LCH

Connectivity guide
LCH SA

LSEG POST TRADE

Contents

1. Introduction

1.1. Definitions and acronyms

Abbreviation/terms	Explanation/definition
API	Application Programming Interface.
CAP	Certified Access Point
CCP	Central Counterparty Clearing
CLEARING HUB® (for clearing only)	The message handling interface-managing application flows between the central systems and the access points.
CMC	Customer Managed Connectivity
CMF	Clearing Member Firm
DMZ	Demilitarized zone. Secured zone in a network.
CCW	Access solution to Central Counterparty Web based services. This program provides an access to the LCH SA clearing services for EquityClear SA Listed Derivatives & CommodityClear SA
EGCP	€GCPlus service. This program provides an access to the LCH RepoClear services for cash tripartite repo transactions that are secured by collateralising securities belonging to a pre-defined basket of securities
EUA	External User Acceptance (test platform for Users)
FTP	File Transfer Protocol
GMA	Group Member Access
IP	Internet Protocol
ISV	Independent Software Vendor. A provider offering a software and/or facilities management solution to access the LCH SA clearing systems.
LAN	Local-area network
LCAP®	Logical Certified Access Point. A device handling network between a Member's site and the "CLEARING HUB®" or the "Order Flow HUB", including data compressing. A LCAP® handles the communication for one or more Members
MAP	Mutualized Access Point
Members	LCH Clearing Member of LCH SA or LCH Ltd.

Abbreviation/terms	Explanation/definition
MMTP	Market Message Transfer Protocol Standardised communication protocol used by client applications to access the LCAP® solution as an interface between the CAPI®/MAPI® and the "CLEARING HUB®" or the "Order Flow Hub".
OTC	Over The Counter (Bond & Repo market service)
POP	Point of Presence (into CMC network)
Physical server	Computer hardware on which order management server (SLE) and/or broadcast server (SLC) software reside.
Router	A network device that performs dynamic routing between the Hub (Order Flow or Clearing) and the access point.
SEF	Swap Execution Facility
SFTP	Secured File Transfer Protocol
SLC	Broadcast Server. A logical server (server software), developed by the Member or ISV; it receives the market data feed, stores this information in a local database that maintains a picture of the current state of the market, and makes this information available on the workstations. (SLC – "Serveur Local de Consultation" in French means local consultation server.)
SLE	Order Management Server. A logical server (server software) developed by the Member or ISV; it handles the interactive communication between the Clearing/Trading central systems and Members, including all private messages, i.e. the order feed (orders, acknowledgments, trade notices, cancellations, etc.). (SLE – "Serveur Local d'Emission" in French means local transmission server.)
SPOF	Single Point of failure
Subscribers	Logical access to a LCAP. A LCAP can support up to 5 subscribers
TMF	Trading Member Firm
VPN	Virtual Private Network
WAN	Wide Area Network

1.2. Service description

Clearing Gateway Solutions (see Appendix for detailed description):

– LCAP (only for EquityClear SA),
– ⌒CCW (only for EquityClear SA),
– LCH Website,
– Clearlink Gateway (only for CDSClear),
– LCH Member Portal,

rely on 2 types of Connectivity enabling Members to connect LCH's clearing platforms in regards of the market or the product cleared:

– CMC
– Internet

Connectivity and Clearing Gateway Solutions can simultaneously provide access to the same cleared market, product, trading or matching platform.

The Internet connectivity is not provided by LCH, Members have to subscribe an Internet connection by their own means.

The following chart gives an overview of the access solutions for each Business Line.

			Member access solution					
Business lines	**Product family**	**Market/product/ trading or Matching platform**	**Network CMC**	**LCAP via CMC**	**eCCW via Internet**	**LCH Website via Internet**	**Clearlink Gateway (reporting SFTP)**	**Portal via Internet/SFTP**
EquityClear SA	**Cash Securities**	Euronext Cash	Yes	Yes*	n.a.	Yes	n.a.	Yes
		Equiduct	Yes	Yes*	n.a.	Yes	n.a.	Yes
		Turquoise	Yes	Yes*	n.a.	Yes	n.a.	Yes
		Cboe	Yes	Yes*	n.a.	Yes	n.a.	Yes
		Aquis	Yes	Yes*	n.a.	Yes	n.a.	Yes
		Bourse de Luxembourg Cash	Yes	Yes*	n.a.	Yes	n.a.	Yes
	Financial Listed Derivatives	Euronext Derivatives	Yes	Yes	Yes	Yes	n.a.	Yes**
CommodityClear SA	**Commodities Listed Derivatives**	Euronext Derivatives	Yes	Yes	Yes	Yes	n.a.	Yes**
CSDClear SA	**Credit Default Swap**	CDS	Yes	n.a.	n.a.	Yes	Yes	Yes
RepoClear SA	**Fixed Income**	TP ICAP	n.a.	n.a.	n.a.	Yes	n.a.	
		Euroclear Trade Capture and Matching System (ETCMS)	n.a.	n.a.	n.a.	Yes	n.a.	Yes
		MTS Group	n.a.	n.a.	n.a.	Yes	n.a.	Yes
		CME Group (Broker tech)	n.a.	n.a.	n.a.	Yes	n.a.	Yes
		TradeWeb	n.a.	n.a.	n.a.	Yes	n.a.	Yes

* Restricted to MMTP Real time messages

** Only treasury reports

Members' choice is to be made according to their own internal requirements, constraints or policies.

All solutions provide encrypted data transfers between Members and LCH SA systems in order to guarantee security and confidentiality.

