



# OSM R1 - VNF PACKAGE CREATION, UI & ONBOARDING

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## OSM R1- VNF PACKAGE CREATION AND ON-BOARDING RX10033



#### **GETTING STARTED WITH OSM R1**



- INSTALL OSM R1
- CREATE VNF & NS PACKAGES
- ONBOARD VNF & NS PACKAGES
- •INSTANTIATE NETWORK SERVICES

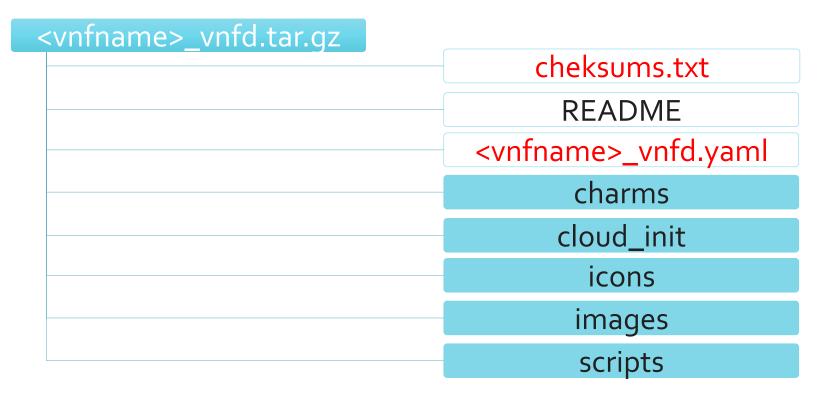
#### **PACKAGES**



- Used for onboarding NS and VNFs
- Descriptors(Mandatory) and Additional artifacts (eg icons, charms, scripts)
- Provides a simple and one click on-boarding experience.
- Defined directory structure for each package type.
- Mandatory checksums.txt file
- The packages are distributed in the tar.gz format.

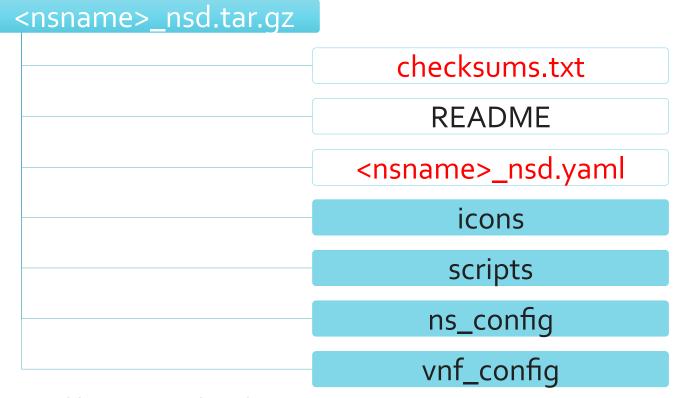


#### VNF PACKAGE STRUCTURE



#### NS PACKAGE STRUCTURE





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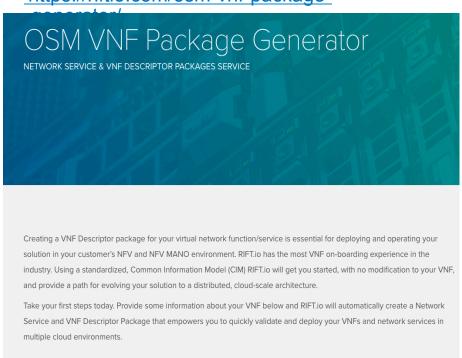
#### CREATING PACKAGES

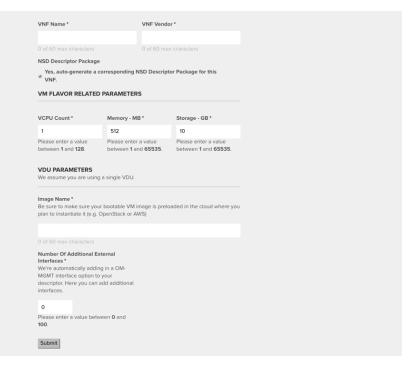


- Use a simple web based form
- Use package creation utility
- Use composer

#### WEB BASED PACKAGE GENERATOR

https://riftio.com/osm-vnf-package-





#### WEB BASED FORM



- Pros
  - Extremely easy to use and helps get started with OSM.
- Cons
  - Only supports simple VNFs as of now.
  - No support for additional artifacts within the package

