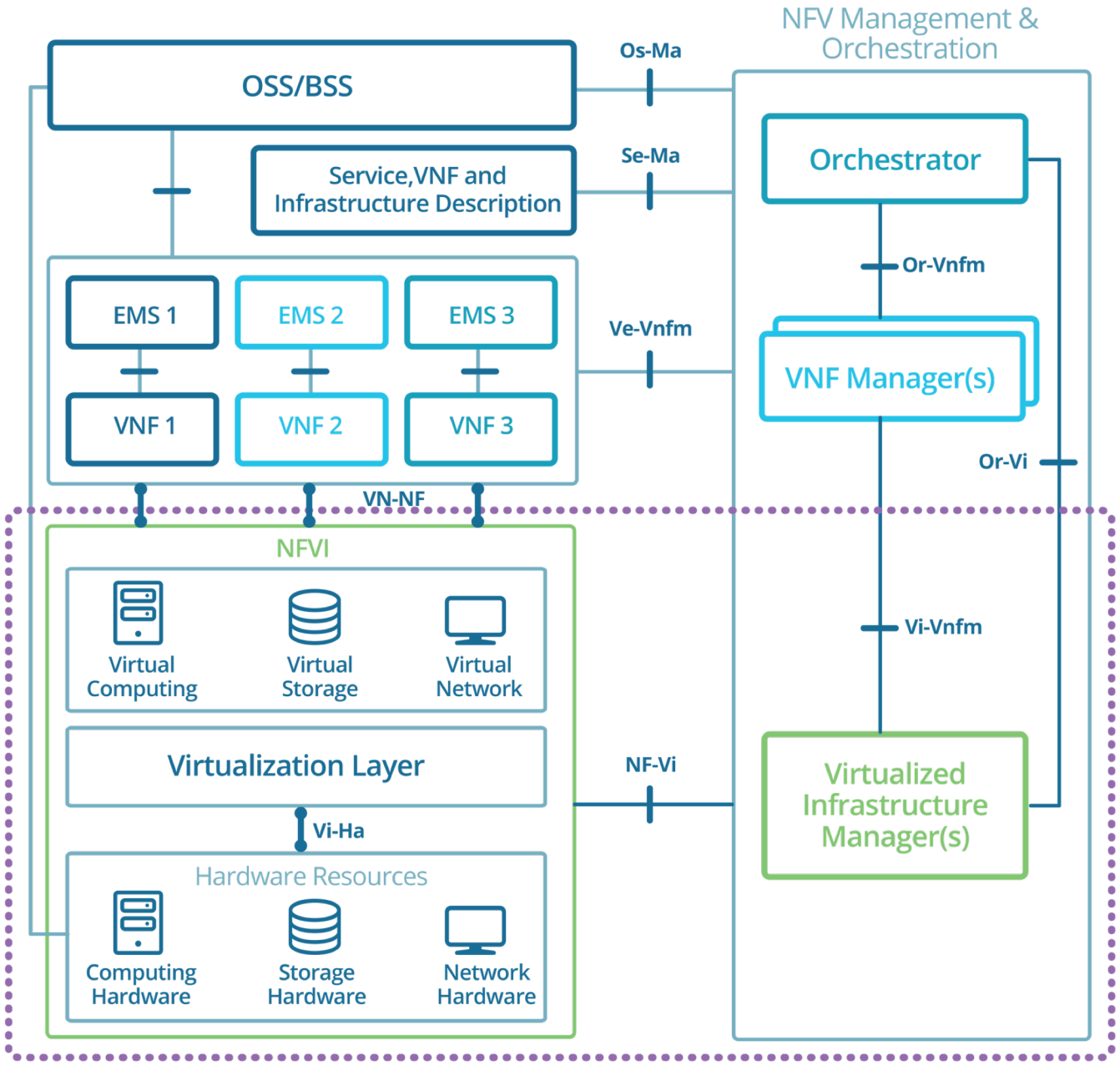
AVNFM

Ansible VNF Manager

Winner of the 2nd prize at SoftFIRE NFV Innovation Hackathon

Massimiliano Romano – Cloud & DevOps Engineer

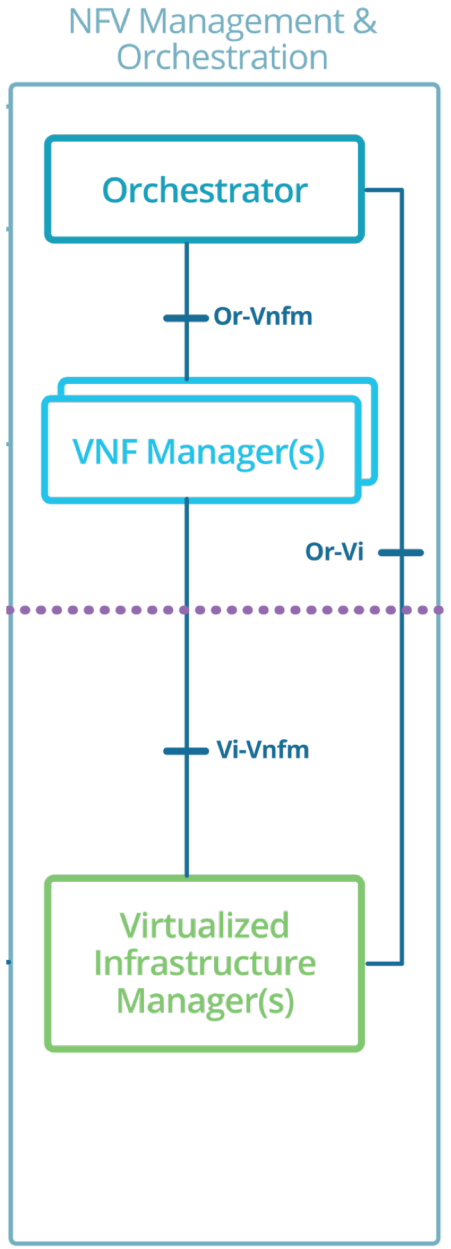
NFV Architecture



VNF Managers

- Manages the lifecycle of a VNF interacting with Orchestrator and VIM
  1. Instantiate
  2. Start
  3. Scaling
  4. Stop
  5. Terminate

- NFVO provides generic VNFM



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NFV Orchestrator

NFV Extensible Framework

Adapter for new Cloud Platforms

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VNF Descriptor

```yaml
tosca_definitions_version: tosca_simple_profile_for_nfv_1_0

metadata:
  ID: NSD-Iperf+FloatingIps
