Tacker:
VNF Lifecycle Management and Beyond

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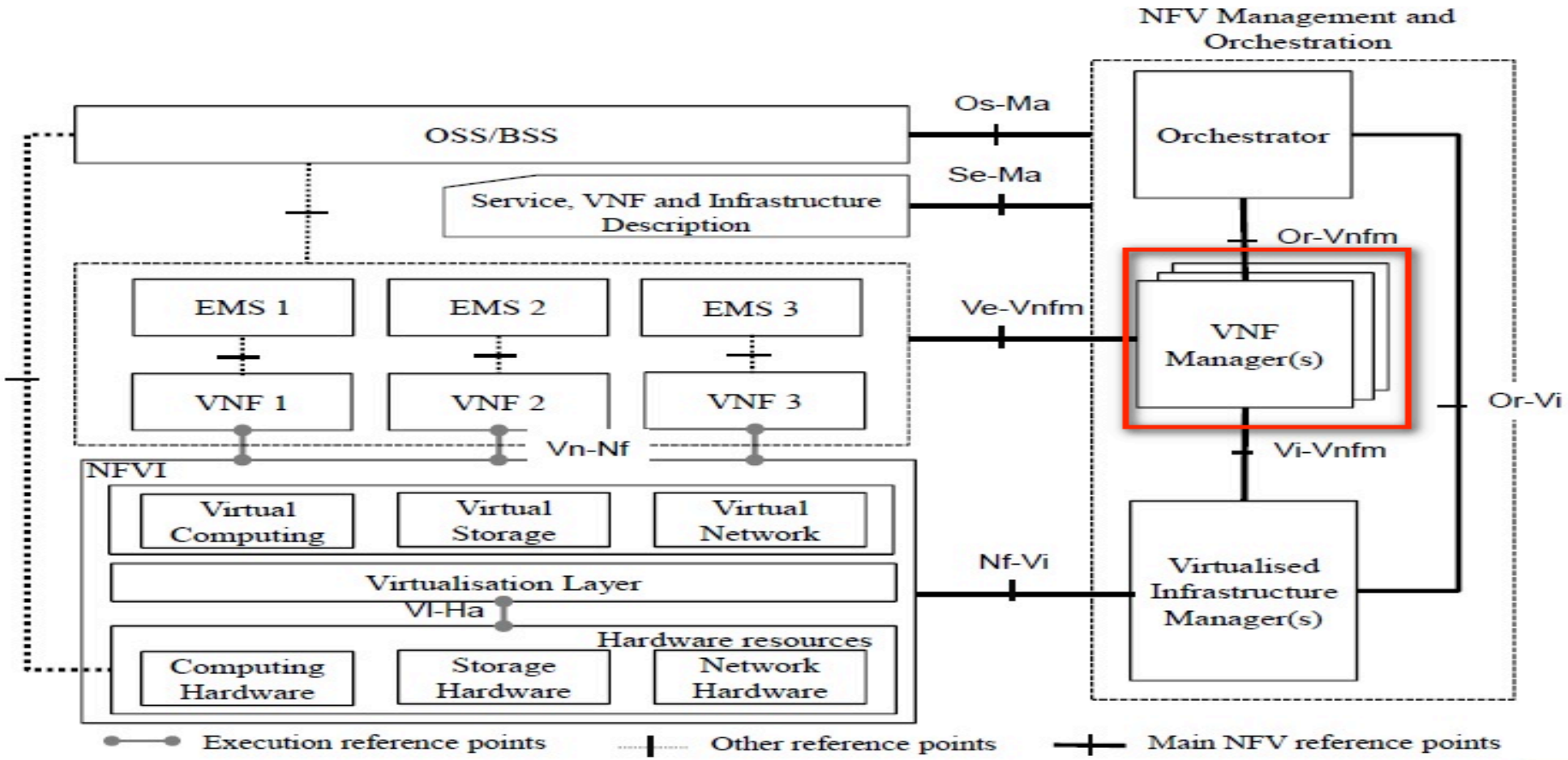
IETF #93