#### PACKAGE CREATION UTILITY



- Utility is part of R1
- Web based form uses this utility
- Option to generate NS package
- •Use cases:
  - 1. VNF/NS package including descriptors from scratch
  - 2. VNF/NS package after modifications to an existing VNF/NS package
    - Validates the package structure
    - Re-creates the checksums.txt file

# PACKAGE CREATION UTILITY INSTALLATION & USAGE



- TO INSTALL
  - git clone <a href="https://osm.etsi.org/gerrit/osm/descriptor-packages.git">https://osm.etsi.org/gerrit/osm/descriptor-packages.git</a>
- TO USE
  - # cd descriptor-packages/src
  - # ./generate\_descriptor\_pkg.sh —help

# PACKAGE CREATION UTILITY INSTALL – SCREENSHOT

```
File Edit View Search Terminal Help

rvelandy@gluon =1\u00e9 git clone https://osm.etsi.org/gerrit/osm/descriptor-packages.git
loning into 'descriptor-packages'...
emote: Counting objects: 426, done
emote: Finding sources: 100% (426/426)
emote: Total 426 (delta 152), reused 405 (delta 152)
eceiving objects: 100% (426/426), 9.93 MiB | 721.00 KiB/s, done.
esolving deltas: 100% (152/152), done.
hecking connectivity... done.
rvelandy@gluon =1\u00e9 cd descriptor-packages/src/
rvelandy@gluon =1\u00e9 cd descriptor-packages/src/
rvelandy@gluon src]\u00e8 ls
enerate_descriptor_pkg.sh gen_nsd_pkg.sh gen_vnfd_pkg.sh nsd vnfd
rvelandy@gluon src]\u00e8 ./generate_descriptor_pkg.sh --help
--help --
              -t|--package-type <nsd|vnfd> : Descriptor package type
is NSD or VNFD. Script will try to
determine the type if not provided.
Default is vnfd for create-folders.
               Options specifc for create descriptor:
                         -c|--create-folder : Create folder with the structure for the
                                                                        package type using the base-dir and package-dir
and a descriptor template
                         -a|--archive: Create package for the descriptor
                         --nsd : Generate NSD descriptor package also.
                         --vendor : Vendor name for descriptor. Default OSM
                         --vcpu : Virtual CPU count. Default 2
                           -storage : Storage size for VM in GB. Default 10GB
```

# VNF/NS PACKAGE CREATION UTILITY - USE CASE 1



Create a VNF and NS package from scratch

# ./generate\_descriptor\_pkg.sh -c -a --nsd --vcpu <vcpu\_cnt> --memory
<memory\_mb> --storage <storage\_gb> --image <image-name> <br/>dir> <vnf-name>

-c|--create-folder: Create folder with the structure for the package type

-a|--archive: Create package for the descriptor

--nsd: Generate NSD descriptor package as well for the VNF.

<base-dir>: Directory where the package is generated. If unspecfied

package is created in the current directory

# VNF/NS PACKAGE CREATION UTILITY - USE CASE 1 - EXAMPLE



- ./generate\_descriptor\_pkg.sh -ac --nsd --vcpu 4 --memory 2048 --storage 20 --image cirros-0.3.4.img /tmp/cirros cirros
- •\*\* By default, vnfd is created. When using "—nsd" option, the nsd is also created as well.

# VNF/NS PACKAGE CREATION UTILITY - USE CASE 1 - SCREENSHOT

```
^[[A^[[A[rvelandy@gluon src]$ ./generate_descriptor_pkg.sh -ac --nsd --vcpu 4 --memory 2048 --storage 20 --ima
-a -c --nsd --vcpu '4' --memory '2048' --storage '20' --image 'cirros-0.3.4.img' -- '/tmp/cirros' '/tmp/cirros
                                                                                                                                   --image cirros-0.3.4.img /tmp/cirros /tmp/cirros
/tmp/cirros/cirros_vnfd.tar.gz
/tmp/cirros/cirros_nsd.tar.gz
[rvelandy@gluon_src]$ ls /tmp/cirros/
 rvelandy@gluon src]$ ls /tmp/cirros/cirros_vnfd
 harms cirros_vnfd.yaml cloud_init icons images README scripts
 rvelandy@gluon src]$ ls /tmp/cirros/cirros_nsd
                            ns config README scripts vnf config
cirros_nsd.yaml icc
rvelandy@gluon src]$ cat /tmp/cirros/cirros_vnfd/cirros_vnfd.yaml
vnfd:vnfd-catalog:
   vnfd:
- id: cirros_vnfd
- cirros vn:
         short-name: cirros_vnfd
         description: Generated by OSM pacakage generator
         # Place the logo as png in icons directory and provide the name here
         # logo: <update, optional>
         # Management interface
              vdu-id: cirros vnfd-VM
         # Atleast one VDU need to be specified
        # Additional VDUs can be created by copying the
             id: cirros_vnfd-VM
              name: cirros_vnfd-VM
              description: cirros vnfd-VM
              count: 1
                   memory-mb: 2048
storage-gb: 20
              # Image including the full path
image: 'cirros-0.3.4.img'
```

