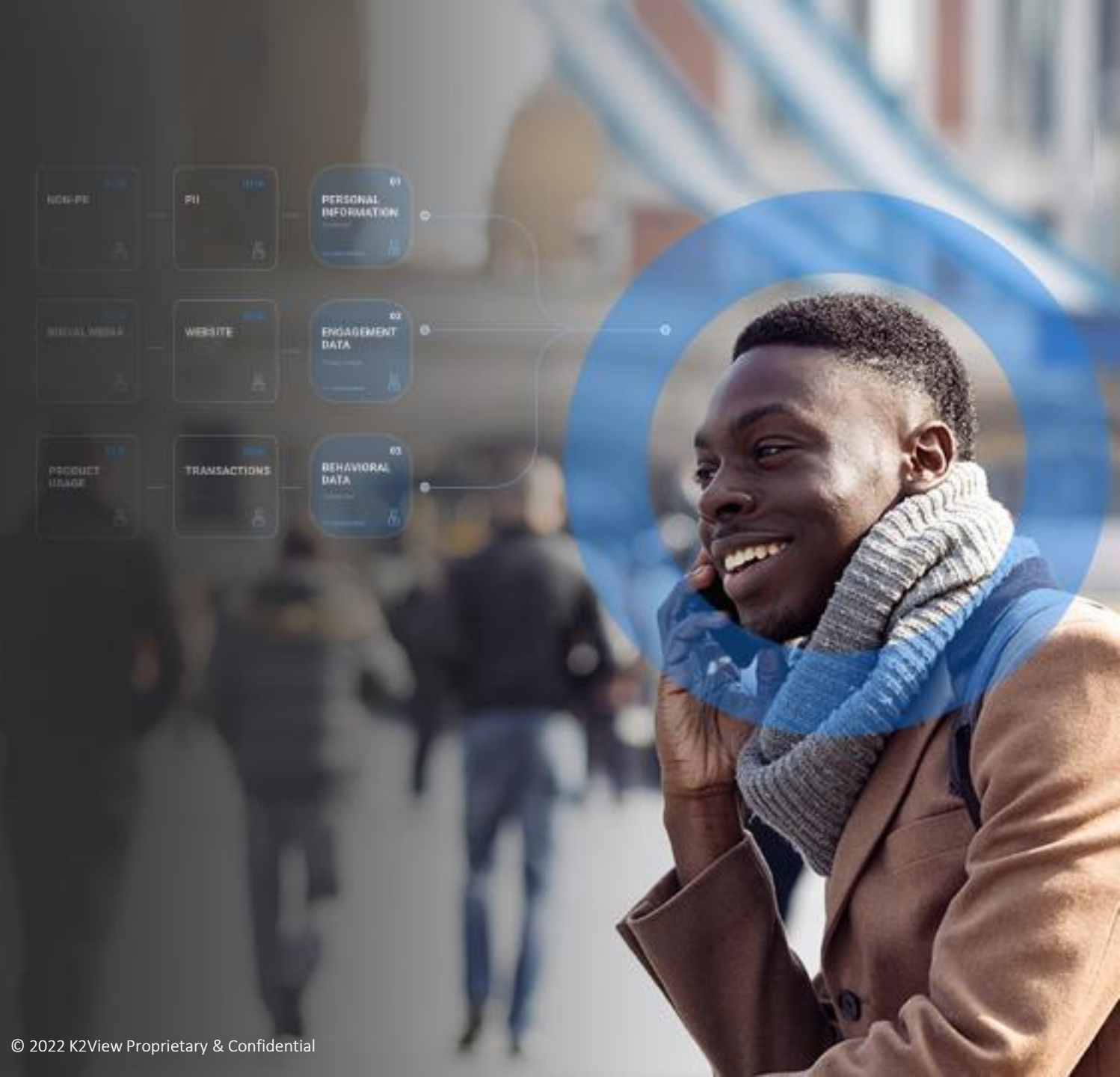
Product Status 2021-2022



Presented by: Lion Brotzky

Agenda

1. Achievements 2021
2. Roadmap 2022

2021 Releases

- Fabric
  - 6.4.X (0-7)
  - 6.5.X (0-3)
  - 7.0 (Free Trial) – Fabric over the Cloud (Web Studio)
- TDM
  - 7.X (0-3)

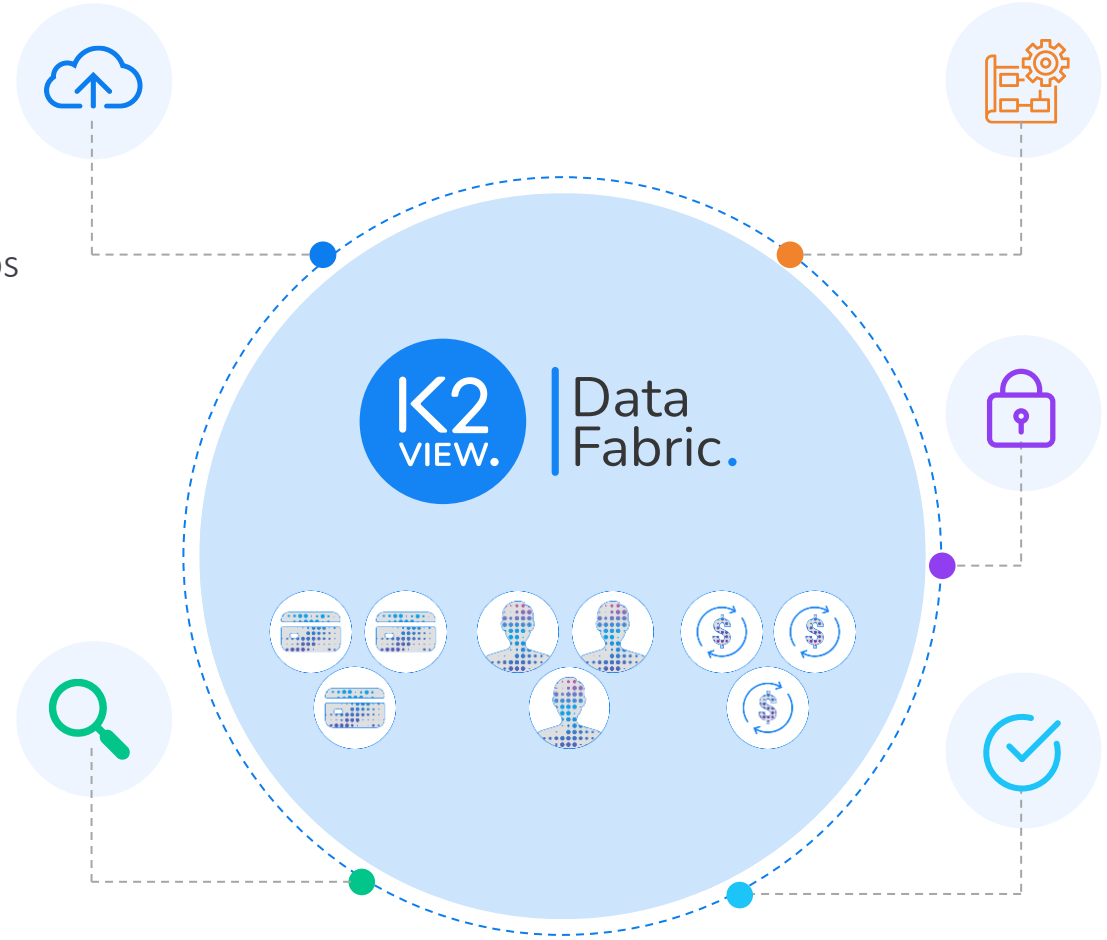
2021 - K2View Product Developments

Why	What	How
Improved Support	Support site at support.k2view.com	Knowledge Base, Freshdesk integration, DevOps Documentation, Developer Community
Security Improvements	Security flexibility & Enhancements	Multi channel authentication Compliance Updates Azure, Okta, CyberArk authenticators
Catalog Enhancements	Catalog improvements, flexibility, discovery	Graph Database Source System Lineage
Visualization	Integrated Business Intelligence Web Apps Data Explorer	Data Product Visualization Designer Integrated with Fabric
Improve Reuse	Templates	Can Apply to Broadway flows, actors, Catalog, etc…
Performance and scalability	iidFinder – move delta to Kafka	Storage: Delta content is written to memory, Improved Partitioning Sync execution close to data, Priority on dedicated Kafka Topic
Improve TDM Automation	TDM Integration	Security, Broadway integration for automation, many features
Improved Operations	New Batch Monitor	Integrated into Web Admin
Fast install, dev and operations	Studio on Cloud	Spin up with a click the right Fabric runtime OS & PC agnostic, IDE Integrated and many other features

