3 September 2019

Re: CHESS Replacement System Access Pricing

I am writing to you to provide an update on the indicative pricing to access the CHESS replacement system. Access pricing includes prices for clearing and settlement participants and other users for the wider use of the distributed ledger access option. This information is being provided in response to queries to assist users' investment decisions well in advance of the 2021 go live date.

This information adds to previous announcements including the waiving of access fees for the CHESS replacement customer development (CDE) and industry wide testing (IWT) environments as well as the letter to clearing and settlement participants dated the 12th March 2019 confirming their access pricing.

Access options

There will be three options to access the clearing and settlement services provided by the CHESS replacement system. These are:

1. Messaging – ISO 20022 standard messaging via AMQP or SwiftNet;
2. Distributed ledger – a distributed ledger API or "node" connection;
3. Browser – a browser user interface (UI) that replaces CHESS PC for low transaction value and volume users.

Feedback on clearing and settlement access pricing

Following the March announcement on access pricing, we received feedback from stakeholders including:

1. **SWIFTNet messaging** - Support for this option; however, some users requested the use of SWIFT's Reverse Billing arrangement and to avoid incurring a pass-through of SWIFT's infrastructure up-lift costs incurred by ASX.
2. **AMQP 1.0 messaging** – Support for this option at $495 per session, per month.
3. **Distributed ledger access** (node Ledger API access) – Support for this option and a three year fee waiver period to access clearing and settlement services for clearing and settlement participants; however, stakeholders requested an indication of what this pricing would be absent any waiver.
4. **Other user types** – Requests for access pricing for users in addition to clearing and settlement participants including issuers, investors, share registries and service providers such as back office system vendors.

The following information addresses these points and provides further access pricing information.

Distributed ledger access pricing

The use of the distributed ledger to access the clearing and settlement services provided by the CHESS replacement system is optional and offers the same clearing and settlement functionality as available via messaging.

Distributed ledger access can coexist with messaging and browser access options if desired.

As we are nearly two years from launch, the technical solution is still being completed and the access pricing model is still being finalised. However, to assist users in forward planning we provide the following indicative pricing:

- Access pricing for clearing and settlement services provided via a node would be comparable to AMQP access pricing (at $495 per month) noting that this is subject to a three year waiver.
- Access pricing for non-clearing and settlement services provided via a node are anticipated to be in a range of $295 - $995 per month but will be solution dependent.

Further details and definitions are provided in the Technical Access Details and Glossary sections of this letter.

Browser UI access pricing

Browser UI access pricing for clearing and settlement services will be made available at the beginning of the industry wide testing (IWT) project phase.

Messaging access pricing

ISO 20022 messaging via SWIFTNet

SWIFT fees are a matter between SWIFT and their clients.

ASX and SWIFT have reviewed SWIFTNet connectivity and subject to finalised legal agreement ASX can confirm:

- That no SWIFT infrastructure uplift cost pass through is required for clients choosing the SWIFT connection option.
- The SWIFT Reverse Billing method will be available for CHESS Replacement ISO 20022 messaging.

ISO 20022 messaging via AMQP

Consistent with stakeholder feedback, there will be no change to AMQP access pricing. This will remain at $495 per AMQP session, per month - connectivity via AMQP 1.0 protocol for ISO 20022 messaging.

Further information

I trust this access pricing information provides further input to your connection choice and business investment decisions. As we approach the launch date we will provide stakeholders with finalised access pricing.

Should you have any questions please contact the CHESS Replacement team on CHESSReplacement@asx.com.au or 02 9227 0159.

Yours sincerely,

Cliff Richards | Executive General Manager

Equity Post Trade | **ASX Limited**

Technical Access Details

Distributed ledger access

Services provided on the distributed ledger will be accessed via a Ledger API. The use of the distributed ledger to access clearing and settlement services is optional. Together, a node and a session are required to access the data and services a customer is entitled to, through a Ledger API. However the same clearing and settlement functionality is available using ISO messaging (accessed via AMPQ or SwiftNet).

Nodes and sessions will have fees associated with them. As the technology is still under development at this time, pricing is yet to be finalised. However, indicative pricing for nodes and sessions are detailed below.

Indicative Node pricing

- **Standard node** = comparable to an AMQP session @$495 per standard node per month.
- **Dedicated node** = greater than a standard node and dependent on capacity requirements.
- **Service Provider node** = comparable to the number of Standard nodes it replaces.

Indicative Session pricing

- **Clearing and Settlement session** = $Nil per month[1]
- **Non Clearing and Settlement session** = Use case dependent, anticipated range of $295 - $995 per month per session.

Distributed ledger services will operate over the ASXNet communications network.

AMQP

AMQP 1.0 can be accessed using any AMQP 1.0 compliant client.

An AMQP session consists of access to a transaction queue pair (send/receive) that is configured on a UIC basis (this is analogous to the AIC concept in CHESS messaging).

SWIFTNet

ASX will use the SWIFT MI Channel interface into SWIFT.

SWIFT strongly recommends that for optimal performance customers also use SWIFT's MI Channel. However, if a customer is exchanging low volumes, they can also connect via Interact.

[1] A single primary and single secondary (disaster recovery) clearing and settlement session is $Nil. In the event that a user requires additional clearing and settlement sessions, these may incur additional access fees.

Glossary

AMQP - Advanced Message Queuing Protocol (AMQP) v1.0 is an open and International Standard (ISO/IEC 19464) for passing business messages between applications or organisations. It is analogous in function to the existing CHESS messaging protocol (Section 10/11 of EIS). AMQP 1.0 is supported by various open source projects and vendors.

Browser UI – a secure browser option to access the core clearing and settlement services of the CHESS replacement application is effectively a replacement for the CHESSPC desktop application currently used by typically smaller, low transaction value and volume users.

DAML – the Digital Asset Modelling Language is an open-source smart contract computer programming language for building ledger and database agnostic secure distributed applications on a safe, privacy aware runtime.

Distributed Ledger – the ASX distributed ledger is a secure database architecture that facilitates permissioned interaction with a shared view of business processes and data.

Ledger API is an application programming interface which allows authorised users to access the distributed ledger to, submit commands, stream data and access utility services.

Node - a node is an instance of the distributed ledger software that can host and facilitate interaction with a segregated and synchronised view of the ledger. A node is offered as a managed hosted service by ASX and only contains entitled data.

Standard Node – a standard node logically segregates user data on a shared server infrastructure.

Dedicated Node - a dedicated node physically segregates user data on a separate dedicated server infrastructure.

Service Provider Node - a service provider node is available to service providers who may wish to aggregate a number of clients on one node. This will be scaled to the capacity requirements of the type and number of clients the service provider is hosting. Each client of the service provider will need to request for the permissioning of their data and sessions to the service provider's node.

Session – is access between a customer's system and a Node for the purposes of transacting with a specific application for a given party.

SWIFTNet – SWIFTNet is a general purpose, industry-standard solution for the financial industry. SWIFTNet provides an application-independent, single window interface to all the connected applications of all the institutions participating in the global financial community.