ASX 24 Trading Platform

Guide to ASX 24 Testing Services

December 2023

Table of Contents

1   Introduction

The ASX provides a range of testing services to customers developing and testing market-facing systems.

The purpose of this document is to provide an overview of the customer testing services available on the Exchange and how to access them.

When read in conjunction with the Technical Specifications and the other available testing documentation, it is intended that these documents provide all of the necessary information customers require to develop, test and trial their software before connecting to the Production Services.

Please note that all times quoted are in Sydney time (AEST/AEDT).

1.1   Readership

This document is relevant to software developers, system testers, and other technical staff who are involved in testing and developing applications for use within Production Services.

1.2   Contacts

The Customer Technical Support (CTS) team operates a 'service desk' style support centre for ASX customers, which provides support coverage during business hours, 08:00 to 18:00. After-hours support and escalation is provided via the ASX Trading Operations team.

Questions about Trading Testing Environments should be directed to CTS:

Email: CTS@asx.com.au

Phone: Within Australia   —   1800 663 053

Outside Australia —   +612 9227 0372

1.3   Version History

This document has been revised according to the table below:

Version	Date	Comment
v1.12	December 2018	• Updated to new ASX branding • Change to load injector products and clarification of price patterns • Addition of failover times for FIX Market Data and Drop Copy services
V1.13	November 2019	• Addition of exceptional schedule for hourly auction
V1.14	June 2021	• Changed document title • Changed references to the platform to "ASX 24" • Changed references to "CDE Plus" to "CDE+" • Updated table colour schemes on page 12
V1.15	December 2023	• Updated naming conventions

2   Service Overview

The ASX offers a wide range of trading testing services. These environments are for customers to use to test the functional interface between their software applications and the ASX FIX Gateways. Customers can use the testing environments to perform the following:

- Accreditation of their software applications for use on the production service.
- Test trading strategies against a simulation of the production service.
- Provide market participants with a safe training environment away from the production service.
- Test that customer's market data applications can successfully process message volumes.
- Test their application's ability to recover from service disruptions.
- Test outside of normal market hours.

All of the above service offerings are available via a combination of testing environments described in the following sections.

Customers can also download the Administration and Risk Terminal (ART) and the Trading Terminal for use on the test markets.

The test markets offered for ASX 24 are:

- Customer Development Environment (CDE) for the ASX 24 Derivatives market.

  A communal test environment for the ASX 24 Derivatives market. The CDE will use the current production version of the ASX 24 software. CDE connects to the Genium Clearing test system, facilitating end-to-end testing.

- Customer Development Environment Plus (CDE+) for the ASX 24 Derivatives market.

  Similar to CDE, except that CDE+ will have the next version of the ASX 24 software, containing bug fixes and new features which will be part of the next maintenance release or service release of ASX 24. CDE+ connects to another instance of the Genium Clearing test system, facilitating end-to-end testing.

The connectivity details to each of these systems plus the Genium Clearing test system can be found in the Connectivity Guide on the ASX 24 documents page. The guide contains full details of IPs, ports, FIX CompIDs. It also includes ASX 24 production details.

3 Customer Development Environments

3.1 Service Description

3.1.1 CDE

The CDE provides a shared test environment for all participants to help them develop, test and run their trading and market data applications for the ASX 24 Market. Trades entered in the CDE will flow through to Genium clearing test environment.

The environment utilises the most current version of ASX 24 software. The main purpose is to simulate production-like behaviour. Functional testing should only be performed on this environment, as the system is not configured for performance testing.

3.1.2 CDE+

CDE+ provides the same features as CDE, except it contains the future version of the ASX 24 software.

CDE utilises the same version of the ASX 24 software as current production.

CDE+ is connected to its own Genium Clearing test instance, which facilitates end-to-end testing.

Functional testing should only be performed on this environment, as the system is not configured for performance testing.

Note - Aside from the below service descriptions, CDE and CDE+ services are identical and for the purpose of simplicity the remainder of section 3 will refer to CDE which can be considered applicable for CDE+.

