DERIVATIVES SERVICE BUREAU

ANCILLARY SERVICES
ENTERPRISE SERVICE

23 June 2023

ENTERPRISE SERVICE

The DSB Enterprise service is an optional service available to OTC ISIN and/or UPI users with programmatic access

- A user that has purchased the Enterprise Service is referred as an **Enterprise User**

- The Enterprise Service provides a private, dedicated infrastructure stack for the Enterprise User

- An Enterprise User with OTC ISIN and UPI subscriptions must be an Enterprise User for both services

End user access to private infrastructure stack:

- Offers users taking the Enterprise Service a level of insulation from the performance of the shared infrastructure

- Designed specifically for end users with a requirement for higher throughput rates & lower and/or consistent latency

- No change to connectivity APIs

- The private stack is scalable & configurable – calibrated for the user's performance expectations

- The DSB facilitates release management

General DSB shared infrastructure model:

- Access to the DSB is via web based GUI or FIX API or REST API – subject to the acceptable use policy

- Built on a cloud-based, horizontally scalable, multi-region resilient architecture

ENTERPRISE SERVICE MODEL

Who should consider the DSB Enterprise Service?

- The Enterprise Service is aimed at programmatic users of the ISIN or UPI Service that require higher resiliency or higher capacity or lower latency than is offered by the standard shared service

The Enterprise Service utilises private and dedicated infrastructure for each user to:

- Improve and stabilise the latency of all DSB API calls

- Improve the resiliency of the DSB Service by utilising dedicated infrastructure

- Increase the number of ISIN and/or UPI record creations and the frequency at which ISINs are created

- Increase the number of ISIN and/or UPI record searches and the frequency at which they are searched

- Increase the number of times that file-download/reconciliation can be accessed

ENTERPRISE SERVICE MODEL – THE ENTERPRISE STACK

How does the DSB Enterprise service work?

- The DSB is deployed in the cloud (Amazon AWS)

- The DSB maintains dedicated infrastructure for each Enterprise User

- The additional infrastructure is referred to as the **Enterprise Stack**

- Each Enterprise Stack is dedicated to one Enterprise user, it is not shared with anyone else

- The Enterprise Stack is resilient:

  - No single point of failure

  - Available in both the DSB's Primary and Disaster Recovery (DR) production environments

- The Enterprise Stack allows users to increase their operational resiliency and capacities whilst providing consistent low latencies (without affecting the shared infrastructure)

- The same Enterprise Stack must be used to access both the OTC ISIN and UPI Services

DSB ENTERPRISE SERVICE – OTC ISIN HIGHLIGHTS

Requirement	DSB User Type	
	OTC ISIN Enterprise	OTC ISIN Power
Infrastructure	Private stack	Shared
Messages per minute per connection – ReST API	up to 600 create calls + 5,400 search calls per minute	up to 60 calls per minute
Weekly caps	Up to 200,000 create requests + up to 400,000 search requests per calendar week	Up to 50,000 create requests + up to 100,000 search requests per calendar week
Creation Latency SLA @ 99%	1000ms (higher performance subject to user configuration)	2,000ms
# of API connections	Max 30 per User	Max 10 per User
Messages in flight per connection – FIX API	up to 10 create requests + up to 90 search requests	1
Slow Consumer	n/a	Not permitted
Invalid messages (across all API connections)	Max 2,000 per day + max 10,000 per calendar week	Max 200 per day + max 1,000 per calendar week

DSB ENTERPRISE SERVICE – UPI HIGHLIGHTS

| Requirement	DSB User Type	
	UPI Enterprise	UPI Power
Infrastructure	Private stack	Shared
Messages per minute per connection – ReST API	up to 600 create calls + 5,400 search calls per minute	up to 60 calls per minute
Weekly caps	Up to 25,000 create requests + up to 50,000 search requests per calendar week*	Up to 6,250 create requests + up to 12,500 search requests per calendar week*
Creation Latency SLA @ 99%	500ms (higher performance subject to user configuration)	1,000ms
# of API connections	Max 30 per User	Max 10 per User
Messages in flight per connection – FIX API	up to 10 create requests + up to 90 search requests	1
Slow Consumer	n/a	Not permitted
Invalid messages (across all API connections)	Max 50 per day + max 1,250 per calendar week*	Max 25 per day + max 125 per calendar week*

DSB ENTERPRISE SERVICE PRICING STRUCTURE

- Refer to the Enterprise Fees page on the website - https://www.anna-dsb.com/enterprise-fees/

- Enterprise Service fees apply in addition to Power User fees and any other DSB fees (e.g.: BT Radianz)

- 12-month or 36-month term available

- Enterprise Service Fees are comprised of:

  - One-off set up fee

  - Production Management fee

  - Hardware & Infrastructure fees (pass through)

  - Optional UAT Environment (for an additional monthly management fee)

APPENDICES

PLEASE NOTE THE FOLLOWING SPECIFICATIONS WILL BE SUBJECT TO UPDATE AS THE INFRASTRUCTURE TRANSITIONS BETWEEN UPI UAT AND PRODUCTION.

