Open Command Line Interface Platform (OCLIP)
&
ONAP CLI

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CLI PTL

ONAP Paris Developer Event

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Agenda

- Command Line Interface (CLI)
  - What is CLI
  - Why CLI is required
  - Today’s problem in implementing CLI

- Open CLI Platform (OCLIP)
  - Open Command Specification (OCS) 1.0
  - Interactive shell
  - Web command console
  - Binaries & Installer

- ONAP CLI
  - DEMO

ONAP
OPEN NETWORK AUTOMATION PLATFORM

Command Line Interface (CLI)

What is CLI?

- Command line interface (CLI)

- Integral part of any operating system and software platforms/products
  - GUI : For Desktop vs CLI : For Console

- **Simple, Fast and Easy**

- Examples:
  - Git, svn, npm **(developers)**
  - ipconfig, hostname, apt-get, dir, ping, ssh (**operators**)
  - openstack, onap, docker, kubeadm, npm (**users**)

Why CLI is required?

- Easy automation by using scripting language (devops)
- Uniform interface
- Industry tread !
- Faster for performing operation vs GUI
- Short development cycle compare to GUI

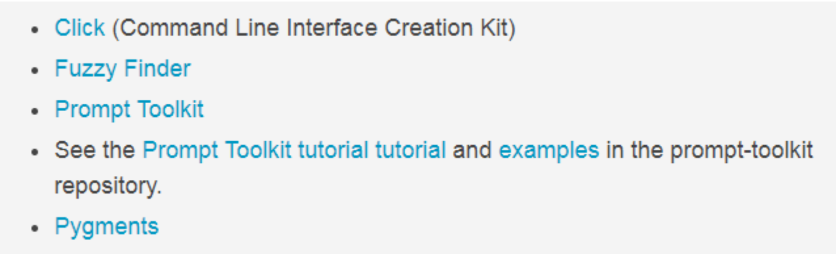
Today’s problem in implementing CLI

- There are many libraries in market
  - Dependency
  - deep learning
  - delay on getting bug-fix/feature
    - Risk.
- Community/product maintains xxx KLOC of code
  - Human-effort, money and time
  - CI (Power and energy wastage)

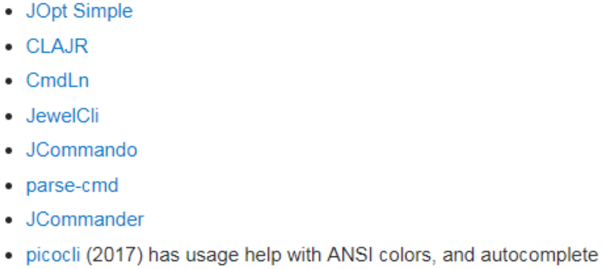
  - Delay in delivering bug-fix/feature
    - (release cycle dependency)
- Commands do not tell about output, user

Needs to run and find out ! Its issue

No platform exists today



- Click (Command Line Interface Creation Kit)
- Fuzzy Finder
- Prompt Toolkit
- See the Prompt Toolkit tutorial tutorial and examples in the prompt-toolkit repository.
- Pygments



- JOpt Simple
- CLAJR
- CmdLn
- JewelCli
- JCommando
- parse-cmd
- JCommander
- picocli (2017) has usage help with ANSI colors, and autocomplete

Platform/Community CLI	Commits	Contributors
OpenStack	4106	228
Docker	4559	557
Rancher	213	15
K8S	655	115

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OPEN NETWORK AUTOMATION PLATFORM

OPEN Command Line Interface Platform (OCLIP)

Open CLI Platform (OCLIP)

OPEN SOURCEd

Implement CLI

Only by text (YAML)

NO coding ☺ ☺ ☺

Simpler
Faster
Easier

Save Money
Save Time
Save Power
Save Energy

Industry First CLI platform !

Tomcat for HTTP, oclip for CLI

- **Console**
  - Interactive Command Shell
  - Web command console
    - Install once
      - Run commands across many products
    - Access it anywhere

Supportability:

- Any cloud (rest) enabled products
  - *Micro-service arch (w/ catalog)*
  - *Monolithic arch.*

- Non-cloud products

Command / OCS

Modeled into YAML schema Open CLI spec (OCS) 1.0

- Argument parsing & validation
  - With Short and long option (ls --help)
  - Positional arguments (ls /opt)
- Man page / Help (man ls)
- Multiple Output format (table/csv)
- Error reporting (0x1001)
- Exit code (0/1)
- Debug/Verbose logging (-d)
- Environment support ($xxx)
- Different Versions of service
- SSL support
- Authentication
- Default valuing

