MODUSBOX

ModusBox Contributions - Community

July 2020

Iterative improvement

Modusbox has had the opportunity to manage the onboarding and operational challenges multiple times in real world deployments.

Each iteration has provided us experience and lessons that have helped us to identify where to improve in security, onboarding, knowledge transfer and integration. We are now combining this understanding to help our customers and providing them tools to shorten implementation time and cost whilst maintaining high standards

Recap on Multi-currency and Settlement

Foreign eXchange Provider (FXP)

Live since April

- Now supports multi-currency and bi-directional flows (buy and sell)
- Rates collected automatically from Partner Bank
- Uses standard Mojaloop transaction flow
  - minor change in quotes at hub, implemented in advance of the strategic Cross Currency / Cross Network solution
  - Payer sends transfer to virtual DFSP
  - Second virtual DFSP sends transfer to Payee
  - Standard Settlement flow
- Rounding for Send and Receive requests
- Move away from rates linked to Settlement Window

Treasury Management Function (TMF)

TMF to support **DFSPs** (including FXP)

- To track and reconcile transfers in the hub back to their own records
- Confirm the amounts they wish to transfer to manage their liquidity at the Settlement Bank

TMF to support the **Hub**

- Initiates logical settlement - Close Window, Adjust Positions and NDCs if required

Optional - to create payment files and automate bank movements

Onboarding Journey

The Mojaloop DFSP Experience

Onboarding: Why?

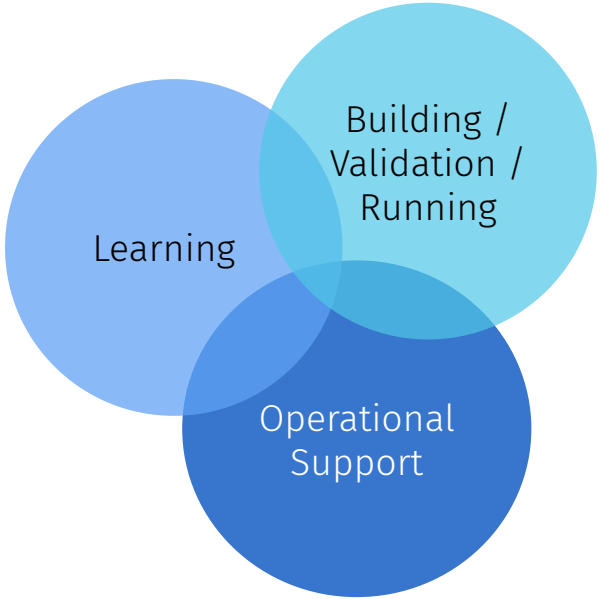
Designing, building, validating and operating a service that connects your Core Systems to a Real Time Payments system, such as Mojaloop, requires a detailed understanding of the business, technical and operational requirements of that payments system. In addition, Mojaloop is real-time and introduces new innovative concepts that may provide challenges when integrating systems.

The Mojaloop DFSP Experience:

1. provides the knowledge / expertise / support required.
2. significantly reduces the implementation time, costs and frustration.
3. provides tools for DFSP staff to train on and execute their roles
4. provides tools for local SI partners or DFSP technical staff to build backend integration components
5. provides a solution that is built on best practice that is secure, easy to maintain and upgrade and has a long term future: Mutual TLS, JWS signing of ILP packet for non repudiability
6. is efficient to operate from both a business and a technical perspective.

