



UNIVERSITÄT  
PADERBORN



**UPB — Computer Networks Group**

# Management of ServiCes Across MultipLE clouds

**SCrAMbLE — Work Packages Demo**

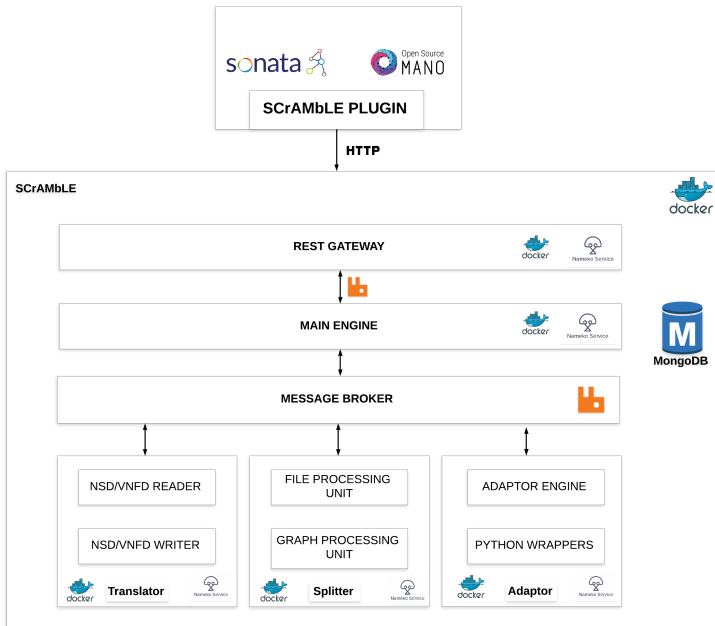
# Agenda

- 1 Introduction
- 2 Adaptor Demo
- 3 Translator Demo
- 4 Splitter Demo
- 5 Conclusion

# SCrAMbLE - Requirements and Architecture

Three work packages:

- SDT
- SDS
- MA





# ADAPTOR

# Adaptor Design

- Common Interface

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  - Python Base Class

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  - Semi-automated generation from ETSI Document



210 lines (154 sloc) 5.05 KB

Raw Blame History  

```

1  """ Common Interface - nsd
2
3  Reference interface to implement REST API Wrappers
4  for MAND Frameworks Defined according to the
5  ETSI GS NFV-SOL 005 V2.4.1 (2018-02).
6
7  Defines abstract methods which are to be implemented
8  by the wrappers.
9  """
10
11  from abc import ABC, abstractmethod
12
13
14  class CommonInterfaceNsd(ABC):
15      """
16      NSD Management Interfaces
17
18      Base: {apiRoot}/nsd/v1
19      """
20
21      @abstractmethod
22      def get_ns_descriptors(self):
23          """ NSD Management Interface - NS Descriptors
24
25          /ns_descriptors
26          GET - Query information about multiple
27              NS descriptor resources.
28          """
29          pass
30

```

# Adaptor Design

- Common Interface
  - Python Base Class
  - Semi-automated generation from ETSI Document
  - ...
- Highly Documented

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  - ...
- Highly Documented
  - Very important aspect of Adaptor
  - Tracked on excel sheet

# Adaptor Design

VNF PACKAGE MANAGEMENT INTERFACE								
Resource name	HTTP method	Meaning	SC/AMBLE common interface methods	OSM-RS endpoint	SONATA-3 endpoint	SC/AMBLE endpoint	OSM-RS Adaptor	SONATA-3 Adaptor
VNF packages	GET	Query VNF packages information	get_vnf_packages	/vnfpkgm/v1/vnf_packages_content	/catalogues/api/v2/vnfs	/vnfpkgm/v1/vnf_packages		
	POST	Create a new individual VNF package resource	post_vnf_packages	/vnfpkgm/v1/vnf_packages_content	/catalogues/api/v2/vnfs	/vnfpkgm/v1/vnf_packages		
Individual VNF package	GET	Read information about an individual VNF package	get_vnf_packages_vnfpkgid	/vnfpkgm/v1/vnf_packages_content/vnfpkgid		/catalogues/api/v2/vnfs/vnfpkgid		
	PATCH	Update information about an individual VNF package	patch_vnf_packages_vnfpkgid					
	DELETE	Delete an individual VNF package	delete_vnf_packages_vnfpkgid	/vnfpkgm/v1/vnf_packages_content/vnfpkgid	/catalogues/api/v2/vnfs/vnfpkgid			
VNFID of an individual VNF	GET	Read VNFID of an on-boarded VNF package	get_vnf_packages_vnfpkgid_vnfid	/vnfpkgm/v1/vnf_packages/vnfpkgid/vnfid				
VNF package content	GET	Fetch an on-boarded VNF package	get_vnf_packages_vnfpkgid_package_content	/vnfpkgm/v1/vnf_packages/vnfpkgid/package_content				
	PUT	Upload a VNF package by providing the content of the VNF	put_vnf_packages_vnfpkgid_package_content	/vnfpkgm/v1/vnf_packages/vnfpkgid/package_content				
Upload VNF package from URI	POST	Upload a VNF package by providing the address information of	post_vnf_packages_vnfpkgid_package_content					
Individual VNF package artifact	GET	Fetch individual VNF package artifact	get_vnf_packages_vnfpkgid_artifacts_artifactid	/vnfpkgm/v1/vnf_packages/vnfpkgid/artifacts				
Subscriptions	POST	Subscribe to notifications related to on-boarding and/or changes of VNF	post_vnf_packages_subscriptions					
	GET	Query multiple subscriptions	get_vnf_packages_subscriptions					
Implemented in Mono Adaptor								

...

