

Infrastructure update

2017-06-16

What is NLNOG RING?

- Awesome network debugging platform
- Provide a VM in your network, get access to hundreds of other networks
- Distributed debugging tools (ring-trace, ring-sqa, ..)
- IRC channel, mailing-list
- Volunteer-driven

Nodes: all Ig01 Protocols: ipv4 ipv6 show route for vwww.nlnog.net

Ig01: show route for 185.107.224.30/32 all

DNS: www.nlnog.net => 185.107.224.30

"countrycode": "US",

"ipv4": "38.103.8.242",

"participant": 381, "statecode": "VA"

"id": 496,

"geo": "38.9626498,-77.3802991",

"ipv6": "2001:550:102:ff::a0a",

"hostname": "pbwcomm01.ring.nlnog.net",

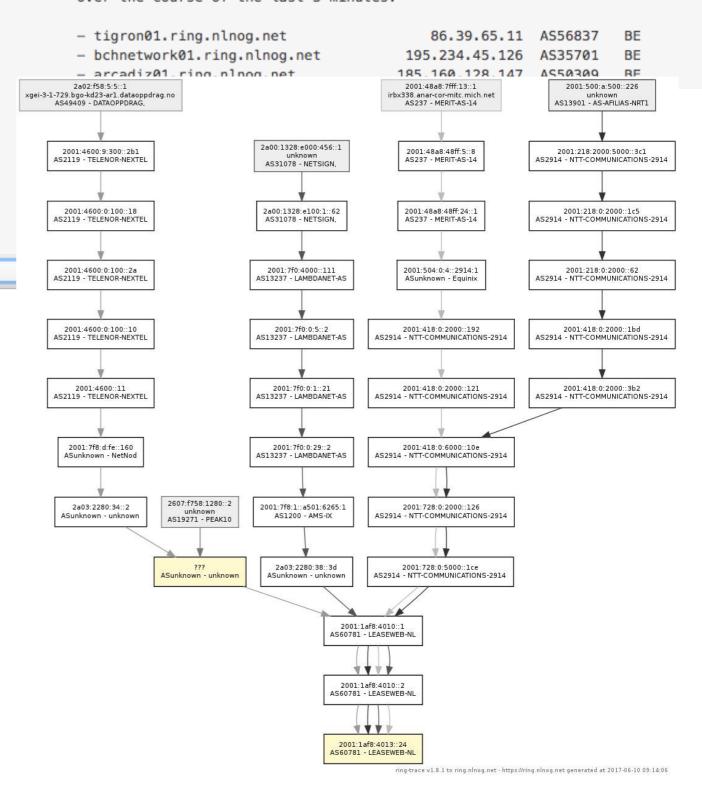
```
185.107.224.0/23
      [EBAYCLASSIFIEDSGROUP1 2017-05-26 from 5.255.154.1] * (100/-) [AS48635i]
            Type: BGP unicast univ
            BGP.origin: IGP
            BGP.as path: 41552 48635
            BGP.next_hop: 5.255.154.1
            BGP.local_pref: 100
            BGP.community: (34307,51068) (41552,400) (41552,405)
      [SVWH1 09:04:41 from 162.213.3.255] (100/-) [AS48635i]
            Type: BGP unicast univ
            BGP.origin: IGP
             BGP.as_path: 394738 12182 701 1299 48635
             BGP.next_hop: 162.213.3.255
            BGP.local pref: 100
      [SVWH2 09:04:18 from 162.213.3.252] (100/-) [AS48635i]
            Type: BGP unicast univ
             BGP.origin: IGP
            BGP.as path: 394738 12182 701 1299 48635
             BGP.next_hop: 162.213.3.252
            BGP.local_pref: 100
      [TFSKOK1 21:08:46 from 46.28.243.194] (100/-) [AS48635i]
            Type: BGP unicast univ
            BGP.origin: IGP
            BGP.as path: 49420 8308 196844 20562 48635
             BGP.next_hop: 46.28.243.194
https://ring.nlnog.net/api/1.0/nodes/active
 "info": {
    "resultcount": 420,
    "success": 1
 },
  "results":
    "nodes": [
         "active": 1,
         "asn": 39451,
         "city": "Manchester",
         "countrycode": "GB",
         "datacenter": null,
         "geo": "53.46517,-2.24686",
         "hostname": "melbourne01.ring.nlnog.net",
         "id": 116,
         "ipv4": "37.128.187.253",
         "ipv6": "2a03:b200:f::24",
         "participant": 104,
         "statecode": null
         "active": 1,
         "asn": 16409
         "city": "Herndon",
```

