DMFUG 2018

DMF7 Architectural Overview and Design Introduction

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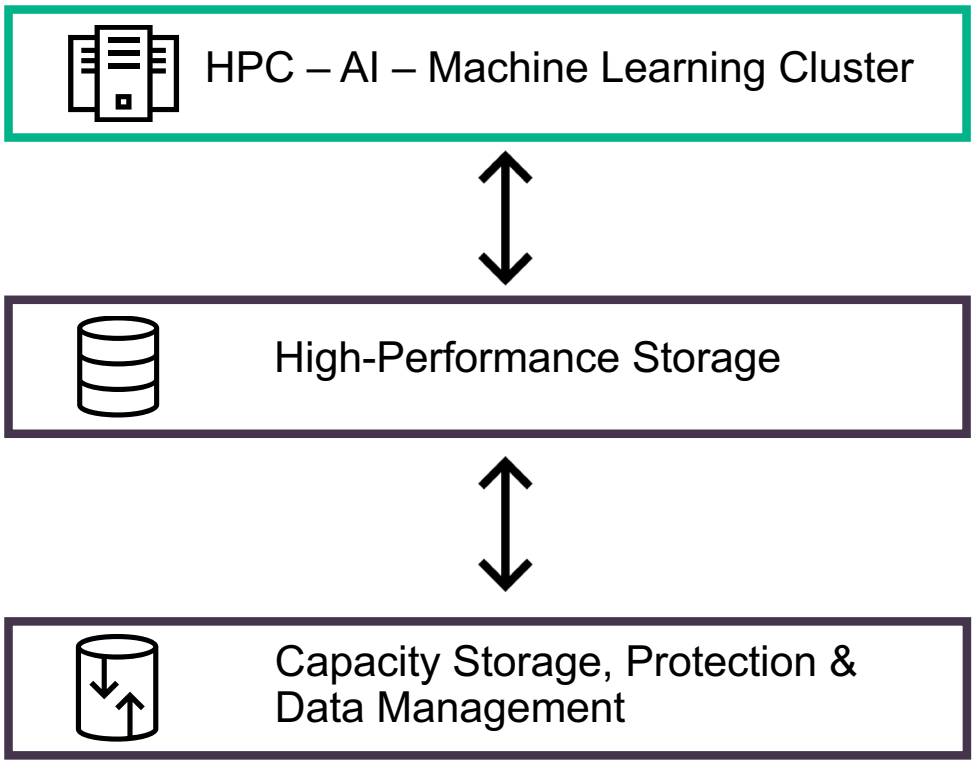
HPC & AI | **Data Management** Technology Shifts & Strategies



Key Takeaways

- Disaggregate and scale High-Performance Storage Tier *Independently* from Capacity Tier
- Collocate Performance Tier with Compute and Fabric
- Implement tiered Data Management for Capacity Scaling and Data Protection

Tiered Data Movement and Management are a Key Requirement – and HPE Data Management Framework (DMF) Meets That Need

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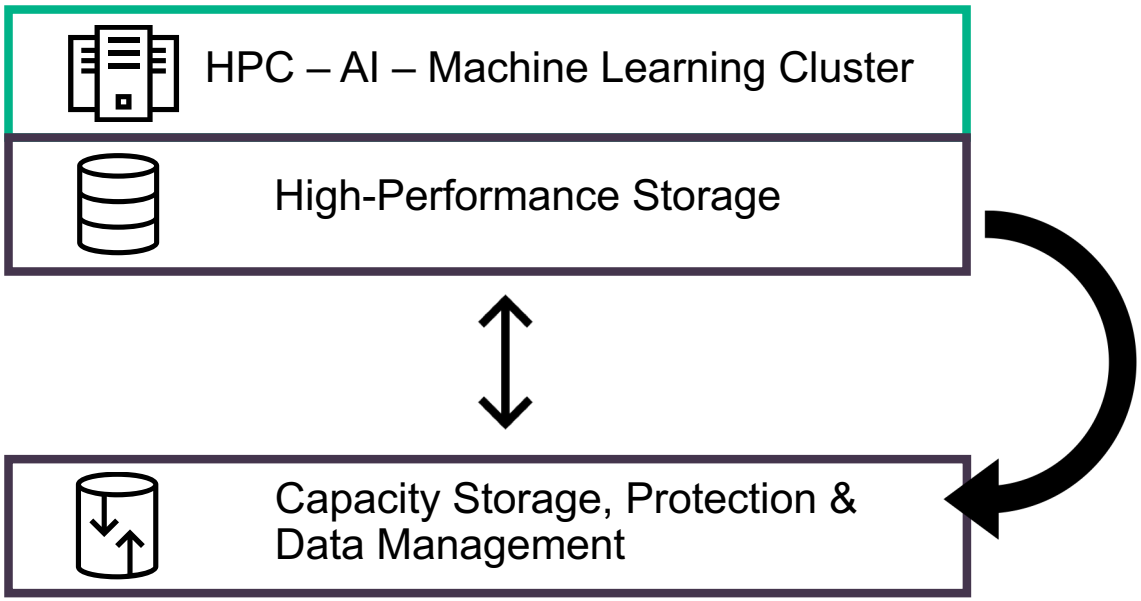
HPC & AI | **Data Management** Technology Shifts & Strategies



