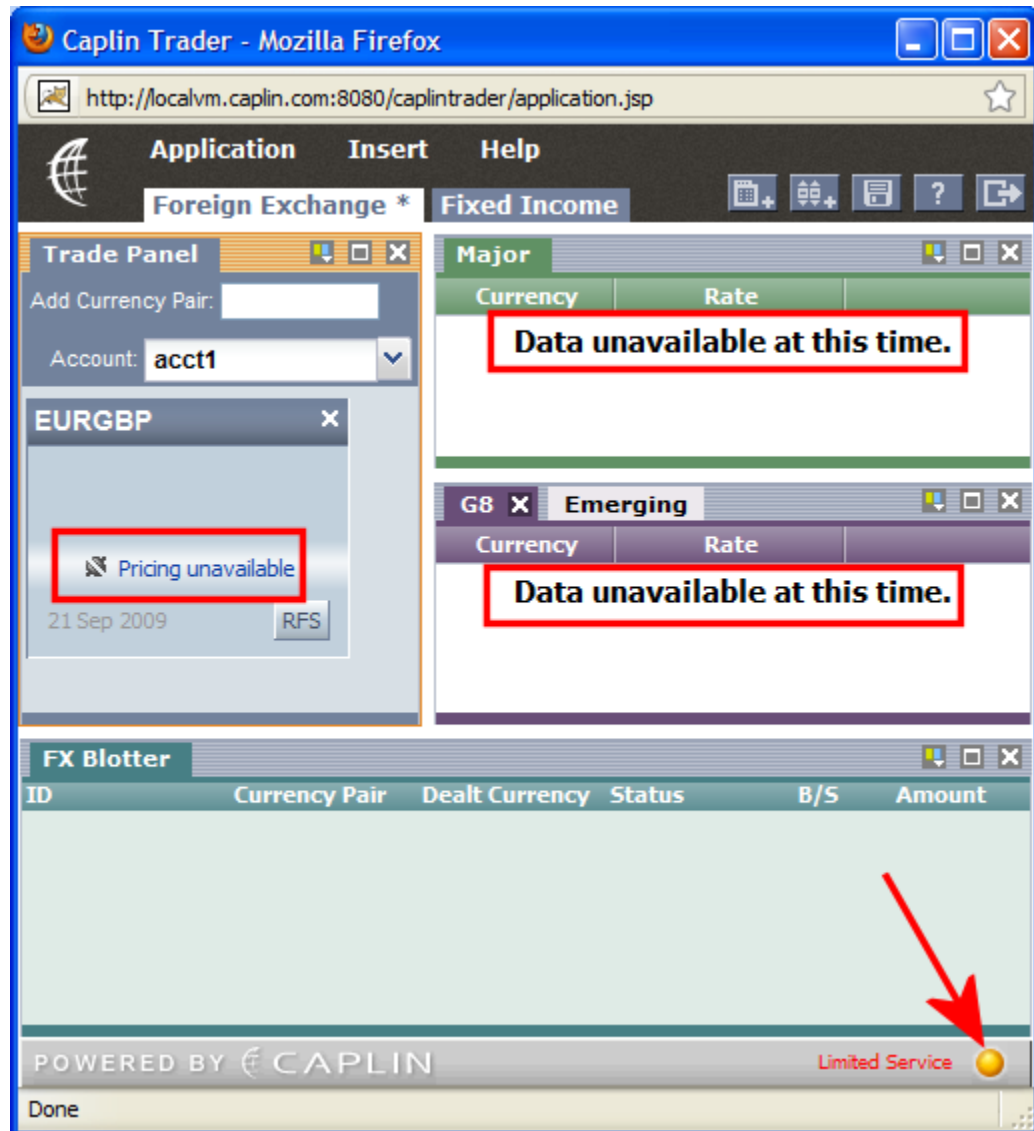
- ◆ Liberator marks the prices as stale. The client therefore strikes out the stale prices displayed in Grids, and indicates on the Trade Tiles that no prices are available, so the user cannot trade.
- ◆ The connection status indicator at the lower left hand corner of the page turns amber, showing that the service is limited.



Caplin Trader Client when Transformer has disconnected

When Caplin Trader Client starts up *after* the connection between Liberator and Transformer has been lost:

- ◆ Liberator indicates that no price data is available.
- ◆ The client displays a message to this effect in each Grid.



Caplin Trader Client started after Transformer disconnected

Tip: The pictures show how the Caplin Trader Reference implementation responds to Transformer loss. Depending on how you have customized Caplin Trader, the stale prices may have a different appearance, the messages displayed in the Grids and on the Trade Tile may have different wording, and the status indicator may be different.

The Liberator status page indicates that the Transformer DataSource is **DOWN**, and the data services provided by the Transformer are also marked as **DOWN**:

Data Services			
Name:	permissioning-data	Name:	fi-trade-data
Status:	OK	Status:	OK
Last Change:	Sep 10 09:58:11	Last Change:	Sep 10 09:58:11
Name:	fx-trade-data	Name:	market-data
Status:	OK	Status:	DOWN
Last Change:	Sep 10 09:58:11	Last Change:	Sep 10 10:04:30
Data Sources			
ID:	20	ID:	16
Name:	transformer	Name:	permissioningsrc
Status:	DOWN	Status:	UP
Last Change:	Sep 10 10:04:30	Last Change:	Sep 10 09:58:11
Address:	192.168.248.129:33822	Address:	192.168.248.129:33821
Label:	transformer	Label:	permissioningsrc

Liberator status page when Transformer is disconnected

Confirm whether the Transformer really is down:

- Look for the Transformer process on the machine that hosts it.

A simple way to do this is using the Linux `ps` command:

```
ps -ef | grep transformer
```

If this command returns just the process that ran the command, the Transformer is not running:

Typical `ps` command output when Transformer is not running

```
tester 25048 23772 0 10:38 pts/2 00:00:00 grep transformer
```

Typical `ps` command output when Liberator is running

```
tester 24797 1 6 10:35 ? 00:00:13
/home/tester/CT1.4.7/apps/caplin/Transformer/bin/transformer -r
/home/tester/CT1.4.7/apps/caplin/Transformer
--preprocessor-binary=../../kits/M4/bin/preprocess.sh
-f transformer.conf -n transformer -d
tester 23021 21599 0 16:42 pts/2 00:00:00 grep rtttd
```


Tip: If you have purchased Caplin's monitoring and management software, you can also check the status of the Transformer using the Enterprise Management Console (EMC).

Tip: If the Transformer is still running, the disconnection may be caused by an [internal network problem](#)^[41].

Possible solutions

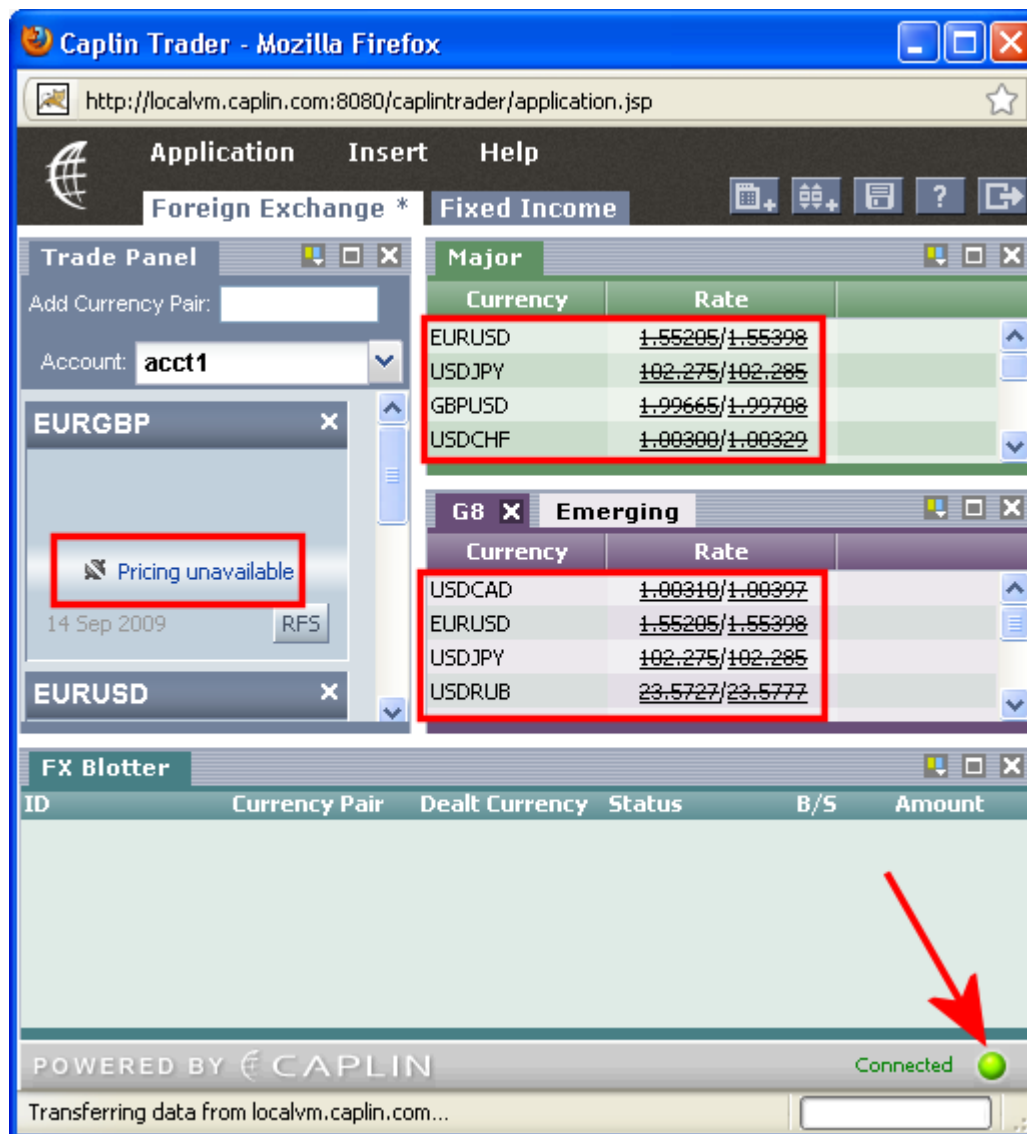
- Look at the Transformer logs, especially the event log, to see if there are any messages about an abnormal condition that may have caused the Transformer to stop running.
- Check whether there may be a problem with the Transformer configuration.

