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Introducing the only real-time RMS data replication solution

Using CDC and Data Replication

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Agenda

- **Connect**
- **Offloading Data for BI – Enabling Technologies**
- **RMS CDC – Attunity Stream for RMS**
- **RMS Data Replication – Attunity RMS-CDC for SSIS**
- **Demo - end to end!**
- **Summary + Q&A**

Attunity - CONNECT

- ODBC, JDBC, OLEdb... data access
- DB2, Oracle, Enscribe, ... RMS
- Heterogeneous queries / optimizer
  - Bindings (Tuning, Log level, Optimizer settings, Codepages)
  - Deamons
  - Workspaces (Server Processes, OpenVMS Usernames)
    - Prestarted, re-usable, log files, tcpi
  - Datasources (Dictionaries / Directories
    - Tables
    - Adapters

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Metadata Import

- Automatically define relational schema based on existing metadata
- Automated imports available from:
  - COBOL (COPY books)
  - BASIC (MAP files)
  - FORTRAN
  - Oracle CDD
  - DIBOL
  - DATATRIEVE
  - ...

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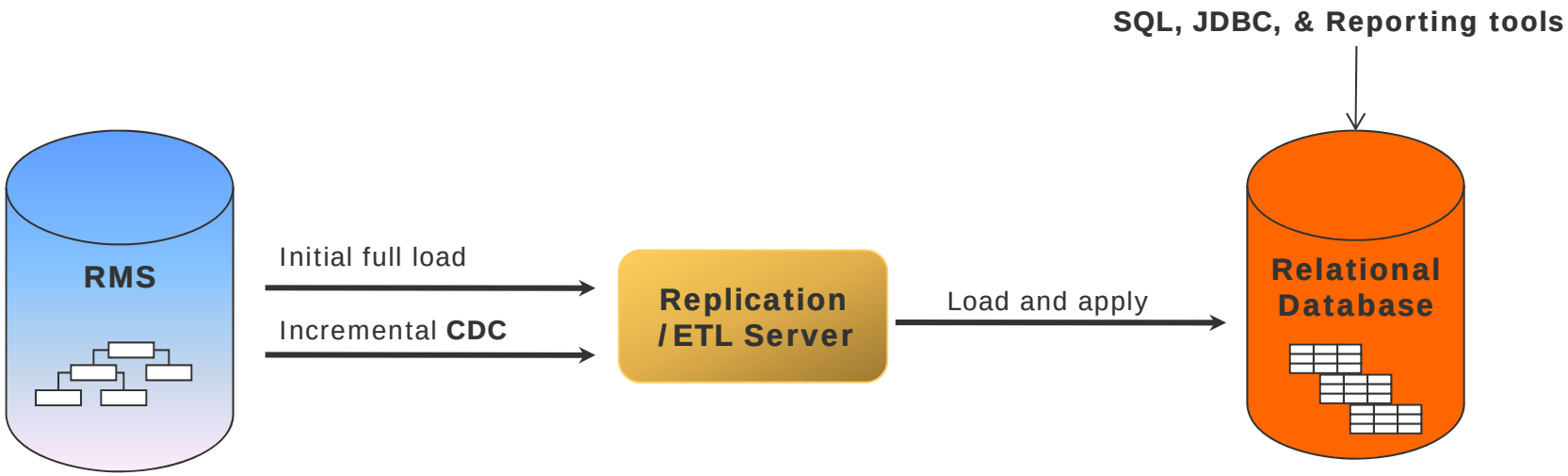
Offloading RMS Data for BI

- **Copy RMS data into a relational database**
- **As frequently as needed**
- **With little impact on the OpenVMS system**



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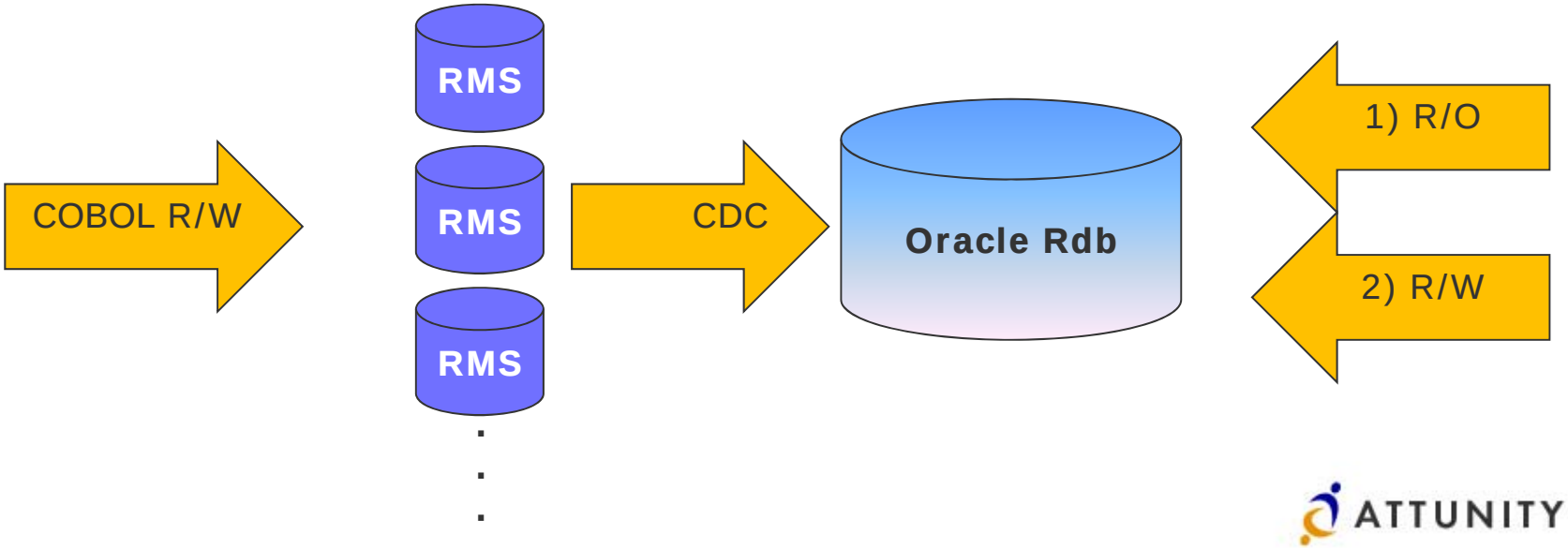
Customer Example: Southeastern Freight Lines

