SaltStack meets Foreman

SALTSTACK

10.08.2019

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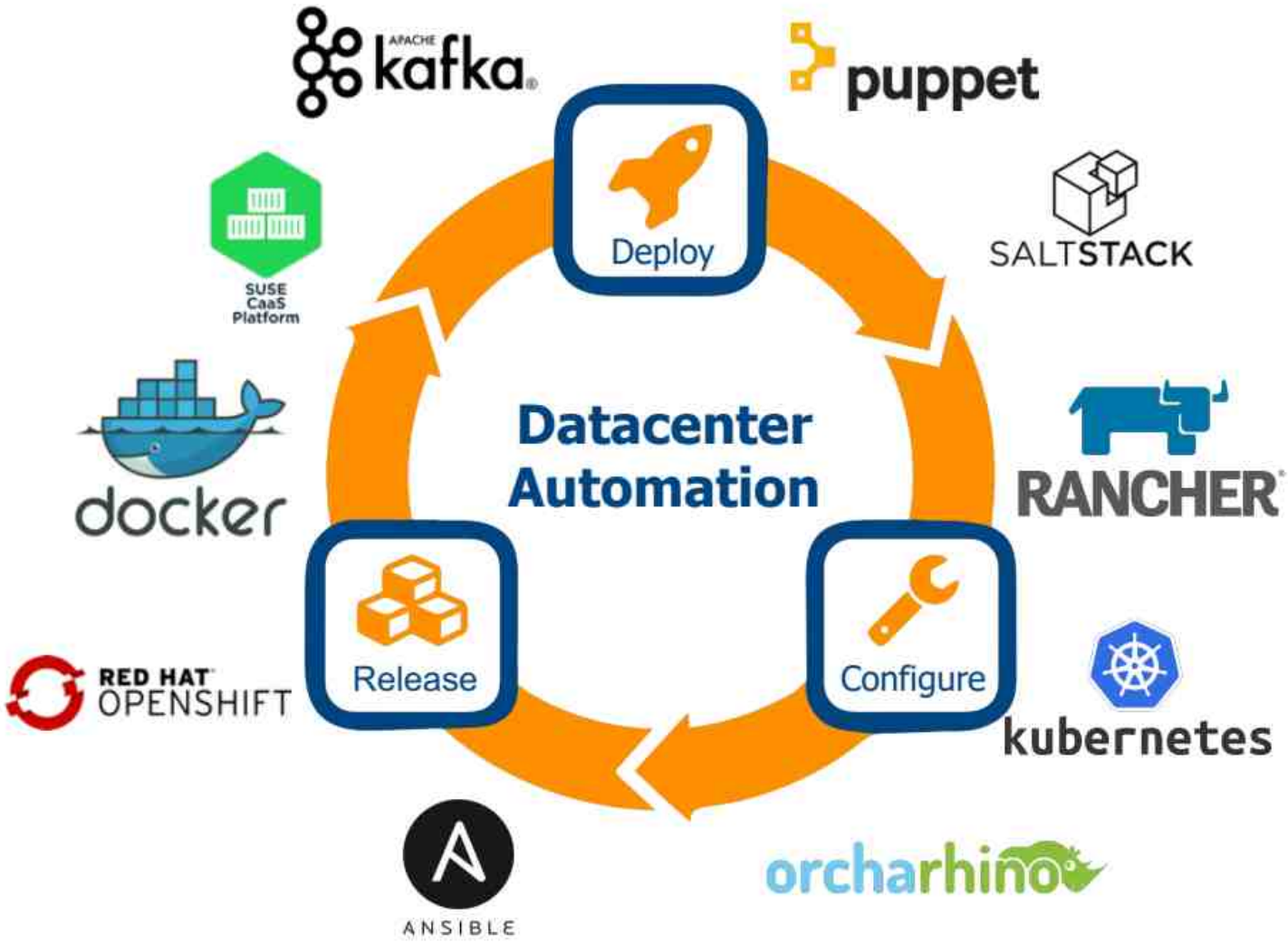
SIMPLIFY YOUR DATACENTER



Open Source Automation Days

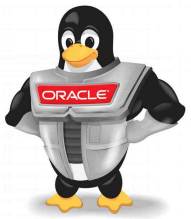
Foreman

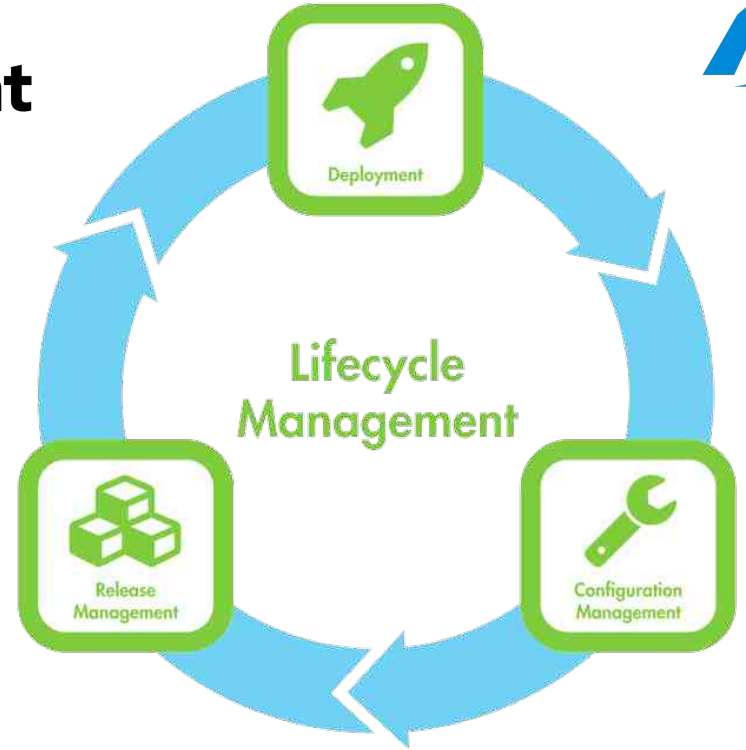
- Open Source project initiated by

  Ohad Levy committed on 13 Jul 2009
- Ruby on Rails (and React / JS)
- Puppet ENC / Show reports & facts

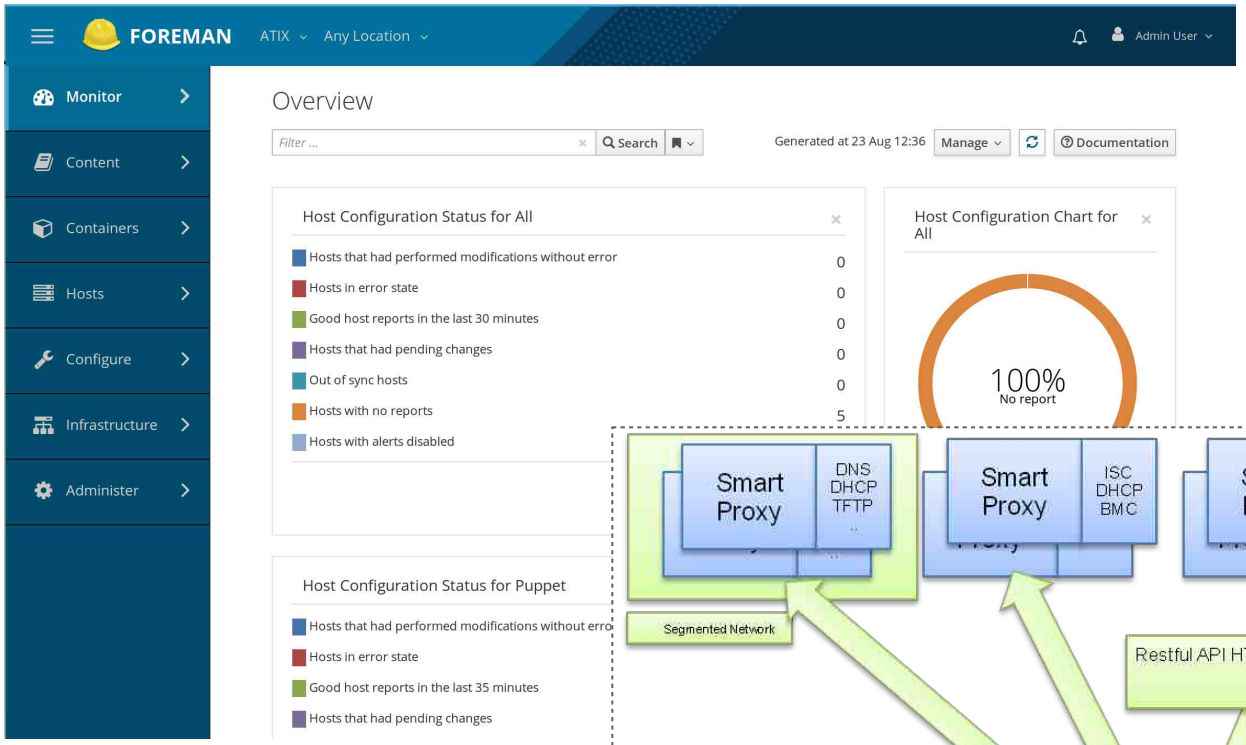
- ~ 300 contributors
- ~ 8000 commits
- ~ 50 plugins

