FitOSV5R2 M1 对接华为 OceanStor Pacific 分布式存储

此文档为信创环境 OpenEuler 系统对接步骤，CentOS 环境部分 rpm 包名不一样，其他配置相同。

对接前准备

- OceanStor Pacific 版本 8.1.x，存储管理网络与 FitOS 管理网络联通，iscsi 业务网络与 FitOS ceph-public 网络联通
- 一个容量足够的存储池，其他主机、启动器不需要，driver 连接时会自动创建
- 搜集以下信息：
  - 管理 ip
  - 用户名密码
  - 资源池名
- 登录存储管理页面确认信息无误

功能限制

FitOS only 安装（不包括 FitStor，FitOS 安装完成后没有后端存储），glance 使用 cinder 驱动存储镜像到华为存储，cinder 对接华为存储的场景下

- 云硬盘备份相关功能不可用（华为没有对应驱动）
- ceph 定制私有特性不可用（包括快照回滚、加密卷、完整性校验、克隆链、独立卷、整机快照）

配置 cinder

所有控制节点执行以下操作：

1. 拷贝华为存储 P 版本驱动代码到控制节点代码目录

mv FusionStorage_OpenStack_Driver-dev/Cinder/Pike-eol/* /usr/lib/python2.7/site-packages/cinder/volume/drivers/fusionstorage/

2. 配置 cinder.conf

vim /etc/cinder/cinder.conf

```
[DEFAULT]
enabled_backends = fusionstorage
default_volume_type = nova@fusionstorage@xcy
```

```
[fusionstorage]
volume_driver = cinder.volume.drivers.fusionstorage.dsware.DSWAREISCSIDriver
volume_backend_name = fusionstorage
#华为存储管理页面登录 ip，用户，密码，存储池
dsware_rest_url = https://192.168.161.12:8088
san_login = admin
san_password = Cty@1234
dsware_storage_pools = XCY

#华为存储 VBS 节点管理地址分号分隔
iscsi_manager_groups = 192.168.161.6;192.168.161.7;192.168.161.8
use_multipath_for_image_xfer = true
enforce_multipath_for_image_xfer = true
image_upload_use_cinder_backend = True

[coordination]
backend_url                                                    =
mysql://cinder:FhCipher_Qwst5kOiI0ei7+3IeV5UMw==_FhCipher@192.168.160.10/cinder
```

3. 重启 cinder-volume 服务

```
systemctl restart cinder-volume
```

配置 glance

所有控制节点执行以下操作：

1. 创建镜像存储专用租户

```
openstack project create glance_store; openstack role add --project glance_store --user glance admin; openstack quota set --gigabytes -1 --volumes -1 glance_store;
```

2. 配置 glance-api.conf

vim /etc/glance/glance-api.conf

```
[glance_store]
stores = cinder
default_store = cinder
cinder_api_insecure = True
cinder_ca_certificates_file = /opt/clusters/xcy/cluster_config/ssl/ca.crt
cinder_store_auth_address = https://192.168.160.10:35357/v3
cinder_store_user_name = glance
cinder_store_password = FhCipher_vvaEdS/UXeqdkOpX5ZZ/Aw==_FhCipher
cinder_store_project_name = glance_store
cinder_volume_type = nova@fusionstorage@xcy
cinder_catalog_info = volumev2::publicURL
```

```
cinder_os_region_name = RegionOne
rootwrap_config = /etc/glance/rootwrap.conf
```

3. 重启 glance-api 服务

```
systemctl restart glance-api
```

配置 nova

所有计算节点执行以下操作：

1. 配置 nova.conf

vim /etc/nova/nova.conf

```
[libvirt]
volume_use_multipath = True
```

2. 重启 nova_compute 服务

```
systemctl restart nova_compute
```

配置主机多路径

所有控制计算节点执行以下操作：

1. 安装多路径软件

```
yum install multipath-tools
```

2. 修改多路径配置文件

vim /etc/multipath.conf

对应位置增加以下配置，修改后将控制节点的配置文件拷贝到所有计算节点

```
blacklist {
        ......
        device {
                vendor "BROADCOM"
                product ".*"
        }
}
......
devices {
        ......
        device {
                vendor "Huawei"
                product "VBS fileIO"
                path_grouping_policy multibus
                path_checker tur
                prio const
```

```
        path_selector "service-time 0"
        failback immediate
        no_path_retry "10"
    }
}
```

