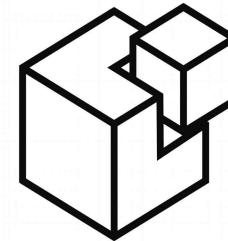


SaltStack meets Foreman



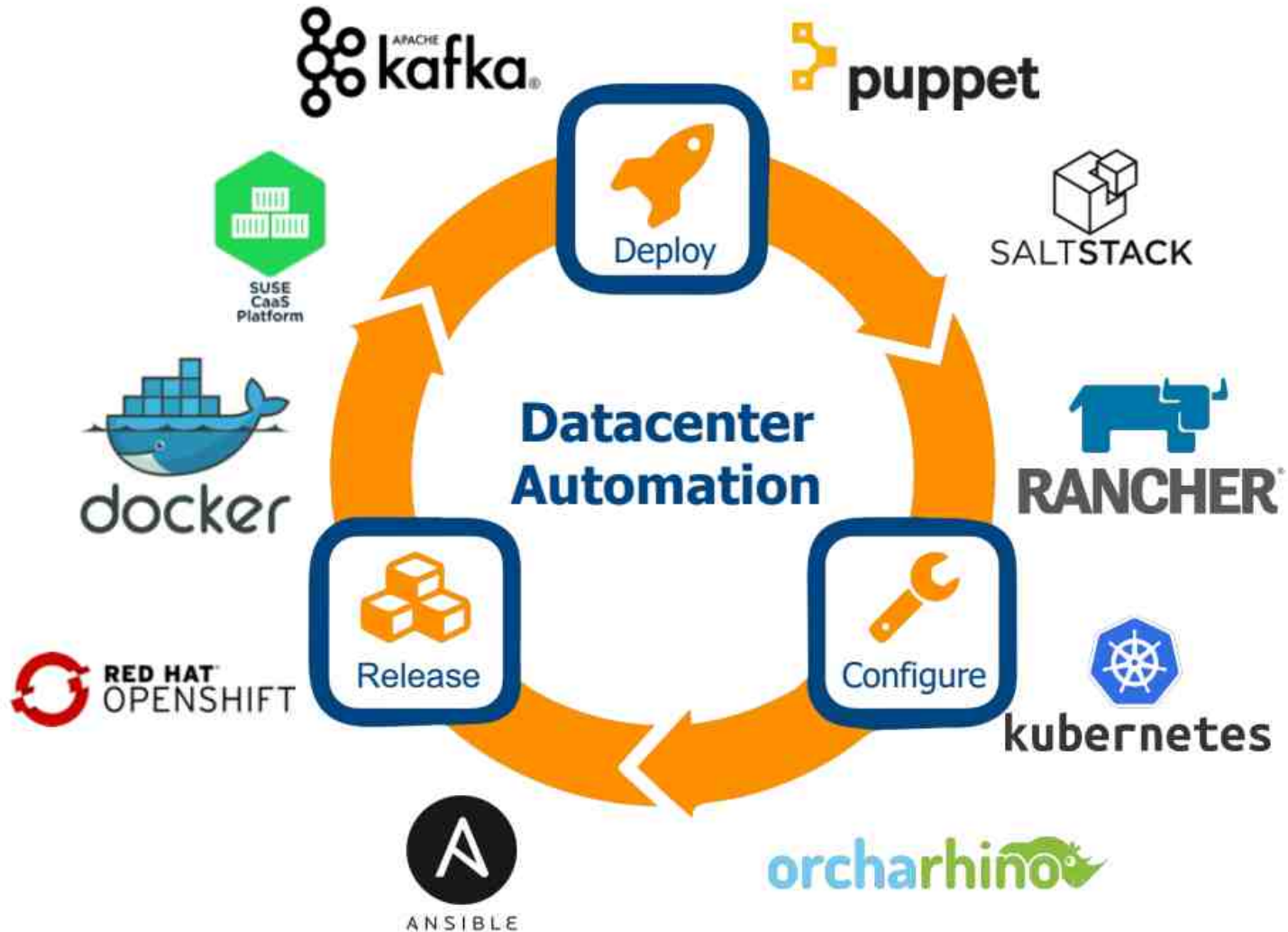
SALTSTACK

10.08.2019

Bernhard Suttner



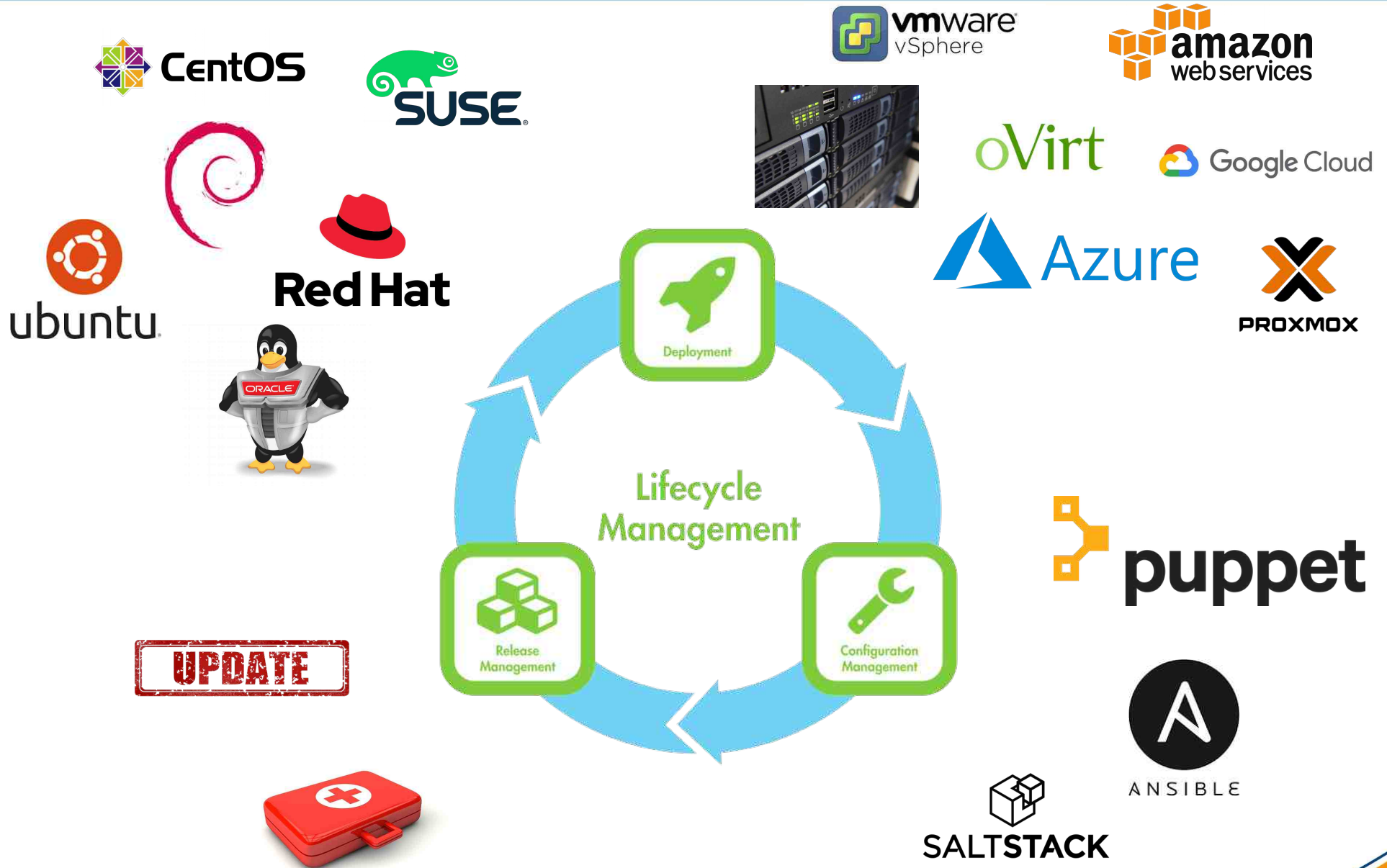
SIMPLIFY YOUR DATACENTER



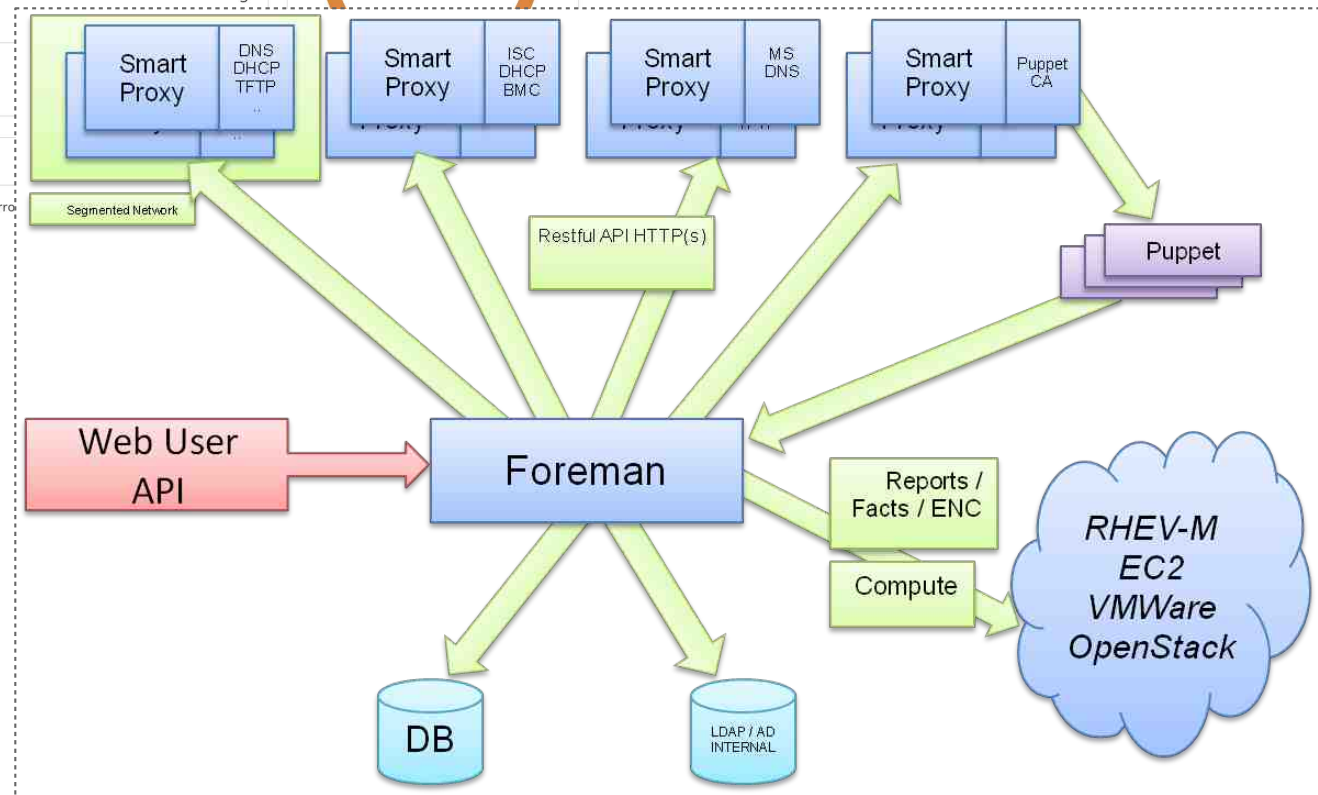


- Open Source project initiated by
Ohad Levy committed on 13 Jul 2009
 - Ruby on Rails (and React / JS)
 - Puppet ENC / Show reports & facts
- ~ 300 contributors
 - ~ 8000 commits
 - ~ 50 plugins

Foreman: features overview



Host Configuration Status for All	Count
Hosts that had performed modifications without error	0
Hosts in error state	0
Good host reports in the last 30 minutes	0
Hosts that had pending changes	0
Out of sync hosts	0
Hosts with no reports	0
Hosts with alerts disabled	5



- Open Source project initiated by Thomas Hatch committed 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

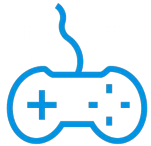
Ansible	Salt	puppet
Facts	Grains	Facts
Modules	Modules	Resources
Tasks	States	Manifests
Roles	Formulas	Modules
Playbook	top.sls	Roles/Profiles
Inventory	Pillar	Hiera