1.3. The connectivity

LCH SA brings to Members different clearing gateways accessible through different paths: private lines **WAN with** the CMC Connectivity or **Internet**.
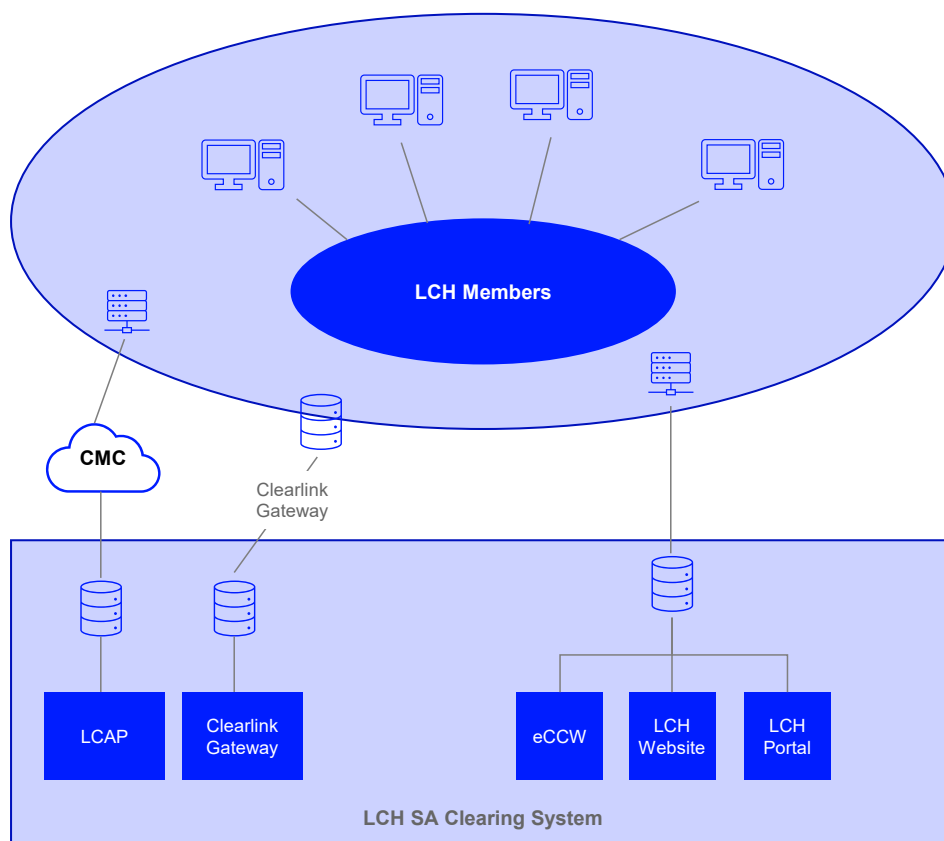
The CMC handles:

– LCAP solution (Logical Certified Access Point)
– ClearLink API

Internet connectivity handles

– CCW solution, (access to Central Counterparty Webservices),
– LCH website
– LCH Member Portal

The following diagram represents the general architecture to access LCH SA services:

1.4. The clearing access solutions

All clearing gateways share the same background in terms of technical reliability, each offers different possibilities.

1.4.1. The LCH Member Portal

The LCH Member Portal is a single sign-on solution which gives access to various LCH applications and business lines.

– Standard authentication and authorisation model for LCH external users in accordance with LCH security guidelines
– A web-based browser presentation layer, aggregating multiple artefacts such as content, reports, documents, applications from multiple business lines
– Consistent standards and framework for the integration and presentation of business applications, document libraries and content
– Standard approach for user-registration and self-service (Super User)
– Single point of access for API interfaces for programmatical interaction with back-end business service

1.4.2. Secure File Transfer Protocol for Portal Member Reporting

The Reporting sFTP solution is a non-browser based, Secure FTP (File Transfer Protocol) interface used by Users of the LCH service for the scripted, bulk retrieval of reports on a scheduled basis.

Features
– Secure FTP
– Allows automation and processing of reports
– Straight Through Processing solution to your information system
– Security, integrity and confidentiality guaranteed by external IP address identification

1.4.3. Solution for CDSClear clearing services

The Clearlink API for CDSClear: LCH SA has implemented the Clearlink API to provide open access to the system and facilitate connectivity with other middleware platforms and SEFs in the future. Clearlink provides an interface allowing market participants (Trade Providers and Clearing Members) to interact with LCH.

Clearlink API allows trade providers to submit trade for clearing and also to exchange messages with Clearing Members to request acceptance to clear a client trade. Clearlink API also allows feedback to be provided to both trade providers and Clearing Members about the progress of a trade through clearing to registration or rejection.

Only trade processing messages can be managed by Clearlink API. Payment of margins and collateral allocation are out of Clearlink's scope. Request for take-up of a client trade, and feedback on the trade status are example of messages managed by Clearlink Gateway. The messages are received from the Middleware and sent back to the Middleware and the Clearing Members.

This service is available for CDSClear only.

The CDSClear Reporting API is an interface where Users of LCH CDSClear service can use scripts to access and download individual reports.

CDSClear Smart*for*CDS API is a programmatic interface where Users of LCH CDSClear service can use scripts to access and download individual margin results.

Features

– Allows automation of margin calculations and processing
– Straight Through Processing solution to your information system
– Security, integrity and confidentiality guaranteed by external IP address identification

1.4.4. LCAP solution (EquityClear SA)

Solution description

– Dedicated to EquityClear SA – Listed Derivatives & CommodityClear SA businesses
– Dedicated network access required
– No hardware in Members premises
– Allows mutualisation of the access point interface for several Members
– The network equipment handles data encryption and compression
– Order flow through the CMC network
– Handles order certification on behalf of the ISV with the Member's agreement
– Member's pricing and connection processes defined and handled by the ISV
– Handles real time messages (MMTP) and file transfer (FTP) or secured file transfer (SFTP)

Features

– An open architecture
– Allows re-processing of delivered real-time feeds
– Enables the handling of multiple and large files
– Secured (IPsec encryption) & resilient solution
– End-to-end connectivity, fully managed by LCH SA(LCAP gateway & IP network)
– Group solution CMC
– Interconnected with Member clearing applications (open API)

1.4.5   eCCW®, solutions (EquityClear SA)

Solution description

– Dedicated to EquityClear SA – Listed Derivatives & CommodityClear SA businesses
– Certified and secured access point

– One Member code per access
– End-to-end solution
– Can be used virtually from anywhere over the Internet
– Manual file downloading

Features

– Easy to implement
– Web-based solution
– Real time access to Public and Member private clearing data

2. Member access CMC – Customer-Managed Connectivity

2.1. Architecture principles

LCH SA brings to its Members a connectivity solution offering performance, security and resilience. LCH SA Clearing Members' connectivity solution is provided by London Stock Exchange (LSEG).

The connectivity solution named CMC (Customer Managed Connectivity) is based on secure IP network between several points of access ("CMC City Pops") and LCH Data Centres.

Members shall connect to these CMC City Pops using a dedicated connection called "Last Mile" that he needs to be ordered from an ACP (Accredited Connectivity Partners). The list of ACPs is provided in the appendix.

The main requirement is that any Members' production clearing applications using LCH SA real time messaging (MMTP SLE clients), Secured File transfers (SFTP-clients) always have to be able to access the LCH SA Clearing services even in case of failure of the Clearing House primary network access.

2.2. Connectivity principles

2.2.1. Resilience

The CMC standard access is built using two separate CMC POPs for the connection to LCH SA or LCH Ltd clearing platform.

Members can choose their architecture for standard connectivity:

– Access from one site, with two circuits or
– Access from two sites, one circuit on each site.

Each circuit can be subscribed with a different Telecom carrier.

The circuits are connected to two different CMC POPs (network points of presence) of the solution provider to avoid any SPOF (Single Point of Failure).

