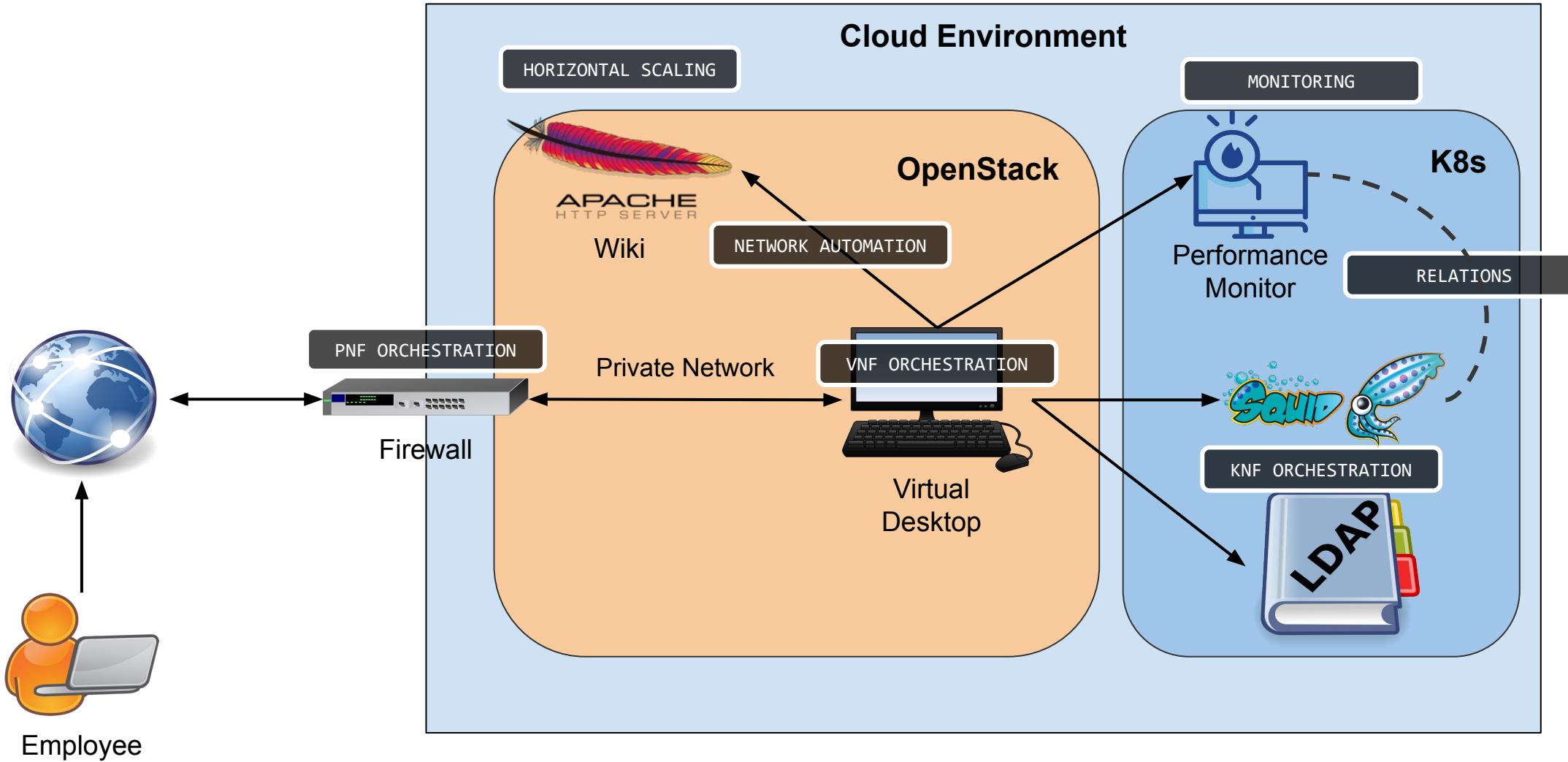


# Open Source MANO

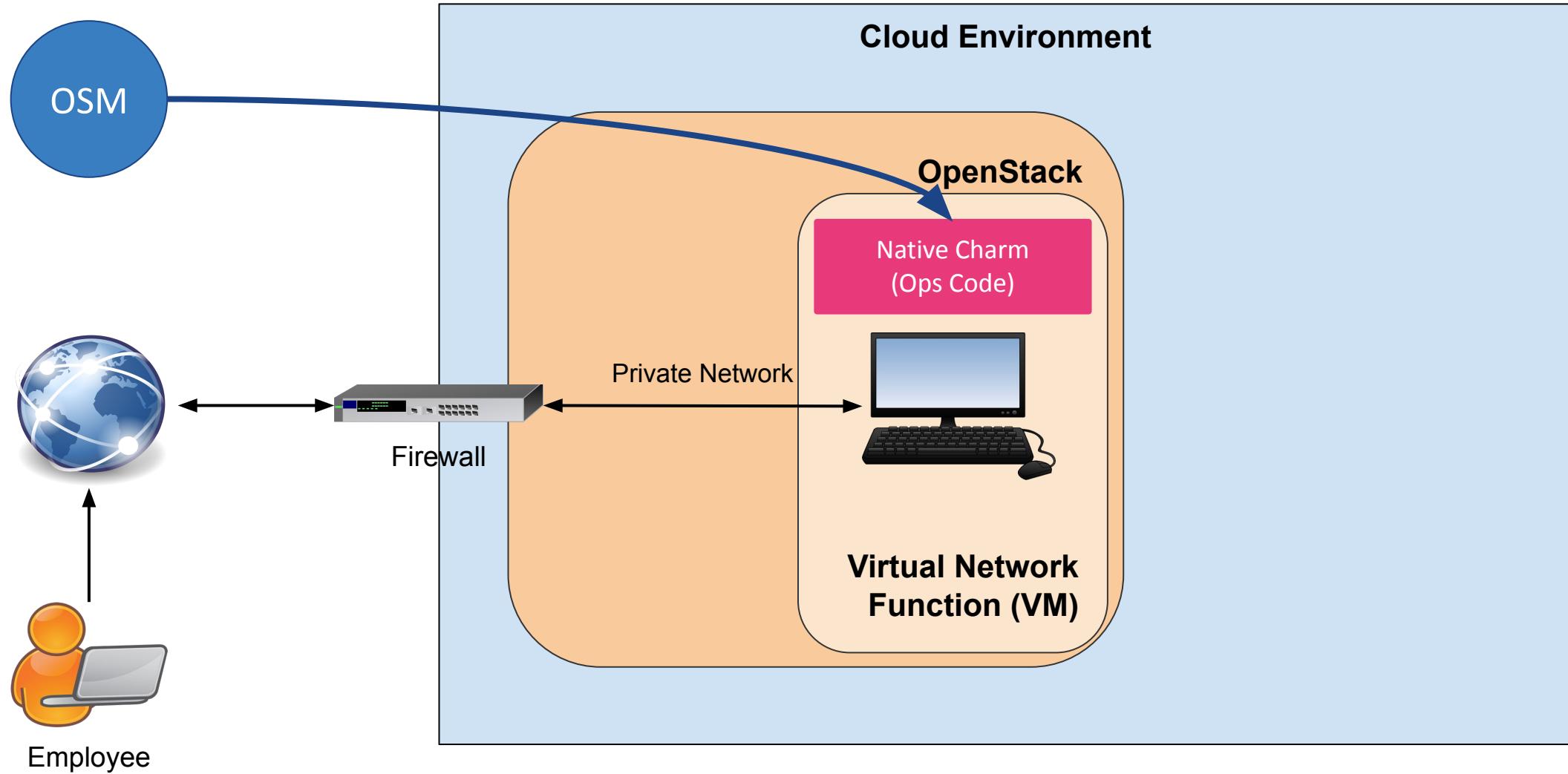
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**OSM-MR#10 Hackfest**  
OSM Primitives for VNFs  
Mark Beierl (Canonical)

