

Linux System Roles

One playbook to rule them all

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Simplified configuration with Linux System Roles and Ansible

Overview of Linux System Roles

Introduction to Storage role

Introduction to Logging role

How to use it and demo time

I bet you've been here before...

```
# My wicked cool automation scripts
do.clever.stuff(with_my_servers)
automate --all-the-things

Watch.it.break --every-time --change
#  $@!$@!$@!$@!$@!$@!$@!
rinse.repeat
```



Image by www.slون_pics from Pixabay

Simplify the admin work

How can we make servers management easier
in an automatable way,
at scale?

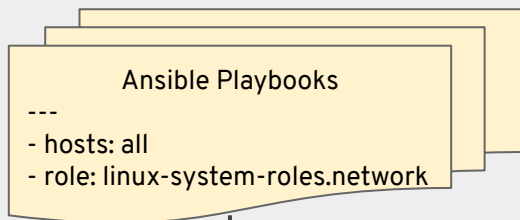


Image by www.slom_pics from Pixabay

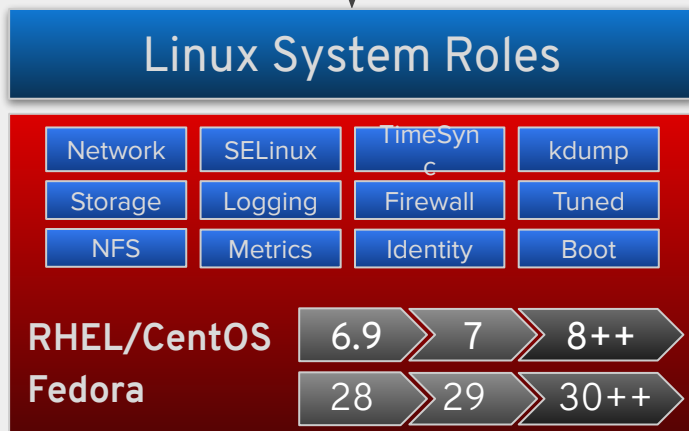
Easier Administration with



ANSIBLE



A collection of Ansible roles and modules



Easier Administration with



ANSIBLE

Ansible is an **open source automation platform**

It is **very simple to setup** and yet powerful.

Helps with **configuration management, application deployment, task automation.**

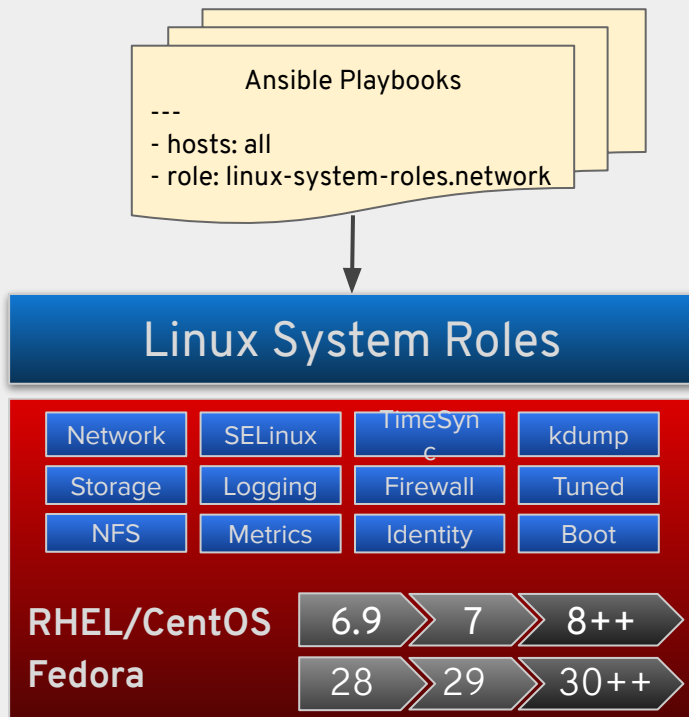
It can do **IT orchestration**, where you have to run tasks in sequence and create a chain of events which must happen **on several different servers or devices.**

It doesn't use an agent on the remote host.