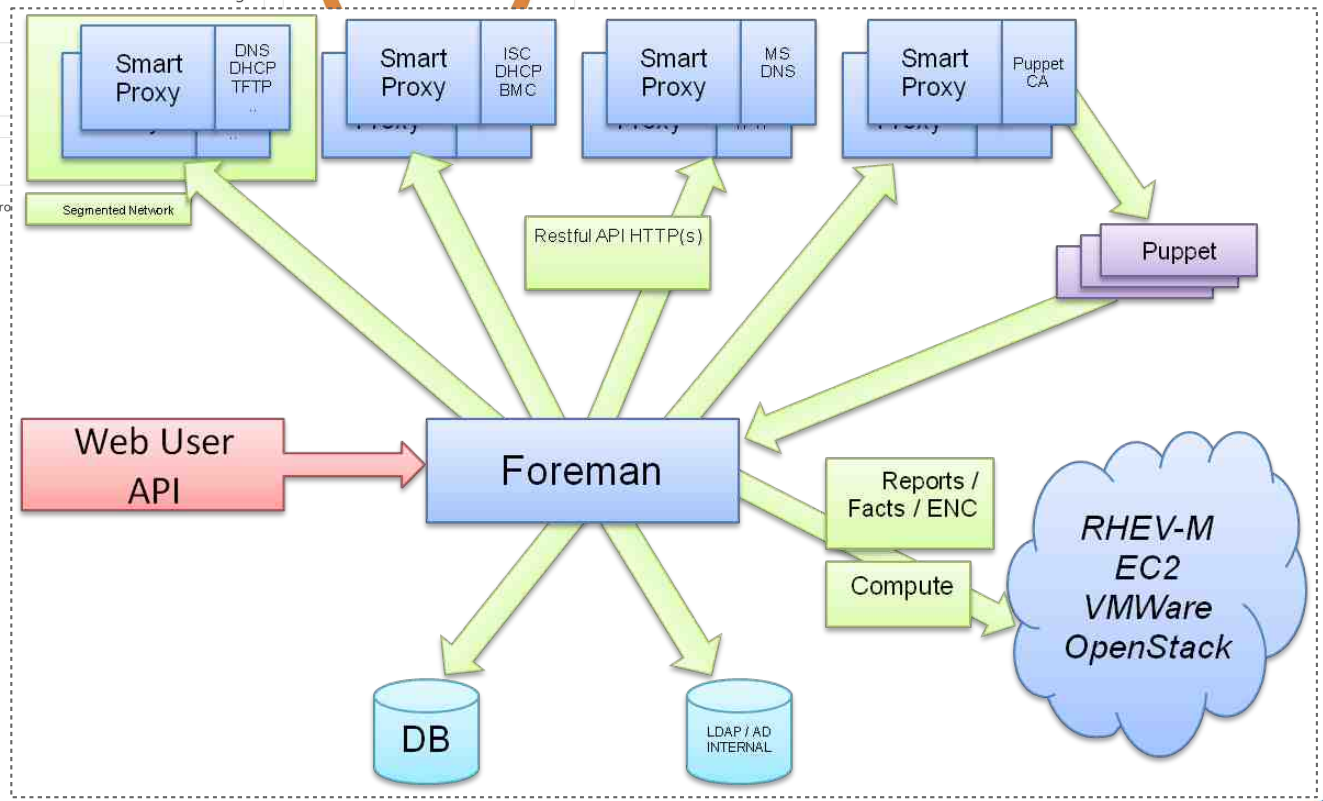
Foreman: features overview





Foreman





#FrOSCon14

SaltStack

- Open Source project initiated by

  Thomas Hatch commited on 13 Feb 2011
  - ~ 2250 contributors
  - ~ 106.000 commits
  - ~ 320 formulas
- Driven by SaltStack Inc, founded Aug 2012
- Written in python
- Infrastructure as code: yaml + jinja templates
- Event driven, full infrastructure management tool

Grains & States → Terminology

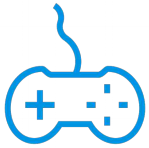
Ansible	Salt	puppet
Facts	Grains	Facts
Modules	Modules	Resources
Tasks	States	Manifests
Roles	Formulas	Modules
Playbook	top.sls	Roles/Profiles
Inventory	Pillar	Hiera

SaltStack: Flexibility

- Architecture:
  - Client (= minion) / Server
  - Client-less (= salt ssh)
- Modes:
  - Push: ‘salt’ on Salt Master
  - Pull: ‘salt-call’ on Salt Minion
- Event bus: Reactor and Beacons
- Scheduled jobs

```
schedule:
  highstate:
    function: state.highstate
    minutes: 20
```