Pricing DataSource down / not accessible

Diagnosis when the Pricing DataSource is connected to a Transformer

Assuming that streaming prices are fed to Liberator via a Transformer (that is the Pricing DataSource is connected to a Transformer, rather than a Liberator), when a DataSource that provides those prices is down, end users would typically see the following in Caplin Trader Client.

The picture shows the Caplin Trader Reference Implementation, where the connection between Transformer and the FX Pricing DataSource has been lost:



Caplin Trader Client detects Pricing DataSource is disconnected

- ◆ Transformer marks the streaming prices as stale; the client therefore strikes out the stale prices displayed in grids, and indicates on the Trade Tiles that no prices are available, so the user cannot trade.
- ◆ The connection status indicator at the lower left hand corner of the page remains green, since Liberator's connections to its DataSource peers are all ok (unlike the situation where the connection between Liberator and transformer has been lost – see [Transformer down / not accessible](#)^[27]).

Tip: The picture shows how the Caplin Trader Reference implementation reports Pricing DataSource loss. Depending on how you have customized Caplin Trader, the stale prices may have a different appearance, the message displayed on the Trade Tile may have different wording, and the status indicator may be different.

Liberator status page

Note that with this configuration, the Liberator status page does not indicate a problem – all DataSources connected to the Liberator and their associated data services are marked as **OK**.

Diagnosis when the Pricing DataSource is connected to a Liberator

If the Caplin Trader installation has been configured so that streaming prices are fed directly from the DataSource(s) to the Liberator, the connection status indicator in Caplin Trader Client *does* indicate when a Pricing DataSource has become disconnected from the Liberator, and the Liberator status page will indicate which DataSource is unavailable. This is similar to the situation where a Trading DataSource becomes disconnected from Liberator – see the pictures of Caplin trader Client and the Liberator status page in [Trading DataSource down / not accessible](#)^[33]

Further checks

Confirm whether the Pricing DataSource really is down:

- Look for the DataSource process on the machine that hosts it.

Tip: If you have purchased Caplin's monitoring and management software, you can also check the status of the DataSource using the Enterprise Management Console (EMC).

Tip: If the Pricing DataSource is still running, the disconnection may be caused by an [internal network problem](#)^[41].

Possible solutions

- Look at the Pricing DataSource's logs, especially the event log, to see if there are any messages about an abnormal condition that may have caused the DataSource to stop running.
- Check whether there may be a problem with the DataSource's configuration.

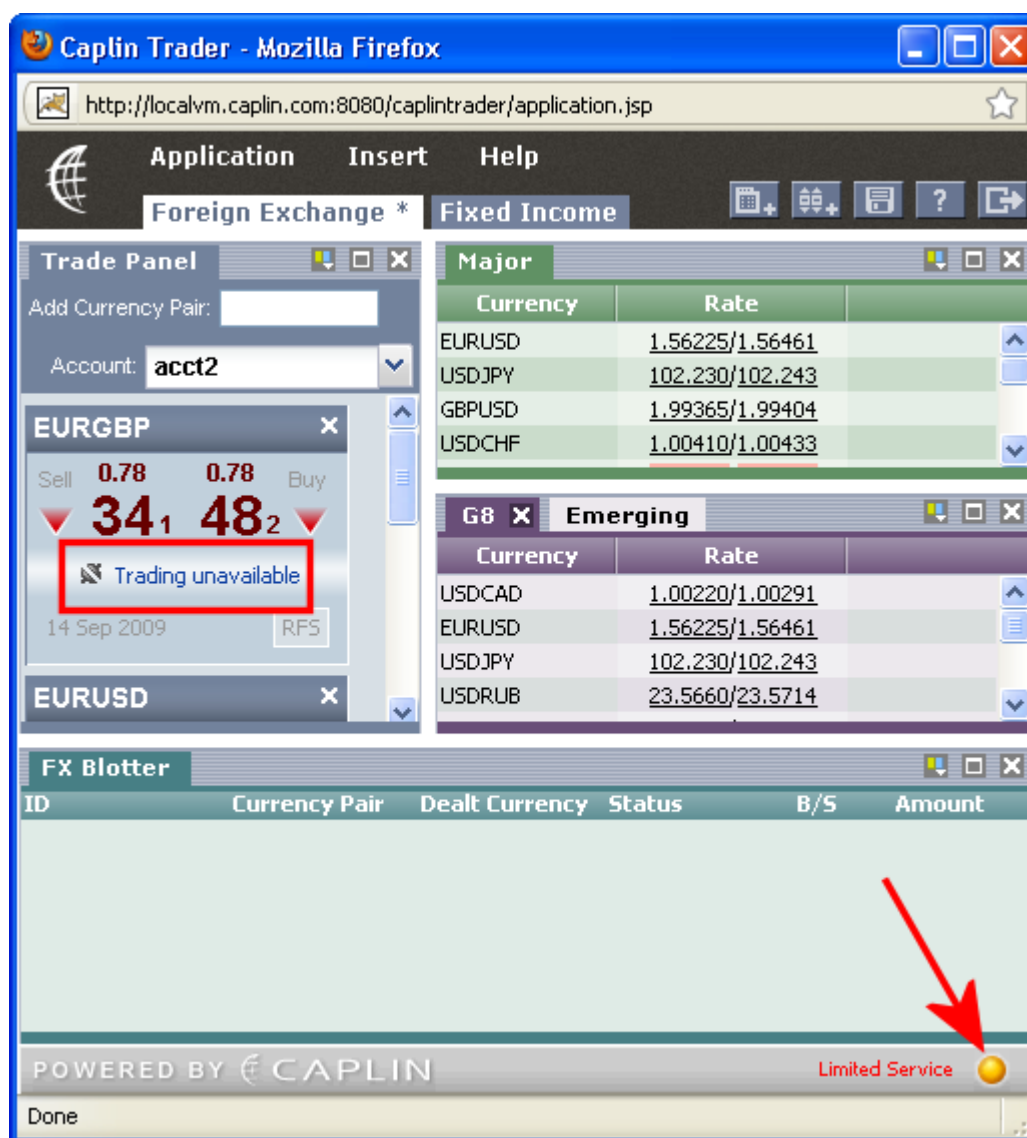
Trading DataSource down / not accessible

Diagnosis when the Trading DataSource is connected to a Liberator

Assuming that the Trading DataSource is connected directly to Liberator (rather than via a Transformer), when the DataSource is down, end users would typically see the following in Caplin Trader Client.

The picture shows the Caplin Trader Reference Implementation, where the connection between Liberator and the FX Trading DataSource has been lost:

- ◆ The user is unable to trade; for example, the client indicates on the Trade Tiles that trading is unavailable, and Trade Tickets do not return quotes.
- ◆ Streaming price updates continue to be fed to the Grids and Trade Tiles, so the connection status indicator at the lower left hand corner of the page turns amber, showing that the service is limited.



Caplin Trader Client detects Trading DataSource is disconnected

Tip: The picture shows how the Caplin Trader Reference implementation reports Trading DataSource loss. Depending on how you have customized Caplin Trader, the message displayed on the Trade Tile may have different wording, and the status indicator may be different.

The Liberator status page indicates that the Trading DataSource is **DOWN**, and the data services provided by the DataSource are also marked as **DOWN**:

Data Services			
Name:	permissioning-data	Name:	fi-trade-data
Status:	OK	Status:	OK
Last Change:	Sep 10 10:21:47	Last Change:	Sep 10 10:21:55
Name:	fx-trade-data	Name:	market-data
Status:	DOWN	Status:	OK
Last Change:	Sep 10 10:24:22	Last Change:	Sep 10 10:21:54
Data Sources			
ID:	20	ID:	16
Name:	transformer	Name:	permissioningsrc
Status:	UP	Status:	UP
Last Change:	Sep 10 10:21:54	Last Change:	Sep 10 10:21:47
Address:	192.168.248.129:34105	Address:	192.168.248.129:34083
Label:	transformer	Label:	permissioningsrc
ID:	17	ID:	18
Name:	tradesrc	Name:	tradesrc
Status:	DOWN	Status:	UP
Last Change:	Sep 10 10:24:22	Last Change:	Sep 10 10:21:55
Address:	192.168.248.129:34088	Address:	192.168.248.129:34111
Label:	fxtradesrc	Label:	fitradesrc

Liberator status page when Trading DataSource is disconnected

Diagnosis when the Trading DataSource is connected to a Transformer

If the Caplin Trader installation has been configured so that Trading DataSources are connected to a Transformer (rather than directly to the Liberator), the connection status indicator in Caplin Trader Client does not indicate when a Trading DataSource has become disconnected from the Liberator, and the Liberator status page does not indicate which DataSource is unavailable. This is similar to the situation where a Pricing DataSource becomes disconnected from Liberator – see the pictures of Caplin Trader Client and the Liberator status page in [Pricing DataSource down / not accessible](#).

Further checks

Confirm whether the Trading DataSource really is down:

- Look for the DataSource process on the machine that hosts it.

Tip: If you have purchased Caplin's monitoring and management software, you can also check the status of the DataSource using the Enterprise Management Console (EMC).

Tip: If the Trading DataSource is still running, the disconnection may be caused by an [internal network problem](#)⁴¹.

Possible solutions

- Look at the Trading DataSource's logs, especially the event log, to see if there are any messages about an abnormal condition that may have caused the DataSource to stop running.
- Check whether there may be a problem with the DataSource's configuration.

Multiple Trading DataSources

Your Caplin Trader installation may have multiple Trading DataSources, perhaps servicing different asset classes. In such a configuration, only those instruments that are impacted by a particular trading DataSource going down will be displayed as having trading unavailable. Users can continue to trade on other instruments whose Trading DataSources are still up and running.

5.4 Client–Liberator transmission latency too high

Diagnosis

The transmission latency of the connection between the client and Liberator is too high. This may manifest as intermittent disconnections and reconnections at the client.

StreamLink for Browsers monitors the health of its connection with the Liberator by timing out the receipt of data from the Liberator. If SL4B does not receive any data during a five second timeout period, it sends the Liberator an RTTP NOOP message and times out the acknowledgement of this message. If the NOOP acknowledgment timer expires before any data is received (including the NOOP acknowledgement), SL4B assumes the connection to the Liberator has been lost, and tries to reconnect.

