ASX Clearing Gateway Uplift Technical Guide

Derivatives Clearing System (DCS)

July 2022

Version History

Version	Date	Comment
1.0	June 2022	Initial release
1.1	July 2022	Correction to displayed title.

1 Background and Audience

ASX is undertaking a technology refresh to upgrade legacy clearing infrastructure and will migrate DCS gateways from the trading network to the ASX Net service. The new model is designed to cater for both clearing and third party services, providing security and operational segregation from trading order entry and market data services.

This initiative will centralise all DCS customer gateways on ASX premises, which reside within the ASX virtual infrastructure. This will improve resiliency and remove the need for ASX personnel to remotely manage ASX devices.

The target audience for this document is IT staff at Participant companies, including network and data centre personnel.

2 Technical Specifications

2.1 Hardware

Current	Target
Dell Power Edge R320 (GiC)	Cisco ISR 4321

3 Deployment

Plan Outline

Participants will be contacted by the deployment team and notified of the deployment plan for their DCS Migration. The deployment plan involves a cutover from using the existing DCS gateway, to the ASX Net Customer Premises Equipment (CPE) devices.

There are minimal configuration changes required on the customer side for this migration. There are two new DCS services provided over ASX Net – a new test service and new production service. The IPs and ports are detailed in Section 7 and are highlighted in green text. The existing legacy DCS test service will remain in place until the upgrade project is completed for all Participants, after which it will be decommissioned.

ASX Net connectivity is delivered using CPE - two Cisco ISR 4321 routers. The devices are housed on customer ASX Net sites or in customer cabinets in the ALC.

Once the migration is completed, the legacy DCS gateway devices will remain on-site in a powered off state for a short period of time; ASX staff will arrange pick up and secure destruction.

Physical Layer

- 2x ASX Net standard routers.
- Media standard is 1000BASE-T RJ45.
- Existing ASX Net customers will use the same physical port for DCS as their current “ASX Services connection”.
- New ASX Net customers will be required to patch the new physical port allocated by ASX on the CPE.
- It is the customer’s responsibility to provide the termination equipment.

Customer Addressing

- All addressing is IP version 4.
- Existing ASX Net customers will need to use the IP address range allocated to them previously.
- New ASX Net customers will be given an IP range such as 172.31.xx.xx/24 from a pre-defined range.
- Within the provided range, 172.31.xx.1-49 is reserved by ASX. Customers can use 172.31.xx.50-89
- It is important to check that the customer is not currently using IPs in the range 172.31.xx.1-49 on existing ASX-facing devices.
- 172.31.xx.32 is the virtual gateway IP on the CPE.
- Customers will be required to NAT their ASX Net connection to the allotted addresses inside the provided IP address range.
- The new target IPs and ports for the DCS test and production services application are the IP addresses in the table in Section 7.
- Outbound connections from ASX will be to TCP ports 20240, 20222 and 20024, as detailed in the same table.

Customer Infrastructure

ASX Net does not employ Spanning Tree Protocol (STP) for loop prevention in the customer access VLAN on ASX Net routers. Customers must provide loop protection mechanisms in order to prevent broadcast storms across the VLAN when connected redundantly.

4 Pre-requisites

- Locate the current ASX DCS equipment at their sites.
- Identify any cabling works required to facilitate the move of DCS to ASX Net.
- Configure networks to allow bi-directional traffic for their MCM application servers to communicate with DCS ASX Net target IPs and ports. Please refer to the table in Section 7.

5 Implementation

Once the pre-requisites have been satisfied, the ASX deployment team will arrange a migration session via a conference call. The action steps for this session are:

1. Customers to run telnet from their MCM application server:

   ```
   telnet 203.4.179.202 20025
   telnet 203.4.179.202 20240
   telnet 203.4.179.203 20025
   telnet 203.4.179.203 20240
   ```

