

ImagePullBackOff状態のレジストリ名前空間ポッドのトラブルシューティング

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概要

このドキュメントでは、ImagePullBackOff状態のレジストリポッドの問題と解決策について説明します。

問題

Ultra Cloud Core Subscriber Microservices Infrastructure(SMI)のCluster Manager(CM)のレジストリポッドはImagePullBackOff状態です。

```
cloud-user@lab-deployer-cm-primary:~$ kubectl get pods -A -o wide | grep -v "Running"
NAMESPACE          NAME                                READY
STATUS             RESTARTS  AGE  IP              NODE                                NOMINATED NODE
READINESS GATES
registry           charts-cee-2020-02-2-1-1-0         0/1
ImagePullBackOff  0          100d  10.10.10.178   lab-deployer-cm-primary           <none>
<none>
registry           charts-cluster-deployer-2020-02-2-35-0  0/1
ImagePullBackOff  0          100d  10.10.10.180   lab-deployer-cm-primary           <none>
<none>
registry           registry-cee-2020-02-2-1-1-0       0/1
ImagePullBackOff  0          100d  10.10.10.198   lab-deployer-cm-primary           <none>
<none>
registry           registry-cluster-deployer-2020-02-2-35-0  0/1
ImagePullBackOff  0          100d  10.10.10.152   lab-deployer-cm-primary           <none>
<none>
registry           software-unpacker-0                0/1
ImagePullBackOff  0          100d  10.10.10.160   lab-deployer-cm-primary           <none>
<none>
```

Common Execution Environment(CEE)Deployerは、システム同期の保留中がtrueであるため、システムの準備状態を0%と表示します。

```
[deployer/cee] cee# show system
system uuid 012345678-9abc-0123-4567-000011112222
system status deployed true
system status percent-ready 0.0
system ops-center repository https://charts.10.192.1.1.nip.io/cee-2020.02.2.35
system ops-center-debug status false
system synch running true
system synch pending true.
```

セキュアシェルプロトコル(SSH)を使用してCEEに接続すると、エラー「404 Not Found」が報告されます。

```
[deployer/cee] cee#
Message from confd-api-manager at 2022-05-05 01:01:01...
Helm update is ERROR. Trigger for update is CHANGE. Message is:
WebApplicationException: HTTP 404 Not Found
com.google.common.util.concurrent.UncheckedExecutionException:
javax.ws.rs.WebApplicationException: HTTP 404 Not Found
at com.google.common.cache.LocalCache$Segment.get(LocalCache.java:2052)
at com.google.common.cache.LocalCache.get(LocalCache.java:3943)
at com.google.common.cache.LocalCache.getOrLoad(LocalCache.java:3967)
at com.google.common.cache.LocalCache$LocalLoadingCache.get(LocalCache.java:4952)
at
com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO.getChartVersion(HelmRepositoryDAO.java:638
)
at
com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO.installRelease(HelmRepositoryDAO.java:359)
at
com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO.sendConfiguration(HelmRepositoryDAO.java:2
54)
at
com.broadhop.conf.d.config.proxy.service.ConfigurationSynchManager.run(ConfigurationSynchManager.
java:233)
at java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:511)
at java.util.concurrent.FutureTask.runAndReset(FutureTask.java:308)
at
java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.access$301(ScheduledThreadP
oolExecutor.java:180)
at
java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(ScheduledThreadPoolExec
utor.java:294)
at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1149)
at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:624)
at java.lang.Thread.run(Thread.java:748)
Caused by: javax.ws.rs.WebApplicationException: HTTP 404 Not Found
at
com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO.retrieveHelmIndex(HelmRepositoryDAO.java:6
20)
at com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO$2.load(HelmRepositoryDAO.java:114)
at com.broadhop.conf.d.config.proxy.dao.HelmRepositoryDAO$2.load(HelmRepositoryDAO.java:112)
at com.google.common.cache.LocalCache$LoadingValueReference.loadFuture(LocalCache.java:3524)
at com.google.common.cache.LocalCache$Segment.loadSync(LocalCache.java:2273)
at com.google.common.cache.LocalCache$Segment.lockedGetOrLoad(LocalCache.java:2156)
at com.google.common.cache.LocalCache$Segment.get(LocalCache.java:2046)
```

分析

1. CEE Deployerでヘルムリポジトリの設定を確認します。

```
[deployer/cee] cee# show running-config helm
helm default-repository base-repos
helm repository base-repos
url https://charts.10.192.1.1.nip.io/cee-2020.02.2.35
exit
```

2. プライマリクラスタマネージャからURLのindex.yamlを照会して、404応答が送信されたことを確認します。

```
cloud-user@deployer-cm-primary:~$ curl -k https://charts.10.192.1.1.nip.io/cee-2020.02.2.35/index.yaml
default backend - 404
```