3. 启动多路径服务

systemctl enable multipathd.service; systemctl start multipathd.service

配置 lvm

1. 首节点部署机配置

```
[root@controller-1 ~]# vgs
  VG                      #PV #LV #SN Attr   VSize    VFree
  openeuler_controller-1    1   3   0 wz--n- <445.04g    0
[root@controller-1 ~]# lvs
  LV   VG                      Attr       LSize    Pool Origin Data%  Meta%
  home openeuler_controller-1 -wi-ao---- <371.04g
  root openeuler_controller-1 -wi-ao----   70.00g
  swap openeuler_controller-1 -wi-ao----   4.00g
[root@controller-1 ~]#
```

vim /etc/lvm/lvm.conf

```
activation {
        auto_activation_volume_list = [ "openeuler_controller-1" ]
}
```

2. 其他节点配置

vim /etc/lvm/lvm.conf

```
activation {
        auto_activation_volume_list = []
}
```

3. 重启所有节点 lvm 服务

systemctl restart lvm2-*;

创建卷类型，租户授权后端存储

页面创建前面配置的默认卷类型 nova@fusionstorage@xcy
授权对应租户使用 fusionstorage 后端

配置 FitOS 数据库备份

所有控制节点执行以下操作：

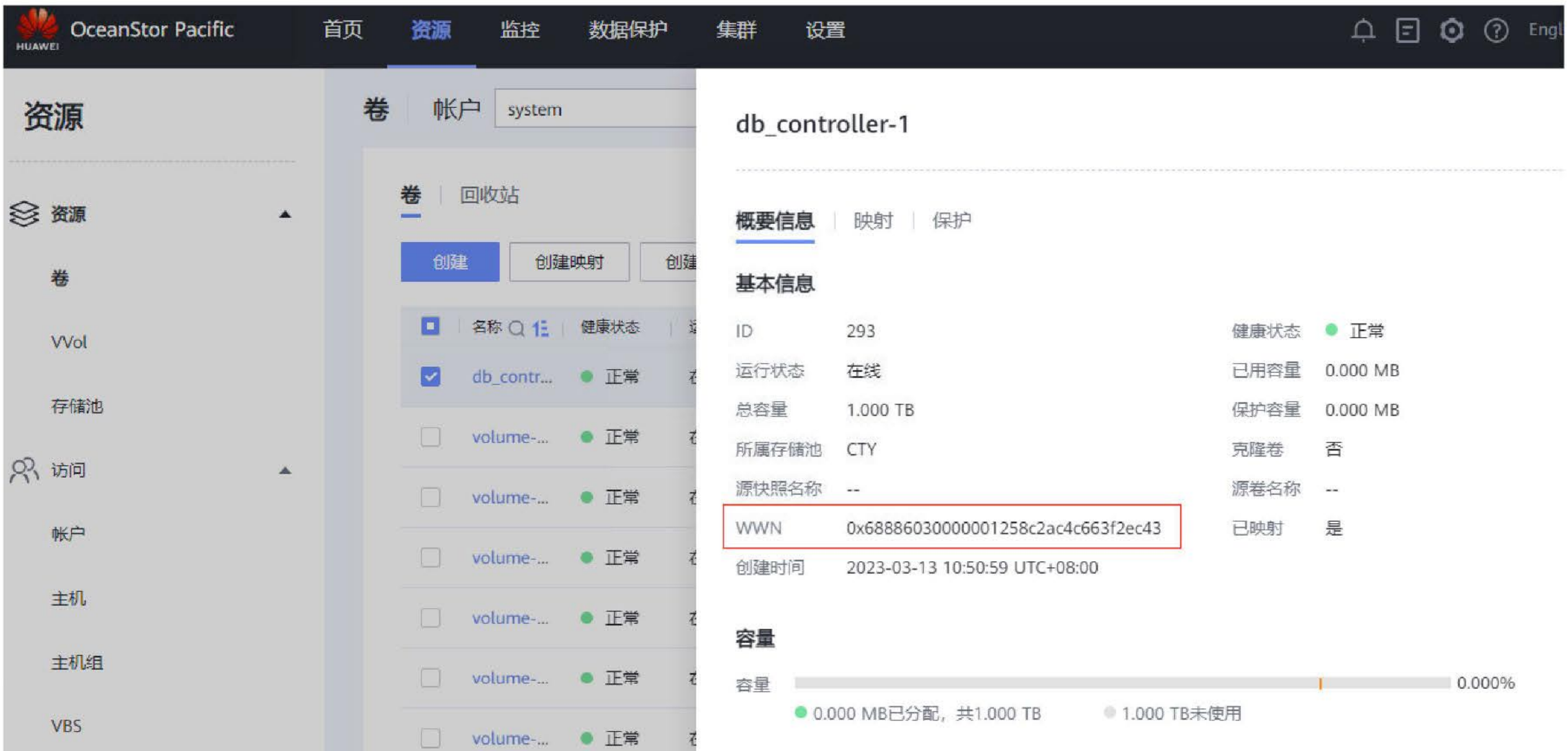
1. 华为存储上创建三个控制节点主机

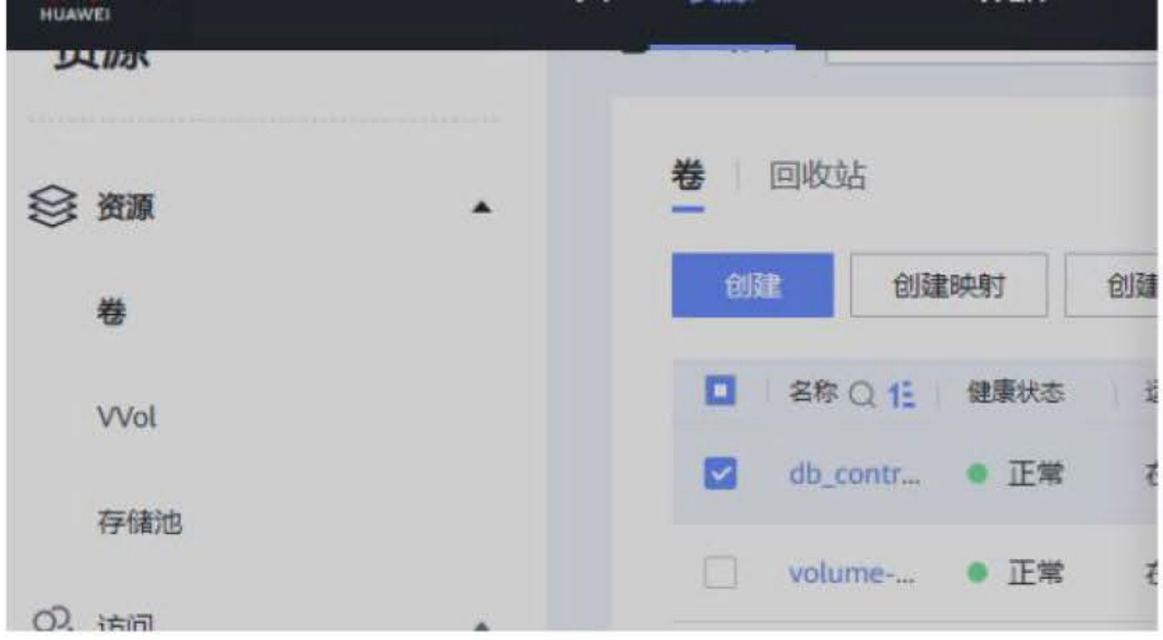
(1) 创建启动器，值从控制节点配置文件/etc/iscsi/initiatorname.iscsi 中获取，不启用 CHAP

(2) 创建主机关联启动器，主机名和控制节点主机名一致，IP 不填，禁用 ALUA

(3)

