

## OBJECTIVES

The objectives of this virtual testbed for ESGF are to allow the setting up of a virtual environment, for ESGF deployment for R&D and testing purposes, in a secure manner, behind a firewall. An additional objective is to be able to setup a server running services that would allow the setting up multiple instances of these virtual testbeds, for instance, in a coding sprint or a deployment workshop.

- Ensuring ease of deployment, without sacrificing on security.
- System which allows for advanced network debugging through logs.

## THE NEED

Organizations have strict firewall policies making test deployments of ESGF very hard. A need existed for a way to quickly and easily perform standalone deployments of ESGF, on a purely internal network, thereby not compromising on security, while providing full control over the local security policies, including firewall, to the user.

- System which only requires transparent http/https egress.
- No requirement for getting clearances for special ports used by ESGF.

## NETWORK DIAGRAM

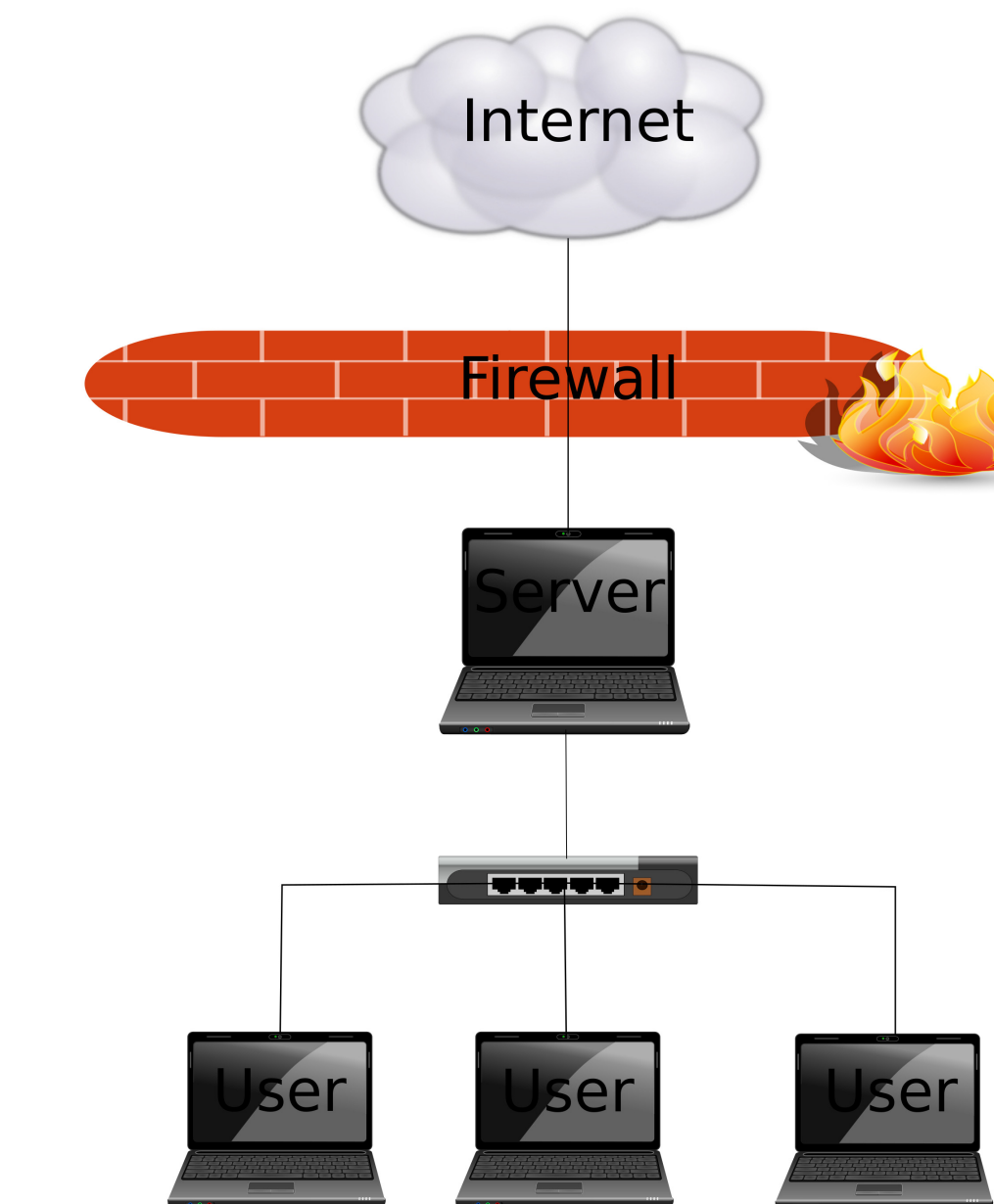


Figure 1: Multiple-testbed environment

## PERSONAL DEPLOYMENT

### Requirements for a personal deployment

1. A Linux/Mac/Windows laptop with at least 15 GiB of free disk space.
2. LAN port/converter on the laptop, to connect to the switch.
3. Oracle Virtualbox version 4.3 or higher preinstalled, on the machine.
4. Refer to instructions in the document <https://github.com/snrc-nsc/esgfcodesprint2015/raw/master/checklist/checklist.pdf>
5. Download preinstalled virtual machine devices from <http://esg-dn2.nsc.liu.se/virtualtestbed>
6. Following instructions in the document, import the vms, perform updates, and take snapshots.
7. Your virtual testbed for ESGF is now ready for use.

## HOSTING A WORKSHOP

### Requirements to host a workshop/multiple-testbed environment

1. **Due clearances from host organization, to operate a limited wireless station, DHCP server, and for performing proxying/network translation, for allowing users on a private network to be routed onto the internet.**
2. A dual-homed Linux server/powerful laptop
3. Multiport gigabit speed network switch and usable length CAT6e cables.
4. A USB-based wireless network adapter capable of functioning in 'Access Point Mode' (optional).

## DESCRIPTION

### What's included

- Precompiled virtual machines running Centos 6 'Minimal', with ESGF prerequisite packages installed.
- /etc/hosts prepopulated with names and ip addresses of the other vm nodes.
- The VMs also run a local firewall (iptables), which though not strictly necessary, can serve as a template for a production node.
- Certificates signed by federation-compliant CA, for the vms.
- Cloned git repository containing scripts for testing data publish/unpublish, sample data files, esg.ini additions for CORDEX project (to test CORDEX data publications).
- Configuration files/templates for services needed to be run on server, to provide for a multi-testbed environment.

### Services that would run on the server (if you run one!)

- DHCP server, to serve IPs on the private network.
- DNS server, to cache lookups for faster response, and better debugging support due to logging.
- HostAPD server (optional), to run a local WiFi accesspoint, in case participants don't have LAN ports.
- An iptables-based proxy script that would forward packets from the private network onto the internet.

## REFERENCES

- [1] Prashanth Dwarakanath. Setting up a virtual testbed for ESGF, 2015.

## FUTURE WORK

We plan to do installation videos of various ESGF roles/role combinations and update the document 'Setting up a virtual testbed for ESGF', with links to these videos.

## MORE INFO/CONTACT

[www.nsc.liu.se/software/esgf-virtualtestbed](http://www.nsc.liu.se/software/esgf-virtualtestbed)  
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