# VNF/NS PACKAGE CREATION UTILITY - USE CASE 2



- Create VND and NS package after Modification of an existing package.
  - Start with an existing package directory
  - Make necessary modifications to the descriptor
  - Copy artifcacts(charm, icon etc ...) to the appropriate directory
  - Run one of the following commands to create the package with the new checksums txt file.
    - ./generate\_descriptor\_pkg.sh -t vnfd <vnfd\_directory> for VNFDs
    - ./generate\_descriptor\_pkg.sh -t nsd <nsd\_directory> for NSDs

# VNF/NS PACKAGE CREATION UTILITY - USE CASE 2 - SCREENSHOT



```
File Edit View Search Terminal Help
 File Edit View Search Terminal Help
rvelandy@gluon ~]$ cp descriptor-packages/src/vnfd/cirros_vnf/icons/cirros-64.png /tmp/cirros/cirros_vnfd/icons/
rvelandy@gluon ~]$ cy /tmp/cirros/cirros_vnfd/cirros_vnfd.yaml
rvelandy@gluon ~]$ cat /tmp/cirros/cirros_vnfd/cirros_vnfd.yaml | grep logo
# Place the logo as png in icons directory and provide the name here
logo: cirros-64.png
rvelandy@gluon ~]$ ./generate_descriptor_pkg.sh -t vnfd /tmp/cirros/cirros_vnfd
eash: ./generate_descriptor_pkg.sh: No such file or directory
rvelandy@gluon ~]$ pwd
inet/homes/homel/rvelandy
itvelandy@gluon ~]$ cf descriptor_packages/
 rvelandy@gluon descriptor-packages]$ ./generate_descriptor_pkg.sh -t vnfd /tmp/cirros/cirros_vnfd
wash: ./generate_descriptor-packages]$ ./generate_descriptor_pkg.sh -t vnfd /tmp/cirros/cirros_vnfd
wash: ./generate_descriptor-packages]$ cd src/
rvelandy@gluon src/$ ./generate_descriptor_pkg.sh -t vnfd /tmp/cirros/cirros_vnfd
-t 'vnfd' -- '/tmp/cirros/cirros_vnfd'
 irros_vnfd/
irros_vnfd/checksums.txt
irros_vnfd/README
   rros_vnfd/cirros_vnfd.yaml
   rros_vnfd/cloud_init/
  irros_vnfd/charms/
irros_vnfd/icons/
   rros_vnfd/icons/cirros-64.png
   irros_vnfd/scripts/
   rros_vnfd/images/
   rvelandy@gluon src]$ date
  ri Sep 30 16:22:37 EDT 2016
rvelandy@gluon src]$ ls -ltr /tmp/cirros/cirros_vnfd.tar.gz
   rw-rw-r-- 1 rvelandy rvelandy 5635 Sep 30 16:22
 rwxrwxr-x rvelandy/rvelandy
rwxrwxr-x rvelandy/rvelandy
rvelandy@gluon src]$
                                                                    0 2016-09-30 15:59 cirros vnfd/images/
```

#### VNF/NS PACKAGE CREATION UTILITY



#### Pros

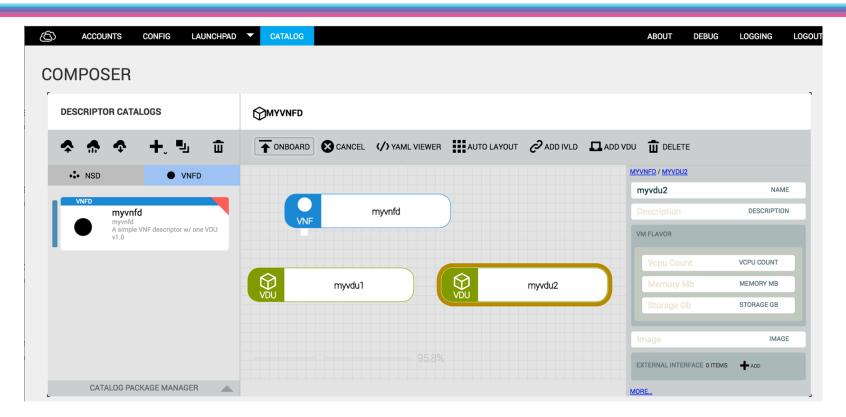
- Easy to use for simple VNFs
- Ability to make updates to the descriptor in an existing package
- Support for additional artifacts
- Easy to get a starting template for complex VNFs