3.2 Access to the Environments

To access the development environments, customers will be required to complete an ASX 24 Customer Development Environment Order Form.

Connectivity can be established via the following methods:

1. Direct Connectivity from an ALC Cabinet
2. Connectivity over ASX Net
3. Connection via VPN.

For more information on the connectivity methods, please refer to the Connectivity Guide.

3.3 Trading Day Cycle

3.3.1 ASX 24

ASX 24 operates two markets ASX 24 (MIC: XSFE) and NZ Futures and Options (MIC: NZFX) on a 24/6 basis, with the first product going into Pre-Open at 06:20 Monday morning (NZFOE) and last product close at 8am, Saturday morning. A typical trading day cycle consists of two trading sessions (night and day) forming a single trading day. The night session always precedes the day session such that the night session for the Friday trading day starts Thursday afternoon.

For the XSFE Markets, the Friday trading day starts at 16:58, Thursday night (IR Pre-Open), and ends at 16:30 on Friday afternoon.

3.4 Trading Day Cycle for ASX 24

Session State/Phase	Description	Day	Time
Pre-Open	A period of ten (10) minutes prior to the Open in respect of a particular futures contract or option contract during which bids and offers may be entered into the system. Trades are executes at a common price on the Open.	Thursday	16:58:00
Open	The commencement of open trading in a particular futures contract or option contract.	Thursday	17:08:00
Maintenance	Night session closes and appropriate orders are purged in preparation for the Pre-Open phase.	Friday	07:00:00
Pre-Open	A second pre-opening phase prior to the day session	Friday	08:29:30
Open	The commencement of open trading in a particular futures contract or option contract.	Friday	08:30:00
Close	The completion of trading in ASX 24. Trading Date in a particular Futures Contract or Option Contract, or such other time as is designated by the Board.	Friday	16:30:00
Start of the Settlement Period	Settlement Price is determined	Friday	+/- 5-15 minutes
Maintenance	Appropriate orders are purged in preparation for the new trading date.	Friday	16:42:30

Specific contract session timings follow the production times described here, http://www.asx.com.au/about/trading-hours.htm.

The CDE test system is designed so that the trading sessions emulate the production timings. Connectivity testing is possible at all times of the week apart from the 2 weekend shutdown periods – 09:00-12:30 Saturday and 17:30 – 19:00 Sunday.

3.5 Exceptional Schedule

To facilitate customer testing of session states outside of normal trading schedules, CDE has a modified schedule for an hourly auction on ASX 30 Day Interbank Cash Rate Futures (IB). PRE_OPEN will start on the hour, every hour, running for 10 minutes then followed by the OPEN market state.

IB PRE_OPEN at 08:20:00 followed by OPEN at 08:30:00 and cycle through these trading sessions every hour.

3.6 Load Injector

A load injector has been configured to provide liquidity in a specific instrument to facilitate testing. The purpose is to provide both market data and predictable examples of order entry/modify/delete. The load injector will perform on the below two XSFE and one NZFX instruments between the hours of 08:29 to 16:29 and 17:08 to 07:00 to emulate market hours in this manner:

Products used:

- AP
- AR

- BB

All use the same type of load over these contracts:

- Spot
- Spot +1
- Spread1 (Spot_Spot+1)

Below is a summary of the load generated for AP, AR, and BB injectors are similar in behaviour.

Prices in the test market may differ, however the load injector price patterns will be as documented:

Stage 1

AP Spot

Bid	Offer
5000	5002
4098	5004
4096	5006

Stage 2

AP Spot+1

Bid	Offer
5002	5004
5000	5006
4098	5008

Stage 3

Modify AP Spot + 1 Lv2 Bid to 5004 (traded)

Stage 4

Enter spread 1 bid 1 at -1

The load generator will cycle through all steps every 30 seconds.

3.7   Failover tests

3.7.1   FIX Failovers

To ensure customers have adequate opportunity to test failover and to facilitate a flexible conformance testing process throughout the week, the CDE+ will incorporate failover and failback events.