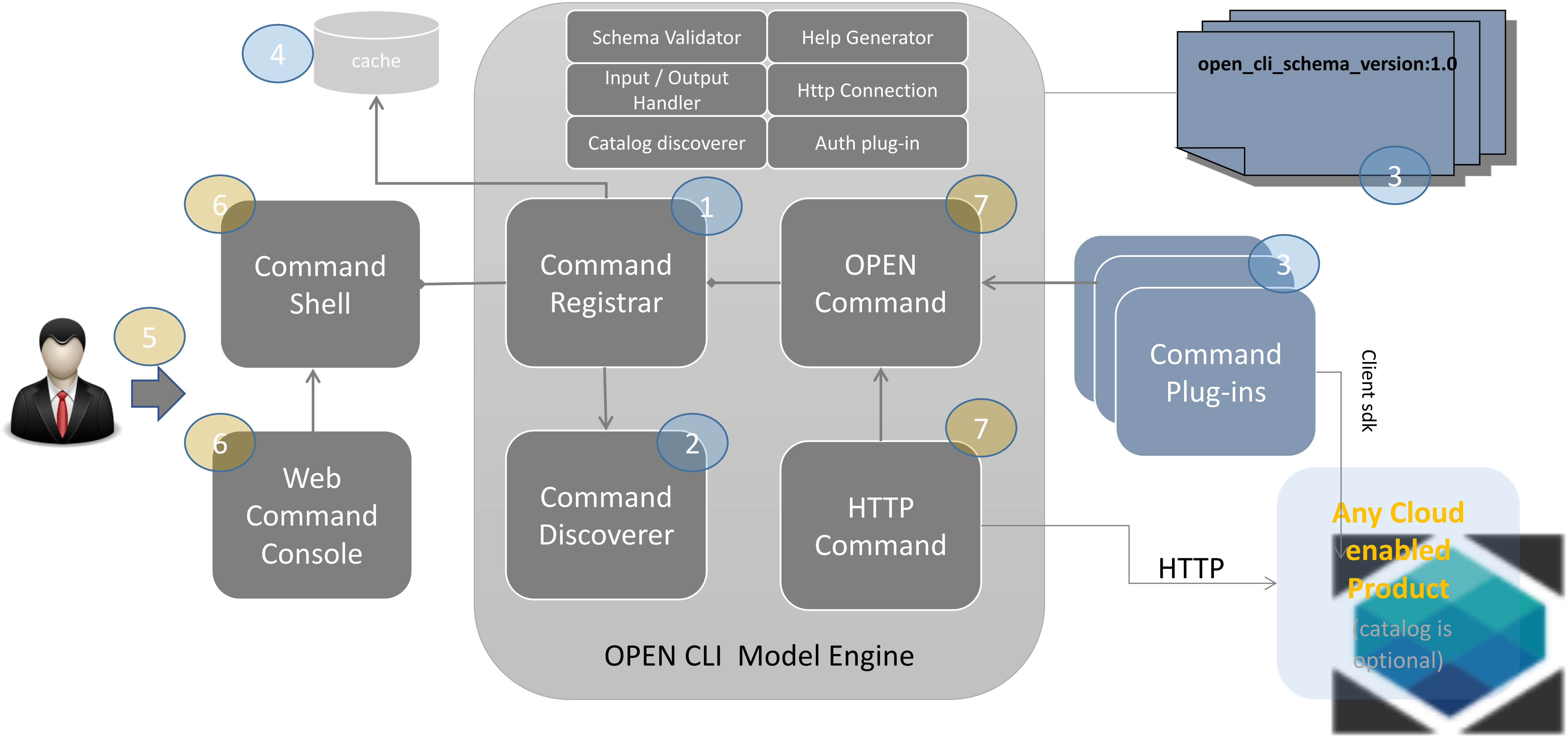
=

```
open_cli_schema_version: 1.0
name: deploy-service
description: Deploy  sample service
version: onap-1.0
parameters:
 - name: name
   description: VSP name
   type: string
   short_option: n
   long_option: name
   is_optional: false
  ......
results:
  direction: portrait
  attributes:

   - name: id
     description: service instance id
     scope: short
     type: string
   .......
```

+

```
service:
  name: vid
  version: v1
  auth:  basic/aaf
  mode:  direct/catalog
http:
  request:
    uri: /vid/rest/service
    method: POST
    body: '{"name":"${name}", ...... }‘

  result_map:
   id : $b{$.vimId}
```

OPEN CLI Platform Architecture



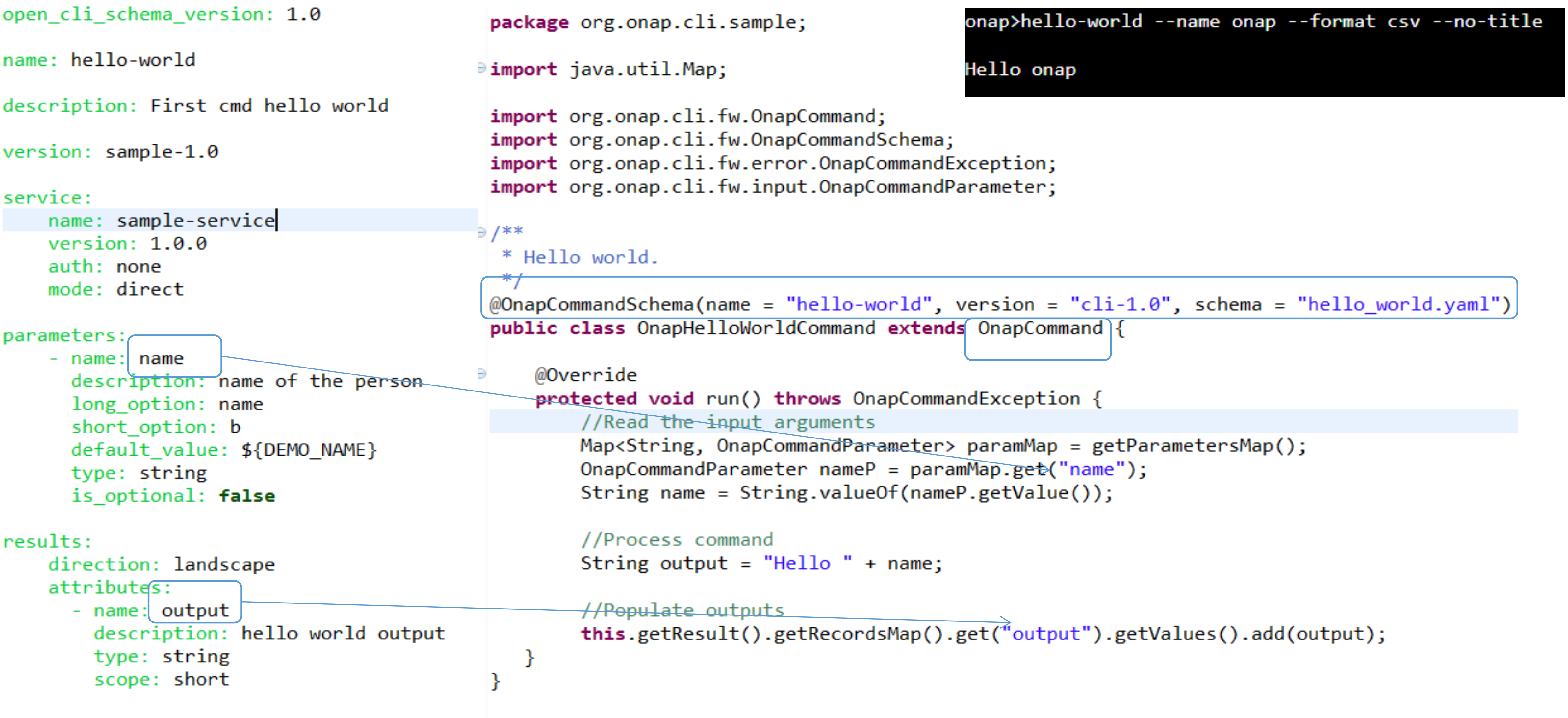
Implementing command as plug-in

- Plug-in approach is useful for implementing commands for those products does not support REST API.

