



In-Memory Computing for the Competitive Business Environment

**Technology
Real Time Data Processing**

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Nikita Ivanov
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BIO: Nikita Ivanov is founder and CEO of GridGain Systems, started in 2007 and funded by RTP Ventures and Almaz Capital. Nikita has led GridGain to develop advanced and distributed in-memory data processing technologies – the top Java in-memory computing platform starting every 10 seconds around the world today.

Nikita has over 20 years of experience in software application development, building HPC and middleware platforms, contributing to the efforts of other startups and notable companies including Adaptec, Visa and BEA Systems. Nikita was one of the pioneers in using Java technology for server side middleware development while working for one of Europe’s largest system integrators in 1996.

He is an active member of Java middleware community, contributor to the Java specification, and holds a Master’s degree in Electro Mechanics from Baltic State Technical University, Saint Petersburg, Russia.

About GridGain:

Einstein got it right when he said imagination is more important than knowledge. At GridGain, we’ve reimagined ultimate performance as In-Memory Computing so that you can reimagine your company for today’s increasingly competitive business environment.

**Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine**

CEOCFO: Mr. Ivanov, what was the vision when you founded GridGain? Where is the today?

Mr. Ivanov: The vision and where we are today are fairly close, but not entirely in the same place. When we started the company almost six years ago the idea was to make the benefits of In-Memory computing available to all organizations. We want companies to replace the traditional processing they’ve been doing with technology that can move data into the memory of the computers, increasing performance by several orders of magnitude. The challenge was always that memory availability was low and expensive and there wasn’t any software on the market that could do it very effectively. Therefore, we built our in-memory stack from the ground up with the anticipation that the memory cost would ultimately come down. Here we are in 2013, the price of memory has been drastically reduced and continues to drop by almost 30 percent each 1.5 years.

GridGain now has the only end-to-end In-Memory stack that businesses of all sizes can use to reap the benefits of high performance computing.

CEOCFO: What types of companies typically use your services?

Mr. Ivanov: A wide range of companies use GridGain – from Fortune 100 companies to small startups. That illustrates how In-Memory computing is really transcending industry boundaries. I think the pioneers in this sense where financial services companies, because they stand to gain the most from the performance increases, particularly when it comes to fraud detection. I believe that In-Memory computing is the next frontier. It is almost the only frontier in terms of performance -- there is no faster way today to process data. Organizations really have no other option. There is theoretically no other way to process data in the modern computer architecture than putting data and the computation in the same place -- computer’s memory. That is a very interesting fact.

The financial services companies where actually the first to explore that, well before GridGain. Another interesting segment is online advertisement and everything associated with it. Here you see huge data sets, but the SLAs are variable. We have seen over the last two or three years the explosion of analytics. Terms like real time analytics, instant decisions, instant BI, actionable X number BI are all synonyms for the same idea: “How do I process in the terabytes of data that I have in my business, in real time.” Not a hardware real time, but *perceptual* real time: I click a button and get a response back. Not two hours later.

Not tomorrow. This need is driving everybody from two people garage startups, all the way up to big corporations to use In-Memory computing technology.

CEOCFO: Do the people who should know about In-Memory computing; do they? Do they know about GridGain?

Mr. Ivanov: If you had asked me this question three years ago I would have said that is the industry's biggest overall problem. There were only two or three or five startups doing something about these technologies. Things are changing dramatically. Today, I would say that almost everyone has heard about In-Memory computing. I speak at many conferences around the globe and I can sense tremendous interest in the audiences. We're working to educate them about GridGain's end-to-end In-Memory computing stack, and have achieved a certain level of visibility. I think it's fair to say that for any startup visibility is the biggest challenge.

CEOCFO: What is it that you understand at GridGain about In-Memory computing that makes it faster, easier and more efficient? What do you understand that perhaps the others do not?

Mr. Ivanov: I think the term "understand" is a little bit misleading here. What we have is an expertise that comes from starting as an open source project in 2005 --- we're not a two year old company that just came up with some interesting technology. We have a very mature and robust product. As you know, products in this area, like databases, take more than a year to develop. Think about Hadoop and how much traction it gets and how long it took to develop. A typical product of this complexity this takes almost a decade to mature. GridGain is about five times bigger than the entire Hadoop ecosystems code base. There's a saying, "If you take nine women, they cannot give birth in one month". It is the same story here. We went through this extensive exercise of first customers, second customers, reworking, fixing and maturing our product over time. Therefore, we have today a very complex and mature technology. We

have customers, we have deployments and we have time and maturity behind us. That, I think, is the biggest benefit of working with GridGain. Being so many years in this market space and this technology space, we understand trends extremely well. We have seen how they develop. We know what is going to happen in a year or two from now. If you look in our product portfolio, it reflects a very different take on In-Memory computing.

CEOCFO: Would you tell us about what is different about your offering?

