Query ICOS (IBM cloud object storage) from powers (AIX)

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# Document Overview

The main purpose of this document is to help IBM cloud customers set up connectivity between powerVS (AIX) and cloud object storage. Object storage can set as a repository that holds powers images, or backup environment for power. Due to the separation locations between power and COS there is a need to deploy few networking components to close the gap.  
these components are listed in this document with step-by-step guidelines to set the configuration.

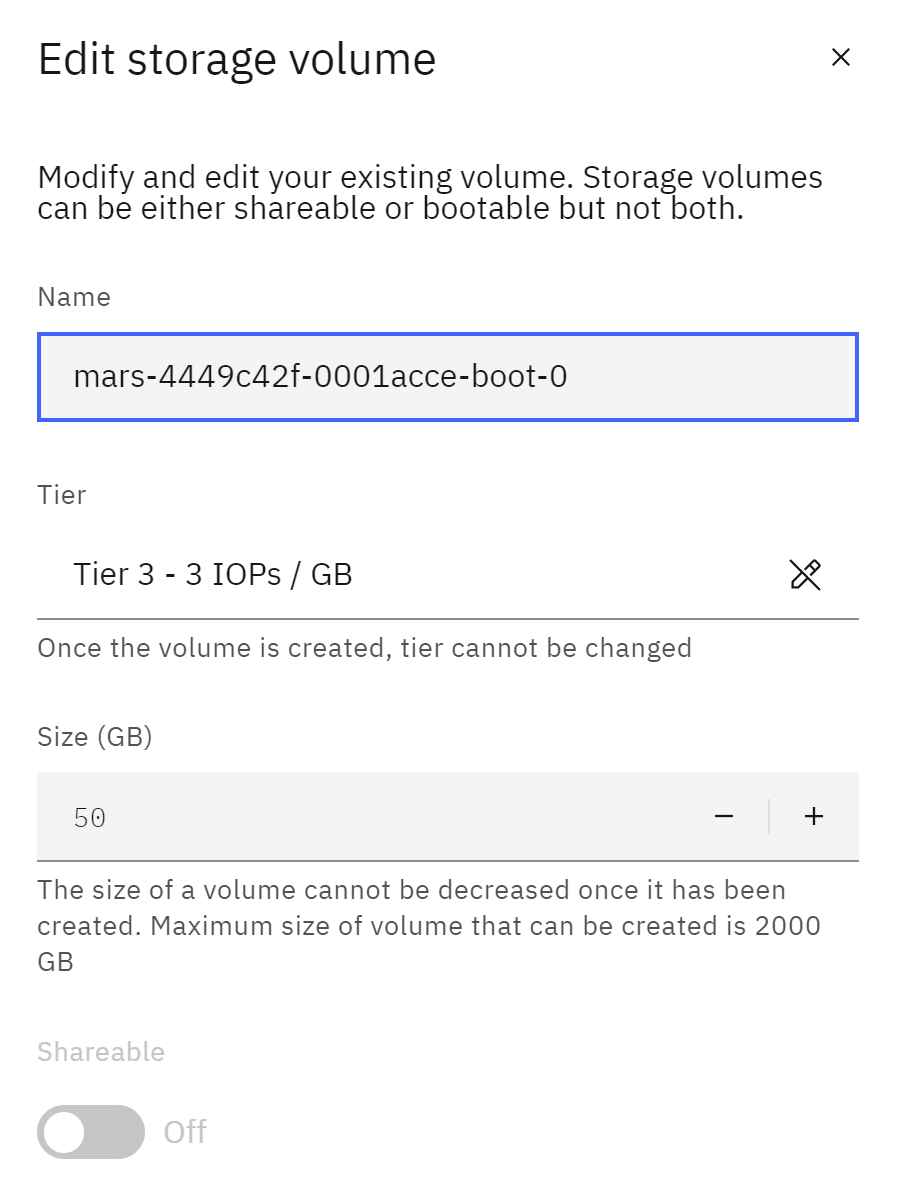
# Architecture

A diagram of a computer network

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# Create LAPR

1. Create private subnet in power.
2. Create LAPR version 7200-05-05, **attach private subnet to LPAR**
3. Increase the storage size using the portal increase the LPAR disk.



