Unsung Tools of DevOps

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Stay DRY

- So I have this one off task...
- You should have access to all of them...
- Can you fetch those logs for me?
The Basics

- SSH wrapper
- Runs a command in parallel
- Multiple ways to identify hosts
- Consolidated logging
Caveats

- Key-based auth
- Working ssh-agent
- sudo issues
- Shell escaping...
Base Setup

• Install from package or source
http://mussh.sourceforge.net/

• sudoers changes (if required)

• Source of hostnames
Explicit Hosts

[jonathan@jaws ~]$ mussh -l pi -m 2 -h rpi-1 rpi-2 -c 'sudo ntpdate -u 72.8.140.222'
pi@rpi-1: 15 Jun 11:39:19 ntpdate[14676]: adjust time server 72.8.140.222 offset -0.002122 sec
pi@rpi-2: 15 Jun 11:39:20 ntpdate[5924]: adjust time server 72.8.140.222 offset -0.000621 sec

• $ mussh \n  -l pi \n  -m 2 \n  -h rpi-1 rpi-2 \n  -c ‘...’
  # Username
  # Concurrency
  # Hosts
  # Command
Classified Hosts

- Use an existing source to gather hostnames

- Read hosts from a file
  - `H <filename>`
  - `H -`  # stdin
Infrastructure as Code

• You want to automate all the things?
• When did that change go in?
• One of these things is not like the other...
The Basics

• Supports multiple vendors / devices
• Automated change logging & reporting
• Division of responsibility
• http://www.shrubbery.net/rancid/
Caveats

- No git support out of the box
  - [http://dotwaffle.github.io/rancid-git/](http://dotwaffle.github.io/rancid-git/)
- Requires read-only access
- Polling, not event driven
Base Setup

• **Install from source**

• **Edit rancid.conf**
  
  RCSSYS=git
  FILTER_PWDS=YES
  LIST_OF_GROUPS="prod staging dev"

• **Create email aliases for groups**
  rancid-admin-prod
  ranicd-prod

• **Enable in cron**
Authentication

- Use a service account

- Configured for user in ~/.cloginrc
  
  ```
  # We only use SSH
  add method * {ssh}
  
  # Device Authentication
  add password *.example.com LoginPass EnablePass
  add password router.example.com OtherPass AndAnother
  ```

- SSH keys work if the remote device supports them
Devices

- Each Group has a router.db file
  ~/prod/router.db
  switch.example.com:cisco:up
  router.example.com:juniper:up
  balance.example.com:f5:up

- Configs stored in unique files
  ~/prod/configs/switch.example.com

- Changes are automatically picked up
From: rancid <rancid@example.com>
To: rancid-example@example.com
Subject: example router config diffs
Precedence: bulk

Index: configs/dfw.example.com

=================================================================
retrieving revision 1.144
diff -u -4 -r1.144 dfw.example.com@@ -57,14 +57,8 @@
  !Slot 2/MBUS: hvers 1.1
  !Slot 2/MBUS: software 01.36 (RAM) (ROM version is 01.33)
  !Slot 2/MBUS: 128 Mbytes DRAM, 16384 Kbytes SDRAM
- !Slot 6: 1 Port Gigabit Ethernet
- !Slot 6/PCA: part 73-3302-03 rev C0 ver 3, serial CAB0312160L
- !Slot 6/PCA: hvers 1.1
- !Slot 6/MBUS: part 73-2146-07 rev B0 dev 0, serial CAB031112SB
- !Slot 6/MBUS: hvers 1.2
- !Slot 6/MBUS: software 01.36 (RAM) (ROM version is 01.33)
  !Slot 7: Route Processor
  !Slot 7/PCA: part 73-2170-03 rev B0 ver 3, serial CAB024901SI
  !Slot 7/PCA: hvers 1.4
  !Slot 7/MBUS: part 73-2146-06 rev A0 dev 0, serial CAB02060044@@ -136,11 +130,8 @@
  boot system flash slot0:
  logging buffered 32768 debugging
  no logging console
  enable secret 5 $1$73Y1$grXuRjuZxfSiLYv1sBRUz0

http://www.shrubbery.net/rancid/#sample

Email of diff
mussh
RANCID
lldpd
Cacti
Iperf
http://vincentbernat.github.io/lldpd/
The Basics

