Katello and Pulp CLI: Debugging Together

November 2022
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Configuration

- Pulp-CLI is comes preinstalled on Foreman + Katello

```
cat ~/.config/pulp/cli.toml
[cli]
base_url = "https://foreman-fqdn.example.com"
cert = "/etc/pki/katello/certs/pulp-client.crt"
key = "/etc/pki/katello/private/pulp-client.key"

[cli-proxy]
base_url = "https://proxy-fqdn.example.com"
cert = "/etc/pki/katello/certs/pulp-client.crt"
key = "/etc/pki/katello/private/pulp-client.key"
```
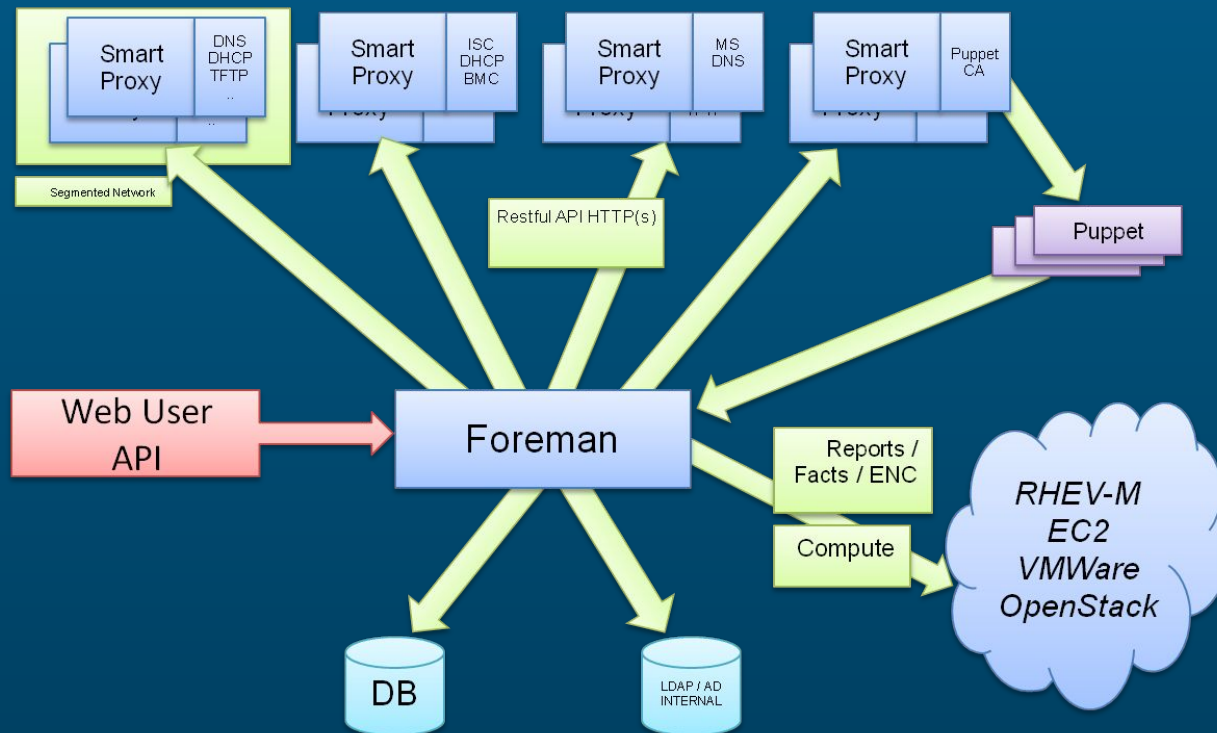
What's a smart proxy?

Profiles are great for smart proxies

- Example: use Pulp-CLI to check if a repository has the right repository version

```
pulp --profile proxy rpm repository list
… <yum repositories on the smart proxy> …

pulp rpm repository list
… <yum repositories on the main foreman> …
```

vs.

```
[6] pry(main)> ::Katello::Repository.search_for("name ~
alma").library.pluck(:version_href)
=> ["/pulp/api/v3/repositories/rpm/rpm/<uuid>/versions/2/", …]
```

- Example: find a Pulp repository version from a smart proxy repo URL 👷
  - /pulp/content/Organization/Library/A_View/custom/Buttermilk_Biscuits/Zoo/

```
shell #> pulp --profile proxy rpm distribution list \
  --base-path Organization/Library/A_View/custom/Buttermilk_Biscuits/Zoo
[
  {
    …
    "publication": "/pulp/api/v3/publications/rpm/rpm/some-pub-uuid/"
  }
]


shell #> pulp -profile proxy rpm publication show \
  --href /pulp/api/v3/publications/rpm/rpm/some-pub-uuid/
{
  …
  "repository_version":
"/pulp/api/v3/repositories/rpm/rpm/uuid/versions/1/",
  …
}
```