  vendor: Fokus
  version: 1.0

topology_template:

  node_templates:

    iperf-server: #VNF1
        type: openbaton.type.VNF
        properties:
          vendor: Fokus
          version: 1.0
          endpoint: generic
          type: server
          vnfPackageLocation: https://github.com/openbaton/vnf-scripts.git
          deploymentFlavour:
            - flavour_key: m1.small
        requirements:
          - virtualLink: private
          - vdu: VDU1
        interfaces:
          lifecycle: # lifecycle
            INSTANTIATE:
              - install.sh
              - install-srv.sh
```

Why should I use an Ansible VNFM??

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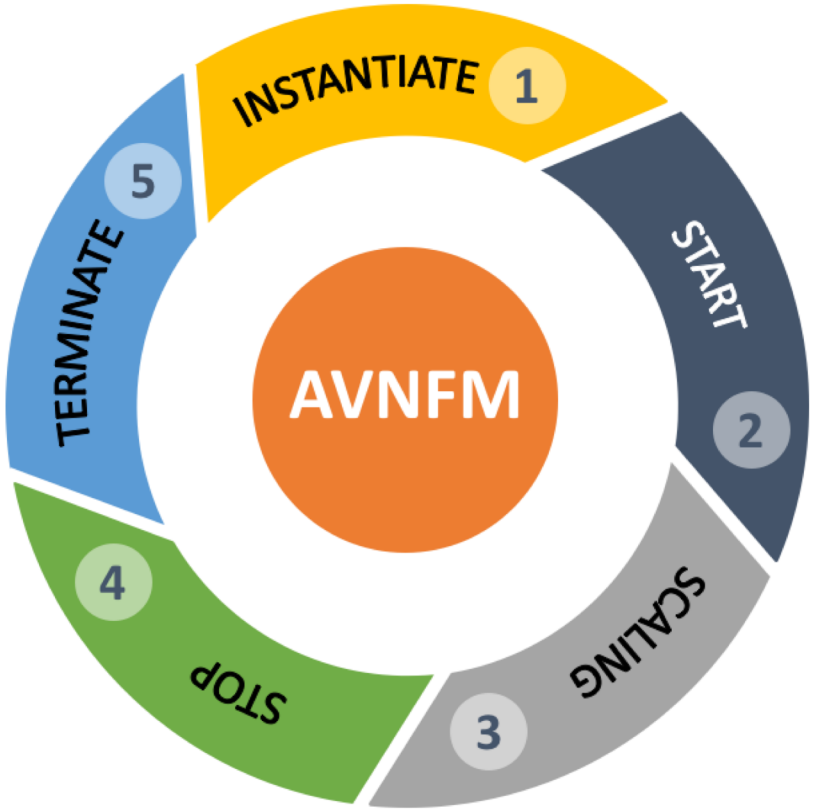
AVNFM