SaltStack: Modular System



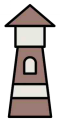
Execution modules

Returner

State

Cloud

Grains



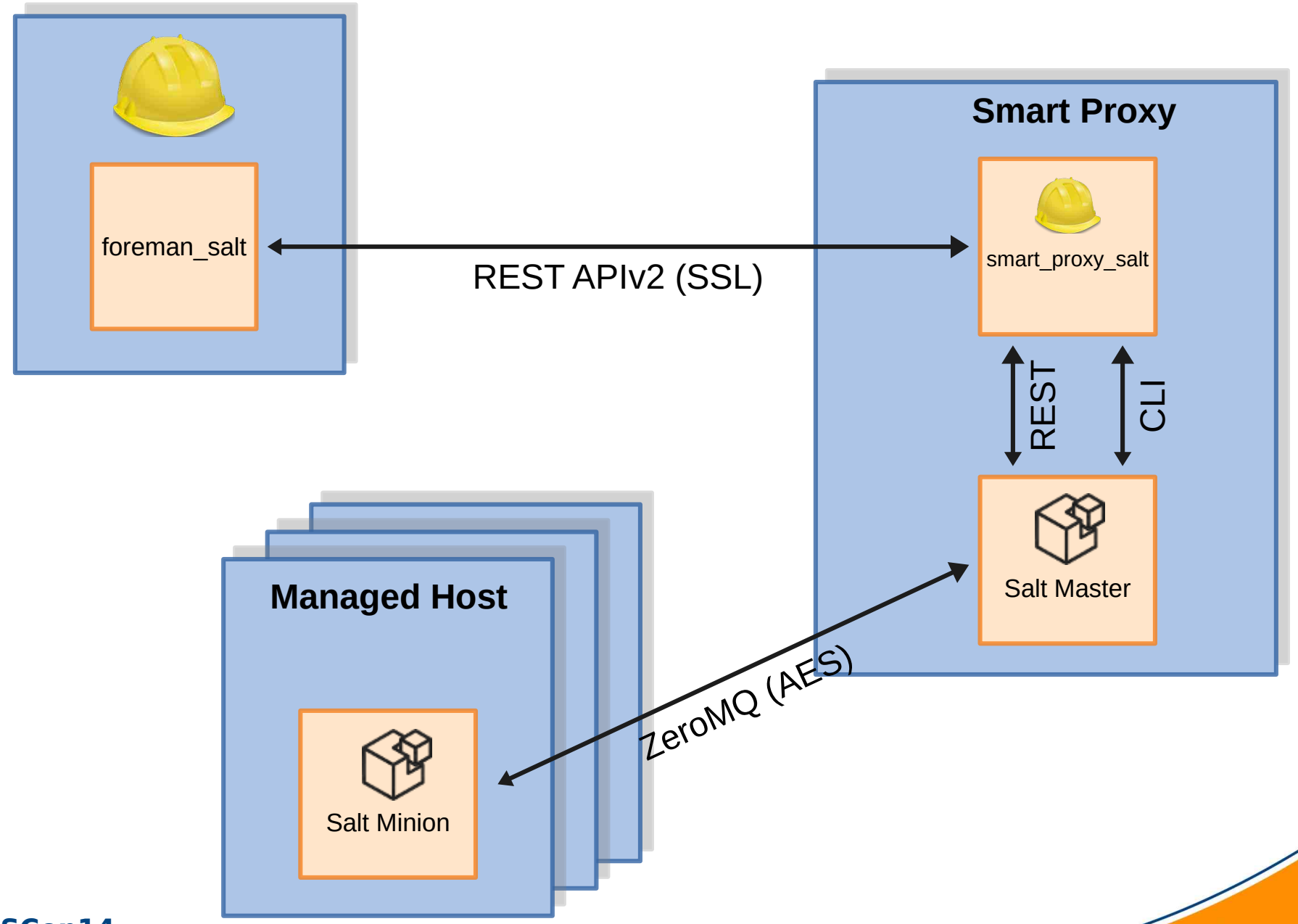
Beacon

Pillar

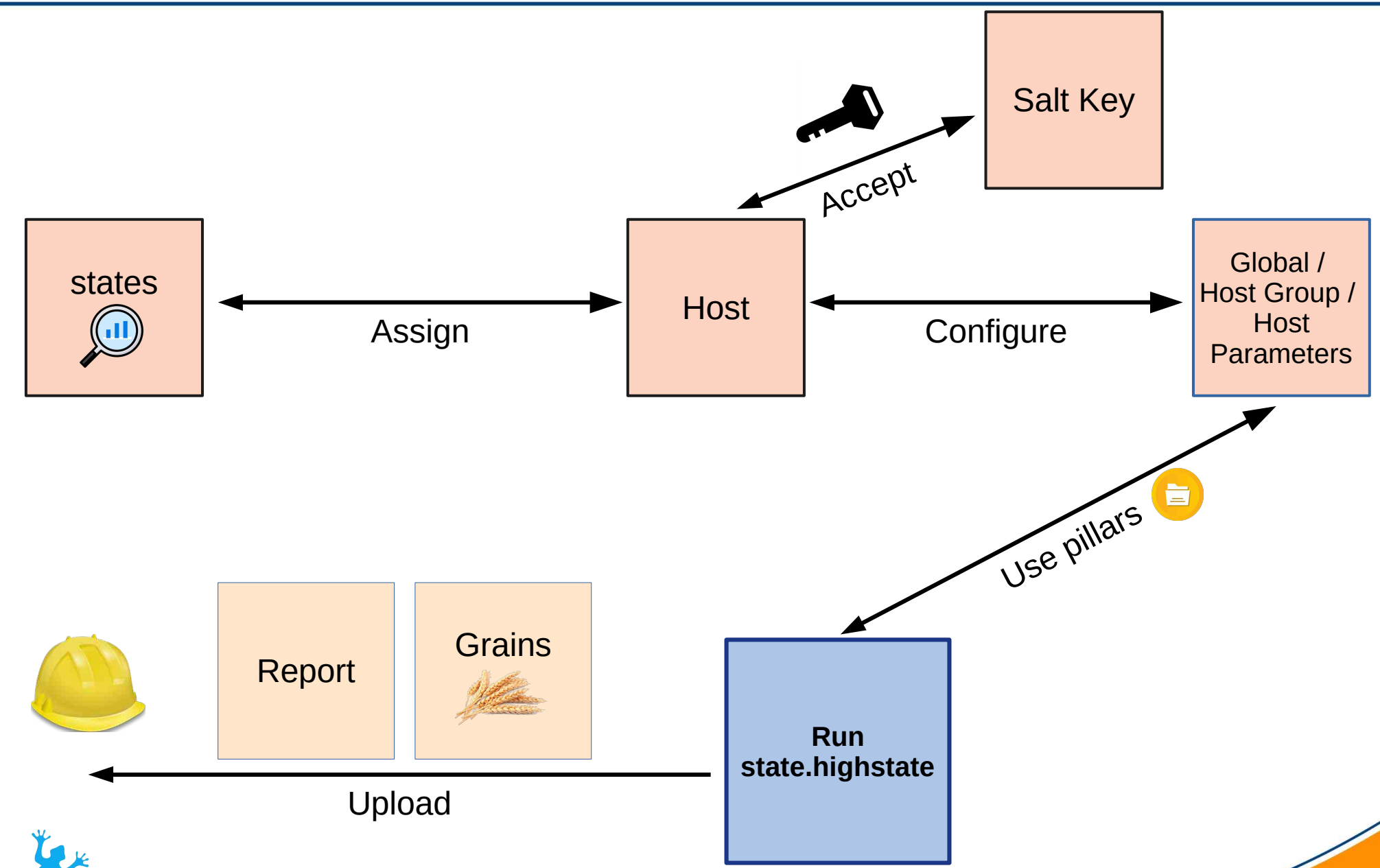
Runner

…. and many more

Foreman & Salt: Scenario



foreman_salt: Supported features



