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## News Release

# Hewlett Packard Enterprise Selected to Build a Faster Supercomputer for the University of Leicester to Simulate Star and Galaxy Formation

*New advanced system, part of the UK-funded Distributed Research utilizing Advanced Computing (DiRAC) organization, will tackle complex research in astrophysics, cosmology, and nuclear physics*

**HOUSTON – August X, 2021 – [Hewlett Packard Enterprise](#)** (NYSE: HPE) today announced that it has been selected by the [Distributed Research utilizing Advanced Computing \(DiRAC\)](#), a UK-funded organization aimed at advancing scientific research with high performance computing (HPC), to build a new supercomputer for the University of Leicester, one of UK's leading academic institutions.

The new supercomputer will feature advanced technologies to deliver faster performance and other capabilities to significantly improve image-intensive simulations and manage complex data involving research in astrophysics, cosmology and nuclear physics. DiRAC's system will also be more energy-efficient to meet ongoing goals for achieving sustainable supercomputing facilities.

### **Making Scientific Breakthroughs with Next-Generation Supercomputing**

The University of Leicester will open DiRAC's XX to broader UK organizations, helping scientists focus on complex science problems, such as:

- **Understanding the formation of stars** – Scientists at Exeter University will use DiRAC's XX to better analyze how stars form and collapse by simulating the star formation process to gain a realistic scale and time frame of how they are developing, including simulating the star's shape and size. The new supercomputer will allow Exeter's scientists to process multiple billion calculations per second at larger resolutions when simulating star formations, compared to running only one calculation of a billion particles per second with previous systems.
- **Simulating how galaxies form and evolve** – A team of researchers at Oxford University plan to simulate events on how galaxies—which are a collection of stars, gas and dark matter—form and develop. Through a telescope, scientists can identify various galaxies in the sky, but researchers seek to explain galaxy differences as a result of evolution paths or initial formation processes. Scientists from Oxford University will use next-generation

compute technologies to simulate various time and length scales to uncover the development cycle of a galaxy.

- **Advancing molecular lightness research by analyzing data-intensive light spectrum patterns** — Researchers at University College London aim to identify key molecules, such as water and methane, from light spectra emitted by planets and stars. The spectra allow scientists to identify elements that exist in particular regions, such as Mars, that might determine opportunities for future habitat. Spectra calculations demand advanced compute power, and with the new system, researchers will be able to process calculations as large as 1 million by 1 million.

### **DiRAC tackles ongoing scientific challenges with an expanded pool of heterogeneous HPC solutions**

DiRAC provides supercomputing solutions to the Science & Technology Facilities Council, which supports data-driven research from simulating the evolution of the universe to exploring the fundamental structure of matter. HPE is expanding its existing collaboration with DiRAC to help grow its pool of heterogeneous HPC solutions by leveraging various CPU architectures required to test and tackle a range of scientific and engineering challenges.

The new system, which will be significantly advanced to support the growing complexity of modeling and simulation demands, will be built using the HPE Apollo 2000 Gen10 Plus system featuring 2<sup>nd</sup> Gen AMD EPYC™ processors.

*“We are seeing an increase in demanding research needs, requiring powerful high performance computing solutions. Our user community turns to Leicester for resources to meet these specific goals,” said Mark Wilkinson, professor of theoretical astrophysics at the University of Leicester and Director of the DiRAC facility. “The new X supercomputer, which involved a close collaboration with HPE to thoughtfully design and test its capabilities, allows us to continue empowering UK’s researchers with advanced technologies to make tremendous breakthroughs in science.”*

### **Inside Leicester’s New Supercomputer**

With the new supercomputer, University of Leicester is tackling research questions and driving scientific calculations at a completely new scale. The supercomputer will be comprised of 200 HPE Apollo 2000 Gen10 Plus systems, each containing AMD EPYC™ 7724 processors. It will also integrate with the Cray ClusterStor E1000 storage system from HPE to expand storage capacity for a growing library of complex scientific data that researchers can intelligently tier and access.

HPE and Keysource, a leading mechanical and electrical supplier, collaborated to ensure a successful upgrade to Leicester’s data center facility to accommodate an HPE Apollo 2000 Direct Liquid Cooled based solution, minimizing the University facilities recurrent bills by improving the energy consumption of the solution. HPE’s direct liquid cooling capabilities were instrumental in meeting the University Datacenter density requirements and reducing carbon footprint by transferring heat generated by the supercomputer to a liquid-cooled process when cooling the system. This enables Leicester to actively manage its environmental impact to align with objectives outlined in the [UK Research and Innovation Environmental Sustainability Strategy](#).

The new supercomputer will go into production starting in August 2021.

### **About Hewlett Packard Enterprise**

Hewlett Packard Enterprise (NYSE: HPE) is the global edge-to-cloud company that helps organizations accelerate outcomes by unlocking value from all of their data, everywhere. Built on decades of reimagining the future and innovating to advance the way people live and work, HPE delivers unique, open and intelligent technology solutions delivered as a service – spanning Compute, Storage, Software, Intelligent Edge, High Performance Computing and Mission Critical Solutions – with a consistent experience across all clouds and edges, designed to help customers develop new business models, engage in new ways, and increase operational performance. For more information, visit: [www.hpe.com](http://www.hpe.com)

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