SOUTHEASTERN FREIGHT LINES

Privately-held trucking company, specializing in next day and second day service. The company's dedication to process improvement is represented by over 285 quality awards.



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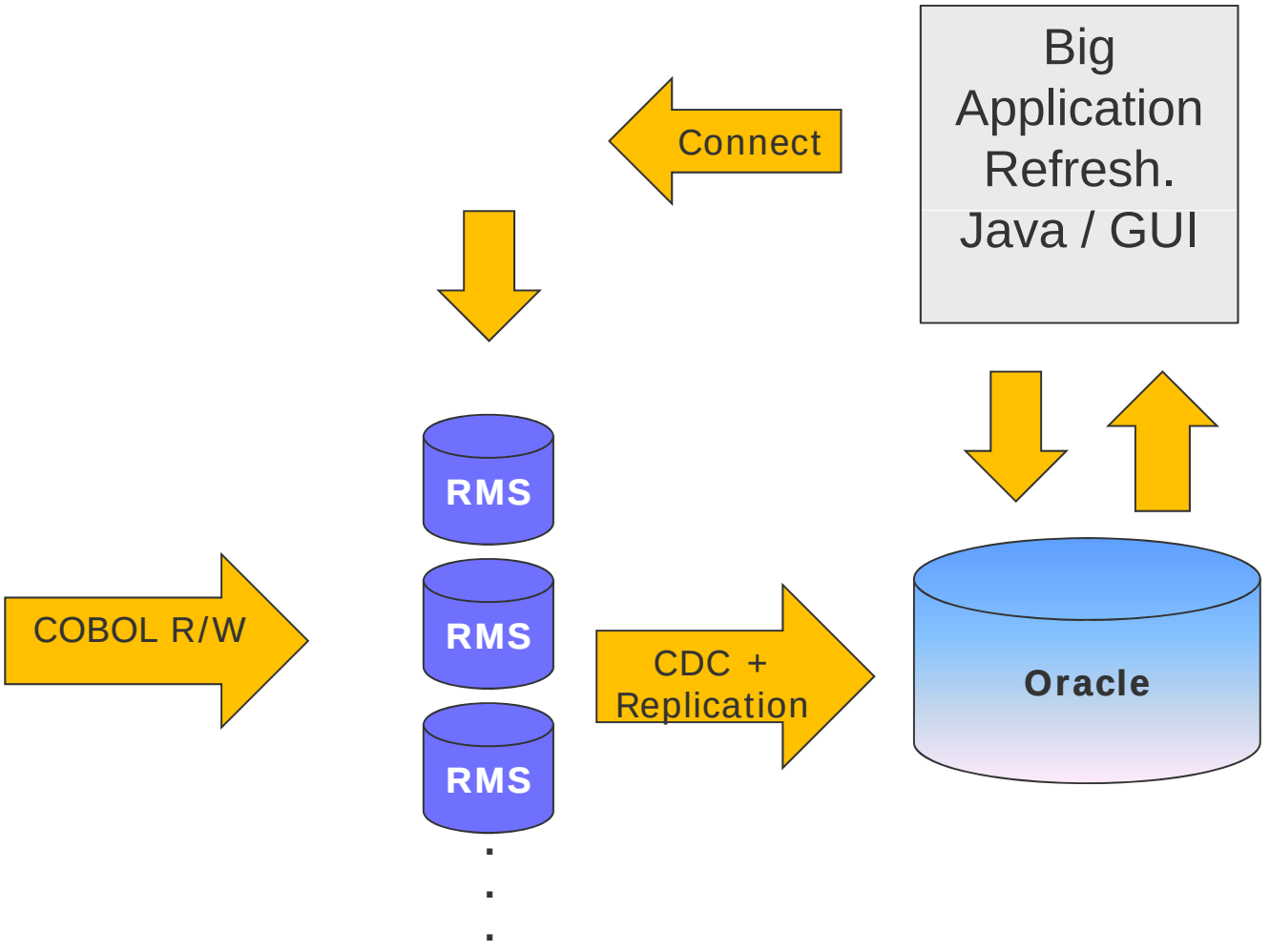
Customer Example: Express-Scripts – large pharmacy



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Enabling Technologies

CDC

Change Data Capture (CDC) is a data integration technology that **captures and delivers only the changes made to enterprise data sources**. It enables real-time and efficient data integration/replication.