Very high transmission latency may mean that every so often the client does not receive any data during the five second timeout period, and also times out the subsequent NOOP acknowledgement; SL4B therefore erroneously assumes the connection to the Liberator has been lost.

Possible solution 1

If most of your end users are experiencing this problem, first check that the timeout on the NOOP acknowledgement from Liberator has been set to a sensible (not too low) value in the StreamLink for Browsers configuration. The timeout is defined by the RTTP Provider configuration attribute called **nooptimeout**. This attribute has a default value of 5000 milliseconds (5 seconds), which should be more than suitable for connections that stream data to clients. (If the network normally introduced a transmission latency approaching 5+5 seconds, the benefits of streaming real time financial data to clients would be lost.)

Tip: In the Reference Implementation of Caplin Trader Client, the SL4B configuration is defined in the Javascript™ file *sl4b-configuration-attributes.js* in *apps/webapps/caplintrader/applications/CaplinTrader/conf/*.

Possible solution 2

High latency could be caused by high data rates saturating the available communication bandwidth. If this is the case, try increasing the throttle level for the streaming data feeds, such as the price feeds. See [Throttle level incorrect](#)^[49].

Possible solution 3

If the timeout is not too low, and data rates look reasonable relative to your internal network's capacity, the problem is most likely a bottleneck somewhere on the Internet or in your internal network.

- Ask your Internet Service Provider if they are aware of a problem with Internet performance that may affect Web users connecting to your site.
- Check the performance of the relevant parts of your internal network.

5.5 Client too slow for update rate

Diagnosis

The Liberator is supplying streaming updates to the Client faster than the client can process them. Typically, the user's PC responds sluggishly, and CPU usage is high.

This fault could also manifest as intermittent/frequent disconnection and reconnection, because the StreamLink library in the slow client application is not processing messages fast enough (see the diagnosis section of [Client-Liberator transmission latency too high](#) ³⁶).

Possible solution 1: PC specification

Check that the user's PC has a high enough specification to handle the streaming data.

Caplin recommends the following PC specification for running Caplin Trader Client (this is the specification against which we benchmark Caplin Trader Client):

- ◆ CPU: Intel® Core™2 Duo (dual core 2.4 GHz per core)
- ◆ Memory: 2 GB RAM
- ◆ Operating system: Microsoft Windows XP

Possible solution 2: PC loading

The user's PC is running too many applications.

- Check what is running.
- Check the PC's CPU loading.

If necessary, recommend that the user closes down some of the other running applications.

Possible solution 3: High user interaction

Find out how the user is interacting with Caplin Trader Client. The following GUI interactions can overload the CPU *if performed at short intervals*:

- ◆ Switching between layouts.
- ◆ Switching between tabs.
- ◆ Scrolling.

Possible solution 4: Browser version


If the user's PC meets the recommended specification, check that the Client application is being run in a suitable browser version. At the time of writing, Caplin recommend using one of the following browsers for optimum Client performance:

- ◆ Firefox 3.5
- ◆ Microsoft Internet Explorer 8

Caplin Trader Client contains code that detects which browser it is running in and warns the user if the browser is not suitable. Each particular release of the Caplin Trader Client Reference Implementation is extensively tested for compatibility with a specific subset of browser versions; these are the browser versions that end users are recommended to use. The list of browser versions is defined in a configuration file in XML format. You can (with some restrictions) tailor the supported browsers to suit your particular implementation of Caplin Trader Client; for more information on how to do this see **Caplin Trader Client: Browser Detection Configuration XML Reference**.

Possible solution 5: Markets are extremely busy.

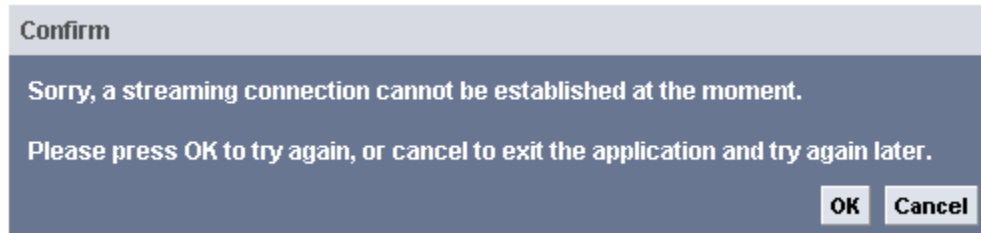
The markets that the user is attempting to trade in may be much more busy than normal, so the rate of data updates is overloading the CPU.

- Check whether other users trading in the same markets are experiencing the same problem.
- If they are, check the throttle level – see [Throttle level incorrect](#) .

5.6 IE trusted site settings deny access

Symptom

End users see the following message when they try to log in to Caplin Trader Client from Internet Explorer:



Caplin Trader Client cannot connect to Liberator

The Liberator status page can still be accessed, and shows that all connections are ok, so the Liberator is working. The Application Server is also working.

Diagnosis

Internet Explorer is not allowing the Client to access Liberator, because the Liberator is not a “trusted site”.

Explanation

In Caplin Trader, Client sessions connect to up to three separate URLs:

- ◆ a URL for the Liberator.
- ◆ a URL for the Application Server.
- ◆ a URL for KeyMaster.

A StreamLink for Browsers application normally works fine without any special browser settings. However, when using Internet Explorer, if the IE security settings define one of the above URLs as a “trusted site”, IE will block access to the other URLs if they are not also “trusted”. IE considers the other sites to be in different security zones and, in an attempt to block cross-domain scripting, it prevents the user from connecting to them.

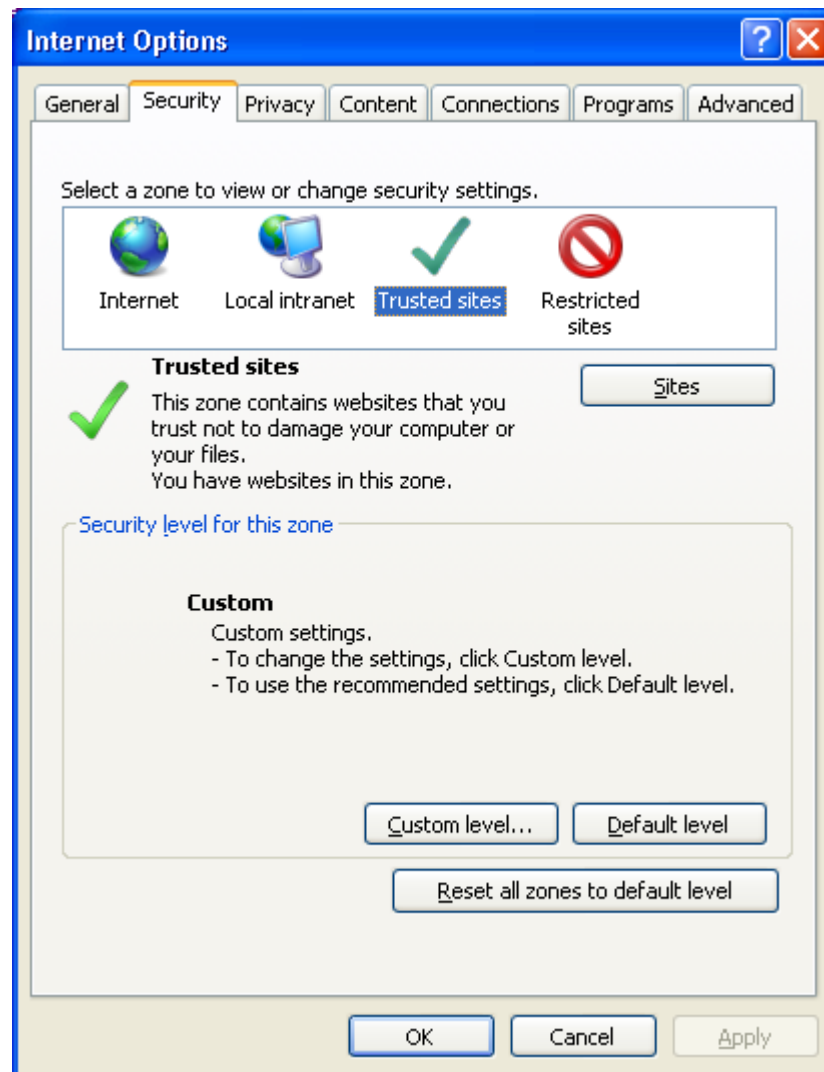
Possible solution

Make sure that either none of the above URLs are set up as trusted sites, or all of them are.

If the URLs share a common top-level domain, they can be added to the IE trusted site configuration as a wildcard followed by this top-level domain.

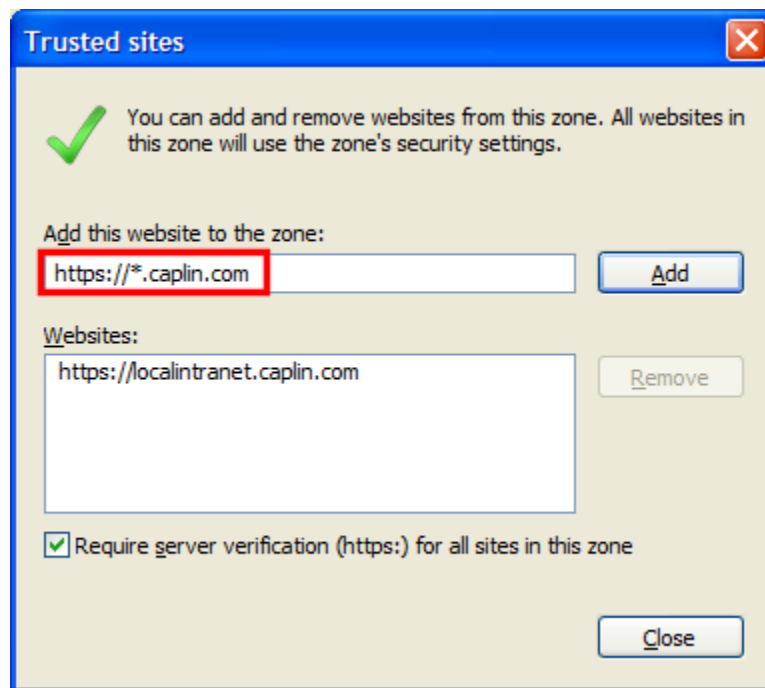
- In Internet Explorer select the menu option Tools --> Internet Options

- In the dialog box that pops up select the Security tab and select the Trusted sites zone.