- We use Dynflow for 99% of task debugging
- Example: publish a content view with filtering and check the new repo version's content
  - In Pulp terms: copy some repository content to another repository and check the advisories copied

35: Actions::Pulp3::Repository::CopyContent (success) [1.14s / 0.63s]

Queue: default

Started at: 2022-09-07 21:38:27 UTC

Ended at: 2022-09-07 21:38:28 UTC

Real time: 1.14s

Execution time (excluding suspended state): 0.63s

Input:

```
---
filter_ids:
- 4
- 5
solve_dependencies: false
rpm_filenames:
remove_all: true
source_repository_id: 2
target_repository_id: 27
smart_proxy_id: 1
remote_user: admin
remote_cp_user: admin
locale: en
current_request_id: c0457169-9311-47e3-a306-e3dfe9013745
current_timezone: America/New_York
current_organization_id: 1
current_location_id: 2
current_user_id: 4
```

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Output:

```
---
pulp_tasks:
- pulp_href: "/pulp/api/v3/tasks/3cc00b14-67fa-41b7-8bfc-73f063c733e9/"
  pulp_created: '2022-09-07T21:38:27.943+00:00'
  state: completed
  name: pulpcore.app.tasks.repository.add_and_remove
  logging_cid: c0457169-9311-47e3-a306-e3dfe9013745
  started_at: '2022-09-07T21:38:28.051+00:00'
  finished_at: '2022-09-07T21:38:28.187+00:00'
  worker: "/pulp/api/v3/workers/04528463-c597-490e-b869-80da8ff145ce/"
  child_tasks: []
  progress_reports: []
  created_resources:
  - "/pulp/api/v3/repositories/rpm/rpm/35b719d8-e7ed-4f12-b1d0-1a86a2aace25/versions/1/"
  reserved_resources_record:
  - "/pulp/api/v3/repositories/rpm/rpm/35b719d8-e7ed-4f12-b1d0-1a86a2aace25/"
task_groups: []
poll_attempts:
  total: 1
  failed: 0
```

Chunked output:

```
--- []
```

```
console #> pulp show --href repo_href
{
    "pulp_href": "/repo_href/versions/1/",
    "pulp_created": "2022-09-07T21:38:28.065307Z",
    "number": 1,
    "repository": "repo_href",
    "base_version": null,
    "content_summary": {
        "added": {
        "rpm.advisory": {
        "count": 4,
        "href": "href_to_query_added_errata"
        },
        "rpm.package": {
        "count": 32,
            …
```

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- Pulp-CLI was instrumental to adding ACS integration into Katello

```
pulp --profile proxy rpm remote create --url
https://fixtures.pulpproject.org/ …

pulp --profile proxy rpm acs create --path rpm-with-modules/ …

pulp --profile proxy rpm acs refresh --href …
```

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- Sometimes our tests would fail to delete extra ACSs and remotes

```
pulp --profile proxy rpm remote list  and then delete
```

```
pulp --profile proxy rpm acs list  and then delete
```

- Useful for times when cascading errors hide the original "cannot create remote/ACS due to name conflict"
  - A quick Pulp-CLI check is faster than going in with the debugger

Recent Debugging Example – Container Content

- https://bugzilla.redhat.com/show_bug.cgi?id=2125244
- Issue: a container repository in Katello is not indexing:

```
2022-09-08T07:09:03 [E|bac|1e1e7f80] undefined method
`schema_version' for nil:NilClass (NoMethodError)

 1e1e7f80 |
/usr/share/gems/gems/katello-4.5.0.8/app/models/katello/docke
r_meta_tag.rb:177:in `block in get_tag_table_values'
```

- Here is the code: https://github.com/Katello/katello/blob/master/app/models/katello/docker_meta_tag.rb#L177

```
…
if values.first.docker_manifest.schema_version == 1
…
```

