

# ELECTRONIC TRADING (ET)

## SUPPORTED ENVIRONMENTS



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## About this document

### Intended readership

This document is intended for anyone using the Electronic Trading (ET) product in either a deployed or a hosted environment.

Please see the [FXT Supported Environments document](#) if you are using ET and FXT.

### In this document

The main purpose of this document is to provide information for clients about the system configuration needed within their operating environment. It does not, however, address issues such as security that could dictate configurations with a higher specification, depending upon individual clients' internal standards. For further information on this subject, consult your CSS representative.

Two separate operating environments are required to run the ET range of products - server and client – each one consisting of an appropriate combination of hardware and software.

We give here details of the **Recommended** and **Minimum** specifications for the hardware and software that you need to run in these environments.

- **Recommended** means this is the version that the system has been targeted at. It will usually give the best performance and have the most testing. It will be used internally for development and support.
- **Minimum** means prior versions lack required functionality or adequate performance.

For these categories, we give brief details of known issues with particular third-party products or product combinations that could have an impact upon system performance.

Additionally, some tables label the software upon how it is planned and tested in the test environment. The definition of each label is as follows:

Label	Definition
No Support	Never been tested and no plans to test
Supported	Supported by Thomson Reuters but not explicitly tested in a release but confidence is that this will work and agreement is that previous testing still holds
Tested	Explicitly tested by Thomson Reuters for the specified environment
Removed	Was supported by Thomson Reuters but no longer supported

This is a live document. It will be updated on a regular basis to provide definitive guidelines for use by all clients for all supported operating environments. This may also include information from Thomson Reuters and other vendors regarding products from which support has been withdrawn.

### Feedback

If you have any comments on this document please contact [ET documentation team](#).

# Chapter 1 Server-side Requirements

## 1.1 Server Hardware

For a client, such as a bank, to run the complete Electronic Trading (ET) product, hardware is required for the application servers. These servers run on Sun UltraSPARC or HP x86 machines under the Solaris operating system

**Note:** SCS and SCS Relay are the only software components on the server side for which Microsoft (MS) Windows may be used as the OS software.

### 1.1.1 Qualified Hardware – x86

ET 1.0, ET 1.1, ET 2.0, ET 2.1, ET 2.2, and ET 2.3 have been qualified on the following HP DL 300 series Intel based servers below:

ET version	Purpose	Model	CPU speed (GHz)	CPU / Cores	Memory (GB)	Internal disk space for O.S./System/ Application software (GB)	Other
ET 1.0 ET 1.1 ET 2.0 ET 2.1 ET 2.2 ET 2.3	ET Application processes & Adapters	HP DL 360p Gen8	2.9GHz	Intel E5-2690 2 Processors 8 Core	128GB	2x 300GB 2x900GB	
	SCS & Web server						
	Oracle	HP DL 380 Gen7	2.93GHz	Intel Xeon 5600 Series 2 Processors 6 Core	96GB	2x 300GB 2x900GB	<a href="#">Oracle certified</a> 2 x Dual Port 8Gbps Fibre Channel HBAs
	ET Application processes & Adapters	HP DL 380 Gen9	3.2GHz	Intel Xeon E5-2667v3 8 cores	64GB	450 GB	Note: Gen9 is supported with OL 6.6 onward
	SCS & Web server						

**Note:** Memory size in the table above is based on the actual test environment hardware, which is used to install multiple ET instances. For a single ET instance (application server and adapters only), we recommend 16GB of memory as a minimum for a basic setup (one EchoTRM and one EchoMM)

**Note:** Server specifications are provided for guidance and advice on the recommended and tested configurations used for release qualification. The exact configuration will depend upon a sizing exercise in which clients define their intended usage in terms of variables such as deal volume and user numbers. Your TPG Support manager will be able to assist with this process if required

### 1.1.2 Supported Hardware – x86

Thomson Reuters also supports ET on non HP hardware, please contact your hardware vendor for details of equivalent specification Intel machines based on our qualified servers listed above.

### 1.1.3 Supported Hardware - SPARC

Thomson Reuters supports ET on Sun M4000 or M5000 (UltraSPARC IV) series of servers until ET 1.1. It removes SPARC support from ET 2.0 onward.

