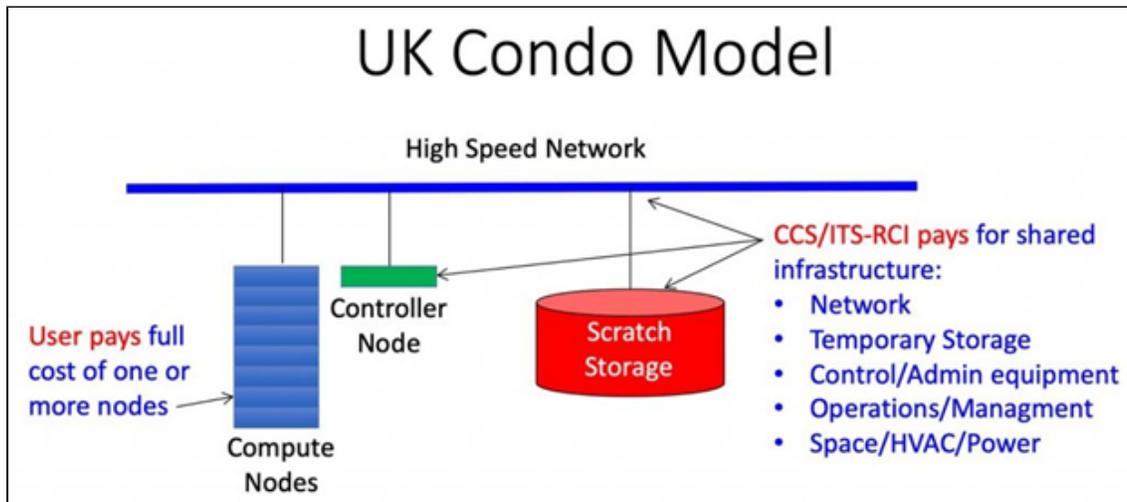# Condo Model

Prior to 2016, CCS fully-covered the cost of the supercomputer and provided open access to all researchers (faculty, staff, and students). Given the expanding UK research community, both in terms of size (users from several new colleges and departments) and in terms of the computational requirements (the growing competition for resources and the need for new types of systems), CCS has been changing to a *Condo Model* – much like other HPC centers who are experiencing the same pressures. A key goal of the switch to a condo model has been to do so without interruption of the computational research currently occurring on the system. This goal, of transitioning smoothly from a system where everything was "free" and "open to anyone" to a system involving "faculty contributions" and "priority access" required addressing both technical challenges and historical/embedded operational/behavioral practices. As a result, the transition has been a process, but we have now almost fully completed the transition. A large portion of our current GPU computational capabilities have been condo-funded, and our system now provides priority access to condo users while at the same time allowing open access to all researchers.

The new CCS condo model allows researchers to contribute resources (nodes) to the system and in return receive guaranteed access to an equivalent amount of resources as well as access to some number of incentive resources (that are not guaranteed) to incentive faculty to join the condo rather than build out their own systems (which had been occurring previously and was problematic in several ways). Any unused resources on the system are available for open access by any users, subject to a fair share scheduling policy. The following figure illustrates the new CCS condo model.

The key features of the CCS condo model are:

- Significant CCS/ITS-RCI investment in the base infrastructure (i.e., the shared parts)
- Researchers purchase equipment at cost
- Guaranteed priority access to purchased equipment (or equivalent)
- Incentive priority access to additional compute time (non-guaranteed)
- CCS/ITS-RCI also purchases compute equipment to be used for meritorious projects
- Unused Condo resources available for open access.

The model is designed to motivate researchers to join/invest:

- Substantially Reduced Costs Over Build-Your-Own:
    - CCS/ITS-RCI covers the network and scratch storage costs
    - CCS/ITS-RCI covers shared servers: DTN, admin, login, control, etc nodes
    - CCS/ITS-RCI covers some software costs
    - CCS/ITS-RCI covers maintenance and operations costs
- CCS/ITS-RCI Handles System Administration: setup and configure systems, manage user accounts, install software, upgrade software, perform backups, and ensure security
- Simple buy-in model: Purchase one or more compute nodes as equipment on a grant
- Condo membership lasts for 5 years
    - Enough to be of value to new faculty
    - Is roughly the useful lifetime of the hardware.