K2View Fabric 2022 Roadmap:
5 Pillars

Cloud
- Cloud efficiencies
- Hybrid Clouds/on premise
- Billing and metering
- Packaging of K2view DevOps orchestration
- Web-Studio (100% .NET features)
- Connectors (GBQ, Snowflake, etc..)

Discovery
- Framework
- Plugins (PII, logical and physical relations, data profiling)



Ease of Implementation
- mDBFinder
- Fabric Exchange
- Fabric Apps

Security
- oAuth as IAM
- Declarative Fields level auth/masking

Customers/ Market Requirements
- TDM – manufacture, reserve instance
- Applications: TDM / Migration (recon, DB checks, monitoring)
- ML live use case

K2View Fabric Roadmap for 2022

Q1

- Packaging of K2view DevOps orchestration
- Connectors – GBQ, Snowflake
- Data Discovery - framework

Q2

- Grafana integration
- Web-Studio (100% .NET features)
- Connectors – Salesforce, Amazon Redshift, DynamoDB
- Data Discovery – objects and relations
- mdbFinder
- TDM – manufacture, reserve instance

Q3

- Cloud Efficiencies
- Billing and metering
- Hybrid Clouds/on premise
- Connectors – Cloudera, Databricks
- Data Discovery – query syntax
- Fabric Exchange
- ML Demo
- Applications: TDM / Migration (recon, DB checks, monitoring)

Q4

- Connectors – SAP
- Data Discovery – profiling, PII discovery, manipulation rules, user input
- Fabric Apps
- oAuth as IAM
- Declarative fields level auth/masking
- TDM as LU apps

Appendix

- 2021

New K2view support site

- A new support site was introduced called support.k2view.com
- Covering the following aspects:
  - Knowledge base where you can search and learn on all product capabilities
  - Q&A – ask the product team any question and get an official reply within 24 hours
  - Open tickets in Freshdesk
  - Dev Ops documentation (product installation, upgrades, etc..)
  - Developers' community
    - Subscribe to product updates
    - In the spotlight
    - Webinars
    - 1 on 1 meetings with product

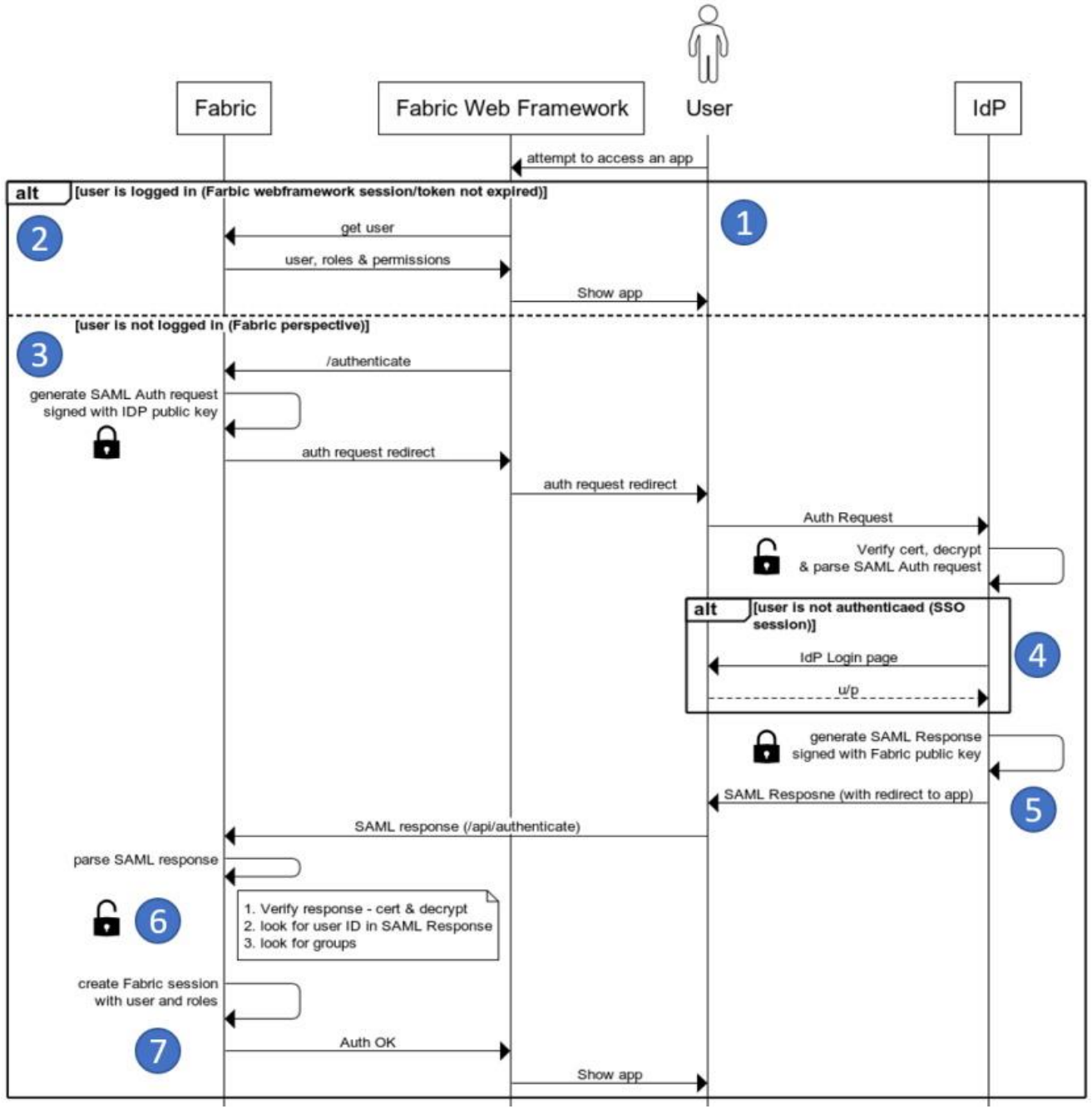
Security - User Identification and Access Management (IAM)

- Fabric provides user identification and access management (IAM) for Web, Console and Web Services access, using either Fabrics local repository or by using the organization's identify provider (IDP) which Fabric is integrated with.
- Fabric supports several Identity and authentication providers:
  - **Fabric**, using its repository (default).
  - **LDAP**, via LDAP integration.
  - **ADLDAP**, via Active Directory (AD) LDAP integration.
  - **SSO via SAML**, for Web and WS access. Done via SAML IDP integration.
- Fabric is ready to work with commonly used and major IDPs such as Azure, Okta and CyberArk.
- Fabric also provides the option to block access, empowering the security access control, for example when users' access is limited only to specific node(s) in cluster.