#### Cons

- More involved (For packages with artifacts or for complex VNFs)
  - Requires hand editing of the initial descriptor template using regular text editors

### **COMPOSER**





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#### COMPOSER



#### Pros

- Easy to use graphical Interface for generating descriptor only packages
- Easier to generate descriptors for complex VNFs and NSes

#### Cons

- Does not yet support artifacts management
  - Requires to use the package utility to add additional artifacts to a package

# PACKAGE ONBOARDING AND INSTANTIATION UTILITY - INSTALLATION



- Get SO code
  - # git clone <a href="https://osm.etsi.org/gerrit/osm/SO.git">https://osm.etsi.org/gerrit/osm/SO.git</a>
  - •# cd SO
  - # ./rwlaunchpad/plugins/rwlaunchpadtasklet/scripts/onboard\_pkg -help
- Alternatively, if you have the OSM R1 installed, the same utility will be available under /usr/rift/usr/bin/onboard\_pkg

# PACKAGE ONBOARDING AND INSTANTIATION UTILITY - ONBOARDING



- Usage
  - Onboarding# onboard\_pkg -s <launchpad-ip> -u

# onboard\_pkg -s <launchpad-ip> -u <package-name> -u can be repeated for multiple packages

- Uses rest interface for onboarding
- Example command to onboard vnfd and nsd in one shot
  - ./rwlaunchpad/plugins/rwlaunchpadtasklet/scripts/onboard\_pkg -s
     10.64.1.175 -u cirros\_vnfd.tar.gz -u cirros\_nsd.tar.gz

# PACKAGE ONBOARDING AND INSTANTIATION UTILITY – ONBOARDING - SCREENSHOT



```
The East View Search Tommoni Help

[Invellandy@gluon tap]s git clome https://osm.etsi.org/gerrit/osm/50.git

[Invellandy@gluon tap]s git clome https://osm.etsi.org/gerrit/osm/50.git

[Invellandy@gluon tap]s git clome https://osm.etsi.org/gerrit/osm/50.git

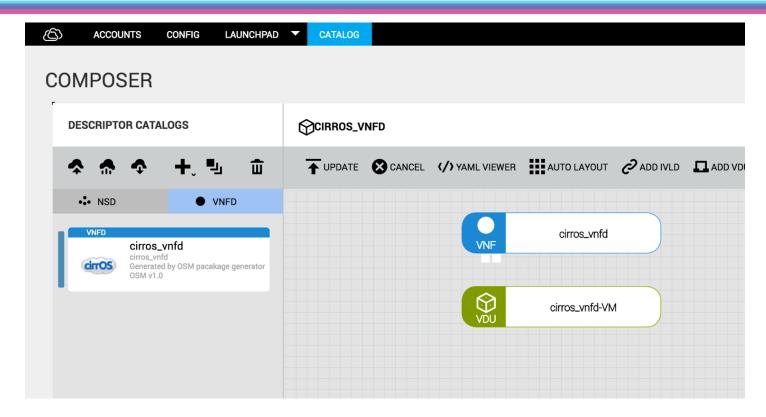
[Invellandy@gluon tap]s cold [169] done

remote: Finding sources: 100% (1169/1169)

remote: Finding sources: 100
```

# PACKAGE ONBOARDING AND INSTANTIATION UTILITY – ONBOARDING -





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# PACKAGE ONBOARDING AND INSTANTIATION UTILITY - INSTANTIATION



- Once onboarded, instantiation can be triggered from the UI or using the utility
- To instantiate from the utility
  - # onboard\_pkg -d <NSD\_ID> -D <DATACENTER>
  - -d NSD ID of the onboarded NS
  - -d DATACENTER ID





# UI REFERENCE AND ARCHITECTURE RX10030



#### MAJOR IMPROVEMENTS - FRAMEWORK

- UI framework is a pluggable architecture where each plugin is a set of isolated functionality:
  - Account Management, Catalog Management, Life Cycle Management of Network Services etc