Agenda

- General Background
- Tacker Architecture & Workflow
- Tacker Features
- Project Update & Roadmap

NFV MANO


NFV Management and Orchestration
OSS/BSS
Os-Ma
Orchestrator
Service, VNF and Infrastructure Description
Se-Ma
Or-Vnfm
EMS 1
EMS 2
EMS 3
Ve-Vnfm
VNF Manager(s)
VNF 1
VNF 2
VNF 3
Or-Vi
Vn-Nf
Vi-Vnfm
NFVI
Virtual Computing
Virtual Storage
Virtual Network
Nf-Vi
Virtualisation Layer
Virtualised Infrastructure Manager(s)
Vl-Ha
Hardware resources
Computing Hardware
Storage Hardware
Network Hardware
Execution reference points
Other reference points
Main NFV reference points

Role of VNF Manager

- VNF Instantiation and Termination
- Monitoring Health and Performance Indicators
- Self Healing and Auto Scaling
- Interface to Vendor specific Element Management systems
- VNF Image update management
- Manages group of components belonging to same VNF instance

Why general purpose VNF Manager ?

- Most VNF Manager functions are generic and common
  - applicable to most types of VNFs
- Avoids vendor lock-in
- Multi-tenant aware

Why on OpenStack ?

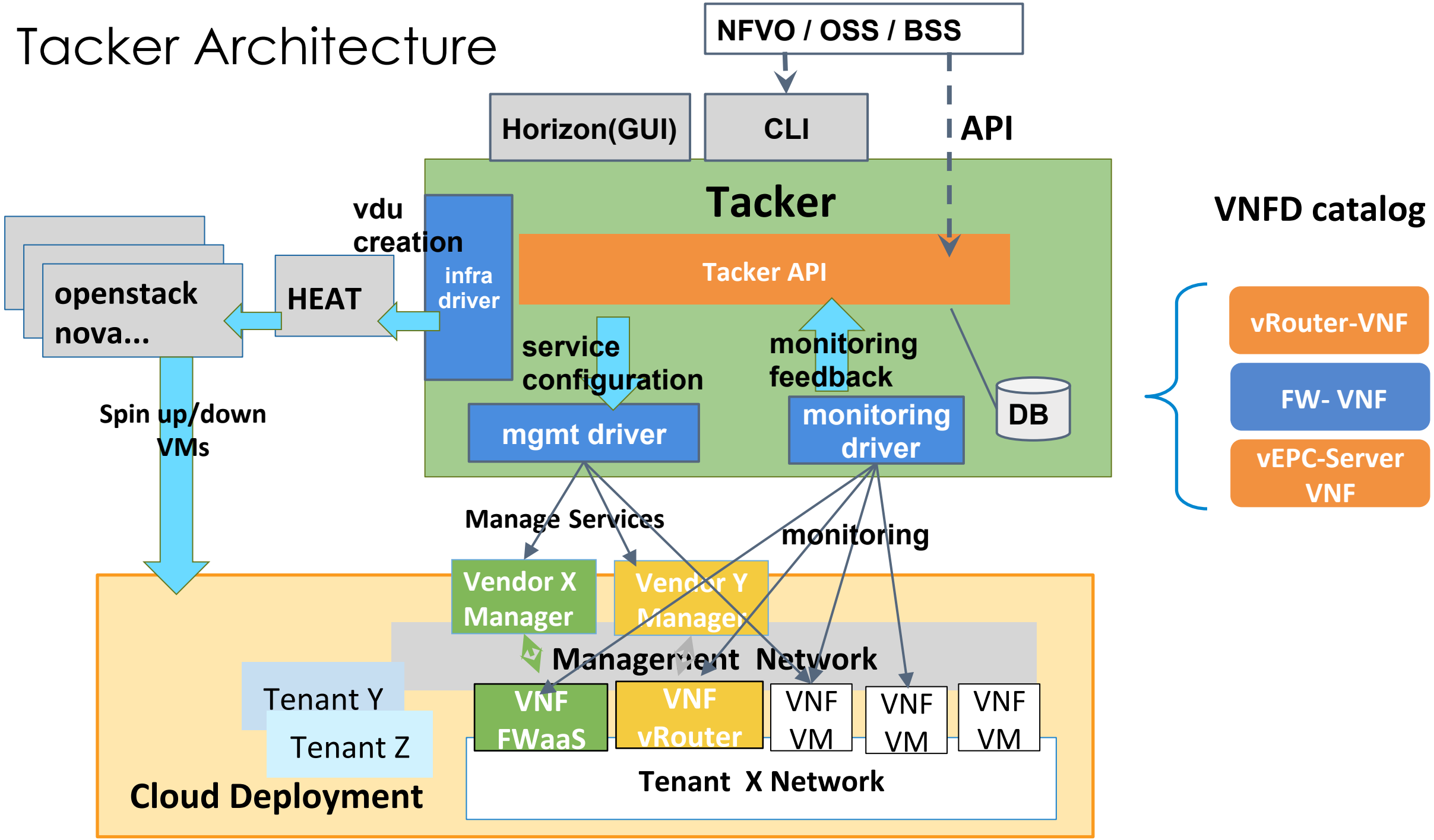
- OpenStack has well-known framework - *plugins and drivers* – to address Vendor and VNF specific components
- Common installation and deployment as VIM
- OpenStack has ample projects to address VNF Manager's functional needs – Heat, Murano, Monasca
- OpenStack based VNF Manager can be used as quick reference implementation of MANO specs