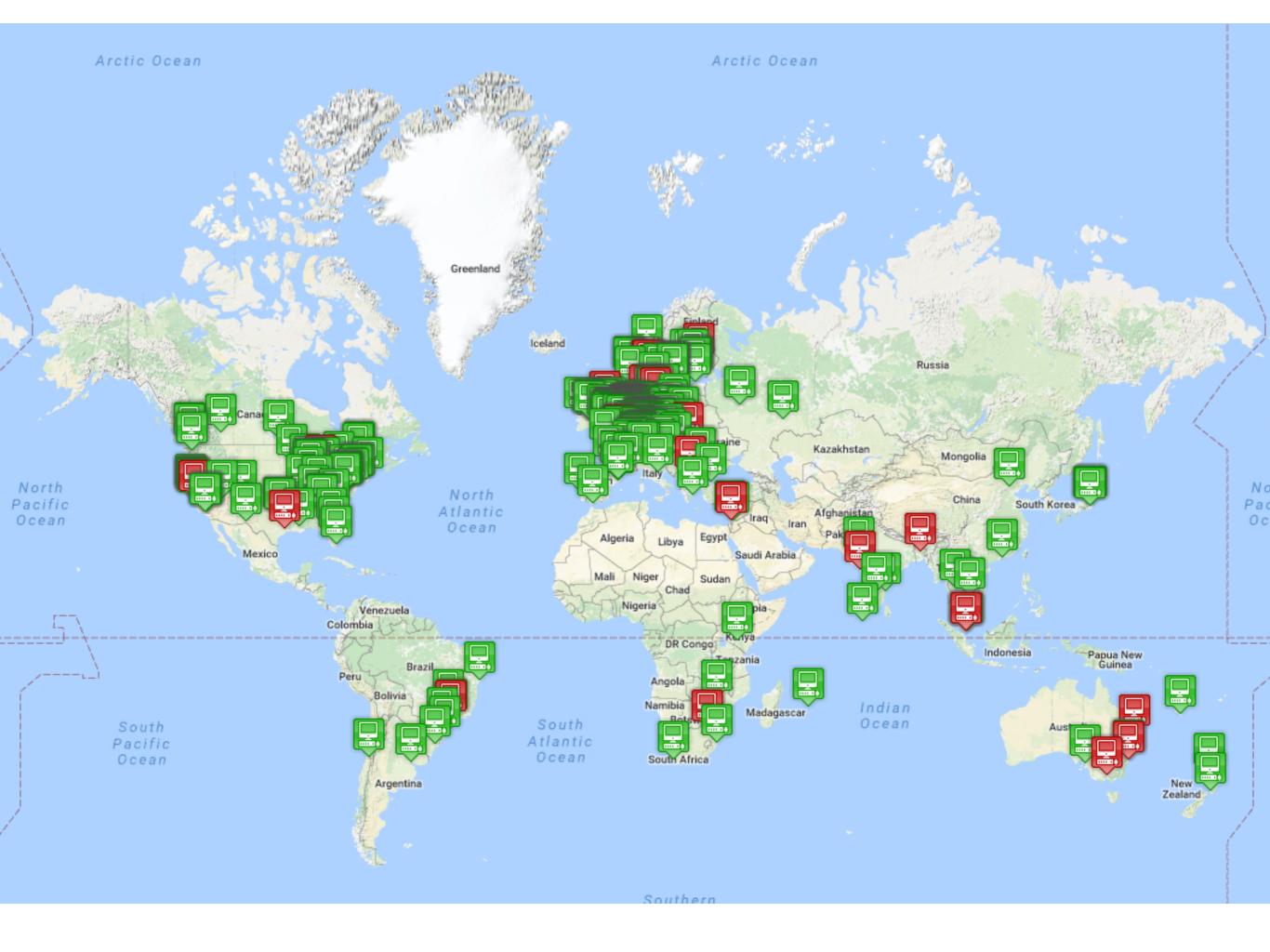
"datacenter": "Cogent Datacenter 510 Huntmar Park Drive Herndon, VA 20170",

This is an automated alert from the distributed partial outage monitoring system 'RING SQA'.

