

50.039 – Theory and Practice of Deep Learning

Alex

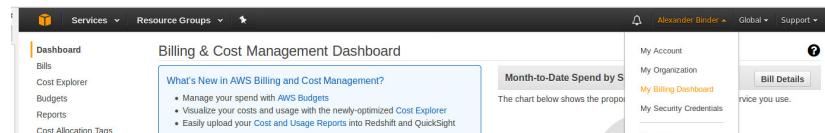
Week 05: amazon and copying files from Windows to a unix machine

[The following notes are compiled from various sources such as textbooks, lecture materials, Web resources and are shared for academic purposes only, intended for use by students registered for a specific course. In the interest of brevity, every source is not cited. The compiler of these notes gratefully acknowledges all such sources.]

1 A quick ride to amazon EC2 webservices

1.1 costs

After log in, see the billing dashboard



click on dashboard on the left shows your usage relative to free tier limits.
Budgets allow to set a warning. create one for your free credits

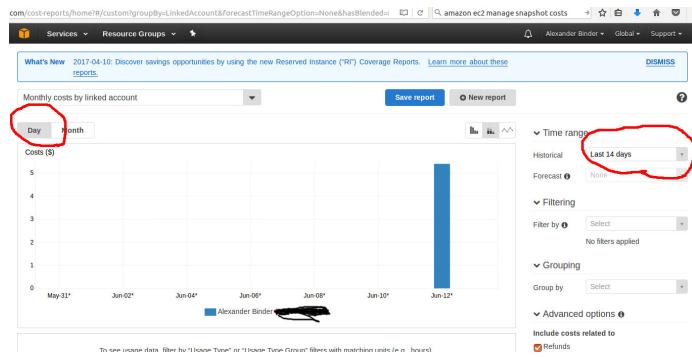
The screenshot shows the AWS Budgets interface. On the left, a sidebar lists various options: Dashboard, Bills, Cost Explorer, Budgets (which is selected and highlighted in orange), Reports, Cost Allocation Tags, Payment Methods, Payment History, Consolidated Billing, Preferences, Credits, Tax Settings, and DevPay. The main area is titled "AWS Budgets". It features a "Create budget" button and buttons for "Copy", "Edit", and "Delete". Below these are two tabs: "Filter by budget name" and "Budget name". Under the "Budget name" tab, there is a table with one row. The columns are "checkbox", "arrow", "Budget name", "Current", and "\$". The row contains a checkbox, an arrow pointing right, the text "teaching", "\$0.00", and a dollar sign icon.

A practical tool is the cost explorer. Click on it and launch it.

The screenshot shows the AWS Cost Explorer interface. On the left, a sidebar lists: Dashboard, Bills, Cost Explorer (selected and highlighted in orange), Budgets, Reports, Cost Allocation Tags, Payment Methods, Payment History, Consolidated Billing, Preferences, and Credits. The main area is titled "Cost Explorer". It includes a search icon and a link "Launch Cost Explorer" with the sub-instruction "Graph, visualize, and analyze your spend. Filter what you see!". Below this is a section titled "Preconfigured Views" with a sub-instruction "Get started quickly with a view that is already set up to answer a common question". A "Monthly Spend by Service View" is listed, described as "Monthly spend over last three months, grouped by AWS Service".

In order to see something meaningful you have to:

- **EVERY time you switch** an item like *Monthly costs by linked account*
- set reporting granularity to DAY
- set time range to last 14 days



- otherwise you might see not costs well!!!

Disk snapshots cause permanent running costs like $0.1\text{USD} * \#Gbytes \dots$

For costs of disk snapshots I suggest to read <https://forums.aws.amazon.com/thread.jspa?threadID=169566>, and <https://aws.amazon.com/premiumsupport/knowledge-center/ebs-snapshot-billing/>. However there should be not much need for you to do snapshots, I can provide you necessary snapshots for you.