#### Release 0

- Framework
  - 3 servers; REST API, Websockets and UI assets served on different ports
  - Several ports required to be accessible directly from browser:
    - 8000 UI assets
    - 3000 REST API
    - 3500-3519 (20 ports!) Websockets
    - 4567 package manager
  - No support for ws/wss servers (web sockets southbound)
  - APIs not part of plugins

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Release 1 UI

#### Release 1

- Framework
  - REST API, Websockets and UI assets served on same port
  - Only 2 (optionally 3) ports required to be accessible directly from browser:
    - 8443 (or 8000 if SSL not enabled) REST, Websockets, UI assets
    - 4567 package manager
  - Support for ws/wss servers added
  - APIs moved under respective plugins

# MAJOR IMPROVEMENTS – PLUGINS & AUTOMATION

#### Release 0

- 4 total plugins
  - about
  - composer
  - debug
  - Launchpad
- No automated tests
- No configuration option for UI server

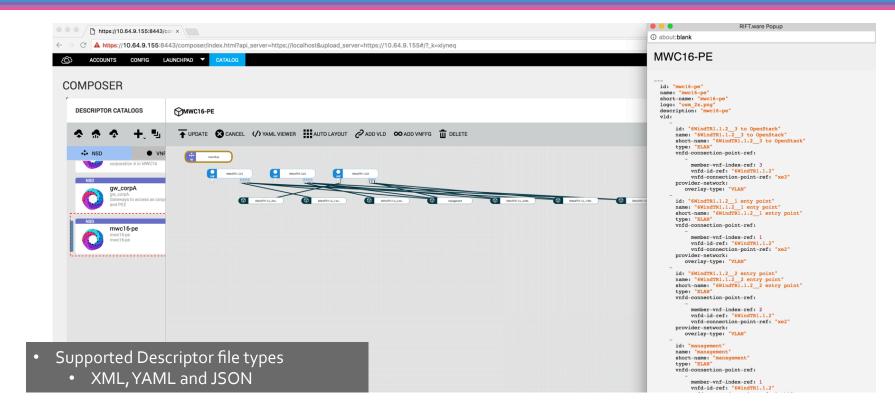
#### Release 1

- 7 total plugins, 3 newly added
  - about, composer, debug, launchpad
  - accounts, config, logging
- Test Framework added intern.js
  - Allows testing of server side modules
- Configuration options through REST API added

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#### DISPLAY DESCRIPTOR DETAILS IN YAML