- Bash scripting is not enough
- VNF developers need to develop their own customized VNFM
- Extends NFV Orchestrator with a swiss-knife VNF Manager leveraging on Ansible
- The project goal is to provide to the NFV users more poweful tools to manage the VNFs lifecycle



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Ansible is simple!

It uses a natural human readable syntax in yaml playbook files

Declarative language

```yaml
---
- hosts: werbservers

  tasks:
  - name: Ensure nginx is installed
    apt:
      state: present
      pkg: nginx-full

  - name: Ensure nginx is running
    service:
      name: nginx
      state: started
      enabled: yes

  - name: Ensure the nginx configuration file is set
    copy:
      src: /app/config/nginx.conf
      des: /etc/nginx/nginx.conf
    notify: Restart Nginx

  handlers:
    - name: Restart Nginx
      service:
        name: nginx
        state: restarted
```

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Many Many Modules!

- ini_file - Tweak settings in INI files
- archive - Creates a compressed archive of one or more files or trees
- file - Sets attributes of files
- mail - Send an email
- mqtt - Publish a message on an MQTT topic for the IoT
- slack - Send Slack notifications
- telegram - module for sending notifications via telegram
- git - Deploy software (or files) from git checkouts
- git_config - Read and write git configuration
- github_deploy_key - Manages deploy keys for GitHub repositories.
- wait_for_connection - Waits until remote system is reachable/usable
- icinga2_host – Add or remove a host to Icinga2 through the API
- iptables – Modify the systems iptables

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Ansible is agentless

It does not need any agent previously installed on the VMs, it uses only:

- SSH (on linux)

Ansible is agentless

It does not need any agent previously installed on the VMs, it uses only:

- SSH (on linux)
- WinRM (on Windows)

new support for Windows VNF!