Salt Keys

Salt Keys on or.deploy5.dev.atix

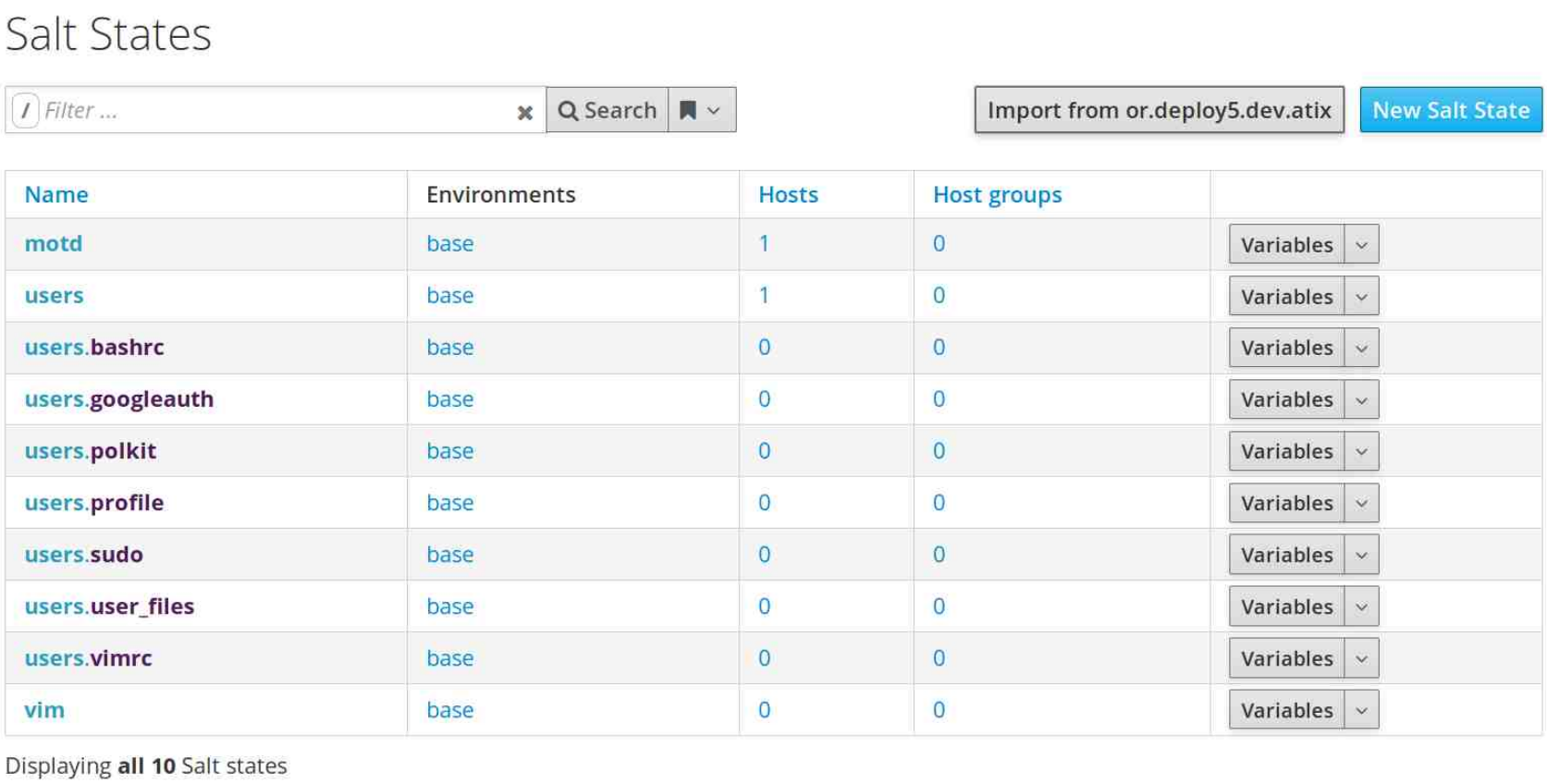
Filter

Autosign

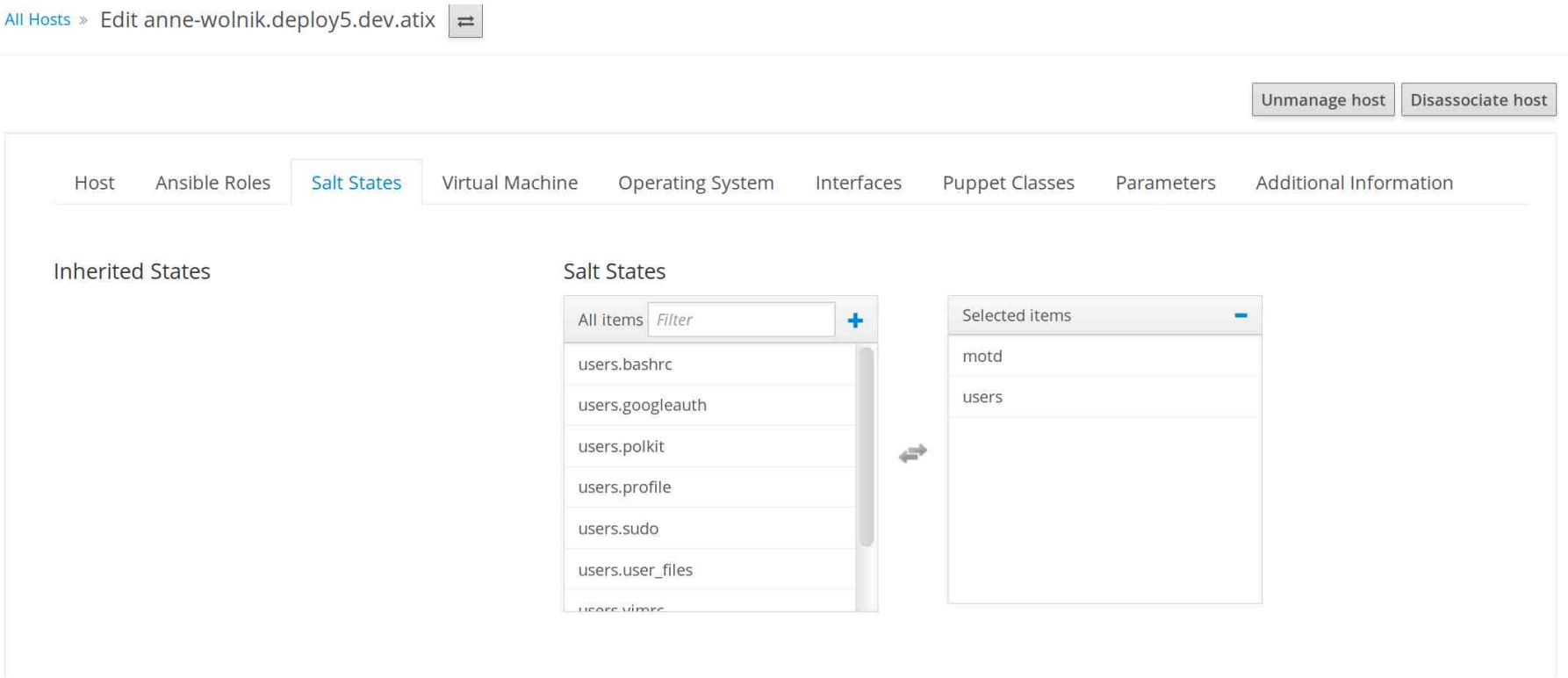
Key Name	State	Fingerprint	
anne-wolnik.deploy5.dev.atix	Accepted	41:4a:e2:73:f2:36:2e:b5:9c:49:7f:5b:18:2a:fc:93:97:08:21:8e:1b:96:25:eb:da:27:ae:dc:35:41:4e:1e	Delete

