SQL Based Data Access

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Empowering Business in Real Time

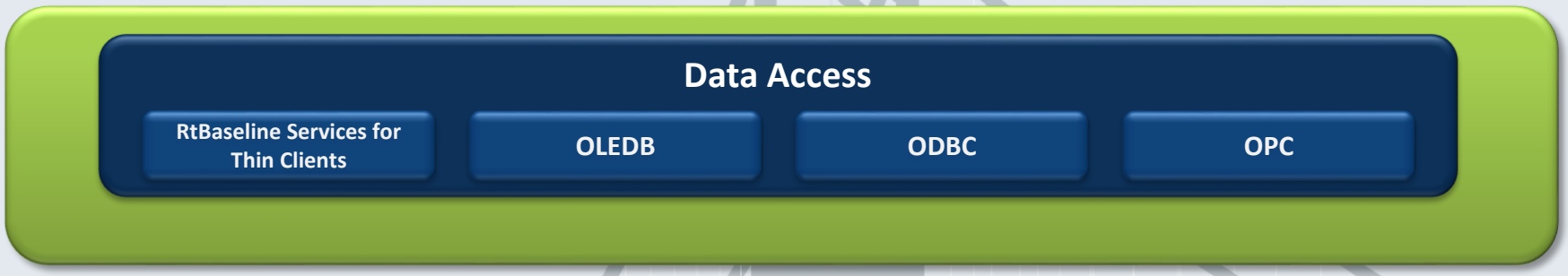
PI Infrastructure for the Enterprise

Agenda

- **New Architecture**
  - Motivation
  - PI SQL Data Access Server (PI SQL DAS)
  - Roadmap
- **PI JDBC**
  - PI SQL DAS 1.0
  - Cross Platform Demo
- **PI OLEDB 64bit (x64)**
  - Details
- **PI System OLEDB Provider 1.0**
  - Functionality
  - Demo
  - Future (Tag based data, Event Frames,...)

Data Access - Overview

PI Data is available via common standards

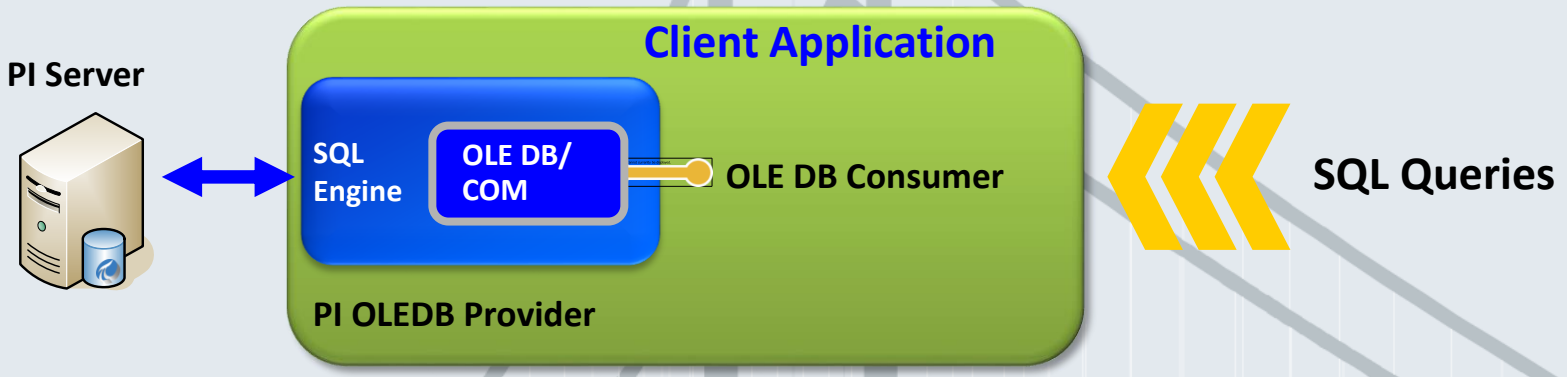


- WebServices (i.e. RtBaseline Services) – Provide Data to Web Applications
- OLEDB – Data Access via SQL Queries
- ODBC – Data Access via SQL Queries
- OPC DA/HDA/UA – Data Access to the PI System via OPC Standard

Data Access

Via PI OLEDB

- PI OLEDB provider allows applications (OLE DB consumers) working with PI data through SQL queries:

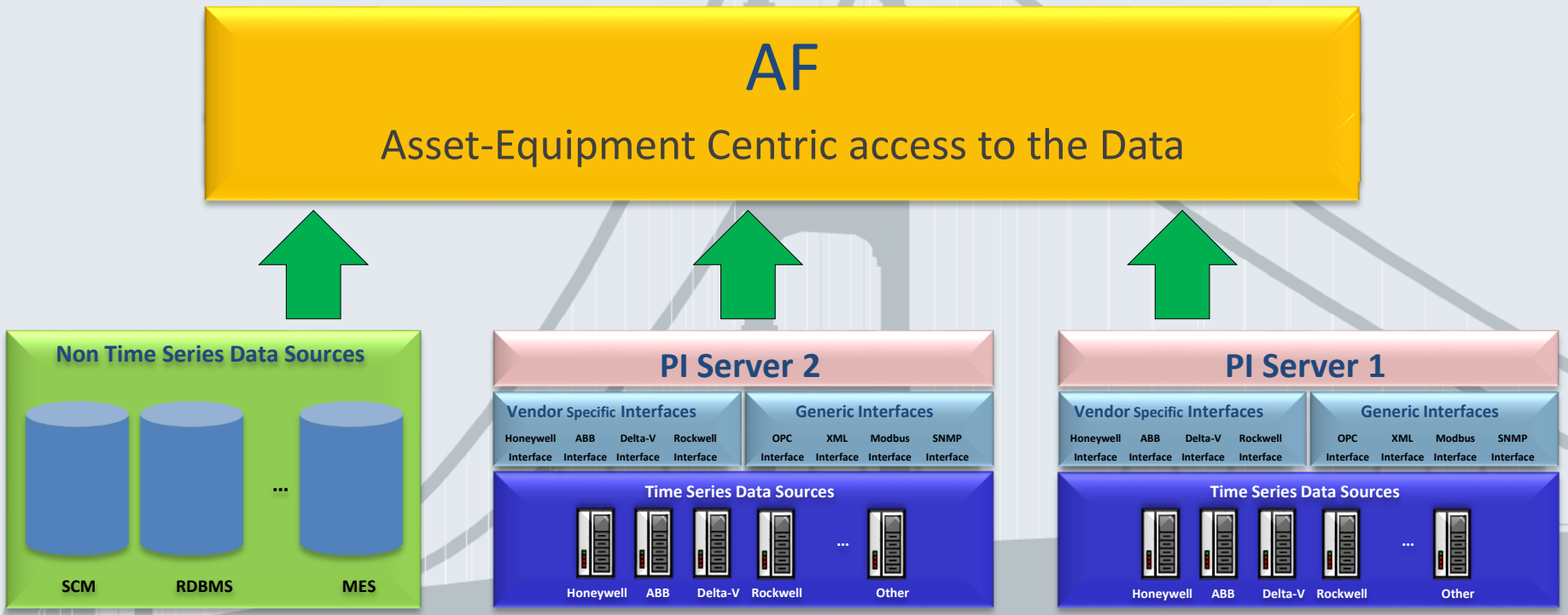


Next Generation – Motivation:

- renew PI OLEDB Architecture
- introduce JDBC and other data provider standards
- support „PI System“

AF in the PI System

- **Data structured and organized by Assets**
- **Spans multiple PI Systems**
- **Incorporates non time series Data**