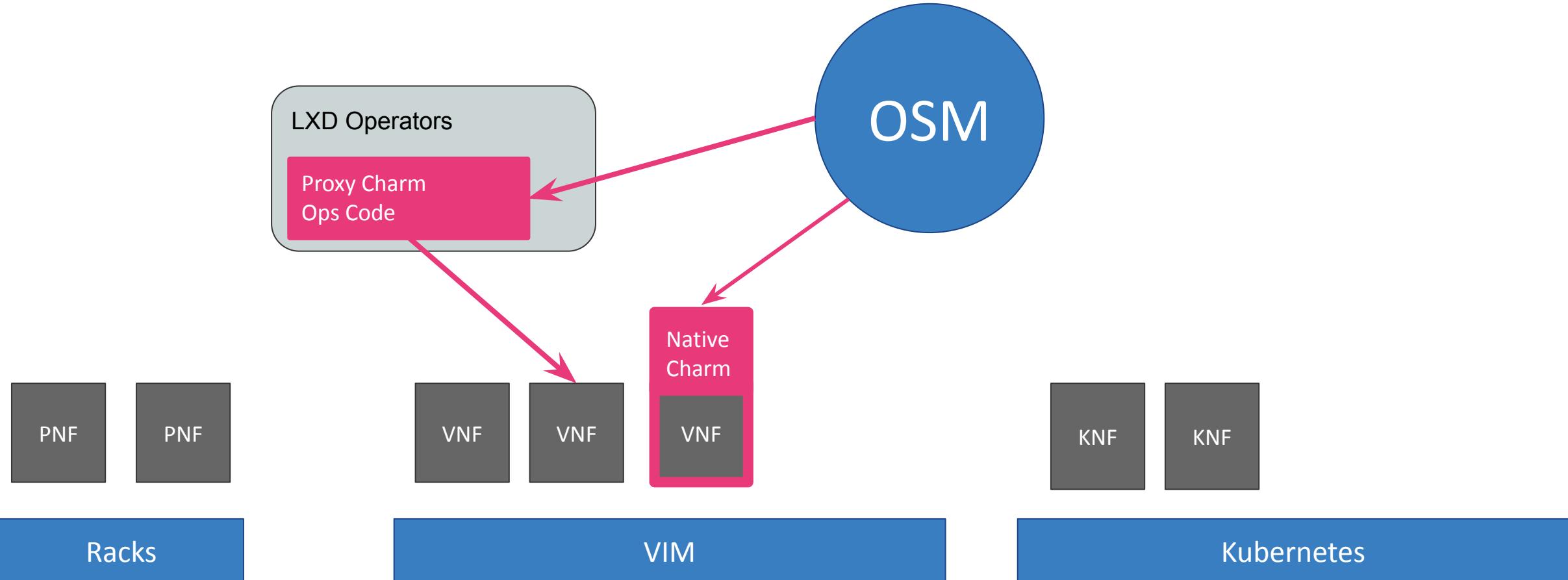
# The Big Picture



# Your Service Architecture



# Focus on Virtualised NF operations



# Helpful Scripts

## Scripts in ~/*Hackfest/HD2.1-VNF-Primitives*

- **virtual-pc-build.sh**
  - Builds the descriptors from source
- **virtual-pc-launch.sh**
  - OSM CLI command to launch the network service
- **virtual-pc-watch-progress.sh**
  - Command to help you watch the progress (ctrl-c to exit)
- **virtual-pc-actions.sh**
  - Lists a series of commands that we can execute later

# Building the Package

```
cd ~/osm-packages
```

```
~/Hackfest/HD2.1-VNF-Primitives/virtual-pc-build.sh
```

```
osm_instructor_5@osm-jumphost:~/osm-packages$ ~/Hackfest/HD2.1-VNF-Primitives/virtual-pc-build.sh
=====
Building operator charms
=====
Already using interpreter /usr/bin/python3
Using base prefix '/usr'
New python executable in /home/osm_instructor_5/osm-packages/hackfest_virtual-pc_vnfd/charms/virtual-pc-src/ve
nv/bin/python3
Not overwriting existing python script /home/osm_instructor_5/osm-packages/hackfest_virtual-pc_vnfd/charms/vir
```

# View Uploaded Package

## NS Packages

[Compose a new NS](#)