- OCLIP uses this approach to provide the commands for its platform related operations and provides following commands as plug-ins:
  - **Schema-validate :** To validate the OCS YAML
  - **Schema-refresh:** To enable the newly added commands

- Offers flexibility to implement any kind of commands. For example, OCLIP provides specific plug-in command to handle HTTP commands, which made **'No code, only Text'**

Sample plug-in command : Hello world !



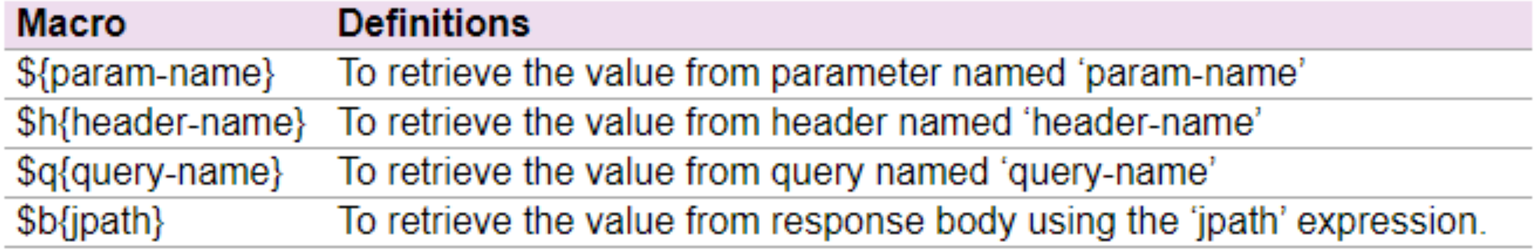
```yaml
open_cli_schema_version: 1.0

name: hello-world

description: First cmd hello world

version: sample-1.0

service:
    name: sample-service
    version: 1.0.0
    auth: none
    mode: direct

parameters:
    - name: name
      description: name of the person
      long_option: name
      short_option: b
      default_value: ${DEMO_NAME}
      type: string
      is_optional: false

results:
    direction: landscape
    attributes:
      - name: output
        description: hello world output
        type: string
        scope: short
```

```java
package org.onap.cli.sample;

import java.util.Map;

import org.onap.cli.fw.OnapCommand;
import org.onap.cli.fw.OnapCommandSchema;
import org.onap.cli.fw.error.OnapCommandException;
import org.onap.cli.fw.input.OnapCommandParameter;

/**
 * Hello world.
 */
@OnapCommandSchema(name = "hello-world", version = "cli-1.0", schema = "hello_world.yaml")
public class OnapHelloWorldCommand extends OnapCommand {

    @Override
    protected void run() throws OnapCommandException {
        //Read the input arguments
        Map<String, OnapCommandParameter> paramMap = getParametersMap();
        OnapCommandParameter nameP = paramMap.get("name");
        String name = String.valueOf(nameP.getValue());

        //Process command
        String output = "Hello " + name;

        //Populate outputs
        this.getResult().getRecordsMap().get("output").getValues().add(output);
    }
}
```

```
onap>hello-world --name onap --format csv --no-title

Hello onap
```

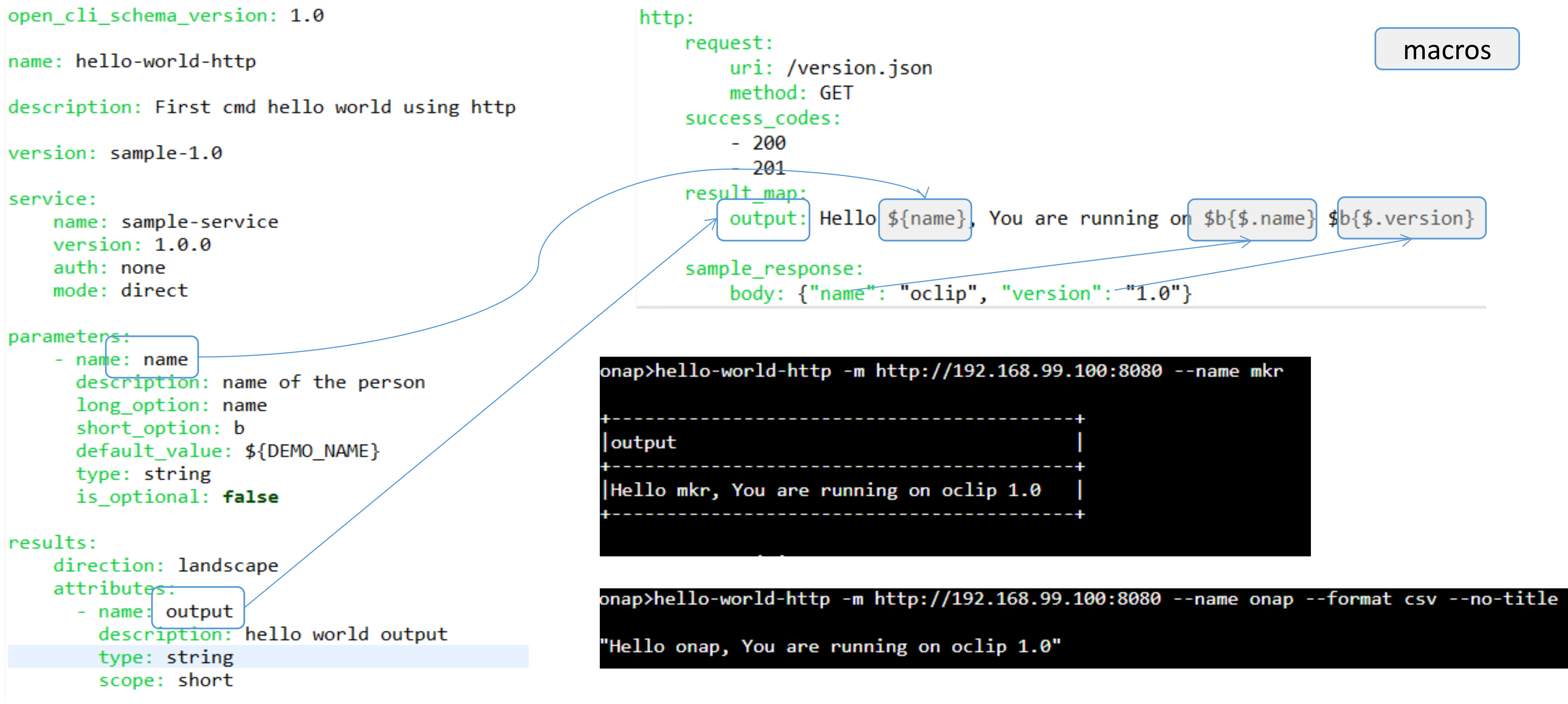
Implementing command as YAML (NO code)

- For cloud enabled products, which provides REST API, OCLIP supports to create commands just by authoring YAML file.
  - No plug-in code is required
- **http** section in OCS helps to author all HTTP action related information.
  - Uses **jpath** for processing the http response and assign the value to command results
- OCLIP provides **macros** for cross-referencing values across sections in the YAML.