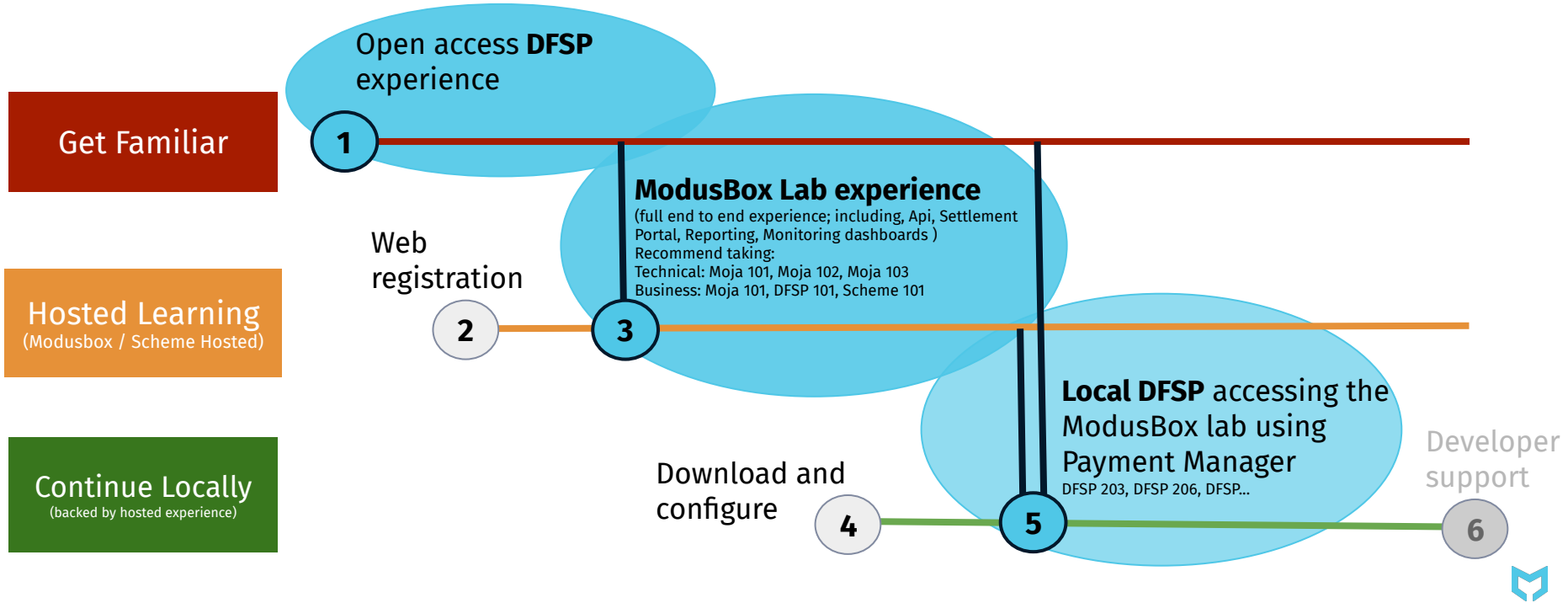
Components of the Onboarding Experience

1. Learning
    a. Formalised Training Program
    b. Labs (play/learn and test against)
    c. Developer Support
        i. Detailed reference guides / Forums / Webinars
        ii. Standard backend connectors with code
        iii. Best practice example implementations/reference
2. Payment Manager for Mojaloop (PM4ML)
    a. Building
        i. Local test and validation services
        ii. Local integration support components
    b. Validation
    c. Operating
        i. Transfer visibility including reconciliation support
        ii. Business Operations control center
        iii. Technical Operations control center
3. Operational Support



Onboarding: Part 1 Connecting

The Connecting part of the onboarding journey includes three experiences. Each experience is similar but enhanced and requires minimal commitment from the DFSP. The end goal is to have the DFSP interacting with Mojaloop from within their local development environment.



Onboarding: Part 2 Building and Standard Validation

Developer support 6

Internal business validation (test) 7

Desired API spec (validate) 8

Scheme sandbox 9

In this part of the Journey, the DFSP builds the connector to their internal backend systems and performs business validation as well as validation against standard Mojaloop requirements in preparation for connection to the specific scheme they are a part of.