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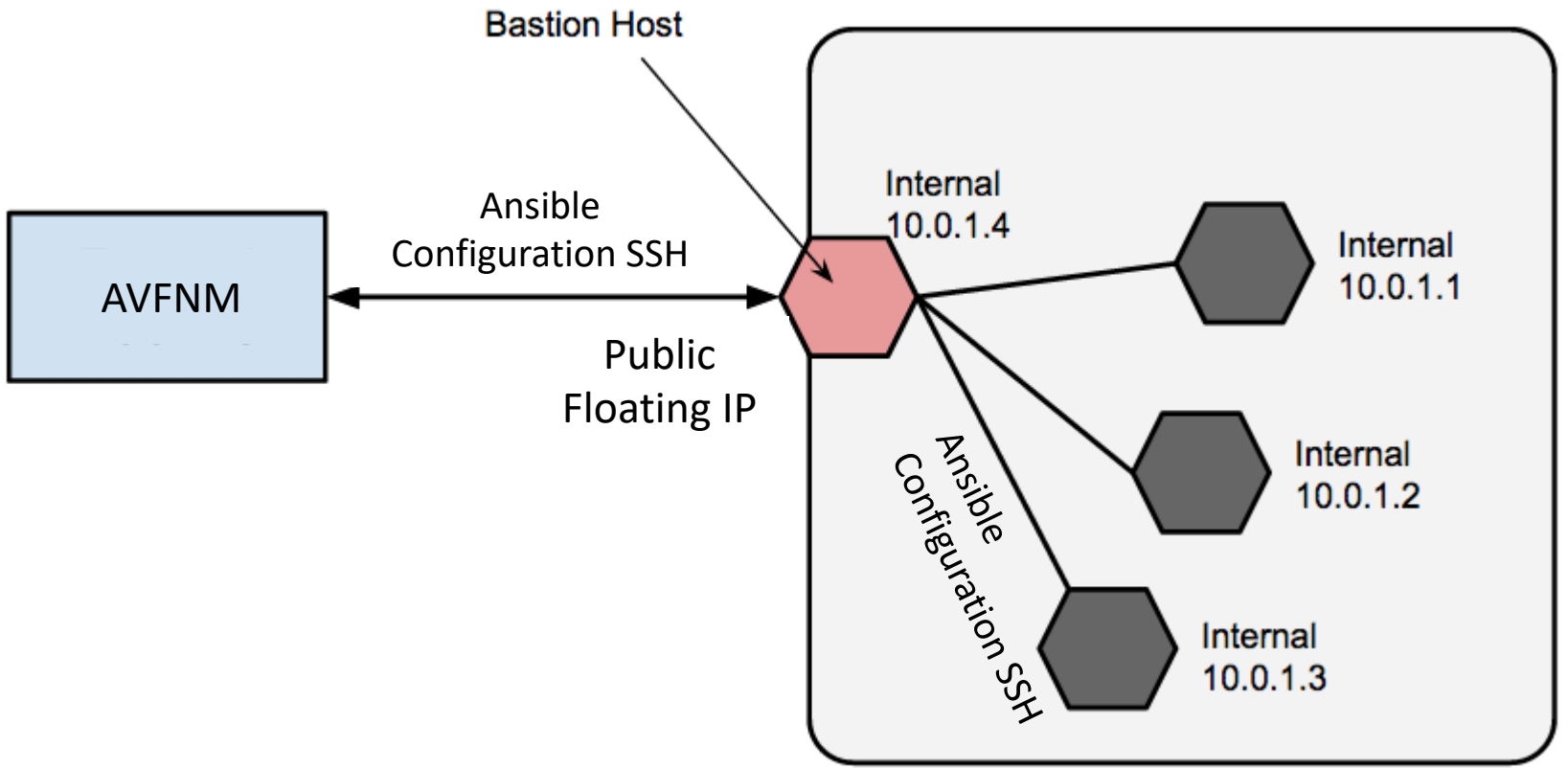
Security Improvement

- Ansible supports password vaults with AES256 encryption
- Configuration through bastion hosts out-of-the-box



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Ansible Galaxy

Galaxy is your hub for finding, reusing and sharing Ansible content

Signin with GitHub

dj-wasabi

zabbix-agent role

Installing and maintaining zabbix-agent for RedHat/Debian/Ubuntu.