Here comes

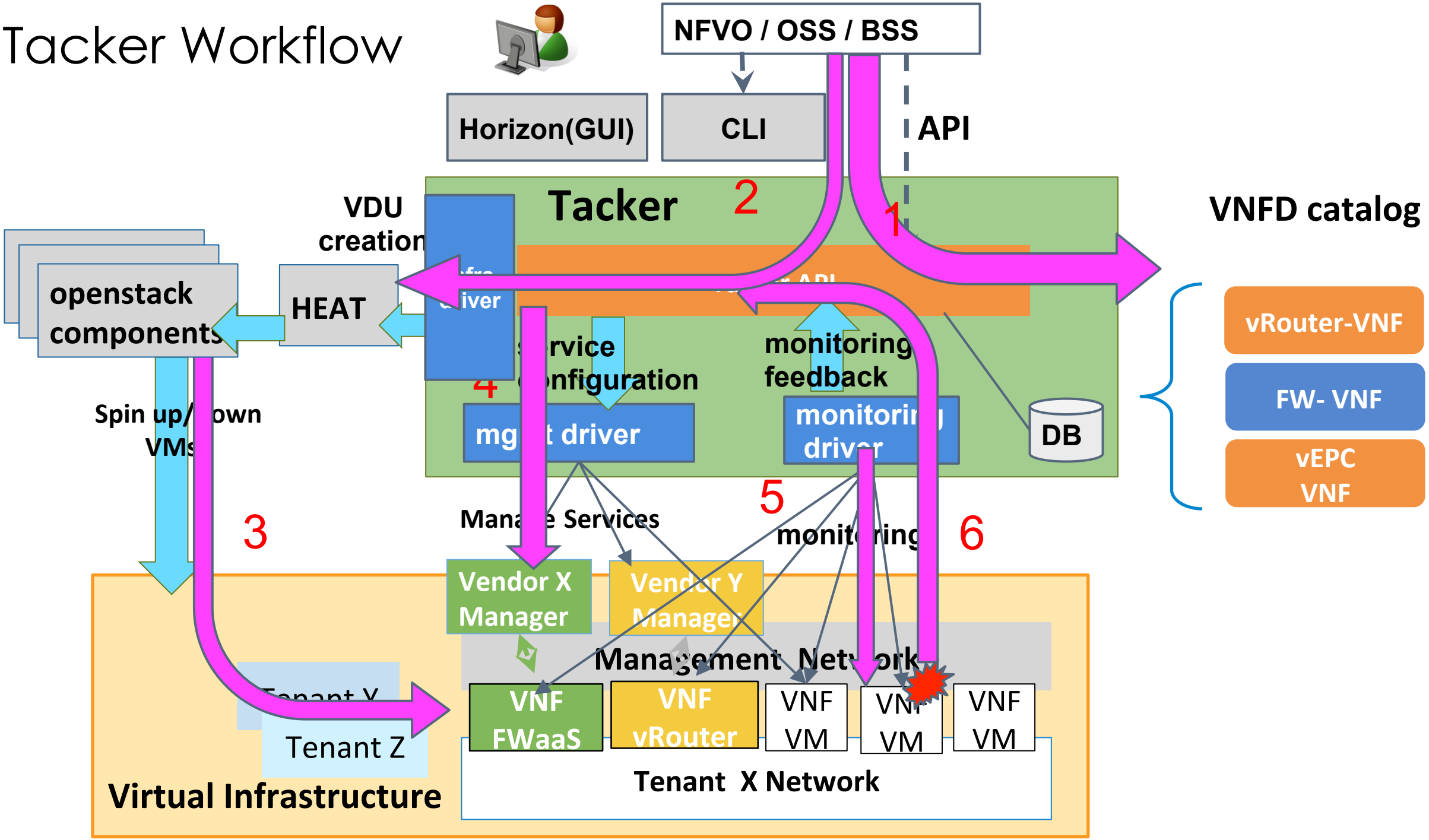
Tacker

a new OpenStack service addressing
NFV Orchestration and ***VNF Manager*** use-cases

Tacker Architecture



Tacker Workflow



Tacker VNF Catalog

- Repository of VNF Descriptors (VNFD)
- VNF definition using TOSCA templates
- Support for multiple VMs per VNF (VDUs)
- Tacker APIs to on-board and maintain VNF Catalog
- VNFDs are stored in Tacker DB

VNFD using TOSCA

- Describes the VNF attributes
  - Glance image IDs
  - Nova properties - Placement, CPU Pinning, NUMA policy, etc
  - Performance Monitoring Policy
  - Auto-Healing Policy
  - Auto-Scaling Policy
- Working with Heat-Translator team
  - Expect deeper engagement with TOSCA NFV sub-group in OASIS

Tacker Lifecycle Management

- Tacker API deploys VNF from the VNF Catalog
- Pluggable infra driver framework
  - Nova, Heat (default)
  - HEAT Driver uses in-built TOSCA to HEAT convertor
  - Instantiates one or more VMs described in TOSCA
- Terminate VNF will delete all VMs associated with VNF instance