Trusted sites security option of Internet Explorer

- Select the Sites button and add the common domain:
For example, if the required URLs are `tradehome.caplin.com` (Liberator URL), `securityhome.caplin.com` (KeyMaster URL), and `tradeportal.caplin.com` (Application Server URL), then simply add `*.caplin.com` as a trusted domain.



Adding the common domain to the trusted site list

In this example, you would also need to remove `https://localintranet.caplin.com` as a trusted site, since it is now included in `https://*.caplin.com`.

Tip: Caplin Trader Client does not need to be set up as a trusted site in Internet Explorer. It can work perfectly well without this setting.

5.7 Internal network problem

Diagnosis

- ◆ No users (internal or external) may be able to access Caplin Trader Client, and/or
- ◆ the Clients may not be able to communicate with Liberator, and/or
- ◆ the Liberator may not be able to communicate with Transformer or the DataSource adapters.

These faults could be because there is a problem with the internal network that connects these components together. For example, there may be a routing problem, or a firewall may be blocking access to Liberator or other component(s).

Possible solutions

- Check the relevant parts of your internal network using a suitable tool, such as traceroute.
- If there is a firewall between the Caplin Trader components, check the firewall rules to make sure that DataSource message traffic is permitted across the firewall.

5.8 Internet access problem at a customer's site

Diagnosis

There could be a problem with your customer's internet connection.

Ask the affected users to do the following simple tests to determine whether this is the case:

- Can the external users can access well known URLs such as www.google.com or www.bbc.co.uk.
- Can the external users access your company's web site?
- Can the external users access your company's portal page that gives them access to Caplin Trader?

5.9 Internet interface problem

Diagnosis

External Clients may not be able to connect to Caplin Trader Client and/or the Liberator across the Internet because there is a problem with the interface between the Internet and your internal network. The fault could lie in the Internet facing network elements; for example, one or more of your network devices could be preventing Client–Liberator communication via RTTP. Alternatively, a firewall may be blocking access to the Application Server and/or Liberator.

Possible solutions

- Check the relevant parts of your internal network using a suitable tool, such as traceroute.
- Check the firewall rules to make sure that the Caplin Trader Client URL on your Application Server can be accessed from the internet
- If there is a firewall/proxy between Liberator and the Internet interface, make sure that RTTP message traffic is permitted across the firewall/proxy.
See [Network devices blocking streaming data](#)^[45].

5.10 Intranet interface problem

Diagnosis

Internal Clients may not be able to connect to Caplin Trader Client and/or the Liberator via your Intranet because there is a problem with the interface between Intranet and the rest of your internal network. The fault could lie in the Intranet facing network elements; for example, one or more of your network devices could be preventing Client–Liberator communication via RTTP. Alternatively, a firewall may be blocking access to Liberator.

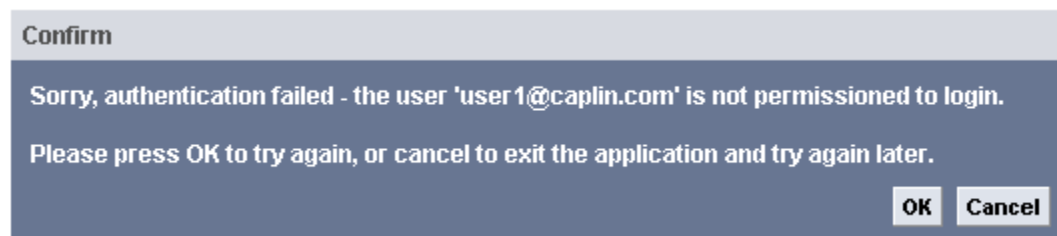
Possible solutions

- Check the relevant parts of your internal network using a suitable tool, such as traceroute.
- Check the firewall rules to make sure that the Caplin Trader Client URL on your Application Server can be accessed from the intranet.
- If there is a firewall/proxy between Liberator and the Intranet interface, make sure that RTTP message traffic is permitted across the firewall/proxy.
See [Network devices blocking streaming data](#)^[45].

5.11 KeyMaster problem

Diagnosis

Caplin Trader can use KeyMaster to authenticate Liberator users through a single sign-on system. KeyMaster may prevent users from accessing Liberator, displaying the following message (in Caplin Trader 1.4.7 and earlier):



Message when there is a KeyMaster authentication problem

- ◆ In later versions of Caplin Trader the message is:
Sorry, we are unable to log you in as <UserName> at the moment.
Please press OK to exit the application and try again later.

Possible solution 1

The message could appear because KeyMaster and / or Caplin Trader Client are incorrectly configured.

Possible solution 2

Another typical cause of this error is a mismatch between system times on servers. Users of Caplin Trader Client are automatically logged on to Liberator through a secure user credentials token that is generated by KeyMaster when the user logs on to the Client. The token is only valid for a certain length of time from its creation, the default being 10 minutes (configured in the Liberator).

If there is a timing problem, the Liberator event log file contains a message like this:

```
NOTIFY: Signature expired for key_id [key id] - [timestamp] denying login
```

Make sure that the clock on the server running the Liberator is synchronized with the clock on the server where the KeyMaster Signature Generation servlet is running. If the clocks on these two servers are set to different times, the Liberator may falsely decide that a user credentials token has expired and it is likely to reject all user credentials tokens for this reason.

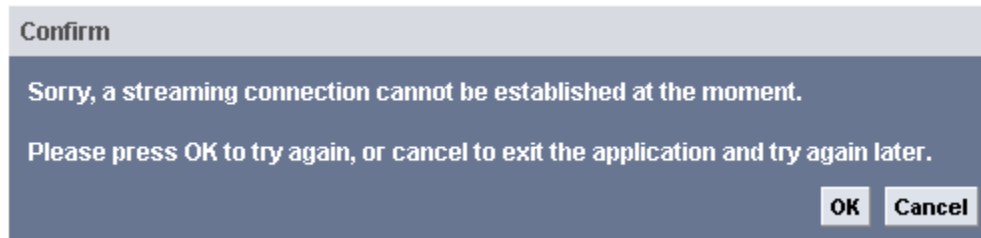
If the fault still occurs when the server times are synchronized, check the credentials token timeout value configured on the Liberator; see the section "Modifying the Liberator configuration file" in the **KeyMaster Administration Guide**.

5.12 Licence has expired

Diagnosis

The Liberator license has expired.

- ◆ End users see the following message when they try to log in to Caplin Trader Client:



Caplin Trader Client cannot connect to Liberator

- ◆ The Liberator status page cannot be accessed.
- ◆ The Liberator event log contains lines like the following:

```
009/09/15-11:46:40.951 +0100: ERROR: Licence Expired on Sep 14  
2009/09/15-11:46:40.952 +0100: NOTIFY: Shutting down - LICENSE (5)
```

Possible solution

Contact your Caplin Account Representative or Caplin Support to obtain a replacement license.

Note: There are other aspects of the licensing scheme that may limit end users' access to Caplin Trader. For more information, see the **Caplin Platform Guide to User Licensing**.

Other reasons for access to Liberator being denied are:

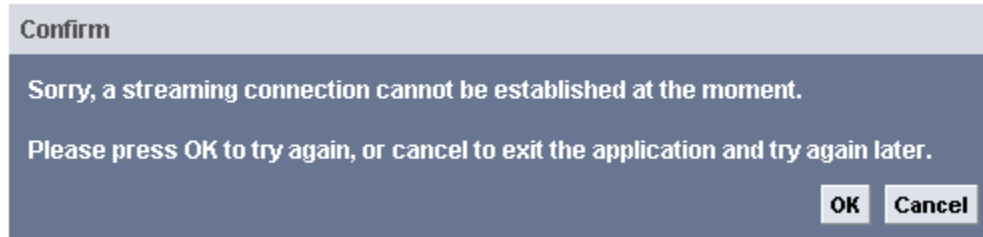
- ◆ [Liberator URL access problem](#) ⁵².
- ◆ [Liberator down / not accessible](#) ²³.
- ◆ [IE trusted site settings deny access](#) ³⁹.
- ◆ There is an [Internet interface problem](#) ⁴² (only external users are denied access to Liberator).
- ◆ There is an [Intranet interface problem](#) ⁴² (only internal users are denied access to Liberator).
- ◆ There is some other [internal network problem](#) ⁴¹ (no users can access Liberator).

5.13 Network devices blocking streaming data

Diagnosis

One or more of your network devices, or a network device at the customer's end of the connection, may be preventing the Client and Liberator from exchanging data (including streaming data), via a direct RTTP connection. This causes the Client to revert to a polling (type 3) connection in RTTP. This manifests as one of the following symptoms:

- ◆ The Client cannot establish a streaming connection:



Caplin Trader Client cannot connect to Liberator

- ◆ The Client display keeps freezing up and/or displayed streaming data is frequently out of date, and the Caplin Trader Client console log contains the following messages:

```
2009/09/16-11:57:28.137 WARN Connection status:  
Connecting to http://example.com:50180 (connection type 3)  
2009/09/16-11:57:28.185 WARN Connection status:  
RTTP Session ID: 09eTryYSCY6TJb_VPjSu_Q  
2009/09/16-11:57:28.351 WARN Connection status:  
Connected and logged into http://example.com:50180 (connection type 3)
```

Caplin Trader normally uses direct RTTP connections tunneled over HTTP or HTTPS. Some (mostly older) proxies and stateful packet inspection firewalls enforce buffering of data, or they may prevent loading of pages until the server has finished sending its data. In these situations StreamLink for Browsers in the Client may not be able to establish a direct RTTP connection to the Liberator, and therefore downgrades to a polling (RTTP type 3) connection. However, polling is inherently inefficient and so may result in poor Client (and possibly Liberator) performance.

Tip: For more information on RTTP connection types, see the **Caplin StreamLink Overview**.

Possible solutions

This problem is more likely to occur if the RTTP messaging between Client and Liberator is tunneled through HTTP.