Easier Administration with



ANSIBLE



A collection of Ansible roles and modules

Consistent configuration **interface** to
RHEL/Fedora/CentOS

Abstract **configuration** from **implementation**

Maintained by subject matter experts

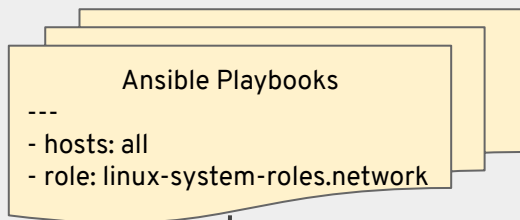
Evolves with subsystem

Compatible and tested with RHEL 6, 7, 8+ and Fedora

Easier Administration with



ANSIBLE



Linux System Roles

Network	SELinux	TimeSyn	kdump
Storage	Logging	Firewall	Tuned
NFS	Metrics	Identity	Boot

RHEL/CentOS

6.9

7

8++

Fedora

28

29

30++



RELEASED ROLES

- Network
- Security-Enhanced Linux (SELinux)
- TimeSync
- Email (Postfix)
- kdump (kernel crash dump)



TARGETED ROLES

- Storage
- Logging
- Image builder
- Web Console (cockpit)
- SAP Hana
- MS SQL Server
- Metrics
- Network file system (NFS)
- Bootloader
- Firewall
- More...

Storage role

Principles

Simplify local storage configuration

- provide a concise model to describe the storage layout
- provide reasonable defaults where possible
- handle non-essential details automatically
- reuse existing storage management logic

Storage role

Examples

Create and mount a file system on a whole unpartitioned disk (including /etc/fstab entry)

```
- - -  
- hosts: all  
  vars:  
    - storage_volumes:  
      - name: backup  
        type: disk  
        disks: ['sdc']  
        mount_point: /backup  
        #fs_type: xfs  
  roles:  
    - role: linux-system-roles.storage
```

Storage role

Examples

Example: two (lvm) volumes in a single pool

```
---
- hosts: all
  vars:
    storage_pools:
      - name: mongo
        #type: lvm
        disks: ['sdd', 'sde']
        volumes:
          - name: data
            #type: lvm
            mount_point: /var/lib/mongo
            size: 500g
            #fs_type: xfs
          - name: logs
            mount_point: /var/log/mongodb
            size: 40g
```

Storage role

Examples

Example: more options

```
---
- hosts: all
  vars:
    storage_pools:
      - name: acme_app
        #type: lvm
        disks: ['/dev/mapper/mpathb']
        volumes:
          - name: data
            mount_point: /opt/acme/data
            size: 100g
            fs_type: xfs
            fs_label: acme_data
            fs_create_options: '-i 512'
            mount_options: '-l internal'
```

Storage role

Status & Roadmap

- **Status**

- v1.0.0 released this week
- planned for inclusion in RHEL 8.1.0, Fedora 32
- supported
 - whole disk, whole disk w/ single partition, lvm (basic)

- **Roadmap**

- encryption (LUKS)
- RAID (md)
- LVM thin provisioning
- LVM cache
- LVM RAID
- compression & deduplication (VDO)
- stratis

Storage role

Challenges

Challenging, high-value features

- automatic device name
- automatic size
- automatic disk selection
- percentage-based size

Logging role

Principles

- **High level** architecture
- **Simplify logging deployment** on **multiple hosts**
- Collect **multiple logs** to **multiple destinations**
- Apply **default settings** where possible

Logging role

Architecture

Rsyslog

Since Red Hat Enterprise Linux 6, **November 2010**, rsyslogd became **the default**.

- Multi-threading
- TCP, SSL, TLS, RELP
- Diverse destinations
- Filter any part of syslog message
- Fully configurable output format
- Suitable for enterprise-class relay chains

Logging role

By Default:

- **All system and kernel messages** get passed to rsyslogd.
- Logs are sent to **files/ logged-in users** based on their **Syslog Facilities** and **Severity**

```
---  
- hosts: all  
  roles:  
    - role: linux-system-roles.logging
```

Logging role

User custom configuration file

List of custom configuration files are deployed to /etc/rsyslog.d/

```
---
- hosts: all
  vars:
    logging_outputs:
      - name: custom_files-test
        type: custom_files
        custom_config_files: [ '/path/to/custom_A.conf', '/path/to/custom_B.conf' ]
```