Replication

Data Replication **creates a copy of one data source in another, periodically or in real-time**. Replication employs CDC to replicate changes from source to target efficiently and in real-time.

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Drivers for CDC and Replication

1. **Demand for real-time data**

2. **Increasing data volumes**

3. **Shrinking batch windows**

4. **Pressure to reduce cost**

5. **Reduce risks of failing long batch jobs**

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Use Cases for CDC and Replication

1. **Offload Production Data for BI**
   - ❖ Create a copy for reporting
   - ❖ Stage data for data warehousing

2. **Maintain Consistency across Operational DBs**
   - ❖ Keep data integrity
   - ❖ For application integration and MDM (master data management)

3. **Data Migration / Upgrade**
   - ❖ Sync with production following initial set-up
   - ❖ Enable fail-back

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Challenges for CDC and Replication

1. **Low Impact on existing applications**
   - ❖ Achieving minimal/no changes to existing applications
   - ❖ Achieving low overhead on resources
2. **Data mapping challenges**
   - ❖ Defining a relational schema for the RMS structures
   - ❖ Applying RMS changes appropriately to the relational tables
   - ❖ Arrays (of records) in records; Variant records.
   - ❖ Funky data types (notably Dates!)
3. **Complexity/Cost**
   - ❖ Making it simple, automated
   - ❖ Low cost of ownership

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CDC Approaches and Technologies

Traditional approaches – Intrusive / High Impact:

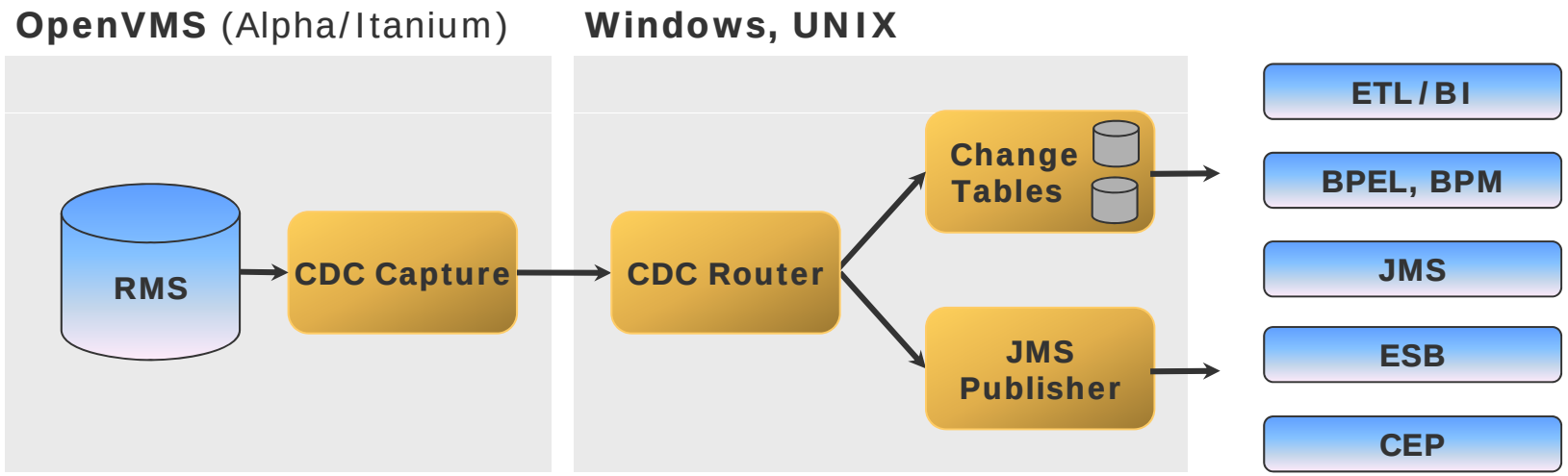
- Use **timestamps** in extracts and file dumps
- Extract and **compare** current data to its history
  - Connx uses Checksums on RMS Indexed files buckets to detect changes.
- Use custom-built **triggers**

Attunity approach – Non Intrusive:

- **Log-based** CDC
  - Low impact. Non-intrusive.
  - Efficient.
  - Reliable.
  - Scalable.