Co-located (Colo) FIX Order Entry services failover from Primary to Secondary, failover from Secondary to Tertiary (DR site), then failback from Tertiary to Primary. WAN FIX Order Entry services failover from Primary to Secondary and then back to Primary. FIX Market Data is offered as a concurrent service, where the Primary and Secondary services run as Active/Active. During a failover, the Primary FIX MD service goes down, then comes back on-line during the failback event. Secondary FIX MD stays live the whole week.

Note: Customers with multiple logins spread across both FIX server groups should look to test failing over their flow from Server group 1 to server group 2 during the windows provided. The Saturday failover is an exception – Tertiary services remain as the active instances until the Saturday 09:00 shutdown of the system.

3.7.2 System Event Times

Day	Time	Event
Sunday	19:00	System startup in Primary mode
Tuesday	17:15	Colo FIX Server Group 1 / WAN FIX Server group 2 - failover to Secondary service
Tuesday	17:15	WAN FIX Server Group 1 - failover to Secondary service
Tuesday	17:25	Colo FIX Server Group 2 - failover to Secondary service
Tuesday	17:30	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Secondary service failure. Applications can re-route Colo traffic to the sessions on Colo Server Group 2 (secondary)
Tuesday	17:45	Colo FIX Server Group 2 - Secondary service failure
Tuesday	17:45	5 minutes of no Colo connectivity
Tuesday	17:50	Colo FIX Server Group 1 / WAN FIX Server Group 2- Tertiary service brought up
Tuesday	17:50	FIX Drop Copy and FIX Market Data – failover to Secondary service
Tuesday	17:50	WAN FIX Server Group 1 - failback to Primary service
Tuesday	18:00	Colo FIX Server Group 2 - Tertiary service brought up
Tuesday	18:10	FIX Market Data – Primary service available
Tuesday	18:20	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Tertiary service failback to Primary
Tuesday	18:20	FIX Drop Copy – failback to Primary service
Tuesday	18:30	Colo FIX Server Group 2 - Tertiary service failback to Primary
Thursday	01:00	Colo FIX Server Group 1 / WAN FIX Server Group 2 - failover to Secondary service
Thursday	01:00	WAN FIX Server Group 1 - failover to Secondary service
Thursday	01:10	Colo FIX Server Group 2 - failover to Secondary service
Thursday	01:15	Colo FIX Server Group 1 / WAN FIX Server Group 2- Secondary service failure
Thursday	01:30	Colo FIX Server Group 2 - Secondary service failure
Thursday	01:30	5 minutes of no Colo connectivity
Thursday	01:35	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Tertiary service brought up
Thursday	01:35	FIX Drop Copy and FIX Market Data – failover to Secondary service
Thursday	01:35	WAN FIX Server Group 1 - failback to Primary service
Thursday	01:45	Colo FIX Server Group 2 - Tertiary service brought up
Thursday	01:55	FIX Market Data – Primary service available
Thursday	02:05	Colo FIX Server Group 1 -/ WAN FIX Server Group 2 Tertiary service failback to Primary
Thursday	02:05	FIX Drop Copy – failback to Primary service
Thursday	02:15	Colo FIX Server Group 2 - Tertiary service failback to Primary
Friday	15:00	Colo FIX Server Group 1 / WAN FIX Server Group 2 - failover to Secondary service
Friday	15:00	WAN FIX Server Group 1 - failover to Secondary service
Friday	15:10	Colo FIX Server Group 2 - failover to Secondary service
Friday	15:15	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Secondary service failure
Friday	15:30	Colo FIX Server Group 2 - Secondary service failure
Friday	15:30	5 minutes of no Colo connectivity
Friday	15:35	Colo FIX Server Group 1 / WAN FIX Server 2 - Tertiary service brought up