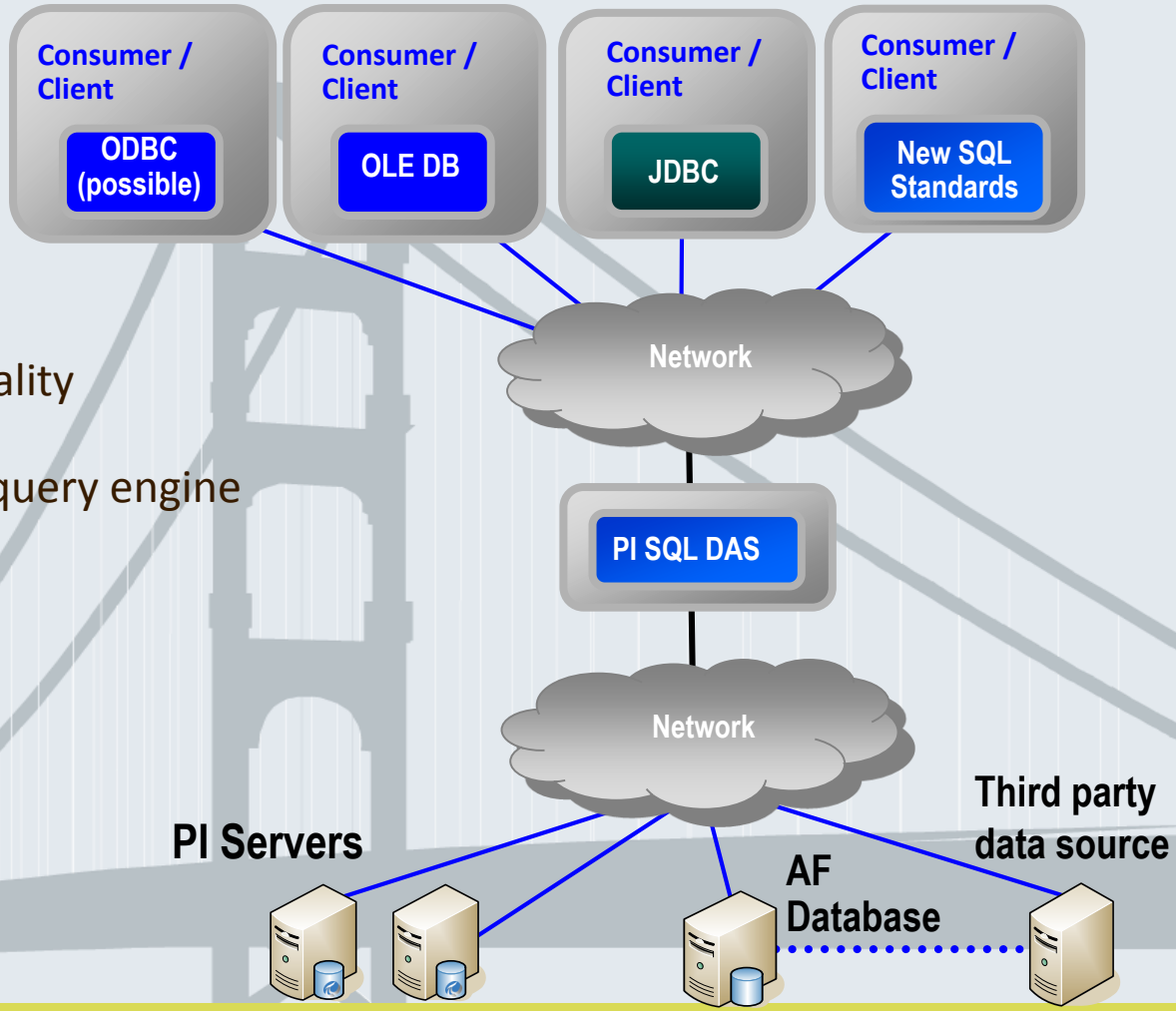
„Meta“-Data

Time Series Data

Time Series Data

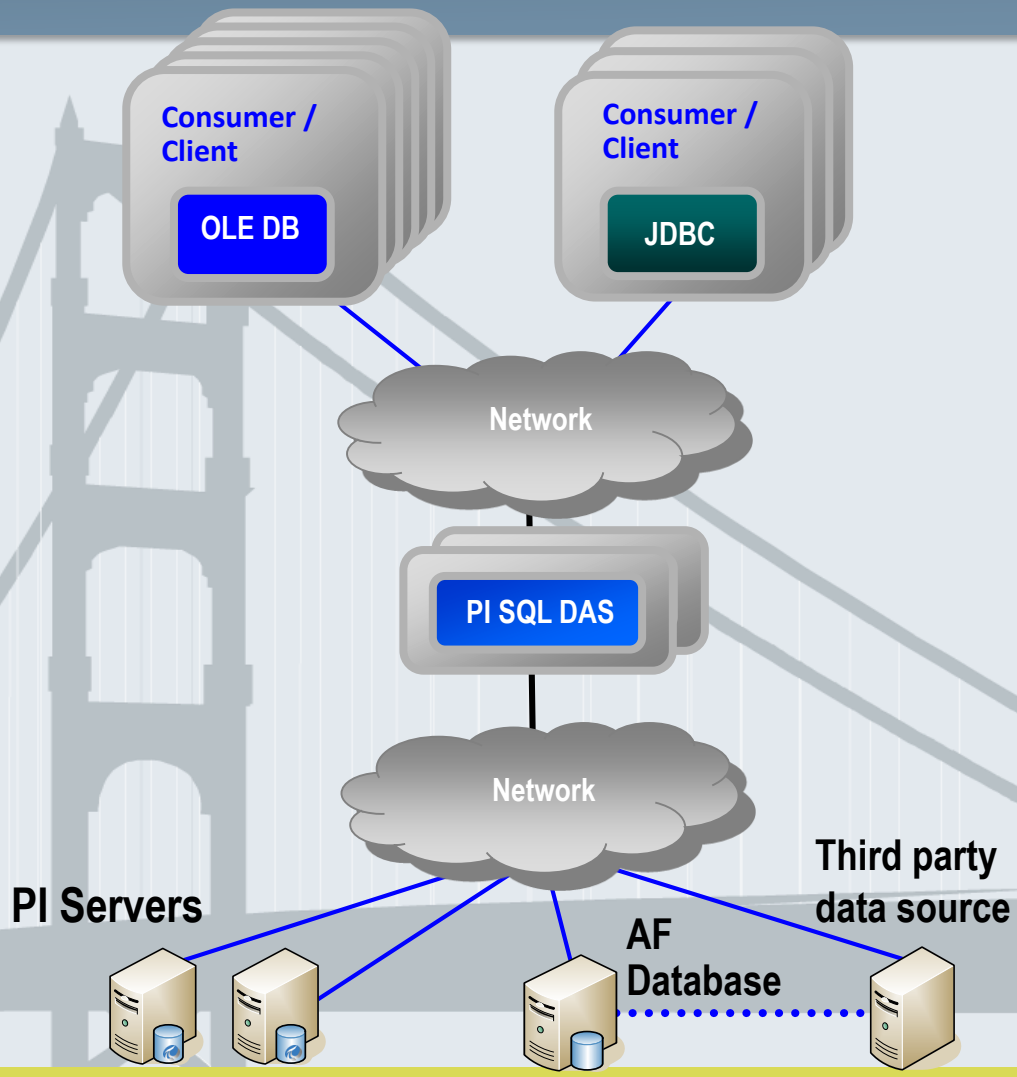
New Architecture

- Multi-standard and **multi-platform** architecture
  One connection allows querying multiple data sources
- Standard implementation separated from SQL functionality
- Prepared for **heterogenious** query engine



