CASE STUDY

ChronoTrack Chooses GridGain for Real-Time Race Updates and Reduces Lag Time Significantly

GridGain In-Memory Data Fabric Meets Performance, Reliability and Availability Requirements for Race Timing Solution Provider

ChronoTrack, a wholly owned subsidiary of Life Time Fitness, is a trusted provider of race solutions for timing partners and race organizers. ChronoTrack supports 80% of the world's races, including 25 of the 30 largest races in the U.S. The company's hardware and software solutions, including EPCglobal-certified UHF RFID tags and readers, paired with its network of certified partners provide the most comprehensive set of timing, race management and live race services available.

RACING FOR TIME

ChronoTrack times, ranks and scores tens of thousands of participants in hundreds of races every week, most of them on weekends. Every race has checkpoints at which there are markers, some of them placed a mile apart, some of them much further apart (as in the case of a marathon, for instance). Let's consider a hypothetical weekend race. The race has four checkpoints and 1,000 participants, so the race will essentially create 4,000 data records. In addition, each participant belongs to at least three brackets (age, gender, ranking, and any number of race criteria). This brings our data sets to more than 12,000 for just one relatively small race. Multiply the figure by the 80% of the world's largest races, for which ChronoTrack gathers, calculates and re-calculates data as one participant passes another and moves to another bracket, knocking someone into a lower ranking, and the numbers are staggering.

CHALLENGE

Athletic event timing and tracking company ChronoTrack, which supports 80% of the world's races, needed an in-memory solution to distribute compute jobs across servers in order to ensure high performance and keep rankings up to date in real-time.

SOLUTION

The company looked at solutions from leading vendors and decided on the GridGain In-Memory Data Fabric, an advanced data access and processing system.

BENEFITS

- With GridGain, ChronoTrack is able to calculate and publish race result changes in seconds.
- With GridGain, ChronoTrack is running computations closer to the data, which ensures calculation and ranking accuracy.
- With the GridGain In-Memory Data Fabric in place, ChronoTrack has redundancy for failover so if a node or even a few were to go down, business would continue as usual and no data would be lost.

"The ChronoTrack system captures the RFID tags in each bib and as a participant crosses markers on the course, servers receive that data. With that data, we have a calculation algorithm we must run to establish their rank," said Ilya Sterin, ChronoTrack Senior Director of Engineering. "We need to do this quickly because some of these individuals are very close in rank and the standings change quickly. Because there are so many races, we needed a solution that would distribute the algorithm calculation jobs for each race participant across many servers in order to ensure high performance so race results would be available in real-time."

> *Before we deployed GridGain, the lag time between participant race result changes and when they were published could take up to five minutes, whereas with GridGain, it's consistently less than ten seconds."*
>
> — Ilya Sterin, Senior Director of Engineering, ChronoTrack

REDUCED COMPUTE TIME, INCREASED ACCURACY

ChronoTrack looked into solutions from two in-memory computing vendors: GigaSpaces and GridGain. ChronoTrack had past experience with GigaSpaces, but the solution in this situation wouldn't work for their needs. GridGain, on the other hand, in addition to meeting real-time performance requirements, offered something very unique. "The GridGain In-Memory Data Fabric is really good at load balancing, in addition to the performance

capabilities it obviously provides," said Sterin. "The ability to distribute the jobs and load balance across the grid is a huge benefit to an application like ours. GridGain allows us to ensure that every job goes to the best possible server – the one with the most resources available. That provides us with reliability and availability as well as real-time performance."

The GridGain In-Memory Data Fabric was deployed in 2012 and according to Sterin, the integration process was straightforward and simple. "The GridGain solution was up and running within a week and has worked very well from the first weekend. That's saying a lot since it was done right before our heaviest weekend – Thanksgiving – a really busy race weekend," he said. "It went smoothly."

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The GridGain In-Memory Data Fabric, an advanced data access and processing system available as an open source distribution, offers in-memory caching, distributed computations, and streaming. The integrated solution addresses performance, scalability, availability and reliability for ChronoTrack. When each participant crosses a marker, his or her time is sent from the RFID tag directly to the GridGain In-Memory Data Fabric, where the algorithm is run directly on the nodes of the grid.

GridGain has brought ChronoTrack significant improvements and the results have impressed Sterin and his team. "GridGain offered ChronoTrack an integrated solution between data and the compute grid. RFID data is fed directly into the grid and in real-time, the calculations are updated. Before we deployed GridGain, the lag time between participant race result changes and when they were published could take up to five minutes, whereas with GridGain, it's consistently less than ten seconds," said Sterin.

Running these computations inside the GridGain In-Memory Data Fabric, closer to the data, also ensures accuracy. According to Sterin, ChronoTrack is now considering moving its results database from MySQL to another database just to take advantage of the GridGain In-Memory Data Fabric and the enhanced performance it provides.

ChronoTrack is happy with GridGain and appreciates the fact that it is an open source solution. Sterin looks forward to learning how else his company can benefit from the many capabilities he knows GridGain offers. "We are looking forward to working with GridGain on future projects for even more reliability, availability, scalability and performance improvements," said Sterin.

ABOUT CHRONOTRACK

ChronoTrack is a trusted provider of race solutions for timing partners and race organizers. ChronoTrack supports 25 of the 30 largest races in the U.S. Its hardware and software solutions, paired with a certified network of partners, provide the most comprehensive set of registration, timing, race management and live race services available. More information is available at www.chronotrack.com.

ABOUT GRIDGAIN™

GridGain, the leading provider of the open source In-Memory Data Fabric, offers the most comprehensive in-memory computing solution to equip the real-time enterprise with a new level of computing power. Enabling high-performance transactions, real-time streaming and ultra-fast analytics in a single, highly scalable data access and processing layer, GridGain enables customers to predict and innovate ahead of market changes. Fortune 500 companies, top government agencies and innovative mobile and web companies use GridGain to achieve unprecedented computing performance and business insights. GridGain is headquartered in Foster City, California. To download the GridGain In-Memory Data Fabric, please visit http://www.gridgain.com/download/.

GridGain