## 1.2 Server Software

### 1.2.1 Operating Systems

The supported Operating Systems for running the SCS and the resource server (the resource server will be mentioned as application server in this document) for the ET platform are Solaris and Linux (Oracle Enterprise).

**Note:** ET software has no Sun/Solaris dependencies beyond those recommended by Sun with respect to the level of Java Virtual Machine (JVM), or those recommended by Oracle with respect to the version of the Oracle database, or those recommended by Microsoft with respect to the version of the Microsoft Windows. This note applies equally to each of the following sub-sections.

#### 1.2.1.1 Solaris for ET 1.0 to ET 2.2 releases

Solaris Version	Application Server			SCS / Web Server		
	ET 1.0 to ET 1.1	ET 2.0 to ET 2.1	ET 2.2	ET 1.0 to ET 1.1	ET 2.0 to ET 2.1	ET 2.2
10 (SPARC) Recommended patch level: 147440-02	Tested	Removed	Removed	Supported	Supported	Removed
10 (x86) Recommended patch level: 147441-02 or 147441-24	Tested	Tested	Tested	Tested	Tested	Supported

#### 1.2.1.2 Solaris for ET 2.3 release

Solaris Version	Application Server	SCS / Web Server
	ET 2.3	ET 2.3
10 (x86) Recommended patch level: 150401-26	Supported	Supported

#### 1.2.1.3 Linux (Oracle Enterprise) – ET 1.0 - 1.1 Releases

ET 1.0 - 1.1 releases do not support Linux for application servers and SCS servers. Linux is only supported for database servers.

Oracle Linux Version	Database Server
	ET 1.0 to ET 1.1
5.8 Recommended patch level: Red Hat compatible kernel: 2.6.18-308.16.1.0.1.el5	Supported

### 1.2.1.4 Linux (Oracle Enterprise) – ET 2.0 to ET 2.3 Releases

Oracle Linux Version	Database Server
	ET 2.0 to ET 2.3
5.8 Recommended patch level: Red Hat compatible kernel: 2.6.18-308.16.1.0.1.el5	Supported

Oracle Linux Version	Application Server			
	ET 2.0	ET 2.1	ET 2.2	ET 2.3
5.10 Recommended patch level: Red Hat compatible kernel: 2.6.18-371.4.1.0.1.el5	Tested	Tested	Tested	Supported
6.6 Recommended patch level: Red Hat compatible kernel: 2.6.32-642.6.2.el6.x86_64	Tested	Tested	Tested	Tested
7.1 Recommended patch level : Red Hat compatible kernel: 3.10.0-229.14.1.el7.x86_64	Supported	Supported	Tested	Supported
7.2 Recommended patch level : Red Hat compatible kernel: 3.10.0-327	No Support	No Support	No Support	Supported

Oracle Linux Version	SCS / Web Server			
	ET 2.0	ET 2.1	ET 2.2	ET 2.3
5.10 Recommended patch level: Red Hat compatible kernel: 2.6.18-371.4.1.0.1.el5	Tested	Tested	Supported	Removed
6.x Recommended patch level for <b>6.4</b> : Red Hat compatible kernel: 2.6.32-504.12.2.el6.x86  Recommended patch level for <b>6.6</b> : Red Hat compatible kernel: 2.6.32-642.6.2.el6.x86_64	Tested	Tested	Tested	Tested
7.1 Recommended patch level: Red Hat compatible kernel: 3.10.0-229.14.1.el7.x86_64	No Support	No Support	Tested	Supported
7.2 Recommended patch level : Red Hat compatible kernel: 3.10.0-327	No Support	No Support	No Support	Supported



### 1.2.1.5 Microsoft Windows

The SCS and SCS Relay are the only software components on the server side for which Microsoft (MS) Windows may be used as the OS software. Versions available are:

MS Windows Version	SCS and SCS Relay	Comments
2012 Server	Supported	Initial and R2 64bit Possible UAC config required for installation as a service <sup>1</sup>
Windows 7/8/10	Supported	SP1 and higher Professional edition and higher Possible UAC config required for installation as a service <sup>1</sup>
2008 Server	Supported	Initial and R2 32 bit and 64 bit Possible UAC config required for installation as a service <sup>1</sup>
2003 Server	Supported	SP2 and higher 32 bit and 64 bit
XP	Tested	SP2 and higher <b>Deprecated from ET 2.0 onward</b>

<sup>1</sup>On Windows 7/8/10, Windows Server 2008 and Windows Server 2012, binaries such as SCS to be run as a service will need “run as administrator”. From explorer view edit the properties and in the Compatibility tab set “Run this program as an administrator”, before attempting to install as a service.