Exception for Test only (Bronze offer see **2.2.1**): a non-resilient access can connect to LCH SA to the testing environments.

a)   Network infrastructures

All LCH network infrastructures are resilient:

– Resilient network equipment implemented with failover mechanisms.
– Resilient Members' access with no SPOF based on dual carriers.

  – Redundant network equipment.
  – Dual circuits
  – Separate CMC POPs

– Secured and fully-meshed network
– Resilient central infrastructures

b)   Systems infrastructures

The logical gateway (LCAP) is built on up-to-date technology which guarantees high availability and performances.

c)   Capacity

The minimum bandwidth for each circuit connected to LCH SA is 2 Megabits per second (2Mbps).

The bandwidth is scalable from a minimum of 2Mbps in steps of 2Mbps depending on Members clearing activity needs.

2.2.2. Security

Security is enforced by Encryption VPN Gateways located in Members' premises.

Each circuit of a CMC access has his own attached Encryption VPN Gateway.

a)   Network infrastructures

The security aspects (encryption and authentication) are guaranteed by the CMC connectivity solution, with end-to-end VPN tunnelling based on IPSec protocol (VPN gateway fully-managed by the selected Telecom Provider):

– All clearing flows are secured by this VPN layer
– Real-time messaging MMTP
– Secured File transfer FTP

b)   Systems infrastructure

On LCH's central infrastructures, each LCAP is isolated on a dedicated DMZ per Member.

2.3. General architecture & connectivity synoptic

– Clearing connectivity solutions for Members through GBSL by LSEG
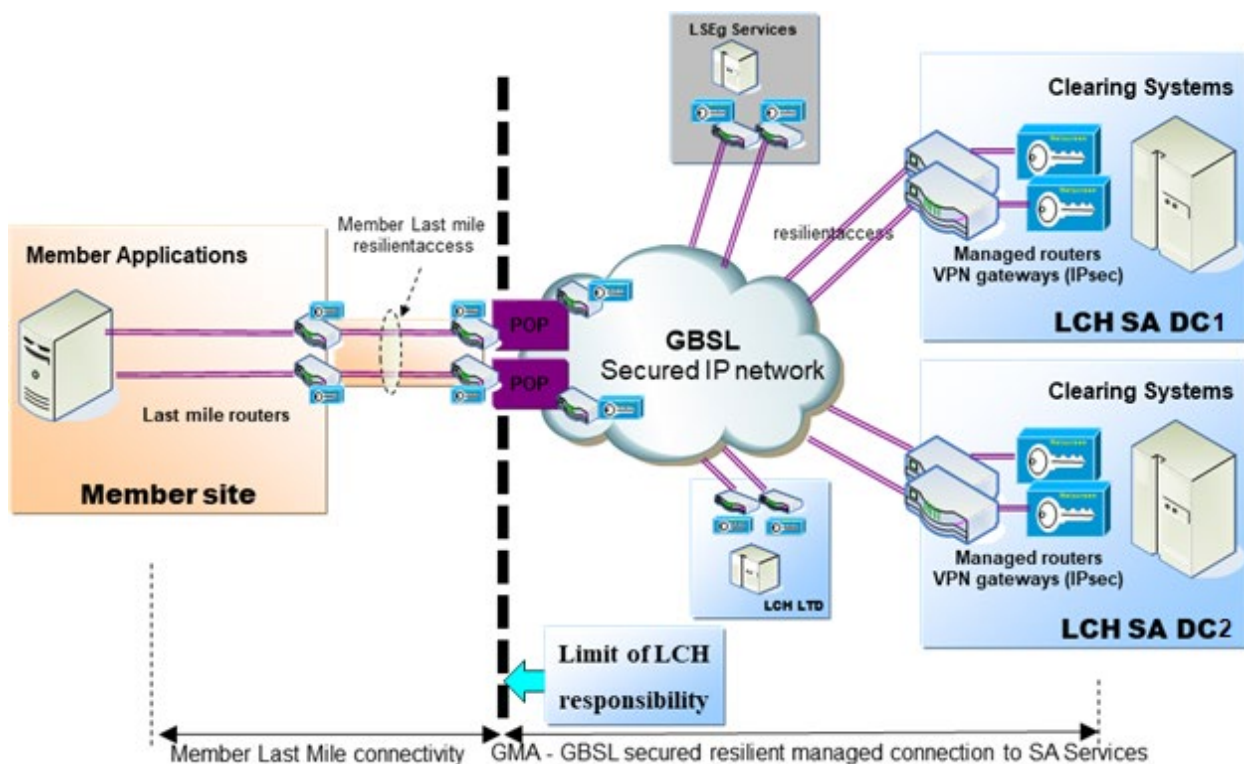– Resilient access of 2 Mbps minimum, scalable to 10 Mbps

2.4. Connectivity tiers

LCH SA offers 4 different packages (Tiers) for Members to choose from:

– Platinum
– Gold
– Silver
– Bronze (this offer is not resilient)

Each Tier comes with different possible bandwidths.

Members need to select the Tier and the bandwidth adapted to their needs and requirements.

2.4.1. Bronze

– A single non-resilient connection
– One circuit, one carrier
– One Member site

This Tier is mainly dedicated to testing environments or for the use of eCCW® connectivity as backup. Because of its non-resilient characteristic Bronze Tier connectivity can only be used for test.

Bronze Tier examples:
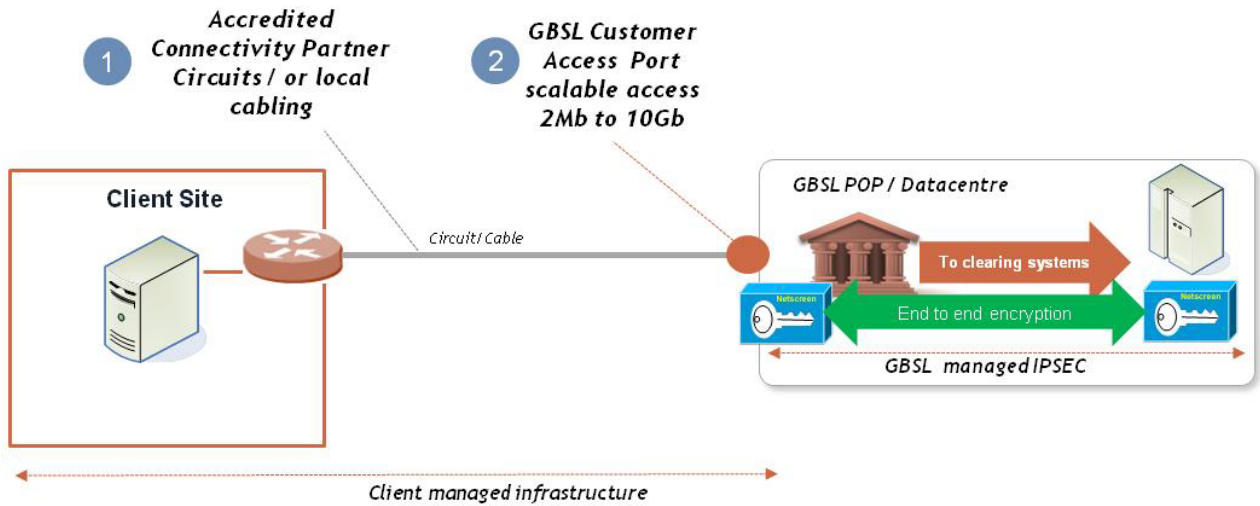
2.4.2. Silver

– A single resilient CMC access
– Two circuits based on 2 different carriers to connect to the CMC POPs
– Circuits can be connected on a single site or can be split on two different interconnected sites as illustrated below