Security – IAM – Cont.

- Fabric enables to use a proprietary custom authenticator, when required.
- This feature is flexible, enabling to define a **sequence of authenticators**, each is used as fallback to its predecessor.
- This feature provides the flexibility to have a different authenticator per channel. For example, web-apps might use access via SAML, where console access uses LDAP.
- Data protection:
  - All supported transit methods provide secured SSL/HTTPS access.
  - Fabric, and IDP SAML's intersections are done using certification and encryption methods.
  - Users, their credentials, and their association to roles are not stored in Fabric, this allows the organization full control over access capabilities.
  - LDAP admin user credentials are encrypted at the Fabric configuration.
  - Users' login access to Fabric is recorded into the Fabric **Auditing** mechanism with the information about the channel and which authenticator was used.
  - **Web services Security**: Fabric supports *bearer header authorization*, where the JWT (JSON Web Token) originated and is sent securely by the API client as the *bearer* token. In this case the user's authentication process is not done at Fabric, allowing an application that already authenticated a user to delegate API calls by providing user's information. Fabric validates that this token can be trusted and uses it to give access permissions to the API's client.

Security - IAM - Architecture



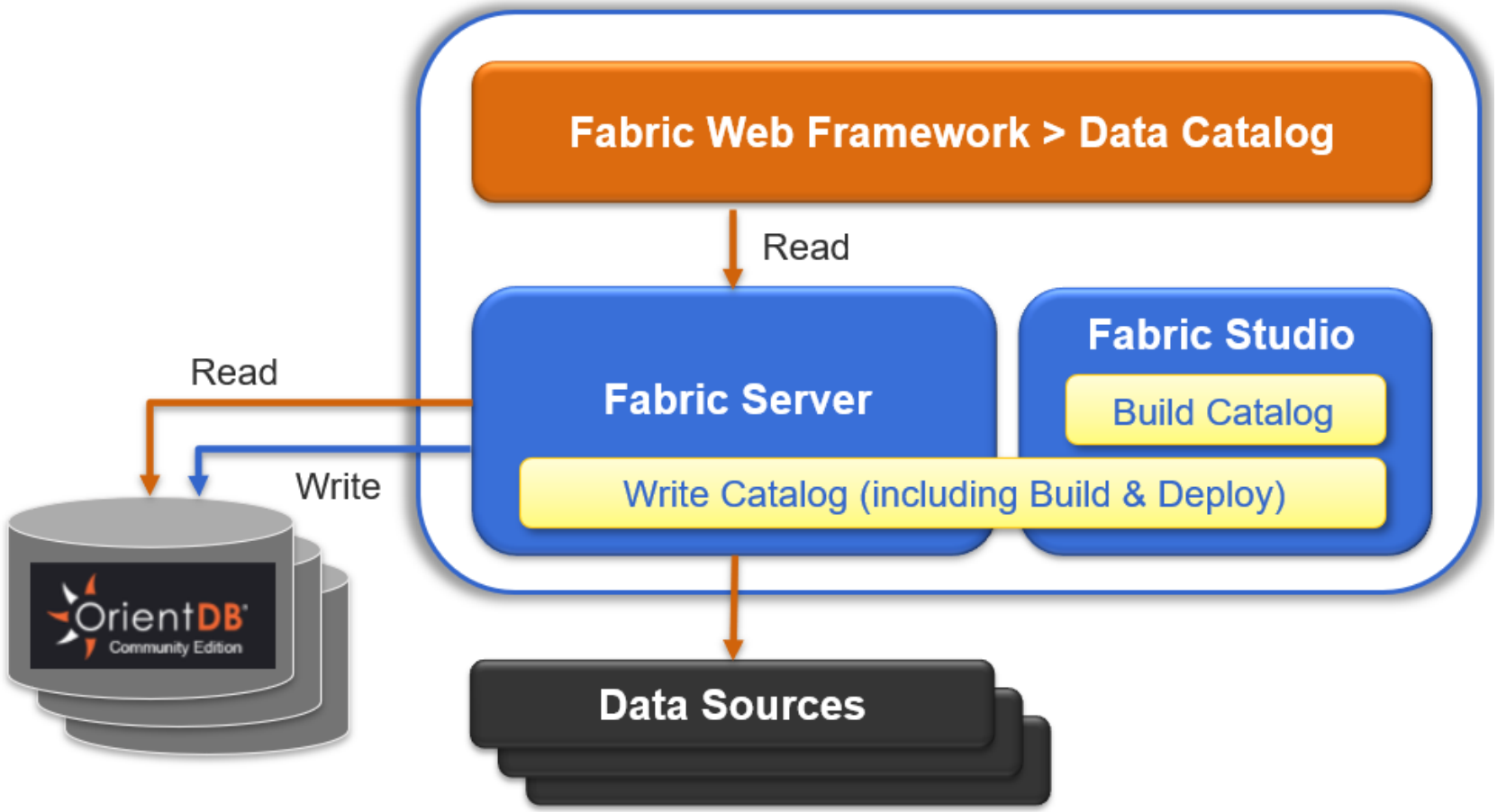
Security – FIPS 140-2

- **FIPS Overview**
  - FIPS (Federal Information Processing Standards) is a set of standards that defines encryption algorithms and other digital technology processes for use within non-military federal government agencies and by any government contractors working with these agencies.
  - In particular, FIPS 140-2 (Federal Information Processing Standard 140-2) is a security accreditation program for validating that the cryptographic modules produced by private sector companies meet well-defined security standards. FIPS PUB 140-2 provides the full list of instructions and architecture documents needed to meet the Cryptographic Modules Security requirements.
- **Fabric and FIPS**
  - K2View has integrated the Bouncy Castle Java stack to ensure FIPS-compliance for all Fabric cryptographic algorithms used across Fabric's projects.
  - By default, Fabric boots up with the FIPS mode set to **off**. Even when FIPS mode is off, Fabric only uses FIPS-compliant protocols and standards implementations with Fabric cryptographic embedded algorithms.