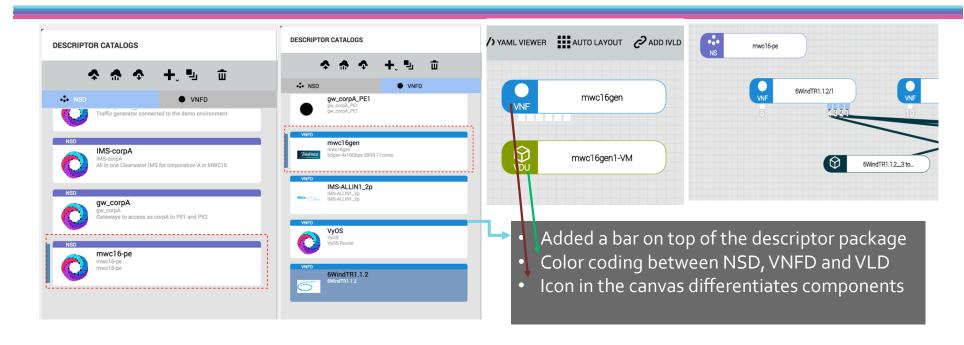




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# ENHANCED VISUAL DIFFERENTIATION BETWEEN NS AND VNF CATALOGS





# UNIT TEST FRAMEWORK FOR UI MODULES

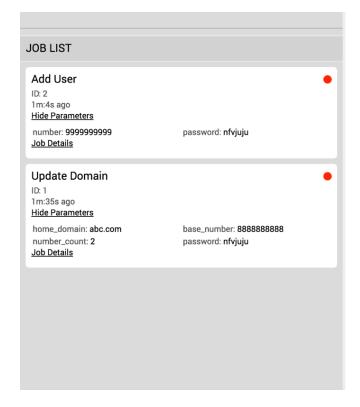


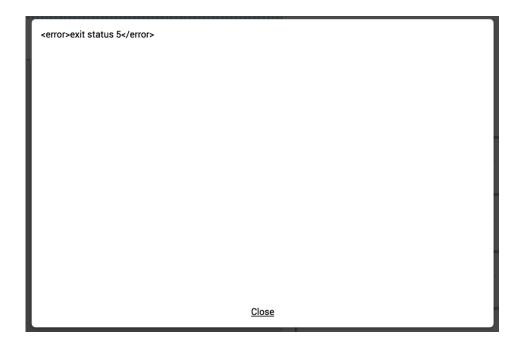
```
KIRANs-MBP-3:skyquake kkashalk$ intern-client config=tests/intern reporters=Runner
✓ plugin_discoverer - Test init (0s)
✓ plugin_discoverer - Test config (0s)
✓ plugin_discoverer - Test run plugin add discovery (0.006s)
✓ plugin_discoverer - Test run plugin update discovery (0.017s)
                       -----|----|-----|-----|-----|-----|
File
                        % Stmts | % Branch | % Funcs | % Lines | Uncovered Lines
 modules/
                            100 I
                                     66.67 I
                                                  100 I
                                                            100 I
 plugin_discoverer.js |
                            100
                                     66.67 I
                                                            100 I
                                                 100 I
  skyquakeEmitter.js
                            100 I
                                       100 I
                                                 100
                                                            100
All files
                             100 I
                                     66.67 I
                                                 100 I
                                                            100 I
TOTAL: tested 1 platforms, 0/4 tests failed
```

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# INFORMATIVE JOB DETAILS FOR SERVICE PRIMITIVE JOBS



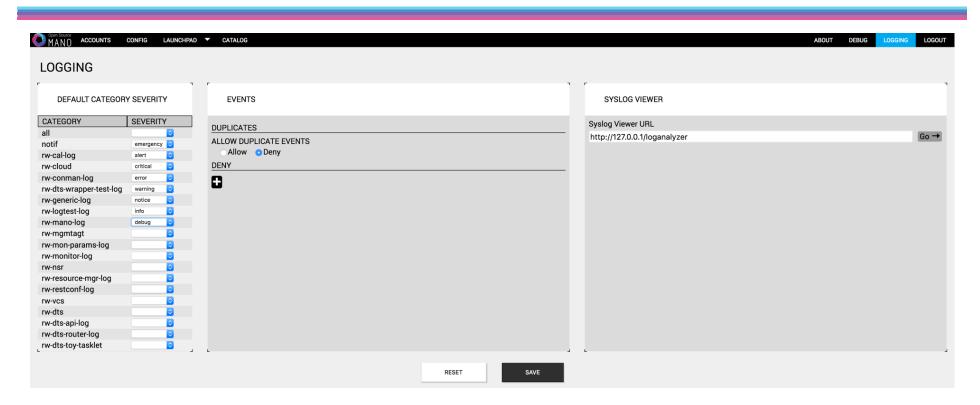




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### LOGGING PLUGIN





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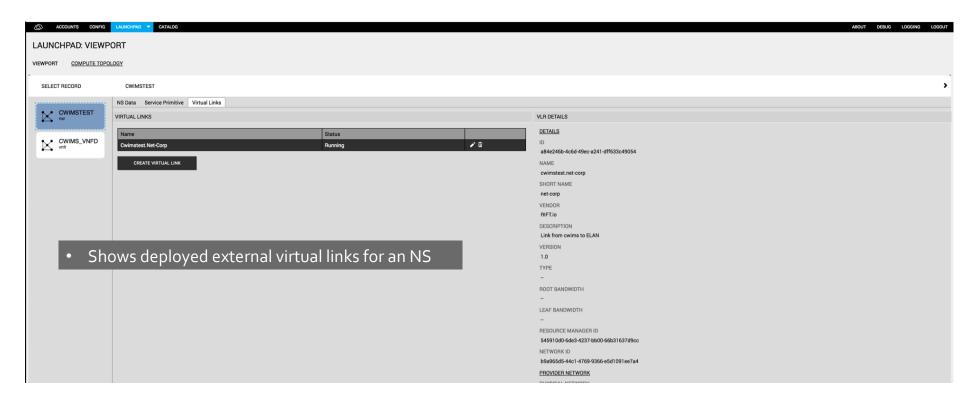