Displaying **1** foreman salt/smart proxies/salt keys

Import Salt states



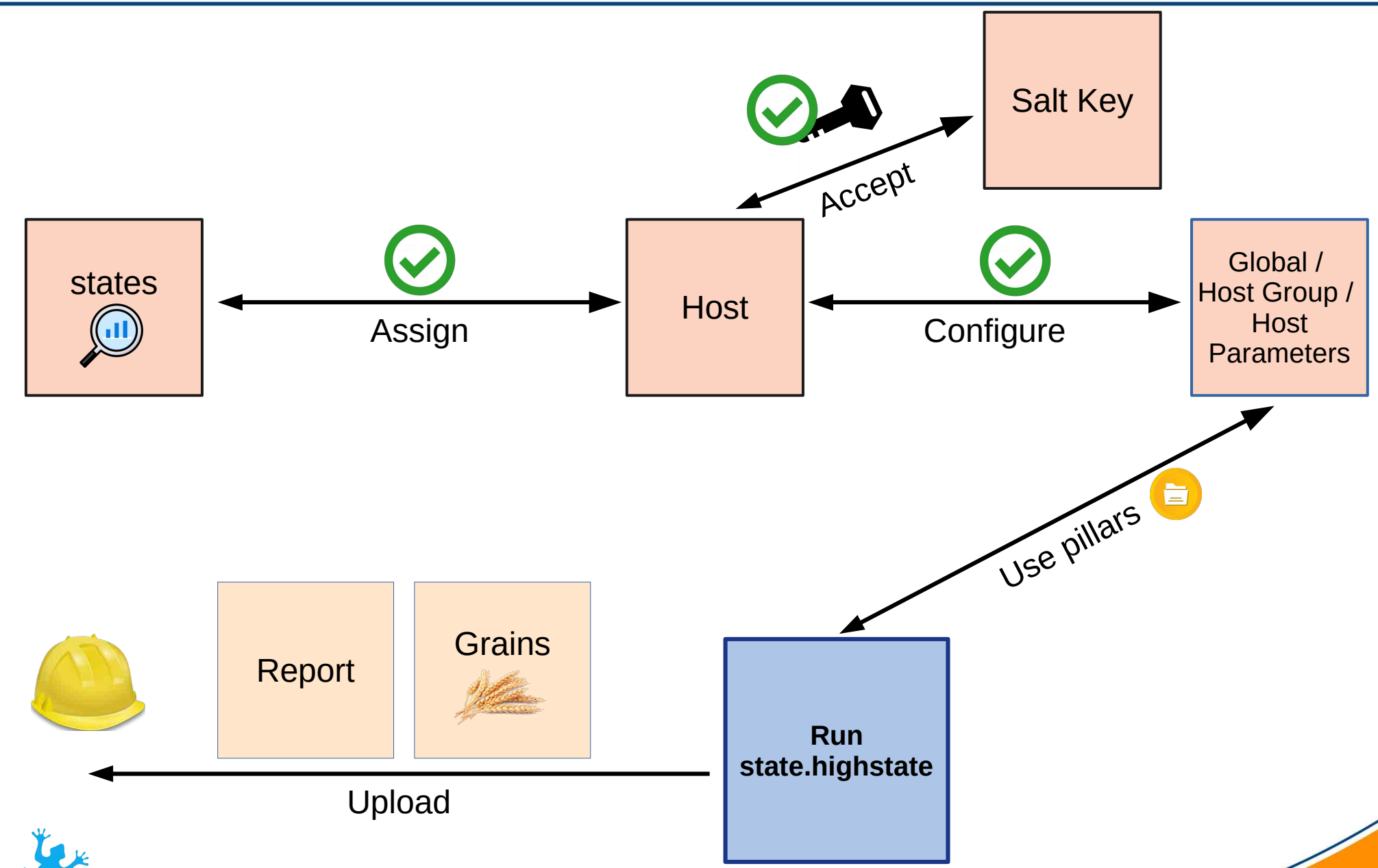
Assign Salt states



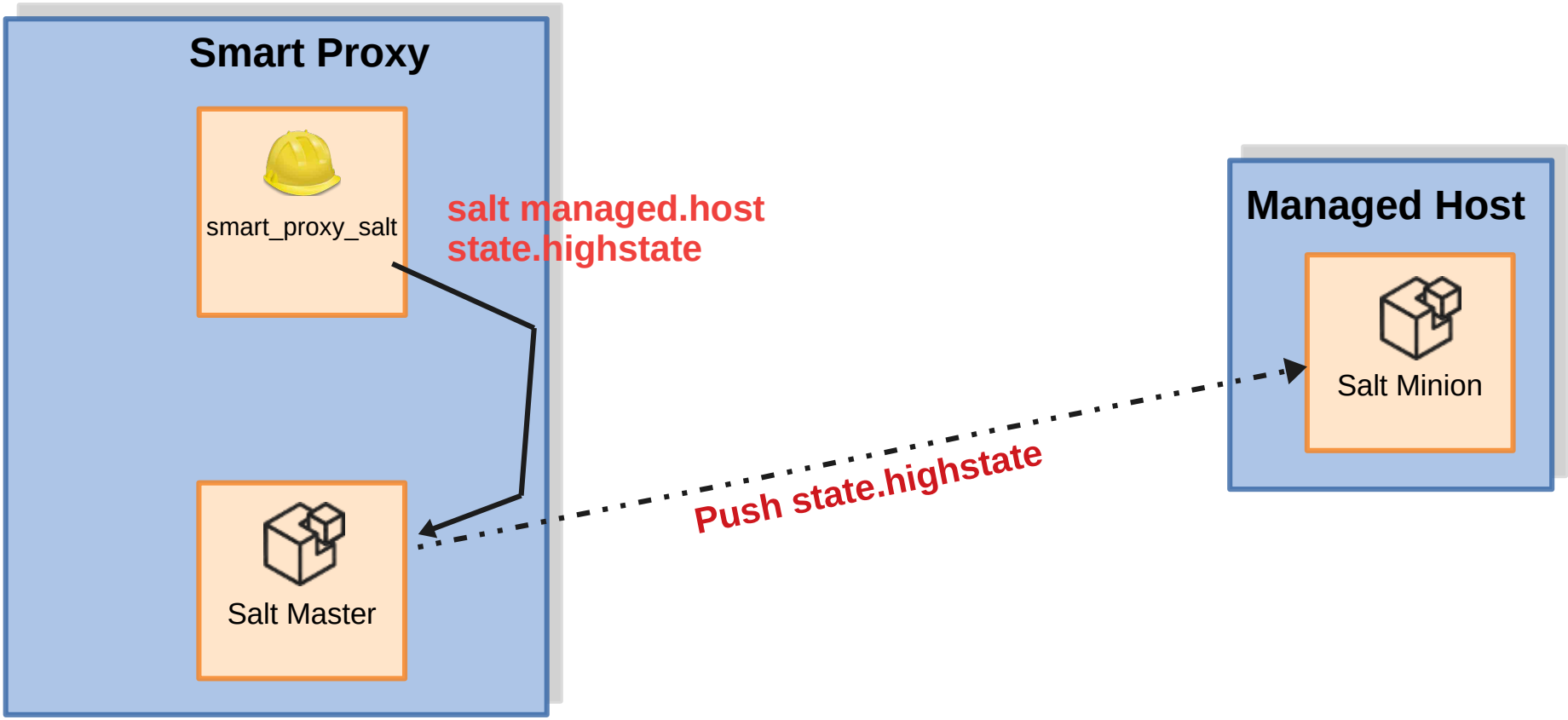
Salt ENC: pillars

```
---
classes:
- motd
- users
parameters:
  kt_env:
  kt_cv:
  foreman_host_collections: []
  lifecycle_environment:
  content_view:
  content_view_info: {}
  foreman_subnets:
  - name: ENG171_6
    network: 192.168.171.160
    mask: 255.255.255.224
    gateway: 192.168.171.163
    dns_primary: 192.168.171.164
    dns_secondary:
    from: 192.168.171.166
    to: 192.168.171.190
    boot_mode: DHCP
    ipam: Internal DB
    vlanid:
    mtu: 1500
    network_type: IPv4
    description:
  foreman_interfaces:
  - ip: 192.168.171.172
    ip6: ''
    mac: 00:50:56:89:8a:5f
    name: anne-wolnik.deploy5.dev.atix
    attrs: {}
    virtual: false
    link: true
    identifier: ''
    managed: true
    primary: true
    provision: true
    subnet:
      name: ENG171_6
      network: 192.168.171.160
      mask: 255.255.255.224
      gateway: 192.168.171.163
      dns_primary: 192.168.171.164
      dns_secondary:
      from: 192.168.171.166
      to: 192.168.171.190
      boot_mode: DHCP
      ipam: Internal DB
      vlanid:
```

Ready to run salt state.highstate?

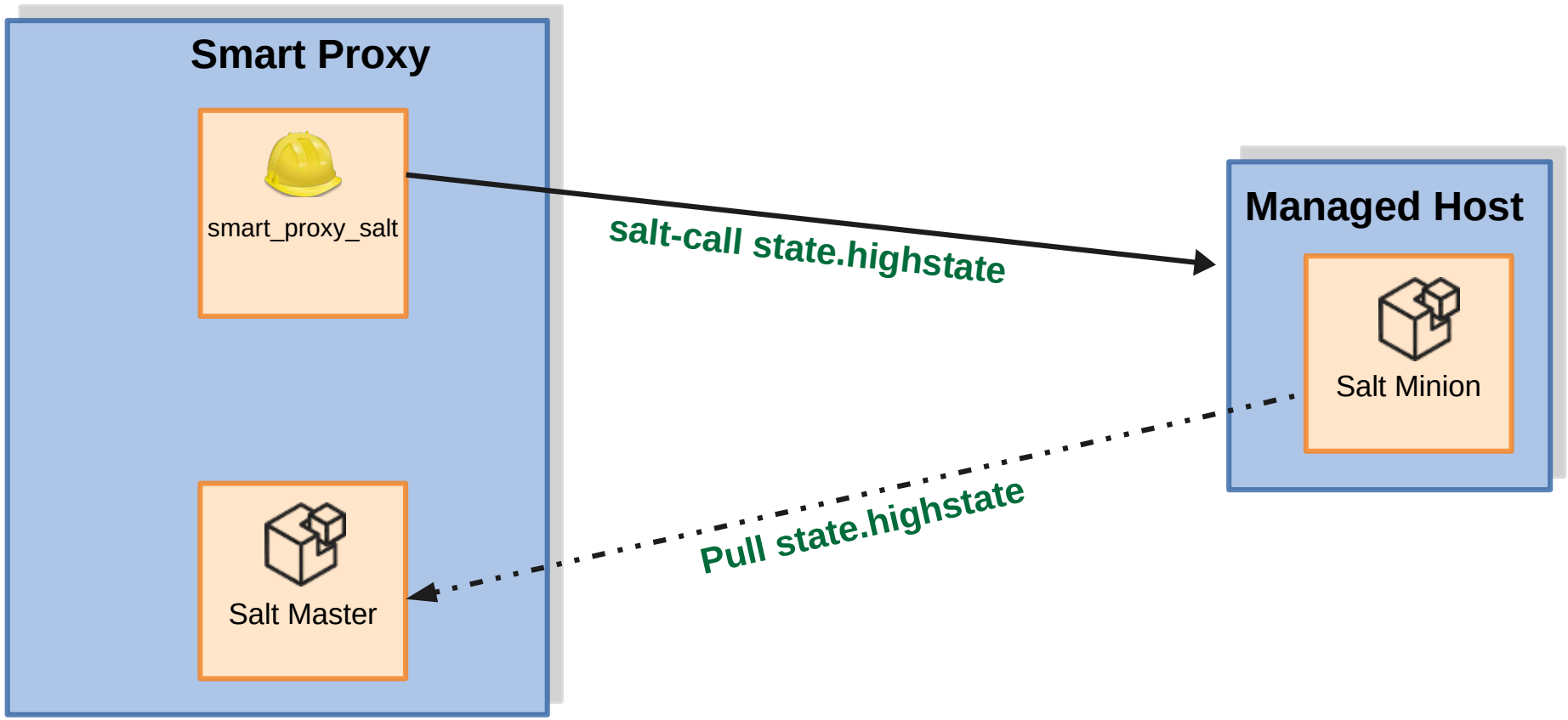


Run Salt by ‘push’



OLD: Salt Run via foreman-task (no output)

Run Salt by ‘pull’



