

# Lightweight inventory management with Pallet Jack

Linux.conf.au 2017 sysadmin miniconf  
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# Problem statement

- Inventory management for system administrators
- Store system information
  - IP addresses, locations, serial numbers, ...
- Generate service configuration
  - DHCP, DNS, configuration management, ...
- Search for static information
  - Location, service contracts, ...

# Goals

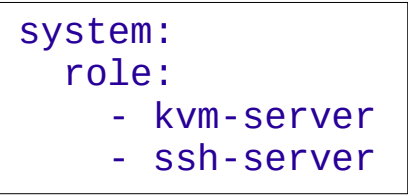
- Single source of truth for system administration
- Version controlled together with configuration management
- Easily interoperable
- Reasonably scaleable
- Decomposable database

# Data store

- “Warehouse” with “pallets” (objects)
- Objects are directories
- Keys and values stored in YAML files
- Inheritance by symlinks and directory hierarchy

system

```
|— testvm
|   |— architecture.yaml
|   |— domain -> ../../domain/example.com/
|   |— machine -> ../../machine/testvm/
|   |— netinstall -> ../../netinstall/CentOS-7.2.1511-x86_64/Kickstart_vda/
|   └─ role.yaml
```



```
system:
  role:
    - kvm-server
    - ssh-server
```

# Transformations

- Synthesize new values from existing information
- Value substitution and regular expressions

- net.dns.fqdn:

- synthesize: "[net.dns.name].[net.dns.domain]"

- host.pxelinux.kernel:

- synthesize: "/boot/[system.os]/vmlinuz"

# Database tools

- **create\_system** --warehouse examples/warehouse/  
--system **vmhost1** --domain example.com --os CentOS-  
7.2.1511-x86\_64
- **dump\_pallet** --position --warehouse  
examples/warehouse/ --type system **vmhost1**

→ [...]  
system:  
 os: CentOS-7.2.1511-x86\_64 # transforms.yaml  
 # (line 175, column 15)  
 role:  
 - kvm-server # system/vmhost1/role.yaml (line 3, column 4)  
 - ssh-server # system/vmhost1/role.yaml (line 4, column 0)  
 architecture: x86\_64 # system/vmhost1/architecture.yaml  
 # (line 2, column 0)  
 name: vmhost1 # transforms.yaml (line 165, column 15)  
[...]

# Data export tools

```
palletjack2kea --warehouse examples/warehouse/ --service example-com
```

```
## Automatically generated by palletjack2kea from
```

```
## Repository: /home/creideiki/src/palletjack/
```

```
## Branch: refs/heads/master
```

```
[...]
```

```
  "subnet4": [
```

```
    {
```

```
      "subnet": "192.168.0.0/24",
```

```
      "reservations": [
```

```
        {
```

```
          "hw-address": "14:18:77:ab:cd:ef",
```

```
          "ip-address": "192.168.0.1",
```

```
          "hostname": "vmhost1.example.com",
```

```
[...]
```

# Current integrations

- Configuration management: Salt
- System installation: PXELINUX and Kickstart
- DHCP server: Kea
- Authoritative DNS: Knot
- Recursing DNS: Unbound
- (Directory service: FreeIPA)



# API

```
> require 'palletjack'
> jack = PalletJack.load('examples/warehouse')
> vmhost1 = jack.fetch(kind:'system',
name:'vmhost1')
> vmhost1['system.role']
→ ["kvm-server", "ssh-server"]
> jack.each(kind:'system') { |s|
  puts s['system.name'] }
→ vmhost1
→ testvm
```

```
gem install palletjack-tools
```

<https://github.com/saab-simc-admin/palletjack>

(or search GitHub for “palletjack”)