From CLI  
chvg -g rootvg  
chfs -a size=+2G /opt   
chfs -a size=+2G /var   
chfs -a size=+2G /tmp

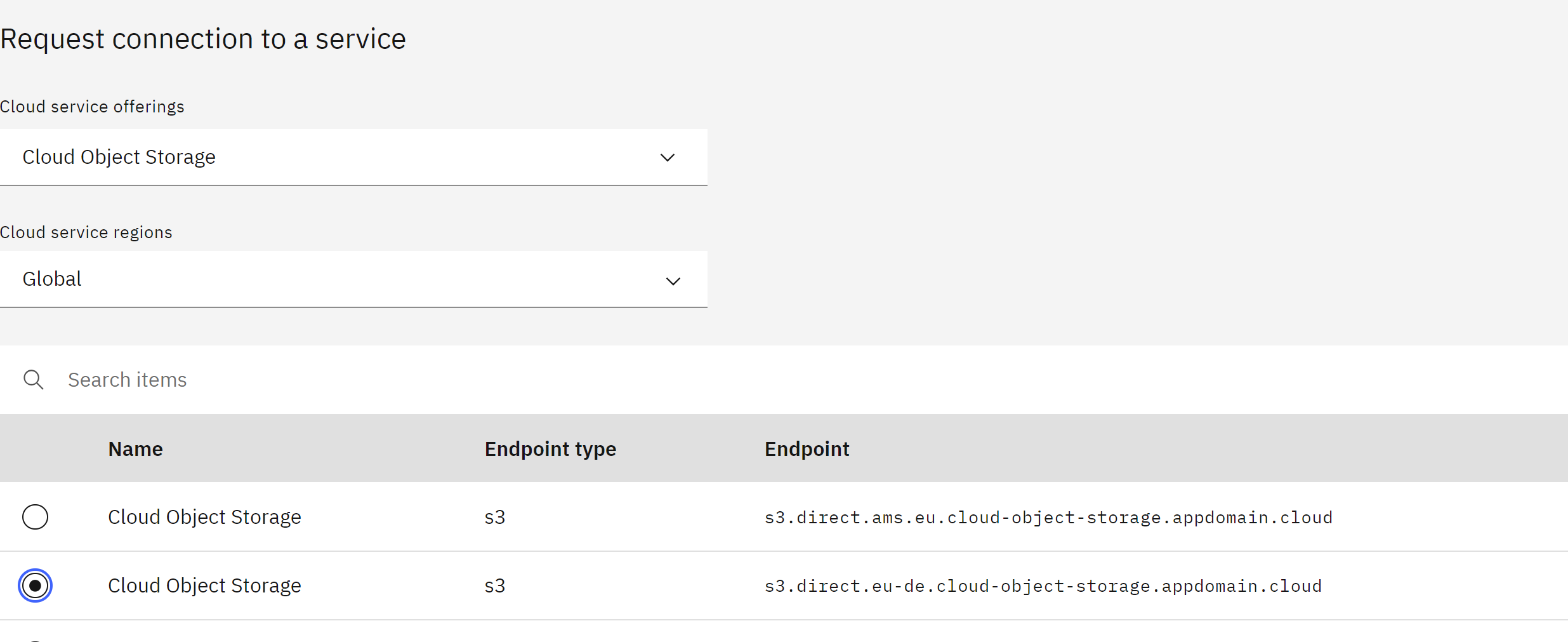
# create VPC + VPE

1. Create VPC (region: Frankfurt for example)
2. Create API key <https://cloud.ibm.com/iam/apikeys>
3. **Optional:** It is better to create VSI in the VPC to validate the connectivity. (You will need floating IP to access from public via SSH)
4. **Needed if VPC VSI is used**: Set the security group for TCP port 443 as the communication for COS is via HTTPS, you can add port 80 if needed.

A screenshot of a computer

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1. Create VPE in the VPC and set the connection service to COS with the relevant endpoint.



# Create cloud connection.

1. From power workspace create cloud connection

Enable global routing for interact with VPC’s in geo  
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Check the relevant VPC  
  
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Finally attach the subnet you created in step1

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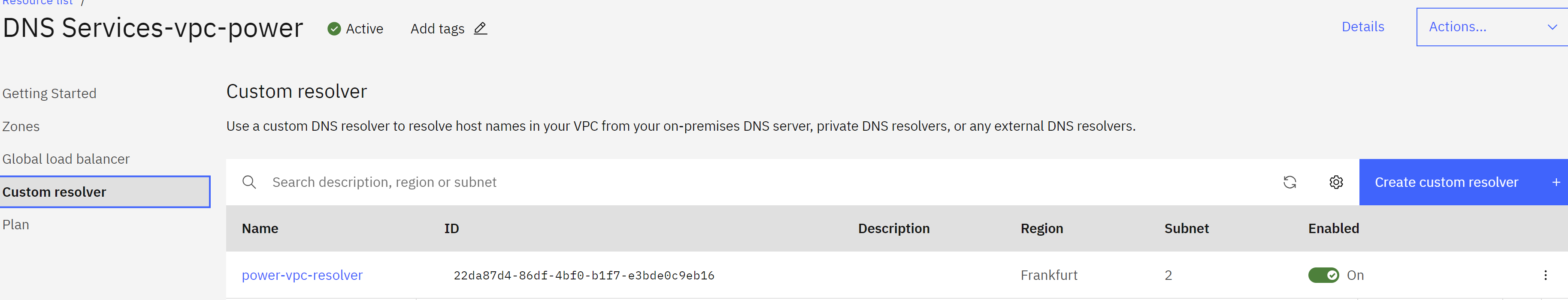
# Create DNS service.