Mr. Ivanov: Consider the contrast with our competitors. For example, Oracle or SAP HANA, two products that are fairly popular right now, essentially treat In-Memory computing as a bolt-on technology behind the data base. SAP HANA is a database In-Memory in a typical sequel based data base that enterprise can use. Oracle is very much the same with their 12c that has an option to store

"People should be paying attention to In-Memory computing and GridGain is the only one providing an end-to-end technology stack. There is no question about it." – Nikita Ivanov

data memory as well. They essentially treat it as a database technology. We find that there are many different types of payloads in enterprise, not only those with fixed data bases, because databases' typical system of records uses stored data and energy processing. However, there are typical payloads that we see today that virtually were not there ten or fifteen years ago. For example, we are seeing traditional high performance payloads gaining traction, which cannot be processed with typical data base. Another example of a use case that you have probably heard a lot about is streaming processing or streaming events. Again, streaming cannot achieve with a database. Therefore, you have to have very specific middleware; very specific infrastructure software for it. In-Memory is the perfect choice for enhancing streaming computing. Therefore, at GridGain, instead of saying, "We have a hammer and everyone else, you customers, have

to become nails for us" – which is essentially what you're saying when you try to make everything fit into a database -- we have multiple products for each individual payload. We have In-Memory high performance computing as one product. We have In-Memory data base when data base is the use case. We also have In-Memory streaming for streaming use cases. However, we did not just stop there. For example, we have a very new, exciting product for us which is called In-Memory Accelerator for Hadoop®. What we have heard when we talk to Hadoop customers is, "Look, we do not want to change anything. We do not want to replace Hadoop with anything. We do not want to move data anywhere. Can you guys at GridGain improve our Hadoop; make it work faster without asking us to move away from it?" We developed a very unique technology; essentially In-Memory acceleration for Hadoop. It plugs and plays in any Hadoop distribution. It makes it up to one hundred X faster. This is basically the fundamental difference between us and practically the rest of the market. We do not treat In-Memory computing as a single, one-size-fits all technology. We treat In-Memory computing as a concept. We have multiple products based on all of this core technology that we developed, that treat each individual payload. We have seen a lot of success with this because we do not have to say to customers, "This is our data base, make sure you feed into it." We ask them, "What problems do you have? You want to speed up Hadoop? Perfect, we have a product that fits perfectly in just that. You have a streaming use case? We have a product for that. Guess what; if you have a data base, we have one of the best data bases around." That is fundamentally how we are different. I would believe that should pay dividends as we go forward. That is because, as we mature as an industry and we mature in our understanding about In-Memory computing we are going to start peeling away from the kind of "one size fits all" approach.

CEOCFO: When you are speaking with a perspective customer do they understand that immediately or is there an “aha moment” when they get the fact that you have a superior product?

Mr. Ivanov: That is a good question. Looking back at some of the conversations, I do not think there is a tremendous “aha moment”. That is because, again, right now the airways, so to speak, are populated by Oracle SAP messaging and people don’t generally understand what In-Memory computing is. I think they definitely have the positive perception that we do not force them to basically think in terms of database only. That is because increasingly not every use case feeds into data base narratives. That is changing conversation dramatically. In-Memory computing itself is a very disruptive technology. People will have to adjust to it. When your product is not flexible that makes it a hard sell; it is hard to convince people. However, we are making our product much more flexible. We are hearing from our prospects that they would like to see more flexible approach in products – not just one that supposedly does everything for you.

CEOCFO: You did a funding in July. What are the plans? How will you be using the funds?

Mr. Ivanov: In general we are focusing on sales and marketing. As we mentioned, we are a firmly mature technology company. From a technology product perspective we are there. We are going to continue to

extend our products and make them better.

CEOCFO: Why pay attention right now to GridGain?

Mr. Ivanov: People should be paying attention to In-Memory computing and GridGain is the only one providing an end-to-end technology stack. There is no question about it. I think about In-Memory computing in terms of staying on a dry beach when the sun is coming up the water has receded. If you just stay perfectly still you are going to get drowned very quickly. We have two major trends that are colliding. One is obviously data growth, which is what everyone is talking about it and that is only going to get worse. You are never going to have less data. What we are also seeing is that we are rapidly becoming a society of everything now. How many businesses do you know, how many systems do you know that actually build the data to process anything offline? Almost none. Look at your iPhone, Android phone and web applications. They are all built for instant responses. Yes, this is not going to happen overnight. However, believe me, since memory itself has become so much more available we are going to be seeing an avalanche of changes in the perception and world’s expectation for business. It will drive changes in enterprises. I frankly believe that anyone who is not paid attention to In-Memory computing is doing a huge disservice. That is because, unlike ten or fifteen years ago, changes happen very quickly. Systems change. Competitors

change. The cost of building software is much less. Things change much quicker. It does not take years anymore; it takes quarters. Things that were taken in overnight are now taken in the click of a button. Therefore, there are many, many business drivers behind massive adoption of In-Memory computing today. If 800 pound gorillas like SAP and Oracle are already moving in, believe me, it is mainstream. There is a tremendous pull in this direction. In-Memory computing is happening. It is a huge change and Gartner said it best -- In-Memory is the new disc and that disc is the new tape. We have a solid, mature technology and can offer a flexible approach for different payloads.

CEOCFO: Final thoughts?

Mr. Ivanov: All organizations will have to adopt In-Memory computing. Ten years from now almost no one is going to store outgoing to store operational data sets on discs. And the disks that we know of today will be predominantly backup devices. Therefore, we are right at the beginning of a very fundamental shift in how data processing systems are built. I believe that CEOs and CIOs and other big companies and practically everyone else should pay very close attention to that. By the end of the decade everyone will be doing this. In the next two or three or four quarters your competitors will learn. It is not just a technology trick. It is a game-changer that will affect almost everyone.



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