Silver CMC access can be used for both Production and Testing environments.

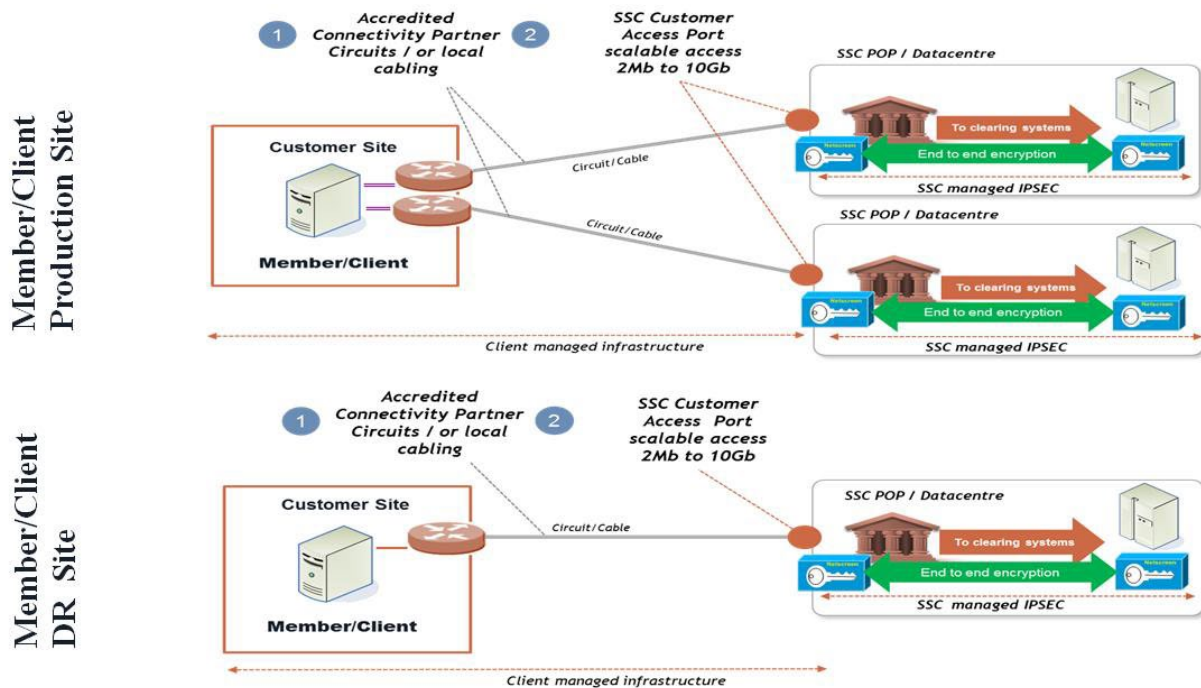**Silver Tier configuration examples:**
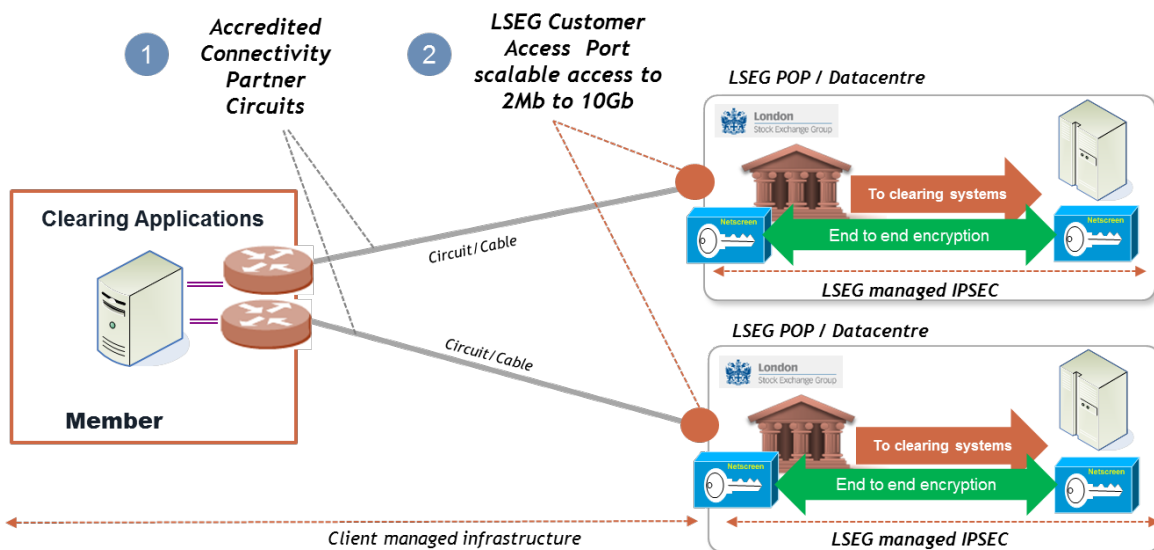
Silver solution for Members wishing to access both LCH SA and LCH Ltd (4 Mbps minimum)