NEW: Salt via Remote Execution

state.highstate

Job invocations » Run Salt state.highstate on host » Template Invocation for centos6.demo.atix ⇄

Back to Job | Toggle command | Toggle STDERR | Toggle STDOUT | Toggle DEBUG | Task Details | Cancel Job | Abort Job

Target: centos6.demo.atix

Scroll to bottom

```
local:
----------
          ID: /etc/motd
    Function: file.managed
      Result: True
     Comment: File /etc/motd is in the correct state
     Started: 19:14:43.726438
    Duration: 73.204 ms
     Changes:

Summary for local
------------
Succeeded: 1
Failed:    0
------------
Total states run:     1
Total run time:  73.204 ms
Exit status: 0
```

Scroll to top

Salt grains

Facts Values » anne-wolnik.deploy5.dev.atix

/ host = anne-wolnik.deploy5.dev.atix Search

Export Documentation

Name	Value	Origin	Reported at	Actions
num_cpus	1		1 month ago	View Chart
num_gpus	1		1 month ago	View Chart
operatingsystemrelease	15		1 month ago	View Chart
lsb_distrib_release	15		1 month ago	View Chart
osmajorrelease	15		1 month ago	View Chart
osrelease	15		1 month ago	View Chart
ip4_gw	192.168.171.163		1 month ago	View Chart
mem_total	1986		1 month ago	View Chart
kernelversion	#1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)		1 month ago	View Chart
saltversion	2018.3.0		1 month ago	View Chart

Salt reports

/ host = centos6.demo.atix and origin = Salt ✖ Search

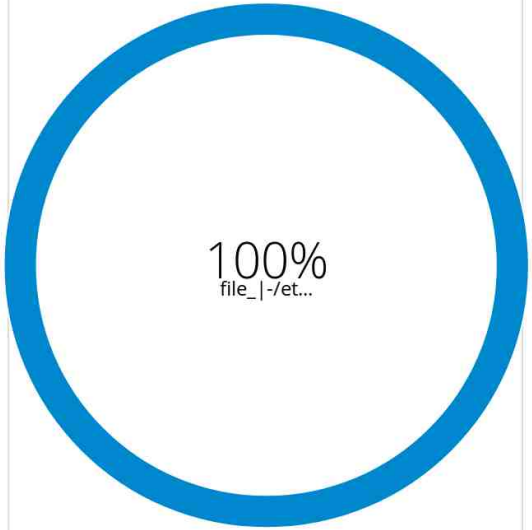
Export | Documentation

Last report	Origin	Applied	Restarted	Failed	Restart Failures	Skipped	Pending	Actions
2 minutes ago		0	0	0	0	0	0	Delete
4 days ago		0	0	0	0	0	0	Delete
4 days ago		1	0	0	0	0	0	Delete

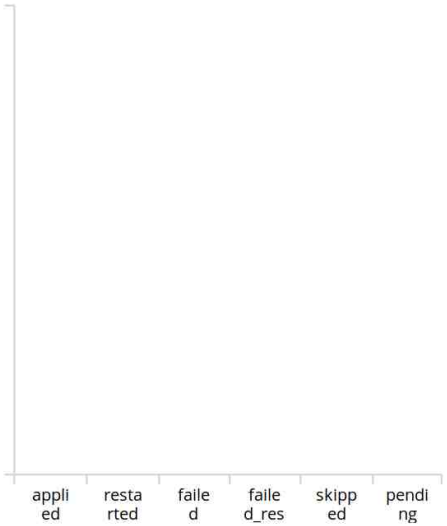
100 per page 1-3 of 3 1 of 1

Level	Resource	Message
info	file_|-/etc/motd_|-/etc/motd_|-managed	File /etc/motd is in the correct state

Report Metrics



Report Status

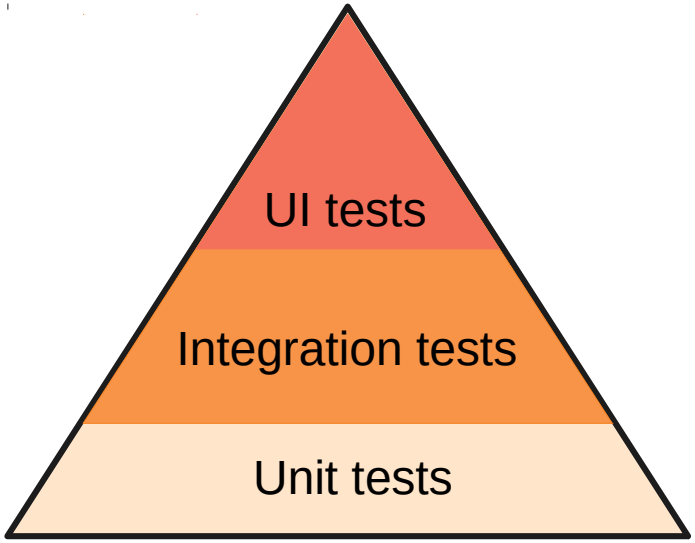


file_|-/etc/motd_|-/etc/motd_|-managed	0.0732
Total	0.0732

WHAT'S
NEW

WTF, I’m maintainer!

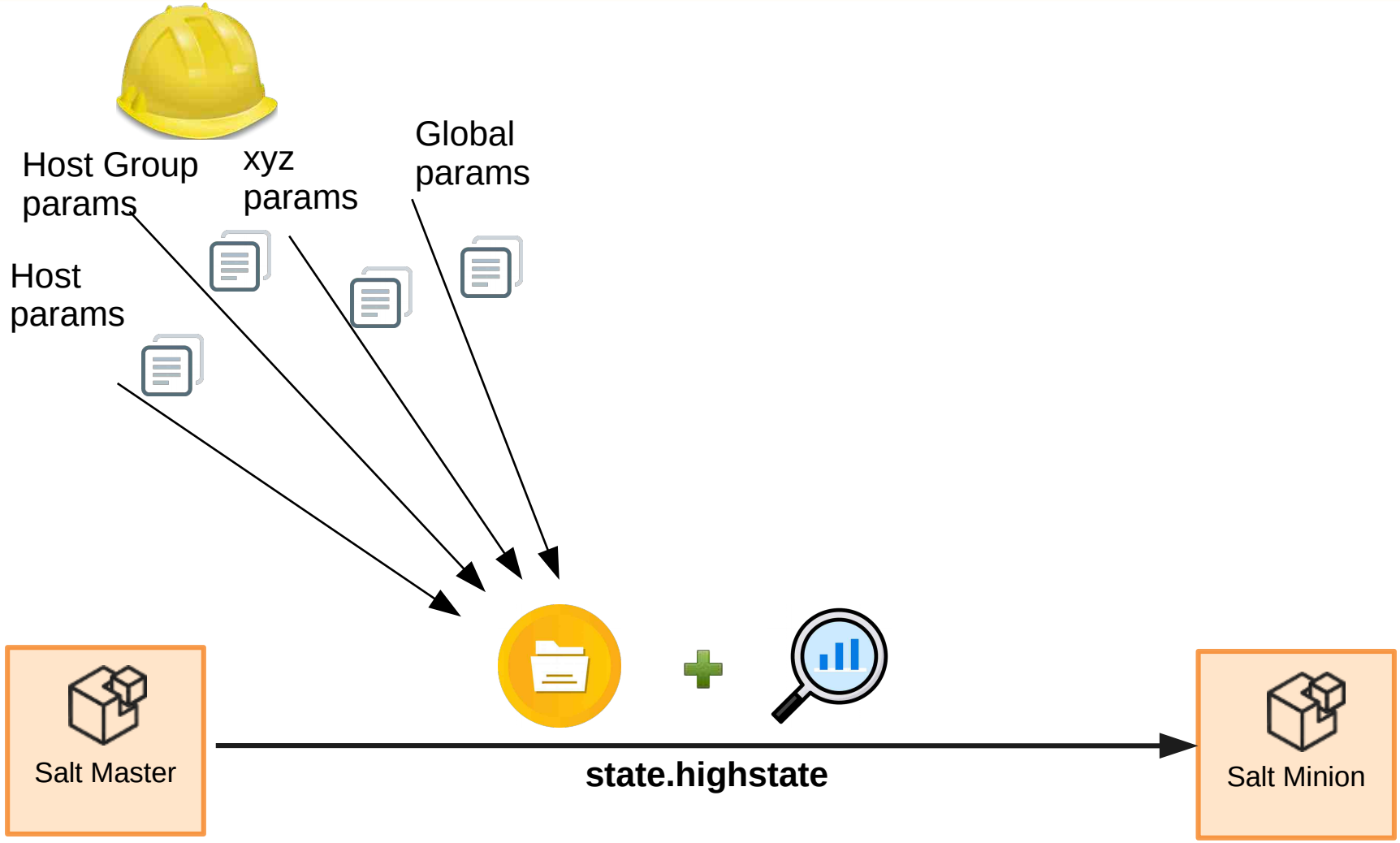
- PR handling
- A lot of more tests in foreman_salt
- Tests for smart_proxy_salt
- Fixes + rubocop



Challenge accepted!

