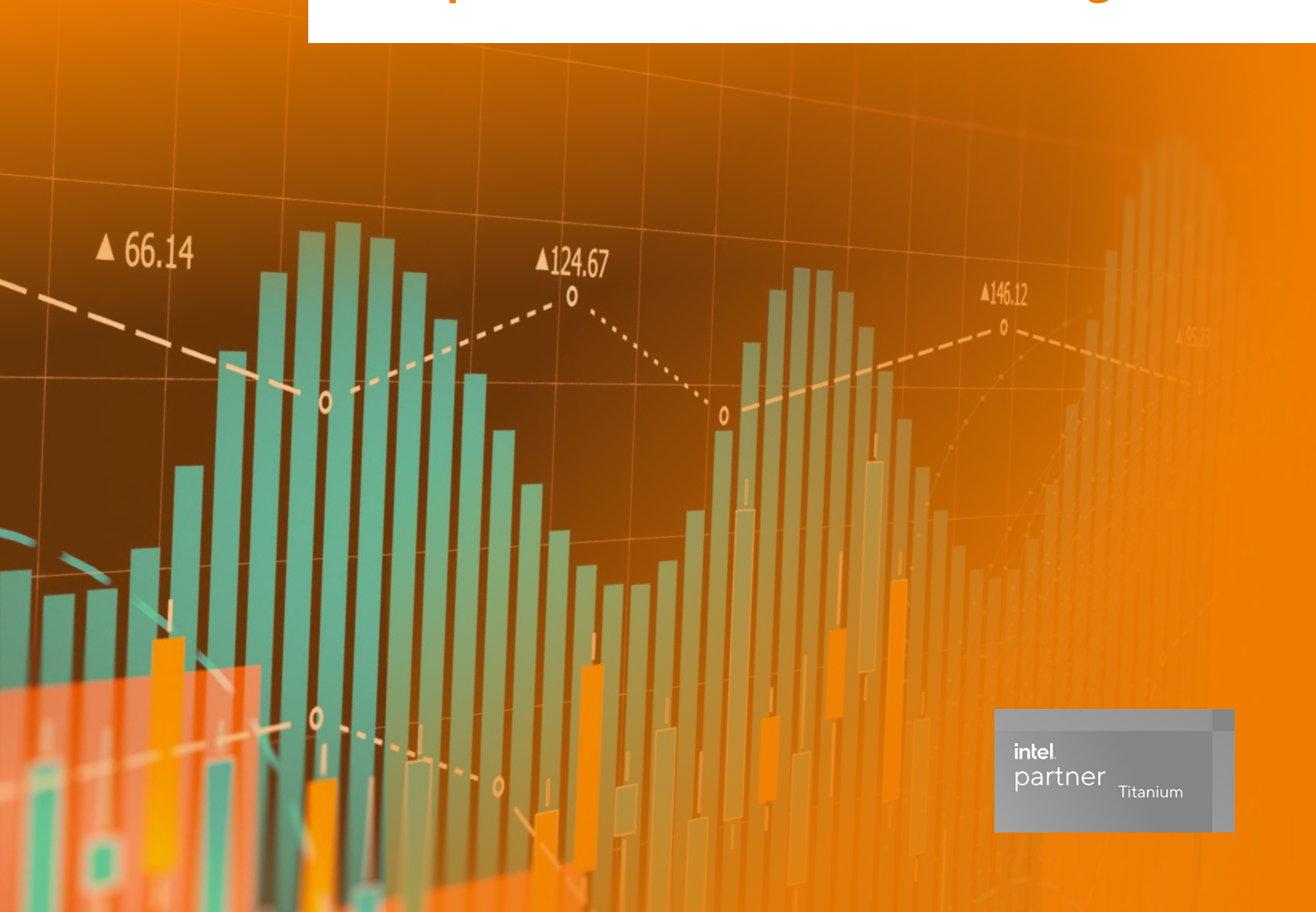


Hosting Service with Direct Liquid Cooling empowers cost-effective HPC-based risk calculation.