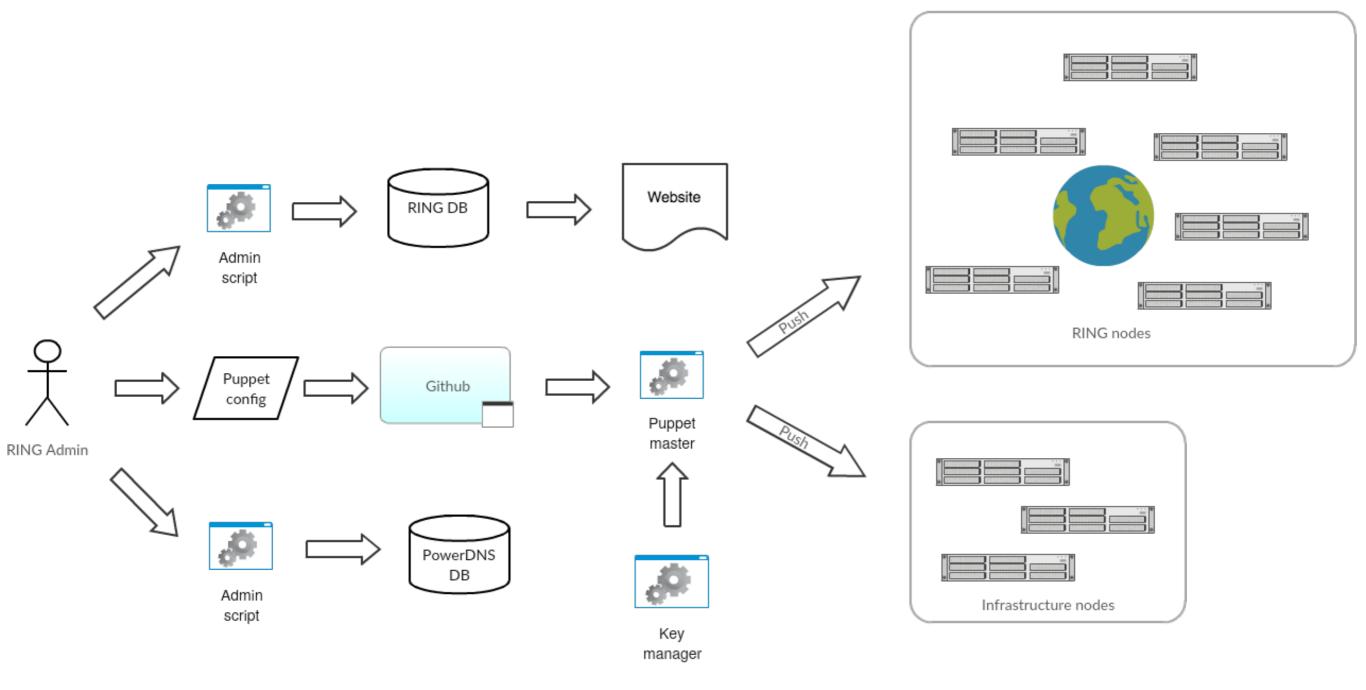
At 2017-06-10 11:31:27 UTC the following measurements were analysed as indicating that there is a high probability your NLNOG RING node cannot reach the entire internet. This could be down to your RING node, its local network, or disruption of peering and/or upstream networks (for example instability at an IXP or one of your transit providers).

The following 64 nodes previously were reachable, but became unreachable over the course of the last 3 minutes:



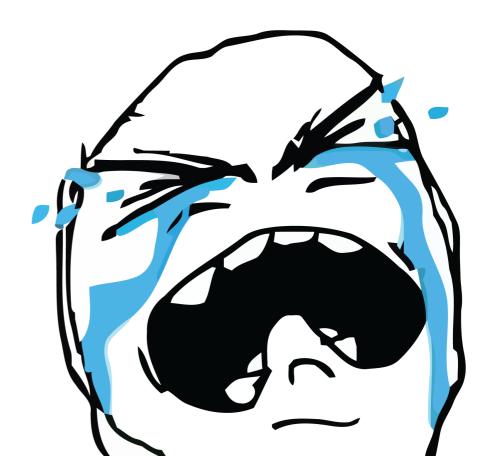


Architecture (2010-2016)



Problems

- Lots of manual labour
- Inconsistencies between db and puppet config
- Node states in DNS/API always outdated



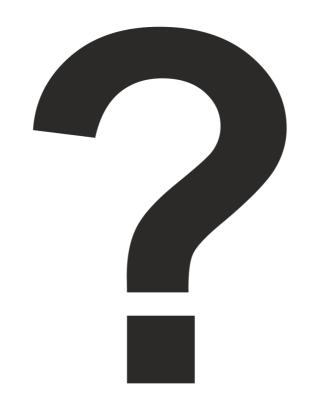
Problems (Puppet)

