



THE SAVANT



SAVANT RELEASE

- Alpha version of the Savant is available for evaluation
- Documentation is available on CD

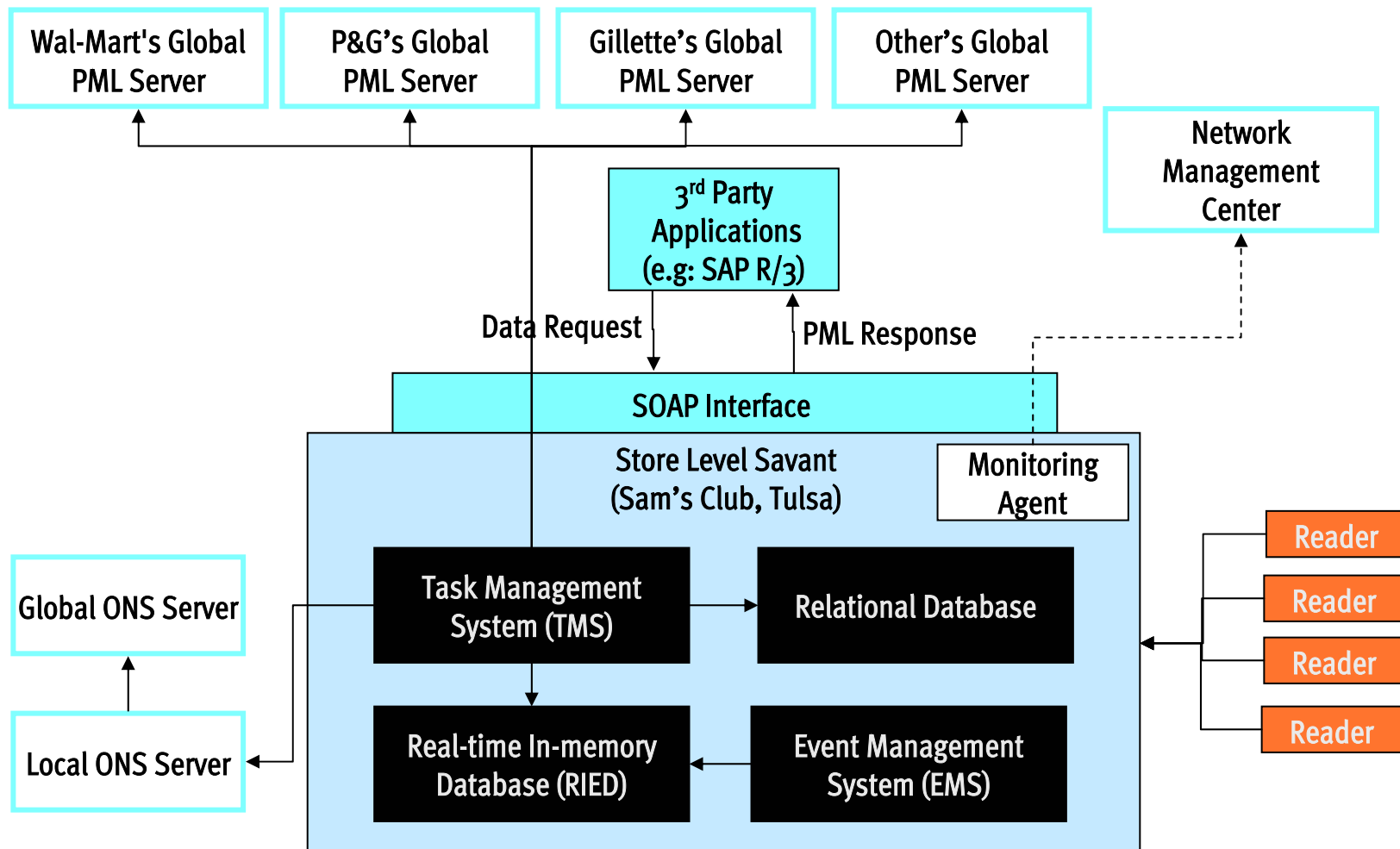


SAVANT

- Savant is a system for capturing and monitoring EPC data
- Savant is a self-replicating system that can be used at a store regional or national level for localized data monitoring
- Savant has a number of different components



COMPONENTS OF THE SAVANT





EVENT MANAGEMENT SYSTEM (EMS)

- Event Management System captures, filters, broadcasts & logs EPC data
- EMS has a number of components