Achieved through iterative process

Slack Channels / Forums

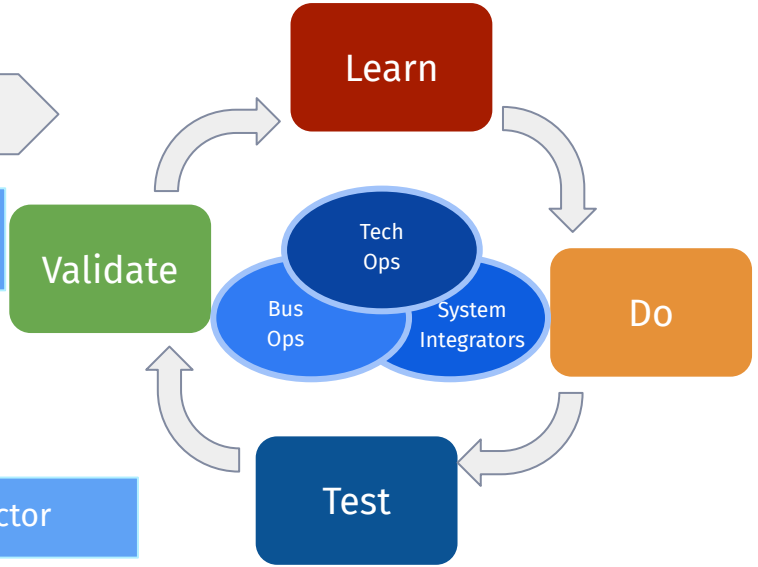
Payment Manager for Mojaloop

Courses / Webinars

Code samples - best practice guidelines

Reference documentation

Mojaloop Connector



Onboarding: Part 3 Onboarding to the scheme

Scheme sandbox

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In this part of the Journey, the DFSP Validates their connection against the requirements for the specific scheme.

This is a scheme specific process.
Additional validation are the scheme specific requirements.

Payment Manager for Mojaloop should now be redirected to the scheme sandbox and other higher order environments as required by the scheme.

Payment Manager for Mojaloop (PM4ML)

Mojaloop

What is Payment Manager - Mojaloop (PM4ML)?

Payment Manager acts as the key point for interacting and confirming everything is working as planned on both sides of the connection - to your core and to Mojaloop. It includes:

A Real-time Ledger that can be used as your **System of record**, or just to support **reconciliation** and **error tracking**.

A Business Operations Portal - through which the business operations will be performed - **Business Monitoring**, **Financial tracking** and **Settlement**.

A Technical Operations Portal - through which the technical operations will be performed - **Service Monitoring**, **health checks** supporting proactive and reactive operational support.

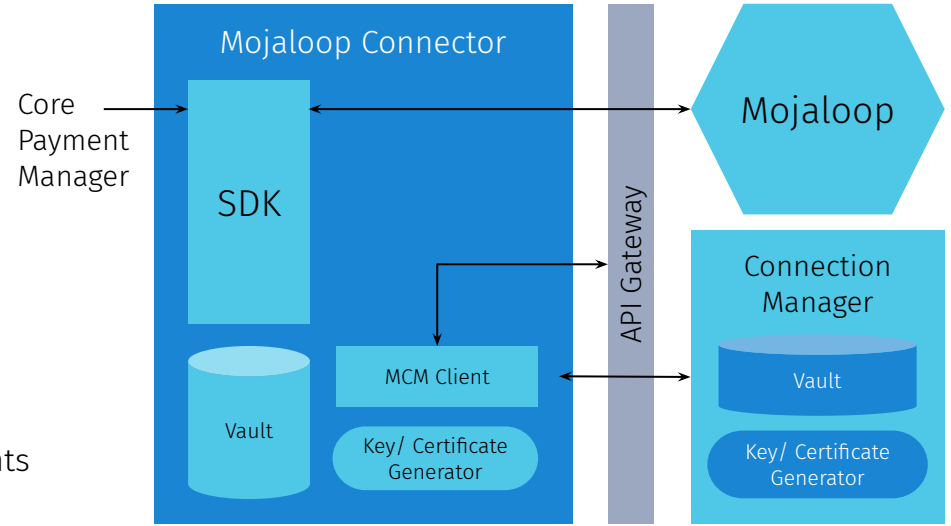
Payment Manager can be hosted in the cloud - and directly connected to the Hub in a pre-configured form or downloadable, once you are ready to progress local integration with a Hub.