VNF Auto Configuration

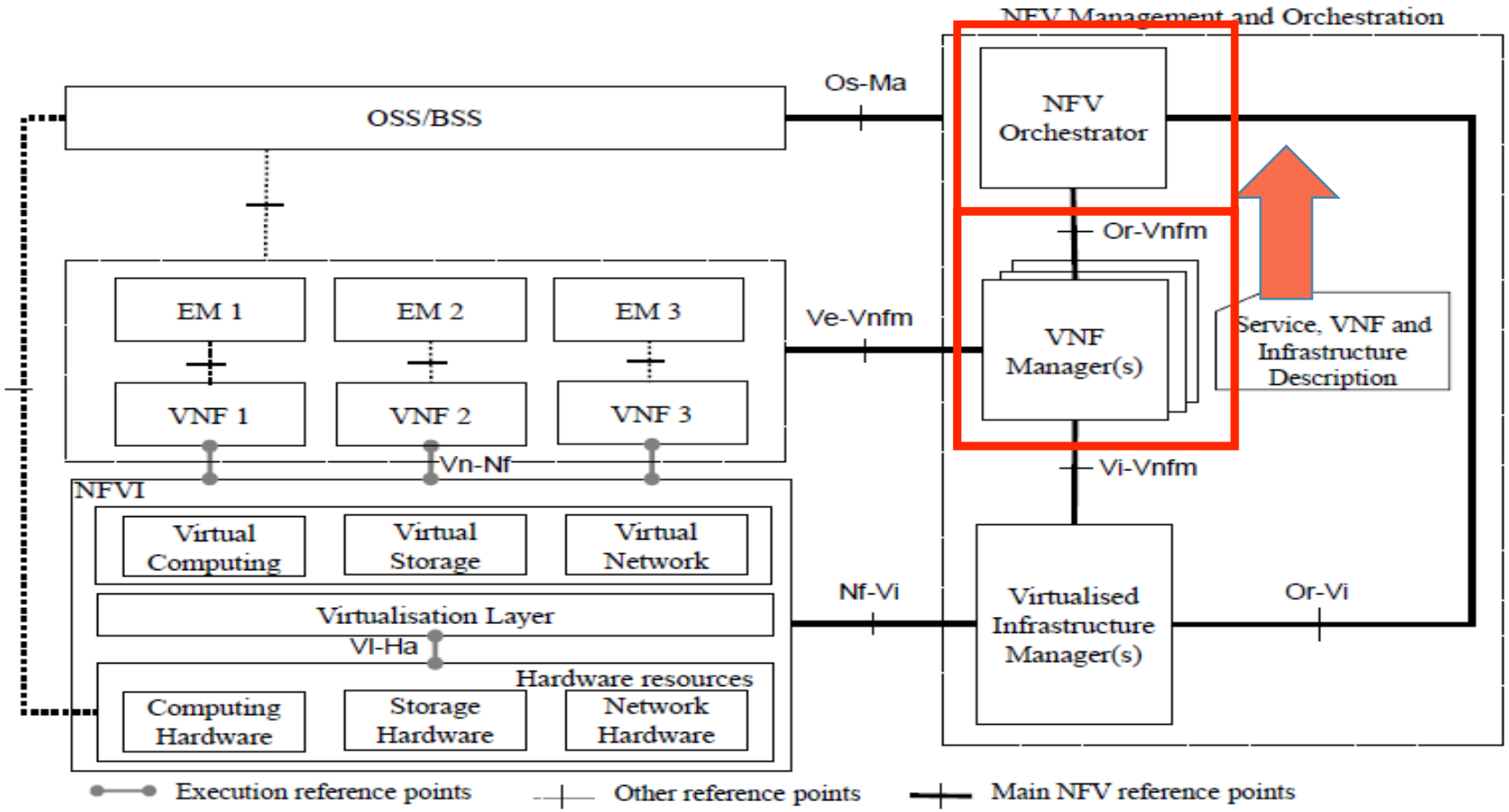
- Tacker provides a Management Driver Framework
- Facilitates VNF configuration based on Service selection
- Inject initial configuration using:
  - config-drive
  - custom mgmt-driver: connect using ssh / RESTapi and apply configuration
- Update configuration in active state
- Extendable!

VNF Self-Healing

- Tacker health check starts as VNF becomes ready
- Ongoing network connectivity check
- Auto-restart on failure – based on VNFD policy
- Extendable Vendor and Service specific Health Monitoring Driver framework

Tacker - Roadmap

NFVO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Tacker Roadmap

- TOSCA NFV Profile support (using heat-translator)
- MANO API enhancements
- Enhanced Health Monitoring (framework, http-alive, etc)
- Auto Scaling support
- Support for NSD and VNFFG
- VNFFG -> SFC mapping

Get Involved

- Stackforge
  - http://git.openstack.org/cgit/stackforge/tacker/
  - http://git.openstack.org/cgit/stackforge/python-tackerclient/
  - http://git.openstack.org/cgit/stackforge/tacker-horizon
  - http://git.openstack.org/cgit/stackforge/tacker-specs
- IRC
  - on-demand: Thursday 1700 UTC @ #openstack-meeting
  - IRC channel: #tacker
- Wiki
  - https://wiki.openstack.org/wiki/Tacker