- If customers at a particular site only are experiencing the problem, check whether there is a proxy server at the customer site that may be blocking direct RTTP connections.
- Try reconfiguring StreamLink and Liberator to tunnel the RTTP messaging through *HTTPS*; it is much more difficult for such proxies to inspect HTTPS data and make (inappropriate) decisions about how to handle it.

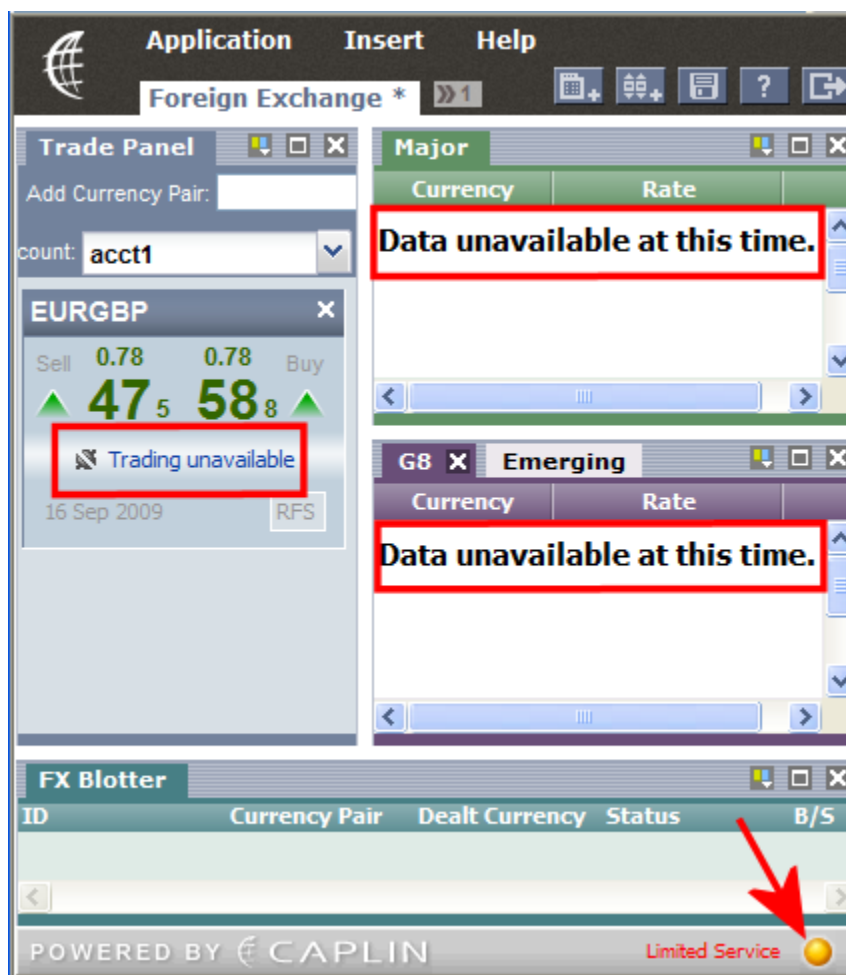
Note: For security reasons, it is good practice to route Client–Liberator traffic via **HTTPS** rather than HTTP.

5.14 Ports are incorrectly configured

Diagnosis

The DataSource configuration for the various Caplin Trader components defines the ports through which the components communicate. If there is a mismatch in the port configuration between components, end users will not have access to data, and/or they will not be able to trade.

As an example, this section describes a particular scenario where the Liberator's DataSource port (the port on which other DataSources, such as Transformer and Trading DataSources, connect to Liberator) is incorrectly configured, so it clashes with the setting configured for the other DataSources. The following picture shows how Caplin Trader Client responds.



Caplin Trader Client when error in
Liberator's DataSource port configuration

The Liberator's *event-rtttd.log* contains the following entries, showing that connections to the Trading DataSources cannot be established:

```
2009/09/14-12:36:32.870 +0100: INFO:
</FT/TRADE/FX/user1@caplin.com-0> has changed status from 1 to 2
  <Mandatory source down>
...
2009/09/14-12:36:32.927 +0100: INFO:
</FT/TRADE/FI/user1@caplin.com-0> has changed status from 1 to 2
  <Mandatory source down>
```

Tip: If you have purchased Caplin's monitoring and management software, you can also check the status of the Liberator's connections to the other Caplin Trader components using the Enterprise Management Console (EMC).

Diagnosis

This fault was caused by the following incorrect Liberator configuration in the M4 configuration file *apps/caplin/CommonConfig/Config_defs.m4*. The Liberator's DataSource port is set to a value that clashes with the Transformer's port:

```
define(LIBERATOR1DIRECTPORT,HOST1PORTPREFIX`82')
define(LIBERATOR1DATASRCPORT,HOST1PORTPREFIX`01')
define(LIBERATOR1RMIREGISTRYPORT,HOST1PORTPREFIX`20')
define(LIBERATOR1RMICLIENTPORT,HOST1PORTPREFIX`30')

...
define(TRANSFORMER1DATASRCPORT,HOST1PORTPREFIX`01')
define(TRANSFORMER1UDPPORT,HOST1PORTPREFIX`61')
define(TRANSFORMER1SHELLPORT,HOST1PORTPREFIX`99')
define(TRANSFORMER1RMIREGISTRYPORT,HOST1PORTPREFIX`21')
define(TRANSFORMER1RMICLIENTPORT,HOST1PORTPREFIX`31')
```

Solution

Make sure that each DataSource application (Liberator, Transformer, Pricing DataSources, Trading DataSources, and so on) has a unique DataSource port number defined in the M4 configuration file:

```
define(LIBERATOR1DIRECTPORT,HOST1PORTPREFIX`82')
define(LIBERATOR1DATASRCPORT,HOST1PORTPREFIX`00')
define(LIBERATOR1RMIREGISTRYPORT,HOST1PORTPREFIX`20')
define(LIBERATOR1RMICLIENTPORT,HOST1PORTPREFIX`30')

...
define(TRANSFORMER1DATASRCPORT,HOST1PORTPREFIX`01')
define(TRANSFORMER1UDPPORT,HOST1PORTPREFIX`61')
define(TRANSFORMER1SHELLPORT,HOST1PORTPREFIX`99')
define(TRANSFORMER1RMIREGISTRYPORT,HOST1PORTPREFIX`21')
define(TRANSFORMER1RMICLIENTPORT,HOST1PORTPREFIX`31')
```

5.15 Throttle level incorrect

Diagnosis

If many users find that the Caplin Trader Client display keeps freezing up and/or displayed streaming data is frequently out of date, yet their PCs and browsers meet the minimum specifications (see [Client too slow for update rate](#)^[37]), the problem may be because the Liberator's throttle level is incorrectly set for the rate at which updates are being received from its attached DataSource adapters.

Possible solution

- Try increasing the throttle level for the streaming data feeds, such as the price feeds.

Note: Messages on Trade Channels must *not* be throttled.

For more information on how to set Liberator's throttle levels for trading applications, see the “Configuring Caplin Liberator for trading” section of **Caplin Trader: Integrating Caplin Trader With A Trading System**.

The same document also has an appendix that gives an overview of the throttling concept. The Liberator configuration options that control throttling are defined in the **Liberator Administration Guide**.

5.16 Unsupported browser

Diagnosis

The user sees an error message like this:

<Browser name & version> is not approved to run this application.

The browsers we recommend are Mozilla Firefox 3.0
and Internet Explorer 8.

The browser or browser version in which the user is trying to run Caplin Trader Client is not supported.

Possible solution 1:

Make sure that Caplin Trader Client is configured to allow the correct subset of browsers.

Caplin Trader Client contains code that detects which browser it is running in and warns the user if the browser is not suitable. Each particular release of the Caplin Trader Client Reference Implementation is extensively tested for compatibility with a specific subset of browser versions; these are the browser versions that end users are recommended to use. The list of browser versions is defined in a configuration file in XML format. You can (with some restrictions) tailor the supported browsers to suit your particular implementation of Caplin Trader Client; for more information on how to do this see **Caplin Trader Client: Browser Detection Configuration XML Reference**.

At the time of writing, Caplin recommends using one of the following browsers for optimum Client performance:

- ◆ Firefox 3.5
- ◆ Microsoft Internet Explorer 8

Possible solution 2:

If Caplin Trader Client's list of browser versions is correctly configured, ask the user to try running Caplin Trader Client in one of the permitted browser versions.

5.17 URL access problem

Diagnosis and possible solutions

Users may not be able to access Caplin Trader or Liberator because a URL has been wrongly defined. There are two URLs to consider: the URL that accesses Caplin Trader Client on the Application Server, and the URL that accesses the Liberator.

Make the following checks:

- Can users access your portal web site that provides access to Caplin Trader Client?
If not, there may be a problem with your Internet service. For example, a faulty network interface, a firewall fault, or a fault in one of your web servers.
If users *can* access your portal site:
 - Can users start Caplin Trader Client by typing its URL directly into the browser?
If so, check that the link to Caplin Trader Client specified on your portal web site has the correct URL.
If not, perform the following checks:
 - Is the user trying to connect using an IP address? (`nnn.mmm.xxx.yyy`)
You can only connect to Caplin Trader using a host name
(for example, `http://myappserver.example.com:8080`).
 - Is the host name of the Application Server defined as a fully qualified name?
For example, it must be `myappserver.example.com` rather than just `myappserver`.
 - Is the port number being used to access Caplin Trader correct?
Note that HTTP access defaults to port 80, HTTPS to port 443.
 - Have port numbers been mixed up for the specified protocol?
For example, trying to connect over HTTP to the server's HTTPS port will fail.
 - Check that the URL of Caplin Trader Client is correctly configured in the Application Server.
If Caplin Trader Client has been deployed as a *WAR* file, make sure this file has been placed in the correct folder of the Application Server.