Payment Manager has been designed as a production grade financial service solution with all the necessary controls and processes required to support a modern payments service.

Mojaloop Connector - underpinning Payment Manager (PM4ML)

The Connector simplifies and automates certificate creation and the configuration of the connections required to different environments. It also provides the interpretation of the Mojaloop API and the appropriate security controls - providing you with the confidence you are connecting to the switch using security best practices. As well as minimizing configuration errors due to certificate management and miscommunication. Connector includes:

- Certificate Management
  - Preloaded self signed certificates
  - TLS (Client) Certificate
  - JWS Certificate upload and sharing
  - Certificate Validation and Signing
  - CSR Creation and upload
  - SDK certificate configuration
- Endpoint Management
  - Switch to interact with different Environments



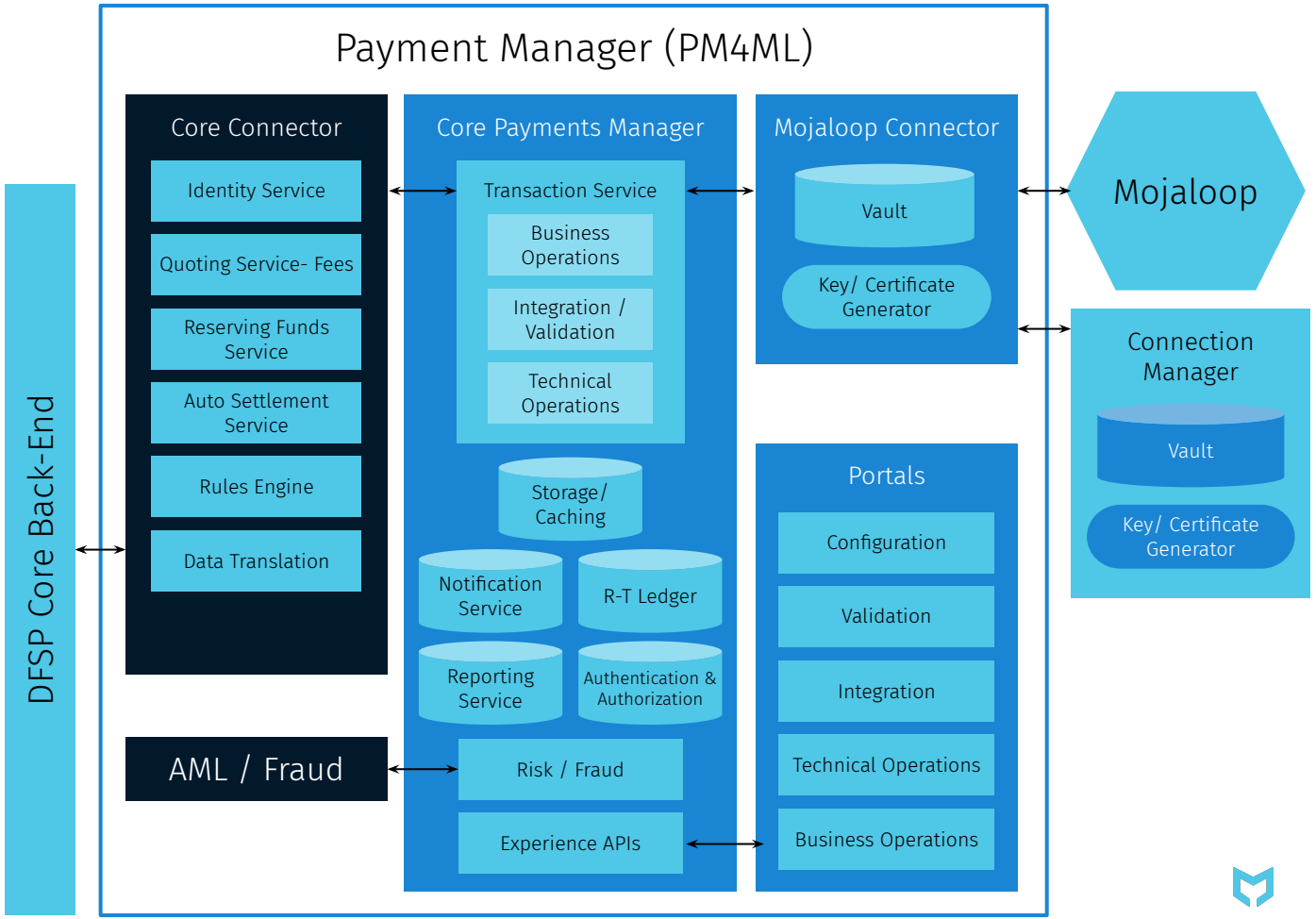
Architecture

Core Connector - Integrates your Core Banking Service to Payment manager acting as a "translator". It includes Standard templates - written in Java on Apache Camel - that can be deployed for major systems.

Core Payment Manager - The main transaction service has the ability to manage, monitor and report on different operational and technical processes from the Core and Mojaloop Connectors, and the associated movement of transfers and funds

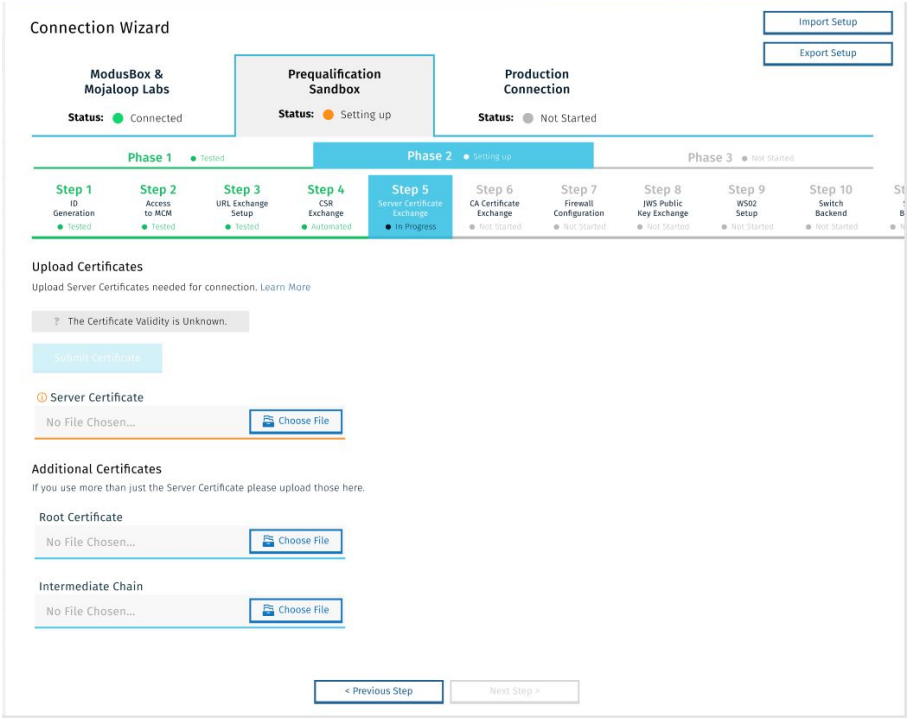
Mojaloop Connector - simplifies and automates certificate creation and the configuration of the connections required to different environments. It also provides the interpretation of the Mojaloop API and the appropriate security controls - providing you with the confidence you are connecting to the switch using security best practices

All components come with standard tests, and expected results, for the validation of services.