Just drag and drop files or click here to upload files

Entries 10



Name	Identifier	Version	Designer	Description	Actions
Name	Identifier	Version	Designer	Description	
hackfest_virtual-pc_ns	491b3ff9-53cd-40c9-81c1-10a7d4a6487a	1.0	OSM	Virtual Desktop Computer with Mate Desktop and RDP	Action ▾

Product Name	Identifier	Version	Provider	Type	Description	Actions
Product Name	Identifier	Version	Provider	Select	Description	
hackfest_virtual-pc_vnf	d3035a95-8718-4281-991c-d3ca673491f7	1.0	Canonical	vnfd	Virtual Desktop Computer with Xubuntu Desktop and RDP	Action ▾

# Launch Service

```
~/Hackfest/HD2.1-VNF-Primitives/virtual-pc-launch.sh
```

```
=====
Launching network service with VIMID bf5f184c-8ce0-4959-99d9-598582483b80
=====
dd336fb8-283d-4ae6-9d36-bb3d370d6399
=====
Done
=====
```

# Status in OSM

## NS Instances

Init running / configured failed
Entries 10

Name	Identifier	Nsd name	Operational Status	Config Status	Detailed Status	Actions
<input type="text" value="Name"/>	<input type="text" value="Identifier"/>	<input type="text" value="Nsd name"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="text" value="Detailed Status"/>	
virtual-desktop	dd336fb8-283d-4ae6-9d36- bb3d370d6399	hackfest_virtual-pc_ns			Stage 2/5: deployment of KDUs, VMs and execution environments. 0/2.  Deployed at VIM	

# VM Launched in OpenStack

- IP address on Private Network
- Management IP address in 172.21.18.0/24 subnet range

virtual-desk	private	-	Active	nova	None	Running	1 minute
top-1-virtua	ubuntu	192.168.239.40	hf.virtual-				
l-pc-vdu-0	20.04	osm-ext	desktop	-			
		172.21.18.92					

# Progress with osm ns-show

```

| admin-status          | "ENABLED"
| deploymentStatus     | null
| configurationStatus | [
| vcaStatus             |
| {                     |
|   "status": "INSTALLING SW"
|   "meter_statuses": {},
|   "status": {
|     "status": "Maintenance",
|     "agent_status": {
|       "status": "executing",
|       "workload_status": {
|         "status": "Maintenance",
|         "agent_status": {
|           "status": "started",
|           "instance_status": {
|             "status": "running",
|             "modification_status": {
|               "status": "idle",
|               "Meter-status": {
|                 "model-status": {
|                   "status": "available",
|                   "init": "init"
|                   "init": "Stage 2/5: deployment of KDU, VMs and execution environments. 0/2. Deployed at VIM"
|                   "vim_status": "DONE"
|                   "vim_status": "DONE"
|                   revision_number: 175, 'router:external': true, segmentation_id: null,\n                     shared: true, status:
|                     "vim_status": "ACTIVE"
|                     'router:external': false, segmentation_id: null, shared: false,\n                     status: ACTIVE, subnets:
|                     "vim_status": "ACTIVE"
|                     "operational-status": "running"
|                     "operational-status": "init",
|                     "detailed-status": "10% Preparing libblockdev-part2 (amd64)",
|                     "VCA-status": "Maintenance",
|                     "status": "running",
|                     "status-time": "1614889418.2858396",
|                   }
|                 }
|               }
|             }
|           }
|         }
|       }
|     }
|   }
| }
| operational-status      |
| config-status           |
| detailed-status          |

