NEW TOOLS

ngage | vaping
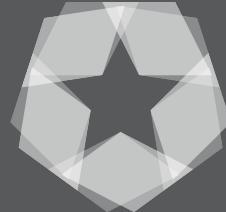
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UNITED
INTERNET
EXCHANGE

WHAT IS NGAGE?

Command line tool to interface with network devices, evolved from internal tools.

https://github.com/20c/ngage
http://ngage.readthedocs.io/en/latest/

USAGE

```
Usage: ngage [OPTIONS] COMMAND [ARGS]...

Options:
  --help  Show this message and exit.

Commands:
  commit    commit changes on a device
  config    view and interact with the config
  diff      get diff from device
  pull      pull config from a device
  push      push config to a device
  rollback  rollback device config
```

WHY NGAGE?

- **Separates device interfacing from config building (unix principle)**
- **Allows using the same code in multiple places**

USAGE EXAMPLE

ChIX (Chicago Internet Exchange) uses ngage to push config built 3 separate ways, all are logged in the same way.

- **Engineer deploys new switch**
  - ansible builds fabric config
- **Customer updates mac address**
  - django updates database, script builds new port config
- **Customer sets BGP community 33713:666**
  - bird updates database, script builds config

COMMON OPTIONS

```
Options:
  --quiet                    no output at all
  --verbose                  enable more verbose output
  --home TEXT                specify the home directory,
                             by default will check in order:
                                 $NGAGE_HOME,
                                 ./.ngage,
                                 ~/.config/ngage
  --debug                    enable extra debug output
```

Home checks current working directory first, to allow for easily having separate config per project

CONNECTION OPTIONS

```
Options:
  --user TEXT              username
  --password TEXT         password to use if not using key auth
  --type TEXT             type of connection, default eznc
  --port TEXT             port to connect to, default per platform
```

If auth fails, ngage will prompt for a password. For an initial deploy of usernames and ssh keys, you could do:

```
ngage push 00-system.conf --user=root $HOSTNAME
```

NGAGE PUSH

Pushes a config to a device

```
Usage: ngage push [OPTIONS] HOST [FILES]...

  push config to a device

Options:
  --check / --no-check        commit check config
  --commit / --no-commit      commit changes
  --diff / --no-diff          show diff of changes
  --lock / --no-lock          lock config for exclusive access
  --rollback / --no-rollback  rollback changes after push
  --help                      Show this message and exit.
```

NGAGE PULL

Gets current config from device

```
Usage: ngage pull [OPTIONS] HOST [FILENAME]

  pull config from a device

Options:
  --output-dir TEXT  directory to save file to, will be named from
filename
                     option
  --help             Show this message and exit.
```

UTILITY FUNCTIONS

Useful for debugging, working on device "directly" with a git log.

```
commit    commit changes on a device
diff      get diff from device
rollback  rollback device config
```

HELPER SCRIPTS

These scripts assume that configs are generated to gen/$hostname/ and numbered in order they should be pushed, for example:

```
$ ls -la gen/chix0.ch2/

00-basesys.conf
01-chassis.conf
03-interfaces.conf
99-qfx.conf
```

HELPER SCRIPTS

diff.sh

```bash
#!/bin/bash

set -x
hostname=$1
shift

if test -z "$hostname"; then
  echo "usage, $0 <hostname> [OPTIONS]"
  exit 1
fi

ngage push --diff --no-commit $hostname gen/$hostname/* $@
ngage rollback $hostname
```

HELPER SCRIPTS

Pushes config to a single device

```bash
#!/bin/bash

set -x
hostname=$1
shift

if test -z "$hostname"; then
  echo 'usage, pushone <hostname> [OPTIONS]'
  exit 1
fi

ngage push $hostname gen/$hostname/* $@
```

DEVICE SUPPORT

Junos / native using eznc

Napalm http://napalm.readthedocs.io/en/latest/ support (lacks pull) adds:
- eos
- ios
- iosxr
- etc

WHAT IS NEXT?

- **Better logging, save diffs every push**
- **Bird plugin**
- **Patches welcome!**

VAPING

Smokeping alternative written in python

https://github.com/20c/vaping
http://vaping.readthedocs.io/en/latest/

Realtime default config demo at
https://status.unitedix.net/

GREEN IO FRAMEWORK

Efficiently multiplexes input / output for you, currently uses gevent, but the io layer is completely abstracted to be able to swap out backends at ease (think py3 asynchio).

PLUGIN ARCHITECTURE

Everything is a plugin! Can also be used for a generic IO daemon

PLUGINS

- *fping* - uses fping to ping multiple hosts
- *command** - run a command and take output, for example:

```
ssh $router "show interfaces | display json"
```

- *zeromq* - sends output over zeromq to configured host
- *vodka* - standalone web server for displaying graphs

* ssh | display json is up to 10x faster than snmp on QFXs
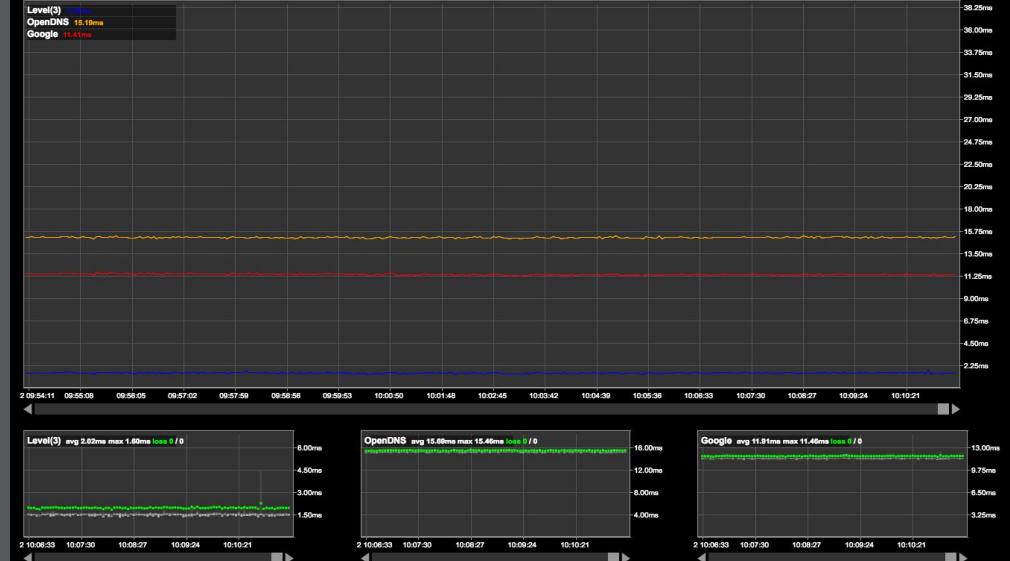
CONFIGURATION

Easy to use yaml, supports inheritance

```yaml
plugins:
  - name: std_fping
    type: fping
    count: 10
    interval: 3s

  - name: more_fping
    type: std_fping
    count: 20
```

OUTPUT

View demo at https://status.unitedix.net

WHAT IS NEXT?

- More plugins (RRD, sflow)
- Python 3 asyncio
- Patches welcome!

QUESTIONS / COMMENTS?

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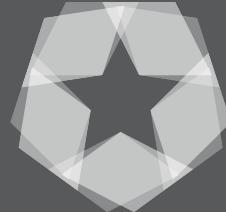https://github.com/20c/ngage
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