

## Quick Take

# Catalyst UK Announcement Bolsters Arm Processor-Based HPC Ecosystem in Europe

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## HYPERION RESEARCH OPINION

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On April 16, 2018, Hewlett Packard Enterprise (HPE) in conjunction with SUSE and Arm teamed up with three leading UK universities to form the Catalyst UK program with the objective of accelerating the adoption of HPC by industry in the UK. The three-year program will center on the installation of an Arm processor-based supercomputer deployment spread across the University of Edinburgh, the University of Bristol, and the University of Leicester, due to be completed in summer 2018. In addition, the program is looking to reach out to UK industry to jointly develop Arm-based applications and workflows. Hyperion Research believes this effort is an important indicator of the UK's commitment to building an indigenous HPC ecosystem centered on Arm processors, and one that could have wider implications for bolstering Arm-based HPC adoption in future European HPC designs.

## SITUATION OVERVIEW

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Arm processor development dates back to the 1980s when it was initially targeted for personal computing. The first big win for Arm-based HPC occurred at the Barcelona Supercomputing Center in 2011, which under the Mont-Blanc project developed the first Arm-based HPC cluster. The latest Mont-Blanc system, DIBONA, started operations in 2017, and it is funded under the EC Horizon 2020 Project charged with developing leading-edge indigenous EU HPC technology.

- The system was manufactured by France's ATOS/Bull and uses ThunderX2 processors with the Arm v8 instruction set from Cavium.

This Catalyst UK announcement is the latest in Arm-based HPC activities in Europe. The collaboration involves the installation of over 12,000 Arm-based cores in three systems deployed across the UK universities. Each of the Catalyst UK university clusters will consist of 64 HPE Apollo 70 systems.

- Each rack will be equipped with two 32-core Cavium ThunderX2 processors, 128GB of memory composed of 16 DDR4 DIMMs, and Mellanox InfiniBand interconnects.
- The operating system is SUSE Linux Enterprise Server for HPC.

The Catalyst UK program will cooperate with UK industry to jointly develop critical applications and workflows to best exploit the Arm system capabilities, including porting and optimizing existing application codes. One important element of the program involves training researchers and equipping them with the knowledge and skills required to work with Arm-based systems.

- Another emphasis will be artificial intelligence applications that process large amounts of data and require high memory bandwidth. This is all being done in the context of future exascale computing.

## FUTURE OUTLOOK

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The Catalyst UK announcement is the most recent example of Europe's interest in Arm-based HPC. It is interesting to note that despite the 2016 Brexit vote, UK supercomputing interests continue to align with the EU Mont-Blanc efforts.

- Another important aspect of the Catalyst UK announcement is the recognition of the need for an HPC ecosystem consisting of hardware, middleware software, applications, and people.
- The announcement demonstrates that the UK understands the potential promise of AI for large-scale analytics.

Although the UK has demonstrated a firm commitment to Arm processors, it is not clear the extent to which the rest of Europe is ready to make the same commitment. In March of 2017, several European countries signed a joint declaration making a commitment to upgrade EU supercomputing power by establishing the European High Performance Computing Joint Undertaking (EuroHPC JU) to pool resources to develop top-of-the-range exascale supercomputers, based on competitive European technology.

- One critical part of this program was the standing up of the European Processor Initiative (EPI), charged with developing an indigenous EU processor, but to date, the extent to which Arm will play a role in the overall EPI effort has not been announced.

Although the degree to which European exascale computers will be based on Arm processors has yet to be determined for these and related EU efforts, this recent Catalyst UK announcement can only help more firmly establish an Arm-based HPC ecosystem in Europe. Hyperion Research believes that despite the recent political split of the UK and the EU, in Europe - and perhaps elsewhere - Arm-based supercomputers will continue to be a promising technology that bears close monitoring.

## About Hyperion Research, LLC

Hyperion Research provides data-driven research, analysis and recommendations for technologies, applications, and markets in high performance computing and emerging technology areas to help organizations worldwide make effective decisions and seize growth opportunities. Research includes market sizing and forecasting, share tracking, segmentation, technology and related trend analysis, and both user & vendor analysis for multi-user technical server technology used for HPC and HPDA (high performance data analysis). We provide thought leadership and practical guidance for users, vendors and other members of the HPC community by focusing on key market and technology trends across government, industry, commerce, and academia.

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