```

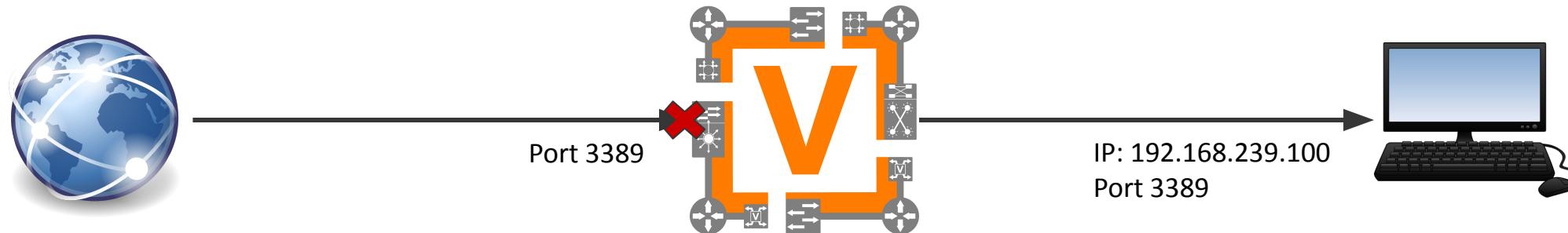
# Virtual Desktop is Ready

- Once configuration\_status is “Ready”, so is your virtual desktop
- Note
  - this will not be reachable via the management network

```
  | admin-status      | "ENABLED"
  | deploymentStatus | null
  | configurationStatus | [
    |                   |   "status": "READY"
```

# Add Port Forward

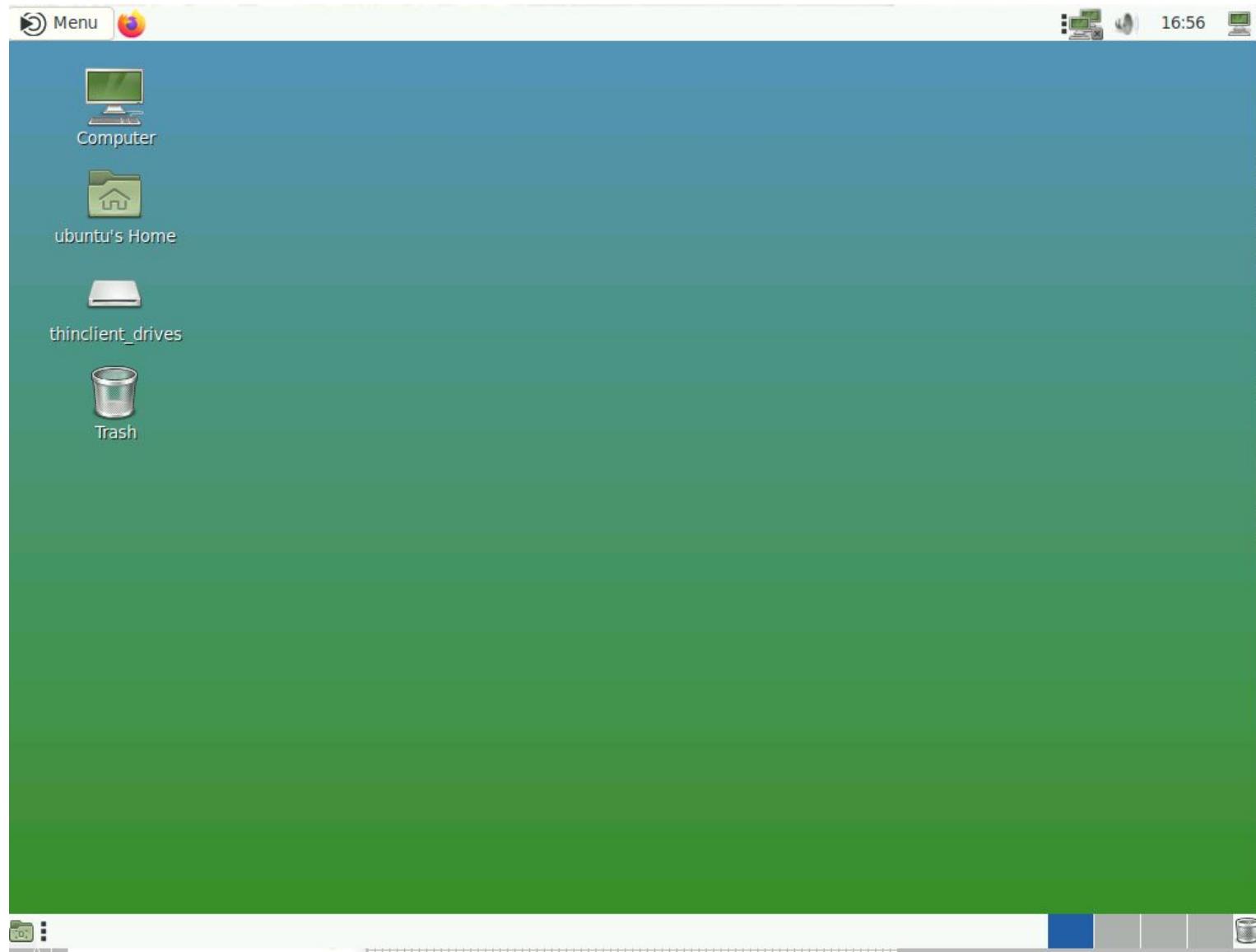
- Need to tell VyOS PNF to add a port forward rule  
**~/Hackfest/HD1.7-PNF/firewall-actions.sh**



```
DESKTOP_IP=`osm ns-show virtual-desktop --literal | \
  yq e '.vcaStatus.*.machines.0.network_interfaces.ens3.ip_addresses.0' -`
```

```
osm ns-action firewall --vnf_name VYOS-PNF --action_name add-port-forward --params "{ruleNumber: '10', sourcePort: '3389', destinationAddress: \"${DESKTOP_IP}\", destinationPort: '3389'}"
```

