**Cloud Memory store:**

* Cloud memory store is a memory module and that's because **Redis** is an in-memory database.
* **Redis is one of the most popular open source in-memory data stores, used as a database, cache and message broker.**
* Redis is typically used as a **persistent session cache** maybe to store logins or shopping carts, as a message queue to help loosely-coupled microservices, or even as a full-blown pub/sub message queue.
* Session data, user preferences, and other data returned by queries for web pages are good candidates for caching.
* Similar to amazon elasticache
* Two engines supported
  + Redis
    - Memorystore for Redis is a fully managed Redis service for the Google Cloud.
    - Applications running on Google Cloud can achieve extreme performance by leveraging the highly scalable, available, secure Redis service without the burden of managing complex Redis deployments.
  + Memcached
    - Memorystore for Memcached is a fully managed Memcached service for Google Cloud.
    - Applications running on Google Cloud can achieve extreme performance by leveraging the highly scalable, available, secure Memcached service without the burden of managing complex Memcached deployments.
* It’s a fully managed Redis instance and sub-millisecond data access.
  + Provisioning
  + Replication
  + Failovers are fully automated.
* This is in 2 service tiers
  + Basic tier
    - The basic service tier is a **zonal resource** that can get you up and running for very little outlay.
    - Need to make sure that application can withstand a cold restart or full data flush
  + Standard tier
    - The standard tier adds **cross-zone replication** and automatic failover.
* The Main benefits of using a managed Redis service is we don't need to provision our own VMs.
  + Of course, provisioning a VM isn't hard but configuring it, making it highly available, scalable, all that stuff takes a lot of scaffolding.
* We can choose how much RAM to assign to our instance up to **300 gigabytes**.
  + The amount of **RAM** assigned to the instance will determine its maximum network throughput.
  + You can also optionally add a few Redis parameters to be applied to the instance when it's created such as the **max memory policy**.
* Only Internal IP
* Highly available with 99.9% SLA
* Import/Export data from Cloud Storage to memory store
  + You can export data to an RDB backup. The RDB file is written out to Cloud Storage.

**Hands-on in Cloud Memorystore:**

1. Make sure API is enabled for memory store for both **Redis** and **Memcached.**
2. Services used:
   1. Memory store (Redis Instance)
   2. Compute engine
      1. Create default compute engine instance
      2. Select ubuntu 20.0v – boot image size
      3. Under network tag add firewall target rule named <#redwis>
   3. VPC network
      1. Go to firewall -give name to it <learngcp-pde>
      2. Under target tags add the same mentioned in compute engine <#redwis>
      3. Click on tcp and add port no. 5000 for allowing python apps

Implementation:

1. Set up the VM
2. Update and Upgrade
   1. sudo apt update
   2. sudo apt -y upgrade
3. Check Version of Python
   1. python3 -V
4. Install pip
   1. sudo apt install -y python3-pip
5. Install Additional Tools
   1. sudo apt install build-essential libssl-dev libffi-dev python3-dev
6. Install venv
   1. sudo apt install -y python3-venv
7. Create a Virtual Environment
   1. python3 -m venv my\_env
8. Activate Virtual Environment
   1. source my\_env/bin/activate
9. Install Retwis
10. git clone https://github.com/infinite-Joy/retwis-py.git
11. cd retwis-py
12. pip install -r requirements.txt
    1. sudo apt-get install gcc libpq-dev -y
    2. sudo apt-get install python-dev python-pip -y
    3. sudo apt-get install python3-dev python3-pip python3-venv python3-wheel -y
    4. pip3 install wheel or pip install wheel
    5. pip install --upgrade pip wheel
13. get the ip-address from memory store instance created
14. go to retwis folder and modify in settings.py
    1. Replace DB\_HOST = “localhost” to copied ip\_address(10.143.40.203)
15. Under retwis-py folder modify runserver.py
    1. Add host=’0.0.0.0’ in run method
16. Under retwis-py execute the app
    1. Python runserver.py
17. Go to compute instance page, copy external ip address and form the link as below.
    1. http:// 34.136.108.248:5000
18. Install redis-cli in SSh terminal
    1. sudo apt-get install redis-tools
    2. Get the IP of your Redis instance from settings.py
       1. Then connect the CLI
    3. redis-cli -h <your redis instance IP> #ip\_address(10.143.40.203)
    4. Some basic redis-cli commands
       1. INFO
       2. INFO keyspace
19. Export/Import to Cloud Storage Bucket

**Resources:**

* <https://cloud.google.com/memorystore/docs/redis/>
* <https://cloud.google.com/memorystore/docs/memcached>
* <https://redis.io/docs/manual/cli/>
* <https://github.com/infinite-Joy/retwis-py>
* <https://www.digitalocean.com/community/tutorials/how-to-install-python-3-and-set-up-a-programming-environment-on-ubuntu-20-04-quickstart>
* <https://github.com/miguelgrinberg/flasky/issues/379>
* <https://github.com/lektor/lektor/issues/784>