



Department of Computer Science
Computer Networks Research Group

Technology Review



Management of ServiCes Across MultipLE clouds

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Open Source MANO

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OpenBaton



SONATA/PISHAHANG

3.1 Configuration requirements to run Pishahang on a single server or VM

- Operating System: Ubuntu 16.04 as base image (<http://releases.ubuntu.com/16.04/>)
- Minimum Requirements: 4GB RAM, 40GB hard disk and a non-root user account

3.2 OpenStack Installation

We set up an OpenStack environment using DevStack, which is installed via a configuration file named local.conf. The installation guide can also be found at <https://docs.openstack.org/devstack/latest/>

- Other references ¹ ²

3.2.1 Steps of installation:

- Create a user “stack”

```
sudo useradd -s /bin/bash -d /opt/stack -m stack
echo "stack ALL=(ALL) NOPASSWD: ALL" | sudo tee \ /etc/sudoers.d/stack
sudo su - stack
```

- Clone the devstack repository

```
git clone \ https://git.openstack.org/openstack-dev/devstack
cd devstack
```

¹Refer DevStack heat documentation to enable heat service

²Refer DevStack networking-sfc documentation for service chaining

- Create and configure the local.conf file

```
[[local|localrc]]
ADMIN\_PASSWORD=password
DATABASE\_PASSWORD=$ADMIN\_PASSWORD
RABBIT\_PASSWORD=$ADMIN\_PASSWORD
SERVICE\_PASSWORD=$ADMIN\_PASSWORD
```

- Execute the command

```
./stack.sh
```

- After installation check and verify from openstack horizon GUI

Access <http://1.2.3.4>, replace 1.2.3.4 with the IP address of your host Login using user id: admin, password: admin

3.3 Pishahang installation

The Below steps of installation are performed from the non-root user account

- Installing packages

```
sudo apt-get install -y software-properties-common
sudo apt-add-repository -y ppa:ansible/ansible
sudo apt-get update
sudo apt-get install -y git ansible
```

- Clone repository

```
git clone https://github.com/CN-UPB/Pishahang.git
cd Pishahang/son-install
echo sonata | tee ~/.ssh/.vault_pass
```

- Start Installation Replace "<your_ip4_address>" with the IP address SONATA should be available at , also check the command

```
ansible-playbook utils/deploy/sp.yml -e \ "target=localhost
public_ip=<your_ip4_address>" -v
```

- Verify Installation Open your browser and navigate to http://public_ip. Login using the username sonata and password 1234. If the installation was successful, you should now see the dashboard of the service platform

- Installation of son-cli The SONATA CLI toolset can also be installed via the Python setup script

```
git clone https://github.com/sonata-nfv/son-cli.git
cd son-cli
python3 setup.py install
```

- Test if its working by invoking

```
son-workspace -h
son-package -h
son-publish -h
son-push -h
son-monitor -h
```

Reference Link - <https://github.com/sonata-nfv/son-cli#all-dists-using-setuptools>

3.4 Service Descriptor Packaging and uploading

We also need the son-cli to be installed and son-examples repository to be cloned in the environment

- Add WIM
 - Open your browser and navigate to http://public_ip
 - Open the "WIM/VIM Settings" tab

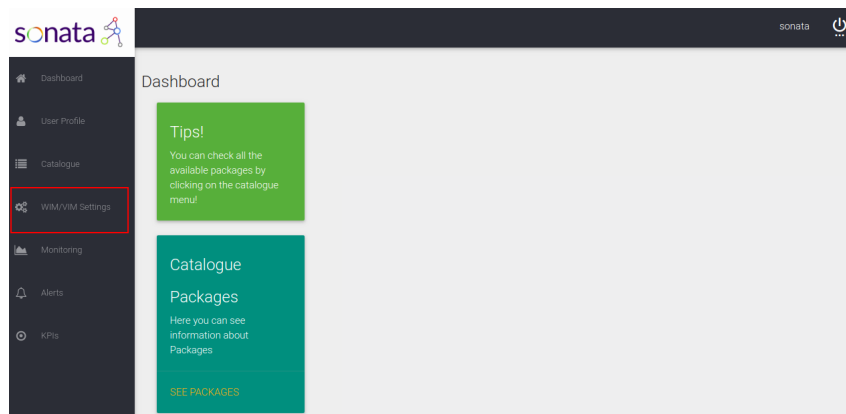


Figure 3.1: Sonata Dashboard

- click on add a WIM
- Select "Mock" WIM vendor
- Enter any WIM name(e.g. Sonata Test), WIM address(e.g. local host), username(e.g., Sonata) and password(e.g. 1234)
- Confirm by clicking "SAVE"

3.4 SERVICE DESCRIPTOR PACKAGING AND UPLOADING

The screenshot shows a web form titled "New Wim". It contains five input fields arranged in two columns. The first column has "Wim Name" (value: SonataTest), "Wim address" (value: localhost), and "Password" (value: ****). The second column has "Wim vendor" (value: MOCK) and "Username" (value: Sonata). At the bottom right, there are "CANCEL" and "SAVE" buttons.

Figure 3.2: Add WIM

- Adding OpenStack VIM
 - Click on add a VIM
 - Enter the VIM name(e.g. DevStack), select the WIM just created, enter the country(e.g. germany) and city(Paderborn)
 - Select "Heat" VIM vendor

The screenshot shows a web form titled "New Vim". It is divided into three main sections. The "General Configuration" section has fields for "VIM Name" (DevStavk), "Select WIM" (e1265246-51e7-491e-9134f), "Country" (Germany), and "City" (Paderborn). The "Compute Configuration" section has a "Vim Vendor" dropdown set to "Heat". The "Networking Configuration" section has a "Network configuration VIM Type" dropdown set to "Select vim vendor". At the bottom right, there are "CANCEL" and "SAVE" buttons.

