



London
STOCK EXCHANGE

Customer Testing Services

GUIDE TO HIGH VOLUME SERVICE TESTING · MARCH 2008





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1. Introduction

The purpose of this document is to provide a reference guide to assist customers in passing a High Volume Service (HVS) Test.

This document contains advice on checks to carry out before taking the test as well as guidance during and after the test. Also contained within this document are the HVS Service IP address details, reference information and customer support details.

In order to provide a quick reference guide for the HVS Test a simple checklist is included in Appendix A.

Purpose of High Volume Service Test

The HVS test is a specialised service designed to prove that a customer's application can successfully receive all messages disseminated over Infolect at peak data rates. It helps the Exchange evaluate whether a firm's infrastructure and software is capable of successfully processing live market data at the rates that the Exchange deems to be appropriate at this time.

This provides a measure of the performance and processing power required of customer's systems, presenting opportunities for performance enhancement before taking the application into production.

Customers will be sent a high volume of messages on all broadcast channels (Service or Performance Channels) that they subscribe to. The test is successful if the following two criteria are met:

- All messages are processed without the application having to re-request missed messages above a predefined minimum rate.
- The application correctly responds to a forced re-request at the appropriate point during the test.

2. Test Booking Process

Customers can book a HVS test via their Technical Account Manager or direct with the Exchange's Customer Testing team on +44 (0)207 797 3100, option 2.

For projects that have a mandatory test requirement, customers will be contacted by their Technical Account Manager as part of the normal process.

Test Confirmation

When booking a test you will be asked to provide :

- the enablement ID to be used for the test, and;
- the contact details of the person performing the test

Once the booking has been confirmed customers will receive a confirmation e-mail with all of the details for the test. Any discrepancies should be reported to the Exchange immediately.



Test Charges

For business as usual HVS tests (e.g. new application rollouts or adoption of new services) normal charges apply, for more information please refer to the Customer Testing Services price list, available at the address below.

www.londonstockexchange.com/cts

For other project specific testing customers will be advised of the charges in advance of the commencement of the test. Customers are normally allocated one free HVS test per software solution.

Cancellation Policy

Customers must provide at least 2 working day's notice of a test cancellation. Customers who fail to give the required cancellation notice will either be charged the full cost of the test or lose their free test slot depending on the nature of the test.

3. Pre HVS Test Checklist

The following information is provided to assist customers in preparing for the test.

Customer Enablement Information Form (CEIFs)

Customers should note that there is a separate set of addresses specifically for the HVS environment. These addresses are different to the set of addresses for the Conformance environment.

Customers should use the conformance version of the CEIFs for the HVS test and not the Customer Development Service (CDS) version of the CEIFs. Customers can check the wording that appears in parenthesis after the enablement ID to establish which environment it is for. The correct enablement will take one of the following two forms: TBK7nnnn (New CONF) or CAS7nnnn (New CONF).

Network Checks

Customers are requested to check the following prior to the test date. If you require assistance please contact your Technical Account Manager.

- Firewall settings
- Switch and Router buffer settings and static routes
- Port settings should be hard set to 100Mb Full duplex.
- Check buffer settings in both the operating system and application are of a sufficient size.
- Customers completing a Performance Channels HVS test should ensure their routers can handle at least 40Mb/sec of data. Please refer to Appendix B for a graphical representation of the HVS profile.



Connectivity Checks

Please note: The Exchange will not open its ports ahead of the test unless customers have pre-booked a Technical Readiness Test or Listen-in HVS Test (please see relevant section below).

- To test connectivity Customers can perform a telnet to the Exchange address 10.5.1.110, port 52900 or customers can choose to use traceroute. If you use traceroute you will see approximately 4 hops, not including customer architecture, with the last address being 10.10.1.1. If any problems are experienced please check network settings and call the Exchange for assistance.

IP Address Information

The HVS test is conducted in the Exchange's HVS environment. The address details are given on the conformance versions of the Customer Enablement Information Form and included below for your reference.

Service Channels

HVS Service	IP address / Multicast group	Port number
Multicast Address range	233.115.135.193 - 233.115.135.216	63000
Exchange source address	10.5.51.225	63000
Message retrieval service	10.5.8.110	52900

Performance Channels

HVS Service	IP address / Multicast group	Port number
Multicast Address range	224.4.0.193 - 224.4.0.239	63500
Exchange source address	10.5.54.225	63500
Message retrieval service	10.5.8.110	52900

Customers will only receive multicast data for the broadcast channels that are specified on their CEIFs. These multicast groups will be within the range specified in the table above.

Customers should:

- Connect from a device configured with the correct 'Host IP' addresses as specified on the CEIF.



- Confirm that the outward bound gateway is correctly configured. The outward bound default gateway is referred to as the 'Exchange Gateway' on the CEIF. For HVS testing this will be .61 (i.e. the secondary router), for resilient SAPs and .62 for 'dedicated test' SAPs (single circuit). Any other configuration for testing is incorrect (e.g. .59 or .60 is commonly found).