monitoring zabbix

build passing

433900 Downloads 162 Stars
22 Watchers 123 Forks

Last Imported 2 days ago
Best Match 0.3714

Stouts

grafana role

Installs and setup Grafana metrics dashboard

monitoring system

250870 Downloads 48 Stars
10 Watchers 13 Forks

Last Imported 2 years ago
Best Match 0.3702

DATADOG

DataDog

datadog role

Install Datadog agent and configure checks

monitoring

186106 Downloads 128 Stars
74 Watchers 122 Forks

Last Imported 24 days ago
Best Match 0.3695

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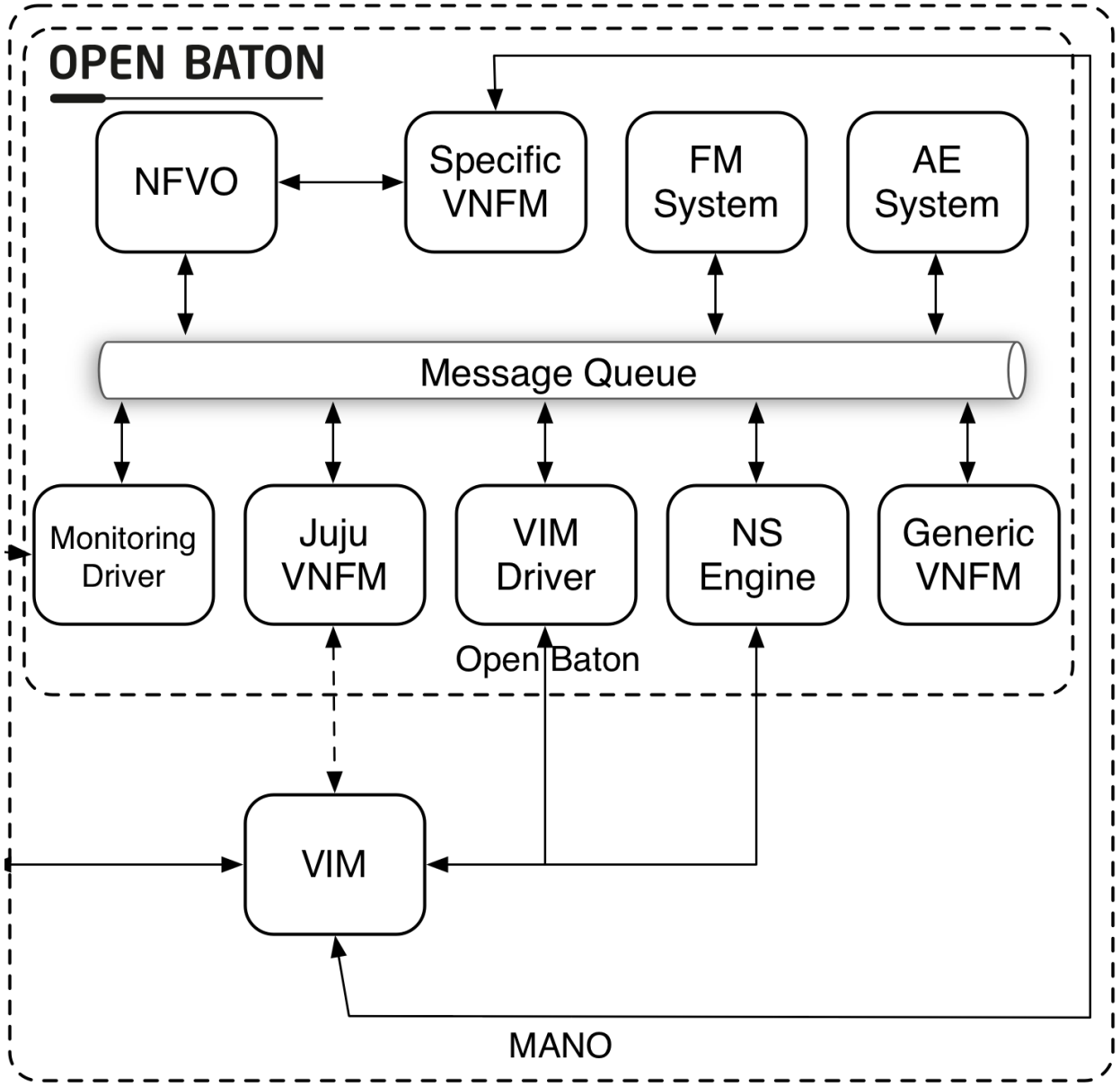
AVNFM Integration

- Written in python (like Ansible) using Open Baton Python SDK
- Receives events as rabbitmq messages (using a token)



