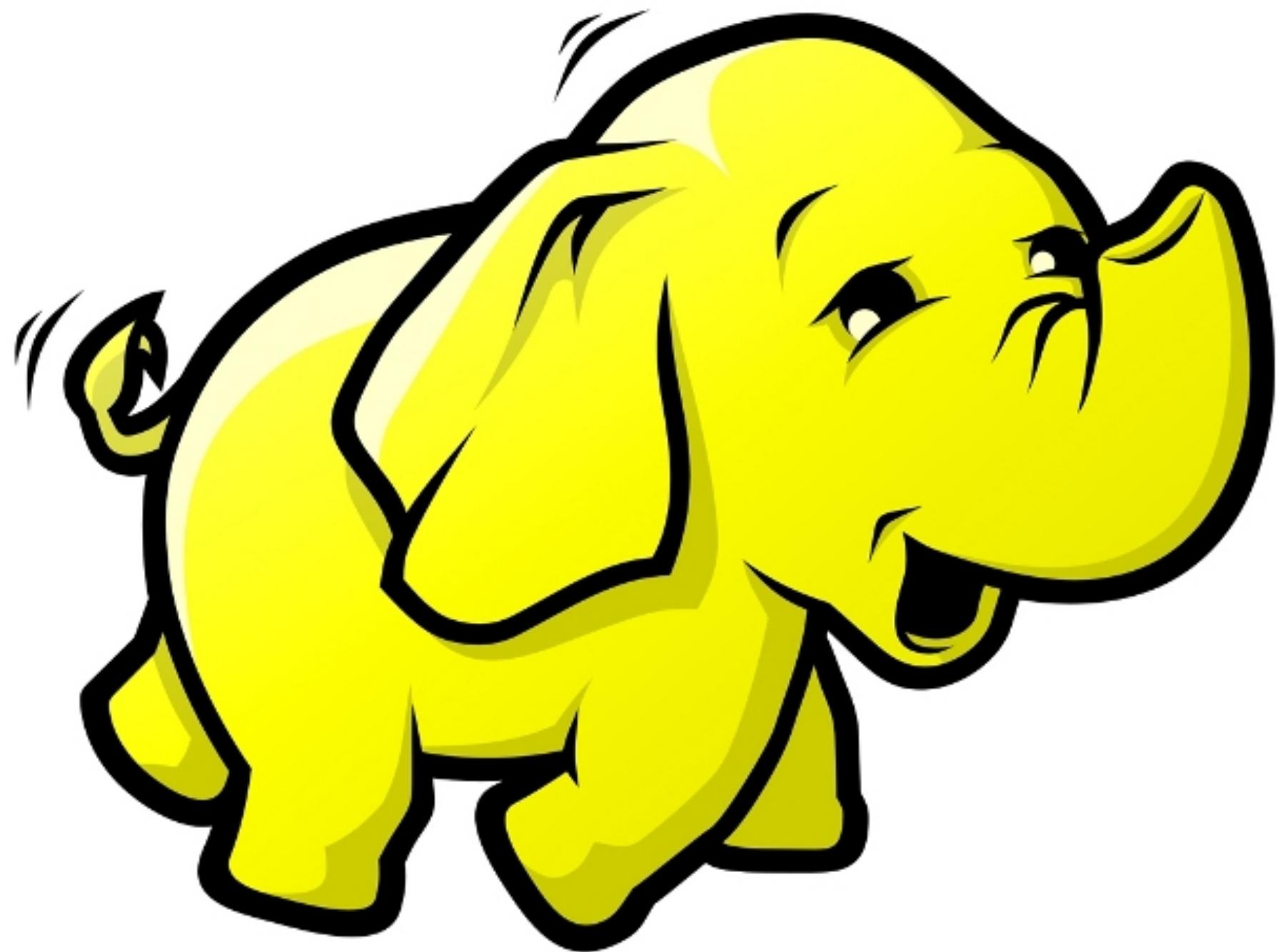