1.2 run stuff

Services ... EC2

The screenshot shows the AWS Services navigation bar with 'Services' selected. The sidebar on the left contains links to 'History', 'Billing', 'Cost Explorer', 'EC2', 'CloudWatch', 'Support', and 'Console Home'. The main content area features a search bar with placeholder text 'Find a service by name or feature (fc)' and a list of compute-related services under the 'Compute' heading: EC2, EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, and Batch.

click on AMI (amazon machine image)

The screenshot shows the AWS EC2 dashboard under the 'AMIs' section. There are two entries in the table:

Name	AMI Name	AMI ID	Source	Owner
no_tf_yet2	ami-ac2128d5	277133844599/n...	2771	
post_tf	ami-2a7b7353	277133844599/p...	2771	

click on the box of the right AMI **post_tf** until it is blue, click on launch

The screenshot shows the same AWS EC2 dashboard under the 'AMIs' section. The 'post_tf' AMI is now highlighted with a blue selection box. The table remains the same:

Name	AMI Name	AMI ID	Source	Owner
no_tf_yet2	ami-ac2128d5	277133844599/n...	277133844599	Prv
post_tf	ami-2a7b7353	277133844599/p...	277133844599	Prv

You need to know before you launch:

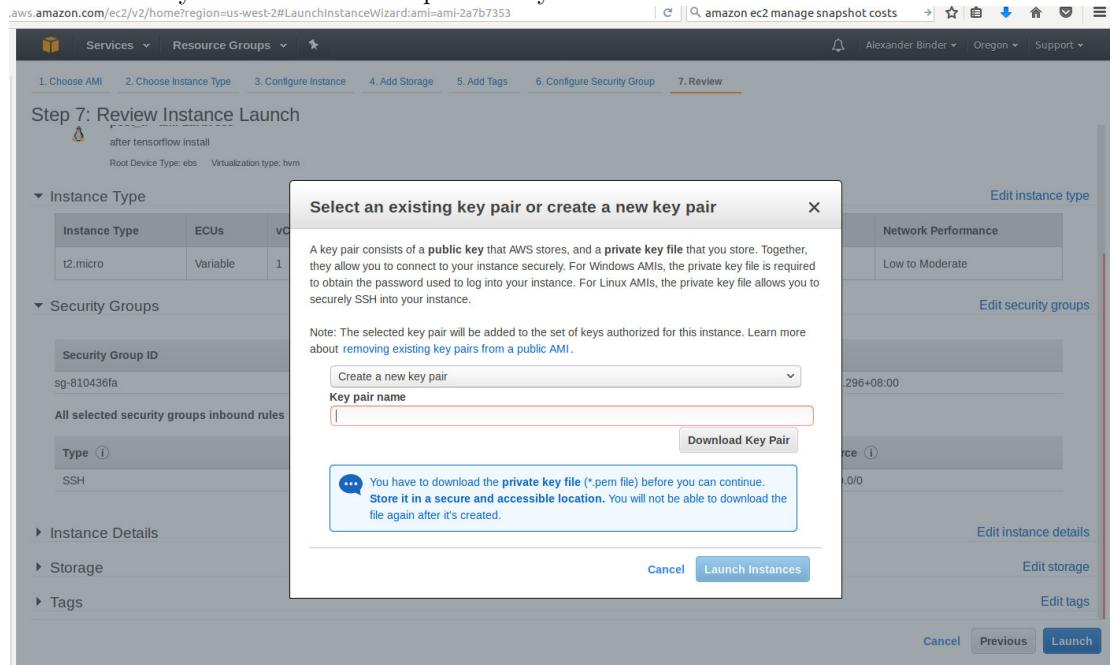
- an instance causes costs while running
- terminating an instance will cause all your changes (written files, your code, your results) **to get lost!!**
- before terminating it: copy off all your code changes and result files (neural network snapshots?)!!
- putty (windows) and scp (mac,linux) allows that – you will **need the private key** for that, which you created when first time launching an instance.