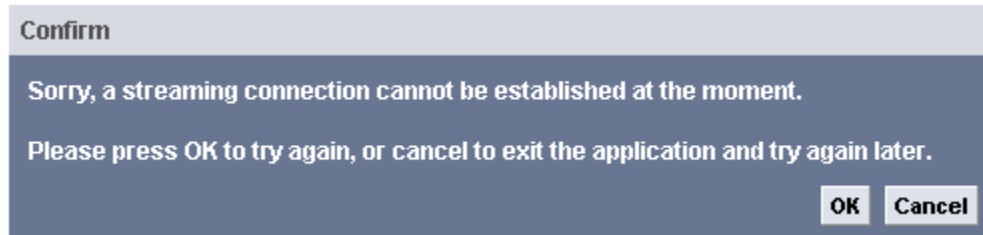
For example, if the Application Server is Tomcat, put the *WAR* file in the `.../tomcat/webapps` folder. If the Caplin Trader Client is correctly configured in the *WAR* file, Tomcat should automatically unzip the *WAR* file to a folder of the same name as the file; for example, *myApp.war* is unzipped to the folder *myApp*. Caplin Trader Client is then available from the URL that includes the folder name; for example, `http://myappserver.example.com/myApp`.

If Caplin Trader Client has been deployed (to a Tomcat server) as a context, check that the path is correct in the `.../tomcat/conf/server.xml` file.
 - Check whether access to the Application Server that hosts Caplin Trader Client is being denied because of a problem with a DNS server or hostname definition.

If the fault is not DNS or hostname related, check the Application Server that hosts Caplin Trader Client; see [Cannot access Application Server](#)^[22].

Liberator URL access problem

- Can users start Caplin Trader Client from your portal site, but are then denied access to Liberator?



(1) Caplin Trader Client cannot connect to Liberator

Or:



(2) Message when Liberator URL has the wrong common domain

If so, check that Caplin Trader Client specifies the correct Liberator URL:

- If your Caplin Trader deployment uses just a single Liberator with no failover, check the **serverurl** configuration attribute in the StreamLink for Browsers configuration file *sl4b-configuration-attributes.js*. (In the Caplin Trader Reference Implementation this file is located in ...\\apps\\webapps\\caplintrader\\applications\\CaplinTrader\\conf\\) The attribute is defined like this:

```
oConfiguration.setAttribute("serverurl",  
                             "https://myliberator.example.com:50181");
```

- If your Caplin Trader deployment uses multiple Liberators and/or is configured for Liberator failover, check the `service` configuration attribute in the StreamLink for Browsers configuration file `sl4b-configuration-attributes.js`. (In the Caplin Trader Reference Implementation this file is located in `...apps\webapps\caplintrader\applications\CaplinTrader\conf\`)

This attribute defines the XML file that specifies the URL(s) of the available Liberator(s), and is typically defined like this:

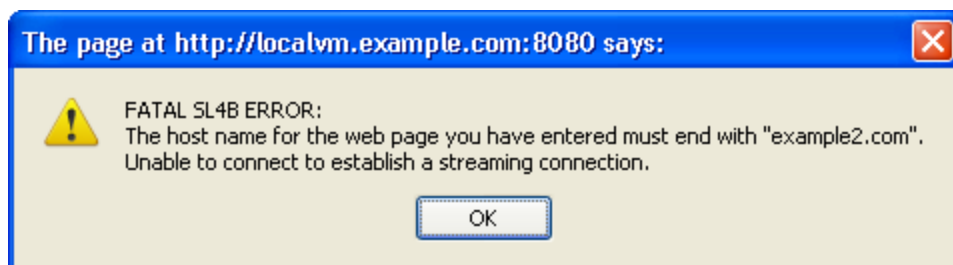
```
oConfiguration.setAttribute("service",  
                             "conf/liberator-service-configuration-https.xml");
```

Open the specified XML file to check these URLs. A typical URL definition looks like this:

```
<!-- primary Liberator -->  
<primaryserver>  
  <address>myliberator.example.com</address>  
  <connections>  
    <type5>https</type5>  
    <type4>https</type4>  
    <type3>https</type3>  
  </connections>  
  <ports>  
    <https>50181</https>  
  </ports>  
</primaryserver>
```

If the common domain of the Liberator URL does not match the common domain of the Application Server's URL, users may see the "connection" failed message (2). For example, if the Application Server's URL is `myappserver.example.com` and the Liberator's URL is `myliberator.example2.com`, SL4B will not be able to access the Liberator, because it does not share a common domain. To fix this problem (in the example), change the Liberator's URL to `myliberator.example.com`, so that it shares the common domain `example.com` with the Application server.

- Alternatively, users may see this message, which indicates that the common URL domain may be incorrectly specified in SL4B's configuration:



(3) Message when common domain configured wrongly in SL4B

The common domain is defined by the **comdomain** configuration attribute in the StreamLink for Browsers configuration file *sl4b-configuration-attributes.js*

```
oConfiguration.setAttribute("comdomain", "example2.com");
```

In this example, SL4B specifies that the common domain is `example2.com`, but the URL of the Application Server is `myappserver.example.com` (and the Liberator's URL is `myliberator.example.com`). To fix this problem (in the example), change **comdomain** to the value `example.com`. Alternatively, the Application server and Liberator URLs could be changed to have the common domain `example2.com`.

- Check that the Liberator is being accessed through the same Web protocol (HTTP/HTTPS) as the Application Server.

Thus:

http://myappserver.example.com and **http://myliberator.example.com**

or

https://myappserver.example.com and **https://myliberator.example.com**

But *not*:

http://myappserver.example.com and **https://myliberator.example.com**

or

https://myappserver.example.com and **http://myliberator.example.com**

If there is a mismatch in the protocols, Liberator connections will be refused.

Note: Access to KeyMaster must also be through the same protocol, HTTP or HTTPS, as the protocol used by the Liberator.

Other reasons for access to Liberator being denied are:

- ◆ [Liberator down / not accessible](#)^[23].
- ◆ [License has expired](#)^[44].
- ◆ [IE trusted site settings deny access](#)^[39].
- ◆ There is an [Internet interface problem](#)^[42] (only external users are denied access to Liberator).
- ◆ There is an [Intranet interface problem](#)^[42] (only internal users are denied access to Liberator).
- ◆ There is some other [internal network problem](#)^[41] (no users can access Liberator).

6 If you need to contact Caplin Support

If you cannot resolve a client connection problem by following the guidelines in this document, and you have a support contract with Caplin Systems, you can contact Caplin Support for assistance.

First try to recreate the problem, so that you can gather as much information about it as possible. In particular:

- Take copies of all the Liberator logs (usually located in the Liberator's *var* directory).
- Enable console logging in Caplin Trader Client, and capture the console log.
See [Appendix A: The Caplin Trader Client console log](#) ⁵⁶.
- Enable SL4B logging in Caplin Trader Client, and capture the SL4B log.
See [Appendix B: SL4B logging](#) ⁵⁹.

You can then contact Caplin Support about the problem through the following channels. Please supply the log files that you captured, and any other information that may help Caplin Support to quickly diagnose the problem and determine how to fix it.

- ◆ Log the problem in Caplin's Issue Management System: <https://jira.caplin.com>
- ◆ Access the Issue Management System via the Caplin Client Portal: <https://support.caplin.com>
- ◆ Email: support@caplin.com
- ◆ Telephone: **+44 (0) 20 7826 9601**

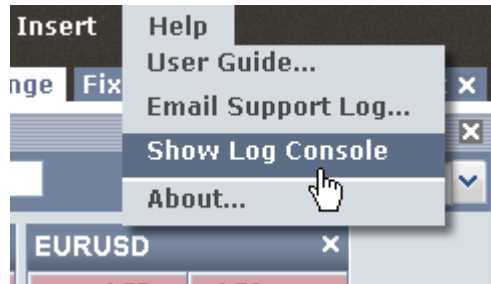
Improving this document

This is very much a living document. If you discover any other situations where Client connection faults can occur, please tell Caplin Support, supplying any information you may have about how to fix the problems. We will include the scenario in a future release of this document.

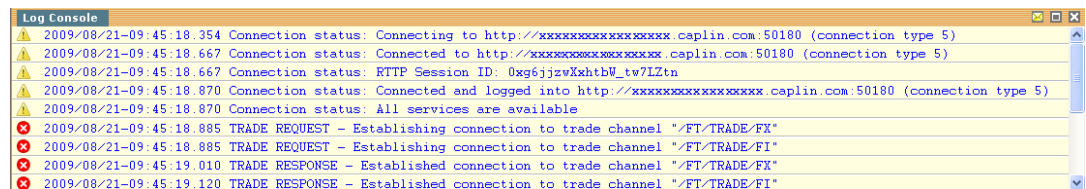
7 Appendix A: The Caplin Trader Client console log

This Appendix explains how to start up Caplin Trader Client's console log and capture it to an email or text file.

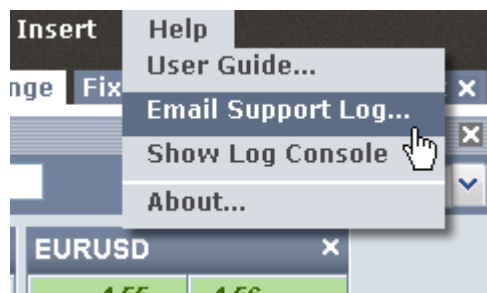
1. In Caplin Trader Client select the menu option
Help > Show Log Console



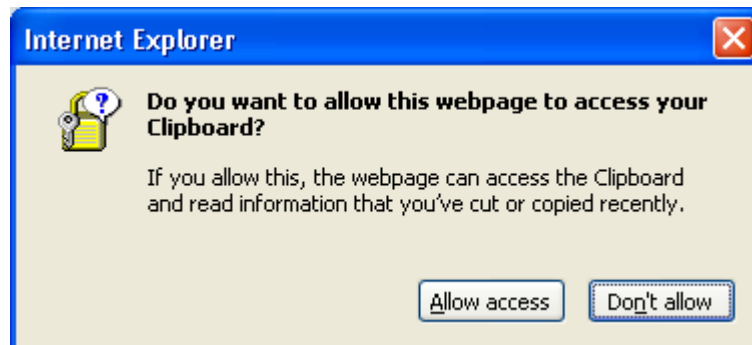
A panel opens that displays messages about Caplin Trader Client activity, including information about connection status:



2. Once you are happy that the condition you are trying to monitor has occurred, you can capture the console log messages. Select the menu option
Help > Email Support Log...