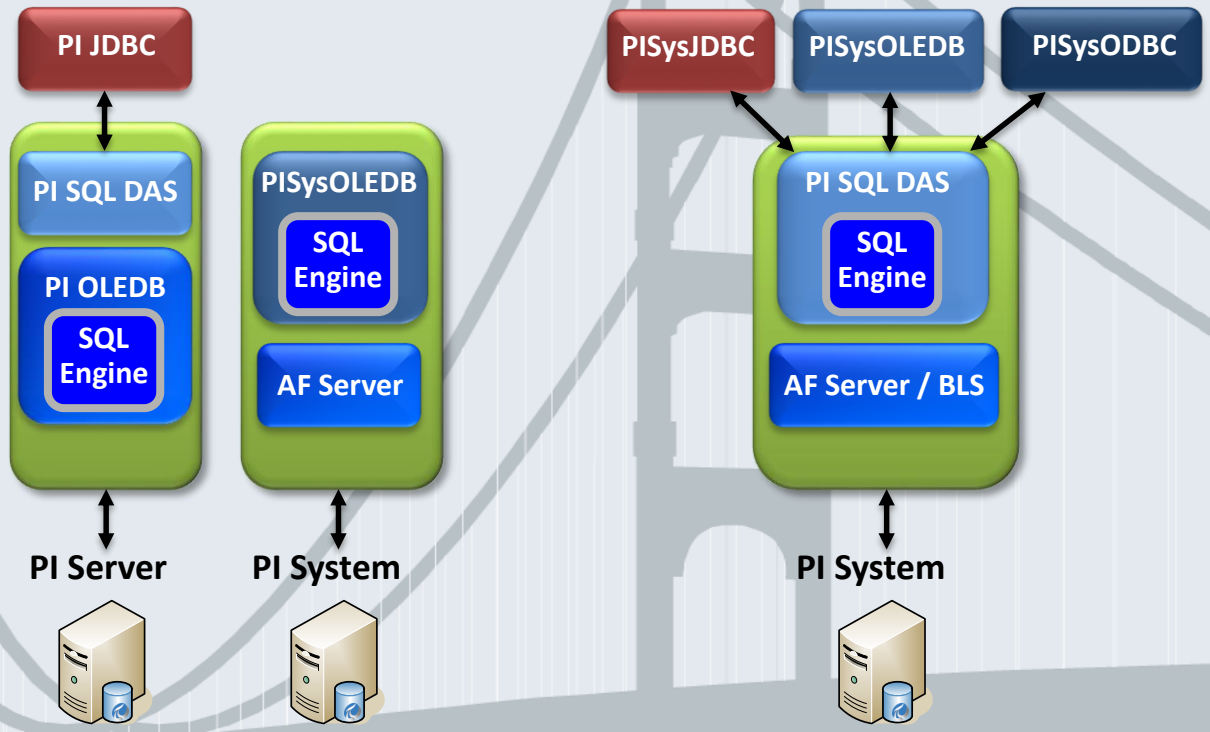
New Resource Management

- **Paging**
  - Protects server from huge data requests
  - Decreases memory requirements
- **Caching**
  - Smart memory management
- **PI SQL DAS Deployment options for example:**
  - 1x PI SQL DAS for Web Farm
  - 1x PI SQL DAS for Reporting
  - 1x PI SQL DAS for Clients



Roadmap

2008 — Use of new Architecture Components — 2011



PI JDBC

Architecture Details

Client Application

Multi-Platform

(Windows, Linux)