- Speed of Puppet runs
- Puppet master is single point of failure
- No insight in configuration run failures
- No easy upgrade path from Puppet2 (Ubuntu 12.04)





SALTSTACK







CHEF





SALTSTACK





Ansible vs Salt

Ansible

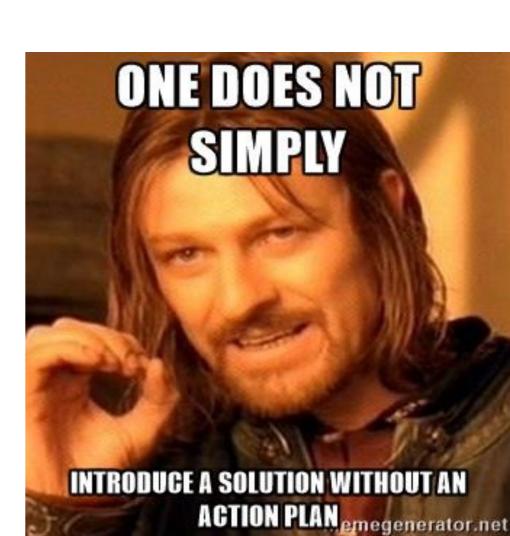
- Masterless operation
- Straightforward configuration syntax
- Agentless operation
- Speed

SaltStack

- Masterless operation
- Speed
- Complex configuration syntax

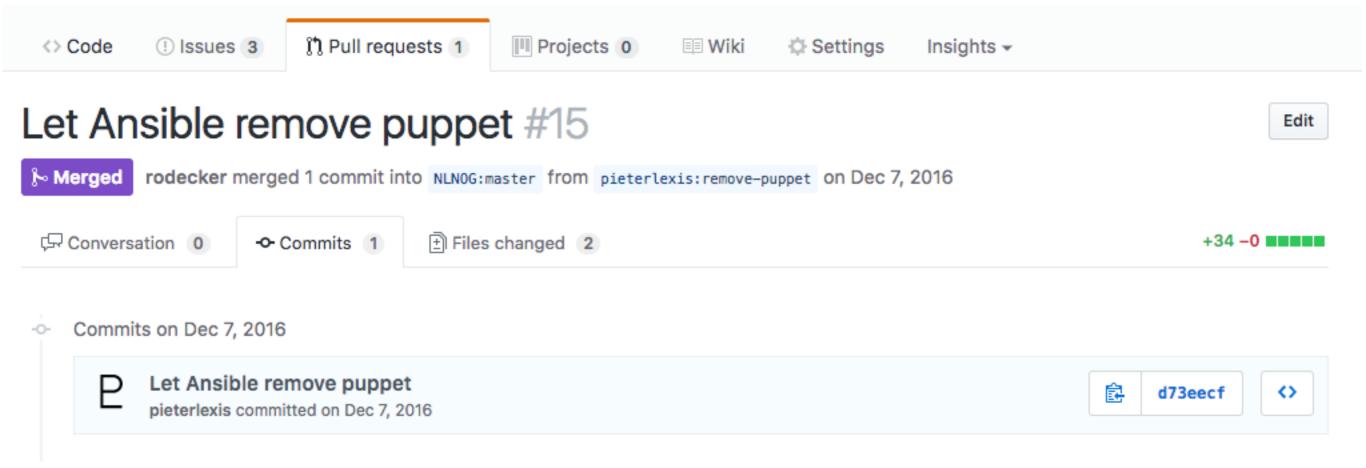
Action plan

- Write Ansible playbooks
- Uninstall Puppet client
- Write Ubuntu upgrade playbook
- Test
- Upgrade nodes



Ansible hackathon

- December 5-7 2016
- Job Snijders, Martin Pels (NLNOG RING)
- Pieter Lexis, Matt Griswold (NLNOG Infrastructure)