# OSM R1 – FEATURES FOR RO/ SO SUPPORT



# VIRTUAL LINK VIEW FOR RUNNING NS





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# VIRTUAL LINK ORCHESTRATION FOR RUNNING NS

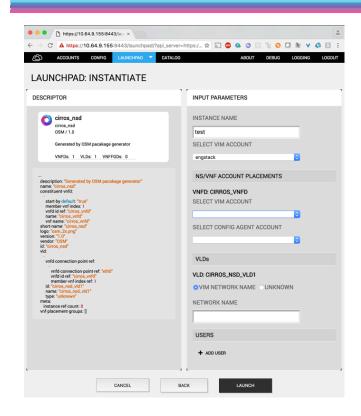


-		NS Data Service Primitive Virtual Links				
j	CWIMSTEST	VIRTUAL LINKS			VLD DETAILS	
		Name	Status		DETAILS	
l i	CWIMS_VNFD	Cwimstest.Net-Corp	Running	<b>У</b> ф	ID	
	4	CREATE VIRTUAL LINK				
		CREATE VIRTUAL LINK			NAME	
					SHORT NAME	
					VENDOR	
					DESCRIPTION	
					MERCHAN	
					VERSION	
					TYPE	
					( )	
					ROOT BANDWIDTH	
					LEAF BANDWIDTH	
					PROVIDER NETWORK PHYSICAL NETWORK	
- 411		والمراز المرتبين والمتراز والمتراز المتراز المتراز المتراز المتراز المتراز والمتراز والمتراز والمتراز	+		PHOLIAL NEI WUNK	
• All	ows crea	ition of a new virtual link	to a running NS		OVERLAY TYPE	
			_	•		
					SEGMENTATION ID	
					VNF CONNECTION POINTS +	
					INIT PARAMS  I P Profile VIM Network Name Unknown	
					NETWORK NAME	
					SUBMIT CANCEL	
					October Contract	
			EVE	<u> </u>		

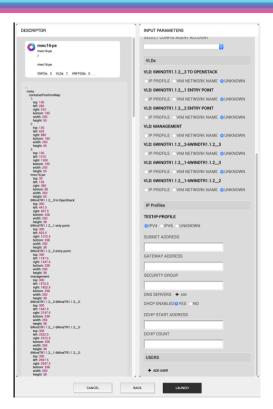
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# IP PROFILE/VIM NETWORK ASSIGNMENT AT INSTANTIATION





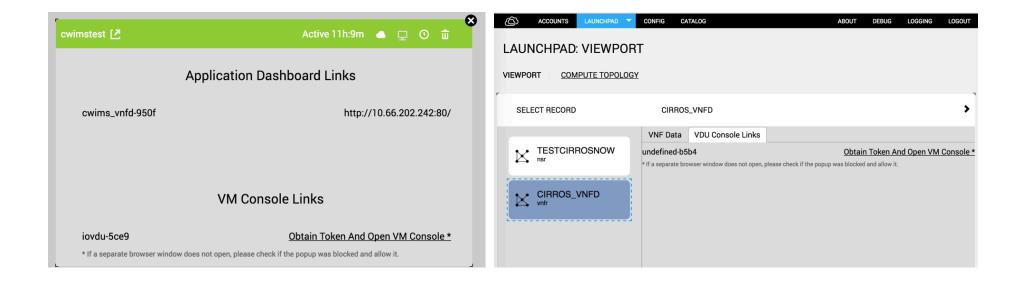
 Ability to add IP parameters and VIM network names to virtual links during instantiation



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### **VDU CONSOLE LINKS**

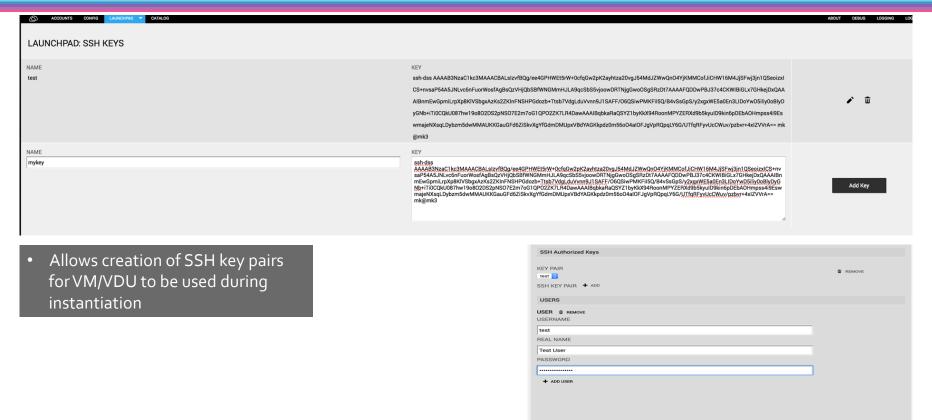




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#### **CLOUD INIT CONFIGURATION**