2. 华为存储为每个控制节点创建一个 1T 硬盘，并映射到对应控制节点





3. 控制节点挂载华为存储硬盘

进入容器执行 iSCSI 挂载

podman exec -u root -it cinder-volume bash

挂载硬盘，10.20.0.131 为华为存储其中一个业务地址

iscsiadm -m discovery -t st -p 10.20.0.131 -l

设置开机自动挂载

iscsiadm -m node -p 10.20.0.131 --op update -n node.startup -v automatic

退出容器

exit

```
[root@controller-1 FitOS]# iscsiadm -m discovery -t st -p 10.20.0.131 -l
10.20.0.131:3260,1 iqn.2012-10.com.huawei.dsware:8c2ac4c663f2ec43.vbs.131073
Logging in to [iface: default, target: iqn.2012-10.com.huawei.dsware:8c2ac4c663f2ec43.vbs.131073, portal: 10.20.0.131,3260]
Login to [iface: default, target: iqn.2012-10.com.huawei.dsware:8c2ac4c663f2ec43.vbs.131073, portal: 10.20.0.131,3260] successful.
[root@controller-1 FitOS]#
[root@controller-1 FitOS]# iscsiadm -m node -p 10.20.0.131 --op update -n node.startup -v automatic
[root@controller-1 FitOS]#
[root@controller-1 FitOS]# exit
exit
```

查看挂载后的多路径设备，找到 ID 和华为 1T 硬盘 WWN 号一致的设备 dm-3

multipath -ll

```
[root@controller-1 ~]# multipath -ll
3688860300000l258c2ac4c663f2ec43 dm-3 Huawei,VBS fileIO
size=1.0T features='1 queue_if_no_path' hwhandler='0' wp=rw
`-+- policy='service-time 0' prio=1 status=active
  `- 9:0:0:1 sdd 8:48 active ready running
```

4. 格式化分区

mkfs.ext4 /dev/dm-3

```
[root@controller-1 ~]# mkfs.ext4 /dev/dm-3
mke2fs 1.46.4 (18-Aug-2021)
Discarding device blocks: done
Creating filesystem with 268435456 4k blocks and 67108864 inodes
Filesystem UUID: de4ca94a-b59a-453e-9a66-988a4f4a5b5a
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
        102400000, 214990848

Allocating group tables: done
Writing inode tables: done
Creating journal (262144 blocks): done
Writing superblocks and filesystem accounting information: done
```

5. 挂载到数据库备份路径

移除已有的数据库备份文件

mv /data/platform/rbd_backup_db /data/platform/rbd_backup_db.bak; mkdir /data/platform/rbd_backup_db;

挂载备份路径到华为设备

mount /dev/dm-3 /data/platform/rbd_backup_db

mount | grep rbd_backup_db

```
[root@controller-1 ~]# mount /dev/dm-3 /data/platform/rbd_backup_db
[root@controller-1 ~]# mount | grep rbd_backup_db
/dev/mapper/368886030000001258c2ac4c663f2ec43 on /opt/public_directory/data/platform/rbd_backup_db type ext4 (rw,relatime,stripe=256)
```

6. 设置开机自动挂载

查询设备 uuid

blkid /dev/dm-3

```
[root@controller-1 ~]# blkid /dev/dm-3
/dev/dm-3: UUID="de4ca94a-b59a-453e-9a66-988a4f4a5b5a" BLOCK SIZE="4096" TYPE="ext4"
```

vim /etc/fstab

```
UUID="de4ca94a-b59a-453e-9a66-988a4f4a5b5a"     /data/platform/rbd_backup_db     ext4
defaults,noatime,_netdev 0 0
```

配置 FitOS 配置文件和日志备份

所有控制节点，参考数据库备份操作步骤，再各创建 1T 日志备份硬盘，mount 到 /data/platform/fitos_config_backup 目录。

进入容器后执行命令：iscsiadm -m session -R，即可挂载新创建的硬盘。

注意：控制节点重启后数据库备份和日志备份使用的华为存储硬盘需要手动重新挂载。或写启动脚本自动挂载。