Payment Manager (PM4ML) UI - Connection Process

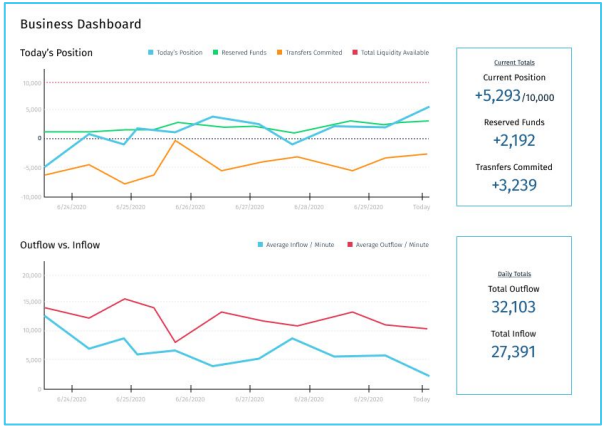
Security is imperative and the Payment Manager provides the control needed to run a fully enabled secure solution in a seamless way with a step by step guide that let you visualize where you are in the process, confident the updates are automatically shared with the hub

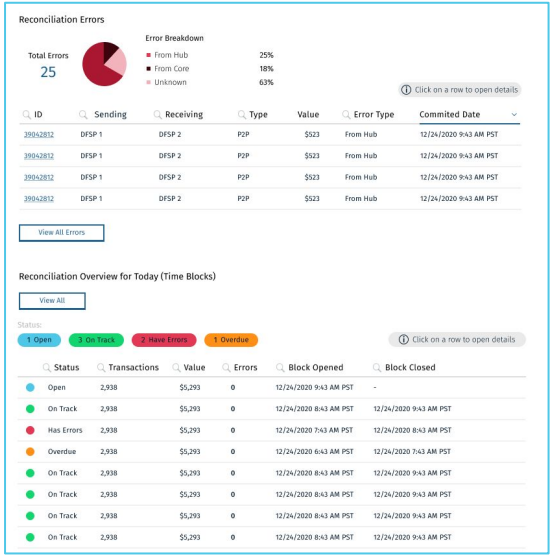


Payment Manager (PM4ML) UI - Business Dashboard

The Payment Manager business operational control center provides Liquidity Management control in a simple dashboard. Observe and monitor your position in real-time.

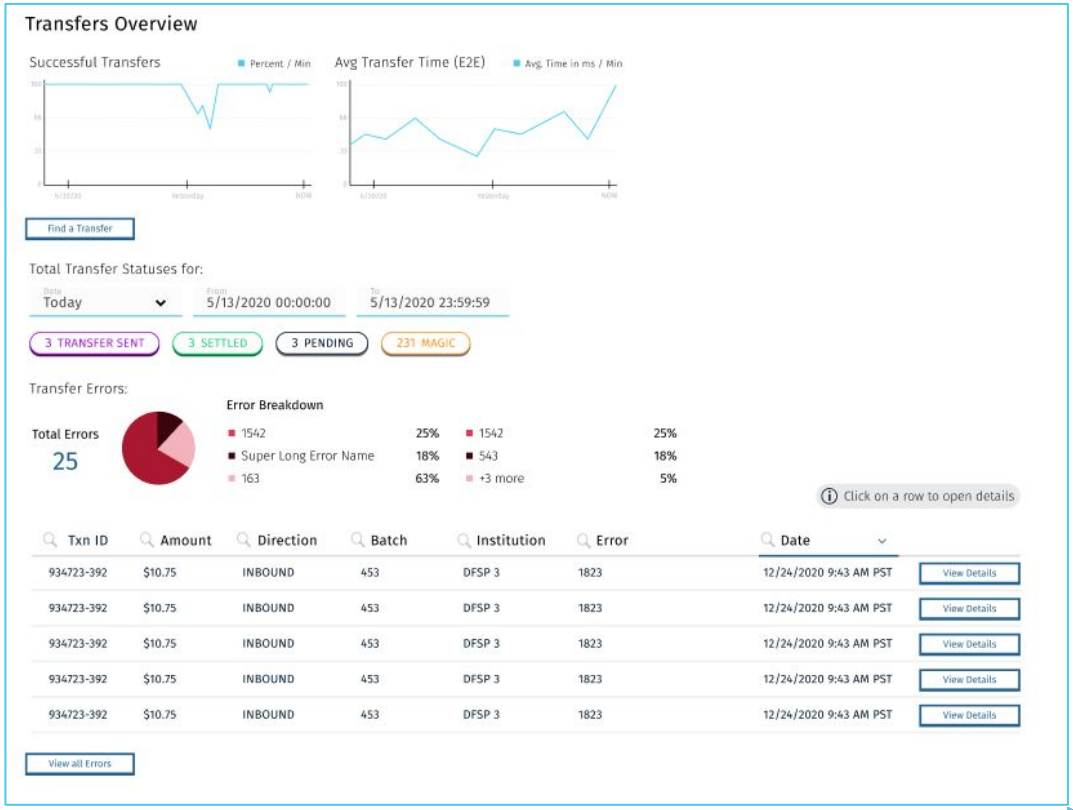
Each settlement window from the hub can be tracked and its status reviewed. Query and drill down into the details of each window. Allowing you to respond to errors and concerns quickly - so your end users have a better experience.