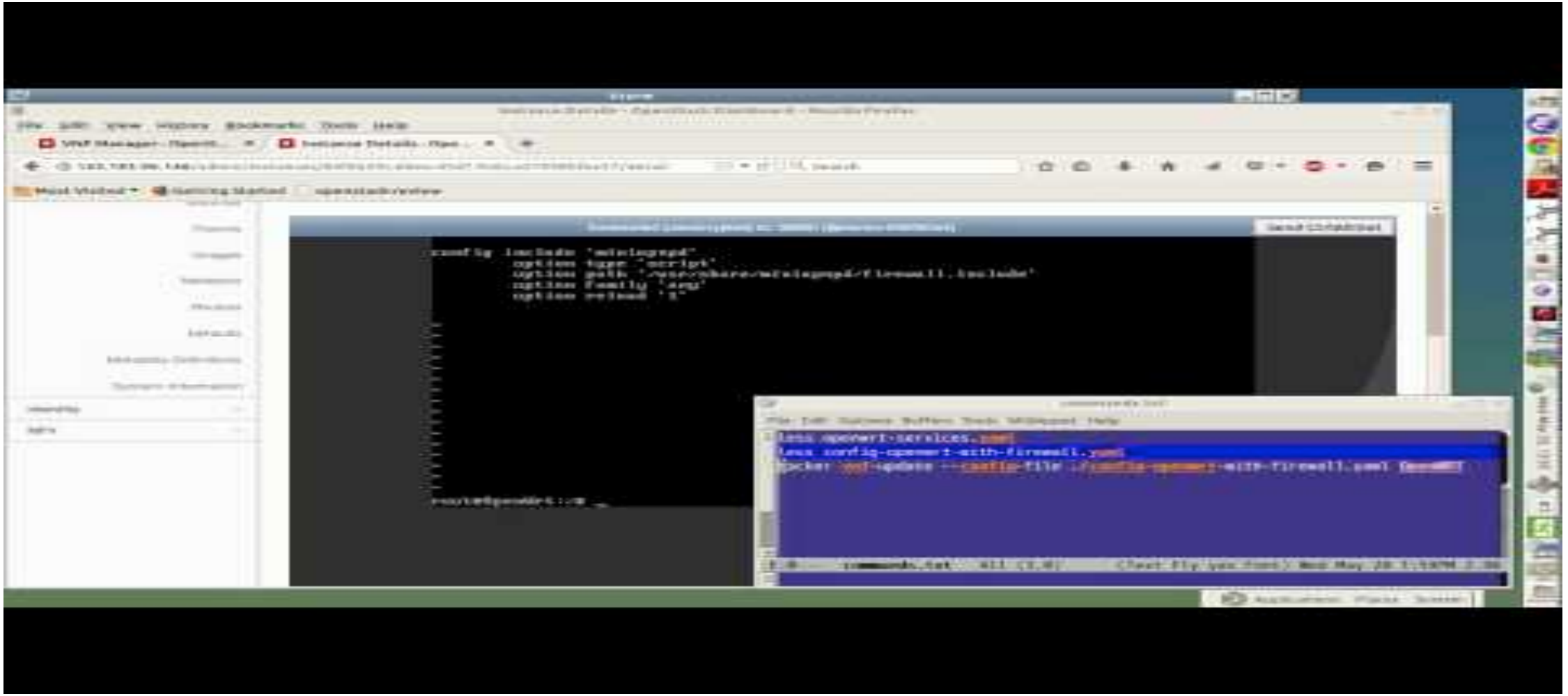
Q & A

Backup slides

VNF Auto Scaling

- Auto-Scale VNF based on policy
- Continuous performance monitoring according to KPI described in VNFD
- Basic Auto-Scaling using common VM metric
  - CPU threshold
  - Custom Monitoring Metric
  - VNF can chose to send specific “load” alerts to VNF manager
- Extendable Vendor and Service specific Performance Monitoring Driver framework

Demo



http://youtu.be/Zsa6FDHqpC0