Exercise Sheet 7

Exercise 1 (AWS Import/Export vs. Internet)

Scenario: Your local time in Frankfurt am Main is 09:00 and it is a Monday. You need to copy 3 TB of data into the storage service S3. Two possible ways exist to solve this challenge.

1. You start to upload the 3 TB of data to S3 immediately at 09:00 via the internet. Consider the data rate between your computer and S3 is 100 Mbit/s.

2. You use the AWS Import/Export service [1]. Therefore you copy the data to a Hard Disk Drive which is connected via USB 3.0. The transfer rate (for write) is 125 MB/s.

   After you copied the data, you need to pack the HDD into a parcel and send it via a package delivery company to Amazon. All popular global package delivery companies like DHL, UPS and FedEx can deliver a parcel from Frankfurt am Main in less than 24 hours to most places in Europe.

   You need 15 Minutes to put the HDD into a parcel and another 15 Minutes to bring the parcel to the branch office of your favorite package delivery company.

   The manager of the branch office of the global package delivery company told you that the parcel must arrive at the branch office no later than 16:30 to arrive at Amazon in Ireland at 9:00 (GMT) the next working day.

   An Amazon employee needs to copy the data from the HDD to the S3 service. The transfer rate of the HDD (for read) is 150 MB/s. Consider 3 hours additional overhead for the in-house mail at Amazon to ship the HDD to the correct employee.

Your tasks:

1. Calculate for both scenarios, how long it takes until the data is copied to S3.

2. Calculate the data rate of the second scenario.

[1] http://aws.amazon.com/importexport/

Exercise 2 (Interacting with Storage Services)

1. Four HTTP methods are enough to work with resources inside storage services like S3 or Google Cloud Storage. Write the HTTP methods into the table.

HTTP method	Description
	Create or replace resource
	Request resource
	Append something to a resource
	Erase resource

2. Why is it recommendable, that storage services do not only implement support for the four HTTP methods of subtask 1, but also for the HTTP method `HEAD`?

Exercise 3 (Different Cloud Services)

1. IBM Smart Cloud Enterprise implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

2. Google Cloud Print implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

3. Amazon S3 implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

4. Google App Engine implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

5. Amazon EC2 implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

6. AppScale implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

7. Google Cloud Storage implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

8. Google Compute Engine implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

9. Microsoft Windows Azure implements...

   ☐ IaaS ☐ PaaS ☐ SaaS

10. HP Cloud Compute implements...

    ☐ IaaS ☐ PaaS ☐ SaaS

Exercise 4 (Functioning of some Cloud Services)

Statement	true	false
Google Cloud Storage implements the API of Amazon EBS.		
EBS volumes can be attached to multiple instances at the same time.		
EBS volumes can be attached at any time only to a single instance.		
EBS volumes must contain the ext3 file system.		
EBS volumes can contain any file system.		
Data can be copied to/from EBS volumes without attaching the volume to an EC2 instance first.		
Before data can be copied to/from an EBS volume, it must be attached to an EC2 instance first.		
The Google Compute Engine implements the API of Amazon EC2.		
The Google Compute Engine implements a proprietary API.		
Firewall settings of EC2 instances can be specified by using security groups.		
The customers of S3 can decide for each object, whether it should be assigned to a bucket or not.		
Objects in S3 can be assigned to multiple buckets.		
Each object in S3 is assigned to a single bucket.		
The number of objects, each S3 customer can store, is limited.		
Each S3 customer can store an unlimited number of objects.		
All objects, which are stored inside S3, have the same size.		
Google Cloud Storage implements the API of Amazon S3.		
Objects inside S3 are online accessible per default.		
S3 implements a hierarchic name space.		
S3 implements a flat name space.		
The name of an object in S3 is called „key“.		
In S3, the file extension of uploaded files is essential for the way, the storage service treats the file.		
Interaction with the S3 service is only possible via the official tools, provided by Amazon.		
Buckets in S3 have unique names.		
When a customer uses a Cloud Printing service, the print jobs are printed out by the provider and sent to the customer via airmail.		
When a customer uses a Cloud Printing service, the print jobs are prepared by the service for the customers local printer and forwarded to the local printer which prints them out.		
When a customer uses a Cloud Gaming service, the video games are executed at the servers of the service provider and the customers' devices are only used to display the compressed video stream.		