1. From the catalog search for DNS and create service.

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1. Create custom resolver.



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Use your VPC subnets subnet1 and subnet2

1. On power VS Edit /etc/resolve.conf with the ip address from the DNS custom resolver service above

**For example**: comment out the default nameserver 172.0.0.1 and 9.9.9.9 and add the

The 2 ip’s from the DNS resolver

#nameserver 127.0.0.1  
#nameserver 9.9.9.9  
nameserver 10.243.64.6  
nameserver 10.243.0.4  
search power-iaas.cloud.ibm.com

# Add static route.

1. Add static route on the AIX server.

Smitty tcpip -> Further Configuration ->Static Routes ->Add a Static Route

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Destination TYPE: net  
DESTINATION Address: you can take from the IP range in the relevant subnet in VPC A screenshot of a computer

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GATEWAY Address is the power subnet of that you attached to the power server

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Network mask: needs to be calculated.

# Create COS service & bucket.

1. From the catalog create COS service

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1. Create custom COS bucket, validate the location.

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1. Create credential and set writer role, remember to turn on the HMAC

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# Interact with COS bucket from power.

## optional: packages to install. (recommended)

1. vi /etc/environment and add /opt/freeware/bin to the path.
2. yum install python-pip -y
3. download openssl-1.1.2.2200.tar.Z <https://www.ibm.com/support/pages/downloading-and-installing-or-upgrading-openssl-and-openssh> follow install instruction smitty install\_all INPUT device . and accept the license agreement.
4. Install dnf\_aixtoolbox.sh <https://www.ibm.com/support/pages/node/6585774>  
   **Note:** chmod +x dnf\_aixtoolbox.sh
5. from /opt/freeware/bin run **./dnf update**
6. pip install --upgrade pip
7. pip install s3cmd

.s3cfg should be created in ~/

1. yum install cloud-init

# working with curl

see <https://cloud.ibm.com/docs/cloud-object-storage?topic=cloud-object-storage-curl> for more info.

### Get token.

curl -X "POST" "https://iam.cloud.ibm.com/oidc/token" \

-H 'Accept: application/json' \

-H 'Content-Type: application/x-www-form-urlencoded' \

--data-urlencode "apikey=\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" \

--data-urlencode "response\_type=cloud\_iam" \

--data-urlencode "grant\_type=urn:ibm:params:oauth:grant-type:apikey"

List Bucket   
(verify the endpoint region you use in curl that match the once you pick in VPE creation above)

curl "https://s3.direct.eu-de.cloud-object-storage.appdomain.cloud/" \  
 -H "Authorization: bearer **add the token content** **here** " \  
 -H "ibm-service-instance-id: add cos service Id" \

Service ID is the **GUID,** see example below.

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### List objects.

curl "https://s3.direct.eu-de.cloud-object-storage.appdomain.cloud/bucket-name" \  
 -H "Authorization: bearer

1. download file.

curl -X "GET" "https://s3.direct.fra.eu.cloud-object-storage.appdomain.cloud/**bucket-name**/some-file.txt" \  
 -H "Authorization: bearer **add the token content** **here**" \

# working with s3cmd

(Note that there are packages need to install on the **optional** section.)

s3cmd usage <https://s3tools.org/usage>

You need edit **.s3cg** that located in ~/.s3cfg , **note the region in red**

[default]

access\_key = 0caed6\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
secret\_key = b5655e\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
host\_base = s3.direct.eu-de.cloud-object-storage.appdomain.cloud   
host\_bucket = %(bucket)s.s3.direct.eu-de.cloud-object-storage.appdomain.cloud  
#

**access key and secret key are taken from create credential section (#16 above after the created)**

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### list Bucket

bash-5.2# s3cmd ls

2023-09-20 06:15 s3://my-bucket

### List object in the bucket

bash-5.2# s3cmd la

2023-09-20 06:17 1229307 s3://my-bucket/my-file.log

### Get file from bucket

bash-5.2# s3cmd get s3://my-bucket/my-file.log

### Put file into bucket. bash-5.2# s3cmd put /tmp/somefile s3://global-bkt-eu-geo