Listen in High Volume Test

Firms may perform a non-chargeable listen in HVS test depending on availability. This enables customers to connect to an active HVS test without the rerequesting functionality switched on. Firms may participate in this test in order to evaluate how their systems would perform against the HVS profile before the actual HVS test.

Please contact your Technical Account Manager for further details.

Technical Readiness Test

Customers may wish to complete a Technical Readiness Test (TRT) prior to the HVS test to prove Exchange connectivity and to confirm that the customer enablement details are correct. Customers who complete a TRT prior to the HVS test will be able to avoid any unnecessary delays due to connectivity issues on the day of the test.

Please refer to the "Pre-technical Readiness Test (TRT)" guide that may be found on the page below or contact your Technical Account Manager for further details:

<http://www.londonstockexchange.com/en-gb/products/membershiptrading/techlib/cust+test/test+doc/>

4. The Test Day

The Exchange can accommodate both intraday and after hours testing. The test start time will be communicated to customers at the time of the test booking and in the interest of time and resources; customers are requested to be aware of the start time and to be ready for testing 30 minutes prior to this time. The Customer Test Analyst (CTA) will contact the customer using the details provided by the customer at the time of booking.

Customers are assigned a CTA for the duration of the test. The CTA will assist you with all aspects of the test and provide advice and guidance on the format and content.

Important note for Customer's taking a Performance Channel HVS test

Customers completing an evening HVS test will be enabled the night before and will receive data from any intraday tests we run. Customers who want to avoid receiving HVS data intraday are advised to request an evening session on a day when there are no intraday tests being run.

Message Logging

The Exchange recommends that customers disable any active message logging processes during the HVS test. This will ensure that system resources are not excessively employed during an intensive part of the HVS test.



5. Post HVS Test

After the HVS test, customers will be notified by their Technical Account Manager whether they have passed or failed.

If a test is unsuccessful, the Technical Account Manager will discuss re-testing and booking requirements with the customer.

6. Customer Support

Customer Testing Team

Customer support for the Customer Testing Services (CTS) environment is available from the Exchange's Customer Testing Team.

- Tel: +44 (0) 20 7797 3100 - option 2

Client Technology Group

The Client Technology Group (CTG) will provide technical support during the implementation of these changes, and may be contacted via:

- Technical Information Desk - Tel: +44 (0) 20 7797 3939, STX 33939
- E-mail Client Technology Group at: CTGroup@londonstockexchange.com

Client Implementation Team

The Client Implementation Team (CIT) is responsible for co-ordinating the implementation of a customer's testing enablements and may be contacted via:

- Client Implementation Team - Tel: +44 (0) 20 7797 3232, STX 33232
- E-mail Client Implementation Team at: clientimplementation@londonstockexchange.com
- Requests for new enablements and changes to existing enablements should be submitted via the eContracts service, the Exchange's online ordering and management system. Implementation queries may also be raised directly through your Client Implementation Consultant.



7. Appendix A - Simple HVS Test Checklist

Before the day of the test, have you:

- Confirmed the test date, time, and enablement details?
- Checked the CTA is aware of the test details?
- Arranged to listen in to the HVS service if required (and if available)?
- Made sure that your network infrastructure can handle the HVS profile?
- For Intraday tests, checked that your network can handle the volumes of data intraday
- Hard set your port settings to 100Mb Full duplex?
- Checked the buffer sizes on the application and operating system?
- Made sure you are using the correct enablement - TBK7nnn (New CONF) or CAS7nnn (New CONF) on the correct SAP?
- Made sure you are using the correct HVS range of addresses
- Configured the correct IP addresses and multicast groups?
- Confirmed that the Service or Performance Channels specified on the enablement forms match your requirements?
- Configured the correct TraderGroup for re-requesting?
- Arranged for the Exchange to block CDS multicast data for the duration of the test with your Technical Account Manager or CTA if required?
- Understood the Exchange's cancellation policy?

On the day of the test, have you:

- Switched off message logging or debugging software?
- Proved connectivity by using telnet prior to the test?
- Contacted your CTA at least 30 minutes prior to the start of the test?