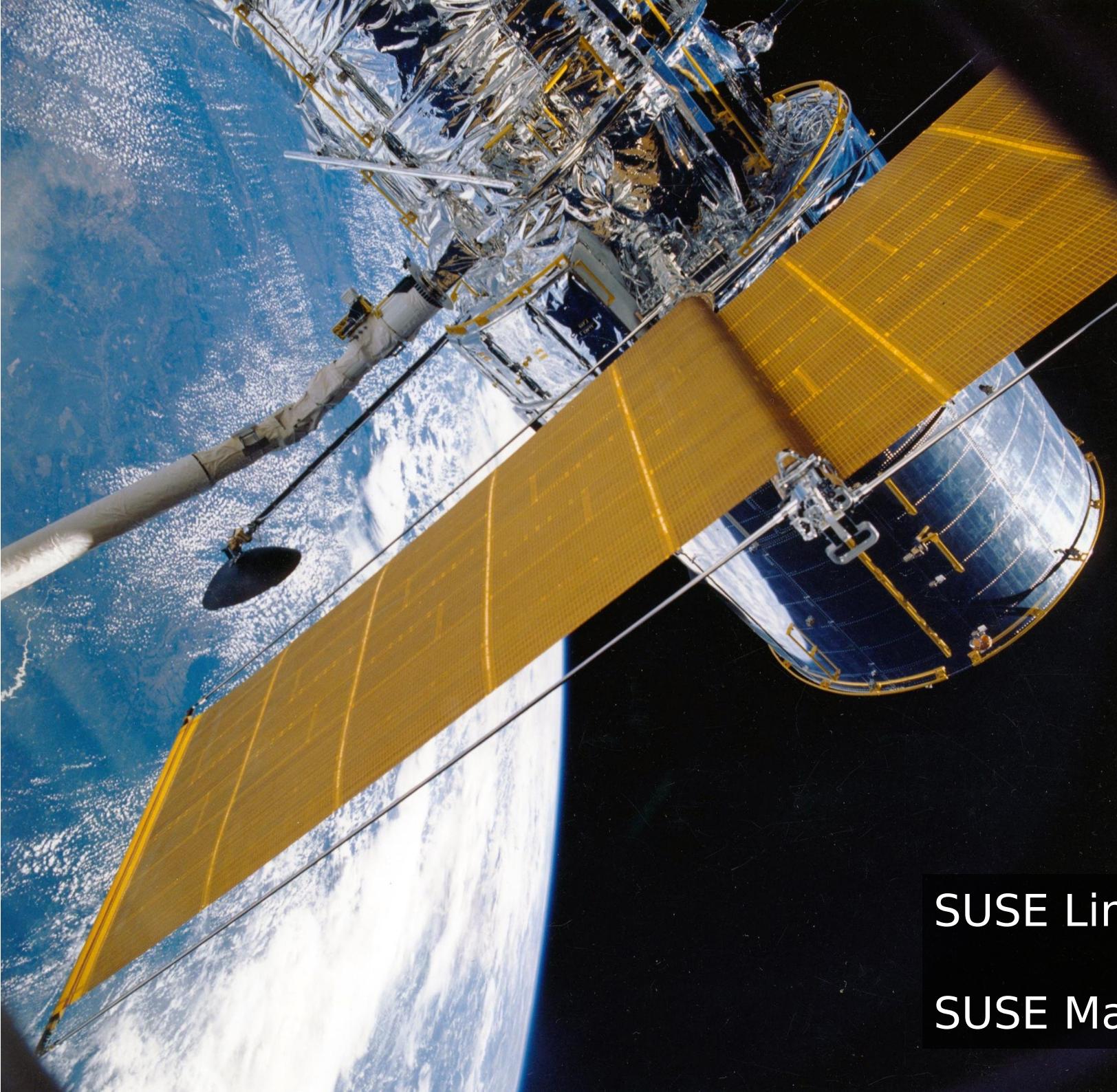