Key Takeaways

- **Transition From**
  - Enormous Static File Systems
  - Traditional Backups
  - Snapshots
- **Transition To**
  - Dynamic Namespaces
  - Searchable Metadata
  - Integrated Data Management & Provenance
  - Policy-based Protection

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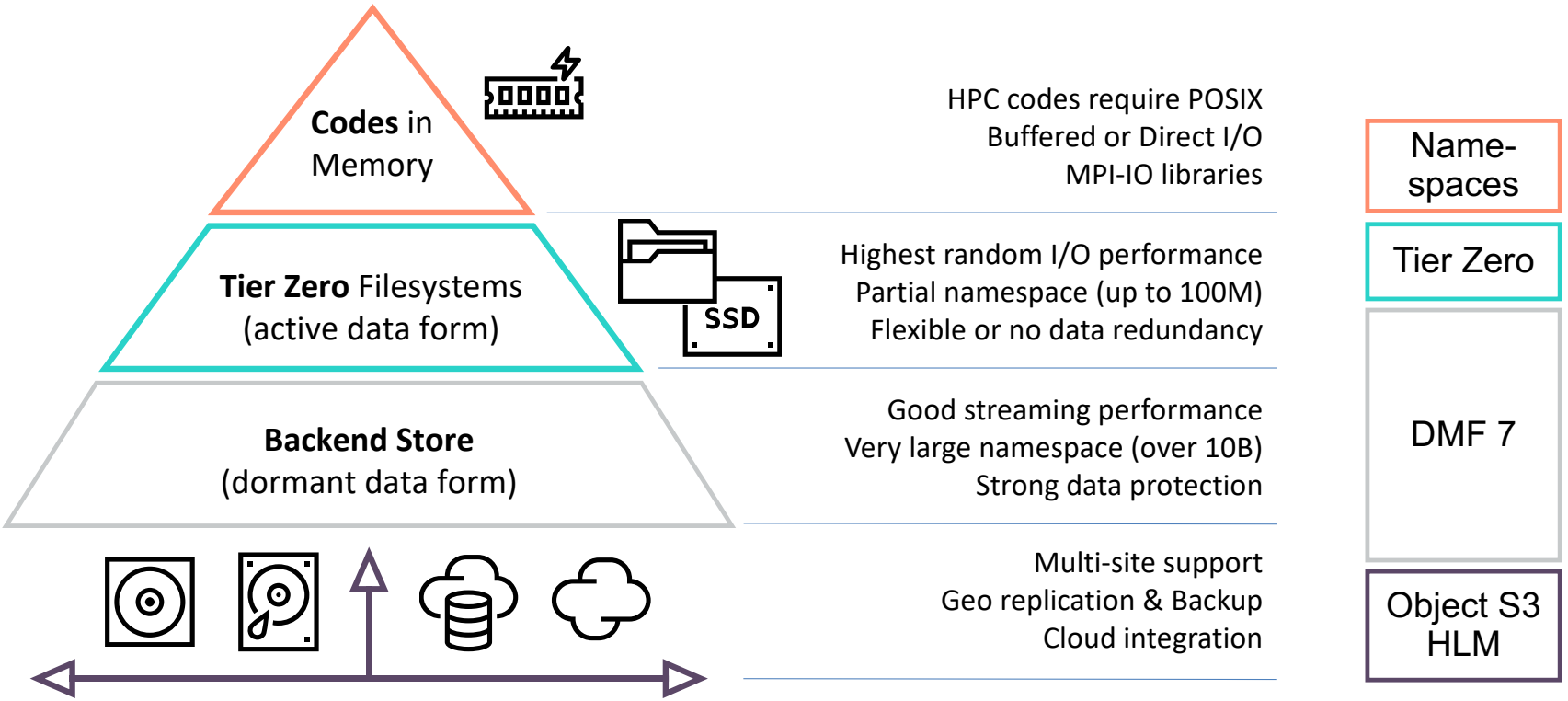
HPC Workflows | **Data Tiering Model** Active & Dormant Forms