### 1.2.1.6 VMware

VMware Version	SCS	Application Server
VMware ESXi version 5.0	Recommended for SCS OL 5.10, OL 6.4 and Solaris 10 (x86)	Recommended for ET application server OL 5.10 and Solaris 10 (x86)
VMware ESXi version 6.0	Recommended for SCS OL 7.1	Recommended for ET application server OL 7.1

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**Note:** The recommended versions of VMware listed above are used in test environment; however, issue investigation will be best efforts should any issue occur on either VMs using the same VM infrastructure or on physical servers.

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## 1.2.2 Database (Oracle)

Oracle is the database software used on the server side. The database must be an Oracle Server Enterprise Edition or Standard Edition (64 bit).

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**Warning:** Deployment of Oracle minor patch versions that deviate from the Thomson Reuters officially supported version will be considered on a case-by-case basis by Thomson Reuters. If Thomson Reuters agrees to the usage of a non-standard Oracle version the client understands that while Thomson Reuters will investigate any reported issues, Thomson Reuters are only obliged to provide fixes where problems are reproducible on the officially supported environment of that release. In these circumstances the client may be asked by Thomson Reuters to raise the issue with Oracle or downgrade to a version of Oracle supported by Thomson Reuters.

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**Note:** The Oracle Version numbers apply to the version of Oracle client and database. Thomson Reuters recommends that the Oracle client version & Oracle server version are kept in step at all times unless explicitly stated.

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### 1.2.2.1 ET 1.0 – 2.3 Releases

Oracle Version	ET 1.0	ET 1.1	ET2.0	ET 2.1	ET 2.2	ET 2.3
10.2.0.4 Standard Edition  only with these patches: Client – 7143299 and 6750296 Server – 7452373, 8576156, 7143299 and 6750296	Tested	Tested	Removed	Removed	Removed	Removed
10.2.0.4 Enterprise Edition  RAC – single node.  only with these patches: Client – 7143299 and 6750296 Server – 7452373, 8576156, 7143299 and 6750296	Tested	Tested	Removed	Removed	Removed	Removed
10.2.0.5 Standard Edition  only with these patches: Client – 7143299 and 6750296 Server – 7452373, 8576156, 7143299 and 6750296	Tested	Tested	Removed	Removed	Removed	Removed
10.2.0.5 Enterprise Edition  RAC – single node  only with these patches: Client – 7143299 and 6750296 Server – 7452373, 8576156, 7143299 and 6750296	Tested	Tested	Removed	Removed	Removed	Removed
11.2.0.3 Standard Edition	No Support	No Support	No Support	No Support	No Support	Supported
11.2.0.3 Enterprise Edition	No Support	No Support	Tested	Tested	Tested	Supported
11.2.0.4 Standard Edition	Supported	No Support	No Support	No Support	No Support	Supported
11.2.0.4 Enterprise Edition RAC – single node	Tested	Tested	Tested	Tested	Tested	Tested

Oracle Version	ET 1.0	ET 1.1	ET 2.0	ET 2.1	ET 2.2	ET 2.3
12.1.0.2 Enterprise Edition non-RAC and disable PDB feature.	No Support	No Support	Tested	Supported	Supported	Supported
<b>Note:</b> For an existing ET 2.0 system, you need Schemapatch2092 for upgrading to Oracle12c. See the instructions below.						
12.1.0.2 Enterprise Edition RAC – single node	No Support	No Support	No Support	No Support	No Support	Supported