Bare Metal Provisioning with Ansible and Cobbler

Felix Frank
(@felis_rex)

The unbelievable
Machine Company





SUSE Linux
SUSE Manager

A stack of approximately 15-20 golden-brown, slightly charred pancakes sits on a white ceramic plate. The pancakes are stacked high, with some visible between the layers. The background is a plain, light-colored wall.

Provisioning Stack
Cobbler
HPE ProLiant Gen10
VMWARE
+ one surprise tool



Platform Stack

FreeIPA
- DNS
- LDAP
Kerberos
Salt



Aside:

IP address management

Query took 0.05 seconds. [search help?](#)

Search interpretation: "text matching".



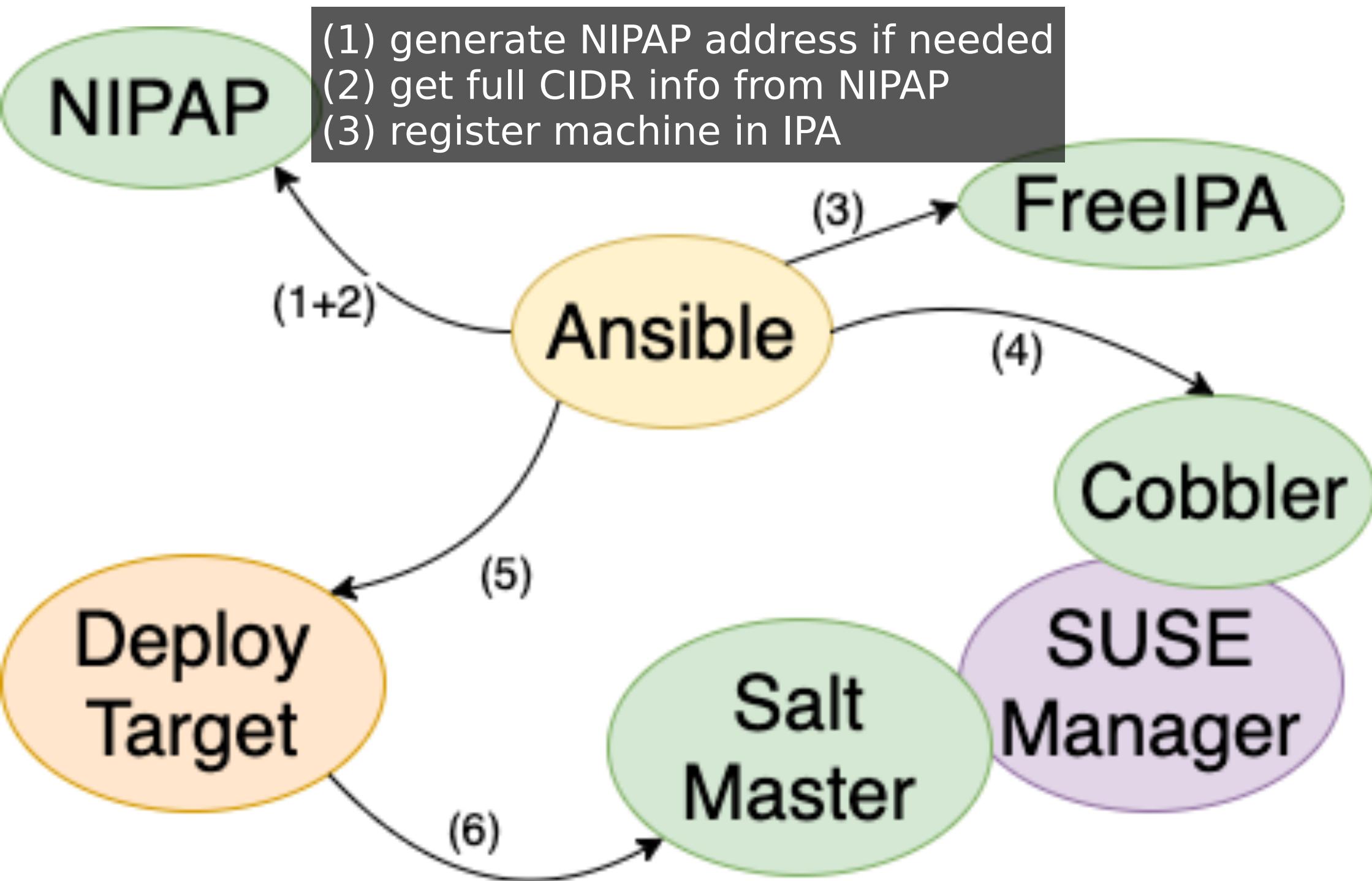
Add prefix

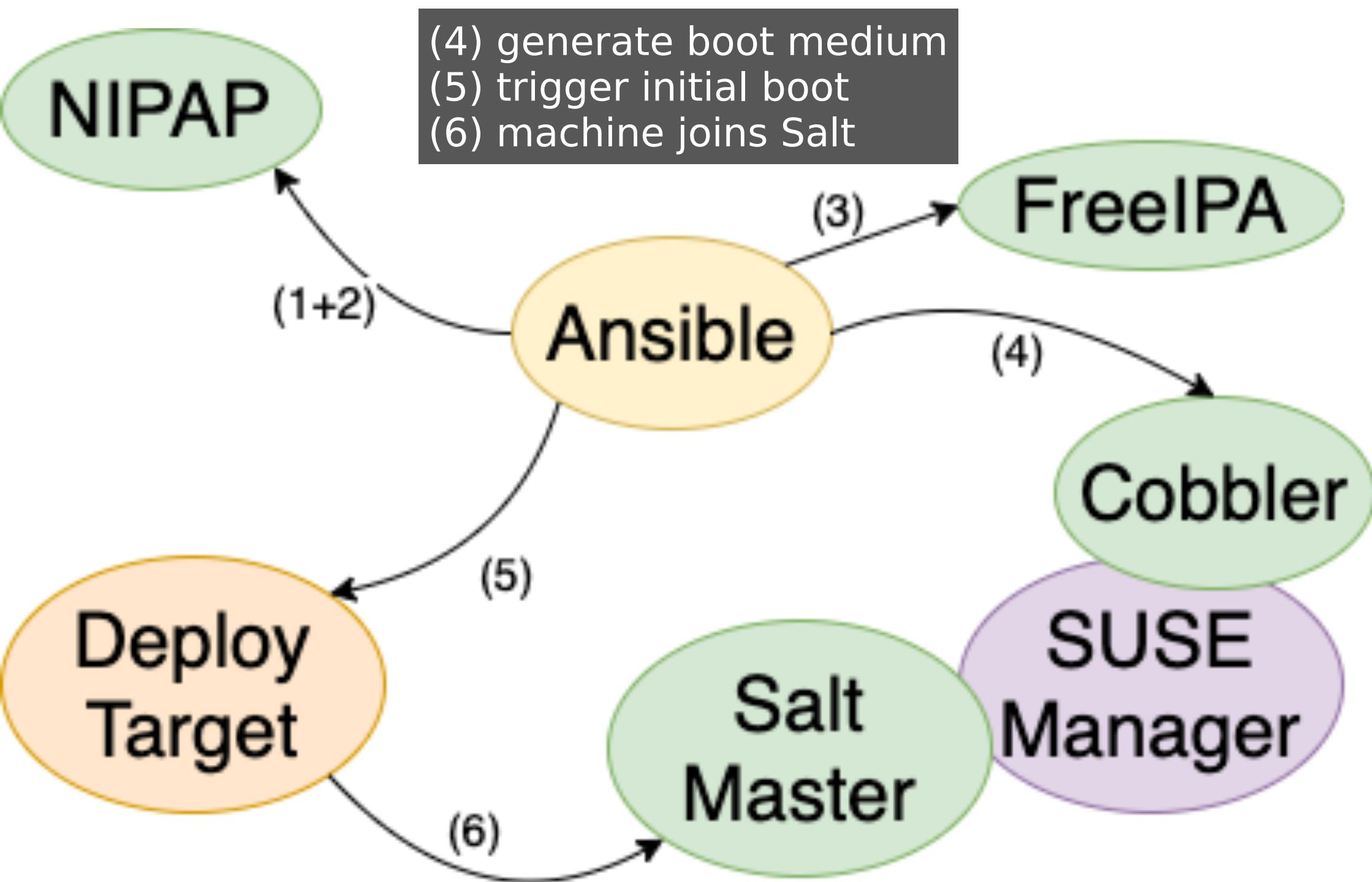
VRF	Prefix	Order	Node	Description
1357985792:199118	+ 80.241.56.0/21	<input type="radio"/>	R	
	+ 80.241.56.0/22	<input type="radio"/>	R	
	+ 80.241.56.0/23	<input type="radio"/>	R	