Upgrade playbook

```
- name: "Add ubuntu xenial repository"
 98
99
           apt_repository:
100
             repo: 'deb mirror://mirrors.ubuntu.com/mirrors.txt xenial main restricted universe multiverse'
101
             state: present
             filename: 'ubuntu_archiv_xenial'
102
103
104
         - name: "Add ubuntu xenial updates repository"
105
           apt_repository:
106
             repo: 'deb mirror://mirrors.ubuntu.com/mirrors.txt xenial-updates main restricted universe multiverse'
107
             state: present
             filename: 'ubuntu archiv xenial-updates'
108
109
110
         name: "Add ubuntu xenial security repository"
111
           apt_repository:
112
             repo: 'deb mirror://mirrors.ubuntu.com/mirrors.txt xenial-security main restricted universe multiverse'
113
             state: present
114
             filename: 'ubuntu_archiv_xenial-security'
115
116
         - name: "Remove ubuntu trusty repositories"
117
           file: name={{ item }} state=absent
118
           with_items:
119
             - '/etc/apt/sources.list.d/ubuntu_archiv_trusty.list'
120
             - '/etc/apt/sources.list.d/ubuntu_archiv_trusty-updates.list'
121
             - '/etc/apt/sources.list.d/ubuntu_archiv_trusty-security.list'
122
123
         - name: "apt-get update (xenial repos)"
124
125
             update_cache: yes
126
127
         - name: "Perform release upgrade (trusty -> xenial)"
128
           command: do-release-upgrade -f DistUpgradeViewNonInteractive
129
           when: ansible_distribution_release != "xenial"
130
       tags:
131
         xenial
```

Upgrade timeline

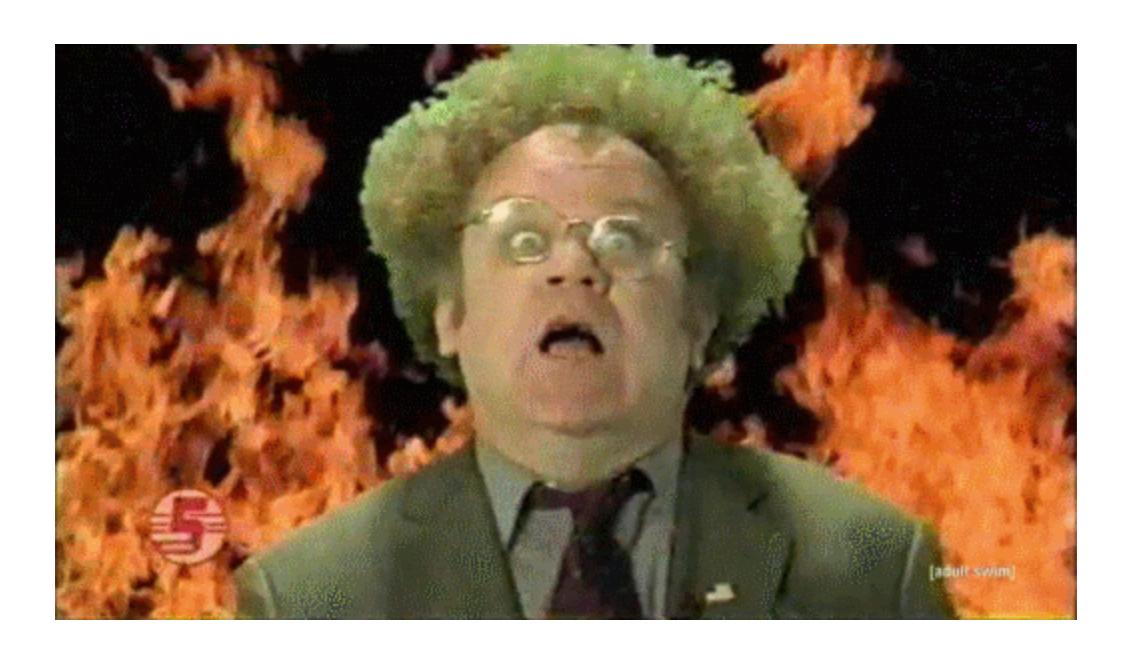
- Day 0: Disable SQA on all nodes
- Day 1: Launch upgrade script on all nodes
- Day 2: Reach out to owners of nodes that didn't survive
- Day 3:

15

- Enable SQA on all nodes
- Add auto-upgrade for unreachable nodes

```
12
13 - include: ubuntu_upgrade.yml
14 when: '"ringnode" in group_names and ansible_distribution_release != "xenial"'
```

Celebrate!