Payment Manager (PM4ML) UI - Transfers Overview

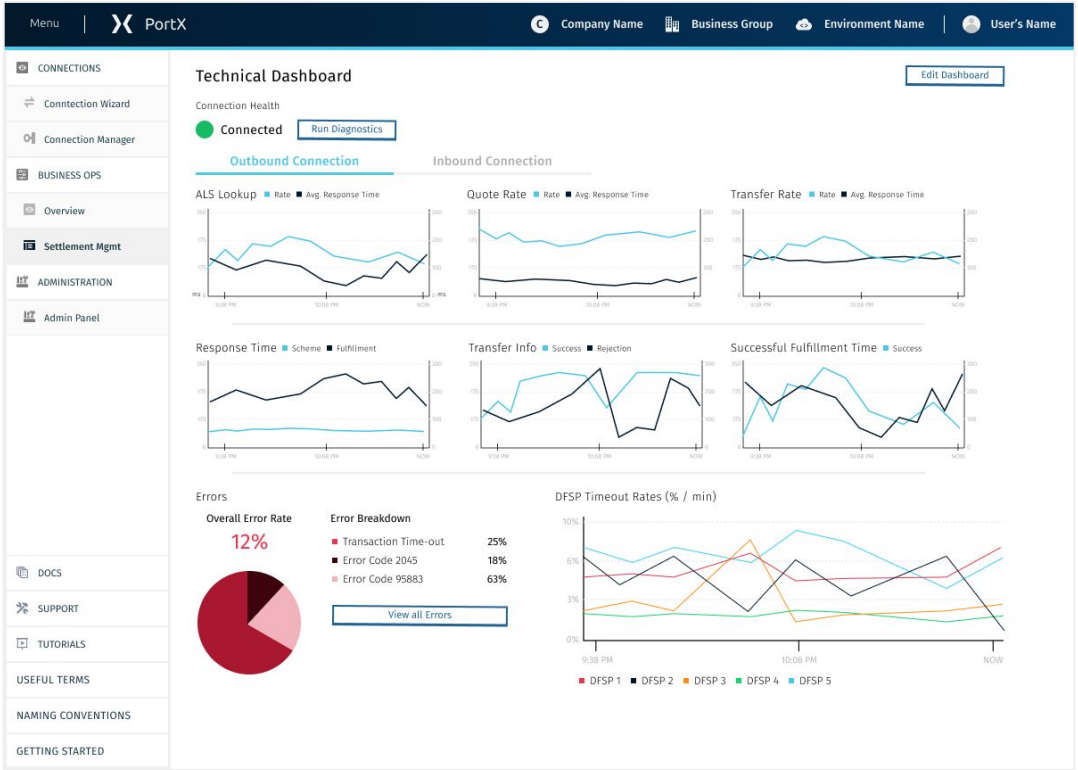
Payment Manager provides Visualization of transaction details and the ability to query and observe each transfer status at the hub, and ensure that your local systems are in sync.



Payment Manager (PM4ML) UI - Technical Dashboard

The technical operational control dashboard of the Payment Manager provides metrics on all the health indicators of the system. Having easy access to these metrics means that technical operational control becomes proactive as potential problems can be picked up before they become real system problems.

You can use these metrics to fine tune the system to ensure the best operational efficiency.



Thank you!

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