Figure 3.3: Add VIM

- Tenant ID: DevStack project id (e.g. sonatademo), Tenant External Network ID: DevStack ID of the public network and Tenant External Router ID: DevStack ID of the router created under sonatademo user i.e. sonata-router as shown below

CHAPTER 3. SONATA/PISHAHANG

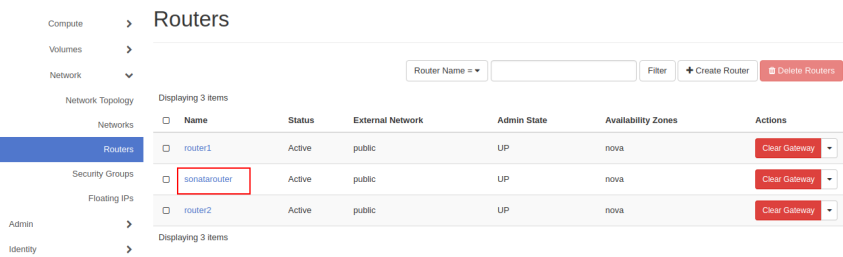


Figure 3.4: Select Router

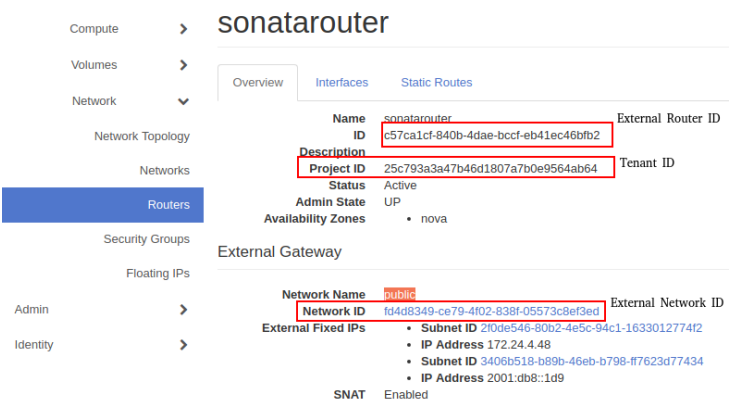


Figure 3.5: Select IDs

- VIM Address: DevStack (131.234.29.34)
- Vim Vendor: “OVS”,Username: sonatademo,Password: password of the user sonatademo (e.g. sonata),Domain: Default
- Click on "Save"

Compute Configuration		Networking Configuration	
Vim Vendor		Network configuration VIM Type	
Heat		Select vim vendor	
Tenant ID	Vim address	OVS	
e3cf6987c0ff43c48	131.234.29.112		
Tenant External Network ID	Tenant External Router ID	Vim address	
fd4d8349-ce79-4f02	c57ca1cf-840b-4dae	131.234.29.112	
Username	Password	Username	Password
sonatademo	*****	sonatademo	*****
Domain			
Default			
		CANCEL	SAVE

Figure 3.6: VIM Details

– On-boarding Service Package

```
git clone \ https://github.com/sonata-nfv/son-examples.git

son-workspace --init

son-validate --project \ son-examples/service-projects/sonata-demo

son-package --project \ son-examples/service-projects/sonata-demo
            -n \ service_package

son-access config --platform_id ServicePlatform \ --new --url
            http://131.234.29.102 --default

son-access auth -u sonata -p 1234

son-access push --upload service_package.son
```

Reference video - <https://www.youtube.com/watch?v=RsXUIt4rzF0>

3.5 Linking VIM to sonata

Login to the DevStack dashboard: <http://131.234.29.34/dashboard>. There are two users created during installation admin and demo. Password for both users is sonata

- Create New User and Project
 - Login as admin user in domain Default and create new user (e.g. sonatademo)
 - In the menu, go to Identity->User (Create User)
 - Give the admin role to the new user

Create User

Domain ID
default

Domain Name
Default

User Name *
sonatademo

Description

Email

Password *

Confirm Password *

Primary Project
sonatademo

Role
admin

☒ **Enabled**

Description:
Create a new user and set related properties including the Primary Project and Role.

Cancel Create User

Figure 3.7: Create user

- Add a new project with the below details
 - Project name/tenant name: sonatademo
 - Allocate maximum number of resources for that project under Quotas tab

Edit Quotas

Compute * Volume * Network *

Instances * 100

VCPUs * 100

RAM (MB) * 51200

Metadata Items * 128

Key Pairs * 100

Server Groups * 10

Server Group Members * 10

Injected Files * 50

Injected File Content (Bytes) * 52100

Length of Injected File Path * 255

Cancel Save

Figure 3.8: Edit project quotas

- Create Private Network
 - Login as new user(e.g. sonatademo)
 - Create a network(e.g. sonata-priv) and add the subnet as well (e.g. sonata-priv-sub)
 - Add the router
 - Use any private network address, for example 192.168.x.0/24. While creating the router select the External Network as public (Error: Reference source not found). Add the sonata-priv-sub as the interface to the router

Create Router

Router Name sonata-router

Description: Creates a router with specified parameters.

☒ Enable Admin State

External Network public

Cancel Create Router

Figure 3.9: Create router

3.6 Network Service Instantiation

- Open your browser and navigate to `http://public_ip:25001`
- Open the "Available Complex Services" tab
- Click the "Instantiate" button of the service you want to deploy
- Confirm the instantiate modal (ingress and egress can be empty)