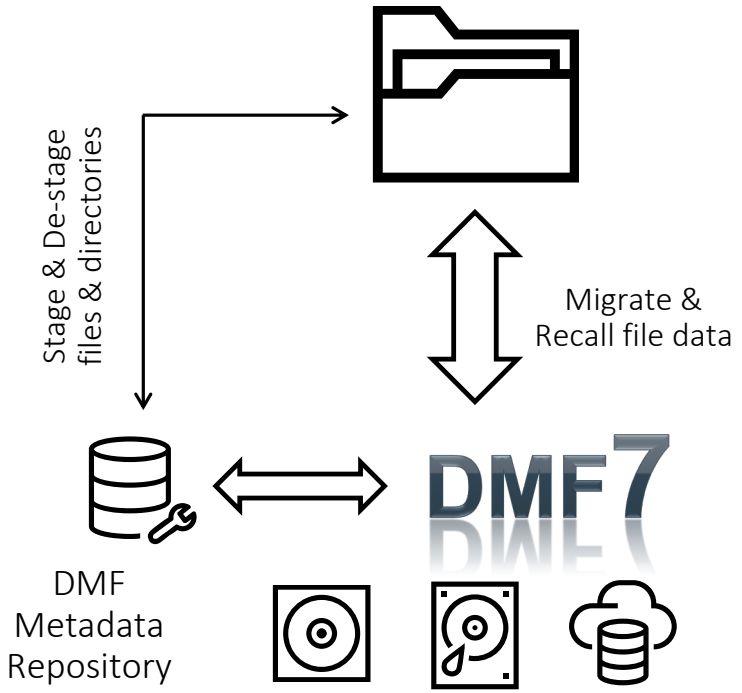
Data Management | **DMF 7** Data Staging & Dormant Form

Key Takeaways

Data Staging and Dormant Form

DMF 7 objects can exist in dormant form without filesystem representation. Only data that needs to be accessed has to be staged into a filesystem.

- **Just-in-Time Data Staging:** Individual objects or collections (data sets) can be staged into managed filesystem as files and directories either on demand by user or in coordination with job scheduler.
- **Increased Filesystem Performance:** De-staging inactive files and directories reduces namespace pollution and allows DMF managed filesystems contain unstructured file sprawl.
- **Enhanced Privacy and Protection:** Files not in active use can be completely de-staged and removed from managed filesystem preventing unauthorized access.



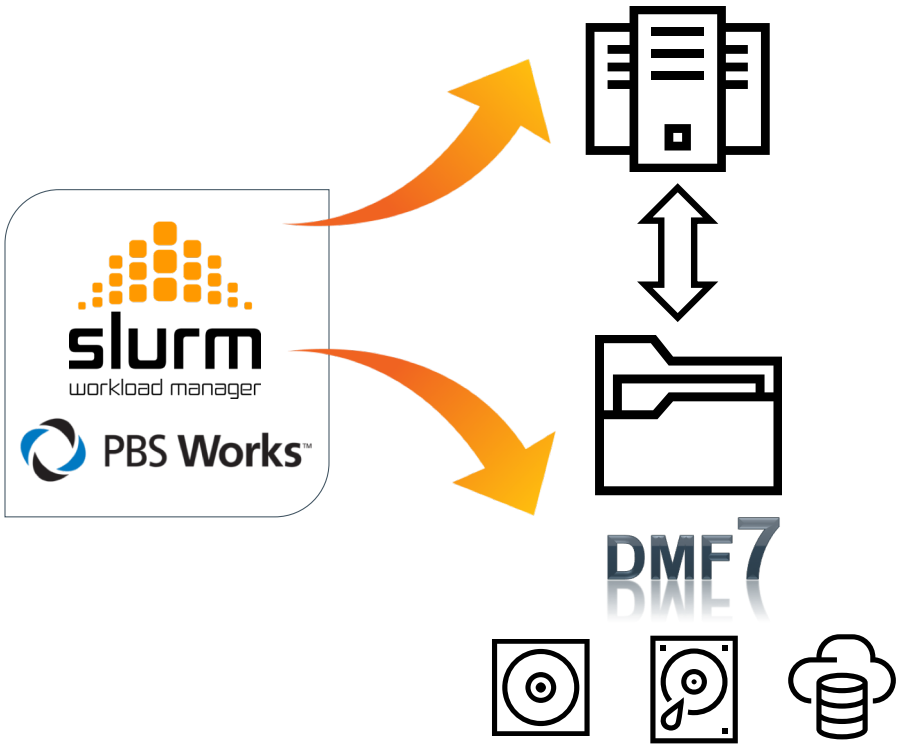
Data Management | **DMF 7** Job Scheduler Integration