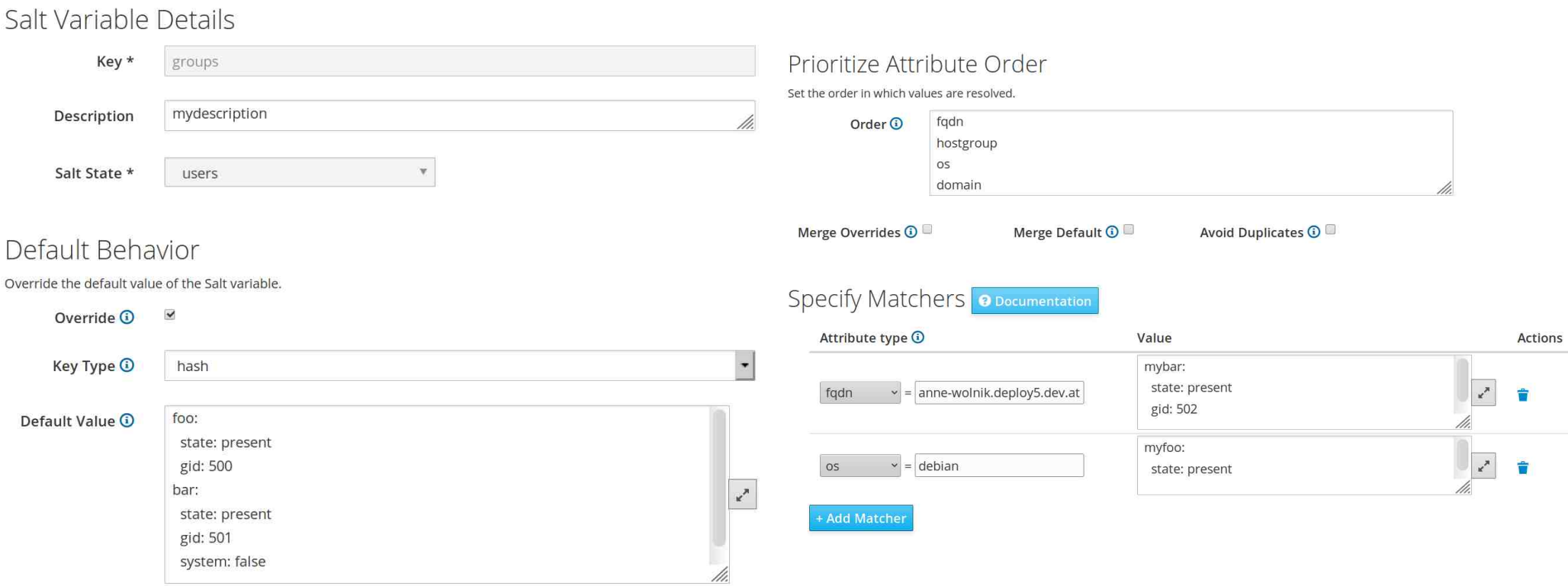
- Configuring pillar data for Salt states
- No Salt Remote Execution Provider
- Report upload only every 10 minutes
- Be more Salt-like

Need more pillars!

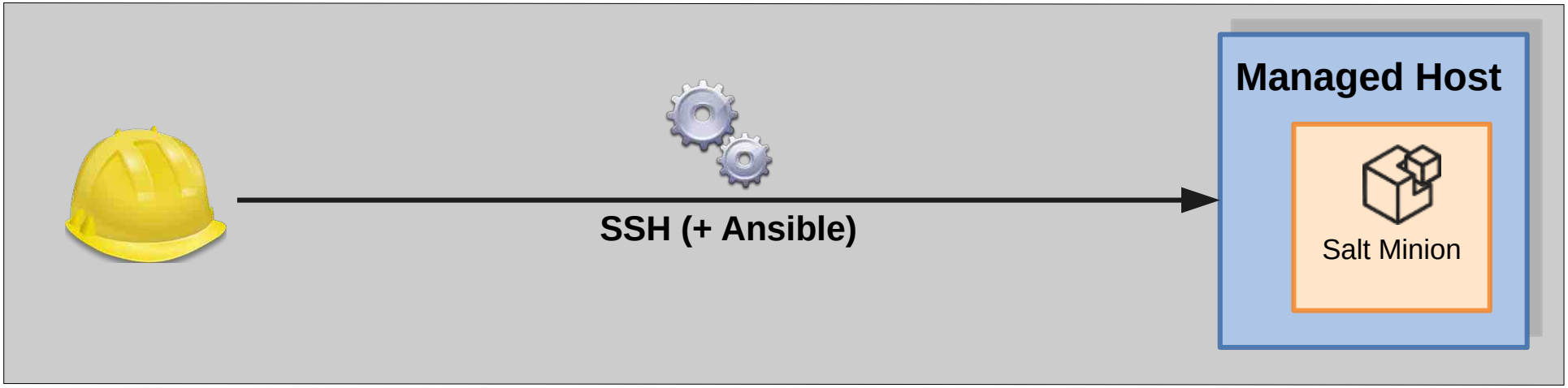


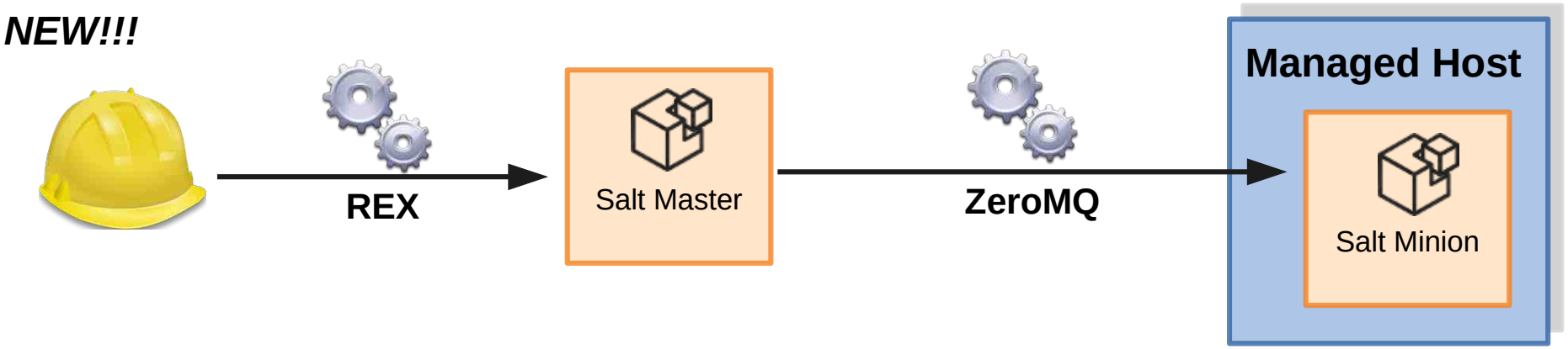
New: Salt Variables

- Similar to puppet smart class variables / ansible variables
- PR: https://github.com/theforeman/foreman_salt/pull/103