2.4.3. Gold

– CMC Access based on three circuits
– Over 2 different Members sites
– On the Member's primary site, resilient access is provided using two circuits based on 2 different carriers to connect to the 2 different CMC POPs
– On the Members secondary site, only one circuit is connected to the solution provider (e.g. for Disaster Recovery or Test dedicated sites)
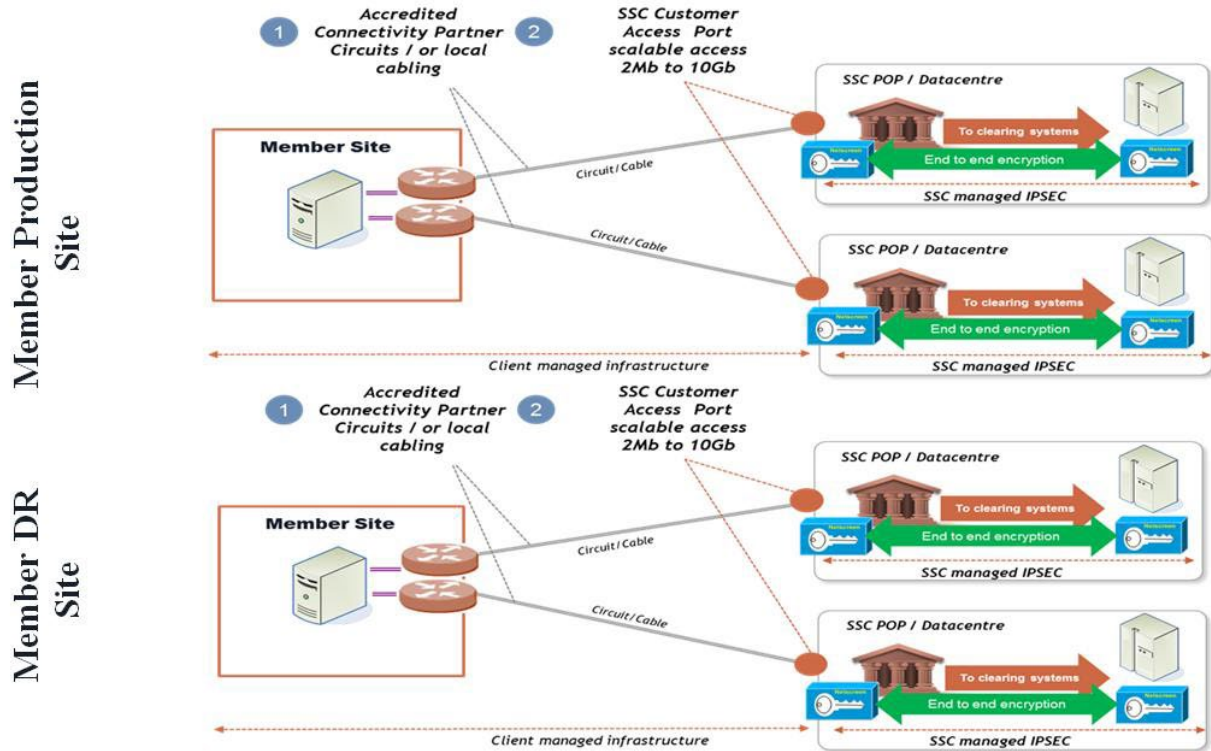
Gold Tier configuration example:

2.4.4. Platinum

– CMC Access is provided on two Members sites
– Using dual resilient connection
– Scalable by steps of 2Mbps
– Two circuits on two different carriers for each site

Platinum Tier configuration example:

2.4.5. Ordering and costs

Costs: the LCH SA Technical Fees.

Last mile connection through the ACP is responsibility of the Member therefore not included in the LCH SA Technical Fees.

3. Subscribing to LCH SA's solutions

LCH SA Members order and subscribe their GMA connectivity and clearing gateway solutions directly with LCH SA in reference to the **Member Access Agreement**.

The agreement governing technical Access to LCH SA clearing solutions and is notably structured around the integration of the Clearing Access Solution and the Support Services description further to their internalisation within LCH.

In order to subscribe to LCH SA solutions, please contact your BDRM team and relevant IT support (details Page 22).

i. Connectivity

Members of both LCH SA and LCH LTD can order their common Clearing Connectivity Services for both CCP either to Ltd either to SA either to LSEG through a single order form.

Clearing connectivity subscription and invoicing will be managed either by LCH SA or by LCH Ltd or LSEG following Member's initial subscription.

ii. Clearing Gateway Solutions

Members have to order their clearing gateway solution and associated services with LCH SA.

3.1 Subscribe

3.1.1 Actors and respective tasks

a) The Member

– Fills out and signs order forms (Order Forms are available by contacting your Customer Relationship Manager).
– Controls technical installations.
– Tests the environment and prepares to production.

b)   LCH

SA IT Support

Dedicated SA IT Supports are in charge of the connection between Members and LCH SA Clearing systems:

– Manages LCAP® implementation
– Maintaining up-to-date ACP list
– Manages connectivity installation with GBSL
– Manages the systems' technical parameters
– Provides the technical support to Members and ISV
– Checks the Order Forms and follow up the installation process with Members and subcontractors

LCH SA Business & Development Relationship Management (BDRM)

– Checks orders and follows up the process with Members and SA IT Support
– Sets up Members' training
– Provides Member's training on eCCW® (for EquityClear SA Listed Derivatives & CommodityClear SA only)
– Organizes individual and general testing

c)   GBSL

GBSL on behalf of LCH:

– Operates and integrates technical installation process of the CMC connectivity service
– Provides and manages the CMC POPs
– Maintains technical installation (entry point: LCH)

3.1.2   Connectivity roll-out overview

1.   STEP 1:   Select a relevant solution

2.   STEP 2:   Implementation

3.   STEP 3:   Tests and training

4.   STEP 4:   Go live

3.1.3   Connectivity Detailed roll-out

a)   STEP 1: Select a relevant solution

Task	Organization	Objectives and expected results
Contact with Member or ISV	LCH SA BDRM saequityclearbusinessdev&rm@lch.com	A detailed presentation on Membership and technical solution is given to the Member for the clearing issues
Send the API and message specifications to Member if requested	LCH SA BDRM SAEquityClearBusinessDev&RM@lseg.com	Member or ISV develops its server and workstation software

Task	Organization	Objectives and expected results
Send to Member the appropriate Order Forms	LCH SA BDRM SAEquityClearBusinessDev&RM@lseg.com	Members are able to order the adequate solution for their connectivity to LCH SA
Sign and send to LCH SA the order form	Member or ISV	Beginning of the connection process. Order of the solution (CMC, LCAP®, eCCW®, …)
Check order form's compliance	SA IT Support Contact: SA.EquityClearIT.Support@lch.com	Initiation of implementation step

b) STEP 2: Implementation

Task	Organization	Objectives and expected results
Order LCH/Technical supplier	SA ECL IT Support Contact: SA.EquityClearIT.Support@lch.com	Start deployment actions
Technical visit	Technical supplier	Design the Member's network configuration
Installation of Network hardware and software components	Technical supplier	Member's connection is operational
Central system and network configuration	Member	Member's connection is operational Member is registered within the Clearing System
Define and set up technical parameters and send them to Members	SA ECL IT Support Contact: SA.EquityClearIT.Support@lch.com	Start deployment actions

c) STEP 3: Tests and training

Task	Organization	Objectives and expected results
Technical and functional testing	Customer Technical Helpdesk Member or ISV	Member's solution operational in the simulation environment
LCH SAClearing Workstation® training	LCH SA Member	Members to become operational

d) Go live in Production

Task	Organization	Objectives and expected results
Connection to live platform	SA ECL IT Support Contact: SA.EquityClearIT.Support@lch.com	Member's solution operational in production environment
Start up date	LCH	Green Light from corresponding entities (LCH SA/CMF/TMF/ISV)

4. Contacting LCH SA

4.1. Business and development relationship management

- Commodities and Listed Derivatives/Equities – saequityclearbusinessdev&rm@lch.com
- RepoClear SA – repocleargroupsales@lch.com
- CDSClear – CDSClearBusinessDevRM@lch.com

4.2. SA IT support

The operators of SA IT Support team can be reached by member to manage queries related to the SA Business line.