	+ 80.241.56.0/24	<input type="radio"/>	A	
	- 80.241.57.0/24	<input type="radio"/>	A	
	80.241.57.1/24	<input type="radio"/>	H	
	80.241.57.2/24	<input type="radio"/>	H	
	+ 80.241.58.0/23	<input type="radio"/>	R	
	+ 80.241.58.0/24	<input type="radio"/>	A	
	+ 80.241.59.0/24	<input type="radio"/>	A	
	+ 80.241.60.0/22	<input type="radio"/>	R	
	+ 80.241.60.0/29	<input type="radio"/>	A	
	+ 80.241.60.64/26	<input type="radio"/>	A	
	- 2001:67c:2050::/48	<input type="radio"/>	R	
	+ 2001:67c:2050::/56	<input type="radio"/>	R	
	- 2001:67c:2050::/64	<input type="radio"/>	A	
	2001:67c:2050::1/64	<input type="radio"/>	H	
	2001:67c:2050::2/64	<input type="radio"/>	H	
	- 2001:67c:2050:1::/64	<input type="radio"/>	A	
	2001:67c:2050:1::1/64	<input type="radio"/>	H	
	- 2001:67c:2050:100::/56	<input type="radio"/>	R	
	+ 2001:67c:2050:100::/64	<input type="radio"/>	A	