### Instructions for applying Schemapatch2092

- Download the Schemapatch2092 from:  
<https://transactions.thomsonreuters.com/asp/intranet/releases/versionDetails.aspx?versionID=514304>
- Take the following steps:
  1. Unzip the files in Schemapatch2092 and replace in schema version 3.5.2.182-sup-1.0.43.
  2. Update permission for Oracle12c
    - For new user (new install)  
@create\_user.sql
    - For existing user which has already created the user with an older schema version  
@update\_user\_permissions.sql
  3. Upgrade schema (See the Upgrade Schema section in [ET 2.0 Installation and Configuration Guide](#) for details)

## 1.2.3 Software Components

### 1.2.3.1 Autotrader Application – JVM versions

For ET systems running the Autotrader Java application, the following JVM versions are supported:

Autotrader Version	Supported JVM
ET 1.0	1.7
ET 1.1, ET 2.0, ET 2.1, ET 2.2	1.7, 1.8
ET 2.3	1.8

**Note:** See section 2.3 Limitations on using particular versions of JVM for information regarding limitations, JVM security risks and recommended versions.

### 1.2.3.2 Autotrader Setup

The autotrader runs as a Java application, and requires a console to be available. If the autotrader is run on a server in a DMZ, with no display available, then an alternative solution must be found in order to make a display available to the autotrader's JVM.

Potential solutions include:

- Installing a display for the autotrader machine
- Allowing XTERM access to the machine from a remote machine, for example using VNC
- Running an X-Windows simulator, such as xvfb or xauth, to simulate a display output

### 1.2.3.3 APIs and adapters – JVM versions

Since APIs and adapters are backward compatible with any ET version, the minimum supported JVM version of each interfaces component is defined in its own component release note with the keyword of "[Java SDK](#)".

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**Note:** See section 2.3 Limitations on using particular versions of JVM for information regarding limitations, JVM security risks and recommended versions.

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### 1.2.3.4 CPG – JVM versions

ET Version	Supported JVM Version
ET 2.0, ET 2.1	1.7
ET 2.0, ET 2.1, ET 2.2, ET 2.3	1.8

### 1.2.3.5 Start Script

TRservermanager.pl and its associated modules were created and tested using Perl 5.8.4 and 5.8.8 on Solaris and 5.10.1 on Oracle Linux. Earlier or later versions may well work, but if any version-related issues are identified, please arrange to raise an Infra Provisioning report with the appropriate details and the matter will be investigated.

On Oracle Linux, we require /usr/bin/gstack, which is part of the gdb package, so this must be installed.

### 1.2.3.6 Web Server for HTML5 GUI (including ET MIS)

#### - Apache Tomcat

Apache Tomcat is required for the ET MIS Solution.

ET Version	Supported Tomcat Version
ET 2.0, ET 2.1, ET 2.2, ET 2.3	8.0.14+

### 1.2.3.7 Web Server for Java GUI

#### - Apache

ET Version	Supported Apache Version
ET 2.0, ET 2.1, ET 2.2, ET 2.3	2.4.3+

## Chapter 2 Client Side Requirements

### 2.1 Client Hardware

#### 2.1.1 Applets

The client, trader and administrator applets require the end-user to have a suitable computer. Specifications for the OS, internet browser and JVM are covered in section 2.2.2 [Browsers and JVMs](#) on page 15. The minimum and recommended hardware (computer) specifications are:

Item	Minimum	Recommended
Pentium Processor	600MHz	1.70 GHz Intel Premium & above
Temporary Internet Files Folder	50MB	50MB & above

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**Warning:** A significantly higher specification may be required if you are simultaneously running any other 'resource heavy' applications on your computer.

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#### 2.1.2 Citrix

Citrix and Windows servers are not qualified or recommended for ET applets. However, we would provide support for issues that are reproducible on a supported operating system and configuration.

### 2.2 Client Software

This section describes the additional software required to run a TPG system for client side environments. Unless explicitly stated otherwise below, it should be assumed that the TPG software has been tested on the recommended version of each component identified.

#### 2.2.1 Operating Systems

MS Windows is the Operating System on which Client side applications (ET Applets, ET Desktop Applications) run.

