Compute Intensive Infrastructure

The inherent scale and elasticity of cloud makes it an ideal environment for large-scale compute-intensive workloads such as Grid Engines, High Performance/Throughput Compute (HPC/HTC) and Massively Parallel Processing (MPP), some of which have an enduring requirement for large amounts of processor cores and memory.

UKCloud's Compute Intensive Infrastructure service is designed for these types of workloads. In return for a volume and term commitment for a large number of compute cores, customers get a cost-effective, highly scalable infrastructure to support their compute intense solution.

Compute Intensive Infrastructure leverages the benefits of the UKCloud assured cloud platform, providing you with a trusted cloud that's connected to key government networks, such as N3 for health and social care, and JANET for research and education.

For workloads that require a temporary, more flexible or dynamic service, UKCloud's Enterprise Compute Cloud (powered by VMware) may be more suitable. It offers exceptional performance and scalability, and consumption-based pricing. We also provide Cloud Native Infrastructure (powered by OpenStack), so can deliver a suite of services to meet all your needs.

Information assurance and connectivity

The UKCloud assured cloud platform is designed and optimised to meet the unique information assurance needs of UK public sector organisations.

- Deploy on an established, trusted Assured or Elevated OFFICIAL cloud platform

- Connect via the internet, or via PSN, RLI, N3 or JANET networks

- UK-based telephone service desk and NOC function, with 24/7 support for high-priority incidents, including access to UKCloud's technical subject matter experts

- Platform optimised for OFFICIAL and fully aligned with the 14 CESG Cloud Security Principles

- Multiple secure tier 3 UK data centres separated by more than 100km and securely connected by high-bandwidth, low-latency dedicated connectivity

- Extensive independent validation by recognised UK public sector authorities enhances the platform's suitability for especially sensitive workloads for organisations such as health, police and defence

- UK sovereignty — assured cloud platform delivered across two UK sites by a UK-based company with UK government security-cleared staff

- Platform that hosts workloads exclusively for the UK public sector, creating a known and trusted community of neighbours

- A mature and expansive partner ecosystem, including system integrators, managed service providers, software development houses and consultants specialising in transformation projects

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Compute Intensive Infrastructure

Features and benefits

Feature	Benefit
High performance, massively scalable for high throughput computing	A solution that can meet the largest of requirements and reduce risk to your project
Optimised for massively parallel processing (MPP) and grid engines	Superior value from a purpose-built solution
Choice of VM/node sizes and configurations	Flexibility to match the requirements of your workload
Extensive independent testing and validation of assurance	A secure and trusted platform which addresses risks associated with hyperscale providers
Connected to PSN Assured, PSN Protect, N3, JANET and the internet	Easy interconnection to existing systems and accessible by your current users and devices

Key differentiators

- Uses a proven hyper-scale architecture to deliver predictable performance at scale

- Optimised for the sensitivity of your specific workload via the internet-facing Assured domain and the trusted Elevated domain

- Offers a choice of virtual machine sizes to suit the core and memory density requirements of your compute-intensive workload

- Tuned to reflect the inherent resilience provided by your grid engine solution

What the service can help you achieve

- Deploy compute-intensive workloads on a massively scalable and inexpensive platform

- Avoid the CAPEX costs, risk and complexity associated with deploying a private infrastructure

- Build hybrid cloud solutions optimised for both compute-intensive workloads and more traditional workloads on the same cloud platform

- Integrate compute-intensive workloads with systems and datasets located on secure government networks (such as N3, JANET and PSN).

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Technical features

The service is provided with a variety of cluster-wide options as follows:

- Choice of virtual CPU mode. Compute Intensive Infrastructure is based on hyper-threaded cores which provide a cost-effective solution for compute-intensive workloads. You can opt for Native mode by using up to half the allocated cores to ensure a one-to-one mapping between virtual CPUs and physical (non hyper-threaded) cores for maximum processing power.

- Choice of core-to-memory ratio. All VMs in your compute-intensive cluster must be identically configured based on one of two core-to-memory ratios.

Compute Intensive Infrastructure includes as standard:

- Virtual firewall

- One production virtual data centre (VDC) and one non-production VDC

- VMware HA (High Availability) protection (only with persistent storage)

- Basic load balancing

- DDoS-protected internet

- Personalised support via Customer Success Managers, Technical Account Managers and a telephone support desk

Use case

Optimised specifically for organisations with compute-intensive workloads which require hundreds of thousands of core hours.