Introducing NIPAP

Hierarchical subnet planning in NIPAP

- 10.139.0.0/19 Subnet for Berlin location
 - 10.139.0.0/20 Location DC Berlin 01
 - + 10.139.0.0/26 VIRTUALIZATION
 - + 10.139.0.64/27 SERVICE
 - + 10.139.0.96/27 INTEGRATION CLUSTER 01
 - 10.139.16.0/20 Location DC Berlin 02
 - .
 - .
 - .
 - 10.184.202.0/22 Subnet for Atlanta location
 - .
 - .
 - .





```
- name: "Register host in nipap"
shell: next-host.sh -e -y {{ host_name }} {{ host_net | upper }}
delegate_to: "{{ nipap_server }}"

- name: "Get base address information from nipap"
shell: nipap address list -c node,prefix | grep {{ host_name }}
register: nipap_info
changed_when: False
failed_when: nipap_info is failed or nipap_info.stdout == ""
check_mode: no

- name: "Get vlan from nipap"
shell: nipap address view {{ address }} vrf {{ host_vrf }}
      | awk '/VLAN/ { print $3 }'
register: vlan
vars:
  address: {{ nipap_info.stdout | ipaddr('network/prefix') }}
changed_when: False
check_mode: no
```



```
# generating boot media

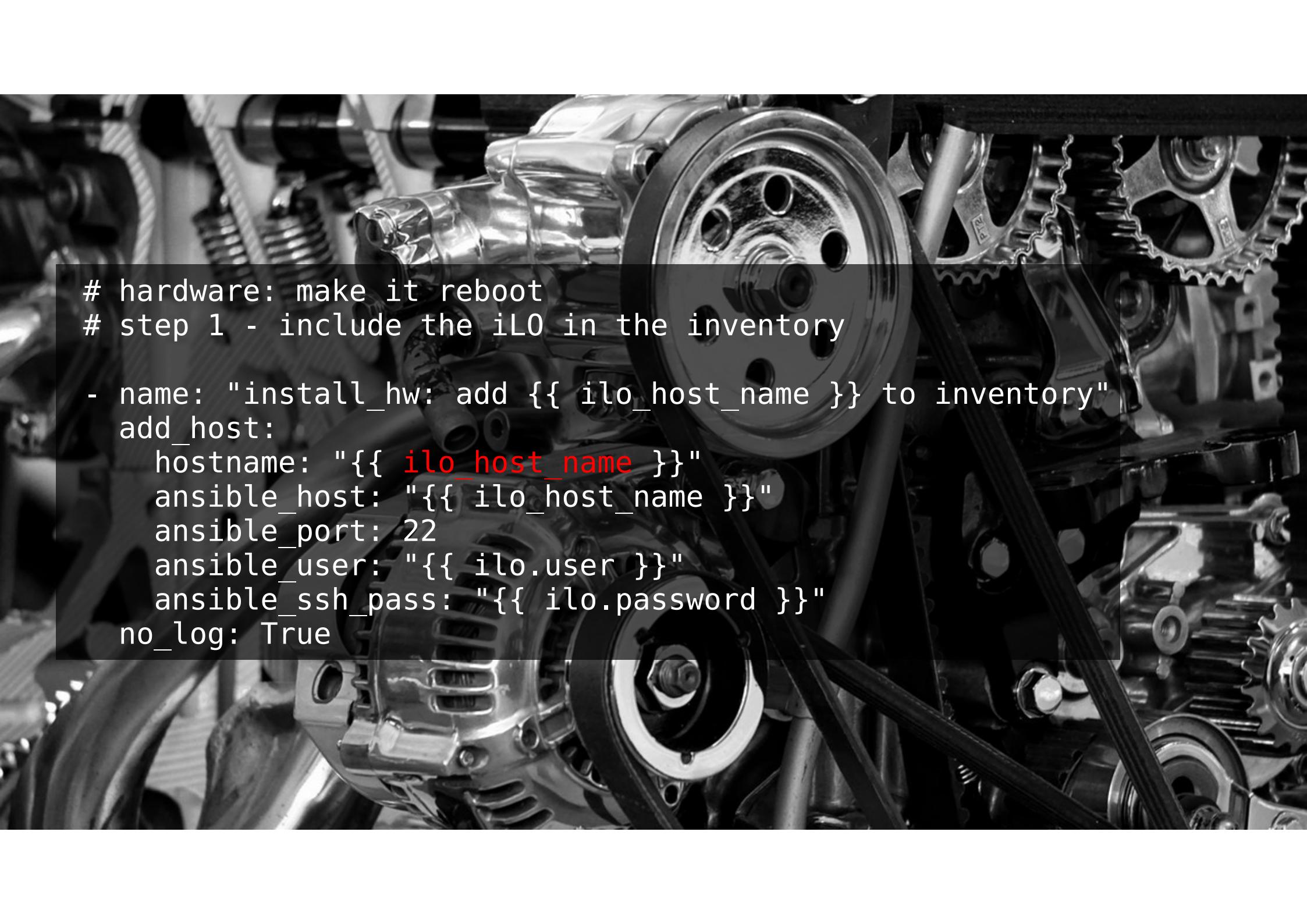
- name: "mkiso_sles: Create autoyast bootcd with mksusecd"
  command: >
    mksusecd
    --create {{ boot_iso_path }}
    --nano --uefi --gpt
    -boot "{{ boot_params }}" {{ suma_iso_path }}

vars:
  ifcfg_option: >-
    {{ iface }}={{ cidr }},{{ gateway }},{{ nameserver }},{{ domain }}
  boot_params: >-
