atnorth

Whitepaper

HPCaaS vs On-Premise vs Public Cloud a comparative outlook

One of the obstacles for large on-premise clusters are the requirements for high-end data centers in addition to the challenge of ever-increasing energy costs.

Large cloud providers have increased their focus on HPC and added more specialized HPC services to their offerings. They leverage the success of their cloud computing ecosystem and are perceived by some to have the most agile and flexible solution available; allowing you to pay on a per-use basis and to adjust your capacity on the fly to meet your needs. But is this really a cost effective long-term strategy for running AI workloads or simulations that can benefit from capacity at scale?

By 2022, 80% of enterprises and SMBs will either no longer operate their own data center or will phase them out rapidly as they become too capital intensive and expensive to keep up with technological and environmental demands. Many will choose to reduce their data center footprint.

HPC**FLOW** is

98%

more cost effective than on-premise and...

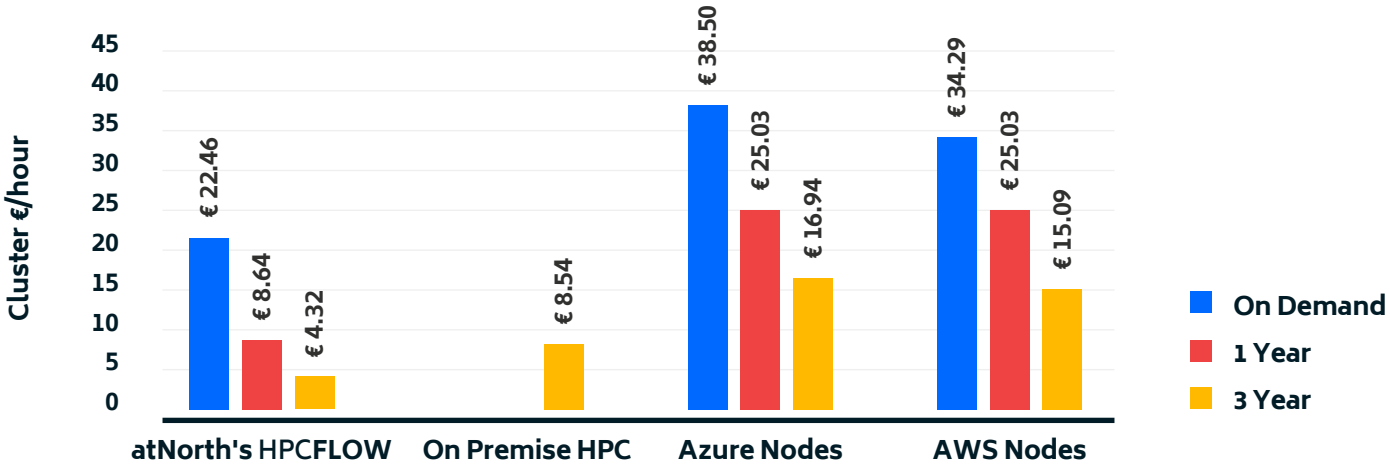
up to 292%

than comparable public cloud offerings.

A number of large HPC users such as automotive manufacturers, aerospace engineering companies, banks and large engineering companies have chosen to locate their clusters in Iceland and Nordic countries due to favorable climate conditions, suited to hosting high performance computing infrastructures. atNorth is one of the leading providers of HPC, AI, and data center solutions, and our PUE (Power Usage Efficiency) is as low as 1.03 (the European average is 1.78[1]). In other words, our data centers need 75% less power than on mainland Europe to run and cool down any compute environment. atNorth's presence in Iceland benefits from 100% renewable hydro and geothermal energy with predictable, long-term energy costs.