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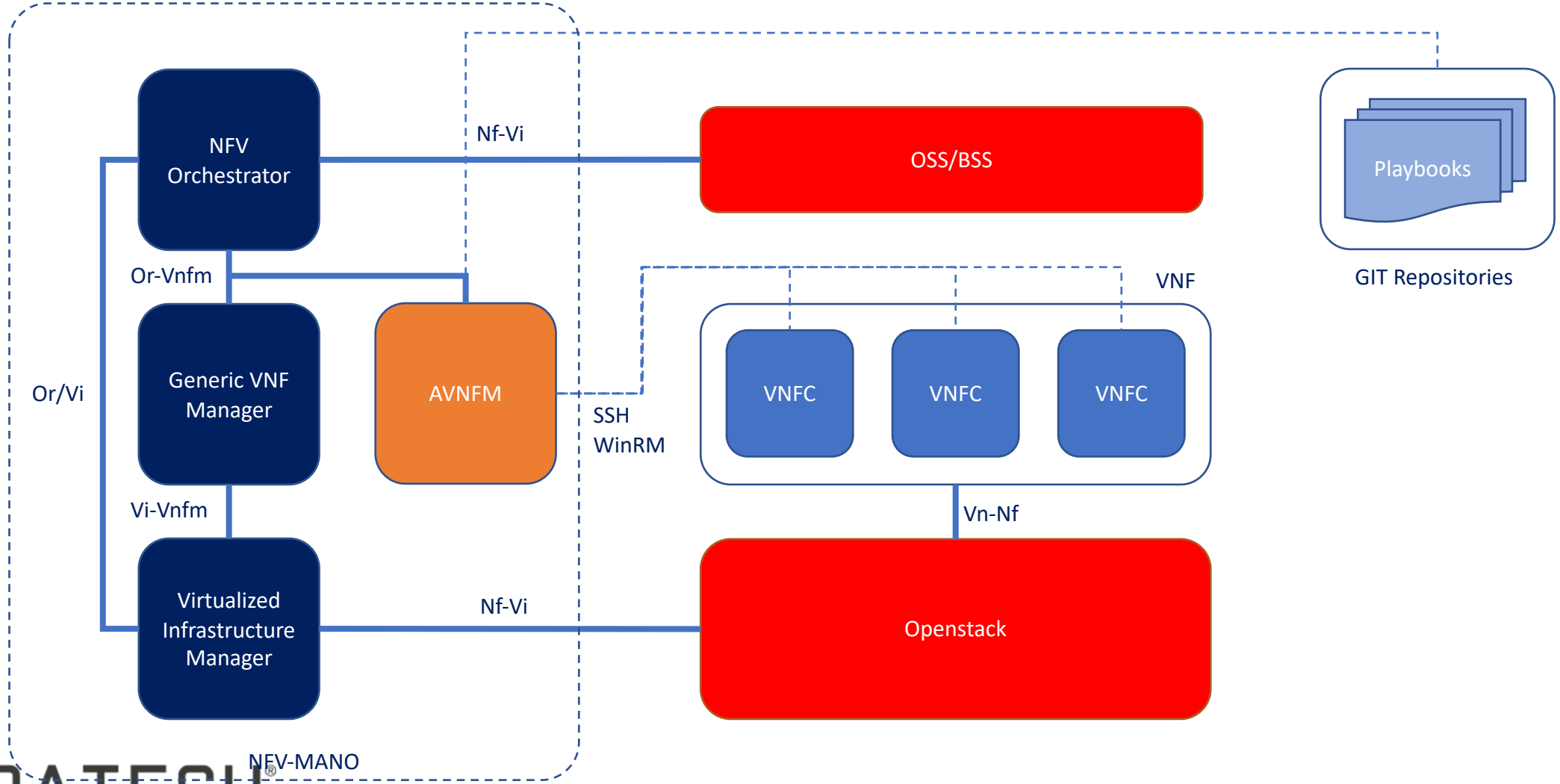
AVNFM Integration



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VNF Descriptor #2

```yaml
tosca_definitions_version: tosca_simple_profile_for_nfv_1_0

metadata:
  ID: MySQL+Tomcat
  vendor: KIRATECH
  version: 1.0

topology_template:

  node_templates:

    iperf-server: #VNF1
        type: openbaton.type.VNF
        properties:
          vendor: KIRATECH
          version: 1.0
          endpoint: generic
          type: mysql
          vnfPackageLocation: https://github.com/maxrome/ansible-test.git
          deploymentFlavour:
            - flavour_key: m1.small
        requirements:
          - virtualLink: private
          - vdu: VDU1
        interfaces:
          lifecycle: # lifecycle
            CONFIGURE:
              - configure.yaml
```

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          type: mysql
          vnfPackageLocation: https://g
          deploymentFlavour:
            - flavour_key: m1.small
        requirements:
          - virtualLink: private
          - vdu: VDU1
        interfaces:
          lifecycle: # lifecycle
            CONFIGURE:
              - configure.yaml
```