    ksdevice=bootif lang=en_US pt.options+=self_update
    install={{ cobbler_dist_url }}
    hostname={{ host_name_short }}
    self_update=0 text autoyast={{ cobbler_kickstart_url }}
    ksdevice=bootif textmode=1
    {% if machine_category == 'HW' %}
    biosdevname=1
    {% endif %}
    ifcfg={{ ifcfg_option }}
```

```
# virtual machine: create from scratch

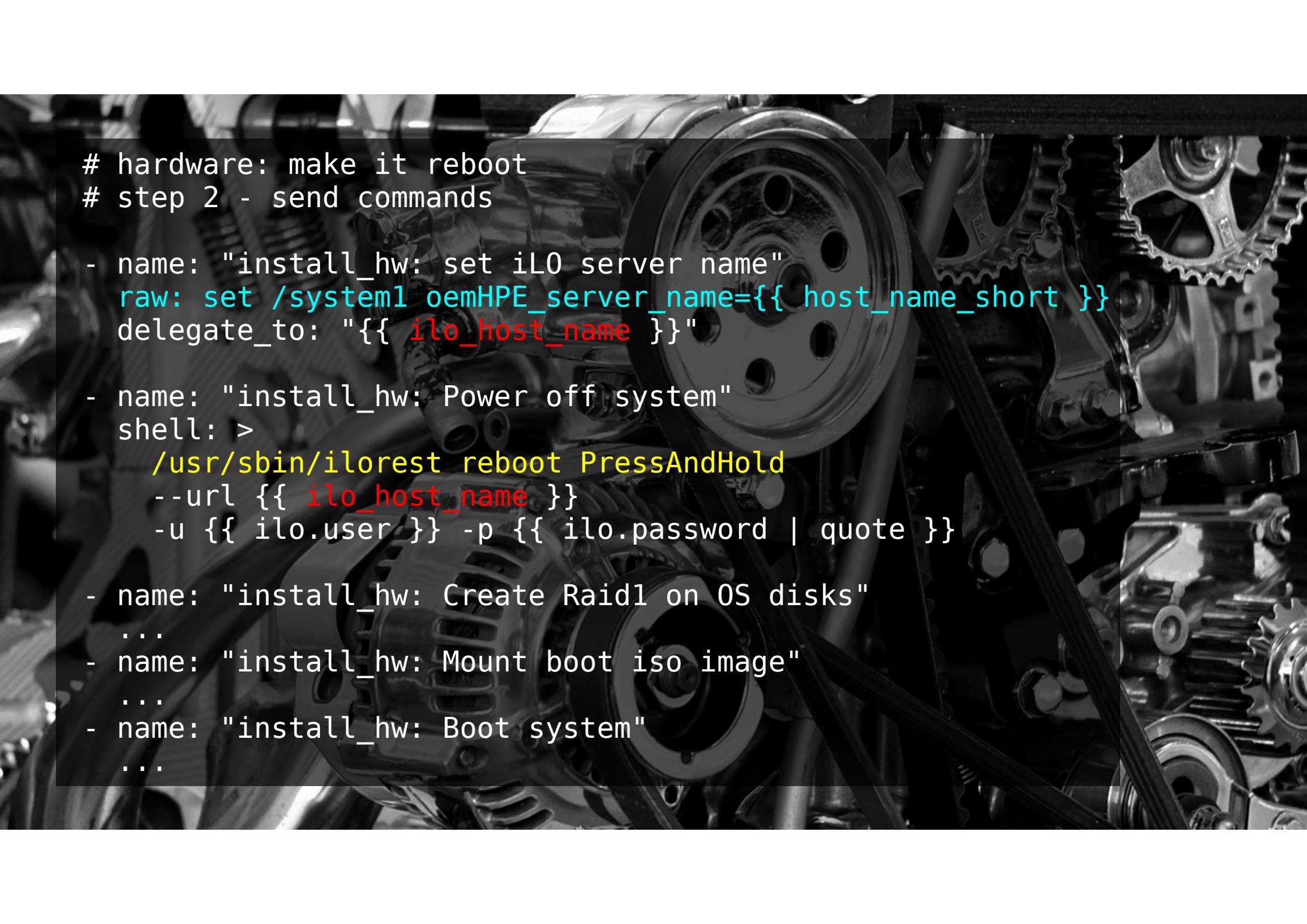
- name: "install_vm": Create VM using govc"
  environment:
    GOVC_USERNAME: "{{ vcenter.user }}"
    GOVC_PASSWORD: "{{ vcenter.password }}"
  command: >
    govc vm.create
      -k=true -debug -u '{{ vcenter.host | quote }}' -on=false
      -m={{ vm_memory | quote }}
      -c={{ vm_cpus | quote }}
      ...
      -iso={{ bootiso_name | quote }}
      -iso-datastore={{ vm_isostore | quote }}
      {{ host_name_short | quote }}

# for additional disks
- name: "install_vm": Query govc for information about the new VM"
  command: govc vm.info ...
- name: "install_vm": Add data disk volume using govc"
  command: govc vm.disk.create ...
```



```
# hardware: make it reboot
# step 1 - include the iLO in the inventory

- name: "install_hw: add {{ ilo_host_name }} to inventory"
  add_host:
    hostname: "{{ ilo host_name }}"
    ansible_host: "{{ ilo_host_name }}"
    ansible_port: 22
    ansible_user: "{{ ilo.user }}"
    ansible_ssh_pass: "{{ ilo.password }}"
  no_log: True
```

