The Bulk service and WLCG TAPE AP support in dCache

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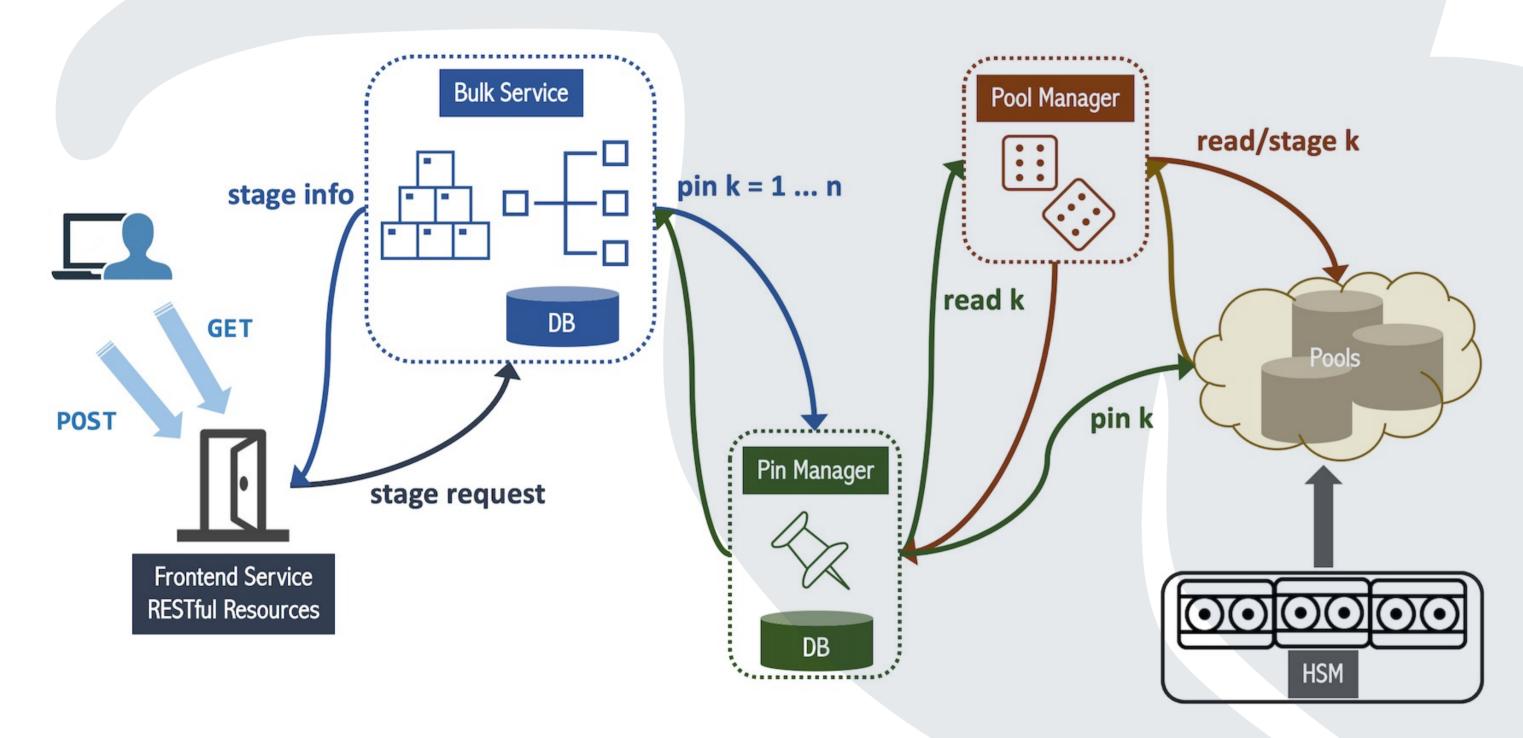
Staging via REST API and Bulk service

As part of the WLCG collaboration, sites deploying dCache will require support for the TAPE REST API allowing for massive recall of files from tape. dCache implements the specified resources in its Frontend service, relaying the requests to a general-purpose Bulk service for handling. Similarly, the status of a request is also obtained via a RESTful query to the Frontend which retrieves the information from the Bulk service. Policies affecting throughput, number of requests per user and maximum files per request are all configurable.

