# High-performance computing HPCC

Using advanced computer systems and special programming techniques to solve complex computational problems.

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| **Guidance Notes:**High-performance computing (HPC) is the use of super computers and parallel processing techniques for solving complex computational problems. HPC technology focuses on developing parallel processing algorithms and systems.High-performance computing is typically used for solving advanced problems and performing research activities through computer modelling, simulation and analysis. HPC technology is implemented in a variety of disciplines including, but not limited to:* biosciences and molecular modelling
* geographical data
* oil and gas exploration
* climate modelling and weather forecasting
* physical simulations
* cryptanalysis.

The terms high-performance computing and supercomputing are sometimes used interchangeably. |

## Level 4

Develops moderately complex solutions that use high-performance computing environments to address real-world problems.
Applies a range of high-performance computing techniques with sensitivity to the limitations of the techniques. Uses input and feedback from experts as appropriate.
Analyses the complexity, scalability and performance of algorithms, including massively parallel implementations, and makes or recommends improvements.

## Level 5

Creates, tests and improves complex high-performance computing solutions to address real-world problems.
Collaborates with stakeholders to ensure high-performance computing solutions are effective at addressing their problems.
Guides development teams in the appropriate and effective use of high-performance computing resources

## Level 6

Initiates the creation, testing, improvement and application of algorithms that solve real-world problems in high-performance computing environments.
Sets standards and strategies for the use of high-performance computing.
Leads the implementation of organisational capabilities to ensure appropriate, consistent and effective usage of high-performance computing.

## Level 7

Directs the creation and review of a cross-functional, enterprise-wide approach and culture for high-performance computing.
Leads the development of the organisation’s high-performance computing capabilities and champions its use in solving real-world problems.