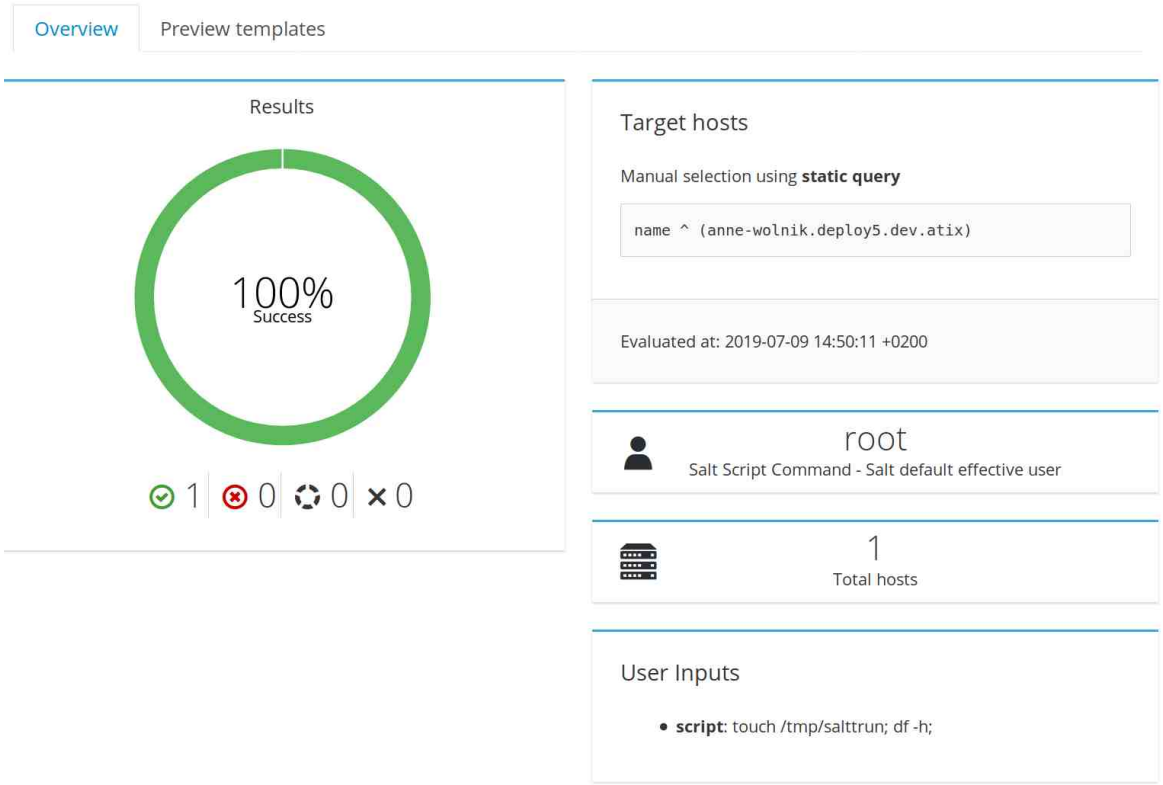
Remote Execution



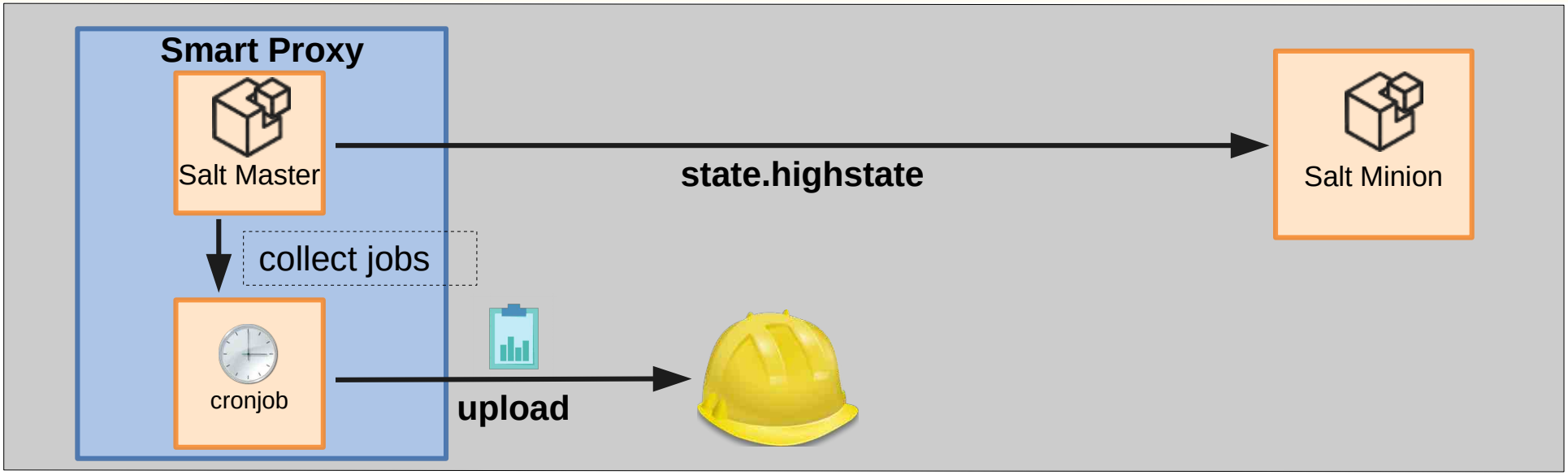


New: Salt Remote Execution Provider

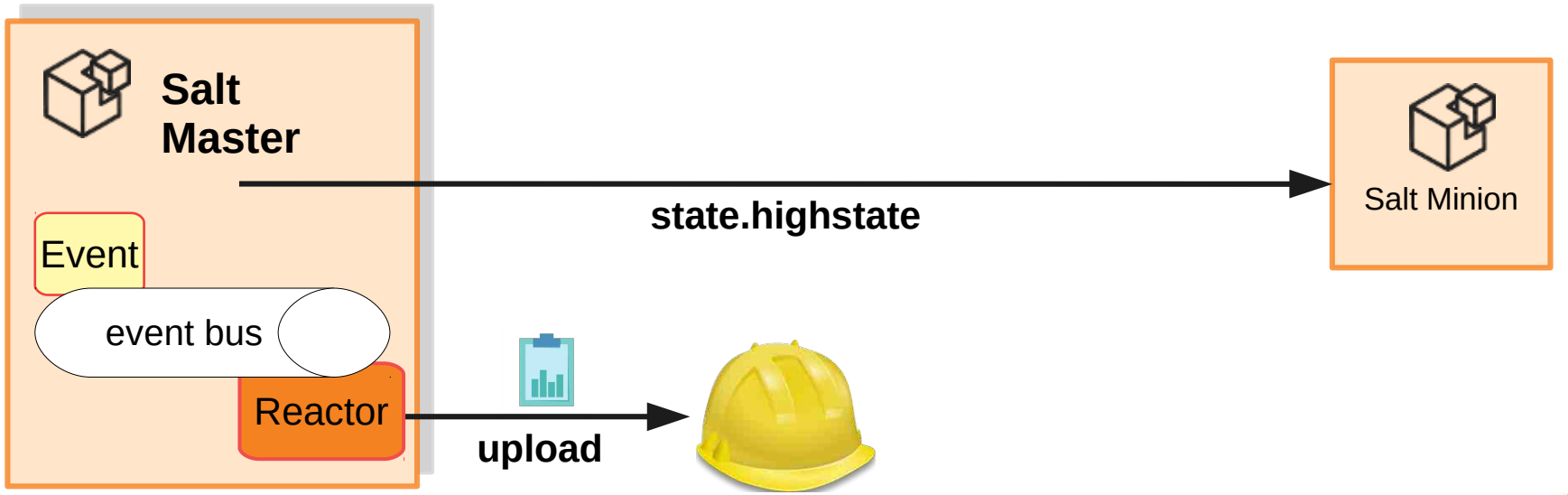
- Thanks to Adam Růžička
- Use salt to execute (every) Remote Execution Job
- Run state.highstate on one/multiple Salt Minions



Report, please!



NEW!!!



New: Salt Reactor for uploading reports

- PR: https://github.com/theforeman/smart_proxy_salt/pull/39
- Reactor + salt runner module to upload the report to foreman

salt/master cfg snippet

```
reactor:
  - 'salt/job/*/ret/*':
    - /srv/salt/foreman_report_upload.sls
```

/srv/salt/foreman_report_upload.sls

```
{% if 'cmd' in data and
      data['cmd'] == '_return' and
      'fun' in data and
      data['fun'] == 'state.highstate' %}

foreman_report_upload:
  runner.foreman_report_upload.now:
    - args:
      - highstate: '{{data|json}}'

{% endif %}
```

Be (even) more salt-like

- Use the Salt remote execution ecosystem
- gitorize everything
- Be a (*) salt module

Links

- https://www.theforeman.org
- https://community.theforeman.org
- https://github.com/ATIX-AG/
- https://github.com/theforeman/foreman/
- https://github.com/theforeman/foreman_salt/
- https://github.com/saltstack/salt/
- https://www.saltstack.com

Thank you!

sbernhard @ #theforeman-dev

https://github.com/sbernhard

@_sBernhard

suttner@atix.de