

Designing Campus Networks

LINGI2142 - Group project

Remote VMs

- SSH login to each group VM:
ssh -o IdentityFile=key -p <port>
vagrant@nostromo.info.ucl.ac.be

<port> ::= \$((40000 + group number))

- Send me one email per group to receive the keyfile!
- Add a config entry in your ~/.ssh/config:
Host vm-lingi2142
 HostName nostromo.info.ucl.ac.be
 User vagrant
 Port <port>
 IdentityFile=/path/to/keyfile

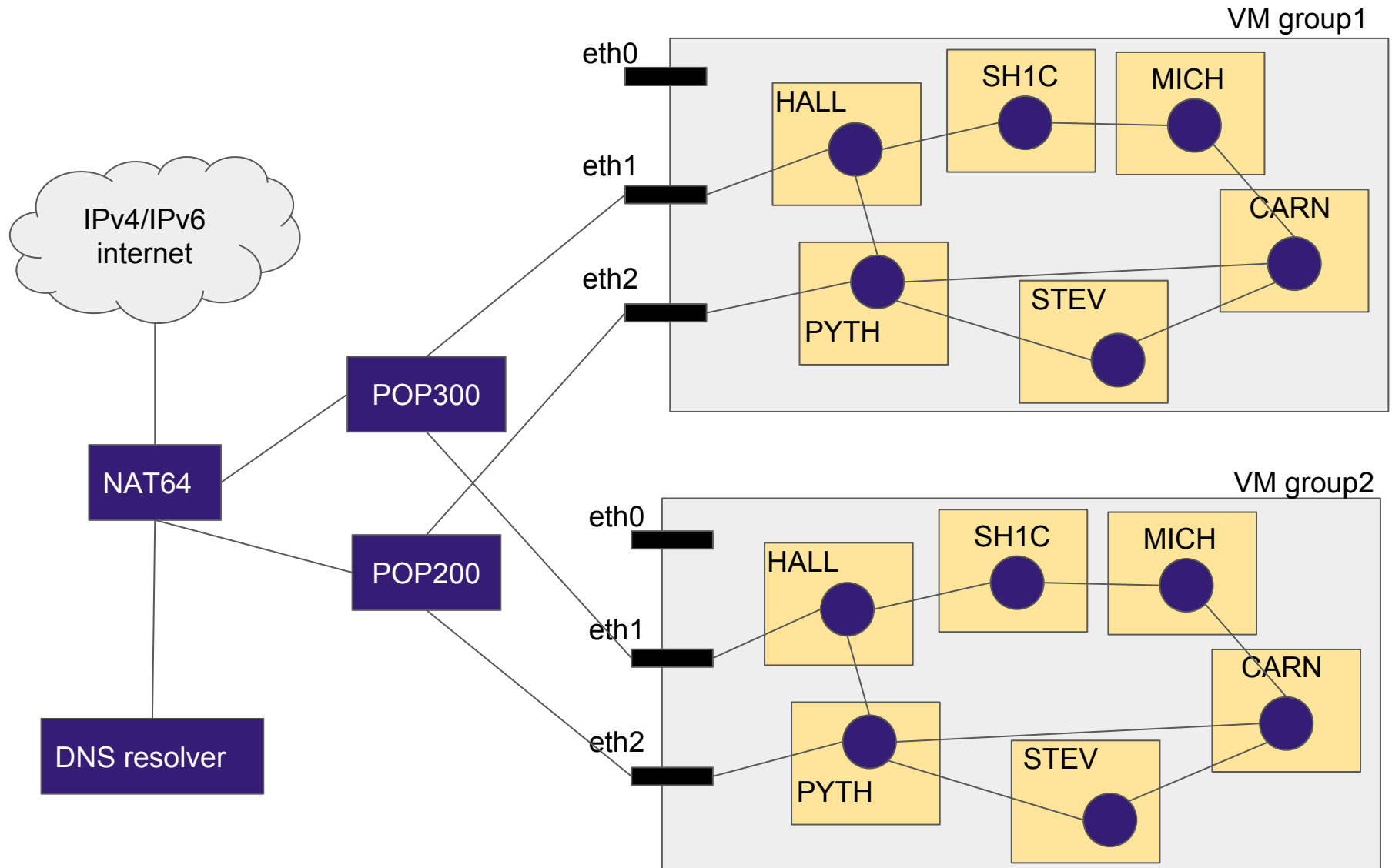
Immediately change ssh key-pair!

