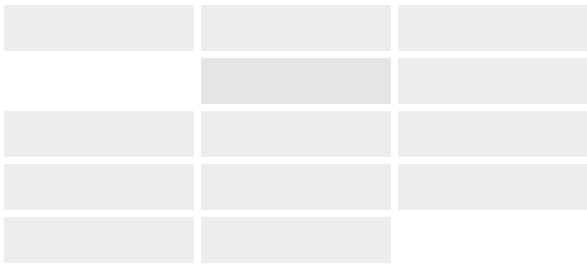




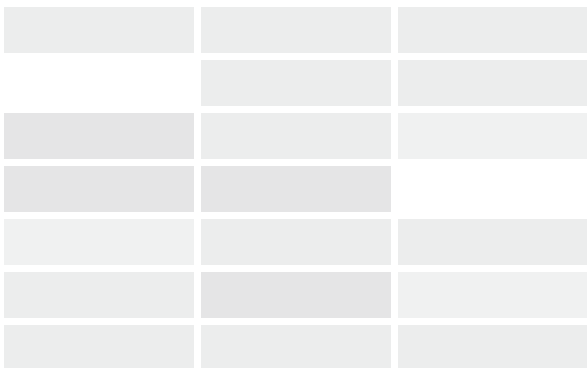
FUTURE-PROOF DATA MANAGEMENT FOR MMOG



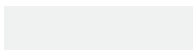
**The Future is  
in Your Hands.**

**Play it Smart.  
Play to Win.**

ROI TCO



**VERSANT**



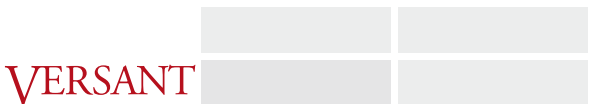





FUTURE-PROOF DATA MANAGEMENT FOR MMOG

High Performance  
Minimum Latency  
Parallel Processing  
Data Partitioning

**The Future is  
in Your Hands.**

Clustered Caching  
High Availability  
Scalability  
Easy & Flexible  
Evolution  
Server Efficiency



When it comes to data management for MMOG, publishers and their developers need a future-proof solution that reduces the risk of unavailability while helping to maximize profits. They need a technology that supports minimum latency via clustered caching, high performance via parallel processing, high availability, data partitioning and outstanding server scalability.

**Play it smart!** Cause, when it comes to game evolution, they need even more. Maximize your profits and secure the future with these smart decisions.

**Play to win!** Consider the following facts before your MMOG application is built. You need:

### **Server Scalability**

The database technology must expand easily with increasing users, requiring only more machines, not server replication. *Think Google!*

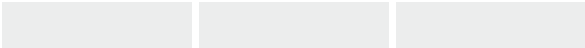
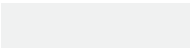
### **Server Efficiency**

A high performance database technology that uses less CPU's, so a reduced hosting footprint will lead to extensive savings of shelf space and energy. *Think Green!*

### **Easy and flexible Schema Evolution**

A future-proof data management technology that enables game developers to evolve the game quickly and easily by supporting changes to the data model as it needs to be changed. *Think Smart!*

Traditional relational database technologies can struggle to keep pace with these new demands. Play to win, use the Versant Object Database to unconditionally accelerate development, performance and – equally important – the evolution of MMOG applications.



## VERSANT Object Database

Using the Versant Object Database, publishers and their developers get a future-proof data management solution that accelerates time-to-market today and leaves the door open for tomorrow's requirements and enhancements.

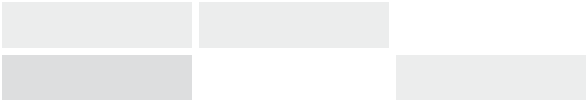
### Today

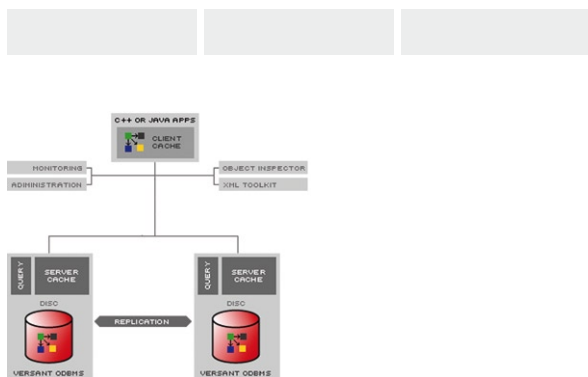
#### **Minimum Latency**

The Versant Object Database provides an in memory database for minimum latency transactional throughput allowing immediate return to game logic control without waiting on backend I/O operations. Versant uses piggy backed double buffering to ensure non-blocking memory writes. The minimized waits on backend structures facilitate thousands of concurrent updates per second on a given data node that is supporting a cluster of shards. A single data node is capable of supporting tens of thousands of active game clients.

#### **High Performance through Parallel Processing**

The shard cache is designed to work with distributed data nodes without requiring coding that is aware of the physical distribution. Operations, such as queries, on the data nodes are defined with logical units and carried out with threads executing in parallel within the shard and data nodes. Game objects may even have relationships spanning physical data nodes without any special code to handle the proper redistribution of game state. Changes are automatically moved to the correct data node on flush operations or transaction boundaries.