3. イメージリストをクエリする際に、`kubectl describe pod` コマンドが表示されない場合もありま

す。説明エラーに基づくイメージはありません。

```
cloud-user@lab-deployer-cm-primary:~$ kubectl describe pod ops-center-cee-labcluster-ops-center-df69975c7-gzszg -n cee-labcluster | grep Image
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-apps/cee-ops-center/2020.02.2/confd_init:0.7.0-00001111
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.33/smi-apps/cee-ops-center/2020.02.2/confd_init@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/crd_registry:0.7.1-00002222
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.27/smi-libraries/ops-center/2020.02.2/crd_registry@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/local_storage_init:0.7.1-00003333
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.27/smi-libraries/ops-center/2020.02.2/local_storage_init@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/confd:0.7.1-00004444
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.27/smi-libraries/ops-center/2020.02.2/confd@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/confd_api_bridge:0.7.1-00005555
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.33/smi-libraries/ops-center/2020.02.2/confd_api_bridge@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-apps/cee-ops-center/2020.02.2/product_confid_callback:0.7.0-00006666
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.27/smi-apps/cee-ops-center/2020.02.2/product_confid_callback@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/ssh_ui:0.7.1-00007777
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/ssh_ui@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
Image: docker.10.192.1.1.nip.io/cee-2020.02.2.35/smi-libraries/ops-center/2020.02.2/confd_notifications:0.7.1-00008888
Image ID: docker-pullable://docker.10.192.1.1.nip.io/cee-2020.02.2.27/smi-libraries/ops-center/2020.02.2/confd_notifications@sha256:01234567890123456789012345678901234567890123456789012345678901234567890123
```

4. Cisco IOSソフトウェアの `kubectl describe pod` コマンドを発行します。

5. Cisco IOSソフトウェアの `kubectl get pods -A -o wide | grep -v "Running"` コマンドを使用して、Kubernetesクラスタ内のすべてのネームスペース間のポッドの状態を確認します。

```
cloud-user@lab-deployer-cm-primary:~$ kubectl describe pod charts-cee-2020-02-2-1-1-0 -n registry
Volumes:
charts-volume:
Type: HostPath (bare host directory volume)
Path: /data/software/packages/cee-2020.02.2.1.1/data/charts
HostPathType: DirectoryOrCreate
Events:
Type Reason Age From Message
----
Normal BackOff 9m3s (x104861 over 16d) kubelet Back-off pulling image "dockerhub.cisco.com/smi-fuse-docker-internal/smi-apps/distributed-registry/2020.02.2/apache:0.1.0-abcd123"
Warning Failed 3m59s (x104884 over 16d) kubelet Error: ImagePullBackOff
```

```
cloud-user@lab-deployer-cm-primary:~$ kubectl describe pod charts-cluster-deployer-2020-02-2-35-0 -n registry
```

```
Name: charts-cluster-deployer-2020-02-2-35-0
Namespace: registry
Priority: 1000000000
Priority Class Name: infra-critical
Node: lab-deployer-cm-primary/10.192.1.1
Start Time: Thu, 01 Jan 2022 13:05:03 +0000
Labels: chart-app=charts-cluster-deployer-2020-02-2-35
component=charts
controller-revision-hash=charts-cluster-deployer-2020-02-2-35-589fdf57b8
registry=cluster-deployer-2020.02.2.35
statefulset.kubernetes.io/pod-name=charts-cluster-deployer-2020-02-2-35-0
Annotations: cni.projectcalico.org/podIP: 10.10.10.180/32
cni.projectcalico.org/podIPs: 10.10.10.180/32
sidecar.istio.io/inject: false
Status: Pending
IP: 10.10.10.180
IPs:
IP: 10.10.10.180
Controlled By: StatefulSet/charts-cluster-deployer-2020-02-2-35
Containers:
charts:
Container ID:
Image: dockerhub.cisco.com/smi-fuse-docker-internal/smi-apps/distributed-registry/2020.02.2/apache:0.1.0-abcd123
Image ID:
Port: 8080/TCP
Host Port: 0/TCP
State: Waiting
Reason: ImagePullBackOff
Ready: False
Restart Count: 0
Environment: <none>
Mounts:
/var/run/secrets/kubernetes.io/serviceaccount from default-token-qcmhx (ro)
/var/www/html/cluster-deployer-2020.02.2.35 from charts-volume (rw)
Conditions:
Type Status
Initialized True
Ready False
ContainersReady False
PodScheduled True
Volumes:
charts-volume:
Type: HostPath (bare host directory volume)
Path: /data/software/packages/cluster-deployer-2020.02.2.35/data/charts
HostPathType: DirectoryOrCreate
default-token-qcmhx:
Type: Secret (a volume populated by a Secret)
SecretName: default-token-qcmhx
Optional: false
QoS Class: BestEffort
Node-Selectors: <none>
Tolerations: node.kubernetes.io/not-ready:NoExecute op=Exists for 30s
node.kubernetes.io/unreachable:NoExecute op=Exists for 30s
Events:
Type Reason Age From Message
-----
Normal BackOff 118s (x104949 over 16d) kubelet Back-off pulling image
"dockerhub.cisco.com/smi-fuse-docker-internal/smi-apps/distributed-registry/2020.02.2/apache:0.1.0-abcd123"
```

```
cloud-user@lab-deployer-cm-primary:~$ cd /data/software/packages/cluster-deployer-
```

```

2020.02.2.35/data/charts$
cloud-user@lab-deployer-cm-primary:$ kubectl get pods -A -o wide | grep -v "Running"
NAMESPACE NAME READY STATUS RESTARTS AGE IP NODE NOMINATED NODE READINESS GATES
registry charts-cee-2020-02-2-1-1-0 0/1 ImagePullBackOff 0 100d 10.10.10.178 lab-deployer-
cm-primary <none> <none>
registry charts-cluster-deployer-2020-02-2-35-0 0/1 ErrImagePull 0 100d 10.10.10.180 lab-
deployer-cm-primary <none> <none>
registry registry-cee-2020-02-2-1-1-0 0/1 ErrImagePull 0 100d 10.10.10.198 lab-deployer-cm-
primary <none> <none>
registry registry-cluster-deployer-2020-02-2-35-0 0/1 ImagePullBackOff 0 100d 10.10.10.152
lab-deployer-cm-primary <none> <none>
registry software-unpacker-0 0/1 ImagePullBackOff 0 100d 10.10.10.160 lab-deployer-cm-
primary <none> <none>