# Adaptor REST API

- Unified access to MANO instances

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- Unified access to MANO instances
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  - Enforce if a MANO is using non-standard endpoint
- **MANO**: parameter sent with each request
  - Currently supports **OSM** and **Sonata**



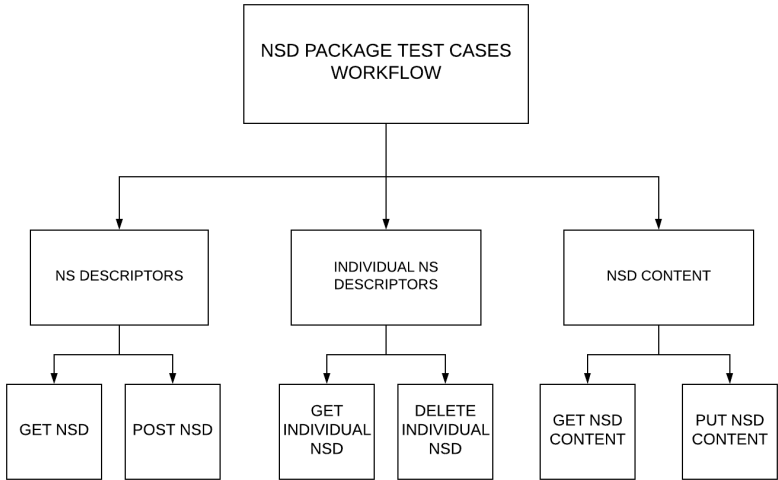
DEMO —>

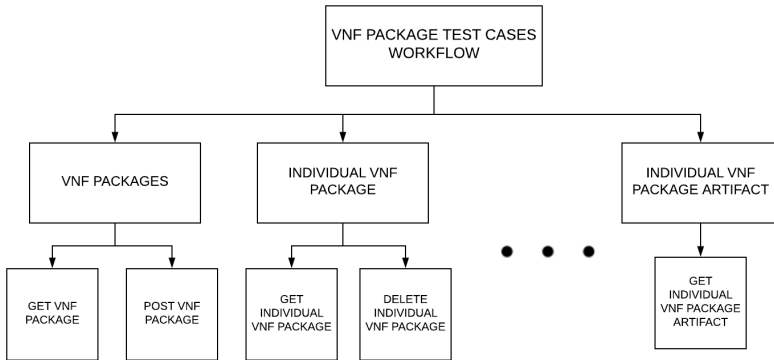
# Test cases

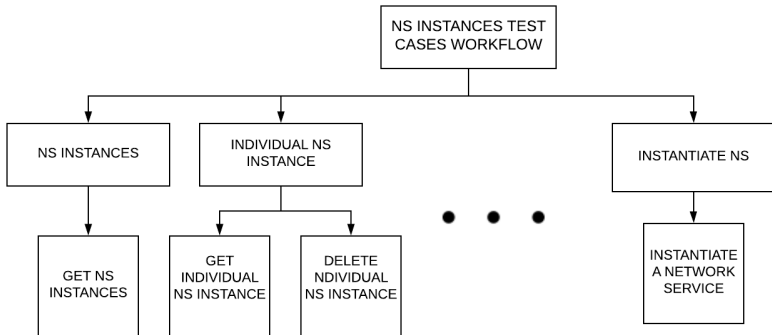
- Test-driven development
- Around 60 test cases are running




DEMO —>











# MANO Scalability Investigation

# Scalability of a system

- Scaling Approaches
  - Service Replication
  - Proactive and Reactive Scaling
  - Heirarchical scaling

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- Scaling Approaches
  - Service Replication
  - Proactive and Reactive Scaling
  - Hierarchical scaling
- Scaling effects
  - Reliability
  - Availability
  - Heterogeneity

# Goals for the coming semester

- Identify the right approach to scale a MANO taking into account all the effects of scaling
- Implement — ?



# TRANSLATOR



# SPLITTER

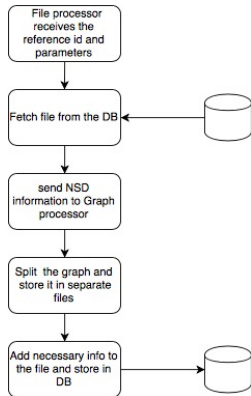


Figure: Work-flow of Service Descriptor Splitter

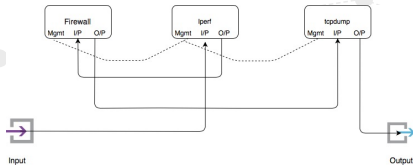


Figure: Forwarding-Graph of Sonata NSD

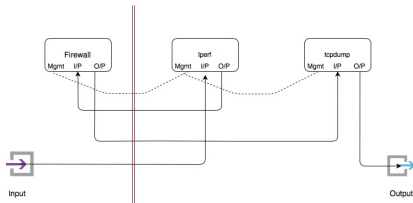


Figure: Splitting criteria



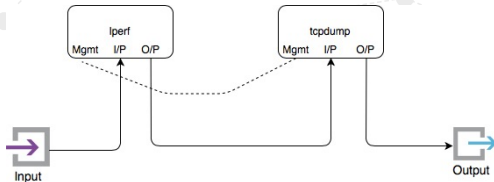


Figure: Graph of iperf and tcpdump NSD

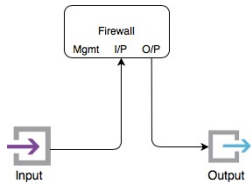


Figure: Graph of Firewall NSD

# Conclusion