PI JDBC

RDSA

WCF C++

https

PI SQL DAS protocol

WCF

RDSA

PI OLEDB

Network

PI Servers

PI JDBC

- Windows + Linux
- requires PI OLEDB
- meant to support Java server apps

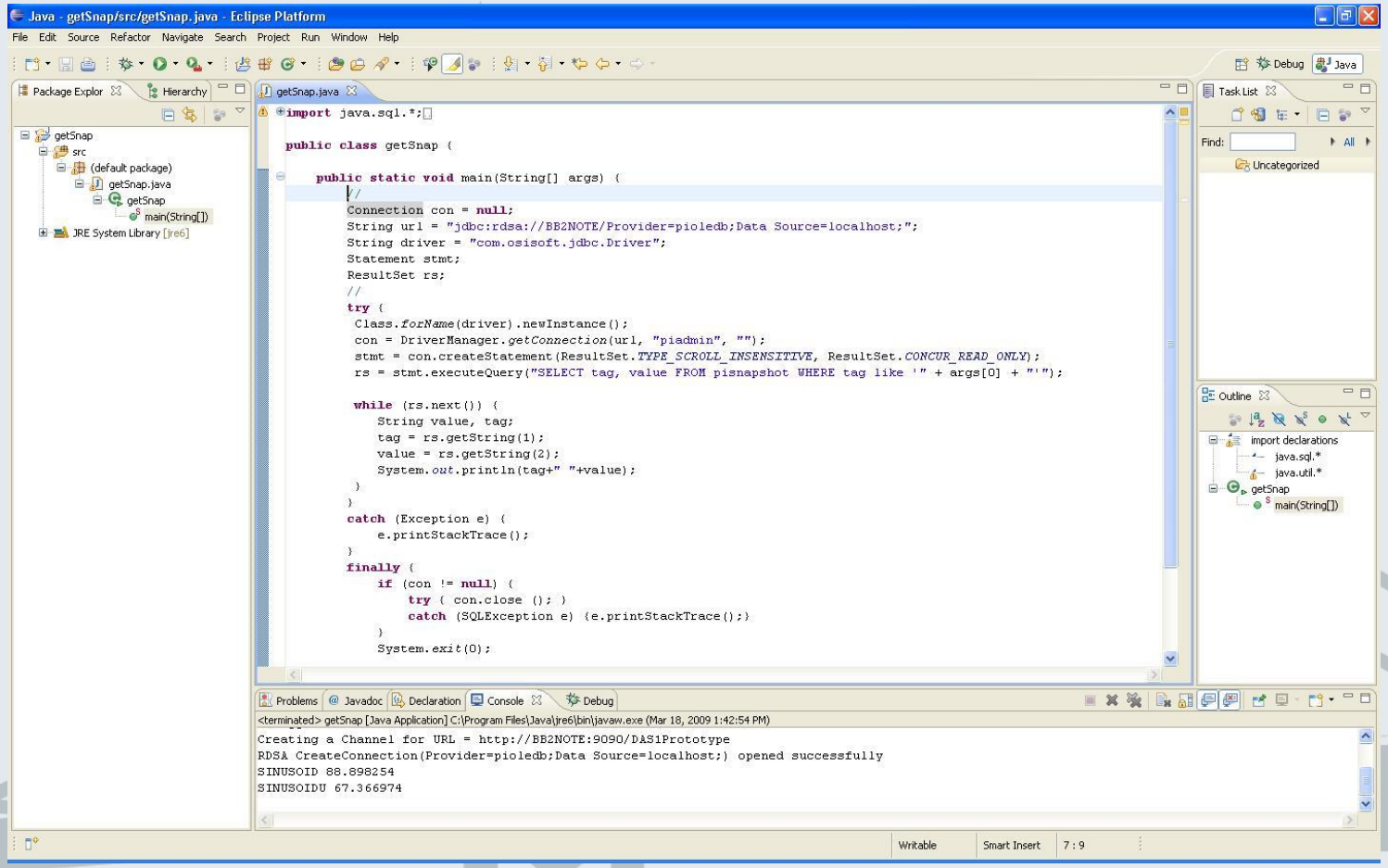
PI JDBC

- **PI JDBC Details**
  - bridge to PI OLEDB (Type 1 JDBC driver)
  - based on JDBC 4.0 API (Java Platform SE 6)
  - same table structure, same SQL functionality as PI OLEDB
  - Multiplatform
    - » Will work on many Linux Distributions
    - » Testing concentrates on Windows,
      Novell Suse Linux Enterprise Server and Red Hat Enterprise Linux
  - best option for JAVA based development

- **Limitations**
  - PI OLEDB is multithreaded but not designed as backend
  - additional communication infrastructure overhead
  - amount of supported OS limited because network component is OS specific

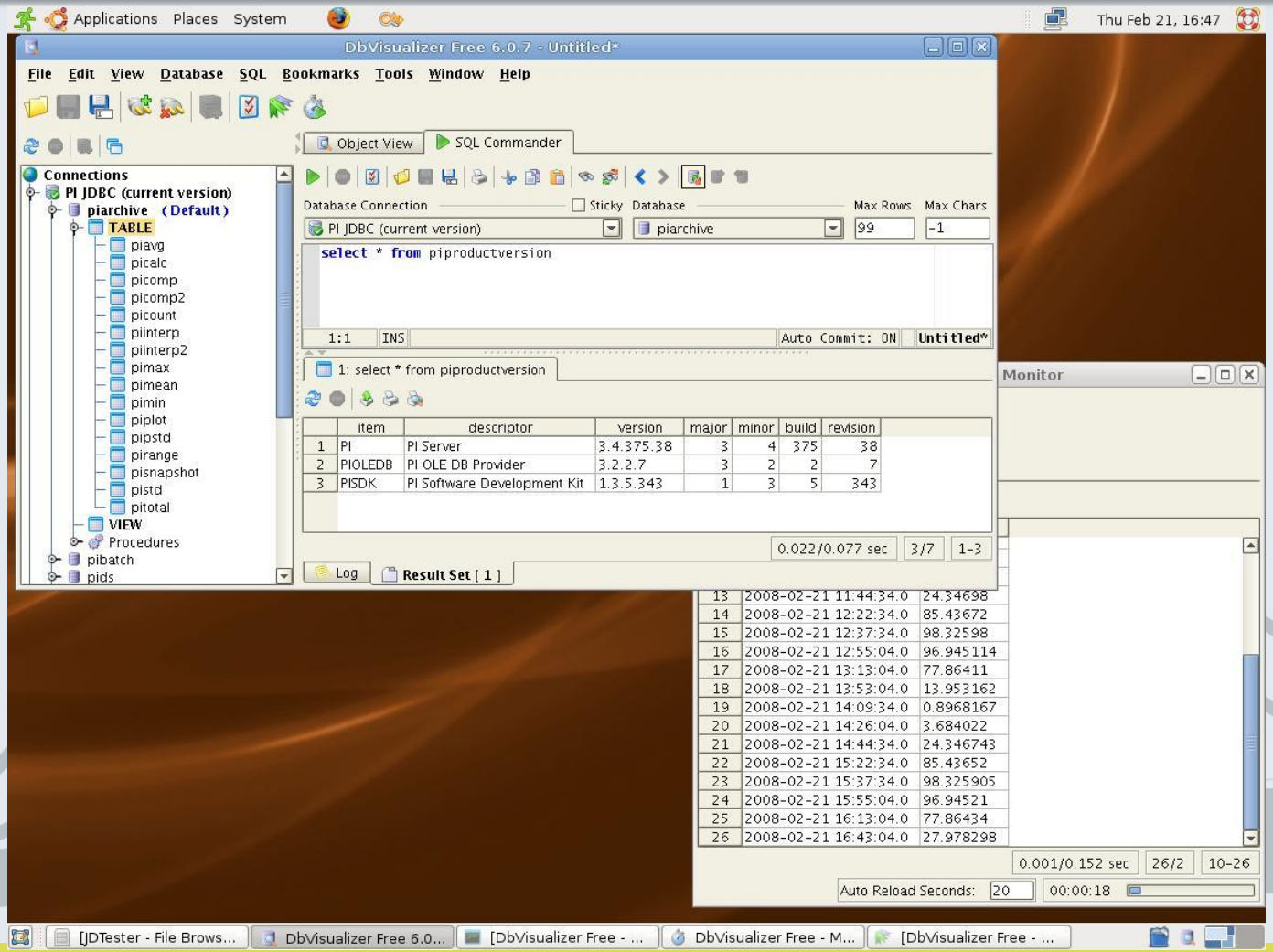
PI JDBC Demo

- **getSnap** JDBC application
- Compile in Windows version of **Eclipse**
- Run on **Windows and Linux** without additional work