ENTERPRISE INFRASTRUCTURE STACK DIAGRAM
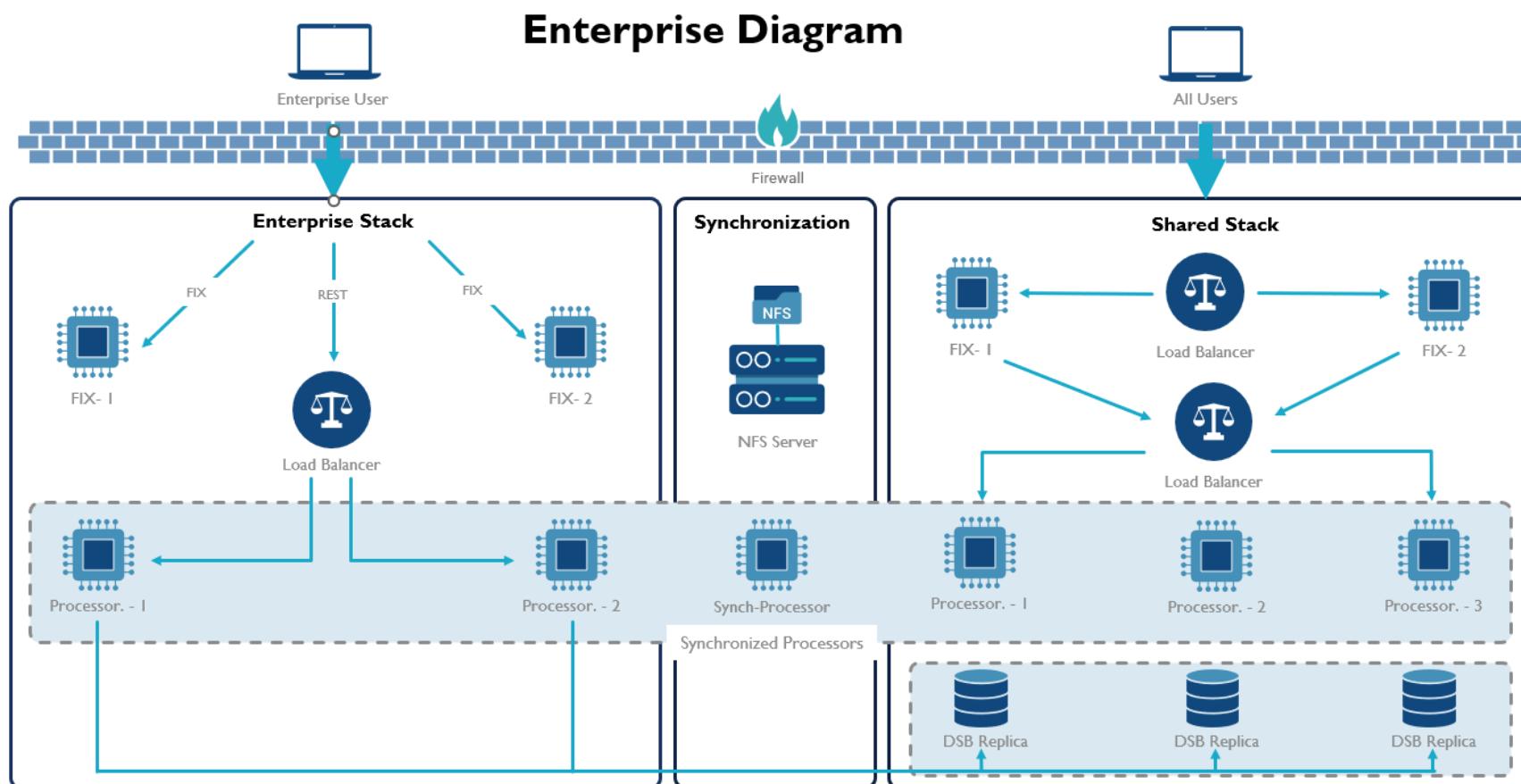
Baseline Private stack includes:

- 1 Load balancer
- 2 FIX servers
- 2 Processing servers

Fully configurable environment allows option to increase:

- # of Load balancers
- # of FIX servers
- # of Processing servers
- Server specification
- Disk/IO specification

ENTERPRISE SERVICE – INFRASTRUCTURE STACK

Location

- User's Enterprise Stack will run at the same site(s) as the DSB's Shared Stack

- Users may request the DSB to set up stacks in multiple environments if required

Managed service highlights

- Includes software releases and hardware scaling

- Provides for 2 production instances – one each across the Primary and DR

- Additional UAT instance available on request (Primary region only unless requested for DR)

- No change in how the user connects to the DSB (e.g.: Internet TLS/SSL, BT Radianz, etc.)

- The DSB will route the incoming user connection to the user's enterprise stack

- Increased throttling & creation caps - caps remain to ensure the integrity of the DSB infrastructure is preserved as some components remain shared

- Private stack available approximately 5 weeks from receipt of a signed Ancillary Services Subscription Form. Please contact the DSB to obtain an indicative delivery date as timelines are dependent on market demand for the service and can vary.

DSB ENTERPRISE USER – HARDWARE DETAILS

Applications/ Services

- FIX – QuickFIX customised with DSB-specific logic

- Processor –
  - Cordra for distributed object management
  - ISIN Engine– Proprietary application providing the ISIN business logic
  - Nginx – Web server

- AWS Application Load Balancer – to distribute and balance tasks across all processor servers

- AWS Elastic IP address – Static IPv4 address to enable firewall whitelisting

Server Types

- AWS server types are listed here:
  https://aws.amazon.com/ec2/instance-types/

Server name	Server type	# instances	Hard Drive	OS	Applications
FIX	t3.large	2	/25GB : GP2 (100) : Encrypted : single volume / 7 days retention	Amazon LINUX	QuickFIX
Processor	r6i.large	2	/10GB : GP2 (100) : Encrypted : single volume : 7 days retention /data 100GB : GP2 (300) : Encrypted : single volume : 7 days retention	Amazon LINUX	CORDRA ISIN Engine NGINX
AWS Application Load Balancer		1	n/a		
AWS Elastic IP address		2	n/a		
SSL certificate – (required for REST API only)					

OTC ISIN SPECIFICATIONS

OTC ISIN CONSISTENT LOW LATENCY

Workflow	Create Call	Search or Other Call	Synchronized Shared Stack	REST
Get ISIN Record by ISIN		✓	-	`GET /records/<ISIN>`
Request ISIN Record by Attributes (do not create)		✓	-	`POST /records&create=false`
Request or Create ISIN Record by Attributes (where ISIN exists)	✓		-	`POST /records` `(where ISIN exists)`
Request or Create ISIN Record by Attributes (where ISIN does not exist)	✓		Synchronized	`POST /records` `(where ISIN does not exist)`
Search by attributes		✓	Synchronized	`GET /search`

OTC ISIN ENTERPRISE USER – FIX API – 30 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Inflight messages Per connection	Max weekly calls per user (across all API connections)	FIX
Retrieve or Create ISIN Record by Attribute (Create Request)	500ms	10	200,000	`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve or Create ISIN record by attributes(1)`
Get ISIN Record by ISIN (Search Request)	200ms	90	400,000	`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve ISIN record by ISIN(0)`
Retrieve ISIN Record by Attribute (Search Request)	500ms			`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve ISIN record by attributes(4)`
Search by attributes (Search Request)	500ms			`MsgType(35)= SecurityListRequest(x) having query in Text(58)`
Search by attributes (Wildcard Search)	2500ms			
Subscribe to ISIN Records (1 subscription per asset class per session)	-	-	-	`MsgType(35)= SecurityListRequest(x)`
Obtain Product Definitions (Daily caps apply: 3 per file)		-	–	`Available via GUI, ReST or freely via GitHub`
Download Historical ISINs (Annual caps apply: 24 per file)		-	3 per file	`Available via GUI or ReST`
Invalid messages per user (Daily caps apply: 2,000)	-	-	10,000	`Messages that are rejected by Reject(3) or BusinessMessageReject(j)`

OTC ISIN ENTERPRISE USER - REST API – 30 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Max calls per minute per connection	Max weekly calls per user (across all API connections)	REST
Retrieve or Create ISIN Record by Attribute (Create Request)	500ms	600	200,000	`POST /records`
Get ISIN Record by ISIN (Search Request)	200ms			`GET /records/<ISIN>`
Retrieve ISIN Record by Attribute (Search Request)	500ms		400,000	`POST /records&create=false`
Search by attributes (Search Request)	500ms	5,400		`GET /search`
Search by attributes (Wildcard Search)	2,500ms			