For their ever-growing needs of risk calculation capacity, a global corporate and investment bank headquartered in France needed to build a business case seemingly contradictory objectives:

- Increasing server density to limit required data center space with all the ensuing challenges of heat dissipation
- Reducing electricity consumption and environmental footprint, and maintaining an attractive price per CPU core.

Corporate and Investment Banking



Featured Customer

A global corporate and investment bank headquartered in France.

Solutions

- HPC-as-a-service, private cage, scalable both in terms of compute capacity and space.
- 2CRSi high-performance servers featuring 2nd Gen Intel® Xeon® Platinum 9242 processors (40,704 cores in total, 162,8 TB total RAM), the most scalable and dense Xeon® platforms to date.
- Hosting infrastructure in a Tier III+ data center in Ile-de-France.
- 2CRSi customized Direct Liquid Cooling (DLC) solution, which enables not only Free Cooling all year (i.e. ambient air is sufficient to cool the infrastructure, no need for expensive air-conditioning equipment), but also waste-heat collection and re-use to warm the building.

Intended benefits

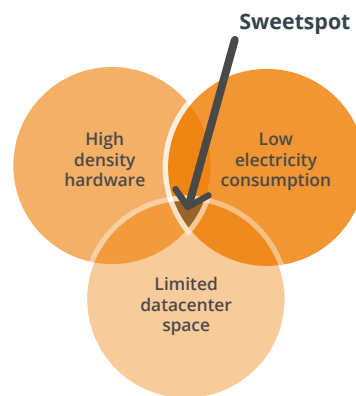
- **10x** higher rack density¹ with the 2CRSi solution, compared to air-cooled solutions.
- **50%** less servers² required for the same performance means a smaller footprint, lower costs, less switches and less maintenance.
- **Future-proof:** an additional benefit is that the choice of Xeon® Platinum 9200 platforms proposed by 2CRSi provide room for significant performance gains in the future (projection of >1.7x), when the Monte Carlo code will leverage the support of AVX-512 instructions. This means that with mere software optimizations, the same infrastructure will be offering even better TCO and greener footprint (projection of 30% improvement).
- **Ecological advantages:**
 - 31% less energy consumed³ in data center when DLC is used to cool the servers, with a PUE (Power Usage Effectiveness) of 1.1 compared with an average of 1.6 in the case of conventional air cooling.
 - Recovery of the server-generated heat, which will be reused in the building's hot-water production system.

Financial heavyweight in search of a new data center strategy

The bank is a global provider of financial solutions to corporate and institutional clients and employs more than 30,000 people in over 50 countries around the world.

A large part of the company's IT servers are used to execute risk calculations, using complex in-house Monte Carlo algorithms. These processes require a high-performance compute grid. The challenge is to keep costs under control: compliance regulation has driven the need for significant risk compute capacity in the financial services industry. Increasing server density in the racks reduces physical space while bringing challenges to evacuate the generated heat. With conventional air-cooled servers, this becomes increasingly difficult, and more costly since it drives up electricity cost for the cooling.

However, as markets have recently been evolving quite drastically and the latest generations of server processors become more power-hungry (as well as thermally more challenging), the bank decided to look for more energy-efficient hosting strategies to optimize production costs and to reduce environmental footprint.



“The only way you can deploy such dense server hardware is by changing the way you cool it”, summarizes Claire Chupin in charge of Strategic Accounts at 2CRSi. “When the bank met with us, a pure player in terms of data center and open compute, who uses Direct Liquid Cooling, they quickly realized that this technology could be a solution for their risk calculations – and might even become an industry standard moving forward.”

The bank builds business case with 2CRSi and Direct Liquid Cooling

The bank decided to migrate just over one-third of their risk calculation capacity to the 2CRSi data center in Ile-de-France (greater Paris area), with the following objectives in mind:



Optimize the bank's risk calculation production costs by:

- Deploying highly dense HPC servers featuring 2nd Gen Intel® Xeon® Platinum 9200 processors, with an attractive price per core, thereby saving on hardware costs, data center space and energy consumption.
- Adding another layer of cost savings by using DLC to remove heat more efficiently and improve data-center power usage effectiveness (PUE), which further reduces electricity consumption.