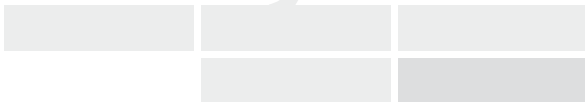
## High Availability

The game shards have the ability to define replica sites for their data nodes. Replicas are written synchronously using parallel processing to provide redundancy of data operations with minimal overhead. Failure in any data node is automatically detected and shard activity is continued to the live site with zero transaction loss. Even in flight transactions are recovered and failed sites are resynchronized to bring full synchronous replication back online.

## Disk Clustering

Each data node can define physical clustering rules for logically related game objects. This means for any given data node that does not completely fit into memory, disk I/O operations will be minimized by loading logically related objects in a single disk seek. This significantly reduces wait time within the data nodes facilitating the support of larger user bases with a single data node process.

# Today





# VERSANT Object Database

## Tomorrow

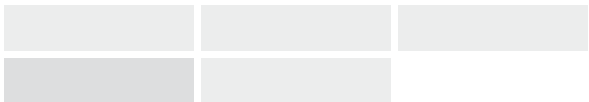
### Easy and flexible Evolution

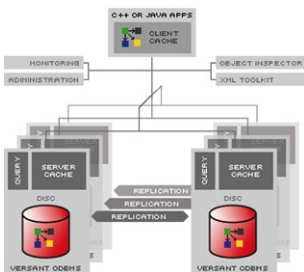
Game objects can be added and evolved online without taking the data nodes off-line or restarting shards. Game schema information is versioned and existing objects are lazily evolved on access allowing evolution of multi-terabyte databases in seconds. Existing game objects are loosely coupled with the data tier schema allowing older game objects to continue to interact with improved data nodes.

### Extreme Server Efficiency

The Versant Object Database is designed for outstanding performance in high workload environments. Hence it requires less hosting footprint as traditional, relational database systems which simply cannot provide the same performance. When it comes to Return-on-Investment (ROI) and Total-Cost-of-Ownership (TCO), this dramatically reduced footprint leads to extreme savings of shelf space and energy. So it's not only about „green“ technology but also about avoid burning money.

Part of the business is to understand that the cost of hosting a MMOG will likely outweigh the initial capital cost of the equipment. You need to make the right technical decisions to keep these hosting costs down: Selecting the Versant Object Database to minimize shelf space, cooling, and electrical power requirements will pay off in the long term and will likely reduce the initial hosting costs.





### Massive Server Scalability

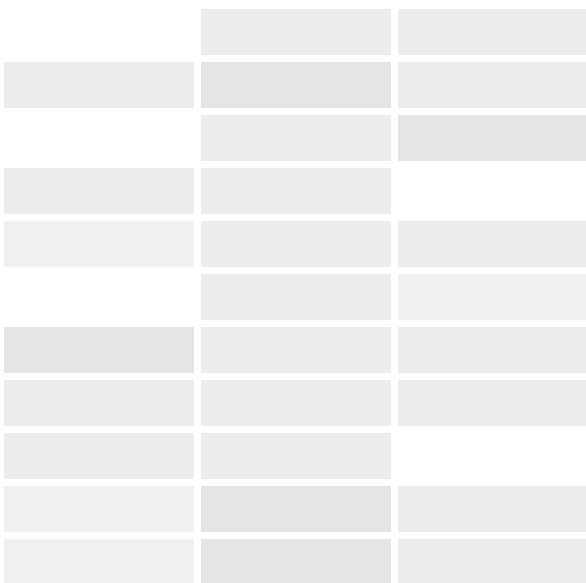
Game object lifecycle management is seamlessly integrated with a horizontally scalable cluster of shard caches. Each shard is capable of holding all or a portion of the complete game world. Individual shards are multi-threaded and capable of supporting tens of thousands of users. Clustering the shard caches provides horizontal scalability to the multi-million user base of a successful game.

### Outstanding Server Reliability

As the success of MMOG platforms depends upon technology, a reliable foundation is essential. Hence reliability is a key factor to consider when choosing a data management system. That's why the Versant Object Database has not only been selected for MMOG applications like Gundam Online and defence simulations of the U.S. Airforce – it also serves as the data management backbone for applications of Ericsson, the New York Stock Exchange, Verizon and the Financial Times.

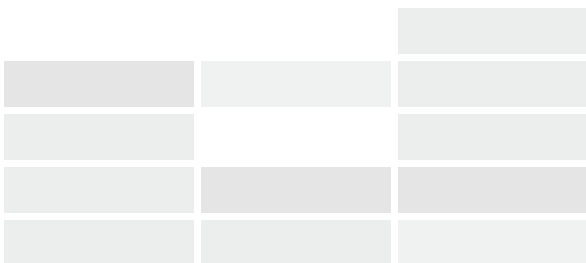
# Tomorrow





**THINK OUTSIDE THE GRID.**  
**NON-SQUARE DATA MANAGEMENT.**

Get rid of rigid row and column structures when it comes to storing and retrieving complex data. Release the full power of a consistently object-oriented application design. Non-square data management with Versant's object database technology – rapid development, high performance and massive scalability.



# VERSANT

**Versant Corporation**  
255 Shoreline Drive, Suite 450  
Redwood City, CA 94065  
Ph +1 800-VERSANT

**Versant Europe**  
Wiesenkamp 22b, 22359 Hamburg, Germany  
Ph +49 40 60990-0

[www.versant.com](http://www.versant.com)