- [On the VM]
ssh-keygen -t rsa
cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
- [On your machine]
scp vm-lingi2142:~/.ssh/id_rsa ~/.ssh/lingi2142.key
[Update the ~/.ssh/config to use the new key]
[Try to login once with the new key] ssh vm-lingi2142
- [On the VM]
cp ~/.ssh/id_rsa.pub ~/.ssh/authorized_keys

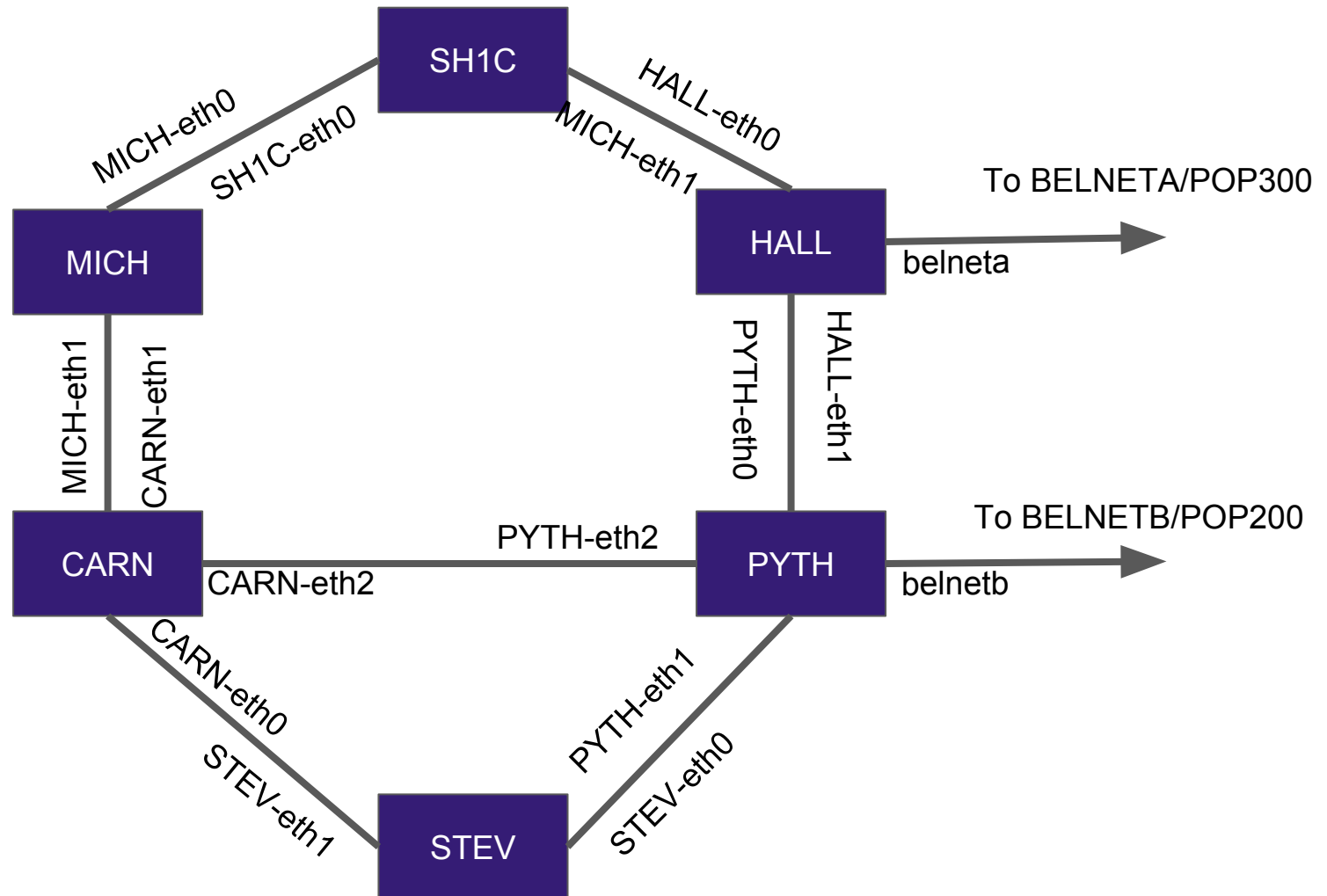
Synchronize configurations across VMs

- Use a **VCS**! (e.g. git)
- Github/Bitbucket can host private repositories
- Use a bare repository to sync offline between your VM and your laptop:
REPO=/path/to/vm/configs
mkdir -p "\${REPO}" && cd "\${REPO}" && git init --bare
[On the VM] git remote add local /vagrant/configs
[On your laptop] git remote add local "\${REPO}"
- You can then use the 'local' remote as usual, i.e.
git push local master