Attunity Stream for RMS

Log-based CDC for RMS files



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RMS – CDC - Key Capabilities

- Log-based CDC
- Filter Changes (by file, operation, …)
- Flexible Change Delivery (periodic, continuous)
- Interfaces to ETL and EAI Tools
- Reliable Delivery and Recovery
- Easy to Use

CDC for RMS

- **Unique service intercepts $RMS system services**
  - Provides system wide capture of RMS changes
    - Cobol, Basic, Datatrieve, DCL, Utilities... Any and all RMS record operation.
  - Record based (log : header + record data)
    - Header : Sequence#; Timestamp; FileID; ProcessID; RFA; Operation; Size.
  - No changes required to any RMS programs
  - Supports all RMS file types
  - Support OpenVMS clusters
  - Independent of RMS (AI/BI) Journaling. RU-J not supported.
  - High performance, low impact
    - Per node Logger not noticeable (3%?)
    - Shared Agent example usage: 1/4 CPU for 10 Million changes in 3 GB Logs.
- **Easy Configuration**
  - GUI-based with wizards in the Attunity Studio
  - Metadata import available from many sources

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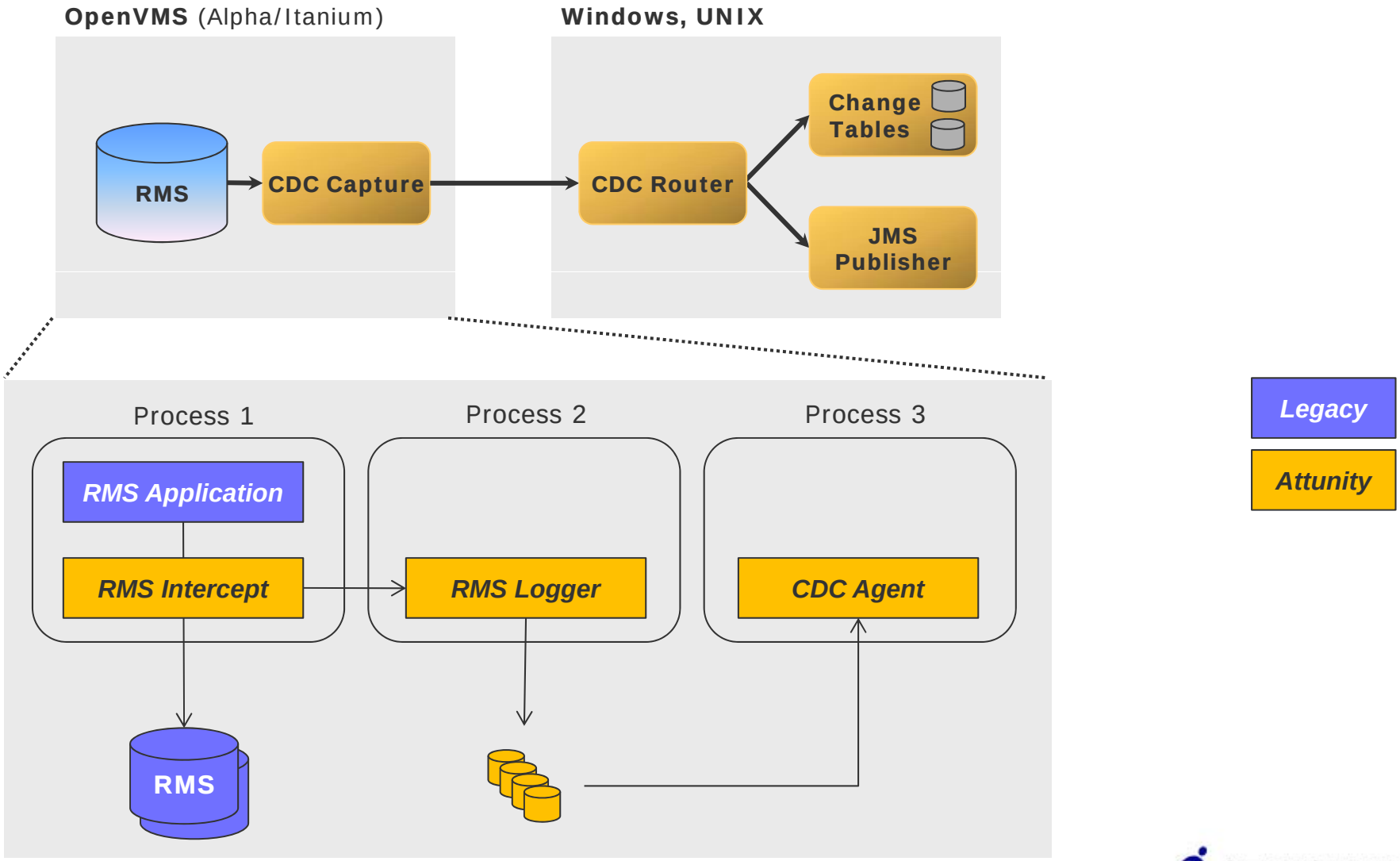
RMS CDC Architecture - Overview