PI JDBC Demo

- **Linux** (ubuntu)
- **DBVisualizer** allows to access and explore any jdbc Driver
- **PI JDBC (Bridge)** talking to PI OLEDB

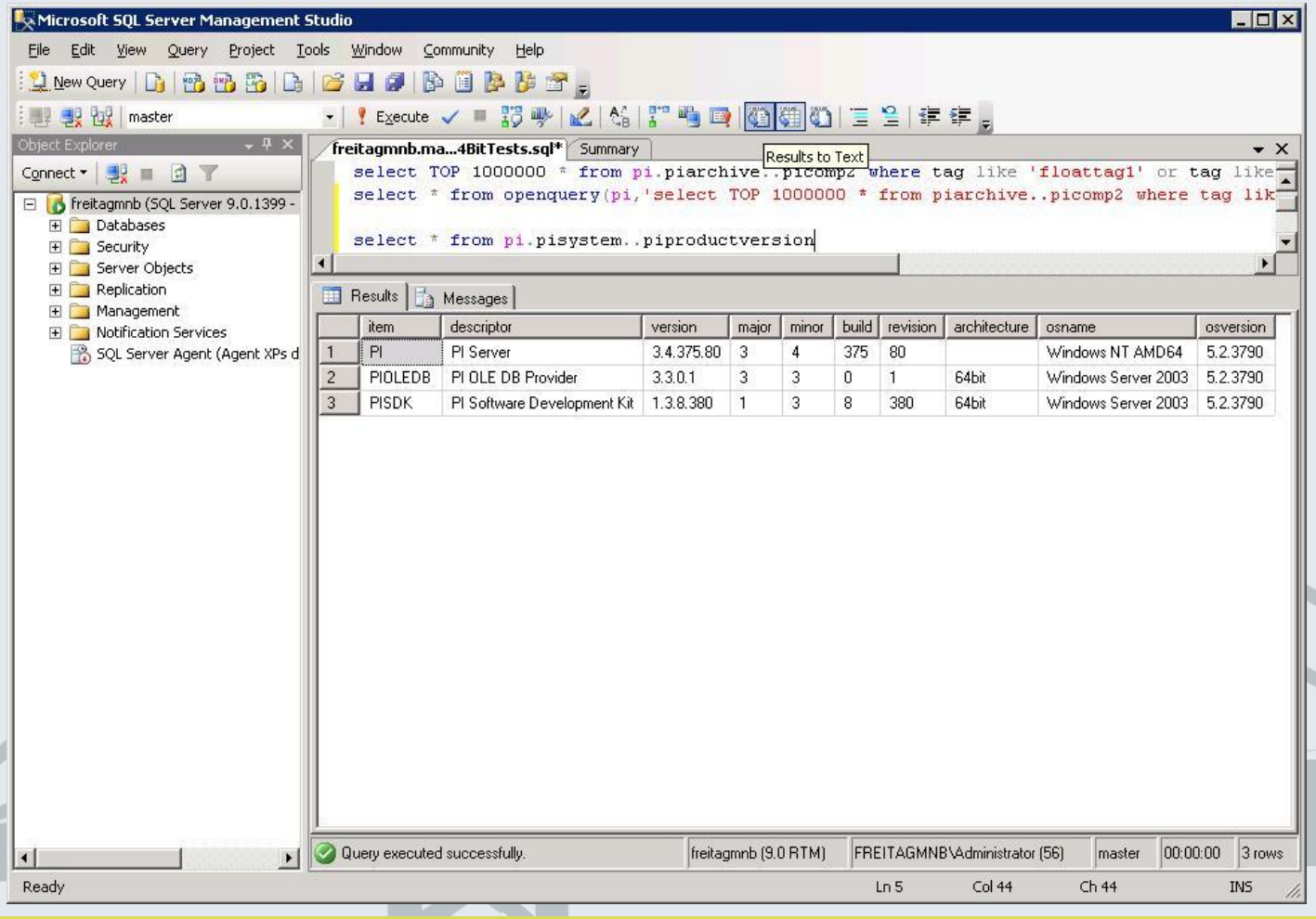


PI OLEDB 64bit

- can coexist with 32bit PI OLEDB version on 64bit Windows (x86-x64)
- transparent to applications if both versions installed
- required for 64bit SQL Server Linked Server
- requires 64bit PI SDK
- comes as seperate setup kit

