

# Actian X and X100

## Combining Record Breaking Analytics with Enterprise OLTP

### Key Benefits

Record breaking analytics combined with enterprise OLTP

Simple, incremental addition of analytic capability to existing Ingres applications

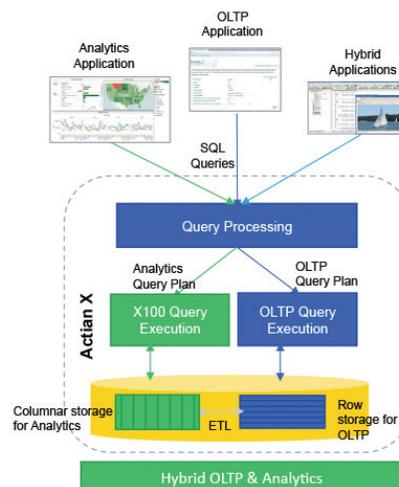
Integrated solution means time to value and TCO are very low

Big benefits with negligible load cost

## Introducing Operational Analytics for Actian X

With the release of Actian X Hybrid Database, Actian introduces an exciting, operational analytics capability. The X100 engine, from Actian's analytic database 'Vector', brings to your Actian X instance the power of column-based data-storage, x86 vector-processing with in-cache direct decompression, and other notable technical advances. The result is that you can now harness this unique, innovative capability for incredibly fast and efficient reporting and analytics queries in your Ingres installation alongside OLTP.

### A New Type of Application – Operational Analytics



Integrating X100 in Actian X enables a new class of application that can mix OLTP and analytic queries – with each query being directed to the appropriate execution engine. An X100 table can be created and populated with just the data needed for reporting or analytics. The X100 components are designed from the ground up for reporting and analytic performance, and to minimize the effect on OLTP operations. Query syntax and connections methods don't change, so time to performance improvement is minimal.

### Creating Hybrid Analytic/OLTP Ingres Applications is Surprisingly Simple

Harnessing the X100 capability in Actian X takes just a few steps:

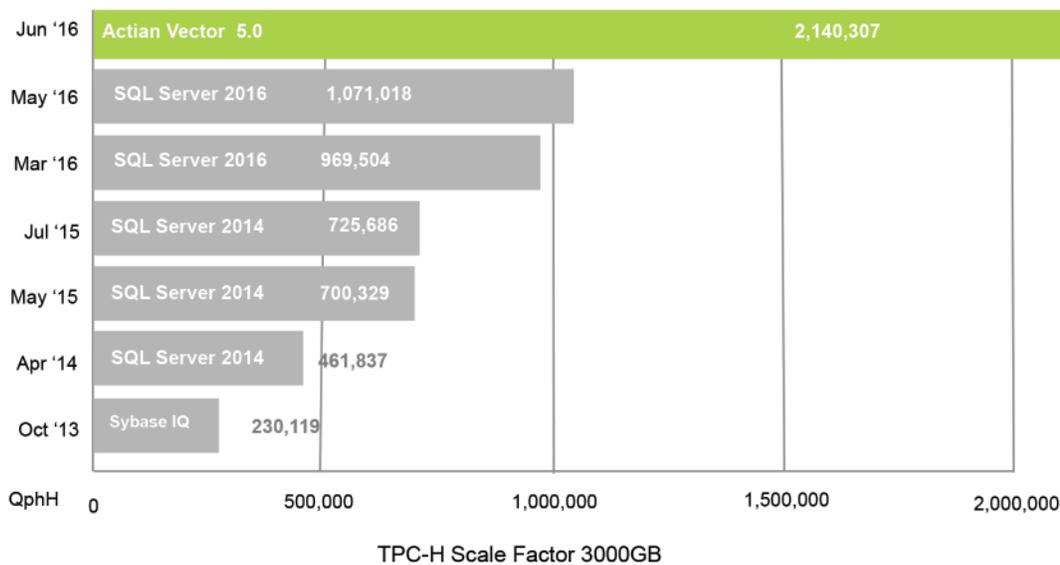
- Create analytics specific tables with STRUCTURE=x100
- Populate the X100 tables with just the data needed for analytics (subset of OLTP data)
- Create an external process to periodically update the tables (SQL, Actian DataConnect)
- Use the same queries and access methods as before. Actian X automatically directs the queries (via the table structure) to send to the X100 engine for processing
- Reporting and visualization tools will connect to the database instance as normal

Action X with X100 makes enabling operational analytics easy because:

- Single vendor, integrated solution
- Use existing hardware (Note: modern CPUs show best results),
- Same vendor, same support contract, same dba skills
- No special data model required – nor are indexes or constraints required for performance
- Run the queries you have always run – only faster!
- Take advantage of more standard syntax analytical capabilities
- Virtually no tuning required
  - No indexing
  - No materialized views
  - No pre-aggregated cubes
  - No compression configuration
  - No complex block size configuration
  - No complex table structure decisions

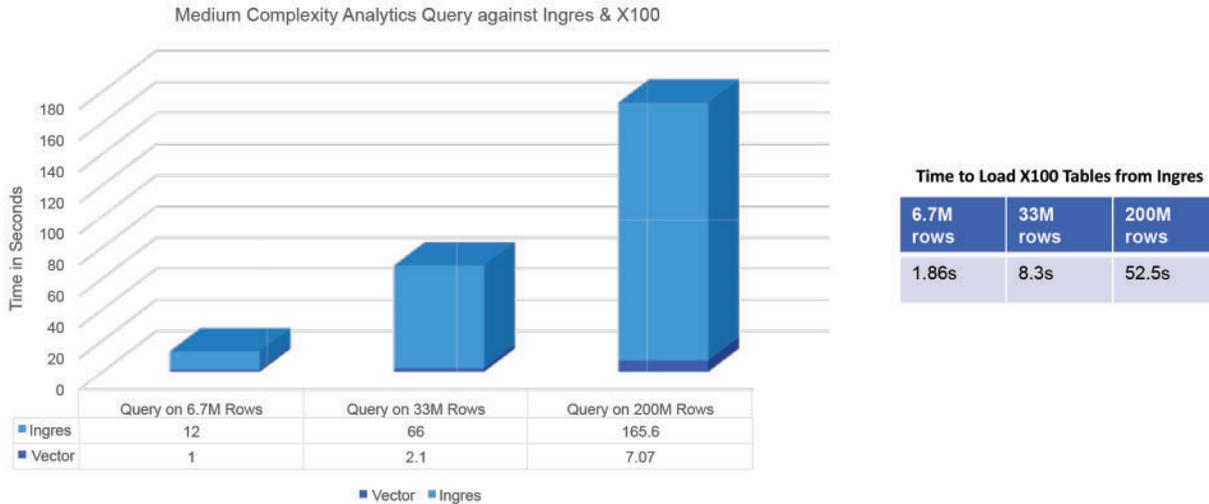
### X100 Brings Record Breaking Performance to Action X

**Twice as fast as the nearest competitor**



Source: [http://www.tpc.org/tpch/results/tpch\\_perf\\_results.asp?resulttype=noncluster](http://www.tpc.org/tpch/results/tpch_perf_results.asp?resulttype=noncluster)

## Huge Analytics Query Benefit/Negligible X100 Load Cost



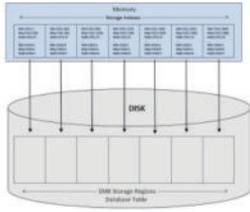
X100 shows orders of magnitude performance improvements with medium complexity analytics queries compared to standard Ingres OLTP results. One time load cost to populate the X100 tables is negligible.

## X100 – Analytic Technology Innovation

X100 unlocks performance features in modern CPUs, removing the need for extensive or ongoing tuning by the DBA

<h3>Vector Processing</h3> <p>Patent pending Actian technology enabling the same operation to be performed on multiple data point simultaneously</p>	<h3>Exploiting Chip Cache</h3> <p>Data processing on chip cache is 100x faster than in RAM</p>
<h3>2nd Generation Column-based Storage</h3> <p>Positional Delta Trees enable online updates, minimize disk I/O and are less CPU intensive</p>	<h3>Smarter Compression</h3> <p>Compression is performed in the CPU for maximum throughput</p>

### Storage Indexes



Quickly identify candidate data blocks, minimize I/O

### Multi-core Parallelism



Data is processed in parallel using any number (configurable?) of CPU cores, delivering optimal performance on commodity hardware

### Activate Your Data

With the new X100 capability, Actian X developers can easily improve reporting and BI performance and expand the value of their applications by adding analytic features. With the X100 capability integrated into Actian X, developers start by copying reporting and analytic data into X100 tables and using familiar queries, reporting and visualization tools - with no changes to the application. Results will be immediate and impressive - X100 technology is part of the world's fastest analytics database from Actian. Adding complex analytics features to existing applications (for example, adding historical trending, averaging, change rates) will be almost as easy, and because of X100's performance gains, many queries will run sub-second and have little to no effect on overall application performance.

It's time to realize the future. Actian X. The hybrid database for next generation operational analytics.