Launching:

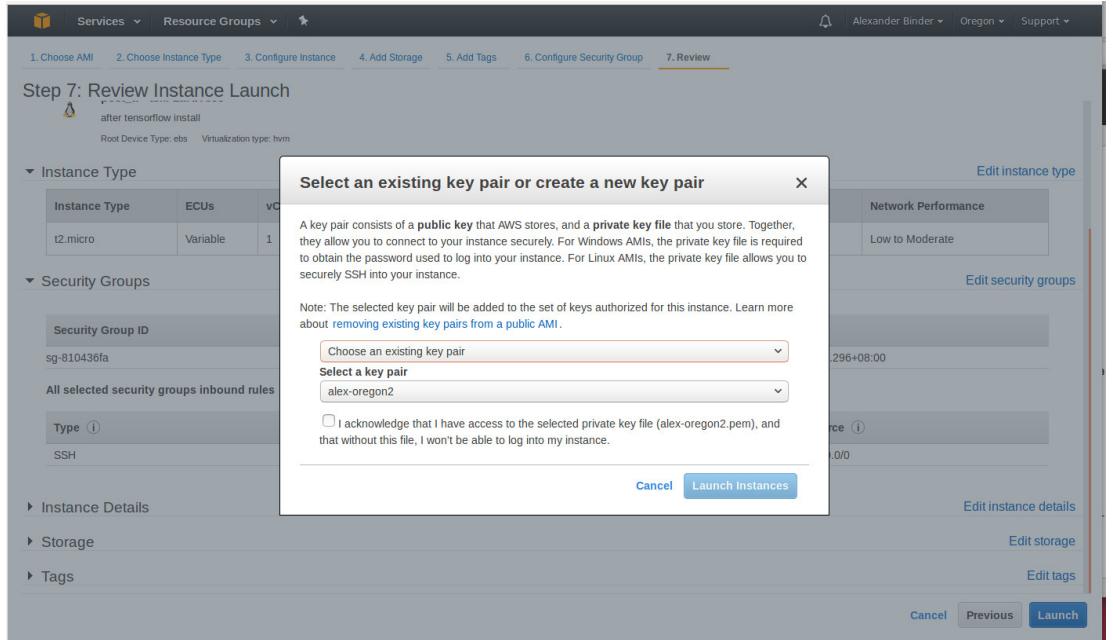
- first choose your instance type ... for the first start use the free tier t2.micro , later you will need p2.xlarge

- next is step 3: configure instance details, you can keep all as is, 1 instance
- next is step 4: Add storage, you can keep it as it is.
- step5: add tags ... good to know what you are running actually when you would launch more than one instance.
- step6: add security group – you can limit the ip range from where it can be reached. Practical if you will access it only from a certain place. Note: your internet provider may assign you ips from some pool - you need to inquire that.
- step7: review daetails
- step8: launch and **important: get the keys!!!**

The first time you have to create a private key



- store it safely somewhere, you will need it later again and again!!!
 - the next time you need only to select a key (that you hopefully have stored, haha)



see your launched instance:

it has a public dns and a public ip to log in

Instance ID	i-0f29ef91df28015d5	Public DNS (IPv4)	ec2-34-211-168-110.us-west-2.compute.amazonaws.com
Instance state	running	IPv4 Public IP	34.211.168.110
Instance type	t2.micro	IPv6 IPs	-

Mac/Linux:

```
ssh -i <path to your private key> ubuntu@34.211.168.110 will log you onto  
the machine
```

Windows: PuTTY and WinSCP will help you
<http://ged.msu.edu/angus/tutorials/using-putty-on-windows.html>

```
Last login: Mon Jun 12 18:59:14 2017 from 220.255.143.185  
ubuntu@ip-172-31-18-184:~$ ls  
install workspace_ami  
ubuntu@ip-172-31-18-184:~$ █
```

take a look with ls, ls -l, cd <dir>, cd .. would bring you a directory back

Unixes have three nice properties – you never need to type too much:

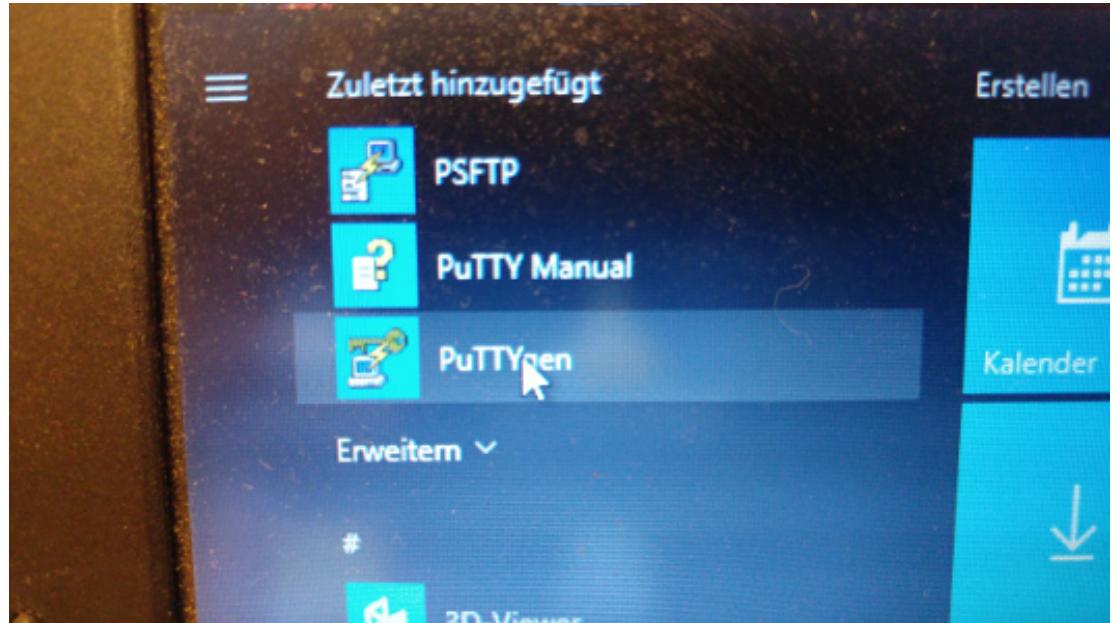
- tab-key autocompletes paths and commands. if a single tab does nothing, then you have multiple choices, and a double tab shows them.
- pwd shows you the current path
- marking any text with right mouse button, then left-clicking somewhere to place a cursor and then pressing middle mouse button allows to copy all marked text at the position of the current cursor, including long paths or commands. I never type long commands.
- key up, key down brings up a history of all commands. history -c deletes them (useful in case of a delete all like: rm -rf*)

workspace_ami/tensorflow.env/ contains a virtual environment workspace_ami/codes contains the code that loads the model weights and does finetuning. Proceed with your tasks. Crunch on a Tesla K80. Certainly not the slowest GPU in town.