Macro	Definitions
${param-name}	To retrieve the value from parameter named 'param-name'
$h{header-name}	To retrieve the value from header named 'header-name'
$q{query-name}	To retrieve the value from query named 'query-name'
$b{jpath}	To retrieve the value from response body using the 'jpath' expression.

Sample command: Hello world !



```
open_cli_schema_version: 1.0

name: hello-world-http

description: First cmd hello world using http

version: sample-1.0

service:
    name: sample-service
    version: 1.0.0
    auth: none
    mode: direct

parameters:
    - name: name
      description: name of the person
      long_option: name
      short_option: b
      default_value: ${DEMO_NAME}
      type: string
      is_optional: false

results:
    direction: landscape
    attributes:
      - name: output
        description: hello world output
        type: string
        scope: short
```

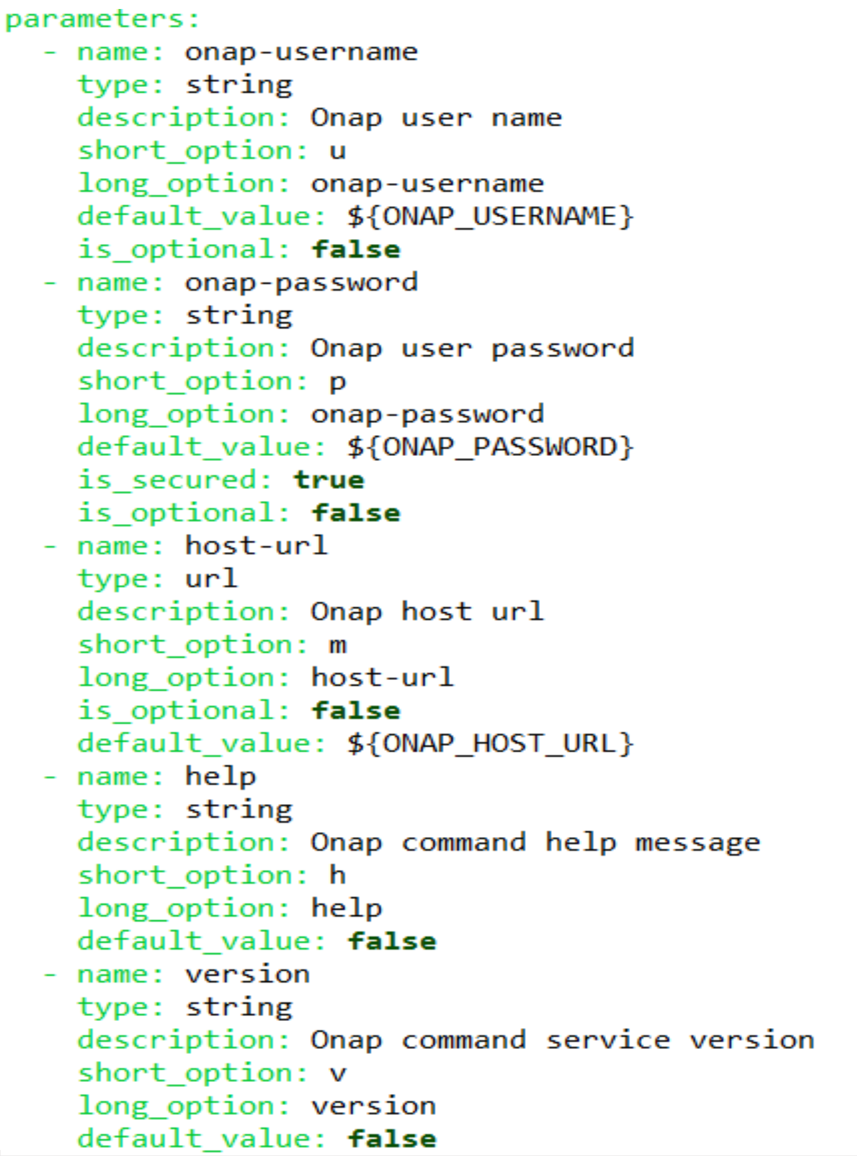
```
http:
    request:
        uri: /version.json
        method: GET
    success_codes:
        - 200
        - 201
    result_map:
        output: Hello ${name}, You are running on $b{$.name} $b{$.version}

    sample_response:
        body: {"name": "oclip", "version": "1.0"}
```

