



Network Configuration

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Network



Networking is a crucial component of any cloud. It is needed so that users can actually access the cloud resources, but also needs to be configured to protect the cloud services.

The “correct” network configuration depends on the type of deployment (i.e. what users will be accessing it) and your site’s security constraints.

StratusLab does not use or require dynamic configuration of the underlying network.



Private Cloud

- Small number of known and trusted users, e.g. admins using a cloud for deploying site services.
- Can have single open network between physical machines hosting cloud services and running virtual machines

Public Cloud

- Larger number of users that are less trusted (either because of lack of admin experience or ...)
- Minimum two different networks/VLANs: one for physical machines with cloud services, one for virtual machines
- Ideal if networks can also be physically separated (multiple cards, network bonding, etc.)



Cloud Services

- Open access to service ports to site (private) or to world (public)
- Open internal service ports only to the necessary nodes
- Block access to all other ports from all nodes

Virtual Machines

- Open all ports to virtual machines by default
- Let users control access to VMs via internal firewalls

Standard StratusLab Network Configuration



Features

- Support 3 specific use cases: public service (public), batch system (local), and BOINC-like worker (private)
- Requires only static configuration of network switches
- Usual services for VM network configuration

Implementation

- No API: manual, static configuration of network
- Recommended config.: separate VM and cloud services networks
- All classes of IP addresses are optional, can create other classes
- Uses DHCP for VM network configuration
- Users responsible for protecting their machines



Configuration

- Network configuration usually achieved through switch routing rules.
- Public addresses: standard public IPv4 and/or IPv6 addresses
- Local and private addresses: 10.x.x.x and/or 192.168.x.x addresses
- Need to have 1 address for every (potentially) running VM!

DHCP

- Need to have all addresses allocated to VMs via DHCP
- DHCP server must be visible from VM, with datagram packets
- Usual (arbitrary) mapping: x.y.z.q to 0a:0a:x:y:z:q

DNS

- All addresses must have names
- Reverse lookup must work

Limited Number of Public IPs?



Port Address Translation

- StratusLab does support PAT
- When used, front end acts as interface to VM nodes
- Conserves real public IP addresses
- Large data transfers can make frontend a bottleneck

Exercises



1. **Determine the network ranges you'll use for each network type**
2. **Ensure that DNS server is configured (forward and reverse)**
3. **If using external DHCP, ensure it is also properly configured**

Questions and Discussion

website <http://stratuslab.eu>

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StratusLab source <http://github.com/StratusLab>

SlipStream source <http://github.com/slipstream>



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