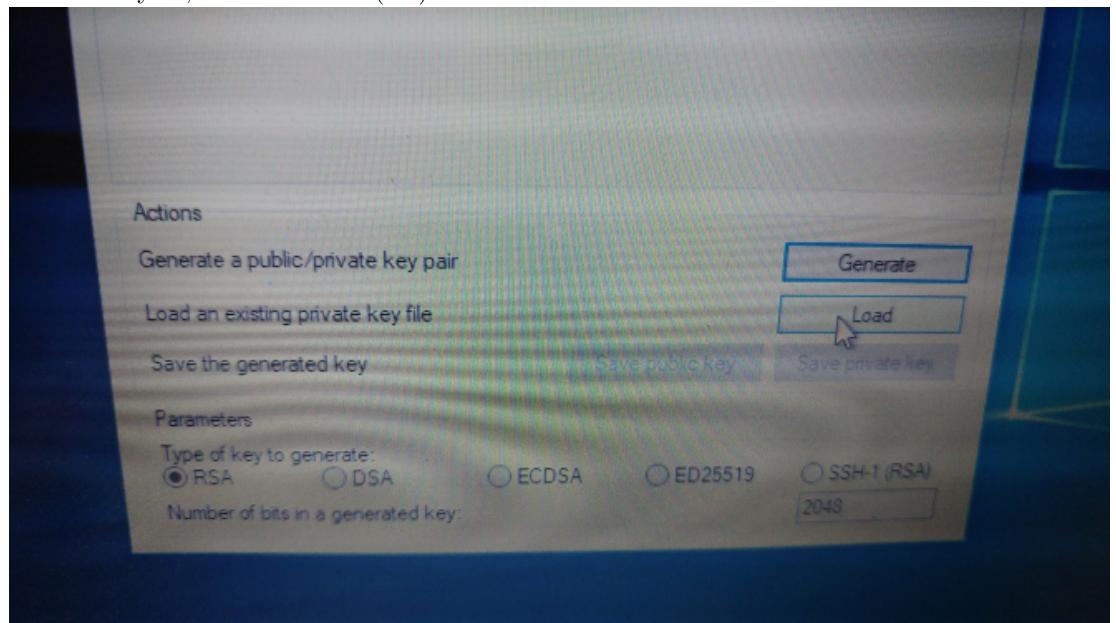
1.3 Access from Win 10

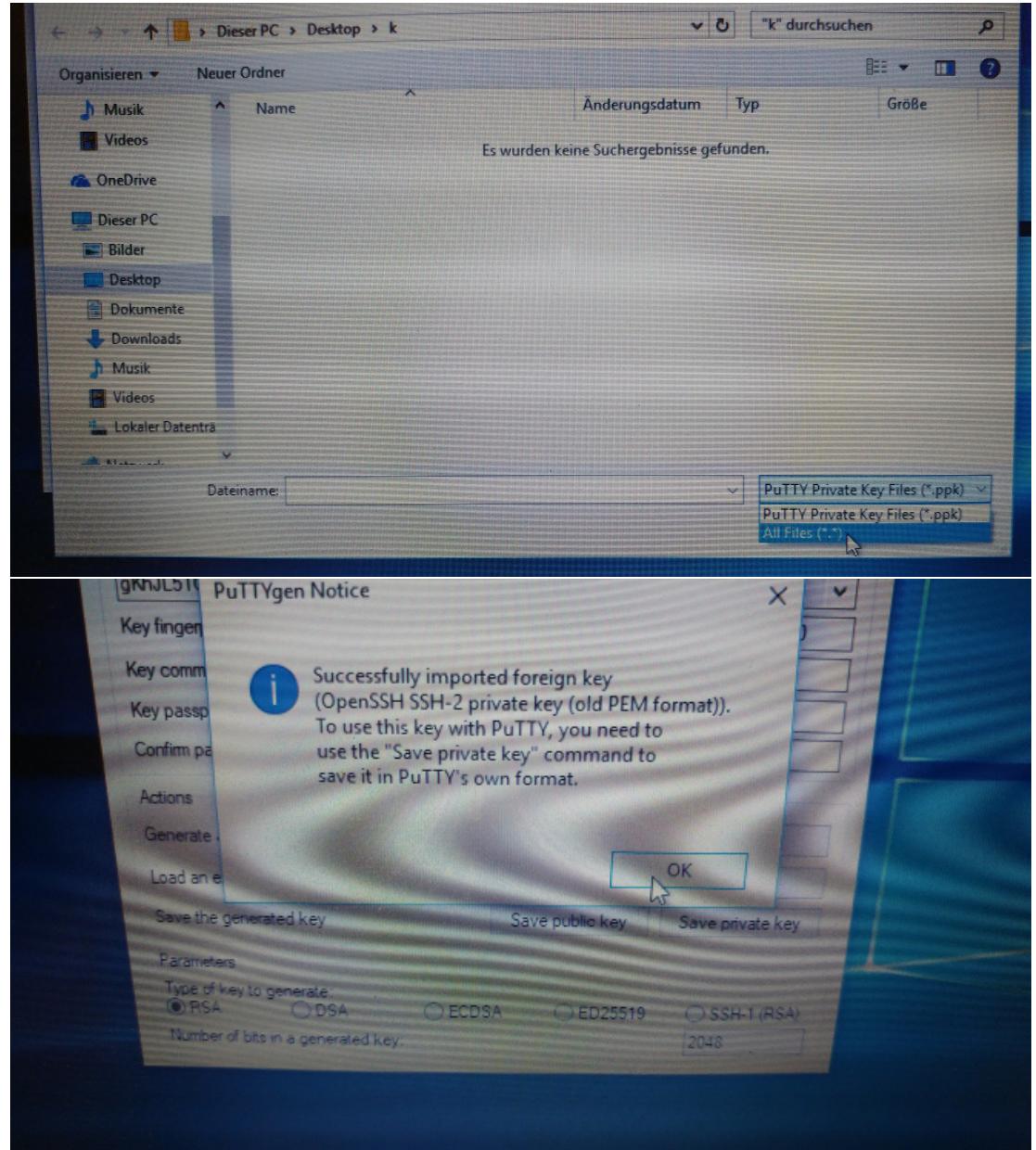
This is same for digital ocean and other providers of compute instances.