##### 2.2.1.1 Applet

The supported Windows for ET Applets are:

Windows Version	ET Version	Remark
7 SP1+ (32bit)	ET 1.0 - 2.3	Test cycle executed with this version (except ET 2.3)
7 SP1+ (64bit)	ET 1.0 - 2.3	Test cycle executed with this version (except ET 2.3)
8.1 (32 bit)	ET 1.0 - 2.3	Test cycle executed with this version (except ET 2.3)
8.1 (64 bit)	ET 1.0 - 2.3	Test cycle executed with this version (except ET 2.3)
10 (32 bit)	ET 2.2 - 2.3	Test cycle executed with this version

Windows Version	ET Version	Remark
10 (64 bit)	ET 2.2 - 2.3	Test cycle executed with this version

**Note:** Windows7 SP1 64 bit has been qualified with Sun JRE 64 bit and IE 64 bit versions. MacOS has not been qualified as a supported environment.

### 2.2.1.2 ET (Client/Trader/OW) Desktop Application

**Note:** ET **Client** Desktop Application is **NOT supported for ET 2.3 SP4 onward**. The recommended alternative is ET Client Webstart which also supports Single Sign On (SSO).

The supported Windows for ET Desktop Applications are:

Windows Version	ET Version	Remark
7 SP1+ (32bit/64bit)	ET 1.0 SP10+, ET 2.0 SP3 - ET 2.3	Test cycle executed with this version (except ET 2.3)
8.1 (32 bit/64bit)	ET 2.2 - 2.3	Test cycle executed with this version
10 (32 bit/64bit)	ET 2.2 - 2.3	Test cycle executed with this version

### 2.2.1.3 ET Client Webstart

The supported Windows for ET Client Webstart are:

Windows Version	ET Version	Remark
7 SP1+ (32bit/64bit)	ET 2.3 SP4+	Test cycle executed with this version
8.1 (32 bit/64bit)	ET 2.3 SP4+	Test cycle executed with this version
10 (32 bit/64bit)	ET 2.3 SP4+	Test cycle executed with this version

## 2.2.2 Browsers and JVMs

A known Sun JRE window painting issue can in some cases cause poor applet performance and applet crashes. This issue affects machines with multiple physical or logical CPUs, including those featuring hyper-threading and multiple cores. The recommended workaround is to use the Windows Task Manager to bind the *iexplore* process to one logical CPU before loading the applet. Third-party software which automates this configuration is also available.

Popup blockers are detrimental to some ET functionality; therefore it is important that such software is either disabled, or configured to allow popups from the domain used to host the ET system.

The following matrix shows supported browsers, JVMs, and ET versions for Applet, Desktop Application, and Webstart technologies.

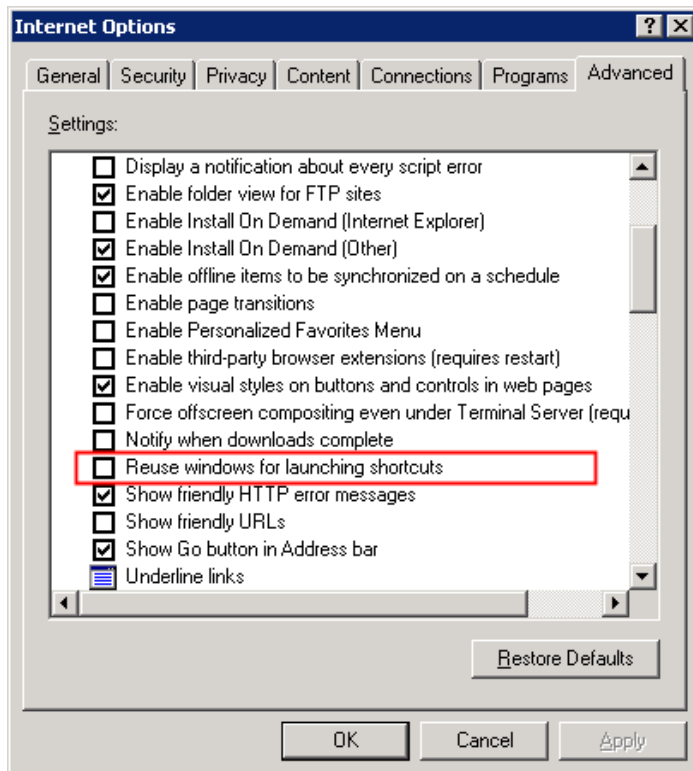
	Applet	Desktop	Webstart
IE	Supported*	Not related to browser	Supported (IE 10+)
Firefox	No Support		Supported (Firefox 20+)
Chrome	No Support		Supported*
ET version Supported	Every version*	ET 1.0 (since SP10 onward) ET 2.0 (since SP3 onward) ET 2.1, ET 2.2 and ET 2.3 are fully supported	ET 2.3 SP4 onward
Solutions	Admin Client Trader OrderWatch	Client Trader OrderWatch	Client
JVM Supported	1.7, 1.8	JVM is bundled into the installation package	1.8.0_121 onward
Remark	This is core solution. If applet is failed to run based on any limitation, please consider either Desktop or Webstart as an alternative	This alternative is suitable for users that DO NOT want to install JVM separately  Note: Since ET 2.3 SP4 onward, Desktop application is no longer supported for Client-side solution	This is a recommended alternative for Client-side solution