Logging role

Journal to Elasticsearch



elastic

Logging role

Journal to Elasticsearch

```
---
- hosts: all
  vars:
    use_omelasticsearch_cert: true
  logging_outputs:
    - name: journald-logs-elasticsearch
      type: elasticsearch
      server_host: 'es.example.com'
      index_prefix: 'project.test'
      ca_cert: /path/to/elasticsearch_ca_cert_file
      cert: /path/to/elasticsearch_client_cert_file
      key: /path/to/elasticsearch_client_key_file
    logs_collections:
      - name: 'journald'
```

oVirt - Full monitoring solution



oVirt - Full monitoring solution

Install Metrics Store

Create VM Deploy Review

1 2 3

Deploy Collectd and Rsyslog ⓘ

Select at least one host and/or engine to deploy on.

Engine

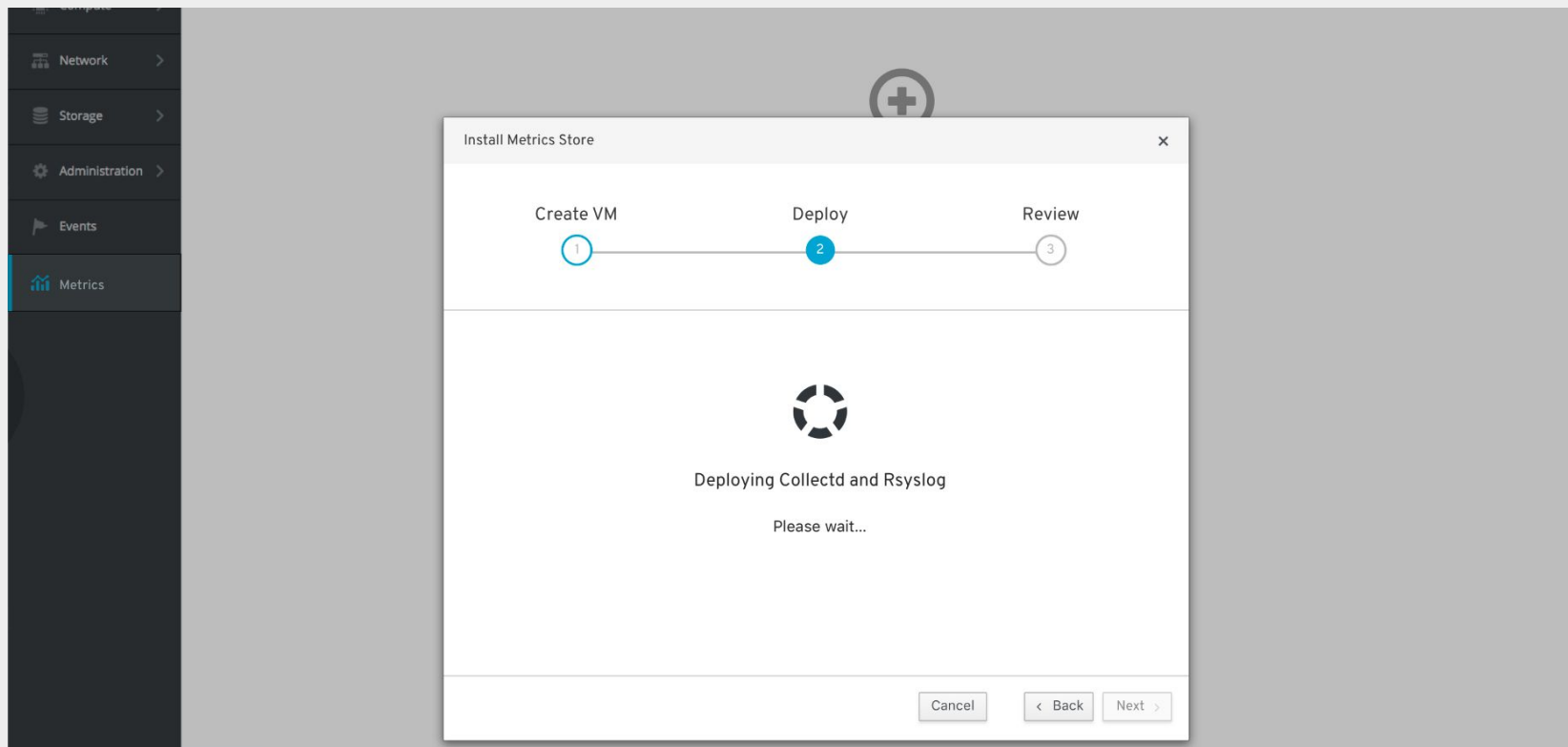
	Engine Name
<input checked="" type="checkbox"/>	Engine 1