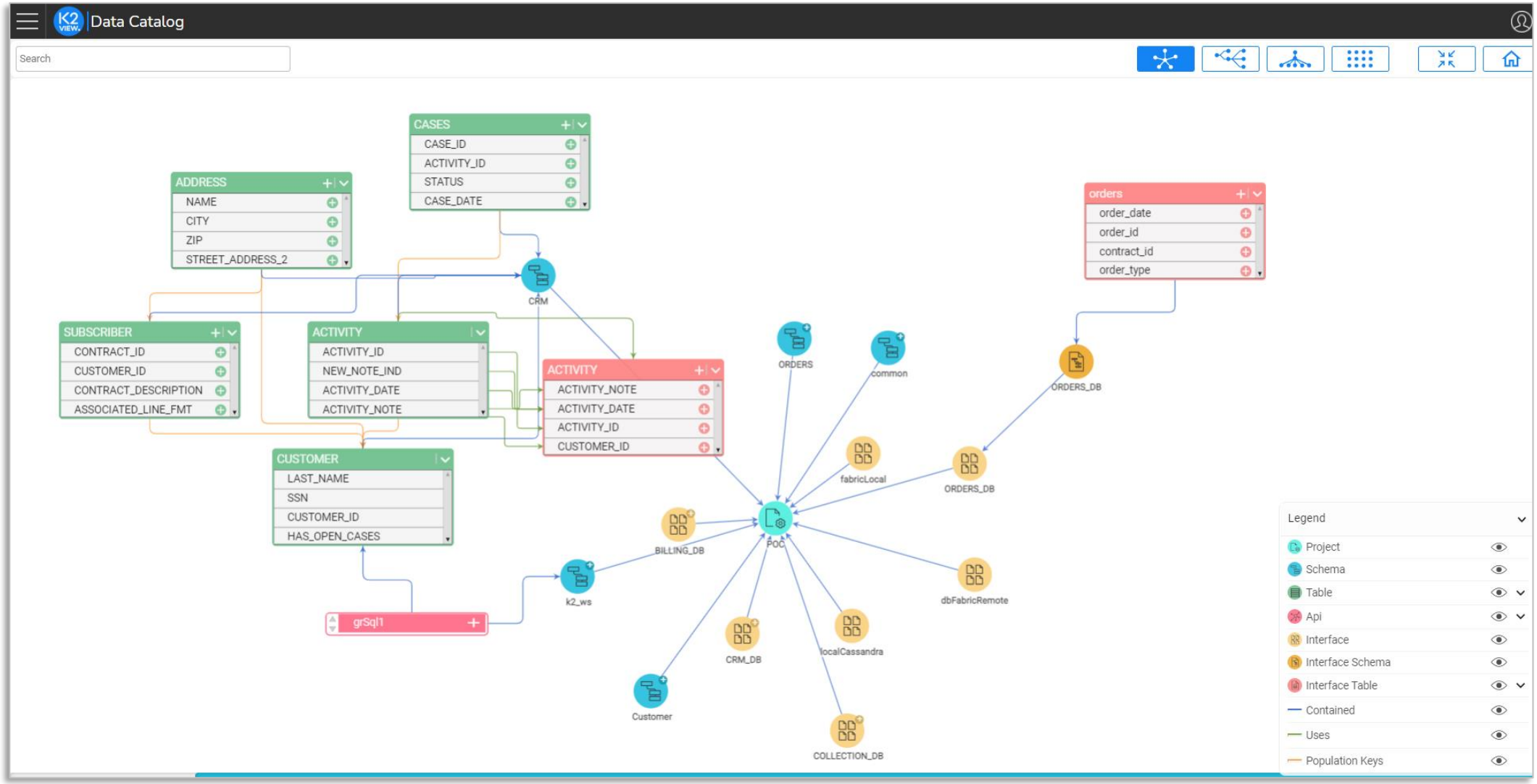
Data Catalog - overview

- Data Catalog is a web application based on a distributed graph database that visualizes a project's meta data structure and the relationships between its entities.
- Data Catalog also enables the user to define additional nodes and relations if the automatic process doesn't find them or if they are not part of the project.
- The resulting Data Catalog becomes available to the Web Framework for navigation.
- The Data Catalog describes how an organization collects, transforms and stores its data inventory. Due to its user-friendly UI, the catalog enables users to follow a data flow from its source to its target and by that, drastically increases a user's comprehension of an organization's data model.
- For example, when developing a Web Service Data Catalog specifies the source system of the Web Service's required output fields.
- Moreover, the solution answers data privacy requirements for
  - Compliance with GDPR, CCPA and other global data protection regulations by enabling users to know how Fabric brings data from source systems
  - Where in Fabric it is stored and
  - How it is published externally.