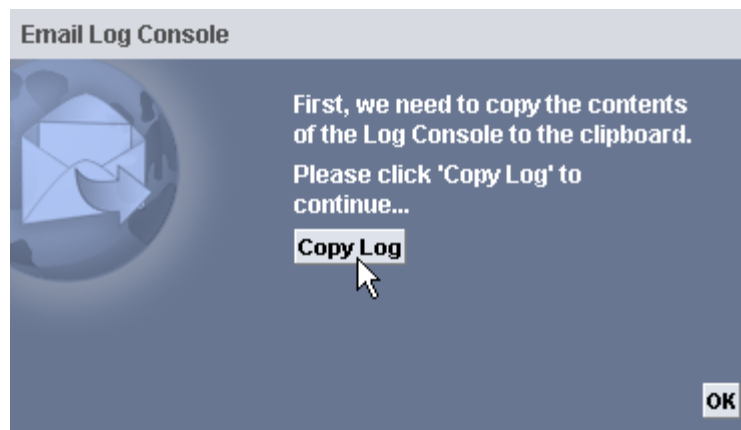


If you are running Caplin trader Client in the Internet Explorer web browser, the following message is displayed



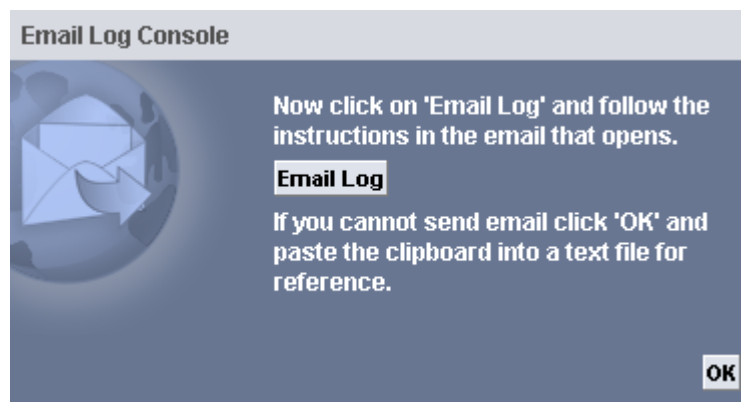
3. Select the Don't allow button

The following dialog box appears:



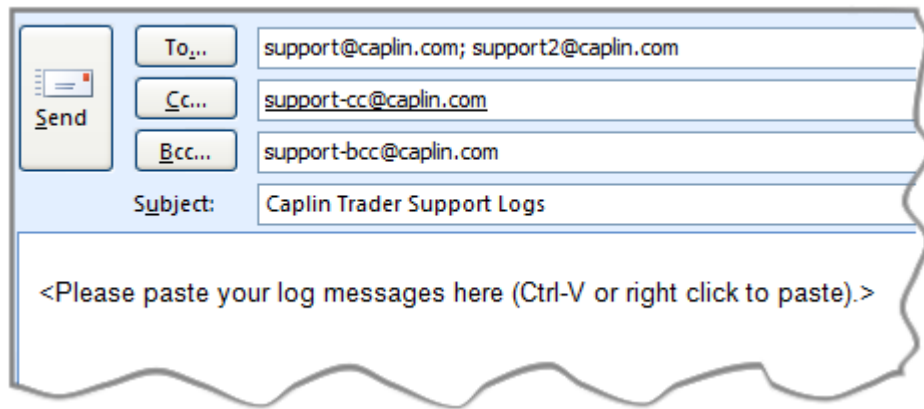
4. Select the Copy Log button

The following dialog box appears:



5. Select the Email Log button

When the email window appears, paste the Console Log messages into it:



Send

To... support@caplin.com; support2@caplin.com

Cc... support-cc@caplin.com

Bcc... support-bcc@caplin.com

Subject: Caplin Trader Support Logs

<Please paste your log messages here (Ctrl-V or right click to paste).>

6. Add any other introductory and/or explanatory text and send the email.

Tip: For an example of a console log, see [Appendix C: Connection log messages](#).

8 Appendix B SL4B logging

StreamLink for Browsers provides a log console facility that displays information about SL4B's connections to Liberator and the RTTP messages exchanged. This information can be useful for diagnosing Client connection problems.

- The simplest way to enable SL4B logging in Caplin Trader Client is to add the debug command to the URL that invokes the Client. For example, to enable SL4B logging in the Caplin Trader Reference Implementation, enter the following URL in the address bar of the web browser:

```
http://<web-address>:8080/caplintrader/application.jsp?debug=debug
```

The command `?debug=debug` sets the SL4B debug level to “debug”, which is the most relevant level for investigating connection issues. It should provide enough information to determine why the client cannot connect, or reconnect, to a Liberator.

- The log messages are displayed in a separate window. You can paste them into a file to keep a more permanent record.

To log the RTTP messages that are exchanged with the Liberator, set the debug level to `rttp-finer`:

```
http://<web-address>:8080/caplintrader/application.jsp?debug=rttp-finer
```

Caution: This will generate a lot of information in the log message window!

Note: When SL4B logging is enabled, the performance of the Client will degrade, particularly if you set the debug level to `rttp-finer` or `rttp-finest`.

Tip: It may be more user friendly to set up a preconfigured URL on your portal page that allows users to launch Caplin Trader Client with SL4B logging enabled. For example, the link might say “Launch XYZ Bank Trader with connection logging”. You will have to do this if your Caplin Trader deployment prevents users from modifying the launch URL in the browser's address bar.

- For more information on how to set up SL4B logging, see “How do I troubleshoot any problems?” in the “Frequently Asked Questions” topic of the **StreamLink for Browsers API Reference**.

Example SL4B console log

Here is an extract from an SL4B console log where the debug level was set to `debug`. It shows the log messages relating to connections (marked [CONNECTION]).

```
Debug Console for frame "master"
Sep 23 10:33:27.219 +0100 - info: SL4B 4.5.7-141234 (Built 11-Aug-2009),
Copyright 1995-2009 Caplin Systems Ltd
Sep 23 10:33:27.219 +0100 - info: SL4B running in browser: Mozilla/5.0
(Windows; U; Windows NT 5.1; en-GB; rv:1.9.1.3) Gecko/20090824 Firefox/3.5.3
...
Sep 23 10:33:27.444 +0100 - notify: [CONNECTION] CommonDomainExtractor.
determineCommonDomain: document.domain will be set to caplin.com
Sep 23 10:33:27.444 +0100 - info: [CONNECTION] JavaScriptRttpProvider.initialise
Sep 23 10:33:30.553 +0100 - info: WindowEventHandler.onLoad: method invoked
Sep 23 10:33:30.557 +0100 - info: [CONNECTION] JavaScriptRttpProvider.onLoad()
Sep 23 10:33:30.602 +0100 - info: [CONNECTION] ConnectionManager.createConnection(false)
Sep 23 10:33:30.607 +0100 - info: [CONNECTION] Next connection information:
ConnectionData(Protocol = http, Address = example.com,
Port = 50180, Method = XHR Multipart)
Sep 23 10:33:30.615 +0100 - info: [CONNECTION] ConnectionProxy.setConnection:
AbstractConnection(url = /RTTP-TYPE4)
Sep 23 10:33:30.620 +0100 - notify: [CONNECTION] Attempting a type XHR Multipart
```

```

connection to Liberator http://example.com:50180
Sep 23 10:33:30.626 +0100 - info: [CONNECTION] ConnectionProxy.start()
Sep 23 10:33:30.630 +0100 - info: [CONNECTION] Type4Connection.start
Sep 23 10:33:30.638 +0100 - info: [CONNECTION] Connection information
    "Establishing response channel (URL: http://example.com:50180/sl4b/
    /javascript-rttp-provider/container.html?type=response&init=true&type4=true)"
Sep 23 10:33:30.645 +0100 - notify: [CONNECTION] LiberatorUrlCheck.
testLiberatorIsAvailable [frmResponse]: Checking Liberator availability:
http://example.com:50180/sl4b/javascript-rttp-provider/
url-check.gif?1253698410645
Sep 23 10:33:30.652 +0100 - info: [CONNECTION] Connection information
    "Establishing request channel (URL: http://example.com:50180/sl4b/
    javascript-rttp-provider/container.html?type=request&init=true)"
Sep 23 10:33:30.658 +0100 - notify: [CONNECTION] LiberatorUrlCheck.
testLiberatorIsAvailable [frmRequest]: Checking Liberator availability:
http://example.com:50180/sl4b/javascript-rttp-provider/
url-check.gif?1253698410658
Sep 23 10:33:30.679 +0100 - notify: [CONNECTION] LiberatorUrlCheck.onLoad[frmResponse]:
Liberator available, loading http://example.com:50180/sl4b/
javascript-rttp-provider/container.html?type=response&init=true&type4=true
&domain=caplin.com&uniqueid=1253698410645&maxget=0
Sep 23 10:33:30.705 +0100 - notify: [CONNECTION] LiberatorUrlCheck.onLoad[frmRequest]:
Liberator available, loading http://example.com:50180/sl4b/
javascript-rttp-provider/container.html?type=request&init=true
&domain=caplin.com&uniqueid=1253698410658&maxget=0
Sep 23 10:33:30.737 +0100 - info: [CONNECTION] ConnectionProxy.connect()
Sep 23 10:33:30.745 +0100 - info: [CONNECTION] Type4Connection.connect
Sep 23 10:33:30.756 +0100 - info: SL4B_HttpRequest.initialiseLogger:
using native XmlHttpRequest object
Sep 23 10:33:30.767 +0100 - notify: [CONNECTION] Session Id: 0XttAUvKkupbdedpDgt4ZK
Sep 23 10:33:30.773 +0100 - notify: [CONNECTION] Successfully established type
XHR Multipart connection to localvm.localadmin
Sep 23 10:33:30.790 +0100 - notify: [CONNECTION] KeyMasterCredentialsProvider
.getCredentials: stop keep alive waiting for iframe to load.
Sep 23 10:33:30.795 +0100 - debug: SL4B_KeyMasterCredentialsProvider:
Loading initial KeyMaster page
Sep 23 10:33:30.806 +0100 - notify: [CONNECTION] KeyMasterCredentialsProvider
.getCredentials: load credentials waiting for iframe to load.
Sep 23 10:33:30.900 +0100 - debug: SL4B_KeyMasterCredentialsProvider:
Initial KeyMaster page loaded
Sep 23 10:33:30.905 +0100 - notify: [CONNECTION] KeyMasterCredentialsProvider.
.getCredentials: Requesting credentials
Sep 23 10:33:30.941 +0100 - info: [CONNECTION] Connection information
    "KeyMaster authentication success: Attempting Liberator login..."
Sep 23 10:33:30.947 +0100 - notify: [CONNECTION] ConnectionManager.login:
username = user1@caplin.com; password = ...
Sep 23 10:33:30.959 +0100 - notify: [CONNECTION] Credentials retrieved for
user user1@caplin.com
Sep 23 10:33:30.977 +0100 - info: SL4B_HttpRequest.initialiseLogger:
using native XmlHttpRequest object
Sep 23 10:33:30.994 +0100 - notify: [CONNECTION] Log in successful
Sep 23 10:33:31.001 +0100 - debug: RtmlSubscriber.ready: called.
Sep 23 10:33:31.006 +0100 - info: RtmlSubscriber: Finding quote tags...
Sep 23 10:33:31.014 +0100 - debug: RtmlSubscriber.ready: found 0 quote tags.
Sep 23 10:33:31.019 +0100 - debug: RTML Subscriber: Made 0 requests after optimisation.
Sep 23 10:33:31.038 +0100 - info: [CONNECTION] DataSource "transformer" is up
Sep 23 10:33:31.043 +0100 - info: [CONNECTION] DataSource "permissioningsrc" is up
Sep 23 10:33:31.048 +0100 - info: [CONNECTION] DataSource "tradesrc" is up
Sep 23 10:33:31.053 +0100 - info: [CONNECTION] DataSource "tradesrc" is up
Sep 23 10:33:31.058 +0100 - info: [CONNECTION] Data service "permissioning-data" is up,
all DataSources are up
Sep 23 10:33:31.065 +0100 - info: [CONNECTION] Data service "fi-trade-data" is up,
all DataSources are up
Sep 23 10:33:31.071 +0100 - info: [CONNECTION] Data service "fx-trade-data" is up,
all DataSources are up
Sep 23 10:33:31.079 +0100 - info: [CONNECTION] Data service "market-data" is up,
all DataSources are up
...

