CLOUD COMPUTING APPLICATIONS

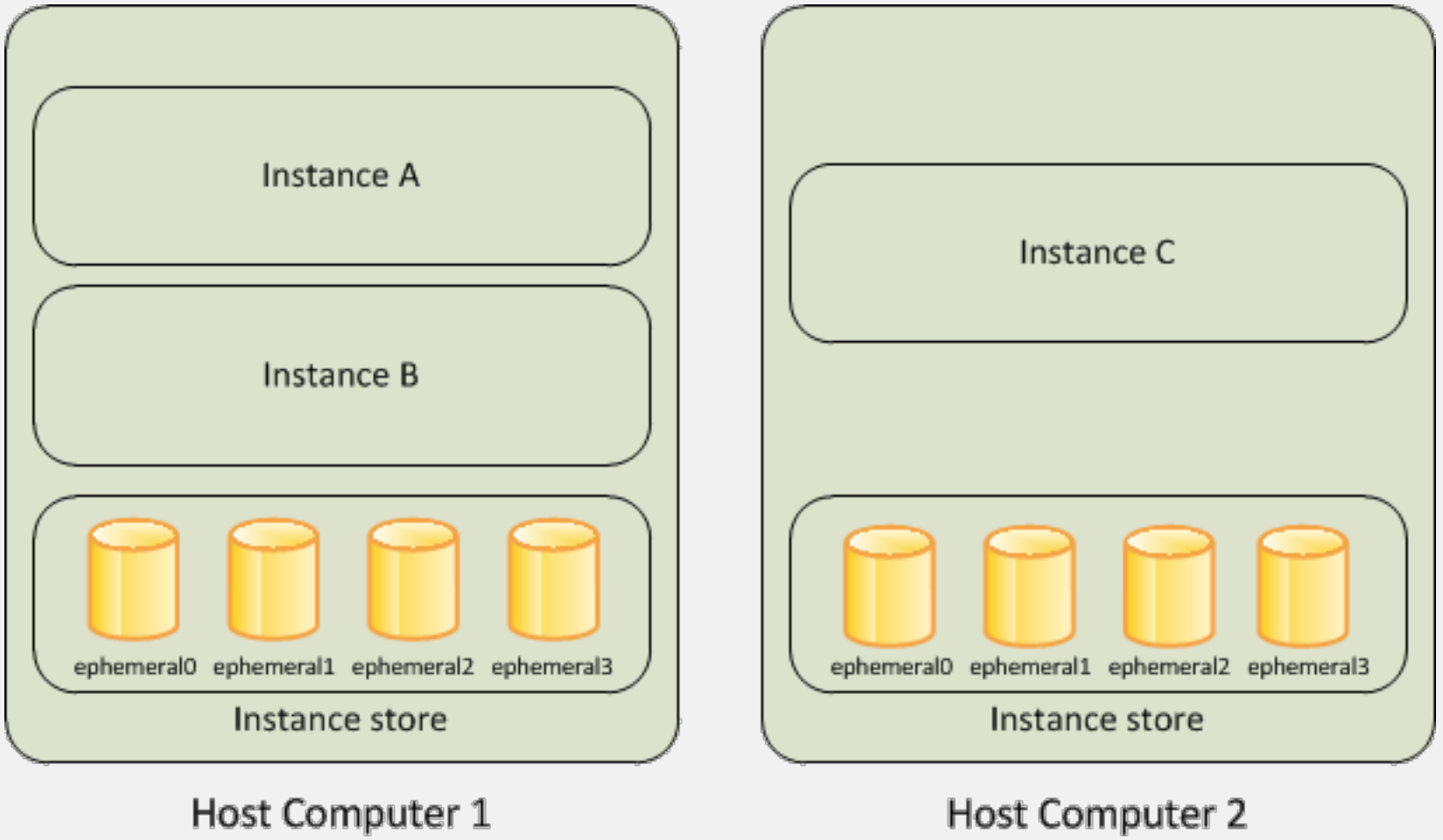
Amazon AWS Block Stores

Roy Campbell & Reza Farivar

Amazon AWS Instance Store

- Instance stores are another form of cloud-hosted **temporary** block-level storage
  - These are provided as part of an 'instance', such as an Amazon EC2
- Their contents will be lost if the cloud instance is stopped.
  - But offer higher performance and bandwidth to the instance.
  - Located on disks that are physically attached to the host computer
- They are best used for temporary storage such as caching or temporary files, with persistent storage held on a different type of server.

Amazon AWS Instance Store



Instance Store Lifetime

- Data persists only during the lifetime of its associated instance
  - It persists a reboot
- Data lost if
  - The underlying disk drive fails
  - The instance stops
  - The instance terminates
- You can get reliability by
  - A distributed file system (e.g. HDFS)
  - Backup to S3 or EBS

Instance Store Size

- A typical instance store is small
  - SSD: can be any where from around 80 GB to 320 GB SSD, up to 3,840 GB on x1.32xlarge
  - HDD: when available (on older generation instances), up to 1,680 GB

Amazon AWS EBS

- EBS Volumes are highly available and reliable
- Can be attached to running instances in the same availability zones
  - Persist independently of the life of an instance
- Use when data must be quickly accessible and requires long-term persistence
- Support encryption
- Up to 16TB in size

Amazon AWS EBS

- Different types
  - General Purpose SSD (gp2)
    - 100 IOPS/GiB, burst up to 10,000, 160 MB/s throughput
  - Provisioned IOPS SSD (io1)
    - Provision a specific level of performance
    - up to 20,000 IOPS and 320 MB/s of throughput
  - Throughput Optimized HDD (st1)
    - Low cost magnetic storage
    - Throughput of up to 500 MB/s
    - Large, sequential workloads such as Amazon EMR, ETL, data warehouses, and log processing
  - Cold HDD (sc1)
    - Inexpensive magnetic
    - Throughput of up to 250 MB/s