\*More detailed information about browsers and JVMs is in the sections below.

### 2.2.2.1 Microsoft Internet Explorer

It is important that each applet instance is launched in its own instance of Internet Explorer. There are known issues in the JVM that cause problems with applets if they share an instance of Internet Explorer.

**Warning:** It is important that the “Reuse windows for launching shortcuts” checkbox is unchecked in Internet Explorer. Select **Tools > Internet Options**. Click the **Advanced** tab, go to the **Browsing** section.



Supported Versions of Microsoft Internet Explorer (MSIE) are shown in the following table:

MSIE Version	ET Version
8	Supported with ET 1.0 - 1.1
9	Supported with ET 1.0 - 2.1 when using Windows 7 SP1
10	Supported with ET 1.0 - 2.1
11	Supported with ET 1.0 - 2.3

### 2.2.2.2 Firefox NPAPI support withdrawal in version 52

- Firefox version 52 has been released without NPAPI support, so **ET applets are unable to start from Firefox version 52 and higher**. However, Firefox ESR (Extended Support Release) still supports NPAPI until early 2018.

This table lists the Firefox versions qualified in Qualification Test environment.

ET versions	Version Qualified in Qualification Test Environment
ET 1.0	Firefox version 27
ET 2.0	Firefox version 33



ET versions	Version Qualified in Qualification Test Environment
ET 2.1	Firefox version 38.0.1
ET 2.2	Firefox version 43.0.2
ET 2.3	Firefox version 48.0.2

### 2.2.2.3 Chrome Java/NPAPI support withdrawal

- ET applets no longer support Chrome.
- Reference: <http://java.com/en/download/faq/chrome.xml>.
- **Background:** Google announced NPAPI support removal from Chrome which could be completed by late 2015. The Java plugin for web browsers relies on NPAPI; therefore ET applets are affected.
- **Recommendation:** Oracle recommends using alternative browsers such as Firefox and Internet Explorer.

### 2.2.2.4 ET Applet – JVM versions

ET Applet Version	Supported JVM	Remark
ET 1.0	1.7	1.7 supports all applets
ET 1.1, ET 2.0, ET 2.1, ET 2.2	1.7, 1.8	1.7 and 1.8 support all applets
ET 2.3	1.8	1.8 supports all applets

**Note:** See section 2.3 Limitations on using particular versions of JVM for information regarding limitations, JVM security risks and recommended versions.

### 2.2.2.5 ET Desktop Application – JVM versions

ET Desktop Application Version	Supported JVM	Remark
ET 1.0 SP10+	1.7, 1.8	-
ET 2.0 SP3+	1.7, 1.8	-
ET 2.1	1.7, 1.8	-
ET 2.2 - 2.3	1.8	ET <b>Client</b> Desktop Application is <b>NOT supported for ET 2.3 SP4 onward</b>

**Note:** See section 2.3 Limitations on using particular versions of JVM for information regarding limitations, JVM security risks and recommended versions.

### 2.2.2.6 ET Client Webstart – JVM versions

ET Client Webstart Version	Supported JVM	Remark
ET 2.3 SP4+	1.8.0_121 onward	-

**Note:** See section 2.3 Limitations on using particular versions of JVM for information regarding limitations, JVM security risks and recommended versions.