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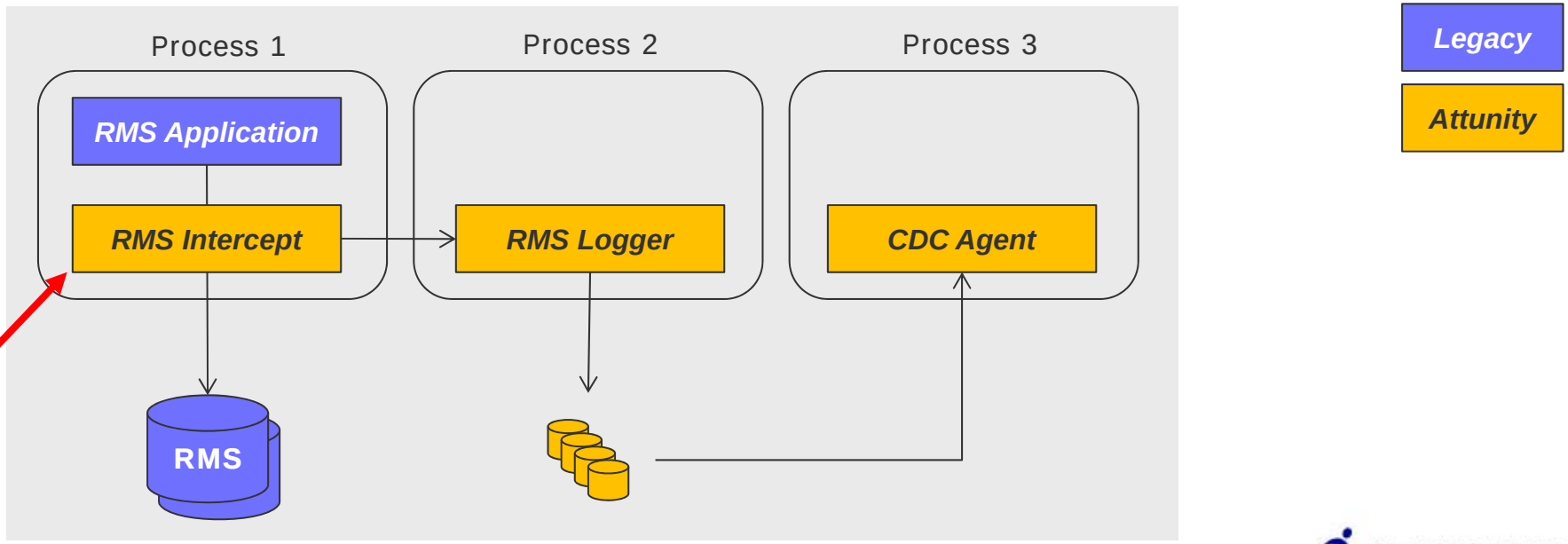
RMS CDC Architecture – RMS Intercept

- **RMS Intercept** – forms an envelope around the $RMS system service. Captures changes only for specified list of files. By file-id (from filename) or by name (“next version”)



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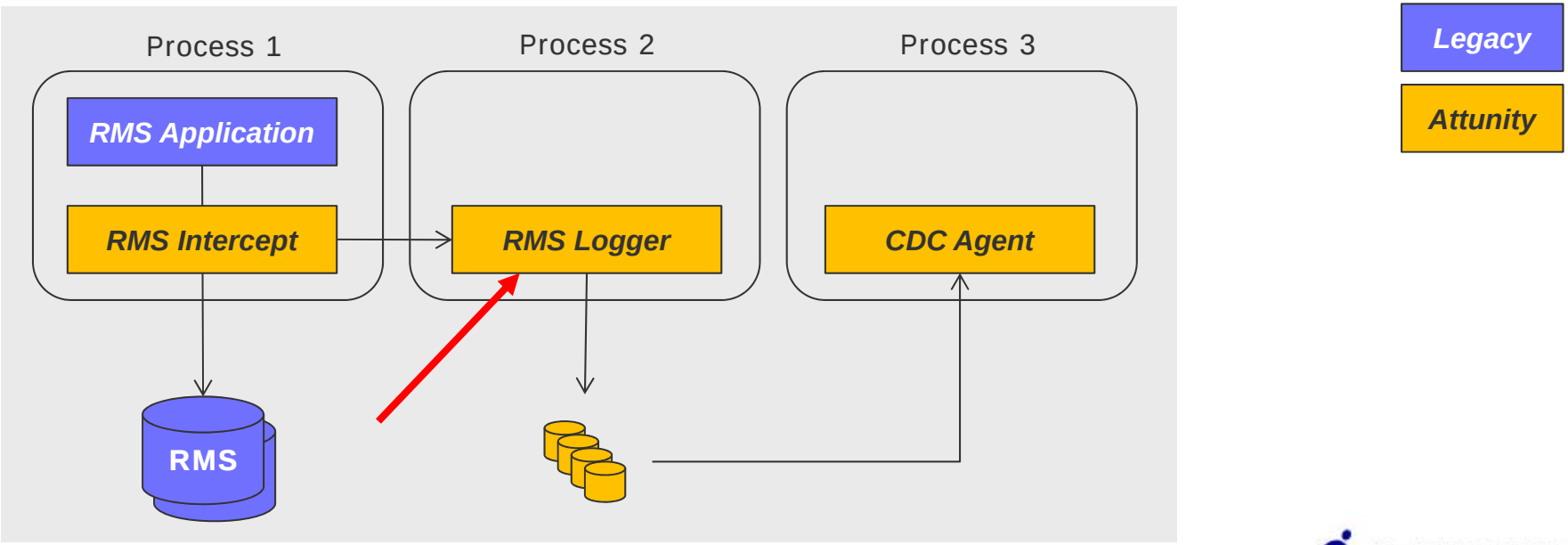
RMS CDC Architecture – RMS Logger