- Supported protocols:
  - LLDP
  - CDP (Cisco)
  - EDP (Extreme)
  - SONMP (Nortel)
  - FDP (Foundry)
- CLI for viewing data
- Alternatives: Open-LLDP, ladvd
Caveats

- Needs LLDP enabled on network gear
- Less useful in virtual environments
- Sometimes odd behavior with bonded interfaces
**Base Setup**

- **Install from packages or source**
  http://vincentbernat.github.io/lldpd/

- **Edit configuration file:**
  `/etc/defaults/lldpd`

  ```
  # Enable CDP
  DAEMON_ARGS="-c"
  ```

- **Start service**
pi@rpi-1 ~ $ lldpctl

LLDP neighbors:

Interface: eth0, via: CDPv2, RID: 1, Time: 0 day, 00:05:35
Chassis:
  ChassisID: local Switch.example.com
  SysName: Switch.example.com
  SysDescr: cisco WS-C2924-XL running on
Cisco Internetwork Operating System Software
IOS (tm) C2900XL Software (C2900XL-C3H2S-M), Version 12.0(5)WC17, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2007 by cisco Systems, Inc.
Compiled Tue 13-Feb-07 15:27 by antonino
  MgmtIP: 192.168.1.2
  Capability: Bridge, on
Port:
  PortID: ifname FastEthernet0/2
  PortDescr: FastEthernet0/2
VLAN: 1, pvid: yes VLAN #1

pi@rpi-1 ~ $
$ lldpctl -f keyvalue

lldp.eth0.via=CDPv2
lldp.eth0.rid=1
lldp.eth0.age=0 day, 00:38:58
lldp.eth0.chassis.local=Switch.example.com
lldp.eth0.chassis.name=Switch.example.com
lldp.eth0.chassis.descr=cisco WS-C2924-XL running on
Cisco Internetwork Operating System Software
IOS (tm) C2900XL Software (C2900XL-C3H2S-M), Version 12.0(5)WC17, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2007 by cisco Systems, Inc.
Compiled Tue 13-Feb-07 15:27 by antonino
lldp.eth0.chassis.mgmt-ip=192.168.1.2
lldp.eth0.chassis.Bridge.enabled=on
lldp.eth0.port.ifname=FastEthernet0/2
lldp.eth0.port.descr=FastEthernet0/2
lldp.eth0.vlan.vlan-id=1
lldp.eth0.vlan.pvid=yes
lldp.eth0.vlan=vLAN #1
mussh    RANCID    lldpd

Cacti
Monitor all the things

- Measure, improve, repeat
- Resolution and Retention
- Monitoring vs Trending
- Actionable Data
The Basics

- Initially for Network Graphing
- RRD Based data storage
- Centralized polling
- Web management interface
Caveats

- It’s RRD backed
- Configuration woes
- No great story for Events
Base Setup

- **Requires:**
  MySQL, PHP, RRDTool, net-snmp

- **Install from packages or source**
  http://www.cacti.net/

- **Allow SNMP queries to devices**

- **Google for additional templates...**
mussh  RANCID  lldpd

Cacti  Iperf
Series of Tubes

- We implicitly trust the network
- The Internet lies
- An Internal matter
The Basics

- Client / Server utility
- TCP or UDP
- Measures maximum bandwith
- Allows for some adjustments
Caveats

• Requires access to both endpoints
• Seriously consumes bandwidth
• Last release in 2008
Base Setup

- Install from package or source
  http://iperf.sourceforge.net/

- Start a server
  $ iperf -s

- Run the Client
  $iperf -c server.example.com
$ iperf -c 192.168.1.136 -u -b 100M

UDP Test