## 2.3 Limitations on using particular versions of JVM

Version	Limitation	More Info
1.7 update 72 and prior versions	Serious security risk	<a href="http://uk.reuters.com/article/2012/08/27/uk-cybersecurity-java-idUKBRE87Q18C20120827">http://uk.reuters.com/article/2012/08/27/uk-cybersecurity-java-idUKBRE87Q18C20120827</a>
1.8 update 25	Serious security risk	Three known issues are described below: <ul style="list-style-type: none"> <li>- The Trader applet is not brought to front on the Trader's deal though the "Bring to front when on deal of Trader" setting is enabled.</li> <li>- The embedded applets cannot be resized.</li> <li>- Upon a successful login to or a successful logout from an embedded applet, no message pops up to indicate the result.</li> </ul> These three issues will be solved automatically if Oracle solves the problem <a href="http://bugs.java.com/bugdatabase/view_bug.do?bug_id=8038127">http://bugs.java.com/bugdatabase/view_bug.do?bug_id=8038127</a> .
	Problems on embedded applets	
1.8 update 141	When executing Java Webstart applications, customers may encounter an exception like "java.lang.SecurityException : digest missing for ..." that prevents the application from loading.	<a href="http://www.oracle.com/technetwork/java/javase/8u141-relnotes-3720385.html">http://www.oracle.com/technetwork/java/javase/8u141-relnotes-3720385.html</a>

**Note:** Thomson Reuters recommends that you use the current minimum baseline security versions (or later) of java as reported at the Oracle site:  
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

**Note:** The Sun Java plugin is not supported where more than one monitor is used, and different resolutions are set on those monitors.

**Warning:** When restarting an applet, please ensure it is started from a new browser window. Any browser windows previously used to launch the applets should be closed when the applet is closed.

### 2.3.1 Order Management Functionality

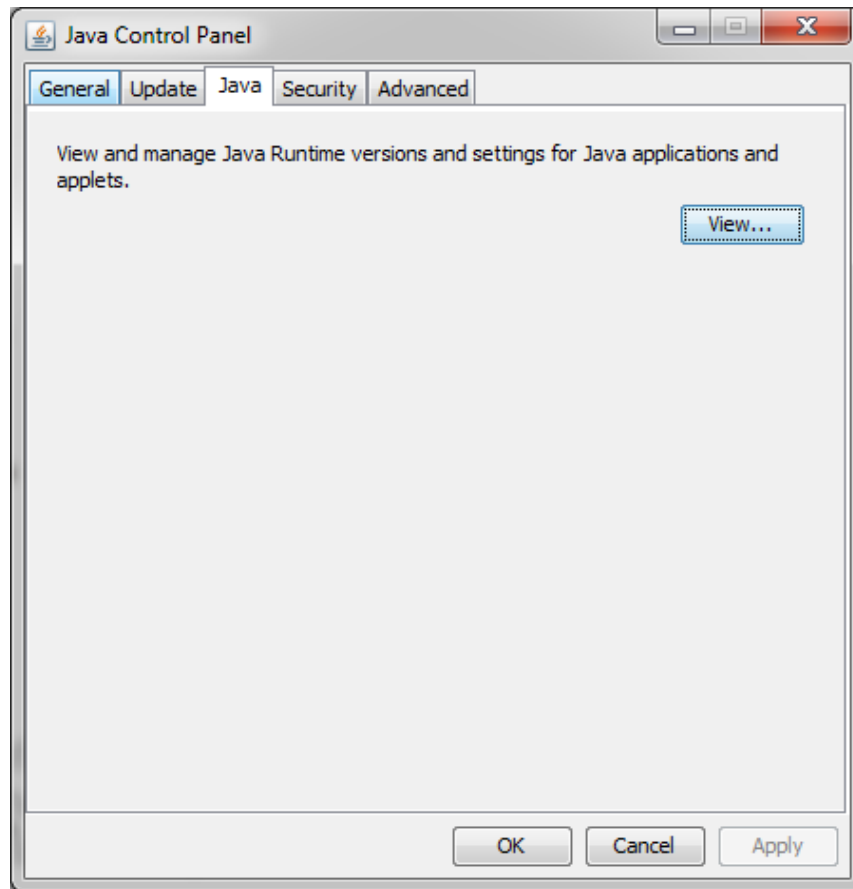
When using Order Management functionality, particularly in the trader applet, memory allocations should be adjusted to account for the size of the bank order book and thus the amount of orders displayed in the applet.