```
.
├── configure.yaml
└── roles
    ├── mysql
    │   └── tasks
    │       └── main.yaml
    │
    └── tomcat
        └── tasks
            └── main.yaml
```

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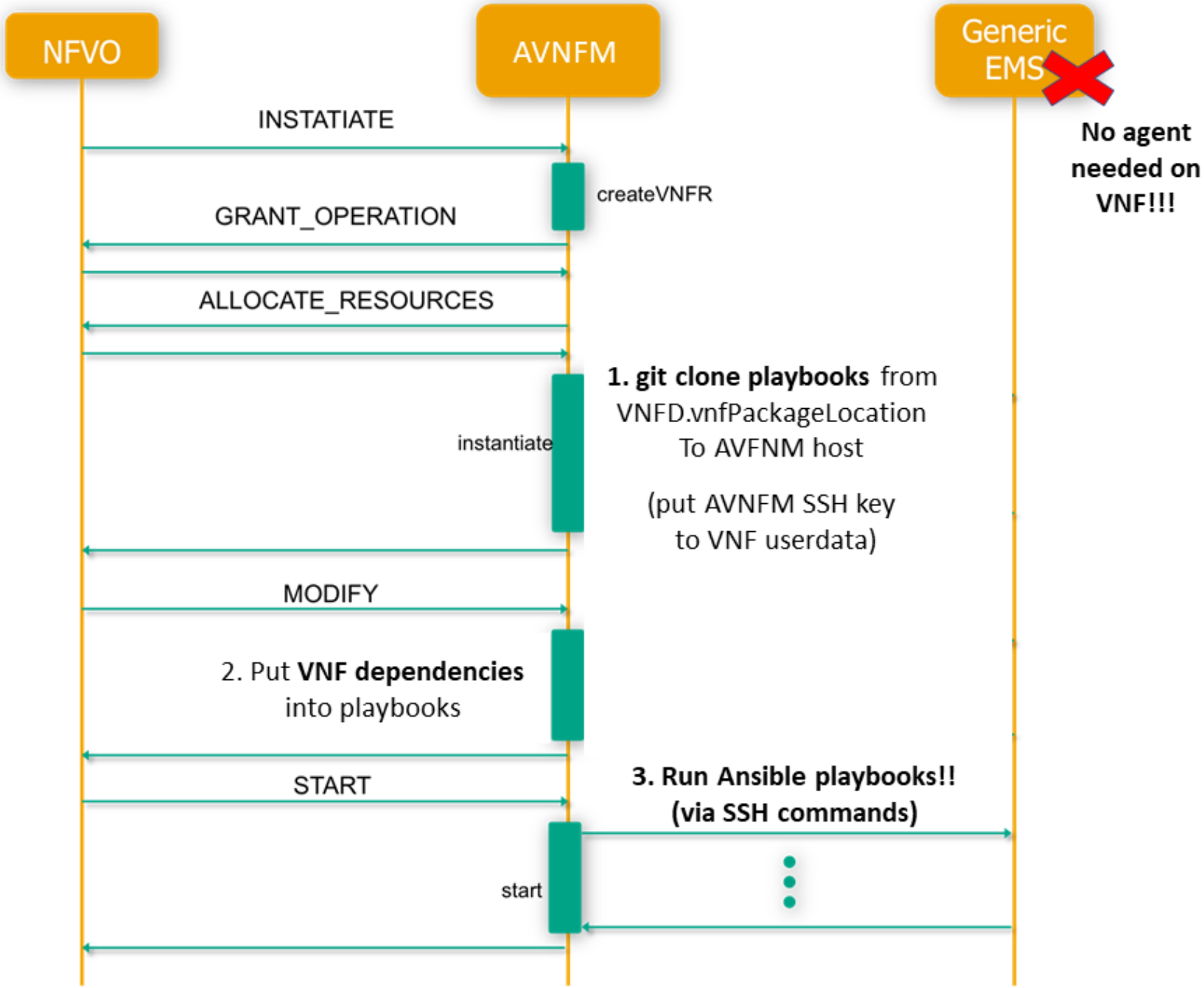
How does it work?



AVNFM Compatibility

- Fully ETSI NFV specifications compliant
- Compatible with Open Baton NFVO
- Compatible with OSM (WIP)
- Compatible with Openstack

The AVNFM fills the gap between customized self-developed ansible tools for NFV and the ETSI NFV specifications, allowing it to be integrated with any NFV-MANO platform compliant with ETSI specifications.

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- **OpenStack Expert**
- **Junior (new diploma/university graduated in computer science or similar)**
- **DevOps Expert**

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