REST API: SWAGGER

(https://example.org:3880/api/v1)

ST /tape/archiveinfo Return the file locality information for a list of file paths.





Lifecycle of a Bulk request

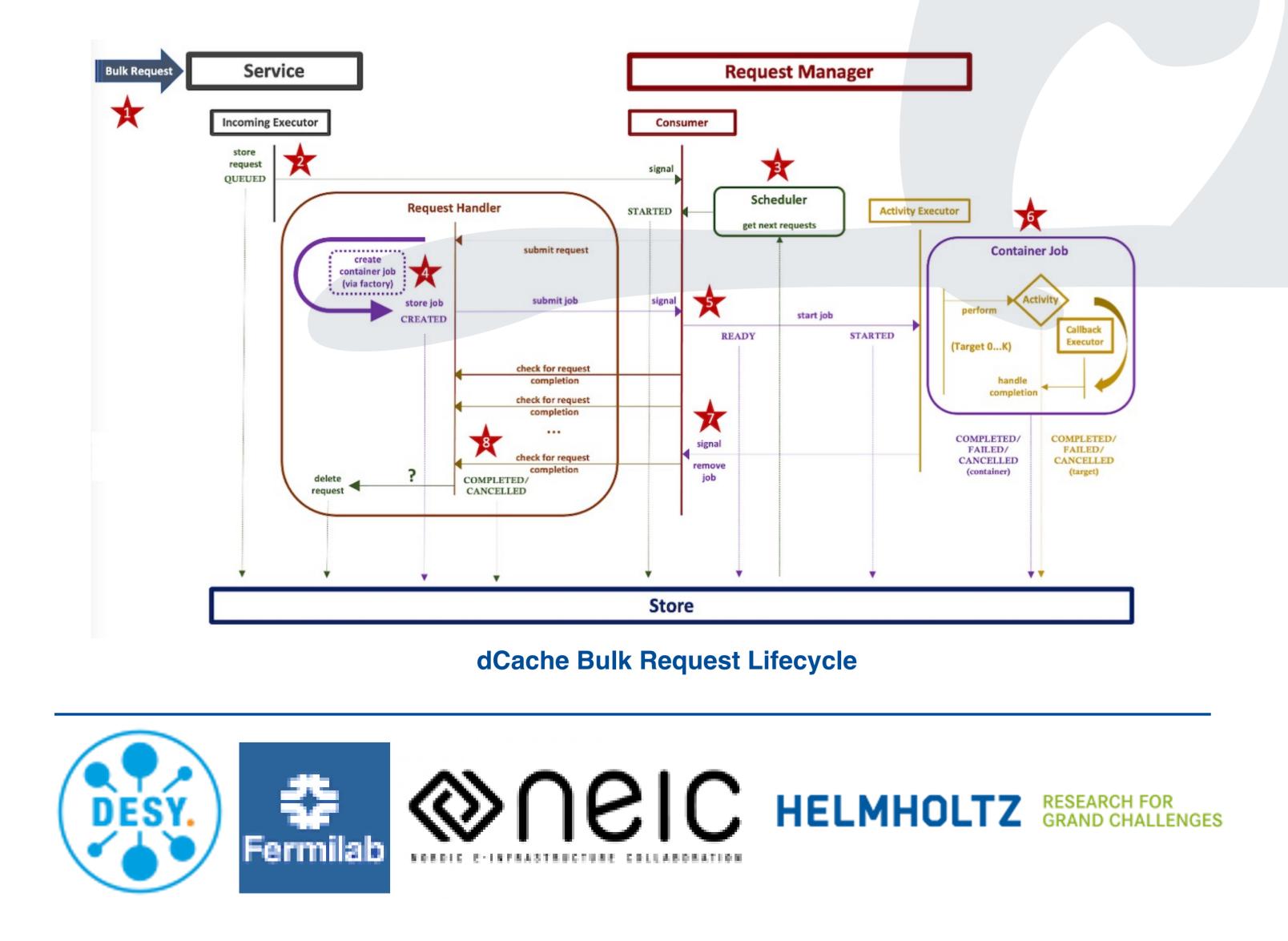
1051		_			
POST	/tape/release/{id} RELEASE files associated with a STAGE request.				
POST	/tape/stage/{id}/cancel Cancel a STAGE request.				
POST	/tape/stage Submit a STAGE request.	-			
GET	/tape/stage/{id} Get the status information for an individual stage request.				
DELETE	/tape/stage/{id} Clear all resources pertaining to the given stage request id.	-			
bulk-requests \					
GET	/bulk-requests/{id} Get the status information for an individual bulk request. If the number of request targets equals 10K, retry using the offset (highest returned seqNo + 1) to fetch more targets.				

