





Storage Strategy for HPC users

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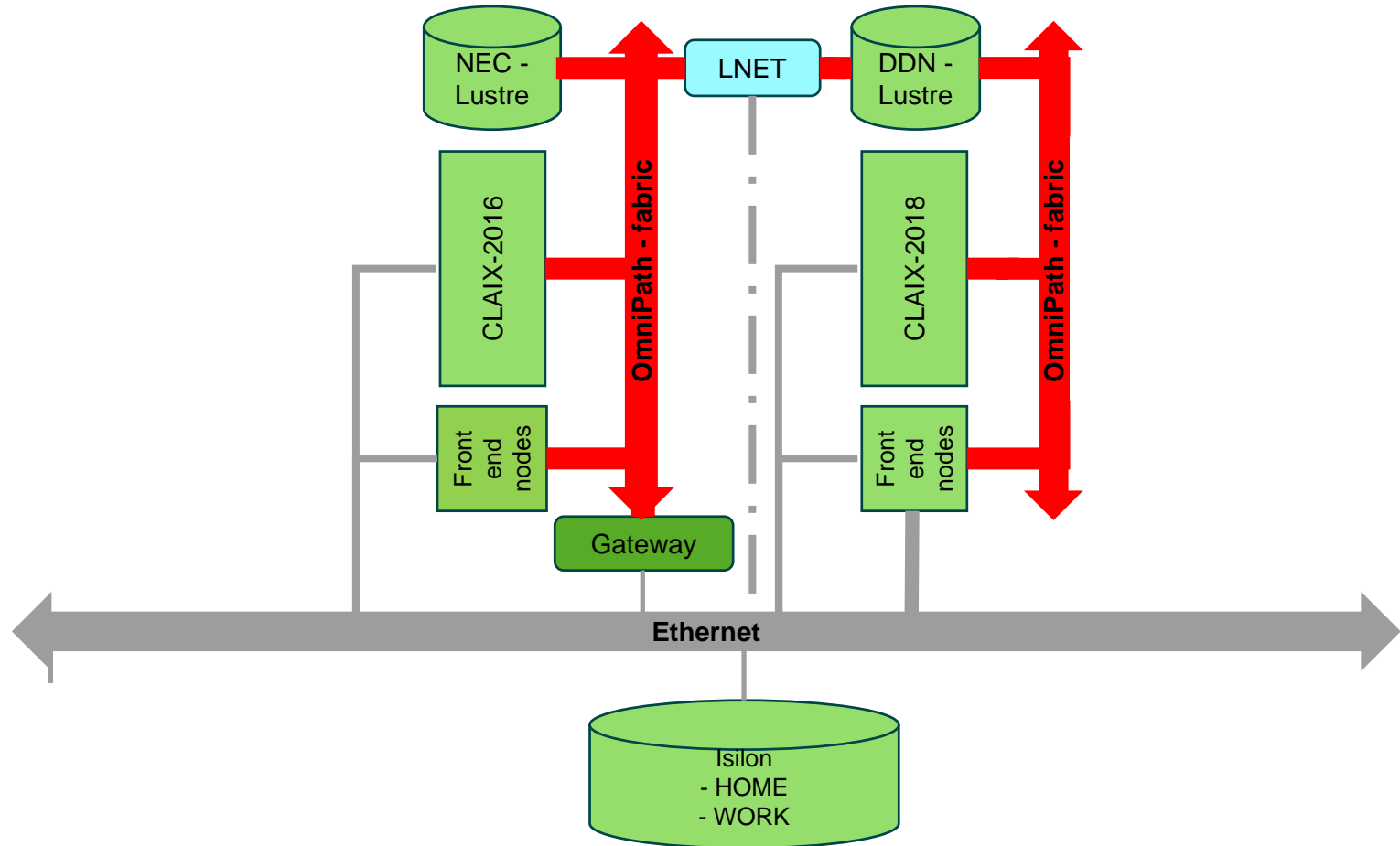
Storage Parameters

- Size / Capacity
 - Total amount of storage
 - Number of (small) files
- Performance
 - GB/s
 - Op/s
 - Time to data
- Safety
 - Protection against
 - accidental deletion
 - System desaster

Satisfying Demands

- Common environments: compromise for optimal mix
- HPC: environments for not-so-common demands
→ very large / very fast / safe
- Challenge 1: satisfy the demands 
we offer 10 PB, 150 GB/s, Snapshots and Backup
- Challenge 2: in one system 
→ not affordable

RWTH Compute Cluster Configuration Overview



What do we offer?