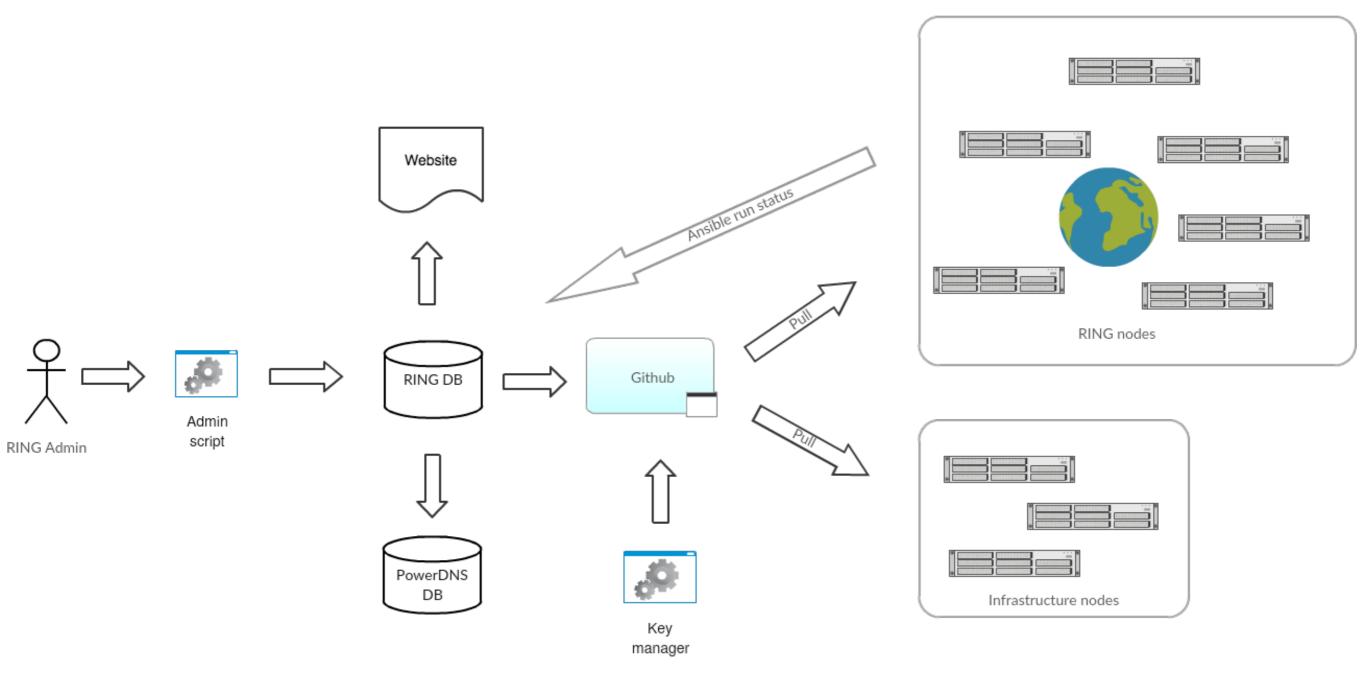
Results

- 132 missing nodes (31%)
- 141 failed ansible runs
- Took ~ 1 week to fix everything

Predictable Network Interface Names

Starting with v197 systemd/udev will automatically assign predictable, stable network interface names for all local Ethernet, WLAN and WWAN interfaces. This is a departure from the traditional interface naming scheme ("eth0", "eth1", "wlan0", ...), but should fix real problems.

Architecture (2017)



Ansible operation

- Provisioning playbook to bootstrap nodes
 - Checks architecture, network connectivity, etc.
 - Installs Ansible and configures cron job

- Ansible-pull retrieves latest config from GitHub
 - Uses proxy-server for IPv6-only nodes



Ansible operation

- Callback plugin reports run status
- Daily reporting and node activation/deactivation
- Weekly mail to owners of down nodes
- User key revoke after 90 days

```
From Me <ring-admins@nlnog.net>
Subject NLNOG RING Ansible report

To Me <ring-admins@nlnog.net>

Nodes:
452
Active:
420 (0 new)
Inactive:
32 (1 new)
Failed:
6
```

New nodes seen:

New missing nodes:

surfnet02.ring.nlnog.net

Failed ansible runs:

- nautile01.ring.nlnog.net
- as250net01.ring.nlnog.net
- grnet01.ring.nlnog.net
- luna01.ring.nlnog.net
- telus01.ring.nlnog.net
- cloudvps01.ring.nlnog.net

```
0 nodes activated.
1 nodes deactivated.
```

Join the RING!

- Requirements
 - 1 machine (virtual is fine)
 - 1 IPv6 address (IPv4 is optional)
 - Fresh install of Ubuntu 16.04
 - Presence in the DMZ with your own ASN
 - Fill in application form on https://ring.nlnog.net/

Help the RING!

- Looking for 1-2 volunteers!
- Questions? Want to help us?
 - ring-admins@nlnog.net
 - IRCNet / #ring