It is recommended that memory allocation is increased from the default with the following Java Runtime Parameter:

```
-Xms128m -Xmx512m
```

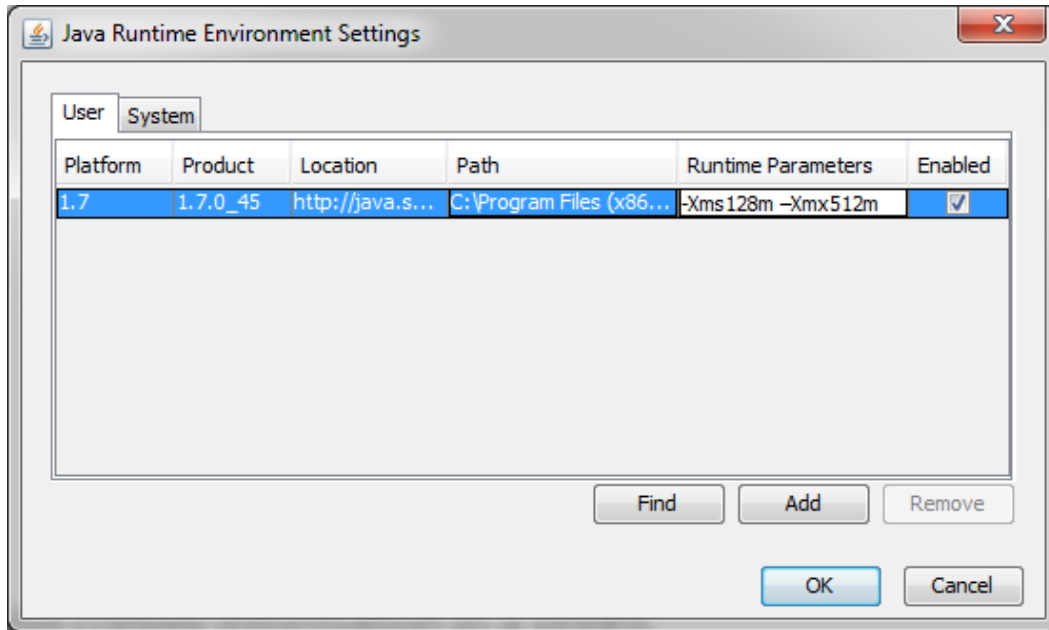
To set this parameter:

1. Go to Start ► Control Panel ► Java  
The **Java Control Panel** is displayed
2. Click the Java tab.



3. Click the **View** button.
4. Type the following into the **Java Runtime Parameters** field for the JVM version you use:

```
-Xms128m -Xmx512m
```



5. Click OK.
6. Click OK again on main window.

The new settings take effect for the next applet that is launched from your browser.

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**Note:** These settings should be checked whenever you upgrade or re-install a JVM.

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## 2.3.2 Client Side Certificates

The ET Client applet supports two features that employ client side certificates:

1. Authenticating the client side certificate when performing the SSL handshake.
2. Deal signing.

### 2.3.2.1 Client-side Certificate Authentication

If the SCS has been configured to request and validate the certificate from the client, the browser and JVM are forced to provide a client certificate when performing the SSL handshake.

The table below shows where the client-side certificate has to be stored on the local machine.

Virtual Machine	Client-side Certificate Location
All supported Sun JVMs	Browser store <b>and</b> java plugin certificate store <sup>1,2</sup>

<sup>1</sup> If the JVM is configured to not use the Browser key and truststore then the client certificate must also be stored in the JVM keystore. The certificate store for the Sun JVM can be accessed by opening the 'Sun JVM Plugin' in the Control Panel, and selecting the Certificates tab.

<sup>2</sup> Use of client certificates in the TLS/SSL handshake is not supported when the TLS/SSL is using X509 certificates with GOST public/private keys.

### 2.3.2.2 Deal Signing

When configured to perform deal signing the client must select the client certificate to use for deal signing from the settings options in the applet GUI before trading can take place. Checks will be made that a valid certificate has been selected.

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