- **RMS Logger** – a separate process (1 per node) which reads the intercepted changes from the intercept and writes them to the transient storage



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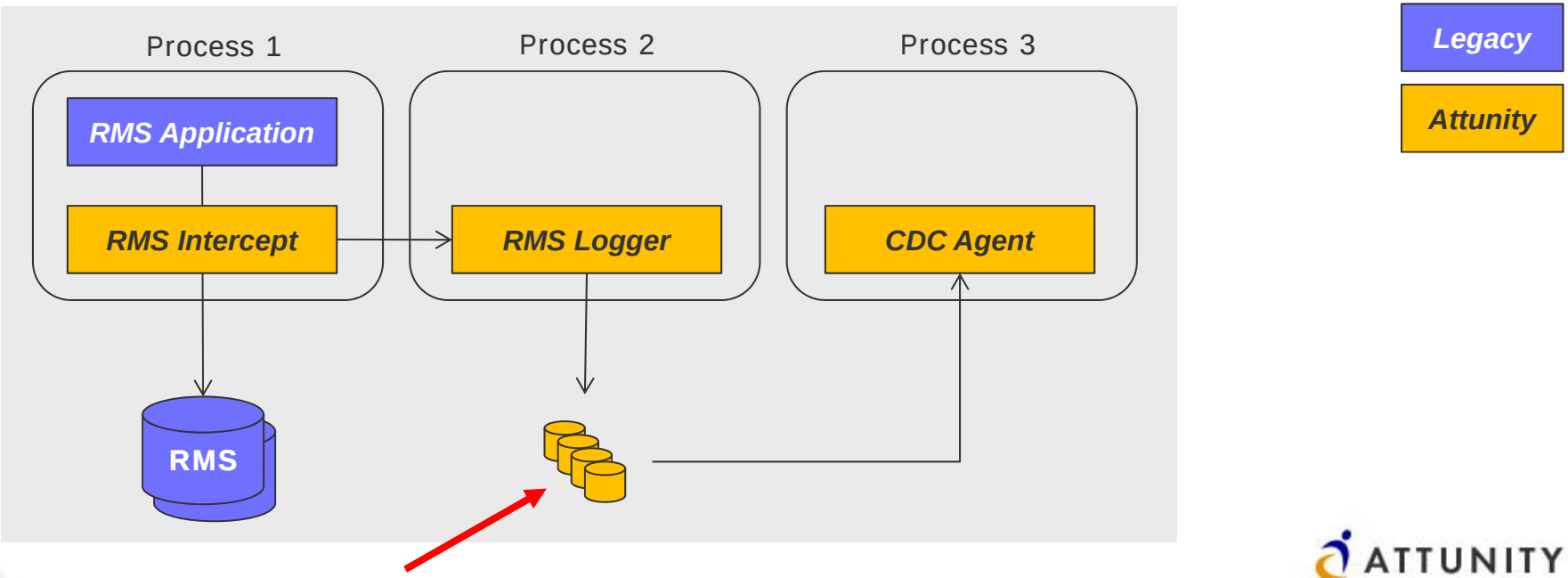
RMS CDC Architecture – Transient Storage

- **Transient Storage** – a sequence of typically-fixed size-sequential files holding the captured changes. When one fills up, a new one is created. (ALQ, DEQ, Max.). Utility to control attributes and force new logs if so desired (Daily?)



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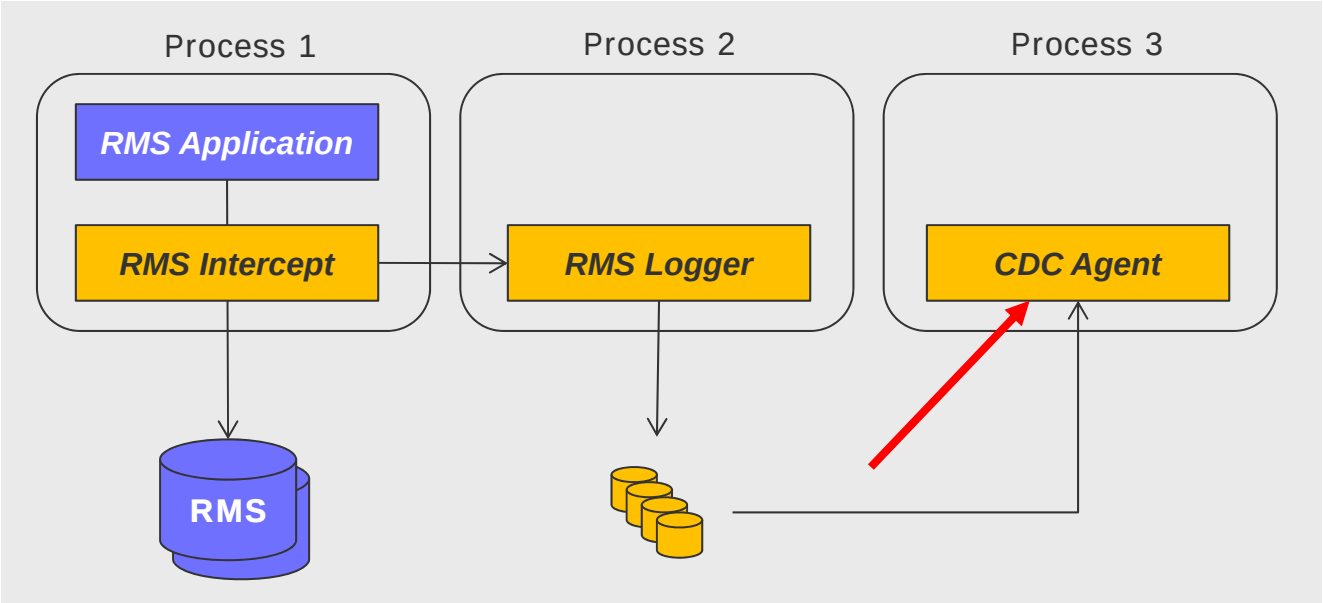
RMS CDC Architecture – CDC Agent