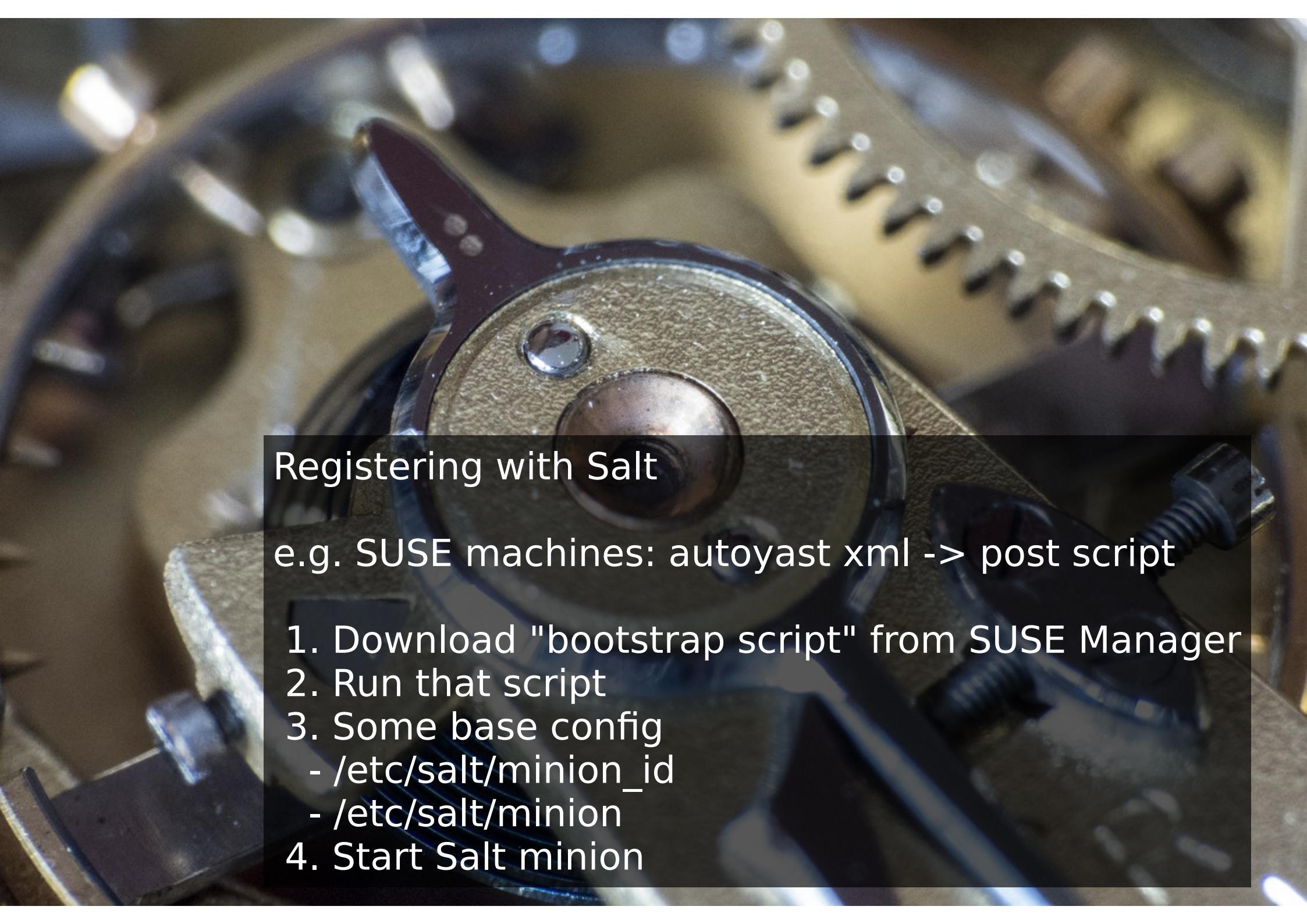


```
# hardware: make it reboot
# step 2 - send commands

- name: "install_hw: set iLO server name"
  raw: set /system1 oemHPE_server_name={{ host_name_short }}
  delegate_to: "{{ ilo_host_name }}"

- name: "install_hw: Power off system"
  shell: >
    /usr/sbin/ilorest reboot PressAndHold
    --url {{ ilo_host_name }}
    -u {{ ilo.user }} -p {{ ilo.password | quote }}

- name: "install_hw: Create Raid1 on OS disks"
  ...
- name: "install_hw: Mount boot iso image"
  ...
- name: "install_hw: Boot system"
  ...
```