/bulk-requests/{id} Clear all resources pertaining to the given bulk request id. /bulk-requests/{id} Take some action on a bulk request /bulk-requests Get the summary info of current bulk operations. If the number of requests returned equals 10K, retry using the offset (highest returned seqNo + 1) to fetch more request /bulk-requests Submit a bulk request.

The dCache Frontend provides a SWAGGER page which describes the REST API and allows the user to try out the various resources.

WLCG TAPE: A special case of the generic Bulk request

1) Service receives request message. 2) Service stores unprocessed request, signals manager. 3) Consumer retrieves next requests from scheduler. 4) Request submitted to handler, which creates and stores container job. 5) Job submitted to manager, which launches it using the activity's thread executor. 6) Job processes request targets by: expanding directories (if indicated); pre-storing discovered targets (if indicated); performing activity; processing completion as callback; storing and/or updating. 7) Consumer removes completed job from queue. 8) Consumer checks and updates state of requests. If clear is indicated, deletes request.



		Dorin	
POST*	<u>Pin</u>	api/v1/bulk-requests	N/A
		{"activity":"PIN","arguments":{"lifetime":"1","lifetimeUnit": "DAYS","id":" <id>"},"target":["path",]}</id>	
POST*	Stage to disk	api/v1/bulk-requests	api/v1/tape/stage
		{"activity":"PIN","arguments":{"lifetime":"1","lifetimeUnit": "DAYS","id":" <id>"},"target":["path",]}</id>	<pre>{"files": ["diskLifetime":"P1D","path",]} (diskLifetime is ISO 8601)</pre>
POST*	<u>Unpin</u>	api/v1/bulk-requests	N/A
		{"activity":"UNPIN","arguments":{"id":" <request_id>"}, "target": ["path",]}</request_id>	
POST	Release	api/v1/bulk-requests	api/v1/tape/release/ <request_id></request_id>
		{"activity":"UNPIN","arguments":{"id":" <request_id>"}, "target": ["path",]}</request_id>	{"paths":["path",]}
POST*	Change file QoS	api/v1/bulk-requests	N/A
		{"activity":"UPDATE_QOS","arguments":{"targetQos": " <new qos="">"},"target":["path",]}</new>	
POST*	Delete	api/v1/bulk-requests	N/A
		{"activity":"DELETE","arguments":{"skipDirs":" <true false="">"}, "target":["path",]}</true>	

(*) The request id is returned with the response.

"nextld": 2030215, "uid" : "0f8f4102-47f1-4b0a-aeda-e40280c2a769" "arrivedAt" : 1652712101542, "startedAt" : 1652712101551, "lastModified" : 1652712369571, "status" : "COMPLETED", "targets" : [{ "target" : "/pnfs/fs/usr/fermilab/users/arossi/tape/000/data-2022050912561652118976111376885", "state" : "COMPLETED", "submittedAt" : 1652712101670, "startedAt" : 1652712101670, "finishedAt" : 1652712101672, "id" : "0f8f4102-47f1-4b0a-aeda-e40280c2a769",

"createdAt" : 1652712101542, "startedAt" : 1652712101551, "completedAt" : 1652712369571, "files" : [{ "path" : "/pnfs/fs/usr/fermilab/users/arossi/tape/000/data-2022050912561652118976111376885", "finishedAt" : 1652712101672, "startedAt" : 1652712101670, "state" : "COMPLETED"

JSON GET responses, Bulk (PIN) request (left) vs WLCG TAPE stage request (right)

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