The SA IT Support team can be reached at the following email addresses for each business line:

- SA EquityClear IT Support SA.EquityClearIT.Support@lch.com
- SA RepoClear IT Support SA.RepoClear.IT.Support@lseg.com
- CDSClear IT Support cdsclear.support@lseg.com

For further details please refer to the Appendix 5 of this document

4.3. CMC forms

The latest versions of the CMC Forms (Order Forms, Change of connectivity, Ceasing of connectivity, etc) are available by contacting the above contacts.

5. Appendices

5.1 SA CDSClear IT support

The SA CDSClear IT Support team is available 24/5.

Service Hours	Monday to Friday (excluding public holidays specified in the LCH Clearing calendar).	08:00 a.m. – 08:00 p.m CET (Central European Time).

Outside of the service hours and for Incident which can't wait the following day, add servicedesk@lch.com in the loop and ask them to reachout SA CDSClear IT Support.

5.2 SA EquityClear IT Support (SA ECL IT Support)

The operator of SA ECL IT Support team can be reach by member to manage queries related to the SA EquityClear business line.

The Clearing Access solution managed SA ECL IT Support team are:

– LCH Portal
– LCAP (Logical Certified Access point)
– eCCW®

Any issue related to above Clearing Access Solution to the EquityClear SA business line identified by members must be communicated to SA ECL IT Support team by mail with details on the symptoms of the problem encounter.

For any request addressed to for SA ECL IT support it should be raised in writing to the teams with the following mandatory information's:

– Clearing Member Name
– Clearing Member Code
– Business involved (Cash Equities or Derivatives)
– IT environment (Production or Test)
– A brief description of the request

Incidents, change request or queries will be attributed a reference number by SA ECL IT Support which will be communicated to members and followed-up from its beginning to its closure.

Upon notification of an issue the SA ECL IT Support will perform the first analysis in collaboration with the members, an assistance will then be provided to correct and/or inform and/or proceed with a workaround solution if feasible.

To further investigation the SA ECL IT Support team is allowed to transfer the case to any authorised Third-Party Provider and/or LCH SA/LSEG department for assistance and/or for corrective action.

Supervision

SA ECL IT Support team provide a monitoring service of the Members connectivity, access and EquityClearSA files delivered. This overview allows the SA ECL IT Support team to detect whether a Clearing Access solution experiences connectivity issues. In this case the SA ECL IT Support team will contact directly the members impacted to proceed with the investigation.

Verification Tests

Whenever a Clearing Access Solution is installed or a change request is issued or an anomaly is reported on the Members' Clearing Access Solution, the SA ECL IT Support Team is entitled to perform a series of verification test in direct collaboration with the Members to check that the Clearing Access Solution is satisfactorily operating. For that purpose, the Member undertakes to comply with all instructions given by LCH SA and to dedicate any appropriate resource to perform the necessary verification tests.

Contact details

The Members are responsible for making direct contact with SA EquityClear IT Support to report any anomaly they encounter or change request they require related to SA EquityClear SA business line during normal use of the Services.

The with SA EquityClear IT Support can be contacted at:

Email: SA.EquityClearIT.Support@lch.com

Service Hours

The customer support SA EquityClear:

Service Hours	Monday to Friday (excluding public holidays specified in the LCH Clearing calendar).	07:00 a.m. – 08:00 p.m CET (Central European Time)

LCH SA IT   07:00 – 20:00 Office hours/20:00 – 07:00 Duty Hours

Day to day operations:

Clear IT Support: SA.EquityClearIT.Support@lch.com

Escalation:

Support IT manger: JAAFARI, Mounir – Mounir.Jaafari@lseg.com

Head of IT Equity Clear: Salmona, Loic – Loic.Salmona@lseg.com

Between 8:00 p.m. and 11:00 p.m. CET (Central European Time; Monday to Friday/excluding public holidays specified in the LCH Clearing calendar), for Incident which can't wait the following day, add mailto: SA.EquityClearIT.Support@lch.com; sa.servicedesk@lseg.com in the loop and ask them to reach out EquityClear IT Support.

LCH SA may decide to extend the service hours under certain circumstances and at its sole discretion. The Members may be informed in time through a general information communicated via e-mail.

Members contacts and references

The Members shall fill in the following information:

– a nominative contact
– a telephone number;
– a fax number; and
– an email address.

COMPANY:		
ADDRESS:		
GENERAL CONTACT		
LAST NAME:	FIRST NAME:	POSITION:
TELEPHONE:	FAX:	EMAIL:
TECHNICAL CONTACT (to be completed if different from above)		
LAST NAME:	FIRST NAME:	POSITION:
TELEPHONE:	FAX:	EMAIL:

The Members shall inform without delay LCH SA of any change in the information indicated above.

5.3 SA RepoClear IT support

The SA RepoClear IT Support team is available 24/5.

Service Hours	Monday to Friday (excluding public holidays specified in the LCH Clearing calendar).	08:00 a.m. – 08:00 p.m CET (Central European Time)

Outside of the service hours and for Incident which can't wait the following day, add GTISOperations@lseg.com in the loop and ask them to reach out SA RepoClear IT Support.

5.4 "Accredited Connectivity Partners" (ACP)

The "Accredited Connectivity Partners" that you can use for the last mile connection to the CMC City Pops are the following:

– Colt
– EU Networks
– Hibernia
– Level 3
– SSE
– Zayo

5.5 Clearing Gateways Solution description

5.5.1 LCH Member Portal

LCH's Portal delivers a secure, single point of access to a comprehensive range of tools and resources to support members and clients with their clearing requirements.

Multiple LCH services are currently supported, with additions planned for inclusion in future releases.

a)   **General Principles**

The LCH Member Portal is a single sign-on solution for various LCH applications. Once logged onto the LCH Portal, users will have access to a set of parameterized applications without logging in again.