- 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
```





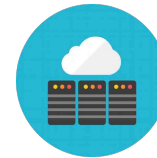
Execution modules



Returner



State



Cloud



Grains



Beacon



Pillar

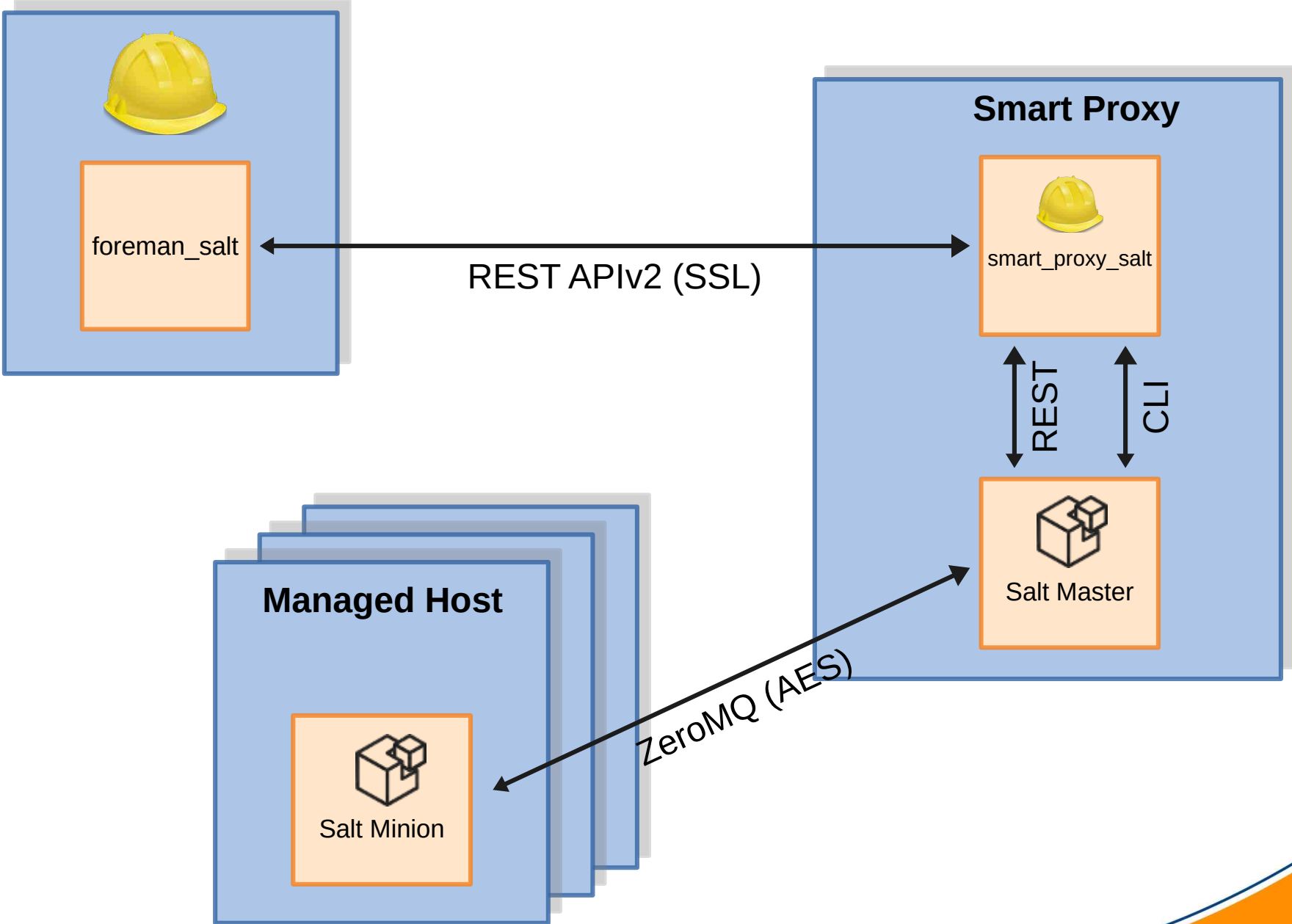


Runner

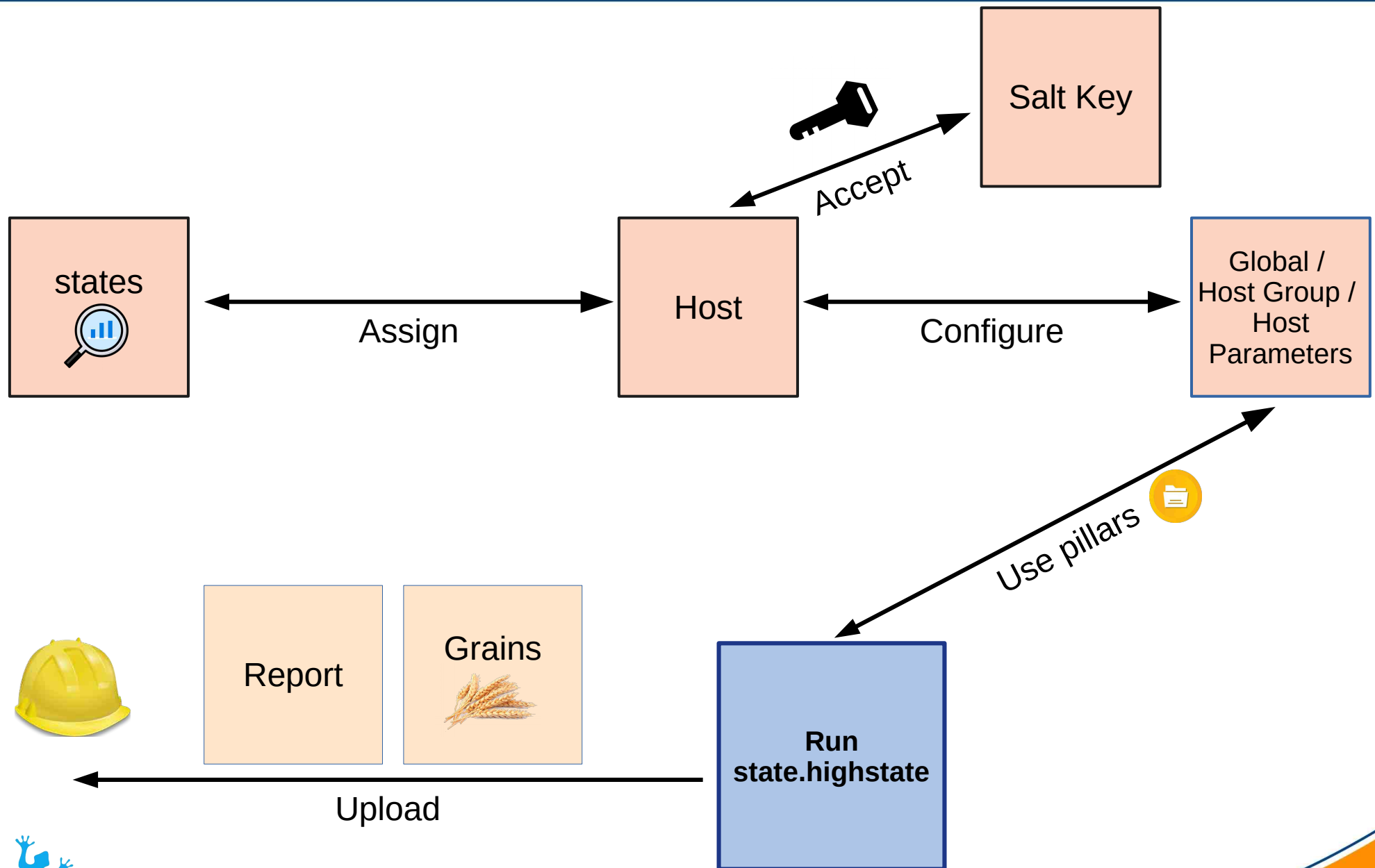
.... and many more



Foreman & Salt: Scenario



foreman_salt: Supported features



Salt Keys on or.deploy5.dev.atix

Filter

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	<input type="button" value="Delete"/>

Displaying 1 foreman salt/smart proxies/salt keys



Import Salt states



Salt States

Name	Environments	Hosts	Host groups	
motd	base	1	0	<input type="button" value="Variables"/> ▼
users	base	1	0	<input type="button" value="Variables"/> ▼
users.bashrc	base	0	0	<input type="button" value="Variables"/> ▼
users.googleauth	base	0	0	<input type="button" value="Variables"/> ▼
users.polkit	base	0	0	<input type="button" value="Variables"/> ▼
users.profile	base	0	0	<input type="button" value="Variables"/> ▼
users.sudo	base	0	0	<input type="button" value="Variables"/> ▼