Data Catalog - architecture

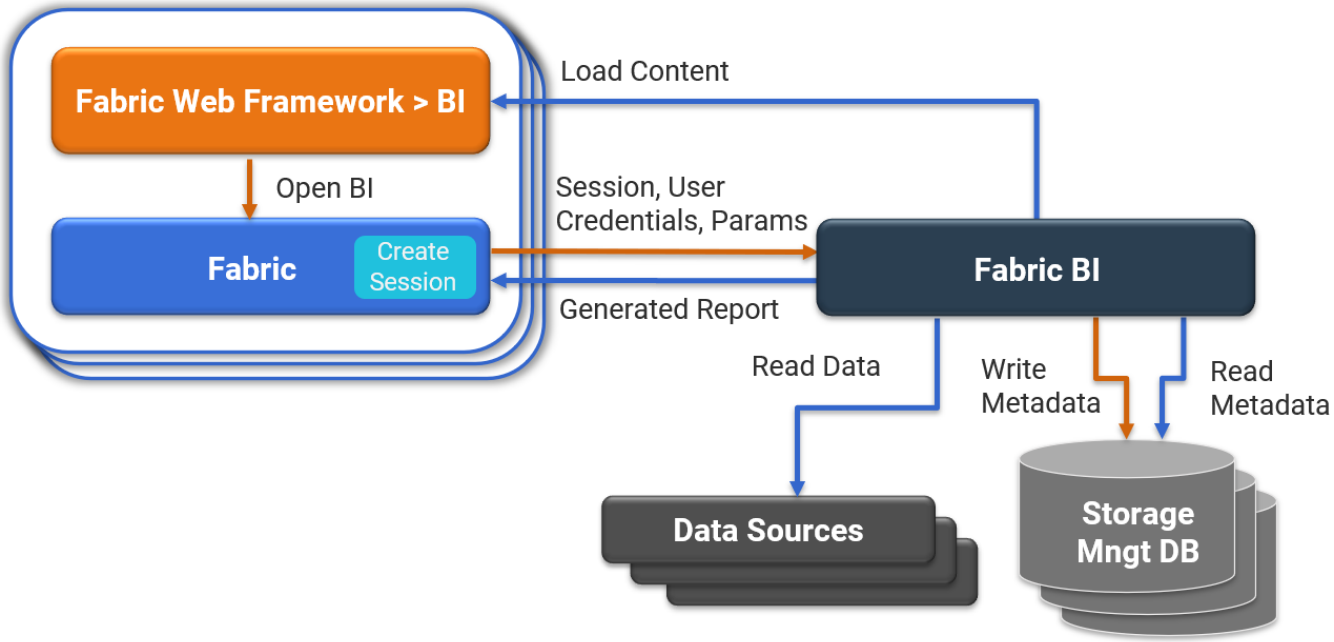


Data Catalog - application

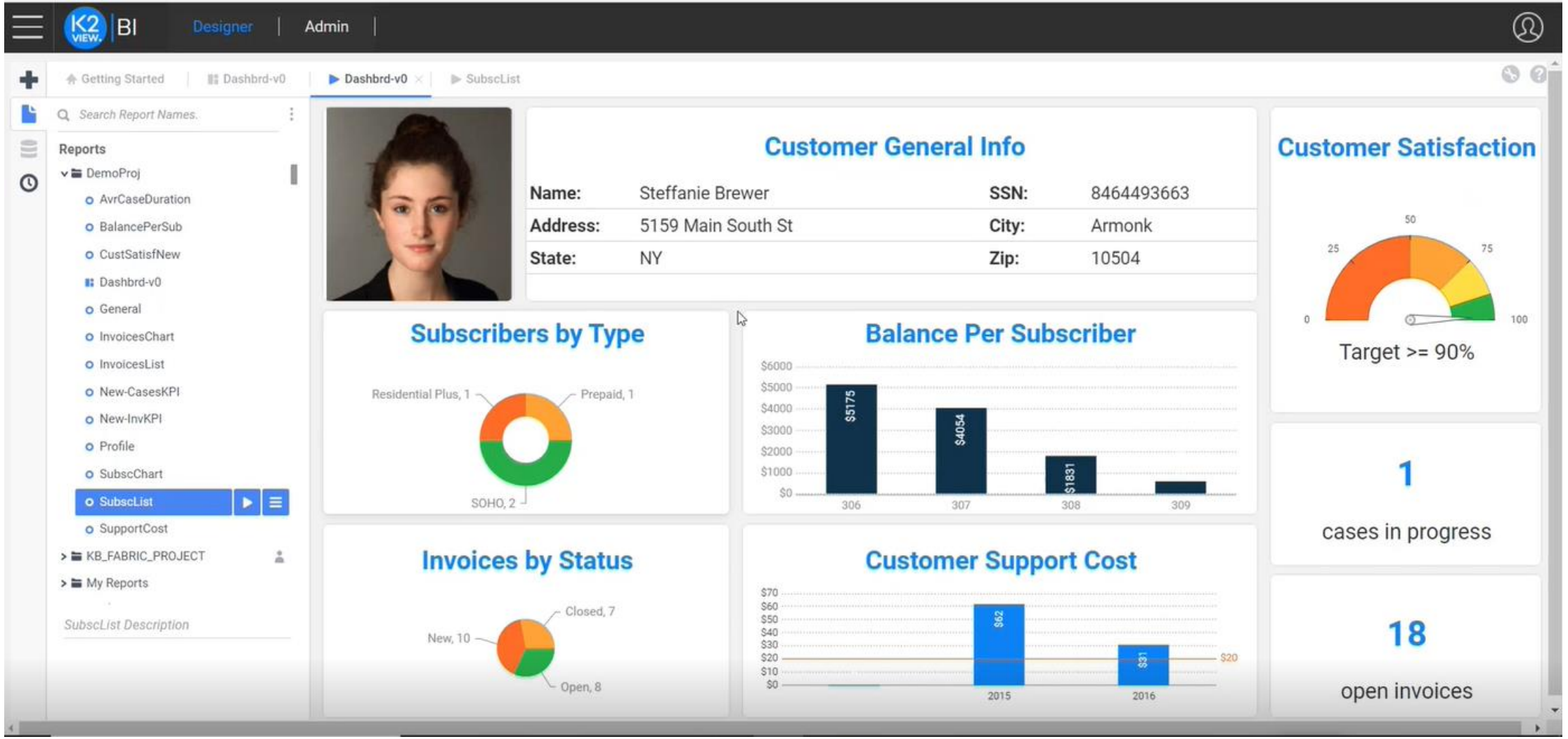


Fabric BI - Overview

- Fabric's BI enables the design and execution of reports and dashboards, and can connect to various data sources to read the data.
- The reports metadata is kept in an external Storage Management database.
- The BI serves as a pipeline between the data sources and the generated reports.



Fabric BI – Dashboard Example

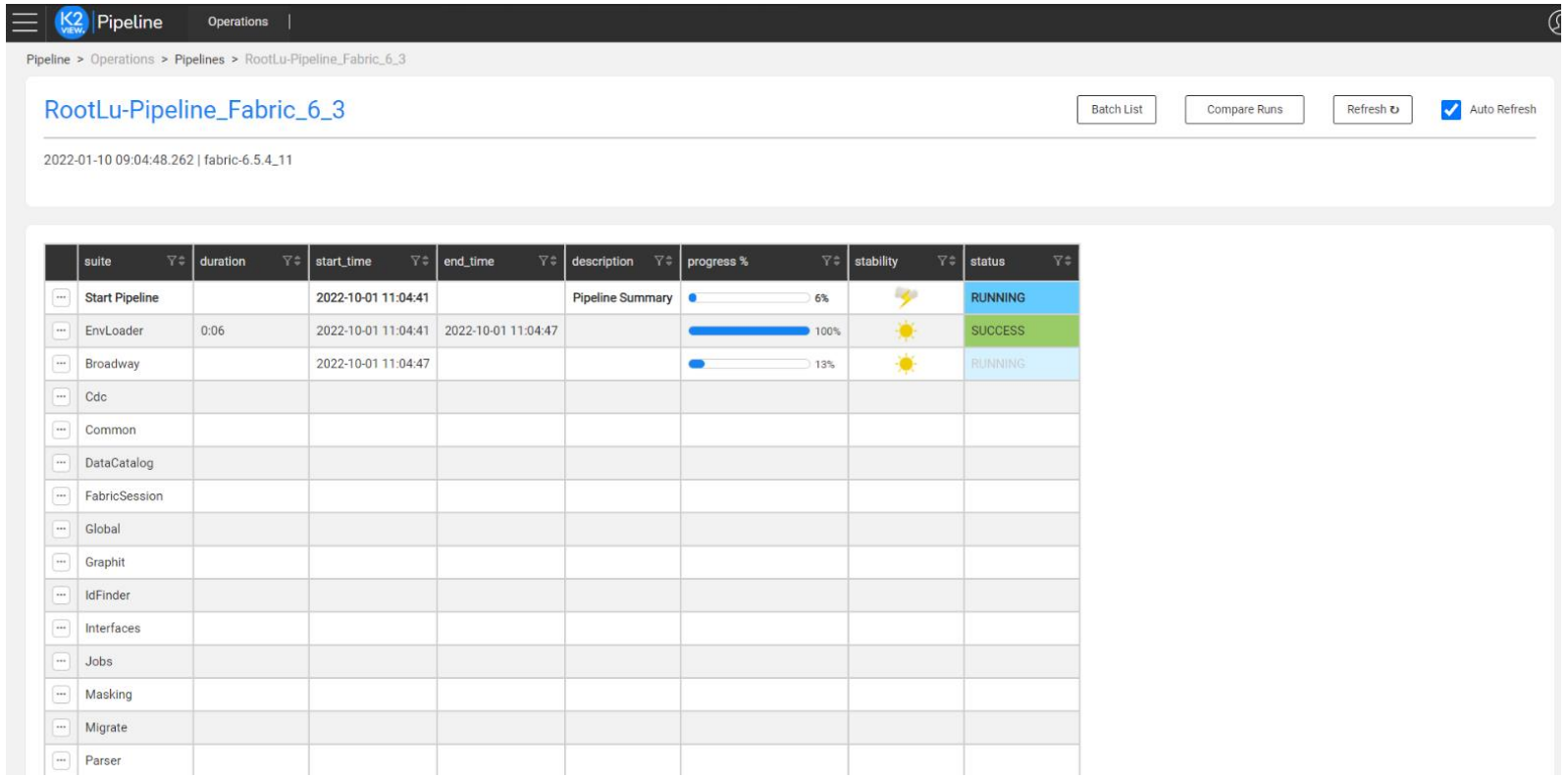


Templates Overview

- Templates are ready-made Fabric objects that can be used throughout a project.
- Working with a defined built-in structure rather than creating an object from scratch, saves time and increases efficiency. Templates can also reduce implementation errors since they use and embed the correct methodologies and Fabric's best practices.
- Templates can be used for various purposes in Broadway flows and Actors, Java files, Graphit and the Data Catalog.
- Fabric Templates support the usage of placeholders for smoother and smarter reuse.
- When creating an object based on a template, the user populates the template's placeholders so that the new object is auto-generated with the data that is already embedded in the created object.
- The integrated Templates engine has powerful capabilities like iteration over lists, conditions and lookup expressions.
- Templates can be used in many scenarios. For example, in TDM they are heavily employed in Broadway flows to transfer data from LU tables into target tables. Here the same template is used to create Broadway flows which fit to all LU tables, instead of manually creating a flow for each LU table.