```

9 Appendix C: Connection log messages

This appendix shows typical client console log and Liberator log entries when Caplin Trader Client starts up correctly and establishes a connection to the Liberator.

Caplin Trader Client console log

```
...
2009/10/27-10:19:24.142 WARN Connection status:
    Connecting to http://localvm.caplin.com:50180 (connection type 4)
2009/10/27-10:19:24.334 WARN Connection status:
    Connected to http://localvm.caplin.com:50180 (connection type 4)
2009/10/27-10:19:24.335 WARN Connection status:
    RTTP Session ID: 0o8xJGSr-LLX9MA3kt9QHD
2009/10/27-10:19:24.875 WARN Connection status:
    Connected and logged into http://localvm.caplin.com:50180 (connection type 4)
2009/10/27-10:19:24.877 WARN Connection status:
    All services are available
2009/10/27-10:19:24.882 CRITICAL TRADE REQUEST -
    Establishing connection to trade channel "/FT/TRADE/FX"
2009/10/27-10:19:24.884 CRITICAL TRADE REQUEST -
    Establishing connection to trade channel "/FT/TRADE/FI"
2009/10/27-10:19:26.094 CRITICAL TRADE RESPONSE -
    Established connection to trade channel "/FT/TRADE/FX"
2009/10/27-10:19:26.098 CRITICAL TRADE RESPONSE -
    Established connection to trade channel "/FT/TRADE/FI"
...
```

Liberator session log (*session-rtttd.log*)

```
...
2009/10/27-10:18:48.690 +0000: 192.168.248.1 4 OPEN 0TQfm5xP6U66dyyjTsKDB1
2009/10/27-10:18:48.846 +0000: 192.168.248.1 4 LOGIN_OK
    admin SL4B 0TQfm5xP6U66dyyjTsKDB1 LOGIN_OK
2009/10/27-10:19:24.293 +0000: 192.168.248.1 4 OPEN 0o8xJGSr-LLX9MA3kt9QHD
2009/10/27-10:19:24.803 +0000: 192.168.248.1 4 LOGIN_OK
    user1@caplin.com SL4B:CaplinTraderReferenceImplementation
    0o8xJGSr-LLX9MA3kt9QHD LOGIN_OK
...
```

Liberator RTTP session log (*session-rtttd.log*)

```
...
2009/10/27-10:18:48.846 +0000: 192.168.248.1 4 LOGIN_OK
    admin SL4B 0TQfm5xP6U66dyyjTsKDB1 LOGIN_OK
2009/10/27-10:19:24.293 +0000: 192.168.248.1 4 OPEN
    0o8xJGSr-LLX9MA3kt9QHD
2009/10/27-10:19:24.803 +0000: 192.168.248.1 4 LOGIN_OK
    user1@caplin.com SL4B:CaplinTraderReferenceImplementation
    0o8xJGSr-LLX9MA3kt9QHD LOGIN_OK
...
```


Liberator event log (*event-rtttd.log*)

```
...
2009/10/27-10:19:24.789 +0000: INFO: Token
<JLdoYz/bicAMjGrG+COsGYZnmF4ErbxxJ4eyqNi4qEwNAde0LddPlTcV6KKGWnn+KmQEYS10ztEhkTpHb
Nm8Z/XC6sv/zBWR+PerjXr7xIkbk7eI45OX04FD9icgcFzJj2EzLLpoXBybZVwIBKWS5xrvVaH5CFVIWtSI9
LE9cGxA=~20091027101924~1~user1@caplin.com> is validated for key_id <Caplin>
2009/10/27-10:19:24.806 +0000: INFO: Created object /SYSTEM/USERS/user1@caplin.com-0
(200) [0xa49a810/86]
2009/10/27-10:19:24.806 +0000: INFO: Changing type of /SYSTEM/USERS/user1@caplin.com-0
from 200 to 202 [0xa49a810/86]
2009/10/27-10:19:25.156 +0000: INFO: Created object /FT/TRADE/FX(200) [0xaa367e8/87]
2009/10/27-10:19:25.158 +0000: INFO: Created object /FT/TRADE/FX/user1@caplin.com-0
(200) [0xaa36d90/88]
2009/10/27-10:19:25.169 +0000: INFO: Changing type of /FT/TRADE/FX/user1@caplin.com-0
from 200 to 200 [0xaa36d90/88]
2009/10/27-10:19:25.245 +0000: INFO: Created object /FT/TRADE/FI(200) [0xaa39738/89]
2009/10/27-10:19:25.248 +0000: INFO: Created object /FT/TRADE/FI/user1@caplin.com-0
(200) [0xa9b7910/90]
2009/10/27-10:19:25.248 +0000: INFO: Changing type of /FT/TRADE/FI/user1@caplin.com-0
from 200 to 200 [0xa9b7910/90]
2009/10/27-10:19:25.471 +0000: INFO: Changing type of /FT/TRADE/FX/user1@caplin.com-0
from 200 to 222 [0xaa36d90/88]
2009/10/27-10:19:25.471 +0000: INFO: </FT/TRADE/FX/user1@caplin.com-0>
has changed status from 0 to 1 <All peers providing>
2009/10/27-10:19:25.579 +0000: INFO: Changing type of /FT/TRADE/FI/user1@caplin.com-0
from 200 to 222 [0xa9b7910/90]
2009/10/27-10:19:25.580 +0000: INFO: </FT/TRADE/FI/user1@caplin.com-0>
has changed status from 0 to 1 <All peers providing>
...
```

Liberator *http-access-rtttd.log*

```
...
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "GET
/s14b/javascript-rtttd-provider/url-check.gif?1256638764145 HTTP/1.1" 200 42
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "GET
/s14b/javascript-rtttd-provider/url-check.gif?1256638764149 HTTP/1.1" 200 42
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "GET
/s14b/javascript-rtttd-provider/container.html?type=response&init=true
&type4=true&domain=caplin.com&uniqueid=1256638764145&maxget=0 HTTP/1.1" 200 170
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "GET
/s14b/javascript-rtttd-provider/container.html?type=request&init=true
&domain=caplin.com&uniqueid=1256638764149&maxget=0 HTTP/1.1" 200 170
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:24 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:25 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:25 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:26 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:27 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:28 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:28 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:29 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:29 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:30 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:30 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:31 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:31 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:32 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:32 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:33 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:35 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:35 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:37 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:37 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
192.168.248.1 - - [27/Oct/2009:10:19:37 +0000] "POST /RTTP-TYPE4 HTTP/1.1" 200 6
...
```

10 Appendix D: Liberator deployment guidelines

Using external load balancers

Organizations deploying Liberator may have security policies that route incoming network traffic (typically from the Internet) to a server located in a DMZ. Such a “reverse proxy” server typically acts as a firewall, hiding the details of the Web servers from the Internet clients. It may also be used as a load balancer to distribute the incoming traffic across the available web servers.

Note: *It is not recommended to use a reverse proxy in front of a set of Liberator servers, for the following reasons:*

- ◆ Performance

Liberator is designed to stream fast moving data to a large number of concurrent clients. Reverse proxies are designed for more traditional HTTP usage and do not generally scale well for the kind of traffic Liberator has to deal with.

- ◆ Streaming support

When reverse proxies are used as load balancers they can prevent real time streaming of data. A proxy will usually try to employ some 'sticky' logic to make sure that once a client has initiated communication with a particular web server via the reverse proxy, it continues to communicate only with this server. In a general purpose reverse proxy server this logic is rarely perfect, but when the servers behind the proxy are Liberators, it *must* be perfect so that each client will continue to receive streaming updates from the Liberator to which it is connected.

- ◆ Security

Liberator is penetration tested so putting a reverse proxy between Liberator and client does not necessarily enhance security.

11 Glossary of terms and acronyms

This section contains a glossary of terms, acronyms, and abbreviations used in this document.

Term	Definition
Customer	A customer of the Bank.
EMC	<u>E</u> nterprise <u>M</u> anagement <u>C</u> onsole Caplin's Java™ application that communicates with Caplin Trader components via JMX, and allows you to monitor and control these components through a GUI interface.
JMX	<u>J</u> ava <u>M</u> anagement <u>E</u> xtensions A Java technology for application and network management.
SL4B	<u>S</u> tream <u>L</u> ink for (4) <u>B</u> rowsers
Reference Implementation	The Reference Implementation of Caplin Trader Client.
Throttling	A Liberator feature for reducing the performance impact of high update rates for data streamed to clients.

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