1. you need the private key in .pem format
2. install puTTY, this also installs a key manager called pageant. you will need putty for ssh logins to the running instance
3. install winscp . you will need this for copying files here and there.
4. you need to convert the .pem key in putty format, so open puTTYgen



5. load the keyfile, select: all files (*.*)



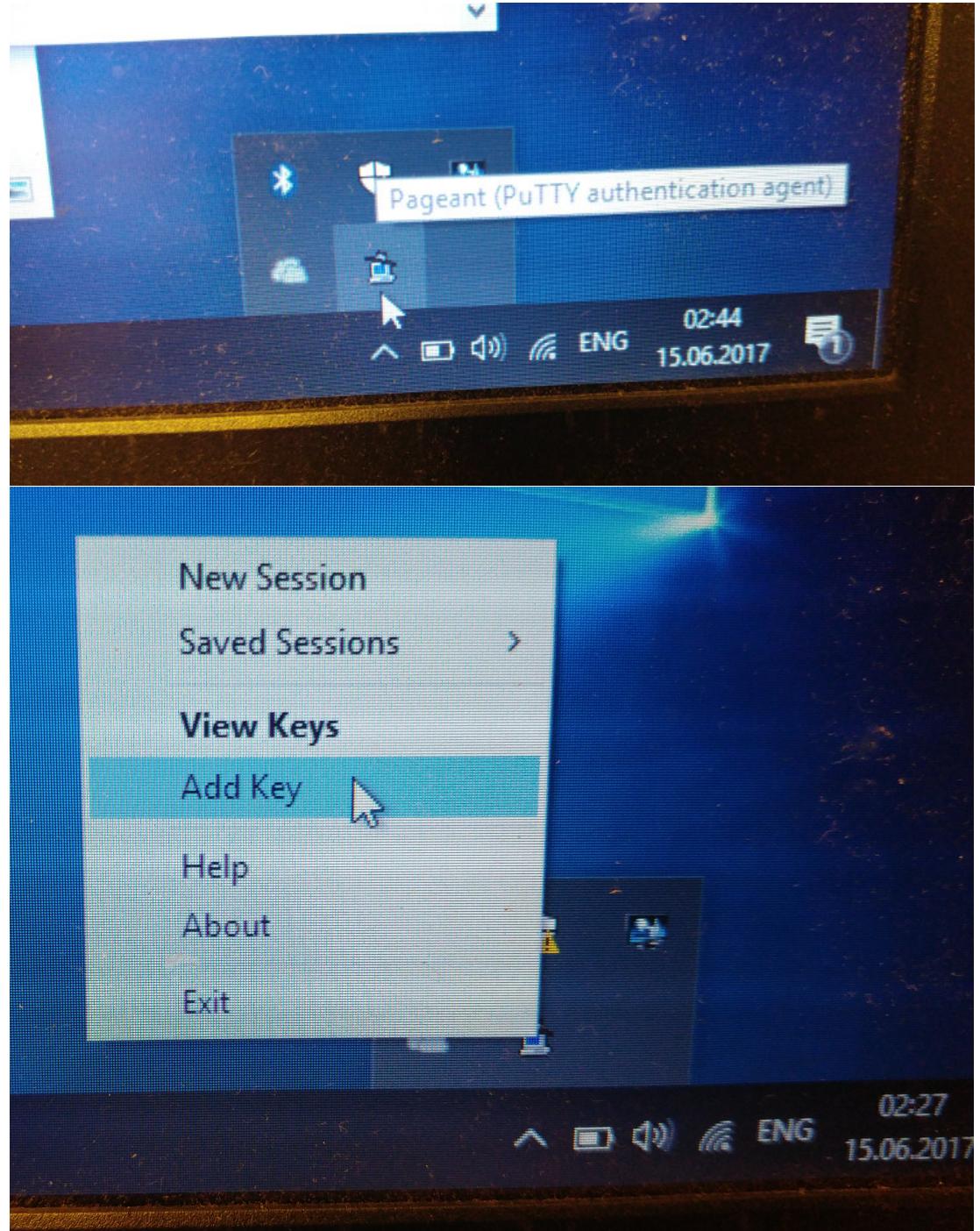


6. enter a key passphrase, and click on save imported key, you can give the key to be saved any name

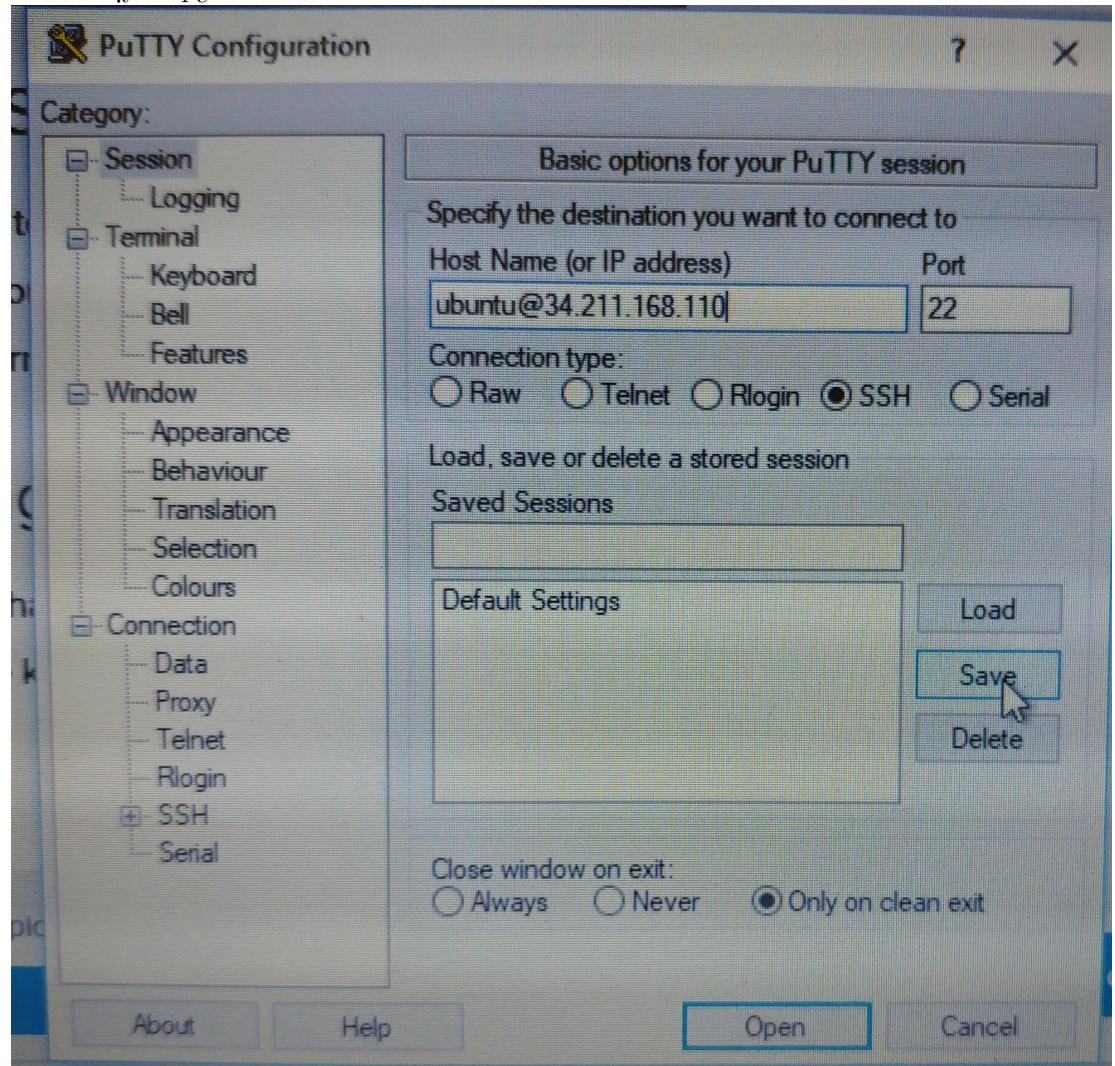
Key fingerprint:	ssh-rsa 2048 04:c5:23:ed:49:2f:cb:97f6:eb:e2:dd:aa:70:52:d0		
Key comment:	imported-openssh-key		
Key passphrase:	*****		
Confirm passphrase:	*****		
Actions			
Generate a public/private key pair	<input type="button" value="Generate"/>		
Load an existing private key file	<input type="button" value="Load"/>		
Save the generated key	<input type="button" value="Save public key"/>	<input type="button" value="Save private key"/>	
Parameters			
Type of key to generate:	<input checked="" type="radio"/> RSA <input type="radio"/> DSA <input type="radio"/> ECDSA <input type="radio"/> ED25519 <input type="radio"/> SSH-1 (RSA)		
Number of bits in a generated key:	2048		