It looks like `values.first.docker_manifest` is `nil`

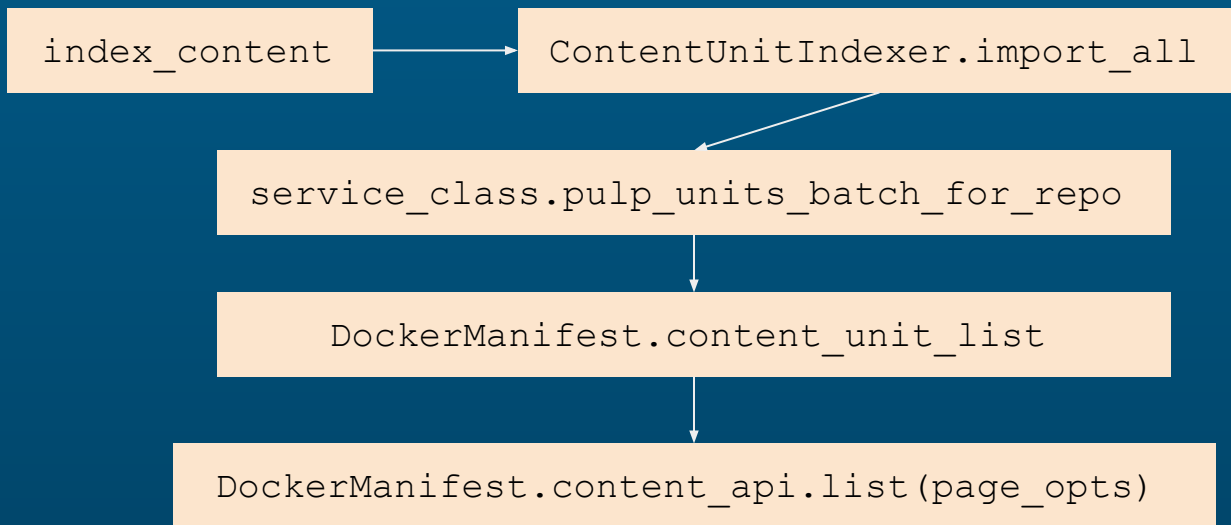So, the manifest is not being indexed correctly. Interesting.

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- Now let's look at the indexing code:
  https://github.com/Katello/katello/blob/master/app/models/katello/repository.rb#L911

```
index_content          ───────▶   ContentUnitIndexer.import_all
```

```
                    service_class.pulp_units_batch_for_repo
```

```
                       DockerManifest.content_unit_list
```

```
                    DockerManifest.content_api.list(page_opts)
```

- Next, call `content_unit_list` to check for issues
  - pass `repository_version` into `page_opts`

```
console #> ::Katello::Pulp3::DockerManifest.content_unit_list({repository_version:
"/pulp/api/v3/repositories/container/container/055b9
df9-5ae2-484d-be70-be27f4ee87ee/versions/1/"})

=>
#<PulpContainerClient::PaginatedcontainerManifestResponseList:0x000055896adc1a10
@count=0, @results=[]>
```

- Nothing is returned!
- Let's check the Pulp repository version ourselves

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```
shell #> pulp show --href
/pulp/api/v3/repositories/container/container/055b9df9-5ae2-484d-be70-be27
f4ee87ee/versions/1/

{
…
  "content_summary": {
    …
    "container.manifest": {
    "count": 1,
    "href":
"/pulp/api/v3/content/container/manifests/?repository_version_added=/pulp/
api/v3/repositories/container/container/055b9df9-5ae2-484d-be70-be27f4ee87
ee/versions/1/"
    },
  …
}
```

- So, there are manifests in the repository version.
  - Let's inspect them using the returned URL:

```
shell #> pulp show --href
/pulp/api/v3/content/container/manifests/?repository_version_added=/pulp/a
pi/v3/repositories/container/container/055b9df9-5ae2-484d-be70-be27f4ee87e
e/versions/1/
{
  …
  "results": [
    {
      "pulp_href":
"/pulp/api/v3/content/container/manifests/796a10da-a1a1-4834-ac38-1816dfb4
c130/",
      "schema_version": 1,
      "media_type":
"application/vnd.docker.distribution.manifest.v1+prettyjws",
    }
  ]
}
```

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- +prettyjws does not look familiar
- Here's the code:
  https://github.com/Katello/katello/blob/eef975fa903a2ef9f079ab0365d47d2601977f74/app/services/katello/pulp3/docker_manifest.rb#L17

```
page_opts[:media_type] =
  ['application/vnd.docker.distribution.manifest.v1+json',
  'application/vnd.docker.distribution.manifest.v2+json']
```

- So, Katello is filtering out the +prettyjws media type, which is why the manifest isn't being indexed!

Pulp-CLI Wishes

- Association viewing
  - Ex: From a repository, list all associated publications and distributions
- More search capabilities
  - Foreman's Hammer CLI allows for generic search queries:
    - `hammer repository list --search "name~alma"`
- `pulp show --href <href> -> pulp show <href>`

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Questions?