macros

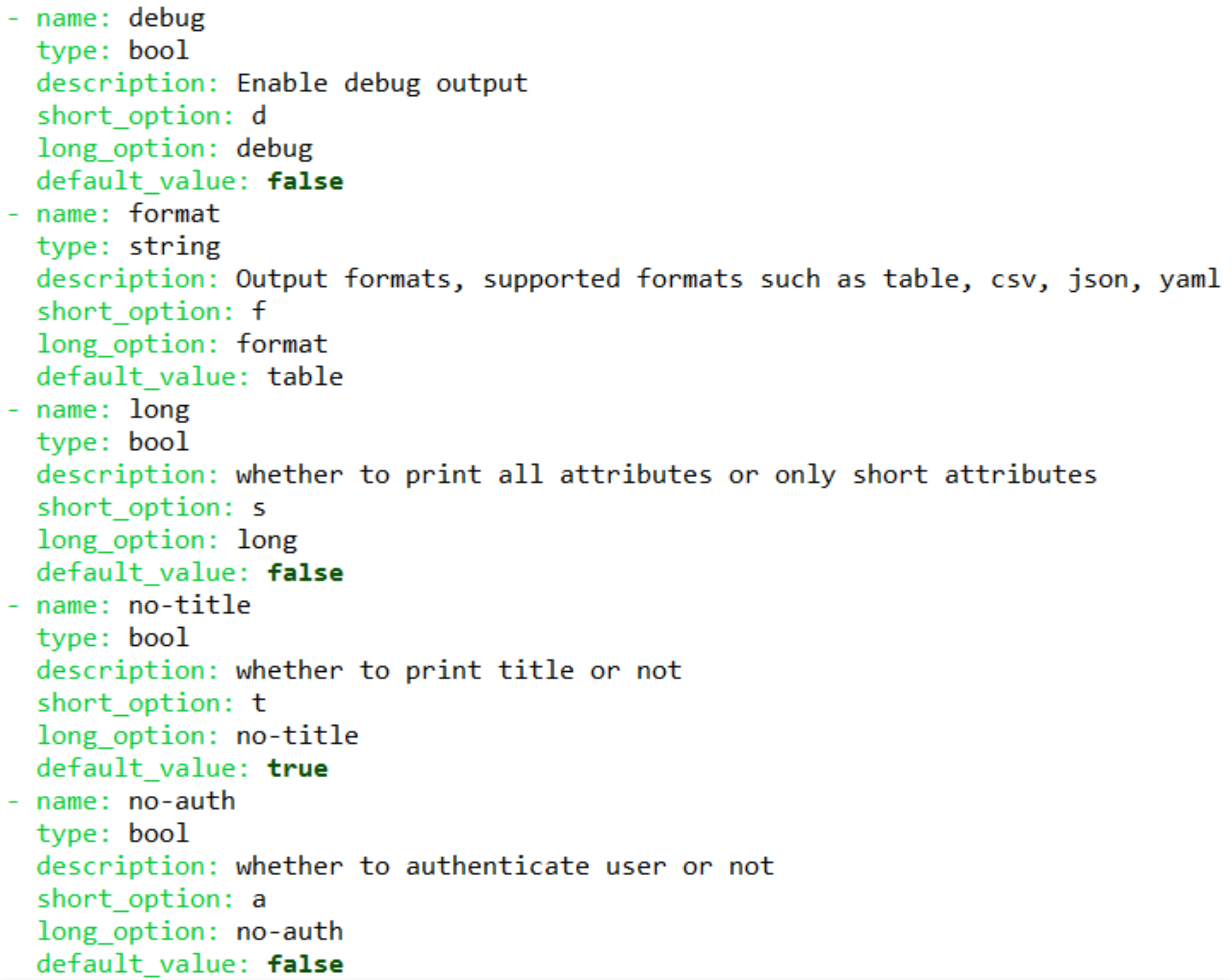
```
onap>hello-world-http -m http://192.168.99.100:8080 --name mkr

+--------------------------------------------+
|output                                      |
+--------------------------------------------+
|Hello mkr, You are running on oclip 1.0     |
+--------------------------------------------+
```

```
onap>hello-world-http -m http://192.168.99.100:8080 --name onap --format csv --no-title

"Hello onap, You are running on oclip 1.0"
```

Default Input Parameters



```
parameters:
  - name: onap-username
    type: string
    description: Onap user name
    short_option: u
    long_option: onap-username
    default_value: ${ONAP_USERNAME}
    is_optional: false
  - name: onap-password
    type: string
    description: Onap user password
    short_option: p
    long_option: onap-password
    default_value: ${ONAP_PASSWORD}
    is_secured: true
    is_optional: false
  - name: host-url
    type: url
    description: Onap host url
    short_option: m
    long_option: host-url
    is_optional: false
    default_value: ${ONAP_HOST_URL}
  - name: help
    type: string
    description: Onap command help message
    short_option: h
    long_option: help
    default_value: false
  - name: version
    type: string
    description: Onap command service version
    short_option: v
    long_option: version
    default_value: false
```



```
  - name: debug
    type: bool
    description: Enable debug output
    short_option: d
    long_option: debug
    default_value: false
  - name: format
    type: string
    description: Output formats, supported formats such as table, csv, json, yaml
    short_option: f
    long_option: format
    default_value: table
  - name: long
    type: bool
    description: whether to print all attributes or only short attributes
    short_option: s
    long_option: long
    default_value: false
  - name: no-title
    type: bool
    description: whether to print title or not
    short_option: t
    long_option: no-title
    default_value: true
  - name: no-auth
    type: bool
    description: whether to authenticate user or not
    short_option: a
    long_option: no-auth
    default_value: false
```

Authentication & Catalog

- In OCLIP, **everything is command**
  - auth and catalog are modeled as commands
  - Author needs to write these commands specific to their product/service.

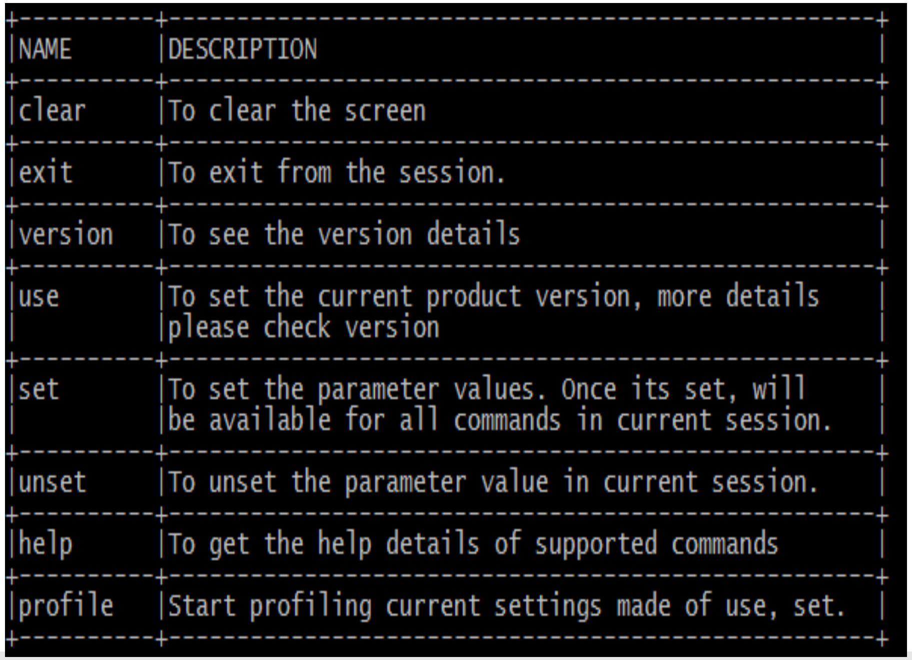
- OCLIP support matrix for product/services auth & catalog:

Product/Service	Catalog	Authentication	Features	Example
Product/Service A	YES	NO	xxx	Open-O Auth service
Product /Service B	YES	YES	yyy	All Open-O services / Future ONAP services
Product/Service C	NO	YES	zzz	AAI
Product/Service D	NO	NO	aaa	MSB

Interactive Shell

- Profiling
- environment (param storage)
- Getting help
- Clear screen
- One shell , Multiple product versions
  - Version switching

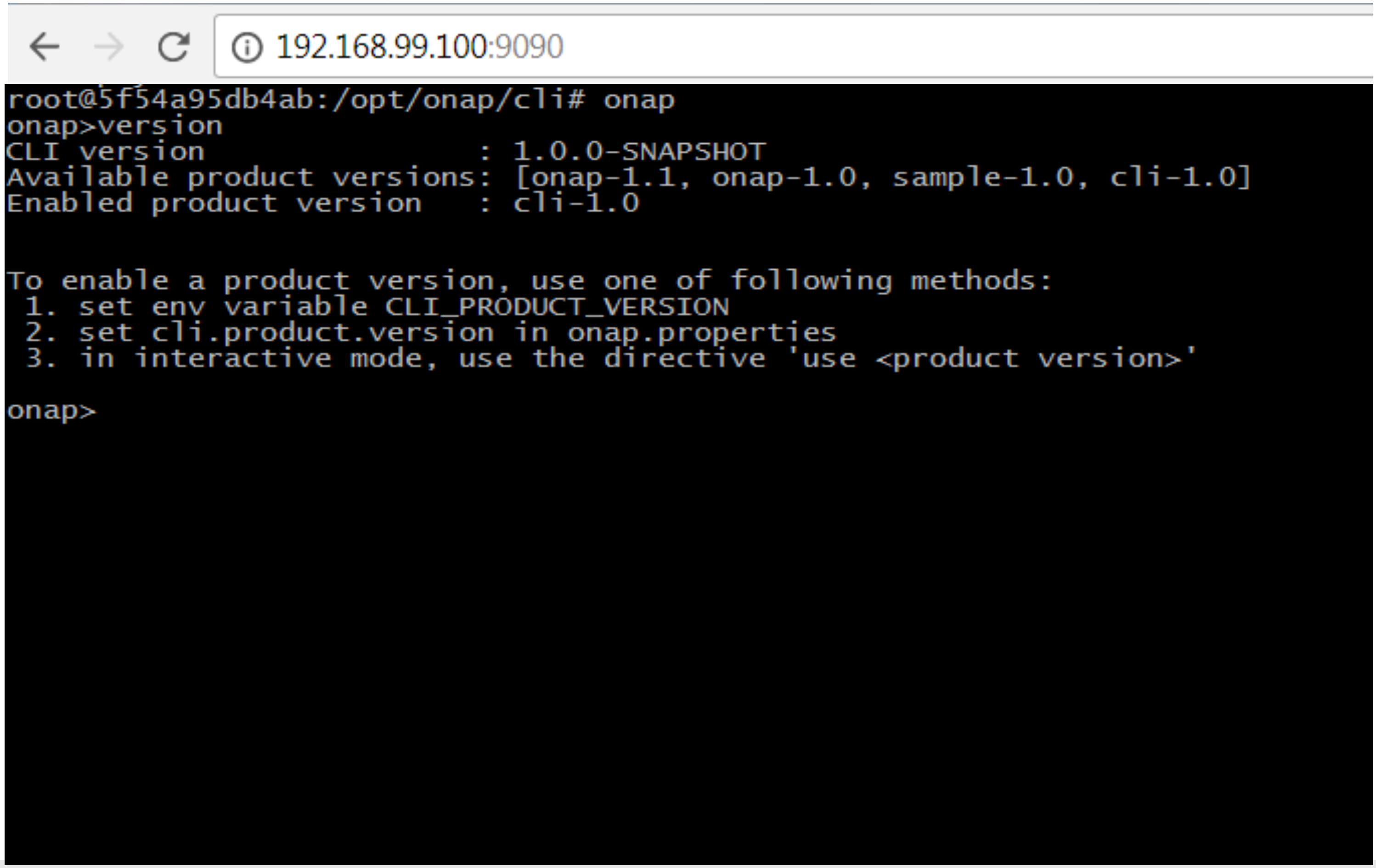
Directives



```
+----------+-----------------------------------------------+
|NAME      |DESCRIPTION                                    |
+----------+-----------------------------------------------+
|clear     |To clear the screen                            |
+----------+-----------------------------------------------+
|exit      |To exit from the session.                      |
+----------+-----------------------------------------------+
|version   |To see the version details                     |
+----------+-----------------------------------------------+
|use       |To set the current product version, more details|
|          |please check version                           |
+----------+-----------------------------------------------+
|set       |To set the parameter values. Once its set, will |
|          |be available for all commands in current session.|
+----------+-----------------------------------------------+
|unset     |To unset the parameter value in current session.|
+----------+-----------------------------------------------+
|help      |To get the help details of supported commands  |
+----------+-----------------------------------------------+
|profile   |Start profiling current settings made of use, set.|
+----------+-----------------------------------------------+
```