```

6. クラスタ配置機能でファイルを確認します。

```

cloud-user@lab-deployer-cm-primary:/data/software/packages$ cd cluster-deployer-
2020.02.2.35/
cloud-user@lab-deployer-cm-primary:/data/software/packages/cluster-deployer-2020.02.2.35$
ll
total 12
drwxrwxr-x 3 303 303 4096 Jan 1 2021 ./
drwxrwxrwt 5 root root 4096 Mar 1 11:39 ../
drwxrwxr-x 5 303 303 4096 Jan 1 2021 data/
cloud-user@lab-deployer-cm-primary:/data/software/packages/cluster-deployer-2020.02.2.35$
cd data/
cloud-user@lab-deployer-cm-primary:/data/software/packages/cluster-deployer-
2020.02.2.35/data$ ll
total 20
drwxrwxr-x 5 303 303 4096 Jan 1 2021 ./
drwxrwxr-x 3 303 303 4096 Jan 1 2021 ../
drwxr-xr-x 2 303 303 4096 Mar 1 12:55 charts/
drwxr-xr-x 4 303 303 4096 Aug 10 2021 deployer-inception/
drwxr-xr-x 3 303 303 4096 Aug 10 2021 docker/
cloud-user@lab-deployer-cm-primary:/data/software/packages/cluster-deployer-
2020.02.2.35/data$ cd charts/
cloud-user@lab-deployer-cm-primary:/data/software/packages/cluster-deployer-
2020.02.2.35/data/charts$ ll
total 116
drwxr-xr-x 2 303 303 4096 Mar 1 12:55 ./
drwxrwxr-x 5 303 303 4096 Jan 1 2021 ../
-rw-r--r-- 1 303 303 486 Aug 10 2021 index.yaml
-rw-r--r-- 1 303 303 102968 Mar 1 12:55 smi-cluster-deployer-1.1.0-2020-02-2-1144-
210826141421-15f3d5b.tgz
cloud-user@lab-deployer-cm-primary:/tmp$
cloud-user@lab-deployer-cm-primary:/tmp$ ls /tmp/k8s-* -al
-rw-r--r-- 1 root root 2672 Sep 7 2021 /tmp/k8s-offline.tgz.txt

```

解決方法

この問題は、クラスタの同期が失敗したことが原因と考えられます。解決策は、Inception Server(ISR)からCM High Availability(HA)へのクラスタ同期を実行することです。

1. SSHを使用してインスペクションサーバに接続します。
2. SSHを使用してオペレーションセンターポート2022に接続します。

```
cloud-user@all-in-one-vm:~$ ssh admin@localhost -p 2022
```

3. クラスタが受信サーバにあることを確認します。

```
[all-in-one-base-vm] SMI Cluster Deployer# show clusters
```

4. クラスタの設定が正しいことを確認します。この例では、クラスタ名はlab-deployerです。

```
[all-in-one-base-vm] SMI Cluster Deployer# show running-config clusters lab-deployer
```

5. クラスタ同期を実行します。

```
[all-in-one-base-vm] SMI Cluster Deployer# clusters lab-deployer actions sync run debug
```

6. 同期ログを監視します。

```
[all-in-one-base-vm] SMI Cluster Deployer# monitor sync-logs lab-deployer
```

Successful cluster sync logs example below :

```
Wednesday 01 December 2021 01:01:01 +0000 (0:00:00.080) 0:33:08.600 ****
```

```
=====
```

```
2021-12-01 01:01:01.230 DEBUG cluster_sync.ca-deployer: Cluster sync successful
```

```
2021-12-01 01:01:01.230 DEBUG cluster_sync.ca-deployer: Ansible sync done
```

```
2021-12-01 01:01:01.231 INFO cluster_sync.ca-deployer: _sync finished. Opening lock
```

7. SSHを使用してCluster Managerに接続し、ポッドが「実行中」状態であることを確認します。

```
cloud-user@lab-deployer-cm-primary:~$ kubectl get pods -A -o wide | grep -v "Running"
```

翻訳について

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