Registering with Salt

e.g. SUSE machines: autoyast xml -> post script

1. Download "bootstrap script" from SUSE Manager
2. Run that script
3. Some base config
 - /etc/salt/minion_id
 - /etc/salt/minion
4. Start Salt minion

SUSE®Manager > Salt > Keys

1233 3 systems selected admin

Keys

Search page

Home Systems Salt Keys Remote Commands Formula Catalog Images Patches Software

Items 1 - 25 of 514 25 items per page

Name	Fingerprint	State	Actions
I01abdpaux001.	ff:6d:f1:01:c5:da:0c:75:8c:e8:02:2b:bd:88:25:99:81:fa:e3:a8:5a:bc:b7:a2:e6:e8:ae:ae:93:87:1b:dd	accepted	
I01abdpaux002.	f6:bf:23:ec:75:64:1a:f5:55:5e:19:d0:84:18:53:54:64:73:4a:ba:a3:06:94:52:39:20:20:25:2d:61:35:45	accepted	
I01abdpaux003.	1b:82:0f:87:20:04:9c:53:3d:d6:65:dd:ee:0a:4d:c1:84:38:40:78:ab:9b:f1:12:2c:d6:88:43:db:b3:6d:a2	accepted	
I01abdpaux004.	33:0b:06:12:38:62:24:8e:56:b5:6d:cf:a4:fc:f7:69:64:ad:ae:16:f4:59:c7:25:42:11:a0:91:ec:5a:fb:43	accepted	

```
# e.g. playbooks/group_vars/location_10a/os_install.yml  
---  
# variables for the os_install role  
os_install_vrf: "1:10"  
os_install_nameserver: 10.139.16.74  
os_install_vm_datacenter: "MYCORP US BD"  
os_install_default_vm_cluster: "US_BD01"  
os_install_vm_clusters:  
  US_BD01:  
    datastore: "PDX_DSC001"  
os_install_timezone: "US/Eastern"  
os_install_vcenter:  
  host: l10abdpvc001.mycorp.net  
  user: "vmware_auto@europe.my.corp"  
  password: "{{ passwords.vsphere['10a'] }}"  
os_install_suma_proxy: l10abdpsm001.mycorp.net
```

Defining machines

```
# hardware  
l19abdpbll004:  
    machine_type: WORKER  
    os: SLES12-SP2  
    net: prodhdp
```

```
# virtual  
l19abdpprx002:  
    machine_type: VM  
    os: SLES12-SP3  
    net: shared  
    vm_memory: 1024  
    vm_cpus: 1  
    vm_disksize: 40GB
```





Photo credits

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