Linux Network Stack Test
Automated and Portable Network Tests

Red Hat
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Abstract

Introduction of our approach towards effective network testing.
Our Goal

A library of network tests to easily catch regressions in networking code
The Problem Is Portability

Simple Ping Test

$ ping 192.168.0.2

The test will break when the addresses change
And Too Much Configuration

**Simple Bonding Configuration**

```bash
ip addr flush eth4
ip addr flush eth1
modprobe bonding max_bonds=0
echo "+ bond0 " > /sys/class/net/bonding_masters
ip link set eth4 down
echo "+ eth4 " > /sys/class/net/bonding_masters/bond0/bonding/slaves
ip link set eth1 down
echo "+ eth1 " > /sys/class/net/bonding_masters/bond0/bonding/slaves
ip addr add 192.168.100.240/24 dev bond0
ip link set bond0 up
```
Network Testing Tool/Framework

To fully automate test execution and handle even the configuration of advanced networking setups with bonds, VLANs, and teams.
Network Testing Tool/Framework

And to make the tests independent of the underlying infrastructure
Linux Network Stack Test
Network Tests

Infrastructure

Configuration

Node Behaviour
Infrastructure
Configuration
Node Behaviour

$ ./my-email-server
$ ./send-email
$ ./send-another

$ ping 192.168.3.1
$ ./upload-file 192.168.2.1
$ ping 192.168.4.2

192.168.3.1
A

192.168.2.1
B

192.168.4.1
1

192.168.4.2
2

192.168.4.3
3
LNST Recipe

All three within a single description
LNST Architecture

LNST Controller
To manage slaves

LNST Slave
Dedicated test machine
Each slave must have a dedicated interface for the controller.
Test Execution

LNST Recipe
- Identify the machines required for the test

Machine Pool
- Select suitable machines from the network available to the controller

Test Network
- Configure them and run the test
Demonstration
Demonstration

Using the built-in **TestIcmpPing** module
Future Features

- Close integration with **libvirt**
  - LNST can change the infrastructure if used with virtualization
  - Adding and removing interfaces from virtual machines
- Controlling routers/switches
- **GUI** for interactive editing of XML recipes
Project Information

- Website:
  http://fedorahosted.org/lnst
- Mailing list:
  <lnst-developers@lists.fedorahosted.org>
- IRC:
  #lnst @freenode

Please feel free to contact us!
The end.

Thanks for listening