COMPONENTS OF EMS

- Reader Adapter
Communicates with the readers to capture EPC events
- Event Queues
Asynchronous queuing system that captures EPC data from various reader adapters and broadcasts the data to multiple event loggers
- Event Filters
Gets data from one or more input event streams and posts the data to multiple output streams, after filtering the data.
- Event Loggers
Logs data to a database, memory model or a remote server (HTTP, SOAP, JMS)



PERFORMANCE STATISTICS

- Hardware & Software Configuration:
DELL PowerEdge Server 2500, with 1133MHz Intel Pentium III processor, 512KB cache, and 512MB RAM, running Blackdown release Java 1.3.1
- Test Scenario
The test involved sending 1 million events through an Event Queue of size 100K events. The Event Logger simply maintained the number events received
- Performance
10.3 μ s/EPC Event (~95,000 EPC Events/sec)



REAL-TIME IN-MEMORY EVENT DATABASE (RIED)

- Real-Time In-Memory Event Database is used to maintains latest event information by the Edge Savants

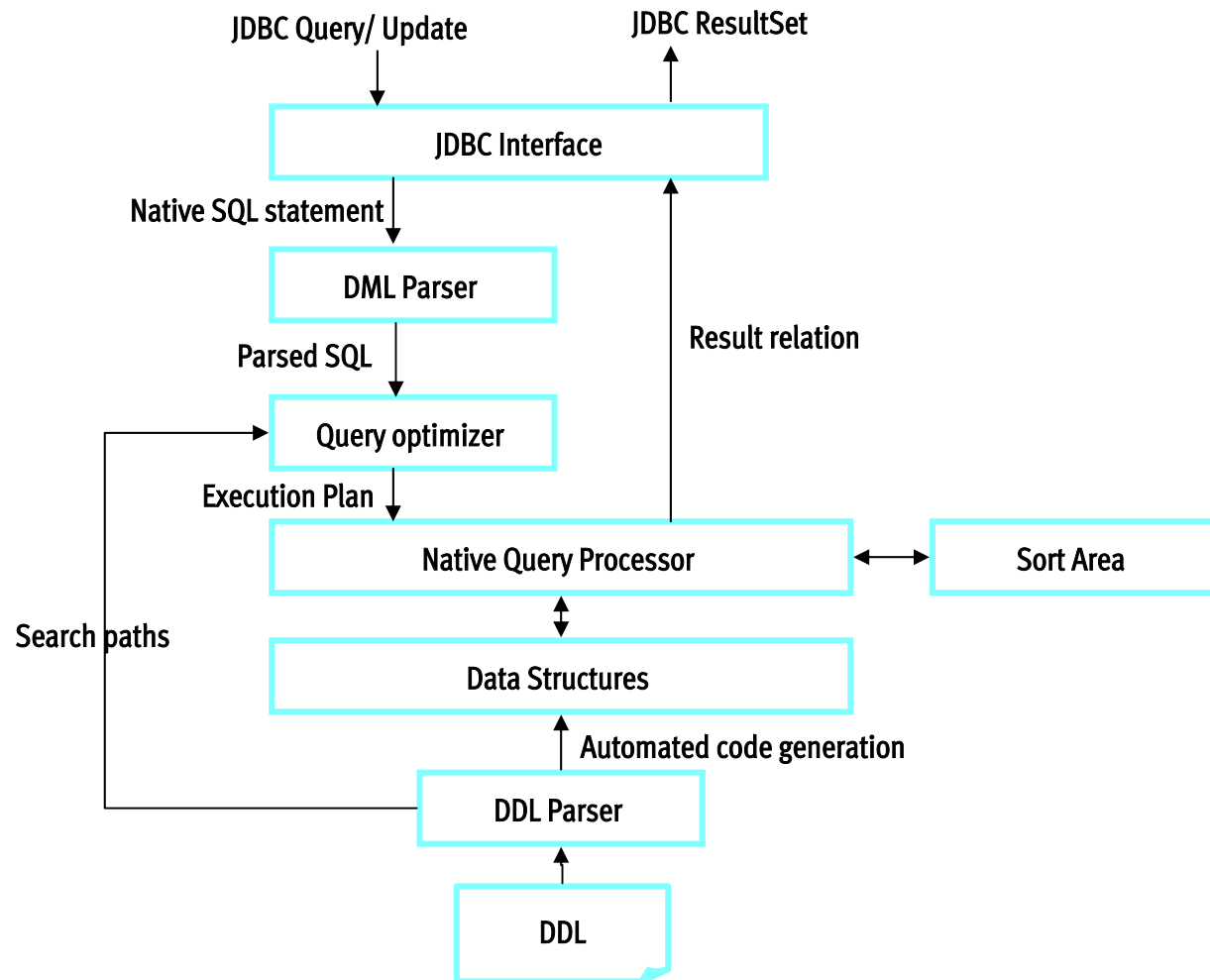


RIED - REQUIREMENTS

- High-performance in-memory database
- Database should be able to maintain multiple snapshots
- Provide a standard interface (JDBC) to access and manipulate data