Assess the operational viability of DLC and check how well it will work after servers have been running for 5 years.







Reduce the bank's environmental footprint, and if DLC becomes an industry standard moving forward, get a head start in this domain, in partnership with a local and flexible solution provider.

“The bank was pleasantly surprised to find a company here in France who could provide them with a competitive hosting offer comparable to hosting-friendly countries such as Iceland, where electricity is cheaper and the weather is cold”, says Raphael Monten, VP - Head of cloud Business at 2CRSi. “In France, hosting is usually much more of a challenge, yet 2CRSi has managed to overcome this with technology and has built a good business case that meets the price per core the bank had set out as a benchmark.”

DLC enables 31% less energy consumption³ and saves the equivalent of 100 tonnes of CO₂ per year⁴

The 2CRSi hosting solution currently being implemented comprises:

-  HPC-as-a-service, private cage, scalable both in terms of computing density and space, in 2CRSi's Tier III+ data center in Nanterre.
-  2CRSi high-performance servers featuring 2nd Gen Intel® Xeon® Platinum 9242 processors (40,704 cores in total, 162,8 TB total RAM), the most powerful Intel processors to date with high electrical density (+60 kW per rack).
-  Hosting infrastructure in a Tier III+ data center in Ile-de-France.
-  Customized Direct Liquid Cooling (DLC) with Free Cooling all year, enabling waste-heat collection and re-usage to heat the building.

Once the service goes live, the bank expects the following benefits:

- The electrical density will be **10x higher¹** compared to conventional air-cooled data centers. This means significantly better TCO: **half the number of servers, a smaller footprint**, less networking gear and less maintenance costs.
- With DLC, each server **requires 31% less energy³ in the datacenter**, because the PUE is reduced from 1.6 (air-cooling) to 1.1 (DLC), ie only 10% extra electricity is needed to cool the servers compared to what is needed to power the servers.
- The bank's carbon footprint gets reduced by the equivalent of **100 tonnes of CO₂ per year⁴**.

For the future, the bank is confident Direct Liquid Cooling for HPC hosting is here to stay.

"We need to see how it's going to work out, but I'm quite confident it's a good move to use Direct Liquid Cooling", says the Bank's Global Head of Telecom and Datacenter. "We think the industry is moving towards this technology. Will this be a permanent trend, or will manufacturers offer less energy-consuming hardware in the future? We don't know, but if the industry continues like it does today, DLC will become an industry standard – and will be mandatory in all data centers in the future. When this happens, with the turnkey solution provided by 2CRSi in their Paris data center, we will have a head start in this domain."

(1) Air-Cooled racks in the UK typically had an average density in 2020 of 6kW/rack (source : <https://www.serverroomenvironments.co.uk/blog/rack-power-densities>). With Direct Liquid Cooled (DLC) racks equipped with 2CRSi high performance servers featuring 2nd Gen Intel® Xeon® Platinum 9242 processors, we achieve rack densities of 60kW and above.

(2) Hardware used previously by the Bank featured 24 cores per CPU. A 2U configuration reached 48 cores. The high-performance servers implemented by 2CRSi feature 2nd Gen Intel® Xeon® Platinum 9242 processors (48 cores per socket), double the number of cores/socket compared to the previous implementation.

(3) The ratio between the Power Usage Effectiveness cooled by air (1.6) and through Direct Liquid Cooling (1.1) is 31,25%.

(4) The bank's platform daily power consumption is 371kW (for 106 server systems). Without DLC, the consumption would be 486kW, so we save 115kW per day. For a whole year: 115 kW x 365 days x 24 hours = 1 007 400kW 1kW/h generating roughly 0.1 kg of CO₂, 1 007 400 kW represent approximately 100 tonnes of CO₂ per year.

Contact us today to find out more on how 2CRSi solutions can help your business.

www.2crsi.com → contact@2crsi.com →