- Attunity **RMS CDC Agent** – Async to the capture process, it reads changes from the transient storage and propagates them to the change processor off platform. Single active agent per 'solution' (router on linux/windows). Failover as needed.



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Attunity RMS-CDC for SSIS

- **Complete solution for data replication**
  - Initial Load + Incremental Load
  - Supports any target (e.g. Oracle/Rdb, SQL Server,...)
  - Monitoring and Control

- **Leverage CDC for incremental load**
  - Log-based RMS CDC
  - Synchronized with Initial Load
  - Granular scheduling

- **Easy to Use**
  - Design-time with wizards in BIDS/Visual Studio
  - Automatic generation of metadata and packages
  - Runtime uses standard SSIS packages

Microsoft Visual Studio

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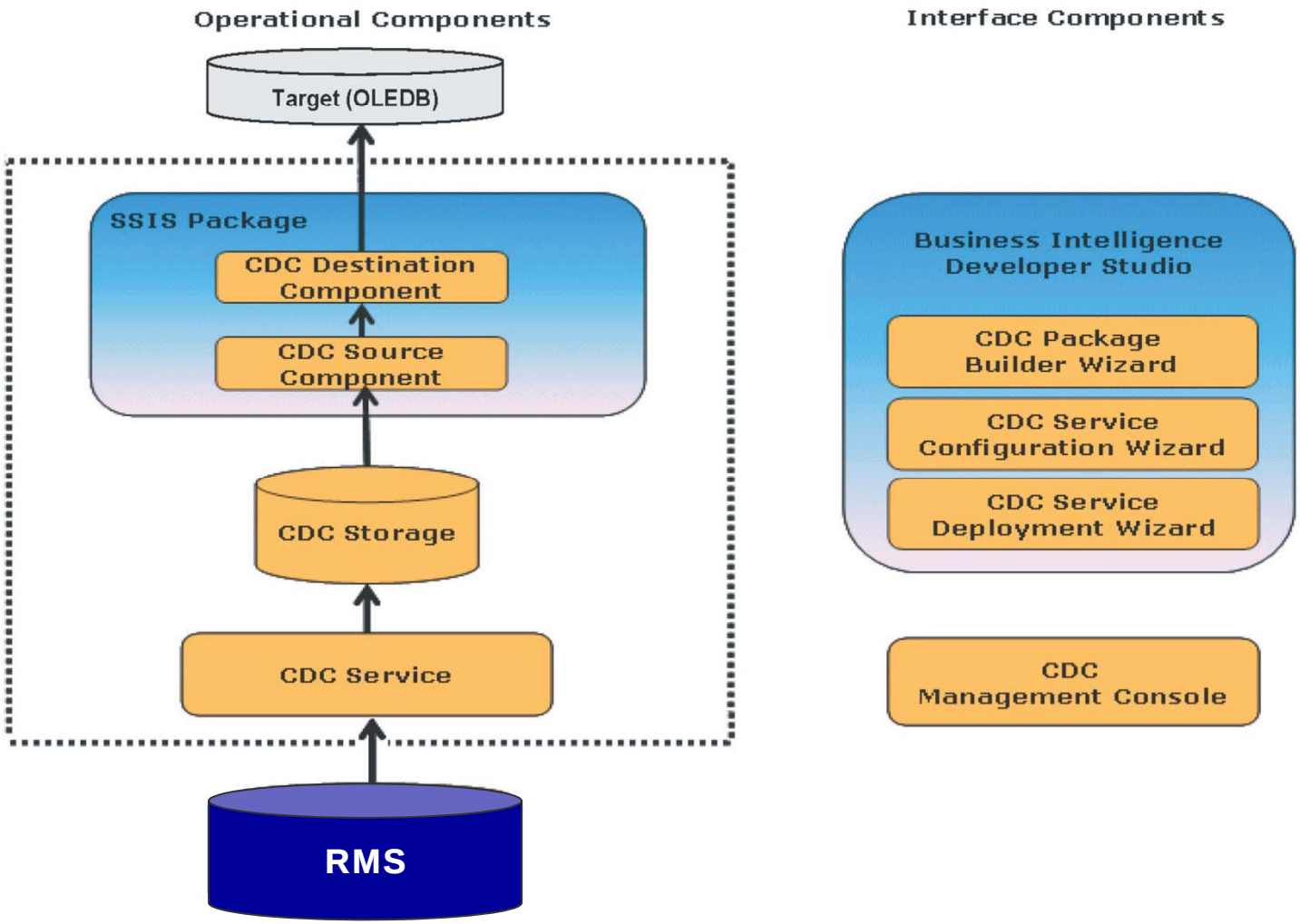
Attunity RMS-CDC for SSIS