7. now add the converted key into pageant

Name	Ander
 alex-oregon2putty.ppk	15.06.2



8. good news - when using puTTY and winscp, then these progs will automatically check pageant for added keys
9. now log in via putty: open putty, click on session (upper left), enter `ubuntu@yourip`



10. you can give it a name in saved sessions, but when you terminate, and relaunch it will be a new ip, so not really needed here. Now click on open, and you will log in

```
ubuntu@ip-172-31-18-184: ~
Using username "ubuntu".
Authenticating with public key "imported-openssh-key" from agent
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.4.0-1018-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

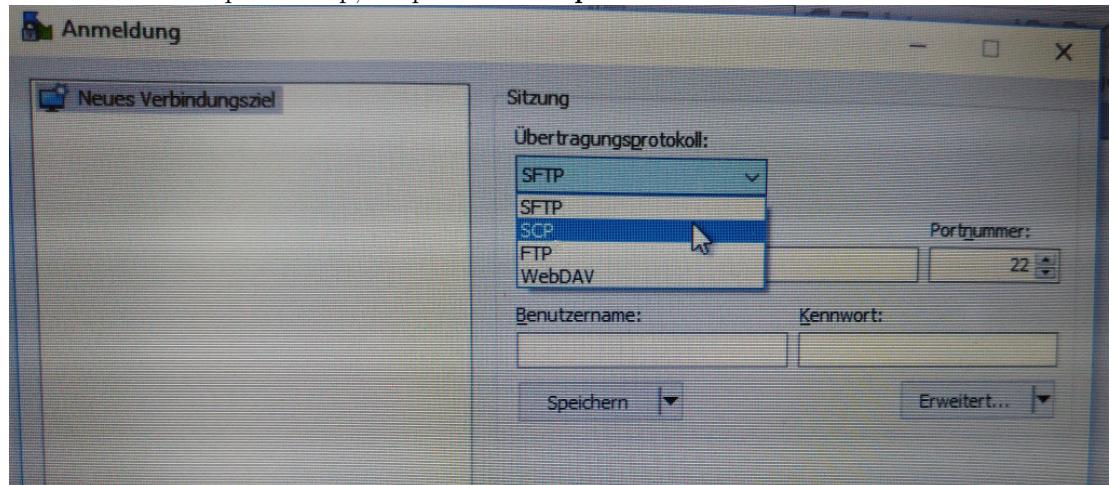
Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

1 package can be updated.
0 updates are security updates.

Last login: Wed Jun 14 18:34:41 2017 from 220.255.143.185
ubuntu@ip-172-31-18-184:~$
```

I should wipe the screen of my old notebook, no?

11. for file transfers: open winscp, set protocol to **scp**



12. enter ip and username in the respective fields, click on login ("anmelden") at the lower end of the window. DONE