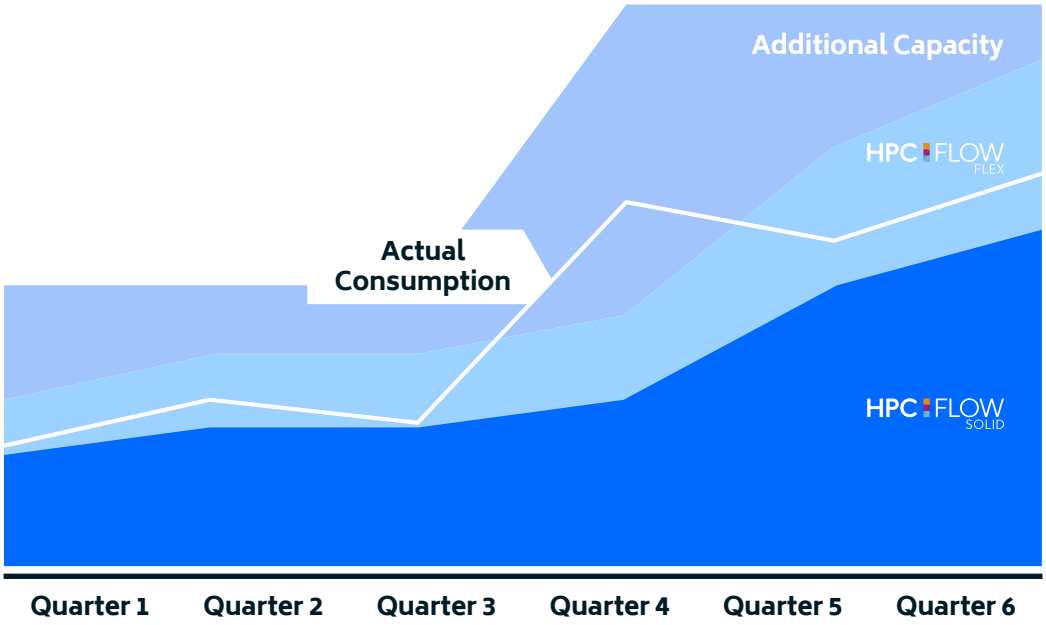
Our data centers are **75%** more power efficient than on mainland Europe.

TCO comparison 10 nodes HPCFLOW | On Premise[2] | Public Cloud (Cluster €/hour)



As portrayed in the above figure the cost-benefit ratio to atNorth's HPCaaS offering is clear: running a HPCaaS cluster with atNorth is 98% more cost effective than the TCO of running an HPC cluster with comparable on-premise capacity. Likewise atNorth HPCaaS clusters are up to 292% more cost effective than comparable public cloud offerings (as an example a 3 years prepaid solution with Azure or AWS). Additionally, benchmarks run by atNorth's HPC experts have shown an up to 25% performance loss when running HPC workloads on virtualized environments[3].

[1] European Commission, Joint Research Centre (JRC), Directorate C-Energy, Transport and Climate https://www.mdpi.com/1996-1073/10/10/1470/pdf-vor
[2] To calculate the TCO for the on-premise cluster, a 100-node cluster was configured to gain fair comparison of personnel, management and other operational costs (networking etc.). Data center and power costs are proportional to 10 nodes of that cluster.
[3] Which is often the case for public cloud offerings.



HPCFLOW customer can scale up even more than their reserved capacity to address the most extreme scenarios

Another advantage that atNorth offer to its HPCaaS customer base is the ability to easily scale up their compute power, on the same cluster for optimized performance, in order to address bursting and workload spikes.

Not only, customers can scale their infrastructure even more than their reserved capacity, as additional resources are provided by atNorth to address more extreme scenarios.

The specialized and custom-designed HPC operating environment ensures you'll achieve the highest-performance HPC results for your budget.

For high-end HPCaaS requirements, atNorth provides a standard SLA of 99.5%[4], supported by a team of seasoned HPC engineers. Additional HPC services are available to enable increased infrastructure automation or development. This allows it to deliver more value to users and engineers, helping them get the most out of simulation applications, resulting in better quality designs and improved time-to-market.

HPCFLOW provides always-available HPC resources you can count on — with the power, flexibility and scalability to respond to your workloads instantly.

[4] Higher levels of SLA can be agreed at request.

For more information contact:

atNorth Sales

sales@atnorth.com • +3545393282
atnorth.com

atnorth