Product Components



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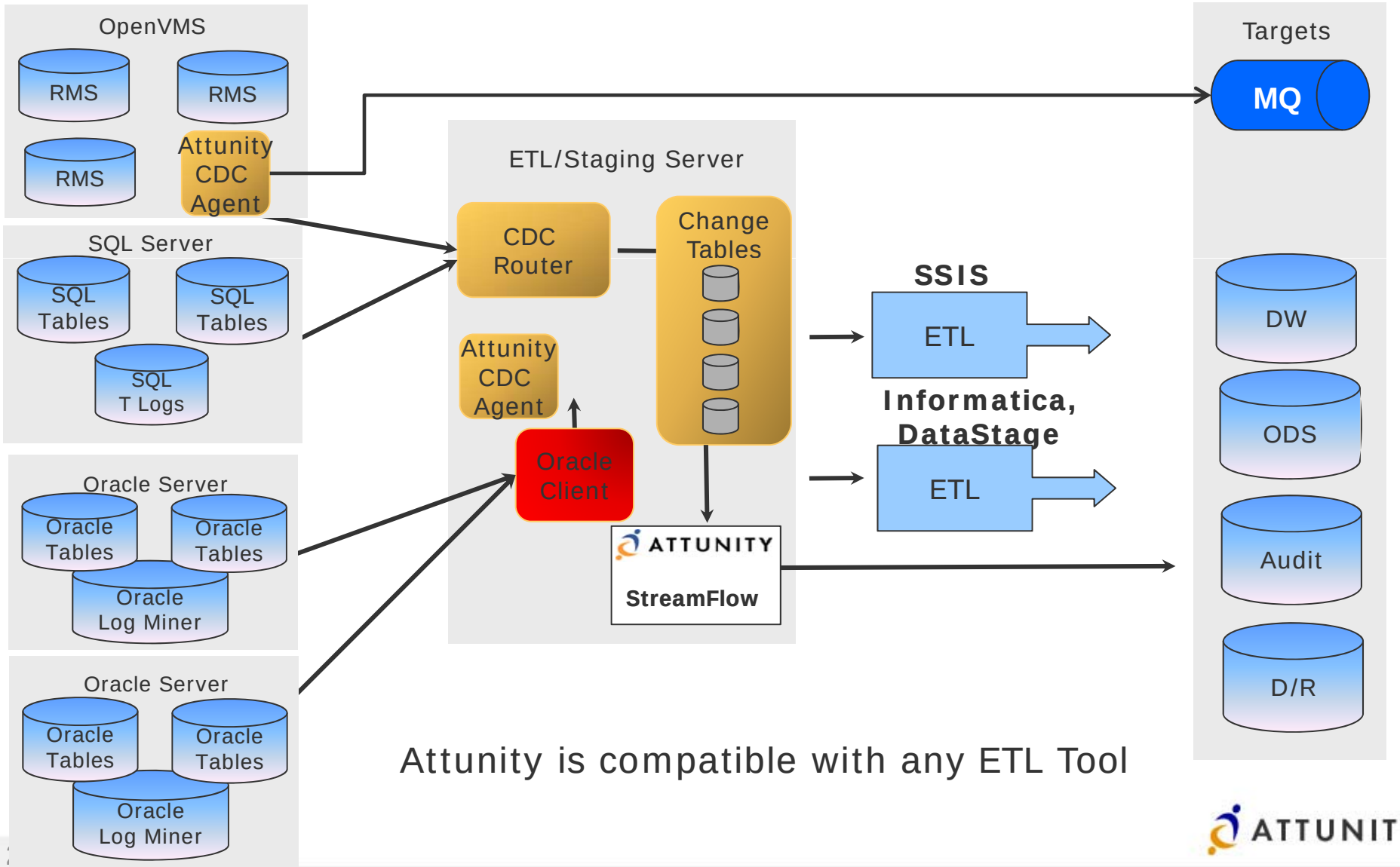
Attunity Stream for Multiple Consumers



Attunity is compatible with any ETL Tool

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Summary

- **Offload RMS data for reporting and BI**
- **Simplify data migration and modernization projects**
- **Synchronize RMS with other data sources**
- **Extract RMS data efficiently and in real-time**
- **Eliminate batch windows required to move RMS data**

Summary – About Attunity

Corporate

- **Real-time data integration & event capture**
- +15 years of expertise in data/legacy integration
- Worldwide operations with offices in US, Europe and Asia

Products

- **CDC and Operational Data Replication**
- Data Connectivity and Federation
- Legacy Adapters and Web Services

Customers

- **+400 direct customers worldwide**
- Technology of choice for HP, Microsoft, Oracle, IBM, …
- Thousands via OEM partners

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Next Steps…

1. Ask questions
2. Get started today with an evaluation
3. Check our introductory pricing for existing customers

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Thank You!