users.user_files	base	0	0	<input type="button" value="Variables"/> ▼
users.vimrc	base	0	0	<input type="button" value="Variables"/> ▼
vim	base	0	0	<input type="button" value="Variables"/> ▼

Displaying **all 10** Salt states



Assign Salt states




All Hosts » Edit anne-wolnik.deploy5.dev.atix 

[Unmanage host](#) [Disassociate host](#)

Host Ansible Roles **Salt States** Virtual Machine Operating System Interfaces Puppet Classes Parameters Additional Information


Inherited States

Salt States

All items 

users.bashrc
users.googleauth
users.polkit
users.profile
users.sudo
users.user_files
users.vimrc



Selected items 

motd
users



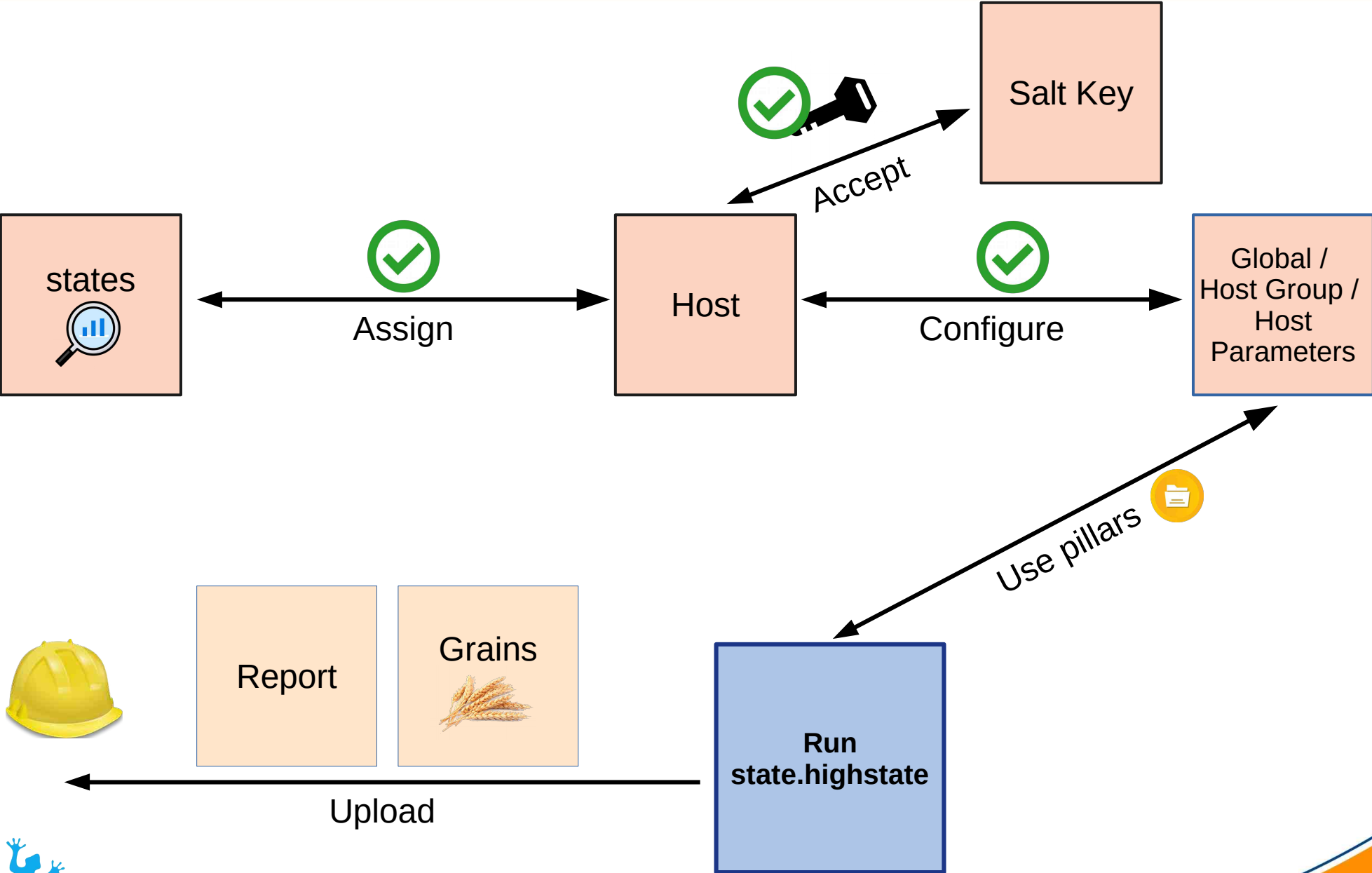
Salt ENC: pillars



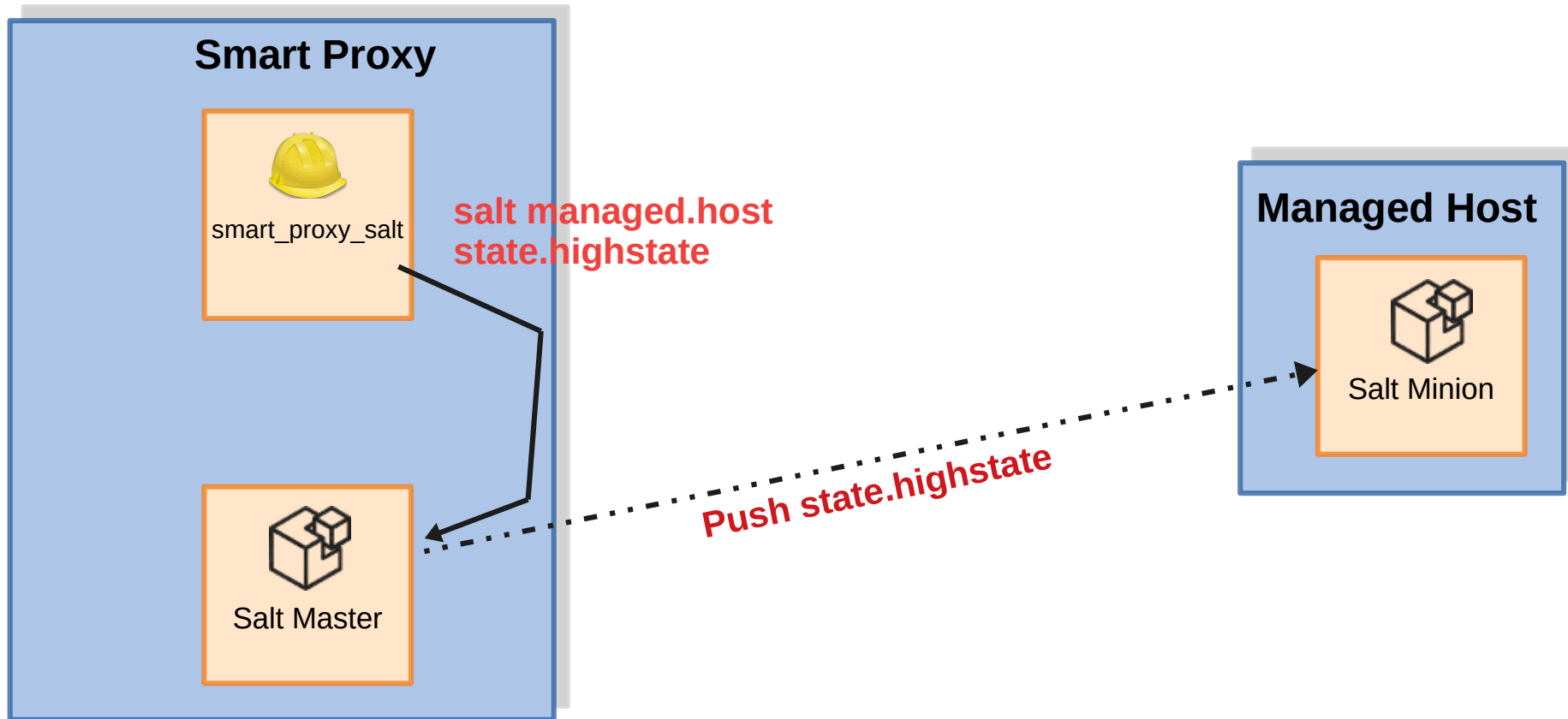
```
---
classes:
- motd
- users
parameters:
  kt_env:
  kt_cv:
  foreman_host_collections: []
  lifecycle_environment:
  content_view:
  content_view_info: {}
  foreman_subnets:
- name: ENG171_6
  network: 192.168.171.160
  mask: 255.255.255.224
  gateway: 192.168.171.163
  dns_primary: 192.168.171.164
  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?