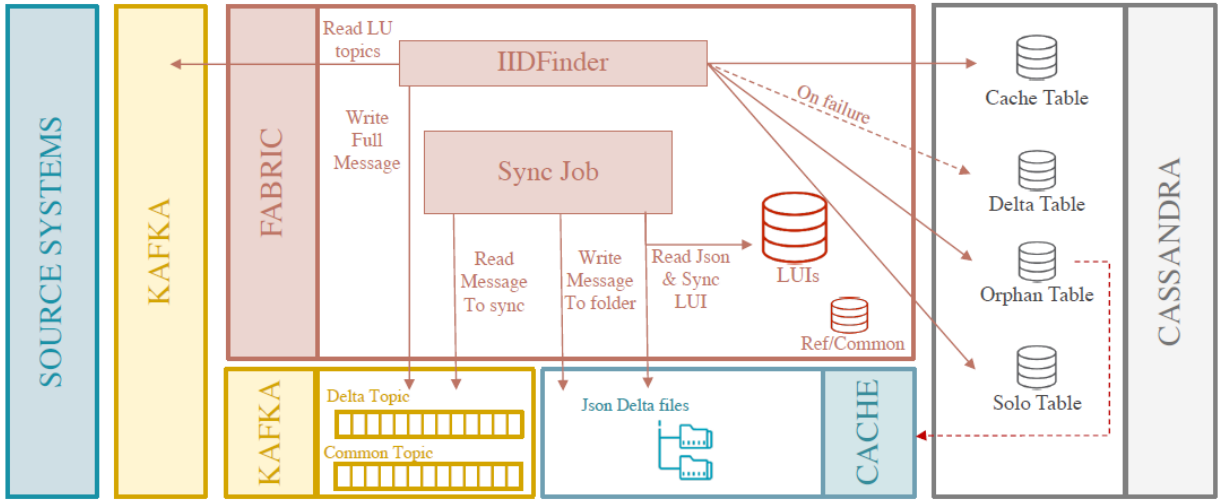
Pipeline tool

- A new pipeline tool was introduced based on Broadway technology
- Broadway can serve as Testing development tool
- CI/CD framework (schedule, execute and monitor testing)



iidFinder – move delta to Kafka – performance and scalability improvement

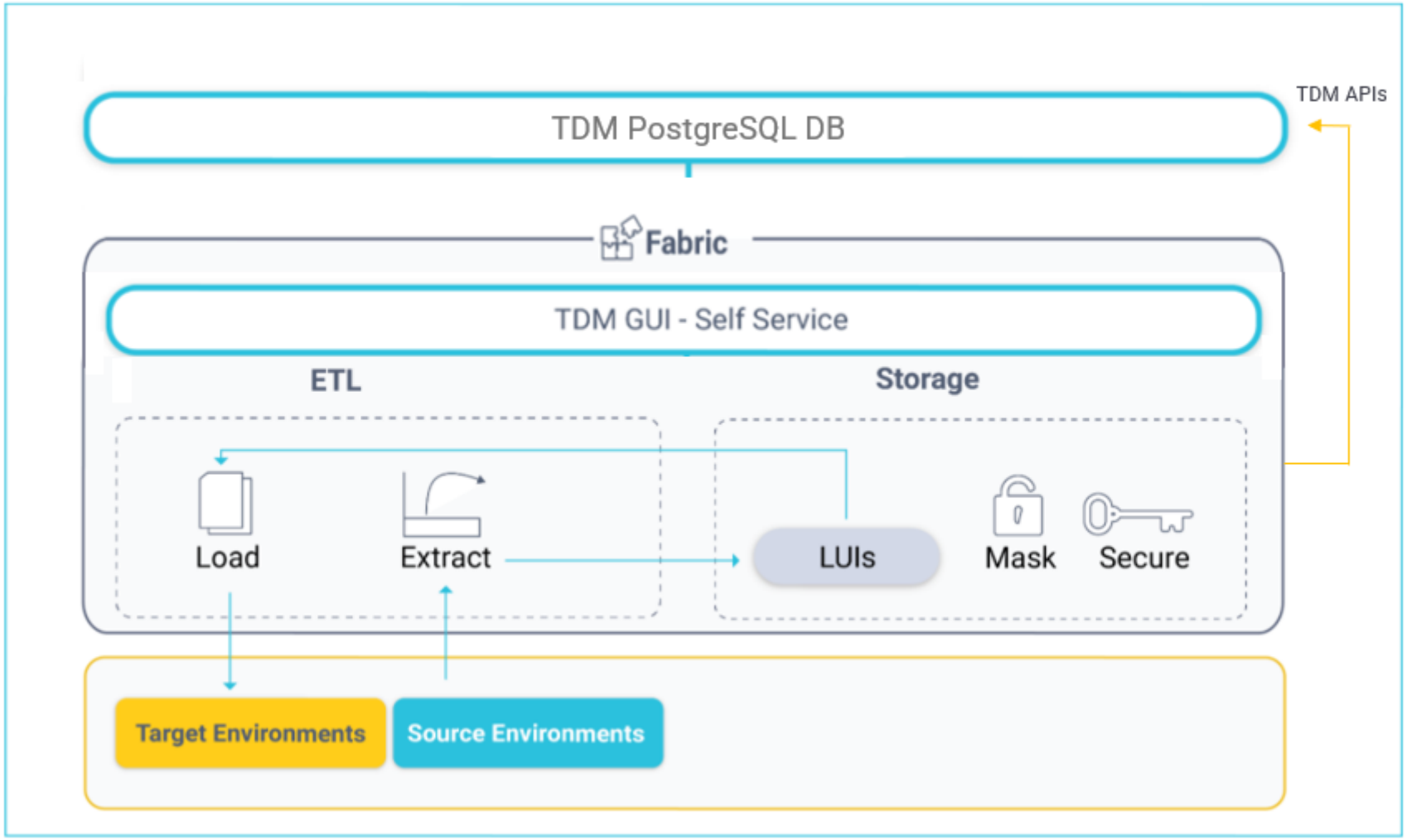
- Storage: Delta content is written to memory, where possible, or to the file system and not into Cassandra.
- Partitioning: the core process outcome's data is handled by multiple jobs where each job owns a range of IIDs.
- An IID is always handled by the same job as long as the job is alive.
- Sync process: each job is also responsible for multiple worker threads that handle the sync process and that run on same node as the job where the data is stored.
- Priority is managed by a dedicated Kafka topic and thus it is faster.



TDM 7.X releases

- Fabric Broadway Replaces ADI
- One Platform for TDM Development
- Supports Various Data Source Types
- One Generic JDBC DB Interface Standard
- Adding New Templates to Automate TDM Development
- Flexible Error Handling Mechanism
- Flexible Statistics Mechanism
- Robust Data Masking and Sequences Libraries
- Security Improvements
  - Adding SSL Connection to LDAP
  - HTTP Interface Authentication (support Bearer and oAuth)
  - Permission group
- Integration of TDM with Fabric Web Framework