Hosts ⓘ

		Host Name ▲	Cluster ▲	Data Center ▲
<input checked="" type="checkbox"/>	▲	Host 1	Cluster 1	Data Center 1
<input checked="" type="checkbox"/>	▲	Host 2	Cluster 2	Data Center 2
<input checked="" type="checkbox"/>	▼	Host 3	Cluster 3	Data Center 3

Cancel < Back Next >

oVirt - Full monitoring solution



oVirt - Full monitoring solution

The screenshot displays the oVirt web interface's Metrics page. On the left is a dark sidebar with navigation links: Storage, Administration, Events, and Metrics (which is highlighted). The main content area features a progress indicator at the top with three steps, where the third step is active. Below this is a notification box stating that a new Collectd and Rsyslog package has been released. The page then lists deployment status for 'VIRTUAL MACHINES', showing successful installations for 'Metrics Installer VM' and 'Openshift VM'. Below this, system information is provided for 'MAC ADDRESS', 'IP ADDRESS', 'HOST', 'ENGINE', and 'COLLECTD AND RSYSLOG'. At the bottom, an 'Update available' message with a warning icon and an 'Update' button is shown.

Storage >

Administration >

Events

Metrics

1 2 3

ⓘ A new Collectd and Rsyslog package has been released, please update it for the latest release.