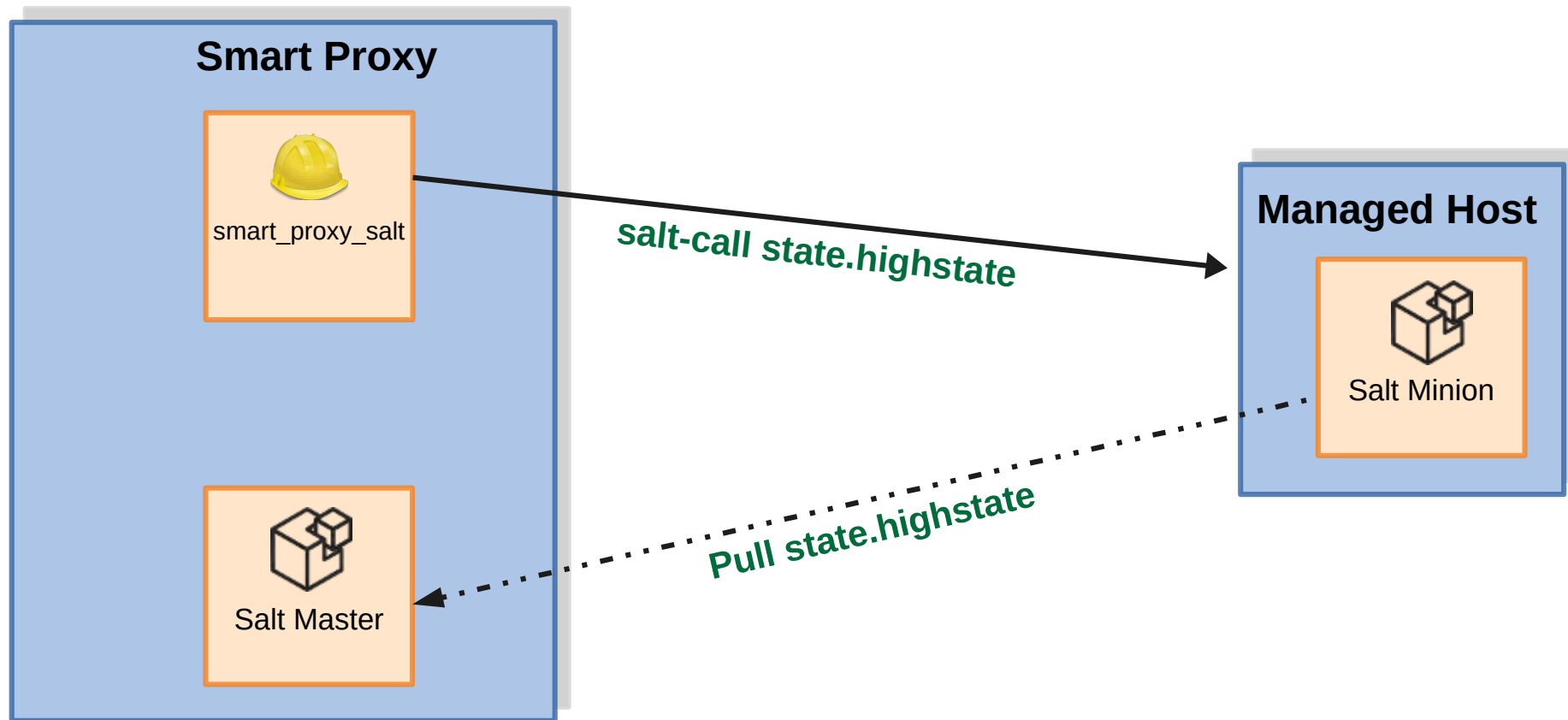
Run Salt by 'push'