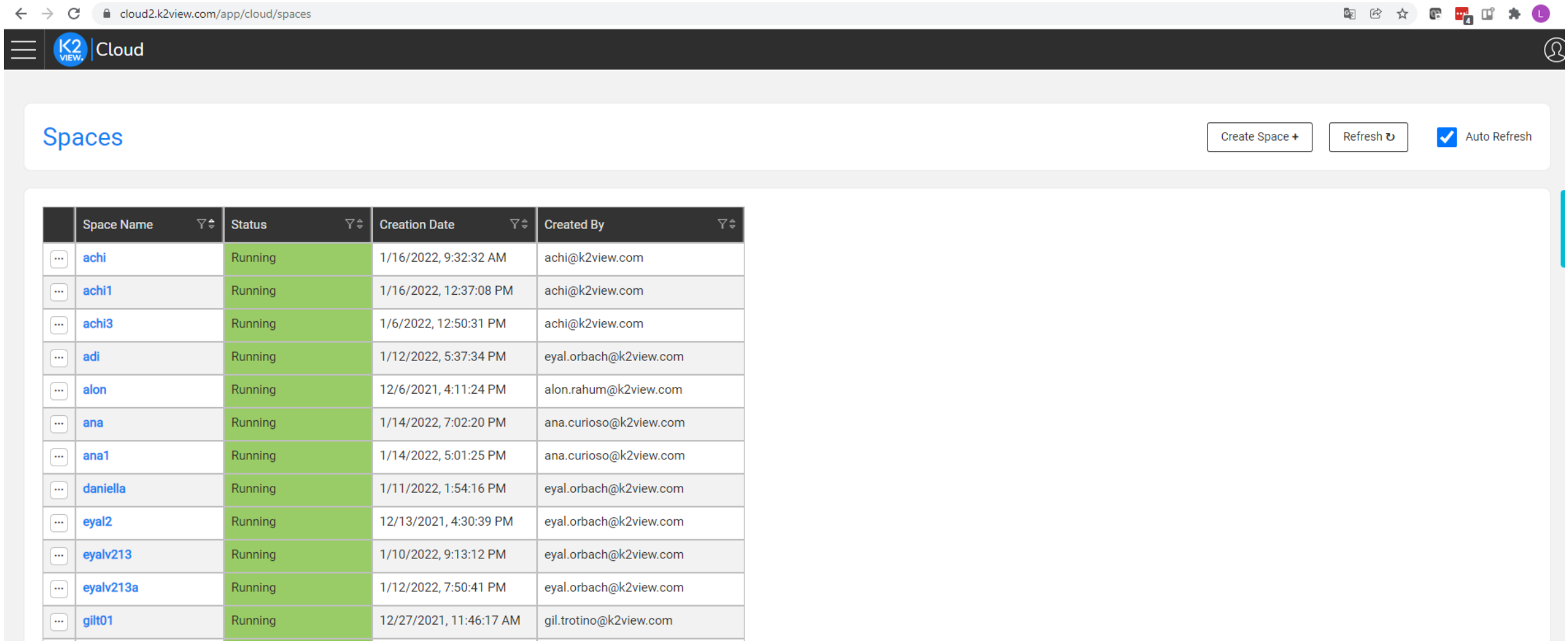
TDM 7.X releases – new architecture



Fabric 7 – Studio Web Based on the cloud

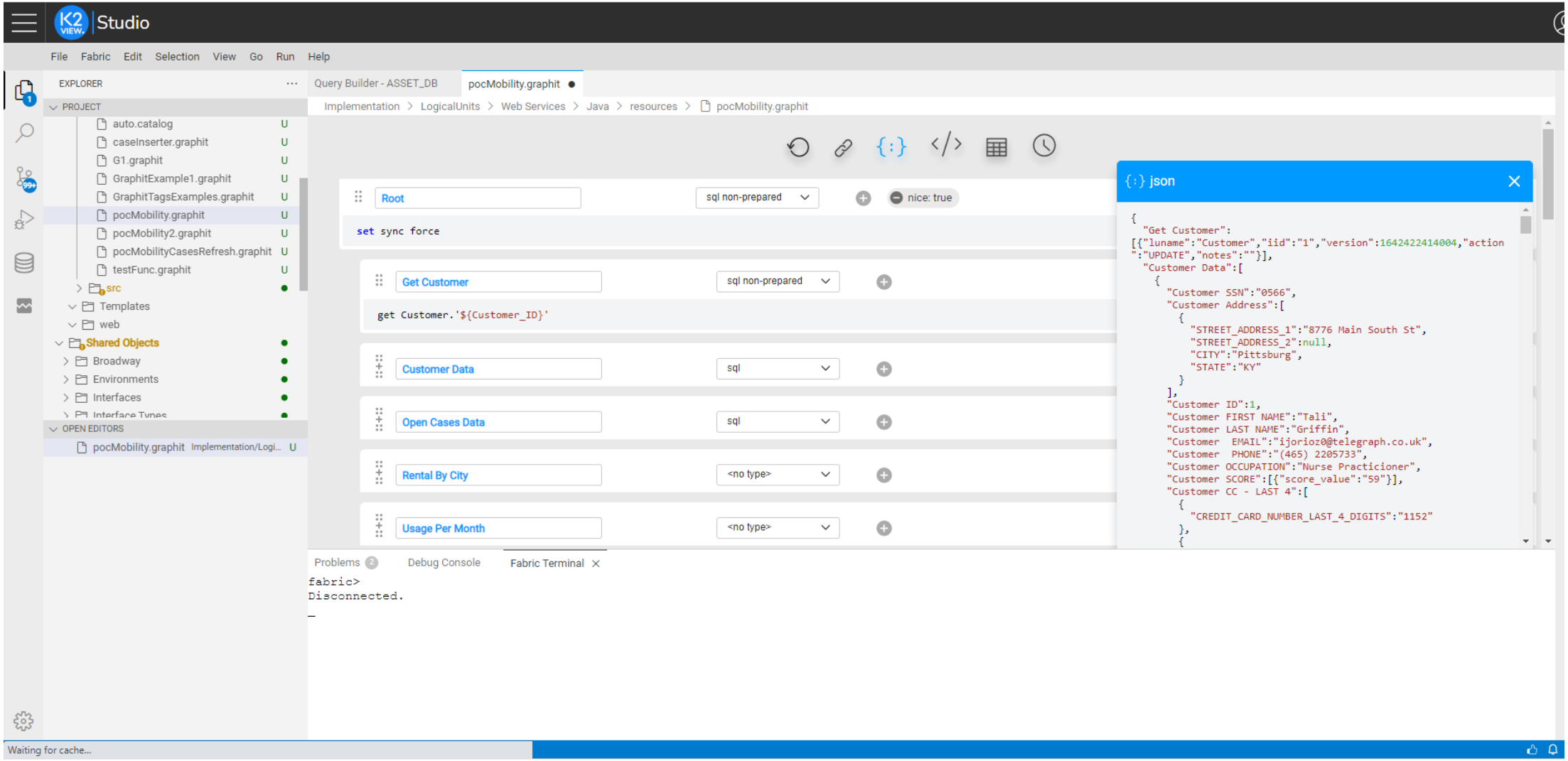
- Expedite implementation & Support
  - Spin up with a click the right Fabric runtime
  - OS & PC agnostic
- Simplified Development
  - An up-to-date full dev framework with improved IDE experience, available anywhere, anytime (Theia integrated)
- Enhance Productivity
  - All is in one place: develop, debug, test, open console and track logs
- Simplified Operation
  - Simplifying deployments and maintenance
  - Simplifying sharing resources
  - Simplifying workloads scaling
- Empowering Security
  - Improved access control and auditing
  - Federated SSO inside

Fabric 7 – Cloud spaces



	Space Name	Status	Creation Date	Created By
···	achi	Running	1/16/2022, 9:32:32 AM	achi@k2view.com
···	achi1	Running	1/16/2022, 12:37:08 PM	achi@k2view.com
···	achi3	Running	1/6/2022, 12:50:31 PM	achi@k2view.com
···	adi	Running	1/12/2022, 5:37:34 PM	eyal.orbach@k2view.com
···	alon	Running	12/6/2021, 4:11:24 PM	alon.rahum@k2view.com
···	ana	Running	1/14/2022, 7:02:20 PM	ana.curioso@k2view.com
···	ana1	Running	1/14/2022, 5:01:25 PM	ana.curioso@k2view.com
···	daniella	Running	1/11/2022, 1:54:16 PM	eyal.orbach@k2view.com
···	eyal2	Running	12/13/2021, 4:30:39 PM	eyal.orbach@k2view.com
···	eyalv213	Running	1/10/2022, 9:13:12 PM	eyal.orbach@k2view.com
···	eyalv213a	Running	1/12/2022, 7:50:41 PM	eyal.orbach@k2view.com
···	gilt01	Running	12/27/2021, 11:46:17 AM	gil.trotino@k2view.com