VIRTUAL MACHINES

Metrics Installer VM

- ✓ Installers successfully deployed
- ✓ Openshift successfully deployed

Openshift VM

- ✓ Installers successfully deployed
- ✓ Openshift successfully deployed

MAC ADDRESS

00-14-22-01-23-45

IP ADDRESS

255.255.255.0

HOST

Host_1

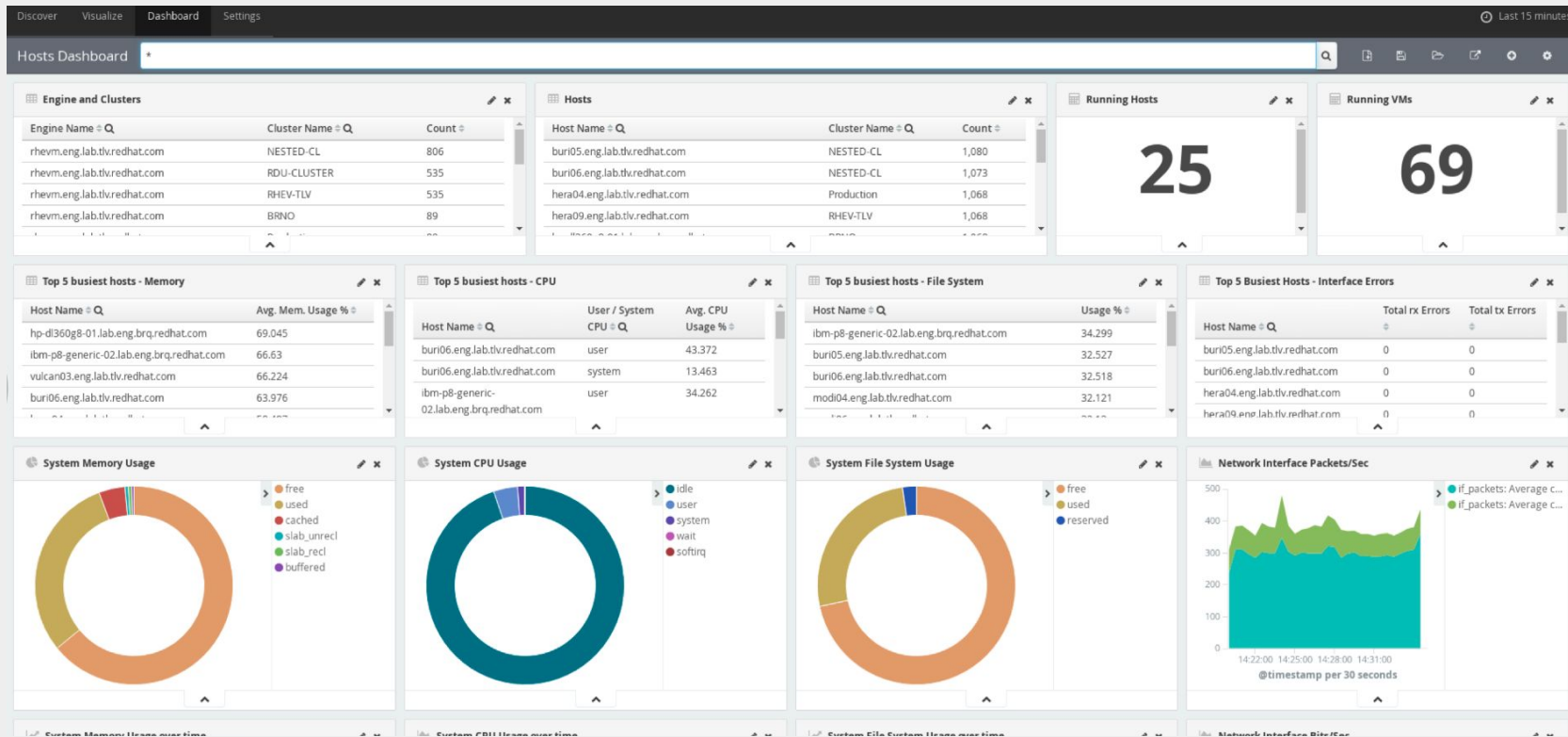
ENGINE

Engine_1

COLLECTD AND RSYSLOG

⚠ Update available [Update](#)

oVirt - Full monitoring solution



Logging role

Status & Roadmap

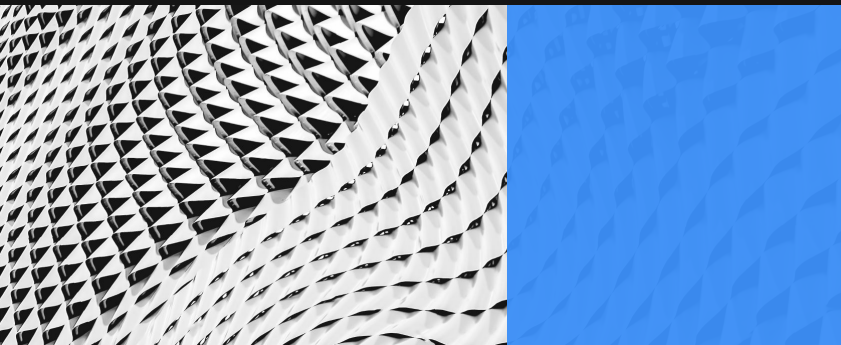
- **Status**

- In development
- Supported
 - Deploy **default rsyslog.conf**
 - Send **journal logs to Elasticsearch**
 - Deploy **custom configuration files**
- Used by oVirt for sending **logs** and **Collectd metrics** to **Elasticsearch**

- **Roadmap**

- Profile based configuration (General, Resilient, Security, etc.)
- Additional inputs
- Additional outputs:
 - Remote rsyslog (server/client)
 - Remote message bus (Kafka, AMQP)

IT'S DEMO TIME!





Give it a try

```
# ansible-galaxy install linux-system-roles.postfix
# ansible-galaxy install linux-system-roles.kdump
# ansible-galaxy install linux-system-roles.network
# ansible-galaxy install linux-system-roles.selinux
# ansible-galaxy install linux-system-roles.timesync
# ansible-galaxy install linux-system-roles.storage
```

Documentation & References

Landing page and overview -

<https://linux-system-roles.github.io/>

Link to Galaxy page -

<https://galaxy.ansible.com/linux-system-roles/>

Link github project -

<https://github.com/linux-system-roles>

Example playbooks

<https://github.com/linux-system-roles/linux-system-roles.github.io/tree/master/demo>

[https://github.com/linux-system-roles/linux-system-roles.github.io/tree/master/demo/devcon
f-demo](https://github.com/linux-system-roles/linux-system-roles.github.io/tree/master/demo/devconf-demo)

Providing Feedback & Requests

Tell us...

- What new features or capabilities you need.

- What is needed.

- What needs to be fixed.


Methods...


- Open an issue at the upstream [linux-system-roles](#) project on github.

- Pull requests welcome!

Thank you

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