Obtain Product Definitions (Daily caps apply: 3 per file)	200ms		-	`GET /schemas?names`
				`GET /schemas?SchemaName=<name>`
				`Also available freely via GitHub`

Download Historical ISINs (Annual caps apply: 24 per file)	-		3 per file	`GET /file-download/isin/<date>/` ` <asset-class>/>/<ASSET-CLASS>-<YYYYMMDD>.records`
Invalid messages per user (Daily caps apply – 2,000)	-	-	10,000	`Messages that are rejected with HTTP code 4xx`

OTC ISIN BASE POWER USER – FIX API – 10 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Inflight messages Per connection	Max weekly calls per user (across all API connections)	FIX
Retrieve or Create ISIN Record by Attribute (Create Request)	1,000ms	1	50,000	`MsgType(35)= SecurityDefinitionRequest(c)` `SecurityRequestType(321)=Retrieve or Create ISIN record by attributes(1)`
Get ISIN Record by ISIN (Search Request)	500ms	1	100,000	`MsgType(35)= SecurityDefinitionRequest(c)` `SecurityRequestType(321)=Retrieve ISIN record by ISIN(0)`
Retrieve ISIN Record by Attribute (Search Request)	1,000ms	1		`MsgType(35)= SecurityDefinitionRequest(c)` `SecurityRequestType(321)=Retrieve ISIN record by attributes(4)`
Search by attributes (Search Request)	1,000ms	1		`MsgType(35)= SecurityListRequest(x) having query in Text(58)`
Search by attributes (Wildcard Search)	5,000ms	1		
Subscribe to ISIN Records (1 subscription per asset class per session)	-	-	-	`MsgType(35)= SecurityListRequest(x)`
Obtain Product Definitions (Daily caps apply: 3 per file)		-	–	`Available via the GUI, ReST or freely via GitHub`
Download Historical ISINs (Annual caps apply: 24 per file)		-	3 per file	`Available via GUI or ReST`
Invalid messages per user (Daily caps apply – 200)	-	-	1,000	`Messages that are rejected by Reject(3) or BusinessMessageReject(j)`

OTC ISIN BASE POWER USER – REST API – 10 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Max calls per minute per connection	Max weekly calls per user (across all API connections)	REST
Retrieve or Create ISIN Record by Attribute (Create Request)	1,000ms		50,000	`POST /records`
Get ISIN Record by ISIN (Search Request)	500ms			`GET /records/<ISIN>`
Retrieve ISIN Record by Attribute (Search Request)	1,000ms		100,000	`POST /records&create=false`
Search by attributes (Search Request)	1,000ms	60		`GET /search`
Search by attributes (Wildcard Search)	5,000ms			

Obtain Product Definitions (Daily caps apply: 3 per file)	1,000ms		-	`GET /schemas?names`
				`GET /schemas?SchemaName=<name>`
				`Also available freely via GitHub`

Download Historical ISINs (Annual caps apply: 24 per file)	-		3 per file	`GET /file-download/isin/<date>/` `<asset-class>/>/<ASSET-CLASS>-<YYYYMMDD>.records`
Invalid messages per user (Daily caps apply: 200)	-	-	1,000	`Messages that are rejected with HTTP code 4xx`

UPI SPECIFICATIONS

UPI CONSISTENT LOW LATENCY

Workflow	Create Call	Search or Other Call	Synchronized Shared Stack	REST
Get UPI Record by UPI		✓	-	`GET /records/<UPI>`
Request UPI Record by Attributes (do not create)		✓	-	`POST /records&create=false`
Request or Create UPI Record by Attributes (where UPI exists)	✓		-	`POST /records` `(where UPI exists)`
Request or Create UPI Record by Attributes (where UPI does not exist)	✓		Synchronized	`POST /records` `(where UPI does not exist)`
Search by attributes		✓	Synchronized	`GET /search`