Command Shell

Web based Console



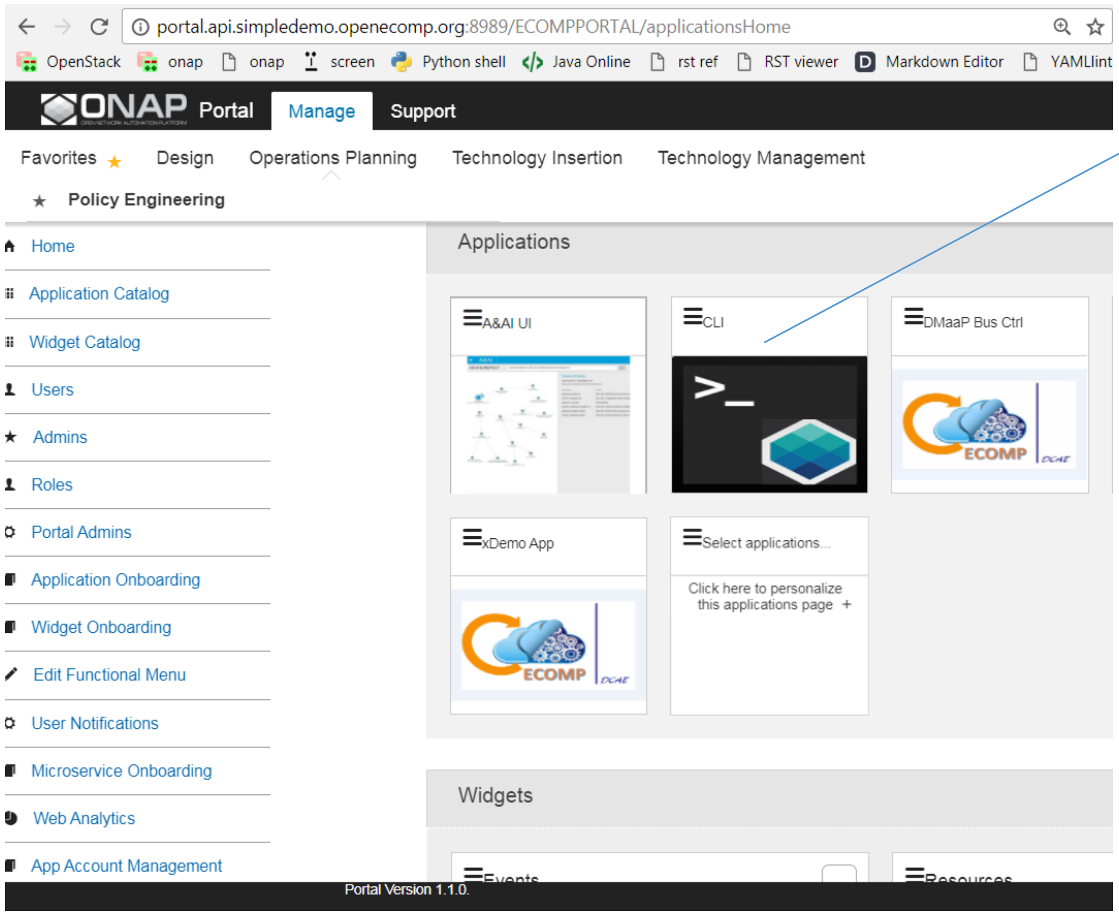
192.168.99.100:9090

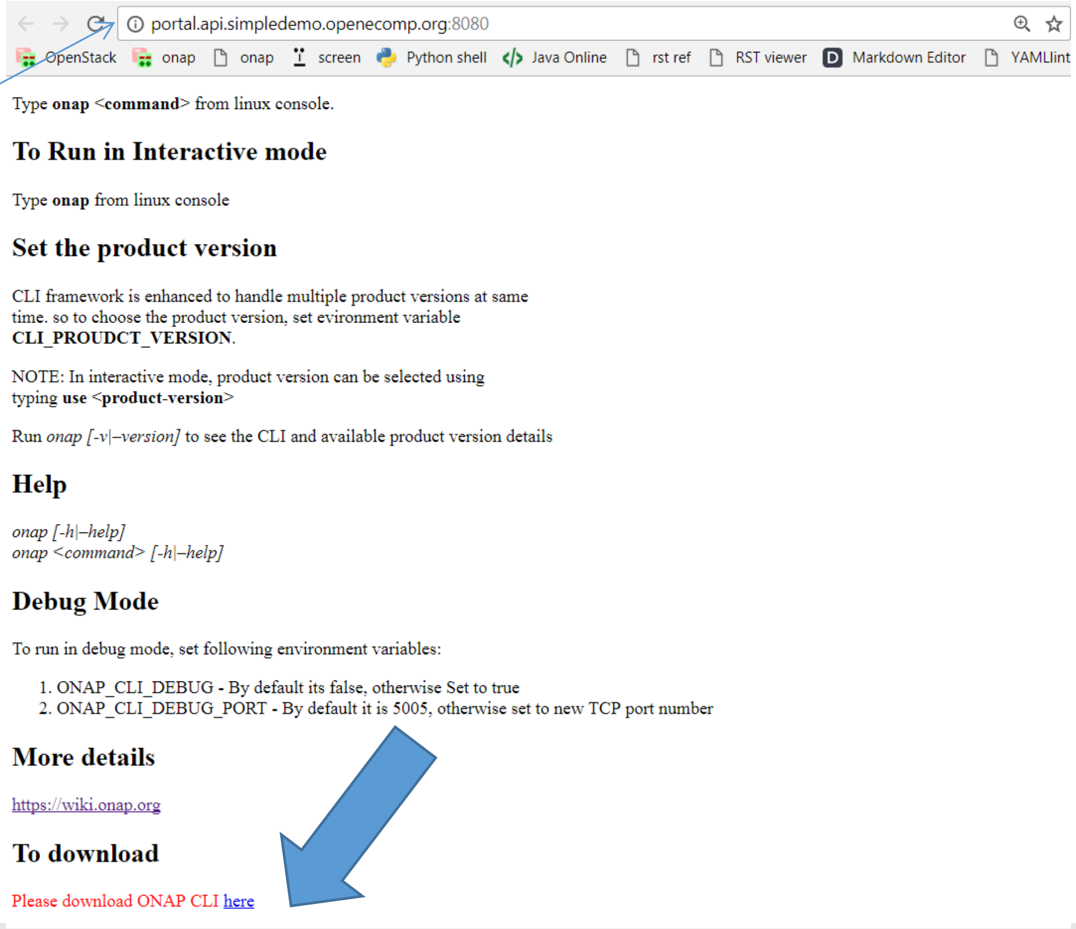
```
root@5f54a95db4ab:/opt/onap/cli# onap
onap>version
CLI version                 : 1.0.0-SNAPSHOT
Available product versions: [onap-1.1, onap-1.0, sample-1.0, cli-1.0]
Enabled product version    : cli-1.0

To enable a product version, use one of following methods:
 1. set env variable CLI_PRODUCT_VERSION
 2. set cli.product.version in onap.properties
 3. in interactive mode, use the directive 'use <product version>'

onap>
```

Binaries

Installers

(part of portal_vm)





Type **onap** <**command**> from linux console.

To Run in Interactive mode

Type **onap** from linux console

Set the product version

CLI framework is enhanced to handle multiple product versions at same time. so to choose the product version, set evironment variable **CLI_PRODUCT_VERSION**.