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### **MULTI-SITE NS**



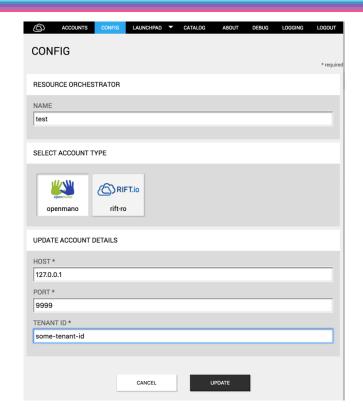
INPUT PARAMETERS	
INSTANCE NAME	
test	
SELECT VIM ACCOUNT	
engstack	<b>*</b>
NS/VNF ACCOUNT PLACEMENTS	
VNFD: 6WINDTR1.1.2	
SELECT VIM ACCOUNT	
engstack	<b>0</b>
SELECT CONFIG AGENT ACCOUNT	
CAacct	0
VNFD: 6WINDTR1.1.2	
SELECT VIM ACCOUNT	
stack2	<b>0</b>
SELECT CONFIG AGENT ACCOUNT	
CAacct	0
VNFD: 6WINDTR1.1.2	
SELECT VIM ACCOUNT	
engstack	<b>0</b>
SELECT CONFIG AGENT ACCOUNT	
CAacct	

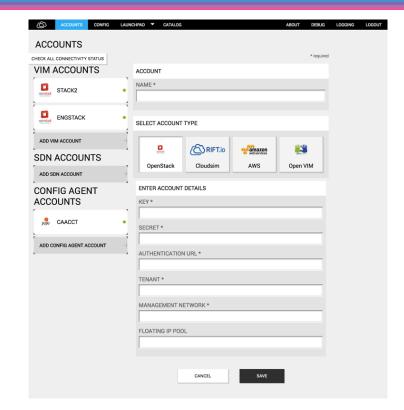
- Ability to launch a NS across multiple VIM VNFs from a given NS can be instantiated on different VIMs

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# IMPROVED RO/VIM ACCOUNTS CONFIG WORKFLOW



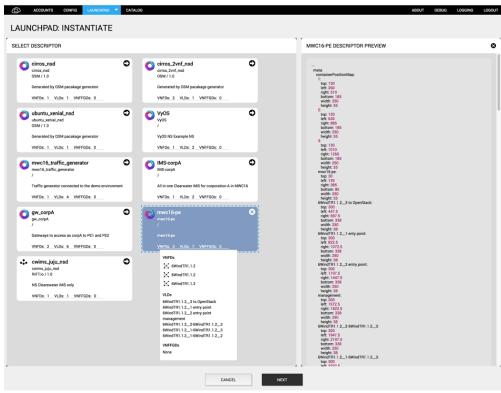




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# IMPROVED NS INSTANTIATION WORKFLOW





 Added capability to check the details of the NS in the NSD card

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Release 1 UI

# IMPROVED NS INSTANTIATION WORKFLOW



△ ACCOUNTS CONFIG LAUNCHPAD ▼ CATALOG			ABOUT DEBUG	LOGGING	LOGOUT
LAUNCHPAD: INSTANTIATE					
DESCRIPTOR	,	INPUT PARAMETERS			,
VyOS  VyOS  VyOS  VyOS  VyOS  VyOS  VS Example NS  VNFDe 1 VLDe 2 VNFFODe 0		INSTANCE NAME  SELECT VIM ACCOUNT engstack  NS/NNF ACCOUNT PLACEMENTS  VNFD: VYOS SELECT VIM ACCOUNT  SELECT CONFIG AGENT ACCOUNT  VLDs  VLD DATA  OVIM NETWORK NAME UNKNOWN NETWORK NAME INETWORK NAME UNKNOWN NETWORK NAME  net-corp  VLD: MANAGEMENT  OVIM NETWORK NAME UNKNOWN NETWORK NAME  net-mgmtOS  USERS  + AGDUSER	0		
wild der et "NyOS" member wir index et. 1  de "deaf" vin netwurk name "net nigmtOS" name "management" type", vinnet steunde name provider network provider network overlay byge. "Vinnet" voorking byg					
to control or control	CANCEL B	ACK LAUNCH			

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## THANK YOU