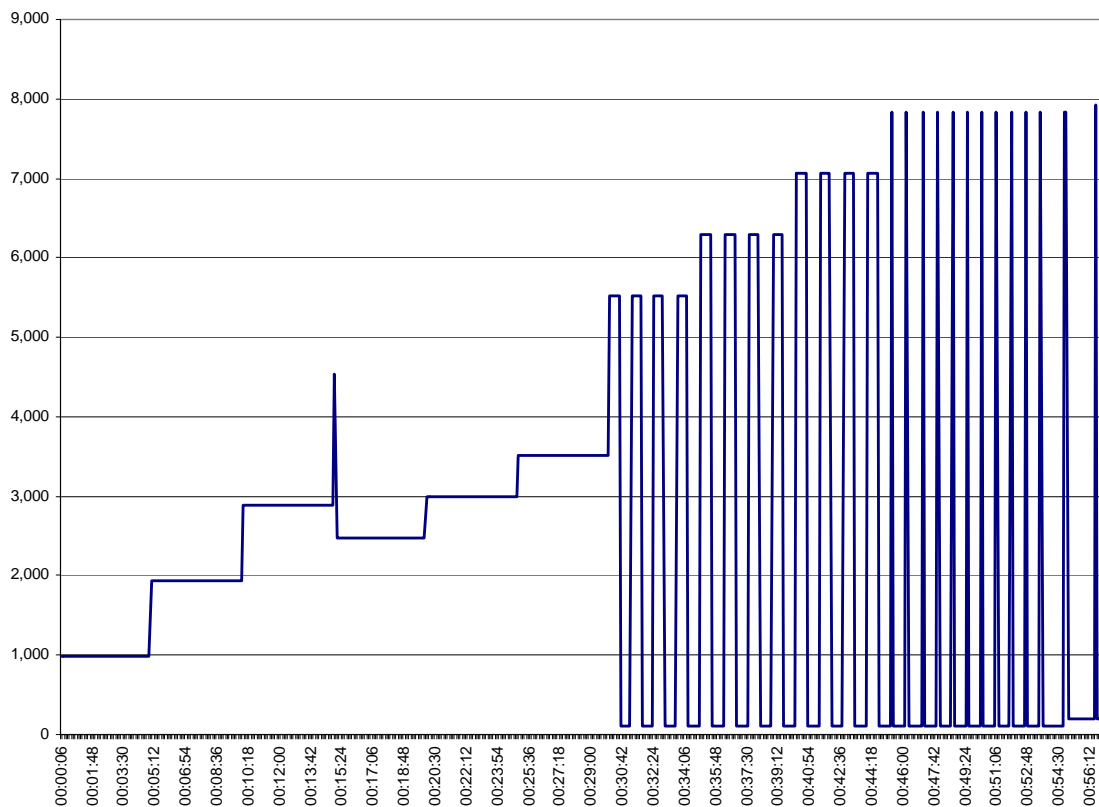


8. Appendix B - HVS Profile

Please find below a graph depicting the HVS test data profile for Performance Channels and Service Channels.

The x axis shows time and the y axis shows Kbit/second. The red line is actual dissemination of multicast data.

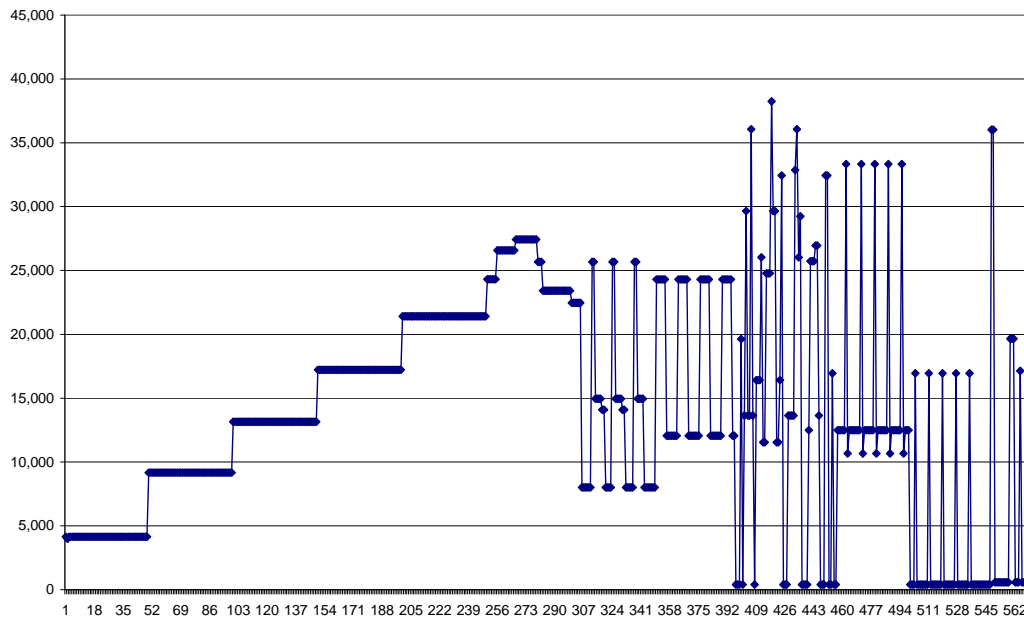
Service Channels



As can be seen, the test lasts for approximately 1 hour. Data is initially sent out in a stepped manner with throughput increasing every 6 minutes followed by short peaks and troughs of data dissemination which peak at approximately 7Mb.



Performance Channels



As can be seen, the test lasts for approximately 1 hour. Data is initially sent out in a stepped manner with throughput increasing every 6 minutes followed by short peaks and troughs of data dissemination which peak at approximately 40Mb.