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



Run Salt by 'pull'



NEW: Salt via Remote Execution



[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](#)

```
1: local:
2: -----
3:     ID: /etc/motd
4:     Function: file.managed
5:     Result: True
6:     Comment: File /etc/motd is in the correct state
7:     Started: 19:14:43.726438
8:     Duration: 73.204 ms
9:     Changes:
10:
11: Summary for local
12: -----
13: Succeeded: 1
14: Failed:    0
15: -----
16: Total states run:    1
17: Total run time: 73.204 ms
18: Exit status: 0
```

[Scroll to bottom](#)

[Scroll to top](#)

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



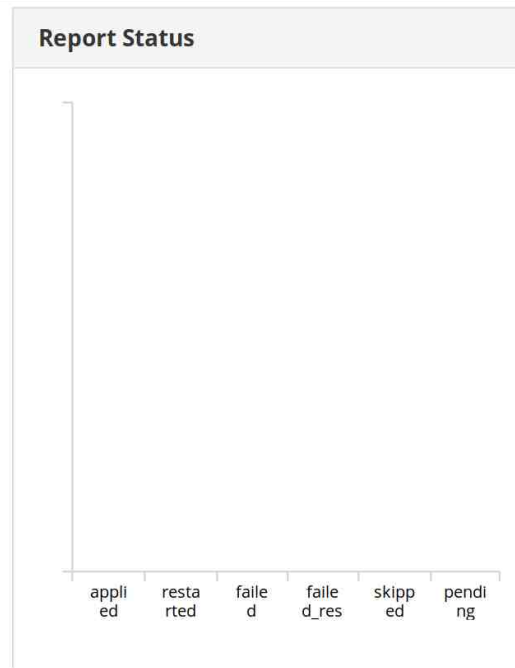
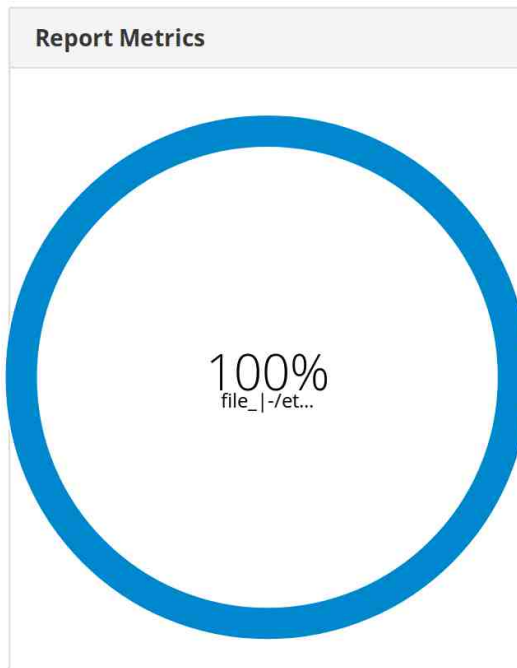
host = centos6.demo.atix and origin = Salt x Q Search