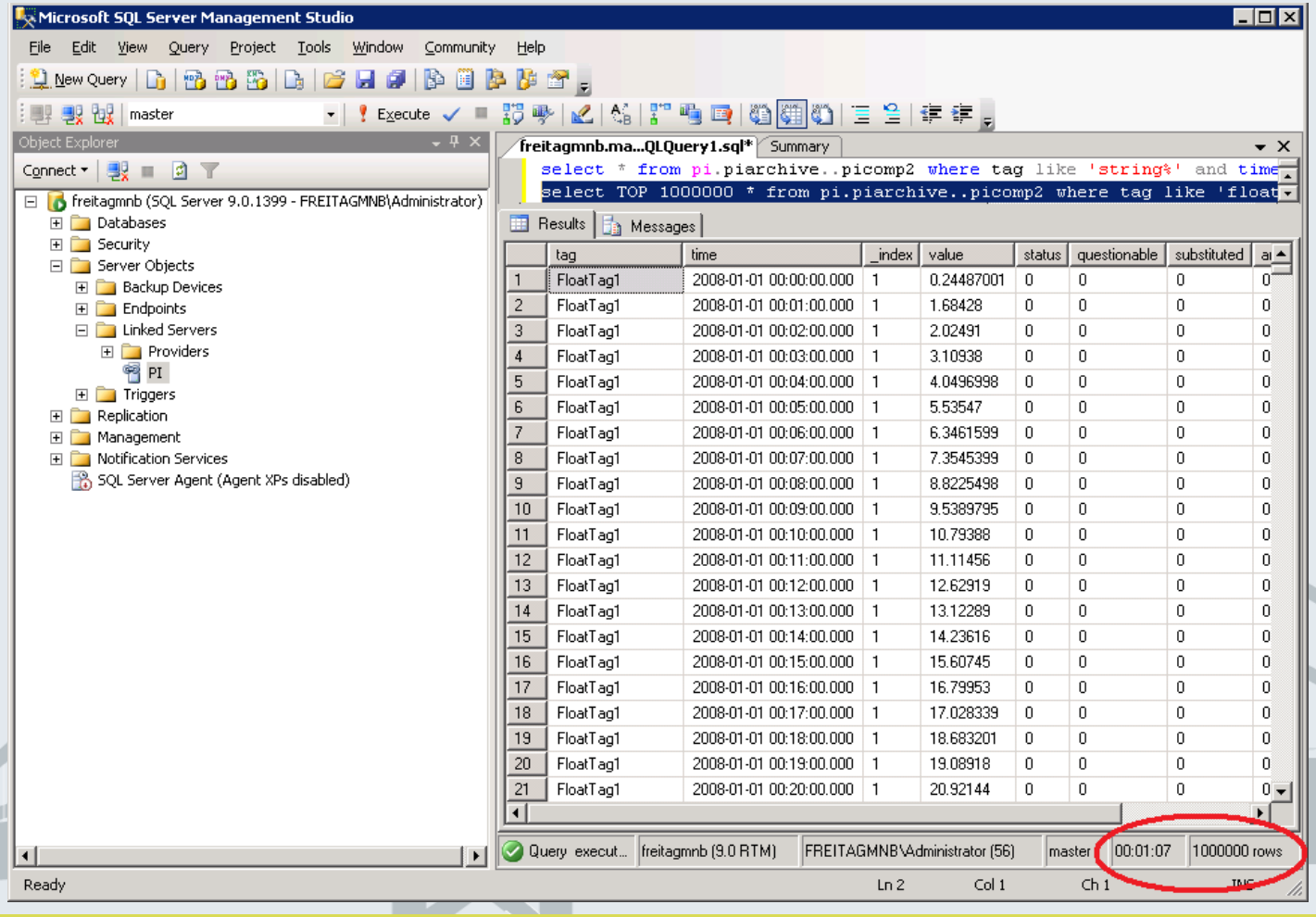
PI OLEDB 64bit

- check version via architecture column in **piproductversion** table



PI OLEDB 64bit

- Increased **performance** for large resultsets

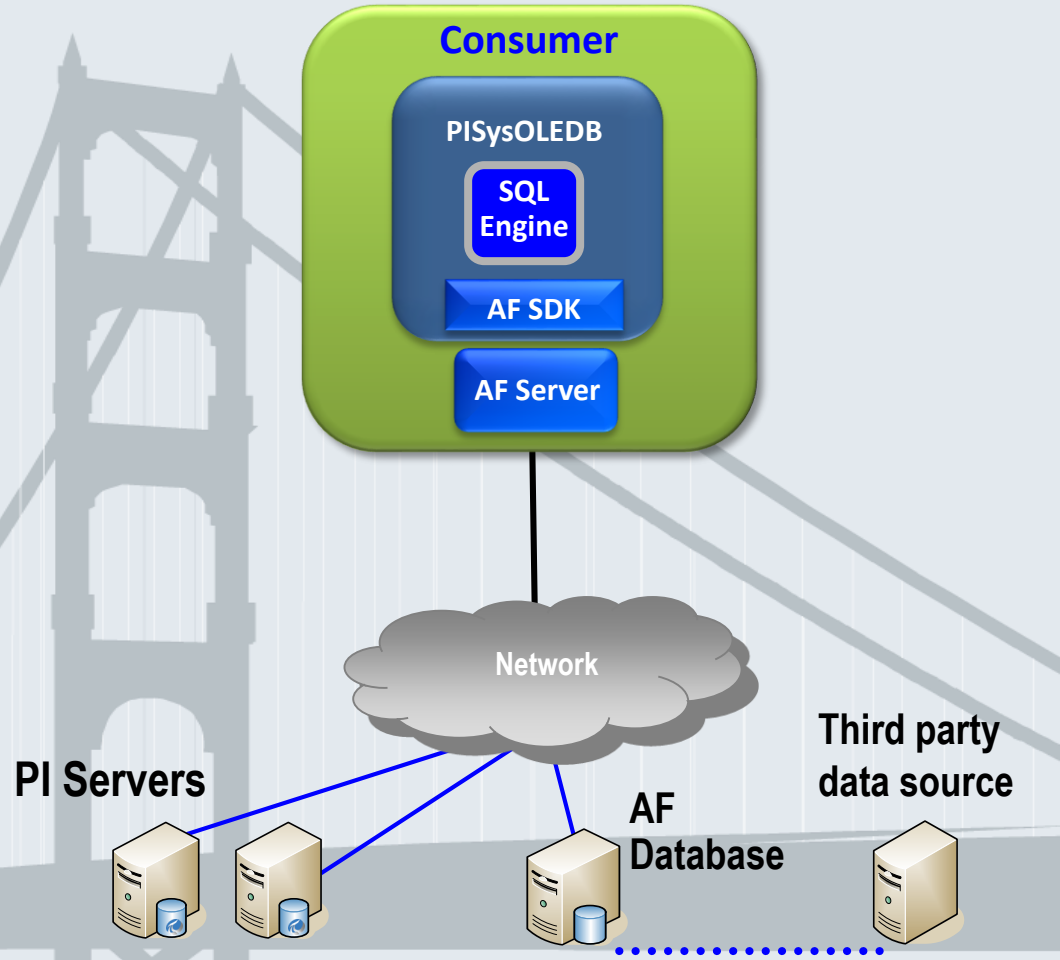


PI System OLEDB v1

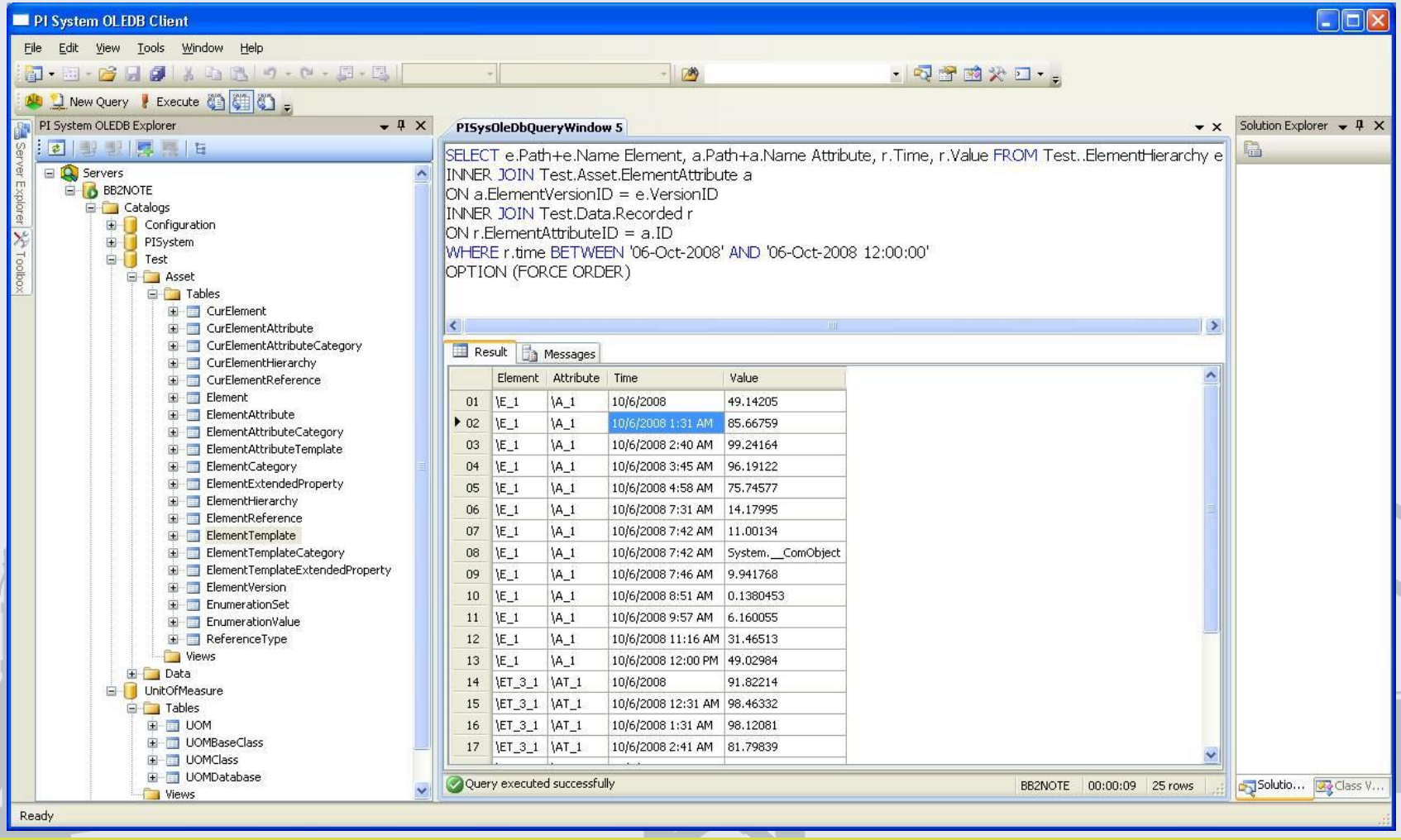
Architecture Details

PISysOLEDB version 1

- Windows based
- Linked to AF SDK (bypass object model)
- Access via AF Server
- Read-only



PI System OLEDB v1 Demo



Summary

- **Upcoming releases**
  - PI JDBC
  - PI OLEDB 64bit
    - » Release schedule ~ Q2/2009
  - PISysOLEDB v1
    - » Beta scheduled ~ Q2/2009
    - » Release schedule ~ Q4/2009
- **PI SQL DAS v2 based products in development**
  - PISysOLEDB v2
  - PISysJDBC