	Type	Total Size	Snapshot / Backup	Def. Quota	
\$HOME	NFS/CIFS, Cluster-wide	1.5 PB	X / X	150 GB	10 GB/s
\$WORK	NFS/CIFS, Cluster-wide		X / -	250 GB	3 GB/s
\$HPCWORK	Lustre Cluster-wide, 2 Instances	C'16: 2.3 PB C'18: 10 PB		1 TB	C'16: ~30 GBs C'18: ~150 GB/s
\$TMP	Ext4 node-local	Several GB .. 1.5 TB			

<https://doc.itc.rwth-aachen.de/display/CC/Available+File+Systems>

Storage Strategy

- Your decision:
 - Depending on Your various types of data You have the choice:
 - „hand made“ data + results should reside in `$HOME`
 - Good for small files
 - Protected by snapshot + backup
 - Results can also go to `$WORK` : similar characteristics, but no backup
 - Snippets of intermediate stuff may go to `$TMP` : node-local, job-local
 - Large intermediate data should go to `$HPCWORK`
large, fast, no loss protection
- Your obligation

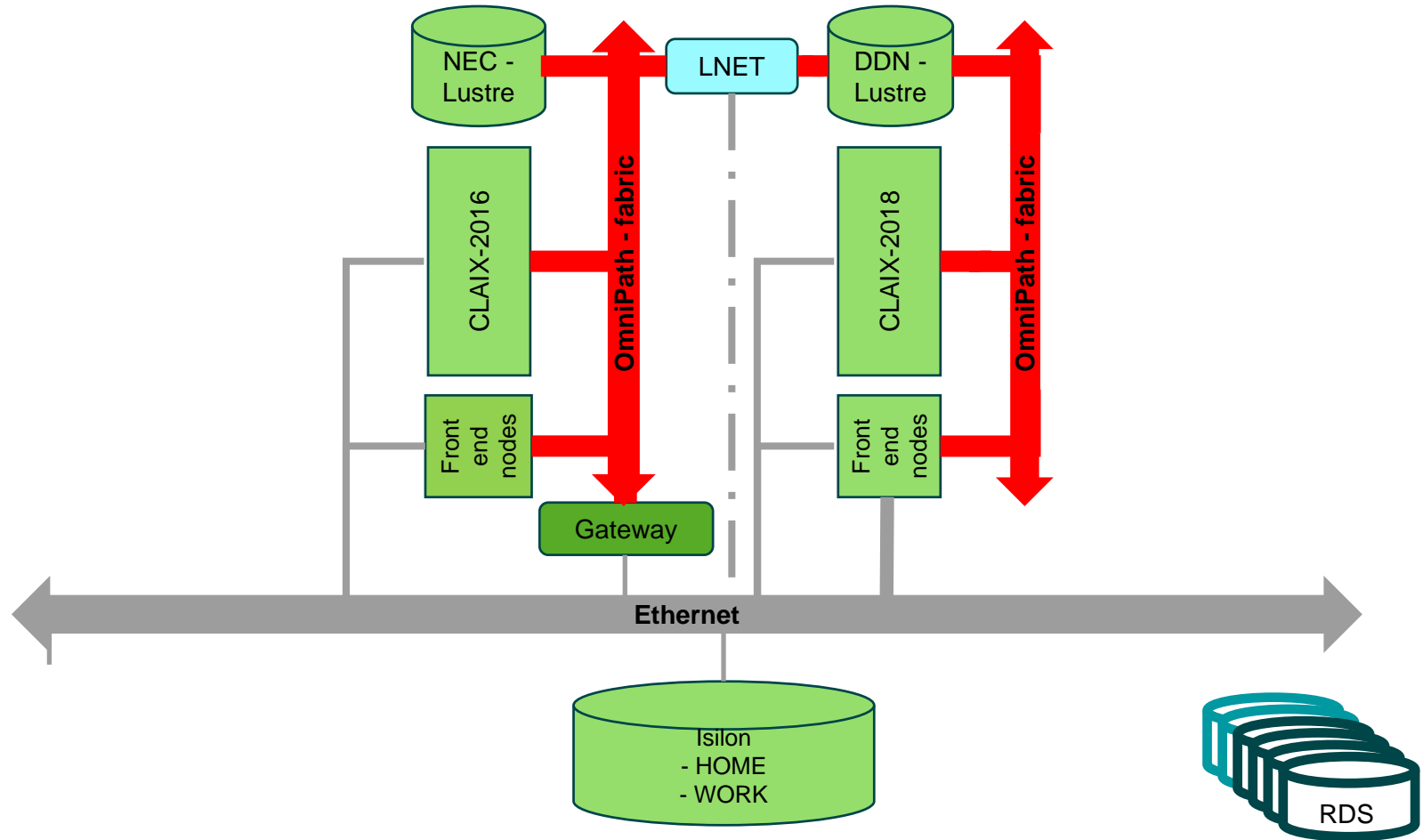
Non-HPC Storage

- „Result“: data leading to knowledge
- Connecting the realm of HPC with ResearchDataManagement (RDM)
- Aims: store data according to FAIR principle (findable, accessible, interoperable, reproducible)
- Here: store resulting data in a way that
 - They can be linked together with the publication
 - The parameters are stored: of simulation, of experimental setting, ...

Dedicated Storage for RDM

- Currently implemented: testbed
- Newly installed: RD storage (~5 PB)
 - Fileserver
 - Object storage
- Storage characteristics:
 - Large
 - ~ slow (compared to HPC)
 - „persistency layer“ → guaranteed safety
 - Structures and processes for lifetimes far beyond the hardware
- Resource Management similar to CLAIX
 - Management integration ~this year

RWTH Compute Cluster Configuration Overview



Thank You!