The available set of applications is defined at user level – based on permissions applied to that user.

b)   **Managing Principles**

In order to be granted access to the LCH Portal, the users shall request LCH to provide the appropriate Request Form. Once this form is duly completed and signed by the Users, LCH takes the necessary actions to give the users access in coordination with the Portal team.

Granting access to the Portal is typically done via the Super User facility, which is done via an online request form directly available to Members upon accessing the LCH Portal Link.

For all applications, users gain access to portal via the Super User facility, which is a delegated responsibility given to 1 or 2 people within that User institution for each line of business and possibly for each application.

Super User will be responsible for managing all internal users accesses (creation, change and deletion).

In order for a Clearing Member to have access as a Super User, such Clearing Member needs to request the appropriate form from LCH, have it signed by an authorized signatory for that bank and then return it to LCH. Once returned, LCH creates this User as a Super User with delegated authority to create access for others within their own institution.

The Users shall comply with the instructions provided by LCH in the relevant documentation in order to activate their login.

There is no equipment provided for this solution and there is no cost associated.

5.5.1.1 sFTP solution for Member Reporting

a)   **General Principles**

Reporting sFTP solution is a non-browser based, Secure FTP (File Transfer Protocol) interface used by Users of the LCH SA services for the scripted, bulk retrieval of reports on a scheduled basis. Users connect on a frequent, automatic schedule and retrieve reports, often across multiple business line, in bulk – for later processing.

This is a non-user interactive interface. Access to the Reporting sFTP solution is made through Internet or CMC connection.

Reporting SFTP solution supplies the Users of the LCH services with a Secure FTP service by restricting accounts by IP addresses enabling the management of incoming and outgoing files flows.

Reporting SFTP solution handles the certification and storage of data interchanged between Users and LCH.

b) Managing Principles

Reporting sFTP solution has been built using the LCH Portal security model. Whenever Users require to be given access to Reporting sFTP Solution, the appropriate Request Form, available from the LCH Portal, shall be duly completed and signed by the Users and sent by registered letter to the appropriate LCH interlocutor as set out on the Request Form.

There are no equipment provided for this solution and no cost regarding the provision of this Service.

5.5.1.2 API for Margin Calculation or Reporting

a) General Principle

The CDSClear PMC API and Reporting API both provide a programmatic interface where Users of the LCH CDSClear service can use scripts to access and download individual margin results or reports. Access to the CDSClear API solutions is made through Internet.

The CDSClear PMC API solution supplies the Users with the ability to run a script in order to calculate margin on an ad-hoc or small-scale basis – the API interface provides a secure mechanism in which to do so.

The CDSClear Reporting API solution supplies the Users with the ability to run a script in order to retrieve reports on an ad-hoc or small-scale basis – the new API interface provides a secure mechanism in which to do so.

Members need to register for a new Portal API account and password.

The CDSClear PMC and Reporting API solutions handle the certification and storage of data interchanged between the Users and LCH.

b) Managing Principles

The PMC and Reporting API solutions were built using the LCH Portal security model. Whenever Users require to be given access to the API, the appropriate Request Form, available from the LCH Portal, shall be duly completed and signed by the Users and sent by registered letter to the appropriate LCH interlocutor as set out on the Request Form.

There are no equipment provided for these solutions and no cost regarding the provision of these Services.

5.5.2   eCCW® SOLUTION

a) Who is the eCCW® solution for?

This solution addresses EquityClear SA (Listed Derivatives) & CommodityClear SA Members willing to have a light clearing infrastructure or for Members who want to give a remote location access to their clearing data.

b) eCCW® Solution Overview

The eCCW® solution is a web based application enabling Members to access their clearing data through Internet.

This solution is dedicated to LCH SA clearing business as a single-Member solution and multi-platform (test and production). The eCCW® servers are located in LCH SA operation center, on the web servers.

The eCCW® can be used irrespective of the location via Internet connection.

The eCCW® handles **basic functions** of the clearing business.

Members must be aware that no real time external system can be connected to an eCCW®.

Installation and connection advises can be given at the LCH SA's SA IT Support (see Appendix 5).

Localisation of the ⓔCCW **solution in LCH's architecture:**
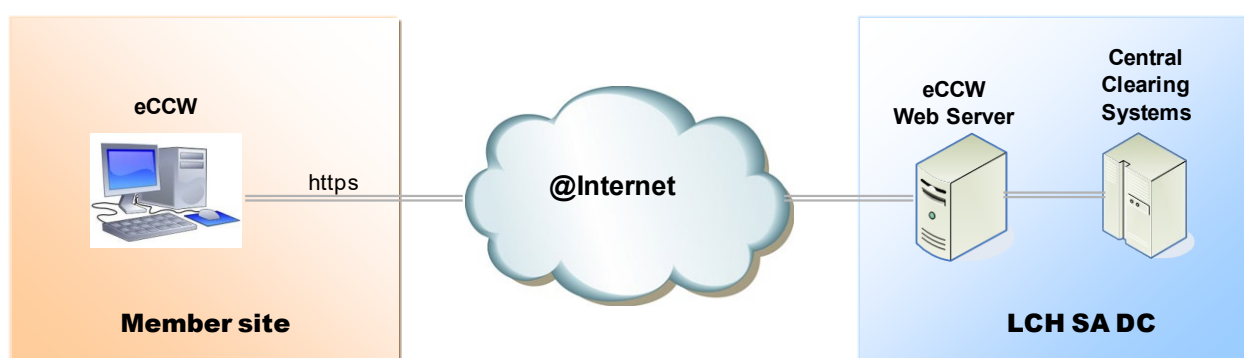
ⓔCCW **access**

– The flows between the eCCW® client and the server will transit through the Internet network.
– The internet provider is the internet provider of the Member.
– The eCCW® service can be accessed from any Member's workstation located in the company LAN or from any other location with internet access.
– Authentication takes place using the SecureID® process.

c) eCCW® Members Architecture Overview

In order to enforce system resilience, LCH SA recommends Members to set up a resilient network infrastructure, compliant with their business continuity needs.

The recommended workstation configuration is a PC capable of running properly Windows 7 (or above) or Linux as operating system, with an internet browser.

The system should be configured to allow HTTPS connections and local execution of JavaScript programs by the web browser.

d) Equipment provided

allowing the access to the eCCW®.

e)   Costs

Costs apply per eCCW® access.