[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

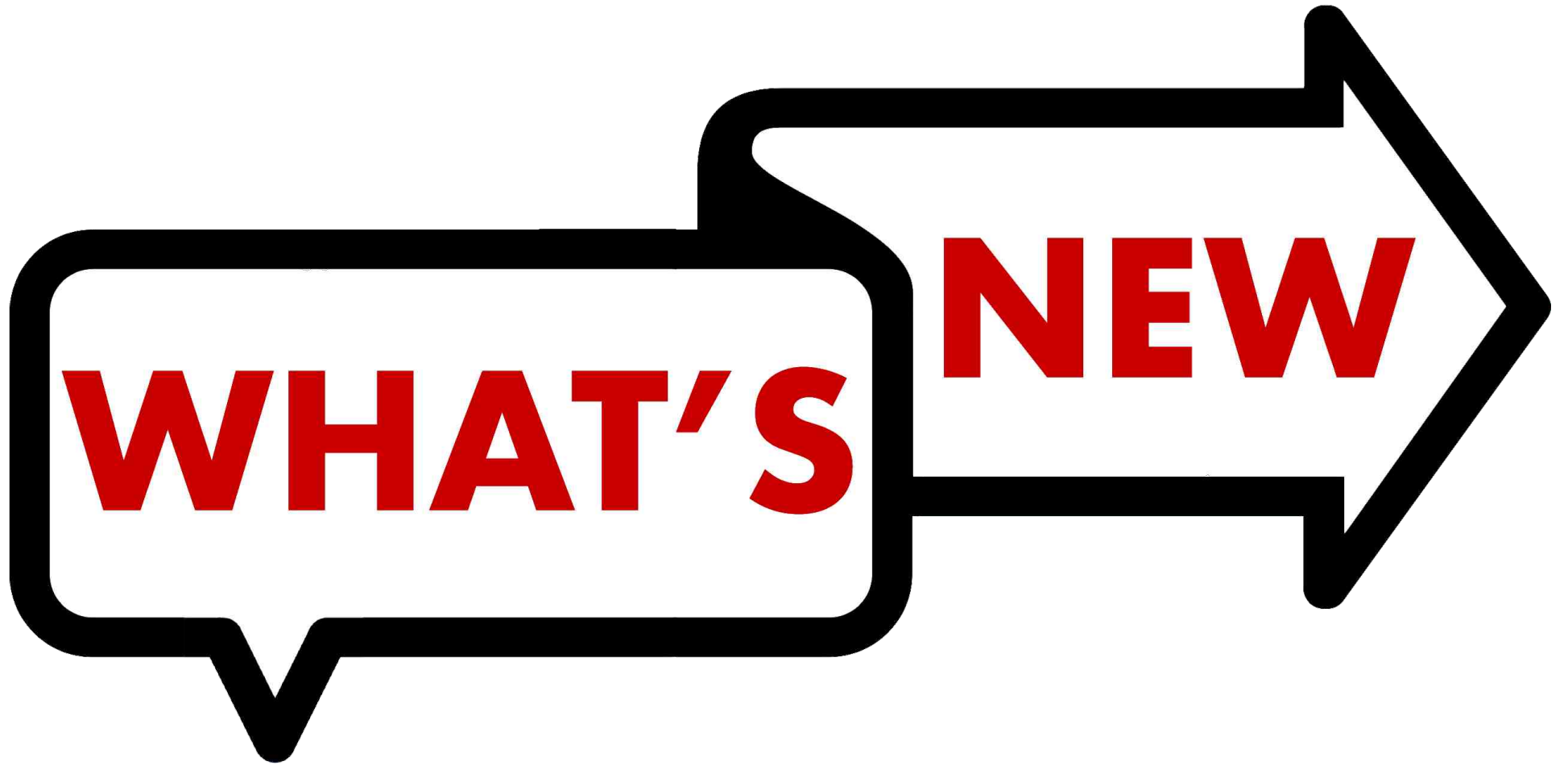
100 per page 1-3 of 3 1 of 1

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



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



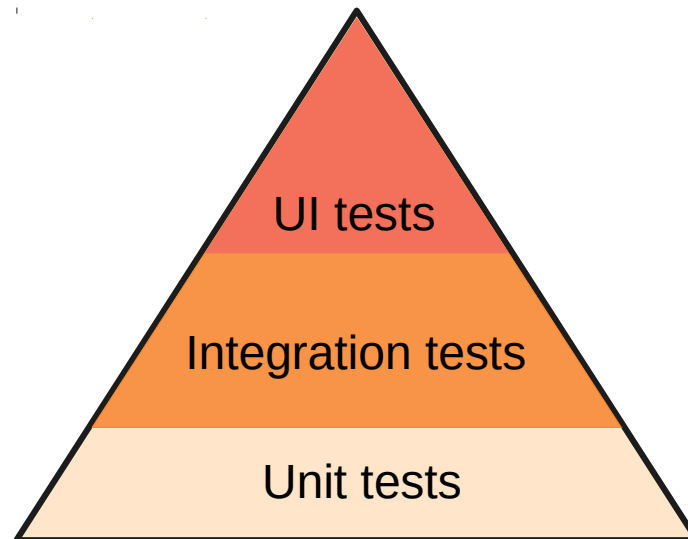


WHAT'S

NEW



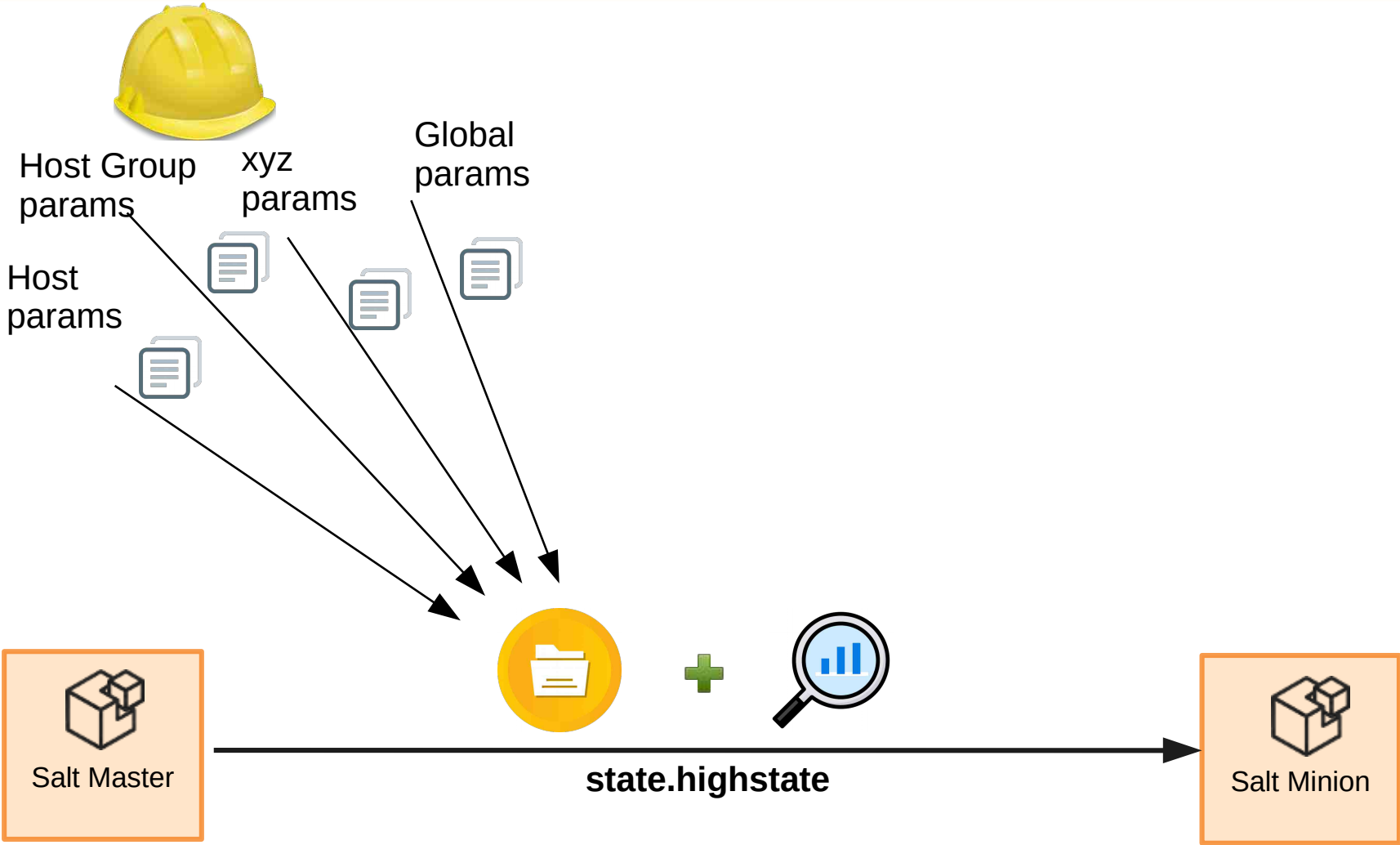
- PR handling
- A lot of more tests in foreman_salt
- Tests for smart_proxy_salt
- Fixes + rubocop



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

Salt Variable Details

Key *

Description

Salt State *

Prioritize Attribute Order

Set the order in which values are resolved.

Order ⓘ

Merge Overrides ⓘ Merge Default ⓘ Avoid Duplicates ⓘ

Default Behavior

Override the default value of the Salt variable.

Override ⓘ

Key Type ⓘ

Default Value ⓘ

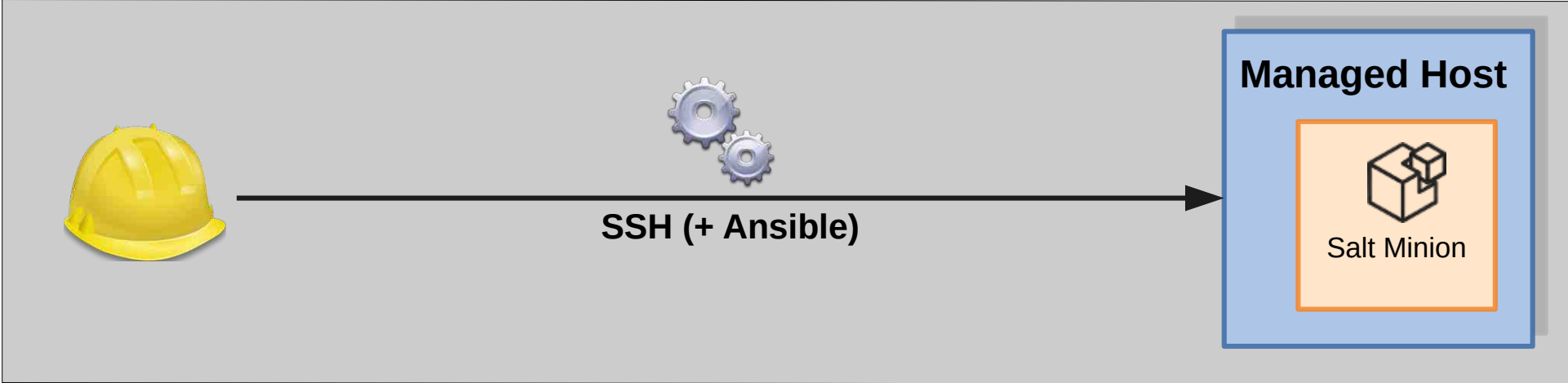
Specify Matchers [Documentation](#)

Attribute type ⓘ		Value	Actions
<input type="text" value="fqdn"/>	=	<input type="text" value="anne-wolnik.deploy5.dev.at"/>	<input type="text" value="mybar:
state: present
gid: 502"/>
<input type="text" value="os"/>	=	<input type="text" value="debian"/>	<input type="text" value="myfoo:
state: present"/>