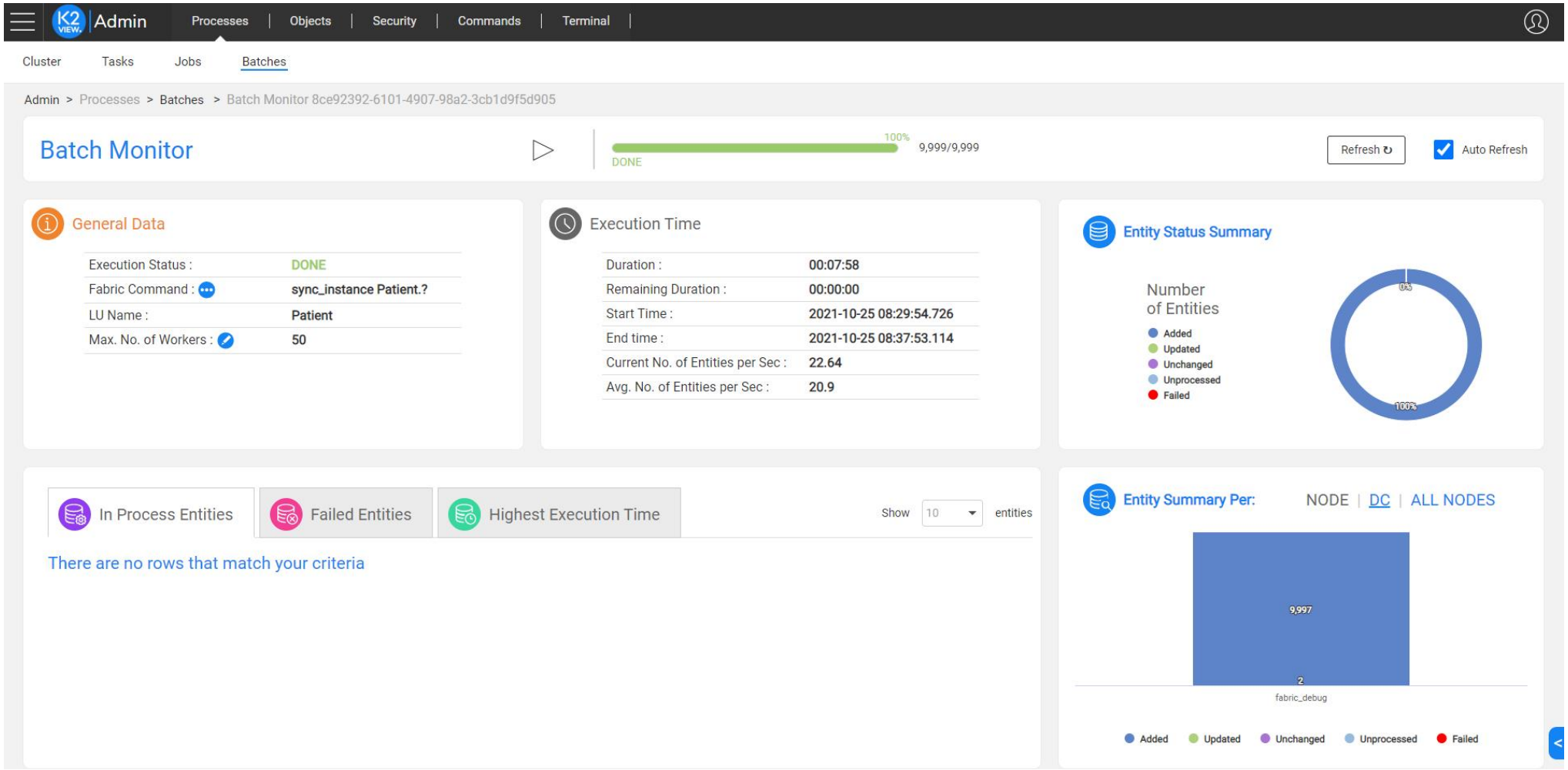
Fabric 7 – Studio over the web



Batch Monitor

- A new advanced batch monitoring screen was added to the Web Admin application. This screen enables tracking of the following main items:
  - Progress status
  - Expected end time
  - Trends on the data center and levels of nodes
  - Analysis of failed entities
  - Entities in process
  - Analysis for performance improvements
- In addition, using this batch monitoring screen, you can control and enhance the execution in run time (add/reduce workers, stop/resume/pause the run).

Batch Monitor



Appendix

- 2022

Cloud

- Cloud efficiency
  - Resource sharing
  - Marketplace
  - Limits
- Cloud – more features
  - Multi data center
  - Hybrid (on premise + cloud)
    - Servers on premise, manager on our cloud; Hybrid servers (Azure, AWS, on prem, etc..)
  - Metering, billing, and monitoring
- Web Studio
  - 100% of Studio .Net features (DB types, Data Catalog as schema designer, environments)
  - Performance over the internet (e.g. debugging)

Data Discovery

- Auto discovery based on:
  - Logical relations and/or
  - Queries on source system and/or
  - Physical relations (such as foreign keys)
- Identify deltas/versioning between source and LU
- Identify data similarity (e.g. SSN and social security number are the same)
- Manually assign definitions of :
  - Relations (e.g. SUBSCRIBER is a child of a CUSTOMER)
  - Roles (e.g. CUST_NO, CUSTOMER_ID means the same)
- Identify sensitive data (PII)
- Data profiling based on real data

mdbFinder

- Productizing the implementation library
- Automation of product reaction to implementation changes
- Simplifying the solution:
  - Guidelines for cross instance changes
  - When data should be synced from source systems
- mDBFinder as a Fabric job:
  - Full access to Fabric user code libraries during the implementation
  - mDBFinder familiarity with fabric commands and processes

Fabric Apps

- A full Fabric application that is encapsulated within a Logical Unit:
  - Contains both client (Web) and server aspects
  - Upon LU deployment, the full functioning application will be available
- To achieve this, the following Fabric objects must be available on the LU level:
  - Web-Services
  - Interfaces
  - Common tables
  - APIs (shared code)
  - Build artifacts and dependency (LUs dependencies, export binaries, maven, etc…)

K2View Fabric Application Development

- Fabric Exchange
- Codeless
  - More templates
  - More Actors
  - Interface extension

Security

- oAuth as IAM – in addition to SAML
- LU Fields level auth/masking

Applications: TDM/ Data Migration/ Data Pipelining

- Modularize data movement
- Common task management/ orchestration layer (Jenkins style)
- Self-service portals (for different use cases)
- TDM GUI as a web resource within TDM LU
- Dashboards, monitoring, reconciliation, IC/DB checks, statistics and reporting
- TDM Ease of implementation (ids, masking, referential integrity, codeless)
- Broadway for Test Automation (Internal, TDM, General purpose)
- More features: Reserve entities, data manufacturing, role-based masking

DevOps Improvements

- Packaging of K2View DevOps orchestration to be used by customers
- Creation of K2View Fabric dashboard for monitoring and management (within Fabric Web Framework)
- Log management and content classification

Machine Learning: Live Use Case

- Demo with a leading ML/AI application or platform
- Identify ML requirements, and enhance Fabric accordingly
- Fabric to serve as a data source to ML system
- ML system to feed Fabric with AI analytic results