Key Takeaways

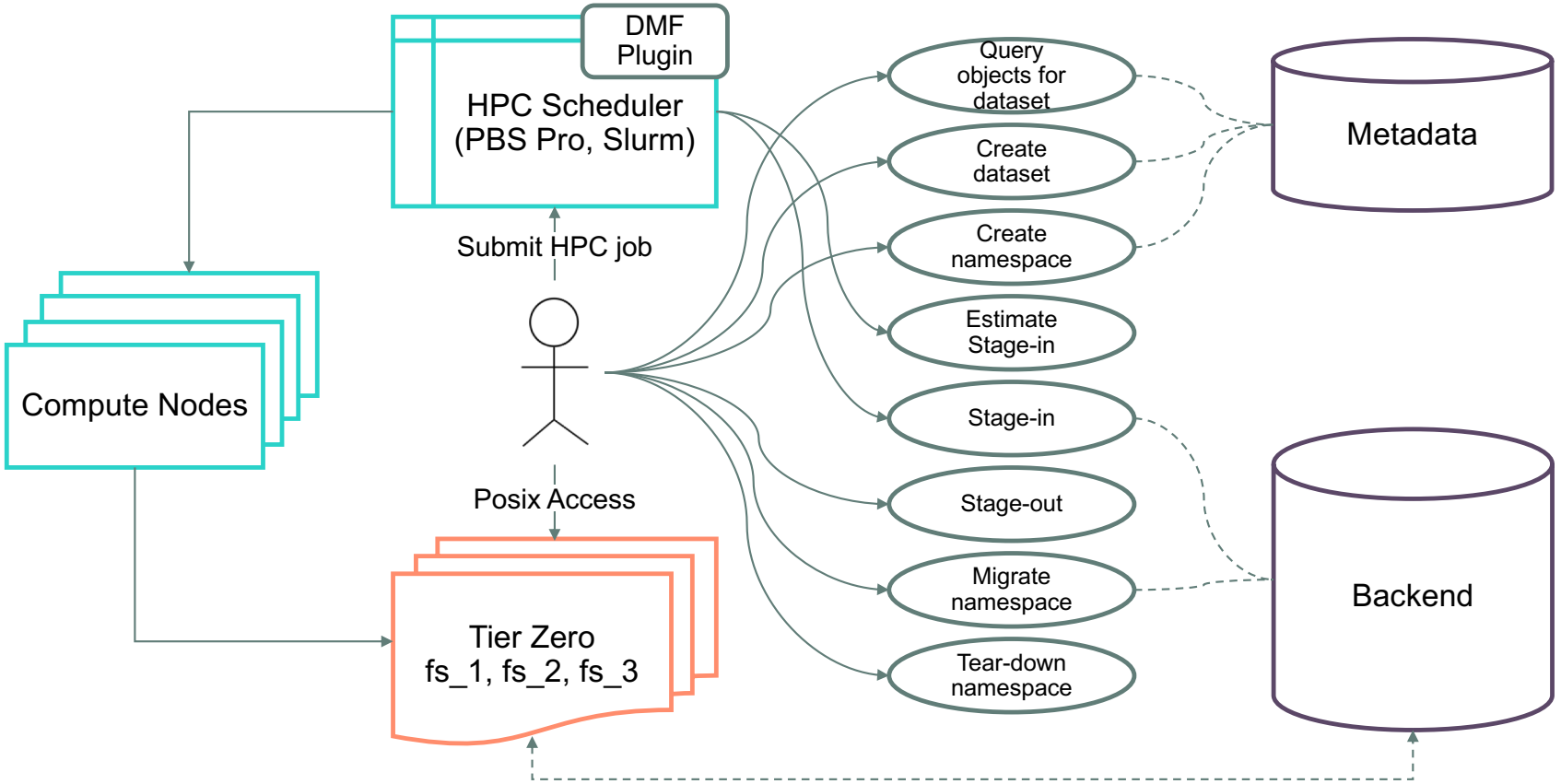
Job Scheduler Integration

DMF 7 is API-enabled to allow integration with job schedulers for operations such as data pre-staging to a high-performance flash tier in advance of job execution.

- **Data Pre-Staging or Recall Based on Metadata:** Job scheduler definitions can include information on required data sets that should be on the fastest tier of storage in advance of job initiation.
- **Data Set Definition:** Job administrators can define labeled "data sets" that are a collection of files/directories associated with a specific job type. This process can simplify job management and enable more easily reproducible results in the future.
- **Data Migration or De-Staging After Job Completion:** Data can be migrated or de-staged from high-performance storage based on automated policies – or job administrators can direct the system to migrate or de-stage data after job completion.

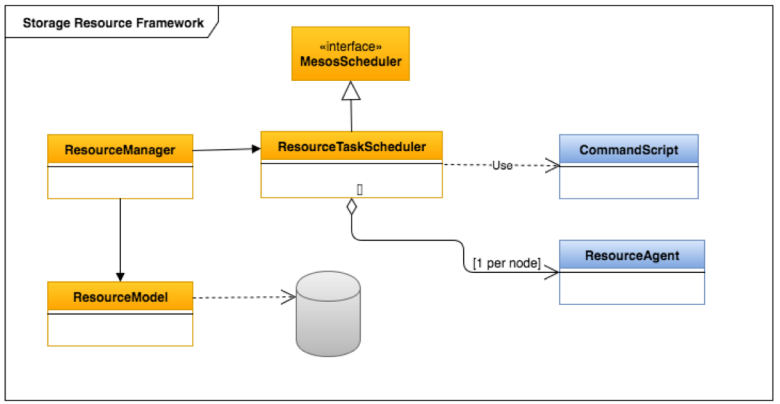