Remote VM topology



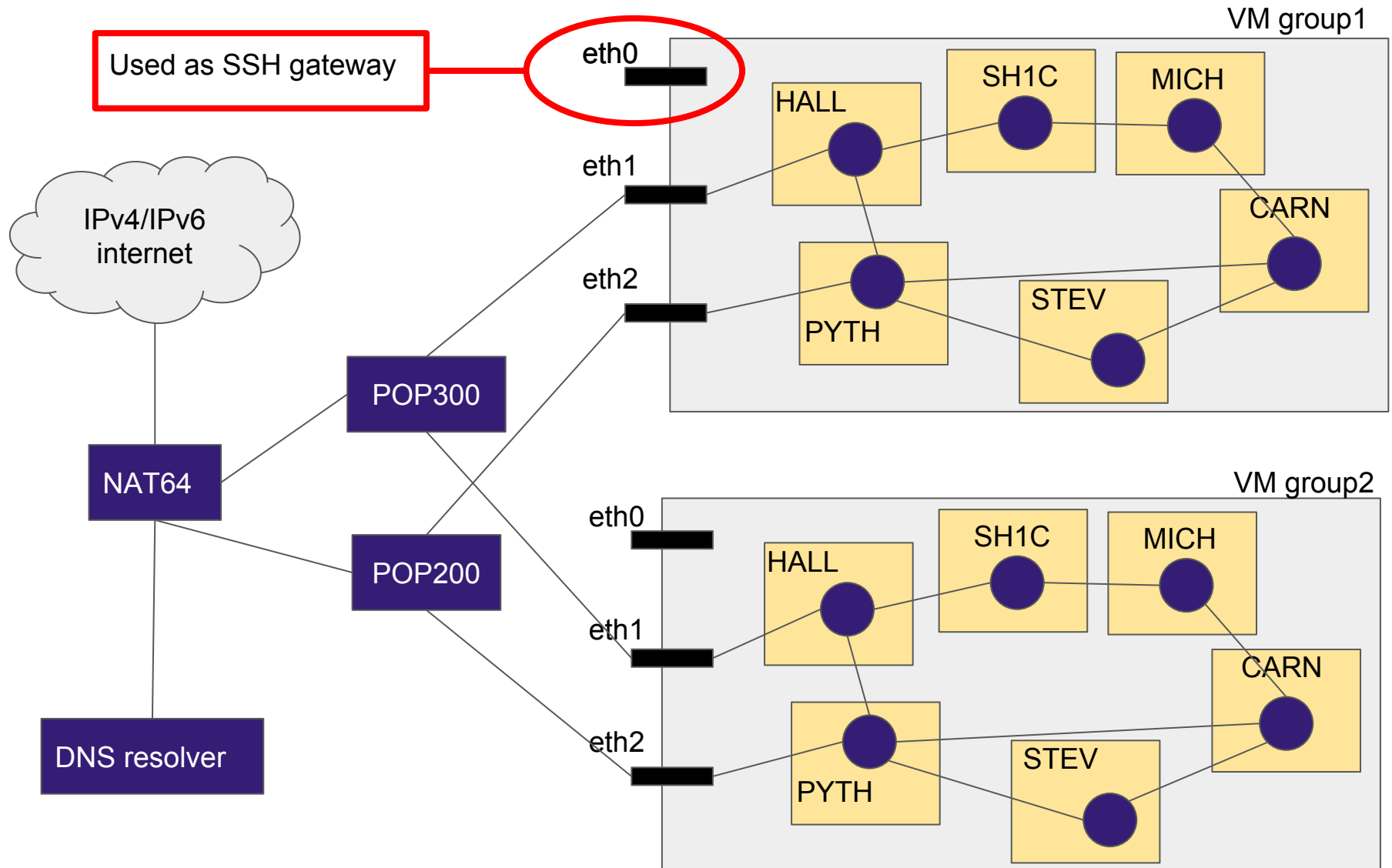
Project topology



Topology properties

- Each network is **dual**-homed
- **At least one** LAN per router
- Add hosts as you need them

Remote VM topology



POP<asn> in the remote host

- IPv6 prefix:
fd00:<asn>::/48 for the POP LAN
IPv6 prefix allocated to VM to announce over BGP
fd00:<asn>:<group#>::/48
- BGP peering: fd00:<asn>::b
Group one can peer with source address
fd00:<asn>::<group#>
[On the VM]
ip address add dev ethX fd00:<asn>::<group#>/48
- IPv4 is dropped on the POP switch
- Cross-VM peerings are allowed (and encouraged!)

DNS resolver

- Use the DNS resolver on the host machine:
echo “nameserver fd00::d” > /etc/resolv.conf
- Requires a working BGP peering!
- New TLD: .ingi.
 - belneta.ingi (BGP peering for POP300)
 - belnetb.ingi (BGP peering for POP200)
 - ns1.ingi ns2.ingi
 - groupX.ingi (Delegated to group X)
- Email me once you have a running DNS server for your group VM to enable DNS resolution of your sub-TLD

Next steps

- Addressing plan
- Position 'services' (e.g. DNS, www, DC cluster)
- Allocate individual tasks
- Individual group meeting next Monday 8.30