– One shot cost installation and
– monthly fees apply

For further details please refer to the LCH SA Technical Fees.

f)   Features

– Mono Member
– Not suitable for automated processing of files
– Web based application, accessible from almost anywhere over the Internet
– Easy and quick setup
– Testing and production platform

5.5.3   Clearlink gateway

Clearing Members have the following possibilities:

a)   Build a direct connection to Clearlink API in order to process messaging
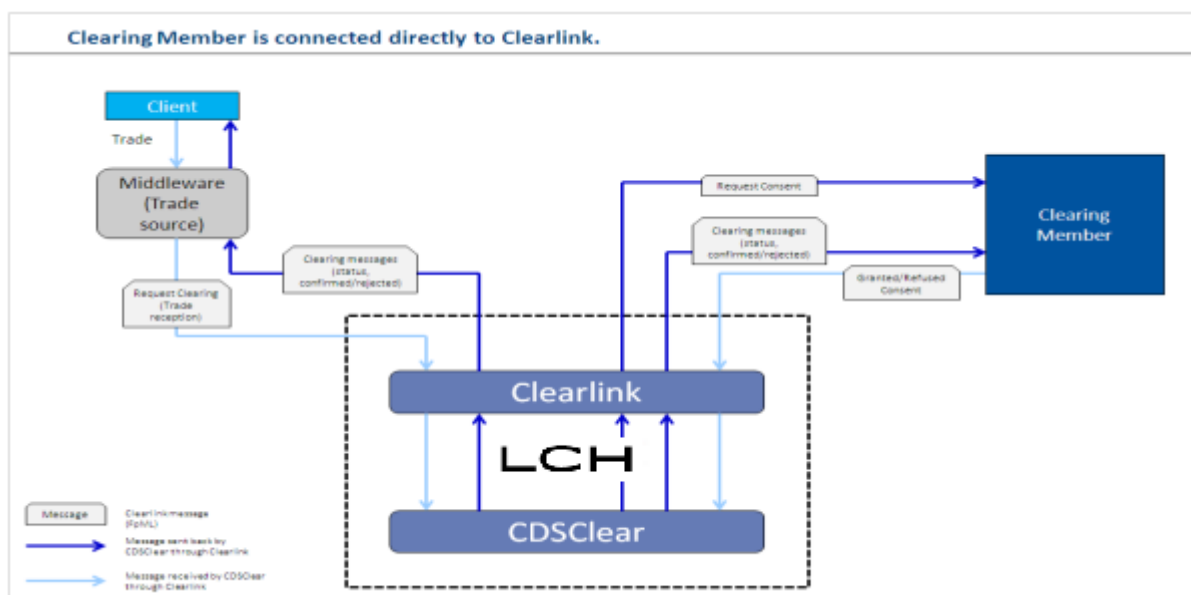
b)   Interoperability Agent

Use the services of an interoperability agent that has built a direct connection to Clearlink API. In this case, the interoperability agent communicates with the Clearing Member in a non Clearlink format messaging while the interoperability agent communicates with Clearlink in a Clearlink format messaging.

Clearing Member is not connected to Clearlink and therefore goes through an interoperability agent.
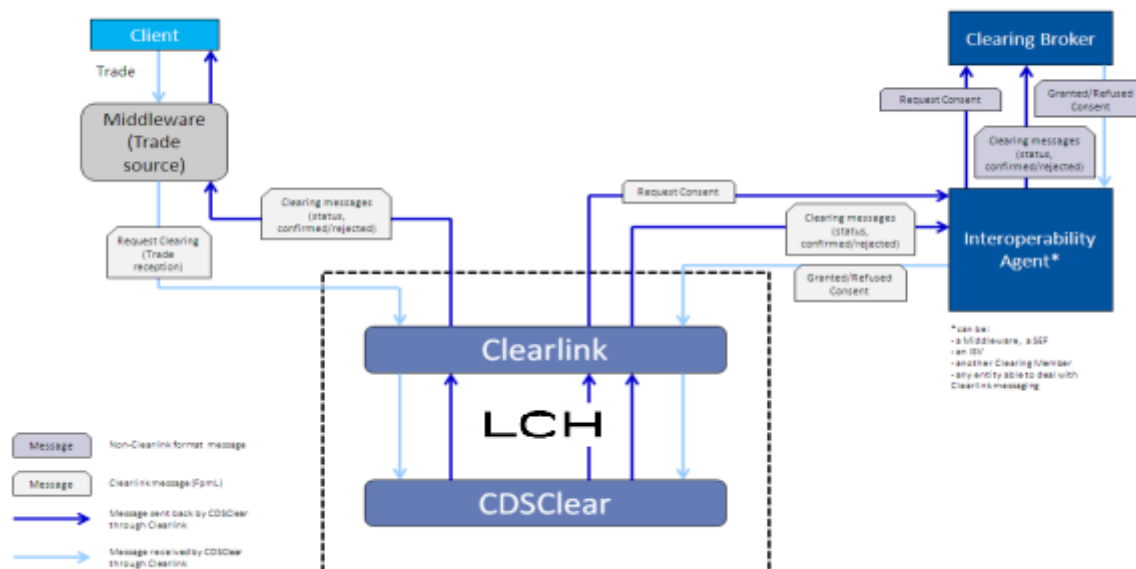
5.5.4 LCAP (Logical Certified Access Point)

a) Who is the LCAP solution for?

This solution is addressed to EquityClear SA Listed Derivatives & Cash Securities (MMTP Real Time messages) and CommodityClear SA Members seeking independent control over message flows, with full responsibility for incoming and outgoing messages. Members opting for this solution may use their own resources or commission access services from subcontractors or publishers.

b) LCAP Solution Overview

The Logical Certified Access Points (LCAP) provides Members or ISVs message flows, data transfer standards and optional protocol development tools.

The LCAP is an access server which supports the API's, compresses and stores data transiting between the Member and LCH's systems.

The LCAP is dedicated to clearing business environment and to production or testing platform.

The LCAP enables Members to set up their own server and workstation configuration with:

– the API and the messages specifications provided by LCH,
– or with an independent software provider (ISV).

The LCAP is located in LCH SA premises. It supports the **MMTP** protocol (real time messages) and the **SFTP** protocol (file server).

To handle incoming and outgoing message flows, Members must develop (or outsource the development) their own applications (SLEs and SLCs), compliant with the LCAP specifications.

LCAPs are accessible only through the LCH's CMC Connectivity.

Localisation of the LCAP in LCH's architecture:

c) Equipment provided

No hardware is provided.

LCAPs are based on full redundant and resilient Virtual Machines located in LCH SA Data Centres and Disaster Recovery Data Centres.

d) Costs

Costs apply per LCAP.

One shot cost installation and monthly fees apply.

For further details please refer to the LCH SA Technical Fees.

e) Features

– Each LCAP can accommodate five subscribers (SLEs).
– Members requiring more subscribers (or backup solutions) will have to order additional LCAPs.
– Open architecture
– Capabilities for integration in existing middle-office and back-office systems.
– The LCAP solution gives Members full control over their information systems, computer equipment, and relations with other suppliers.