RIED – ARCHITECTURE





HOW TO ACCESS RIED

- RIED can be accessed through
Native Interface
JDBC Interface



PERFORMANCE STATISTICS – PERSISTENT DATABASE

- Hardware & Software Configuration:
DELL PowerEdge Server 2500, with 1133MHz Intel Pentium III processor, 512KB cache, and 512MB RAM, running Blackdown release Java 1.3.1, PostgreSQL (7.0.2)
- Test Scenario
Test involved sending 100K events to a database logger. The database already contained 200K events when the test started. Every event was logged in the observation table. The latest observation for each EPC is maintained in a parent table called object. ([Schema](#))
- Performance:
10 ms/event logged (100 events/second)



PERFORMANCE STATISTICS – RIED

- Hardware & Software Configuration:
DELL PowerEdge Server 2500, with 1133MHz Intel Pentium III processor, 512KB cache, and 512MB RAM, running Blackdown release Java 1.3.1, PostgreSQL (7.0.2)
- Test Scenario
Every event was logged in the latest_epc_observation table. This logger performs “smoothing” by associating each object EPC to exactly one reader EPC at any time. Any read from a different reader is logged only if the latest timestamp entry for that EPC is older than 2 seconds. ([Schema](#))
- Performance:
66.5 μ s/event logged (15,000 events/second)

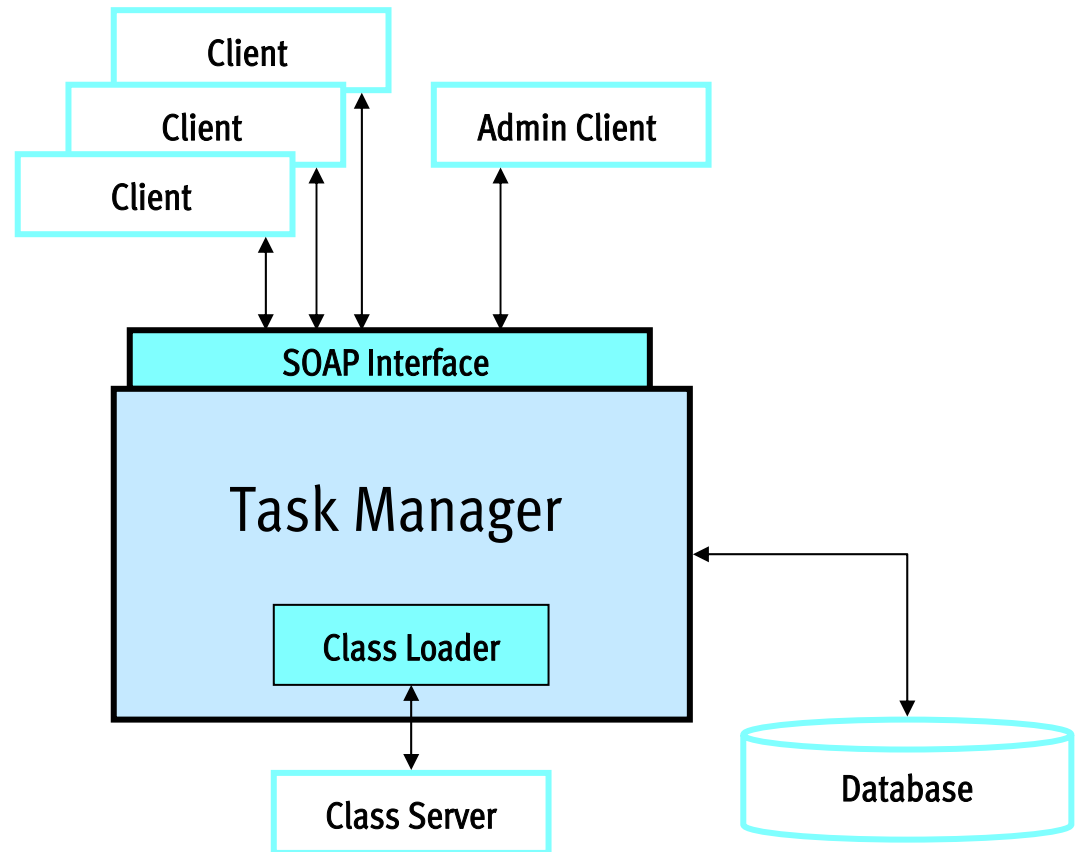


TASK MANAGEMENT SYSTEM (TMS)

- The Savant performs data management, and data monitoring using customizable *tasks*
- Task Management System (TMS) manages tasks as operating system manages processes



TMS - DESIGN





TYPES OF TASKS

- One-time task
The Task Manager spawns the query task and returns the result.
- Recurring task
The Task Manager maintains the recurring schedule in a “persistent store” and then executes the task given the schedule.
- Permanent task
This task is executed continuously by the Task Manager. The Task Manager periodically monitors the task and in case of any failure the Task Manager re-spawns the task.

