ResTech Lunch & Learn:

From PC to Cloud or High Performance Computing (HPC)

UNSW SYDNEY

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Research Technology Services

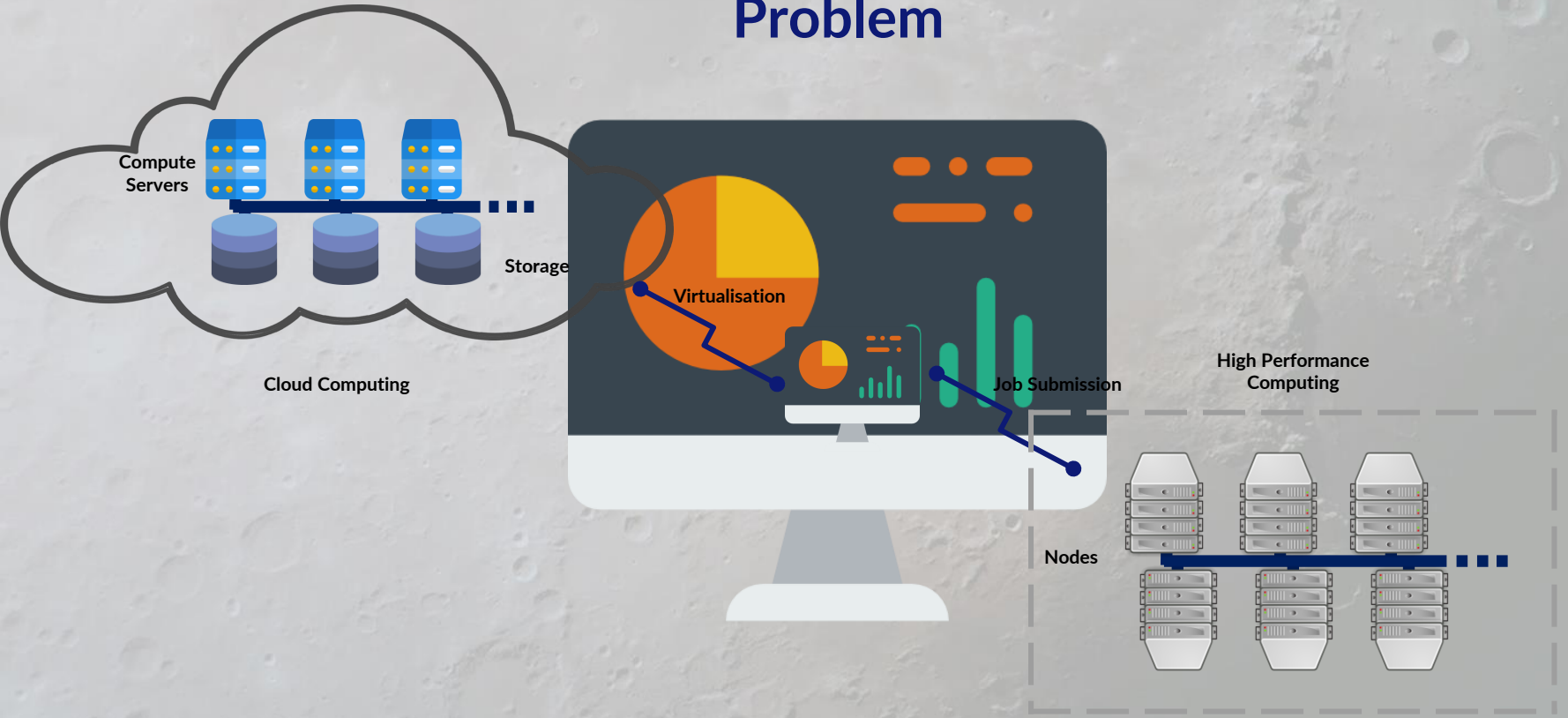
Compute · Data · Community

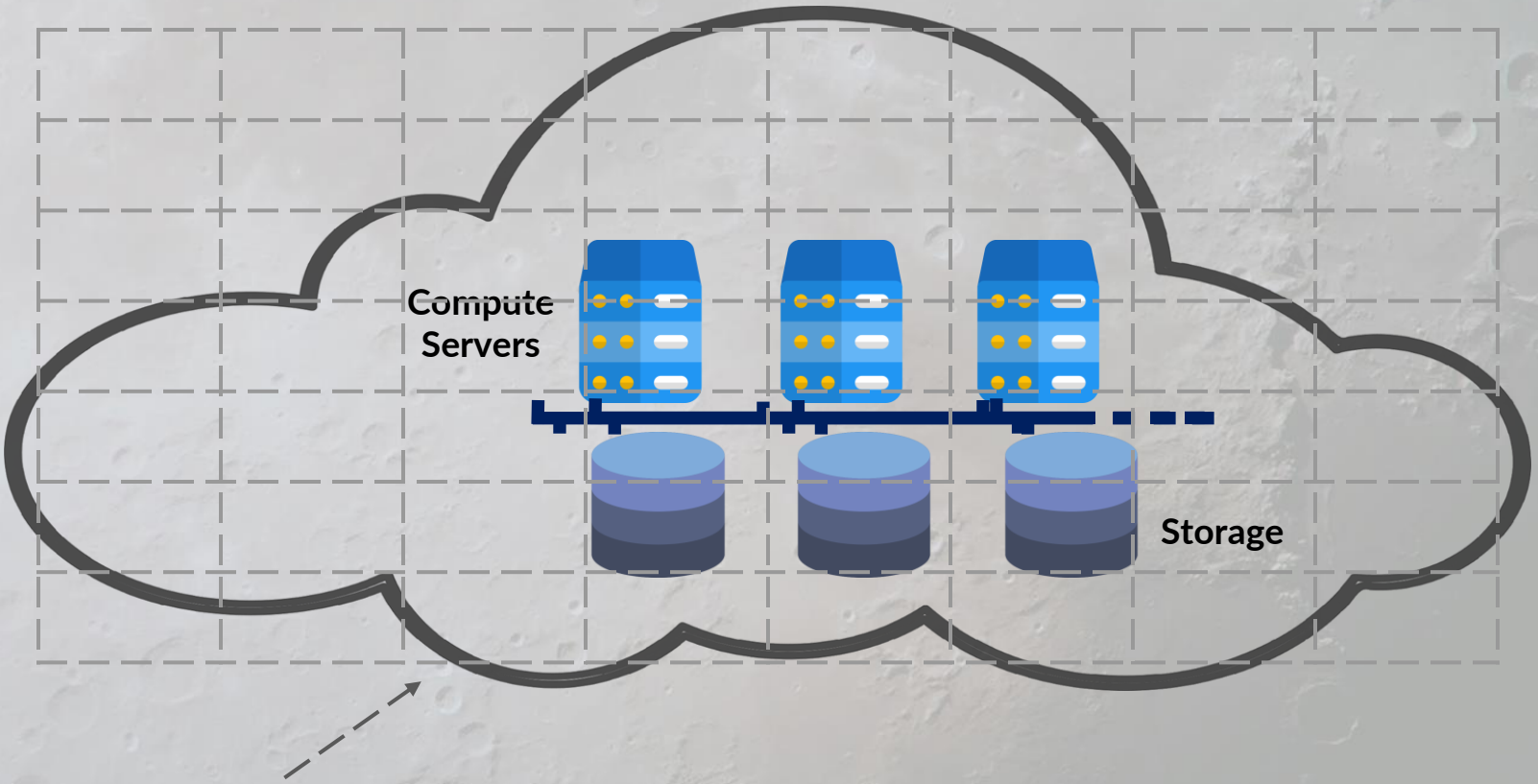
Topics

Agenda

- Motivation
- Cloud Computing
- Common Concerns
- High Performance Computing
- Cloud v HPC
- Conclusion

Problem


Compute
Servers
Storage
Cloud Computing
Virtualisation
Job Submission
High Performance
Computing
Nodes



Virtually divided = Users have as many portions they want

Cloud Computing

Five main characteristics:

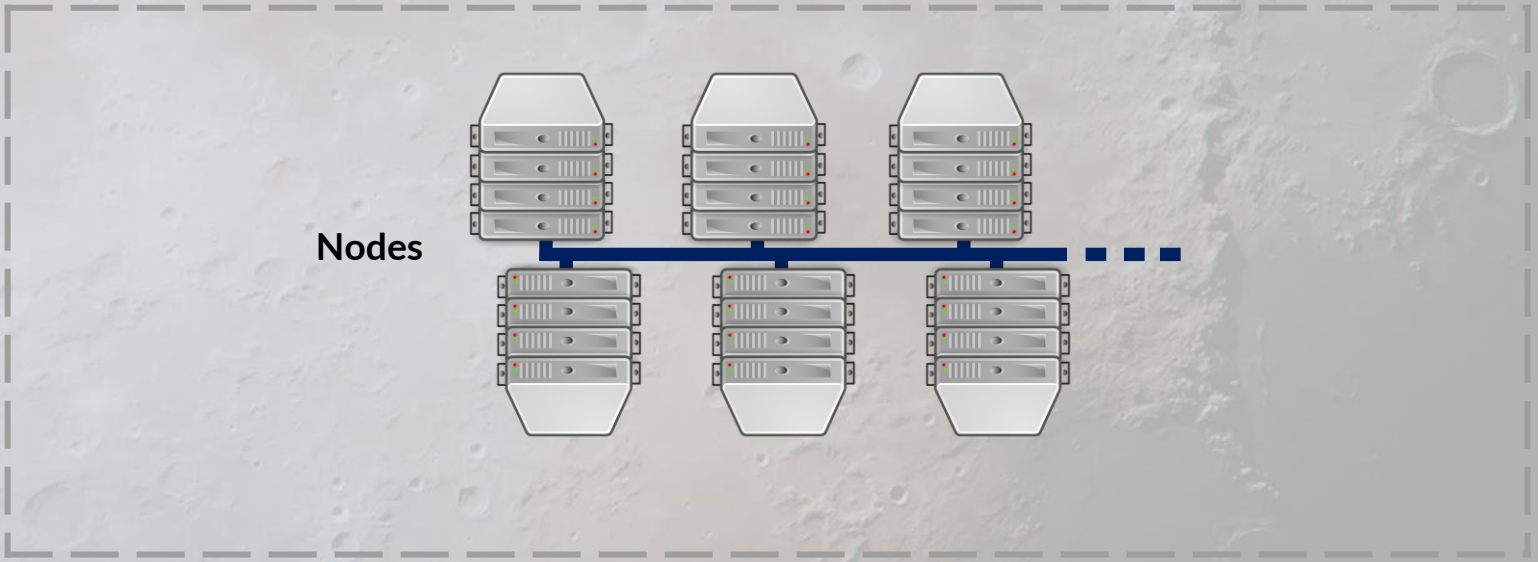
- On-demand self-service
- Resource pooling
- Rapid elasticity
- Measured service

Common Concerns

Common concerns when adopting cloud computing include:

- Privacy & Security
- Portability of tools and data to and from different (cloud) platforms
- Expertise

High Performance Computing



- Acts as a single large computer
- Main objective is to run jobs (script/program/experiment)
- It has a job queue

High Performance Computing

Key characteristics:

- Users can make use of a high number of cores
- Users do not need to maintain OS
- Batch Scheduling

Cloud v HPC

Use Case	Cloud	HPC
Convenience?	Yes	Yes
Large Data Set?	Yes	Yes
Parallel Problem Solving?	Yes	Yes
Long term storage	No	No
Multi-Node?	No	Yes
Queuing Time	No	Yes

Cloud v HPC

Use Case	Cloud	HPC
GUI interaction?	Yes	No
Complex Licensing	Yes*	No
Cloud based Databases	Yes	No
Interactive programs	Yes	No
Custom Deployment	Yes	No

Conclusion

- Combination of Cloud and HPC
- More CPUs doesn’t necessary means faster!
- Optimise the combination of I/O and compute time
- Before you start doing big runs, you need to find the optimised number of cores etc