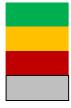| Day	Time	Event
Friday	15:35	FIX Drop Copy and FIX Market Data – failover to Secondary service
Friday	15:35	WAN FIX Server Group 1 - failback to Primary service
Friday	15:45	Colo FIX Server Group 2 - Tertiary service brought up
Friday	15:55	FIX Market Data – Primary service available
Friday	16:05	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Tertiary service failback to Primary
Friday	16:05	FIX Drop Copy – failback to Primary service
Friday	16:15	Colo FIX Server Group 2 - Tertiary service failback to Primary
Saturday	01:00	Colo FIX Server Group 1 / WAN FIX Sever Group 2 - failover to Secondary service
Saturday	01:00	WAN FIX Server Group 1 - failover to Secondary service
Saturday	01:10	Colo FIX Server Group 2 - failover to Secondary service
Saturday	01:15	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Secondary service failure
Saturday	01:30	Colo FIX Server Group 2 - Secondary service failure
Saturday	01:30	5 minutes of no Colo connectivity
Saturday	01:35	Colo FIX Server Group 1 / WAN FIX Server Group 2 - Tertiary service brought up
Saturday	01:35	FIX Drop Copy and FIX Market Data – failover to Secondary service
Saturday	01:45	Colo FIX Server Group 2 - Tertiary service brought up
Saturday	09:00	System shutdown
Saturday	12:30	System startup in Primary mode – available for market snapshot only
Sunday	17:00	System shutdown

This table illustrates the failover scenarios as per the Tuesday schedule.

	Colo Group 1 / WAN Group 2			Colo Group 2			WAN Group 1	
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary
17:00								
17:05								
17:10								
17:15								
17:20								
17:25								
17:30								
17:35								
17:40								
17:45								
17:50								
17:55								
18:00								
18:05								
18:10								
18:15								
18:20								
18:25								
18:30								
18:35								
18:40								
18:45								

Legend:

- Running as Primary (green)
- Service running, no connectivity (yellow)
- Failed service (red)
- 5 minutes of no Colo connectivity (grey)

3.7.3   Multicast Recovery

- ASX provides an opportunity to test the Blink recovery function by facilitating packet loss at scheduled times throughout the session. The MDP service will generate 10% packet loss on both Feed A and Feed B for a 2 minute period on the hour at the following times:
- Every day between the hours of 10:00 and 16:00 inclusive
- On Friday at 15:50
- Every day between the hours of 22:00 and 01:00 inclusive.

FIX Market Data will remain unaffected.

3.8   ASX Administration and Risk Terminal and the ASX Trading Terminal

The CDE environment will allow participants to access both the Administration and Risk Terminal (ART) and the ASX Trading Terminal.

ART is designed for the administration of trading accounts and the management of the Pre Trade Risk settings for participant accounts on the ASX market. ASX Trading Terminal is a trade management terminal used for the entry and management of orders for trading and account supervision purposes. In order to gain access to both terminals, you will need the relevant usernames, passwords, and member IDs. These can be requested from the Customer Technical Support (CTS) team.

Guides to both terminals can be found via the following links -

Administration and Risk Terminal (ART):
http://www.asx.com.au/documents/products/asx-admin-and-risk-terminal-user-guide.pdf
ASX Trading Terminal:
http://www.asx.com.au/documents/trading_services/asx_trading_terminal_user_guide_v0.2.pdf

3.9   Derivatives End to End Test Environment (E2E)

The E2E allows trades which have been executed to flow through to the relevant Clearing and Settlement systems. Any trade which is executed on the ASX 24 markets will flow though to Genium.

A new instance of Genium will need to be installed and running. For further information around this setup contact your TAM.

3.10   Access to the E2E

Customers will be required to have access to both the CDE and/or Genium Test Environments for E2E testing depending on the requirements.

4   Application Certification Test Service

The Application Certification Test Service is designed to test and certify application functionality based on a customer's intent for the application. They aim to ensure that users:

- Can communicate with the production system in the correct manner.
- Do not adversely affect the production system.
- Do not inadvertently affect the production market.

Each customer application must pass the accreditation process prior to production go-live. Customers using a vendor-supplied system will rely on the vendor company to seek accreditation for their own systems.

For details relating to Application Certification testing, please contact your TAM or the CTS team.

Email: CTS@asx.com.au

Phone: Within Australia   —   1800 663 053

Outside Australia —   +612 9227 0372