# Connect to Your Desktop



# Perform Some Actions

```
~/Hackfest/HD2.1-VNF-Primitives/virtual-pc-actions.sh
```

# Package Management

- Adds some apt packages to the desktop

```
osm ns-action virtual-desktop --vnf_name 1 --action_name add-package  
--params '{package:  
"ubuntu-mate-wallpapers-disco,ubuntu-mate-wallpapers-eoan"}'
```

- Remove apt packages from the desktop

```
osm ns-action virtual-desktop --vnf_name 1 --action_name  
remove-package --params '{package: "ubuntu-mate-wallpapers-disco"}'
```

- Update system software (apt upgrade)

```
osm ns-action virtual-desktop --vnf_name 1 --action_name update-system
```

# Snap Management

- Adds a classic confinement snap to the desktop

```
osm ns-action virtual-desktop --vnf_name 1 --action_name add-snap  
--params '{package: "code --classic"}'
```

- Remove snap from the desktop

```
osm ns-action virtual-desktop --vnf_name 1 --action_name remove-snap  
--params '{package: "code"}'
```

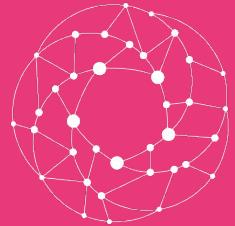
# Desktop Maintenance

- Reboot the desktop computer

```
osm ns-action virtual-desktop --vnf_name 1 --action_name reboot
```

- Announce a message

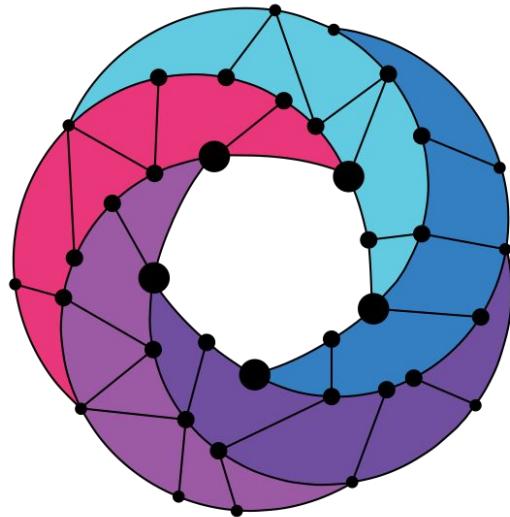
```
osm ns-action virtual-desktop --vnf_name 1 --action_name announce  
--params '{message: "Hello from the Hackfest!"}'
```



# Open Source MANO

## Discuss

- What is a VNF?
- How does OSM model VNFs?
- How does a VNF get launched?
- What is a native charm and how is it different from proxy?
- How do actions get run?



# Open Source MANO

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Find us at:  
[osm.etsi.org](http://osm.etsi.org)  
[osm.etsi.org/wikipub](http://osm.etsi.org/wikipub)