2. ASX to run telnet from the new DCS virtualized gateway back to the customer's MCM application server:

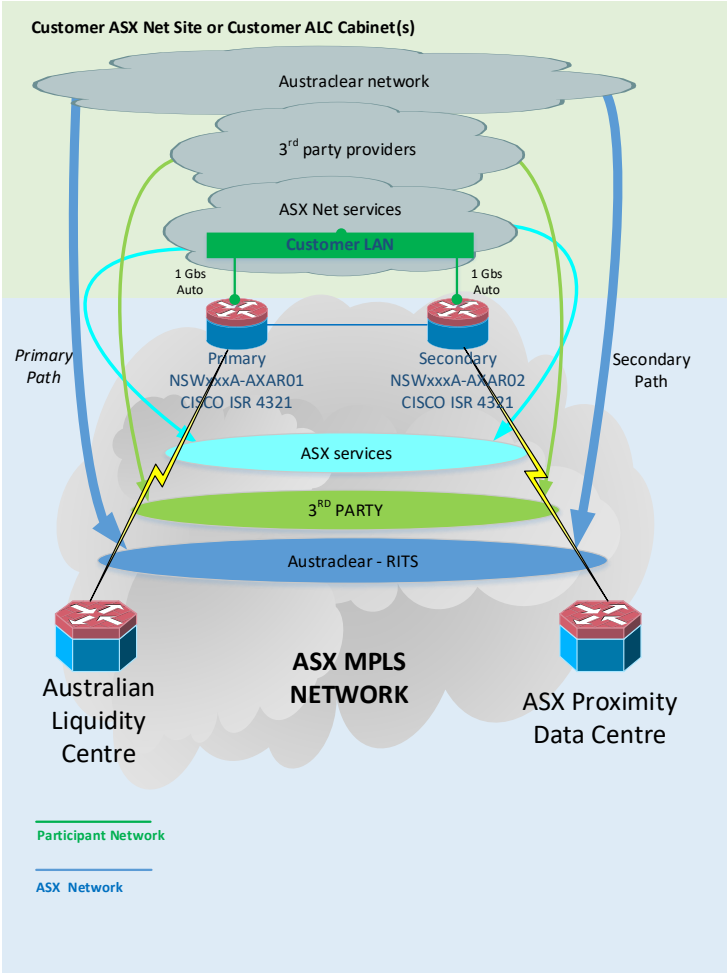
   ```
   telnet <MCM app server IP> 20240
   telnet <MCM app server IP> 20222
   telnet <MCM app server IP> 20024
   ```

3. In the production MCM application server Windows registry, the customer will amend the production DCS gateway IP address to 203.4.179.202
   Instructions will be provided.
4. In the test MCM application server Windows registry, the customer will amend the test DCS gateway IP address to 203.4.179.203
   Instructions will be provided.
5. Verification testing, under direction of the ASX deployment team.

6 Logical Diagram

ASX Net Distribution Upgrade

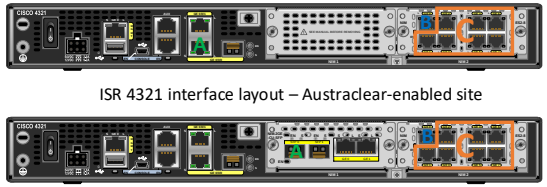
The diagram below outlines the most common implementation for connectivity for ASX Net sites and customer cabinets at the ALC.



Participant provides:

- 2x rack units, 1 for each ASX Net Router
- 2x power outlet, 1 for each ASX Net Router
- Existing configuration based on customer current IP addresses, NAT, NIC speeds and subscribed services.

Physical connections: ISR 4321 interface layout - standard site



A - Gi0/1/0
ASX MPLS Uplink

B - Gi0/2/0
ASX trunk

ISR 4321 interface layout – Austraclear-enabled site

C - Gi0/2/1 to Gi0/2/7
Client interface(s) allocation

ASX provides:

- 2x CISCO ISR 4321 routers
- Rackmounts
- 1x power cable per router
- On-site deployment and configuration based on customer existing IP addresses, NAT, NIC speeds and subscribed services
- Interface allocations for subscribed services

Additional information

- ASX Net Cisco IRS 4321 routers will replace Nortel Baystack 470 switches and/or Cisco 2811 routers
- No change to IP addressing for ASX services or 3rd party services
- ASX Net routers have a new naming convention, e.g. NSW123A-AGE01
  - NSW = region
  - 123A = participant number
  - AXAR = ASX Net router
  - 01 = Device number

ASX Net router specifications:

Make:	Cisco	Model:	ISR 4321
Depth:	294.64mm	Height:	44.5mm
Weight:	4kg	Width:	369.57mm
Rack Space:	1 RU	Typical power:	36 watts
Power:	Single – 100-240v ~1.8A 50-60Hz		

7 ASX Net Services

The table below contains the connectivity details for the services available on the ASX Net "ASX Services" port:

System	Logon Availability (all days unless specified)	Environment	Destination IP	Port
ASX Trade CDE / CDE+	00:05 to 21:30	Test	CDE+: 203.4.179.121 CDE: 203.4.179.122	15024 - 15027 6003 - 6006
CHESS	00:05 to 21:30	Production	203.4.179.22	4200
		Test	203.4.179.23	4206 - 4210
ASX 24 CDE / CDE+	19:00 Sun - 09:00 Sat	Test	CDE: 203.4.179.96 - .102 CDE+: 203.4.179.104 - .112	6971, 6980, 7980, 7990 TCP
ASX Online Market Information B2B portal	(ReferencePoint) All hours	Production	203.4.179.25	15000
ComNews	01:00 to 11:00 Mon - Fri	Production	203.4.179.80	20 - 21
		Test	203.4.179.83	20 - 21
DCS	21:00 to 19:00	Production	203.4.179.202	**ASX Net destination ports:** 20025, 20240 **MCM server destination ports:** 20024, 20222, 20240
		Test	203.4.179.203	
		Test (Legacy)	203.4.179.201	
Genium Clearing	03:00 to 19:30 Mon - Fri	Production	API: 203.4.179.237	32024 - 32027
			CWS: (IP assigned by ASX)	SY 2121 / NZ 2122
		Test	203.4.179.239, .227, .234	32024 - 32025
MarketSource	(OMNet) 02:25 to 20:30 Mon - Fri	Production	203.4.179.85	15024 - 15025, 6004
OTC Margin Simulator	07:30 to 21:00 Mon - Fri	Production	n/a	n/a
Signal B	07:00 to 00:00 Mon - Fri	Production	203.4.179.25-27	15002
TradeAccept FIX	All hours Mon - Fri	Production	Primary: 203.4.179.196	9011 - 9018
			Secondary: 203.4.179.197	9011 - 9018

8 FAQ

Q: What do I need to do and by when?

A: Your ASX Technical Account Manager will be in touch to initiate the migration process.

Q: Why is the ASX replacing DCS Gateway-in-Cabinet (GiC) and migrating this service to ASX Net?

A: As part of ASX's commitment to providing best-in-class services to our customers, we will be undertaking a technology refresh of the DCS network, replacing aged infrastructure and enhancing the technology used to deliver these services.

Q: What are the benefits of this initiative?

A:

- Uplifts the technology and infrastructure for the DCS service.
- Provides operational segregation from trading order entry and market data services.
- Consolidation of multiple devices.
- Centralise all DCS customer gateways on ASX premises within the ASX virtual infrastructure.
- Reduces the physical footprint of ASX services in customer's data centre and the requirements of their facilities and security.
- Improves resiliency and removes the need to remotely manage ASX devices off-site.

Q: Are there any functional changes to DCS?

A: The functionality of the DCS service over the ASX Net network will not change as part of this upgrade. Access, user accounts and passwords will not change.

Q: Will there be any network configuration changes required on the customer LAN? i.e. IP address, NAT configuration?

A: There are minimal changes required to facilitate the migration on the customer side. Existing ASX Net customers will need to use the IP address range previously allocated to them for ASX Services. The ASX deployment team will assist with the details.

Q: Will there be any changes to the physical hand-off from the DCS server?

A: Yes, the customer connection to DCS will be presented as 1000BASE-T RJ45 port on the ASX Net CPE.

Q: If my ASX Net site requires the ASX Net CPE devices to be installed, where should the new CPE be located in my data centre?

A: ASX will install CPE within the same rack as existing ASX infrastructure. If this is not feasible, the customer must provide the interconnecting cabling between racks where the CPE and existing ASX demarcation are located. Considerations for customer provided cabling:

- SMOF cable is required
- Customer handoff is Cat6 RJ45, 1000BASE-T [1]

[1] Cat6 RJ45 connections are limited to 100 metres.

Q: What are the risks?

A: The risks include:

- For customers needing to have the ASX Net CPE devices installed:
  - Increased rack space and power requirements for the delivery of CPE during the cutover schedule
  - Cabling relocation for hand-off from the ASX Net CPE
- IP connectivity and testing
- User accounts and passwords for services that are not utilised regularly

ASX will aim to minimise risks during the cutover. This work has a low risk profile due to the extensive testing performed by the ASX.

Q: Does the deployment and upgrade have to be scheduled on weekends?

A: ASX will advise the cutover schedule options as per our standard maintenance windows. However, ASX welcomes customers to provide a recommendation for the cutover and testing time based on their internal policies and operational guidelines.

Q: What are the testing arrangements?

A: Coordination of testing between ASX and customer personnel will be required. Customers are required to test their access to the new DCS service on the day of the migration. ASX network testing and technical support staff will assist customers during the upgrade activities.

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