UPI ENTERPRISE USER – FIX API – 30 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Inflight messages Per connection	Max weekly calls per user (across all API connections)	FIX
Retrieve or Create UPI Record by Attribute (Create Request)	500ms	10	600	`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve or Create UPI record by attributes(1)`
Get UPI Record by UPI (Search Request)	200ms	90	5,400	`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve UPI record by UPI(0)`
Retrieve UPI Record by Attribute (Search Request)	500ms			`MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve UPI record by attributes(4)`
Search by attributes (Search Request)	500ms			`MsgType(35)= SecurityListRequest(x) having query in Text(58)`
Search by attributes (Wildcard Search)	2500ms			
Subscribe to UPI Records (1 subscription per asset class per session)	-	-	-	`MsgType(35)= SecurityListRequest(x)`
Obtain Product Definitions (Daily caps apply: 3 per file)		-	–	`Available via GUI, ReST or freely via GitHub`
Download Historical UPIs (Annual caps apply: 24 per file)		-	3 per file	`Available via GUI or ReST`
Invalid messages per user (Daily caps apply: 250)	-	-	1,250	`Messages that are rejected by Reject(3) or BusinessMessageReject(j)`

UPI ENTERPRISE USER - REST API – 30 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Max calls per minute per connection	Max weekly calls per user (across all API connections)	REST
<u>Retrieve</u> or Create UPI Record by Attribute (Create Request)	500ms	600	600	`POST /records`
Get UPI Record by UPI (Search Request)	200ms	5,400	50,000	`GET /records/<UPI>`
Retrieve UPI Record by Attribute (Search Request)	500ms			`POST /records&create=false`
Search by attributes (Search Request)	500ms			`GET /search`
Search by attributes (Wildcard Search)	2,500ms			

Obtain Product Definitions (Daily caps apply: 3 per file)	200ms		-	`GET /schemas?names`
				`GET /schemas?SchemaName=<name>`
				`Also available freely via` <u>GitHub</u>

Download Historical UPIs (Annual caps apply: 24 per file)	-		3 per file	`GET /file-download/upi/<date>/` `  <asset-class>/>/<ASSET-CLASS>-<YYYYMMDD>.records`
Invalid messages per user (Daily caps apply – 250)	-	-	1,250	`Messages that are rejected with HTTP code 4xx`

UPI BASE POWER USER – FIX API – 10 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Inflight messages Per connection	Max weekly calls per user (across all API connections)	FIX
Retrieve or Create UPI Record by Attribute (Create Request)	1,000ms	1	6,250	MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve or Create UPI record by attributes(1)
Get UPI Record by UPI (Search Request)	500ms	1	12,500	MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve UPI record by UPI(0)
Retrieve UPI Record by Attribute (Search Request)	1,000ms	1		MsgType(35)= SecurityDefinitionRequest(c) SecurityRequestType(321)=Retrieve UPI record by attributes(4)
Search by attributes (Search Request)	1,000ms	1		MsgType(35)= SecurityListRequest(x) having query in Text(58)
Search by attributes (Wildcard Search)	5,000ms	1		
Subscribe to UPI Records (1 subscription per asset class per session)	-	-	-	MsgType(35)= SecurityListRequest(x)
Obtain Product Definitions (Daily caps apply: 3 per file)		-	–	Available via the GUI, ReST or freely via GitHub
Download Historical UPIs (Annual caps apply: 24 per file)		-	3 per file	Available via GUI or ReST
Invalid messages per user (Daily caps apply – 25)	-	-	125	Messages that are rejected by Reject(3) or BusinessMessageReject(j)

UPI BASE POWER USER – REST API – 10 API CONNECTIONS MAX

Workflow	SLA Latency 99%tile	Max calls per minute per connection	Max weekly calls per user (across all API connections)	REST
Retrieve or Create UPI Record by Attribute (Create Request)	1,000ms	∧ ‖ ‖ ‖ ‖ ‖ ‖ ‖ 60 ‖ ‖ ‖ ‖ ‖ ‖ ‖ ‖ ∨	6,250	`POST /records`
Get UPI Record by ISIN (Search Request)	500ms		12,500	`GET /records/<ISIN>`
Retrieve UPI Record by Attribute (Search Request)	1,000ms			`POST /records&create=false`
Search by attributes (Search Request)	1,000ms			`GET /search`
Search by attributes (Wildcard Search)	5,000ms			

Obtain Product Definitions (Daily caps apply: 3 per file)	1,000ms		-	`GET /schemas?names`
				`GET /schemas?SchemaName=<name>`
				`Also available freely via GitHub`

Download Historical ISINs (Annual caps apply: 24 per file)	-		3 per file	`GET /file-download/isin/<date>/` `  <asset-class>/>/<ASSET-CLASS>-<YYYYMMDD>.records`
Invalid messages per user (Daily caps apply: 25)	-	-	125	`Messages that are rejected with HTTP code 4xx`