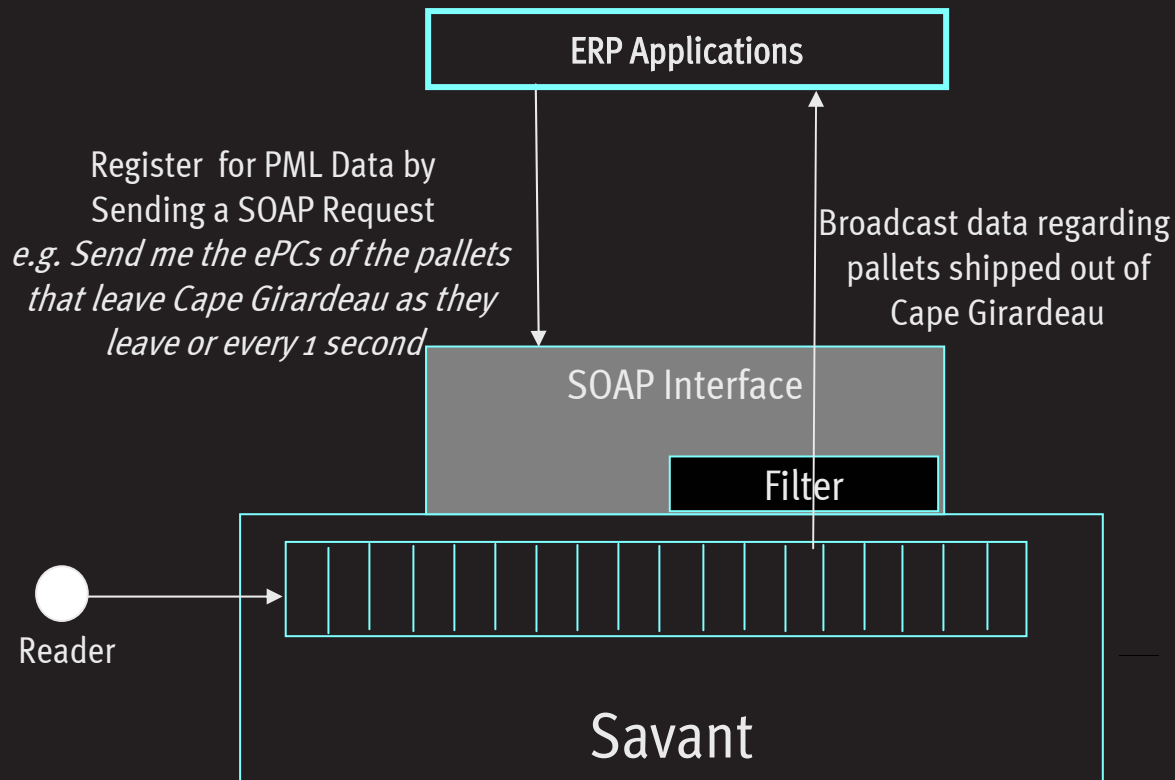


3RD PARTY APPLICATIONS SUBSCRIBING TO EPC DATA

- 3rd party applications can receive EPC data in real-time by subscribing to public event queues through published SOAP interface
- Applications can receive EPC data in batch mode by subscribing to batch dispatchers through SOAP interface



ERP INTERFACE – CONTINUOUS DATA BROADCAST



Filters

- Currently we have filters to filter data by

- ePC
- ePC prefix
- Reader/Location
- PML Attributes



SUMMARY

- Alpha version of the Savant is available now
- Savant is a system for capturing and monitoring EPC data
- Has multiple components for:
 - Event Management
 - Real-time In-memory Event Database
 - Remote Maintenance
 - Task Management
- Provides standard interface for 3rd party applications



FUTURE WORK

- Next version of remote monitoring & maintenance of the Savant and all its components
- Remote software upgrades of the Savant and key tools (JRE, Apache)
- Provide RIED snapshot management system
- Security infrastructure



QUESTIONS?