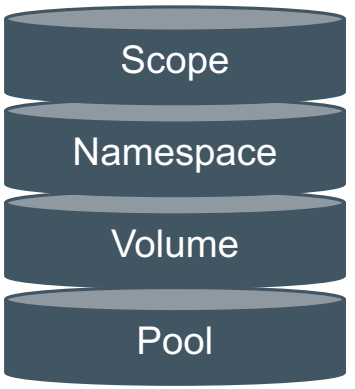
HPC Use Case | **Dynamic Namespaces** HPC User



Data Management | **DMF 7** Storage Resource Framework

- SRF (Storage Resource Framework) is the DMF7 component responsible for managing all the storage resources known to DMF.
- DMF7 supports the following storage types:
  - Static HPE XFS filesystem
  - Static Lustre filesystem
  - Dynamic HPE XFS filesystem on a static volume
  - Fully Dynamic HPE XFS filesystem
- SRF performs the following actions:
  - Discover nodes, pools, parallel filesystem providers, static volumes, and static namespaces
  - Register nodes, pools, parallel filesystem providers, static volumes, and static namespaces with DMF
  - Define groups of compute nodes (scopes)
  - Create Dynamic Namespaces
  - Attach a Dynamic Namespace to a scope of compute nodes
  - Unregister, Detach, and Destroy





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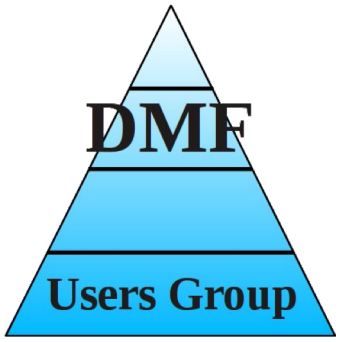

Thank You