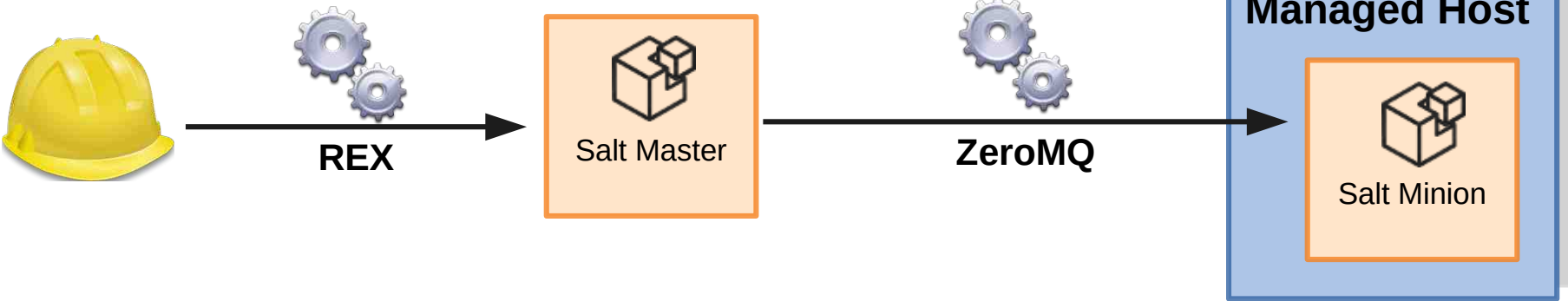
[+ Add Matcher](#)



Remote Execution




NEW!!!



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

Overview [Preview templates](#)

Results



100%
Success


✔ 1 | ✘ 0 | 🔄 0 | × 0


Target hosts

Manual selection using **static query**

name ^ (anne-wolnik.deploy5.dev.atix)

Evaluated at: 2019-07-09 14:50:11 +0200

 **root**
Salt Script Command - Salt default effective user

 **1**
Total hosts

User Inputs

- **script:** touch /tmp/saltrun; df -h;

Providers and templates

Salt Script Command - Salt default - SSH

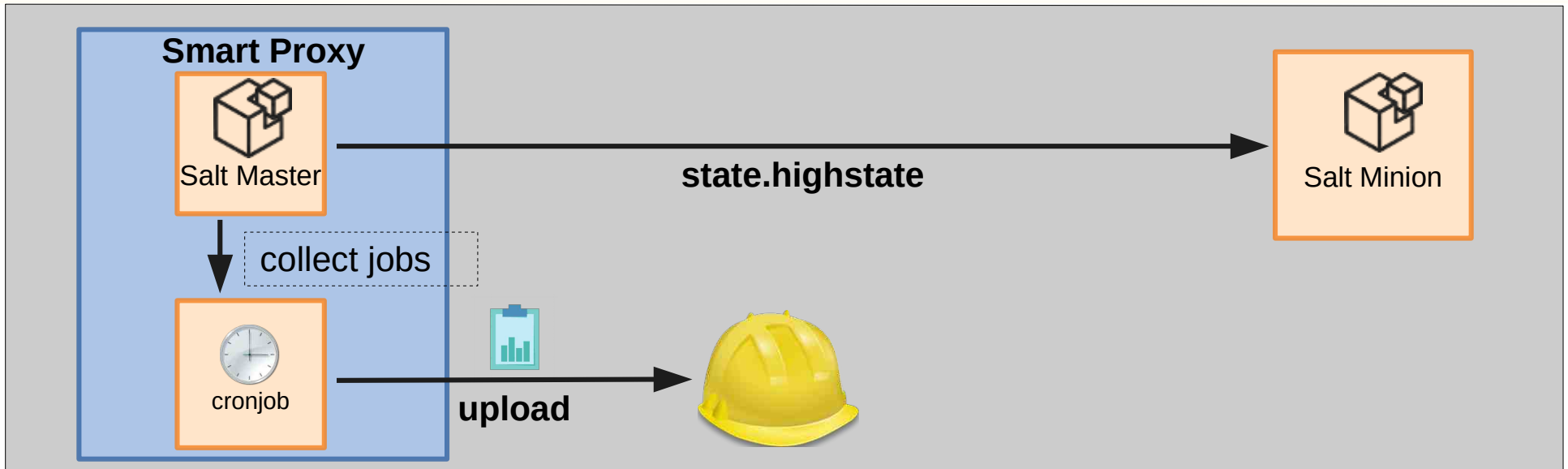
▼ anne-wolnik.deploy5.dev.atix

```
"execute script":  
  cmd.run:  
    - name: |  
      touch /tmp/saltrun; df -h;
```

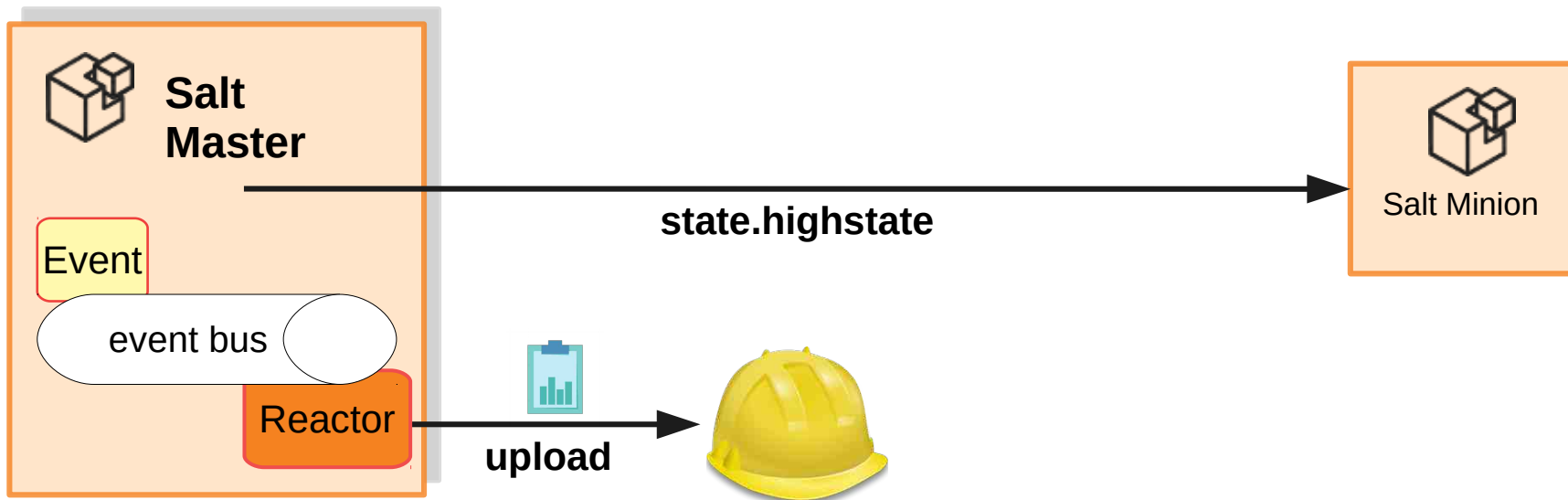
User input	Value
script	touch /tmp/saltrun; df -h;



Report, please!



NEW!!!



- 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




- <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