NOTE: In interactive mode, product version can be selected using typing **use** <**product-version**>

Run *onap [-v|–version]* to see the CLI and available product version details

Help

onap [-h|–help]
onap <command> [-h|–help]

Debug Mode

To run in debug mode, set following environment variables:

1. ONAP_CLI_DEBUG - By default its false, otherwise Set to true
2. ONAP_CLI_DEBUG_PORT - By default it is 5005, otherwise set to new TCP port number

More details

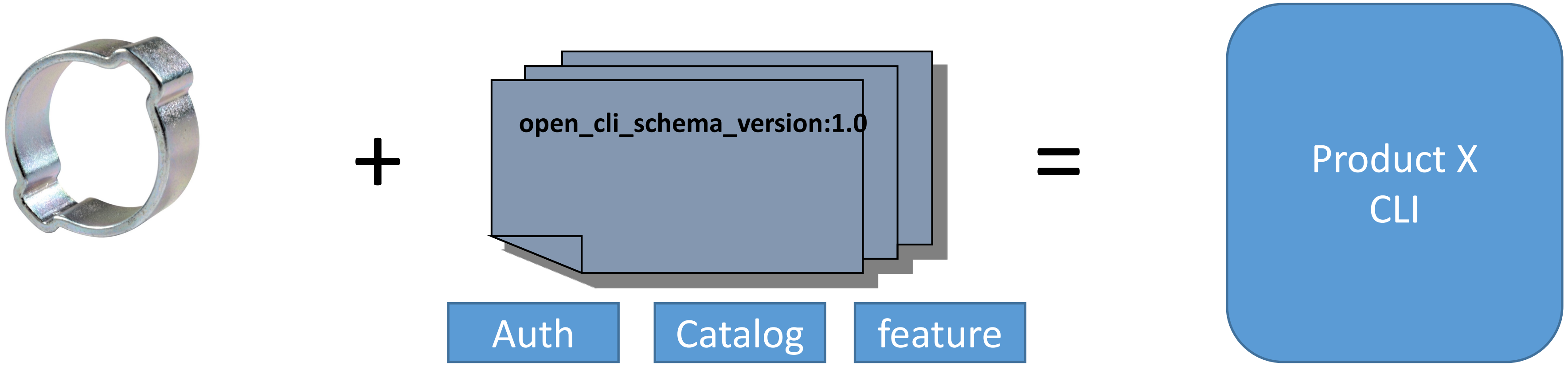
https://wiki.onap.org

To download

Please download ONAP CLI here

IT IS PLATFORM

- **Generic platform to develop CLI for any products** *(ONAP, VNF, VNFM, SDNC, EMS, your commercials, etc.)*
- Just author the required YAML files to yield CLI for any product
- To use OCLIP for a given product, author should implement following commands
  - **Authentication command**
  - **Catalog command**
  - Feature specific commands



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open_cli_schema_version:1.0

Auth

Catalog

feature

=

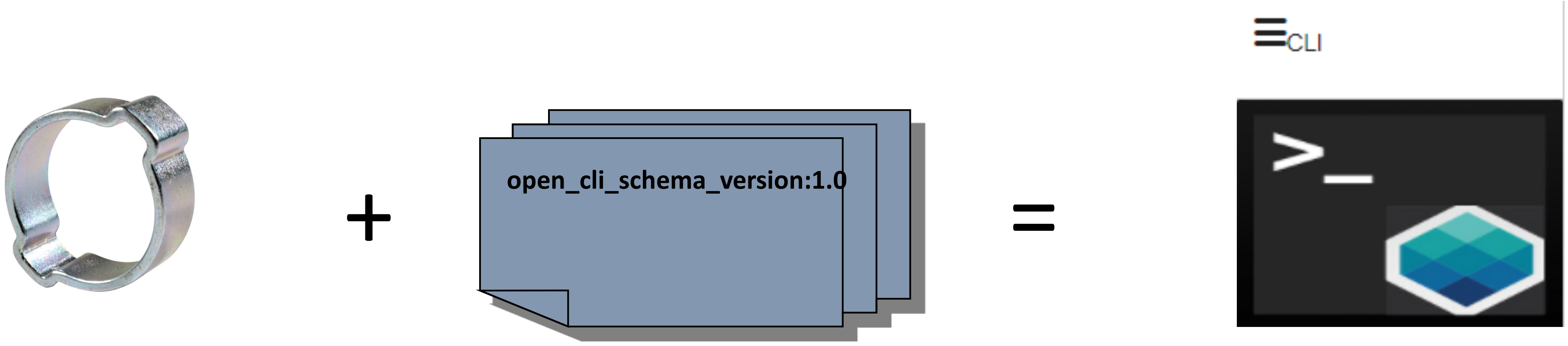
Product X CLI

ONAP CLI

ONAP CLI

- All ONAP commands are developed by authoring set of YAMLs !!
- NO Coding !!

OCLIP + Set of command YAML files -> Yields ONAP CLI



open_cli_schema_version:1.0

Auth
Basic Authentication

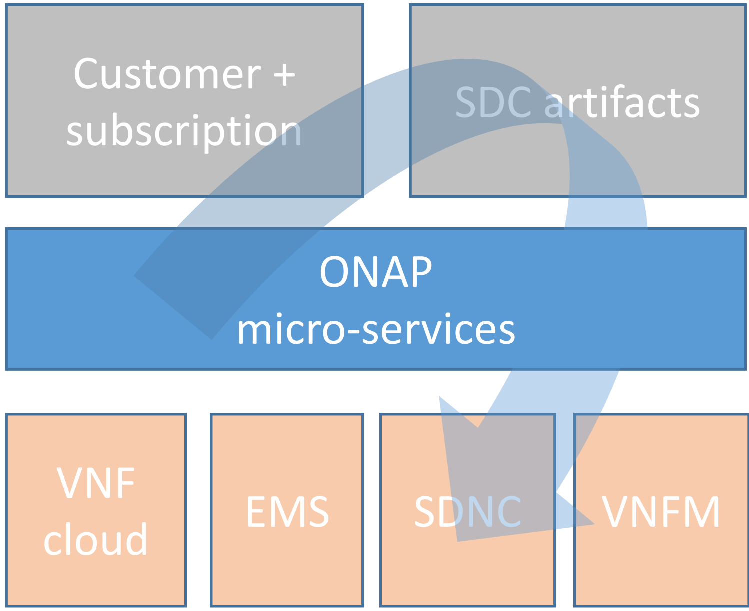
Catalog
MSB

Features
AAI, SDC, SO

ONAP CLI

Following features are supported as commands in ONAP CLI:

- ONAP micro-service discovery
- ONAP external system and VNF cloud on-boarding
- ONAP customer and subscription management
- ONAP SDC artifacts on-boarding (VF, NS TBD)
- ONAP network service life-cycle management



DEMO

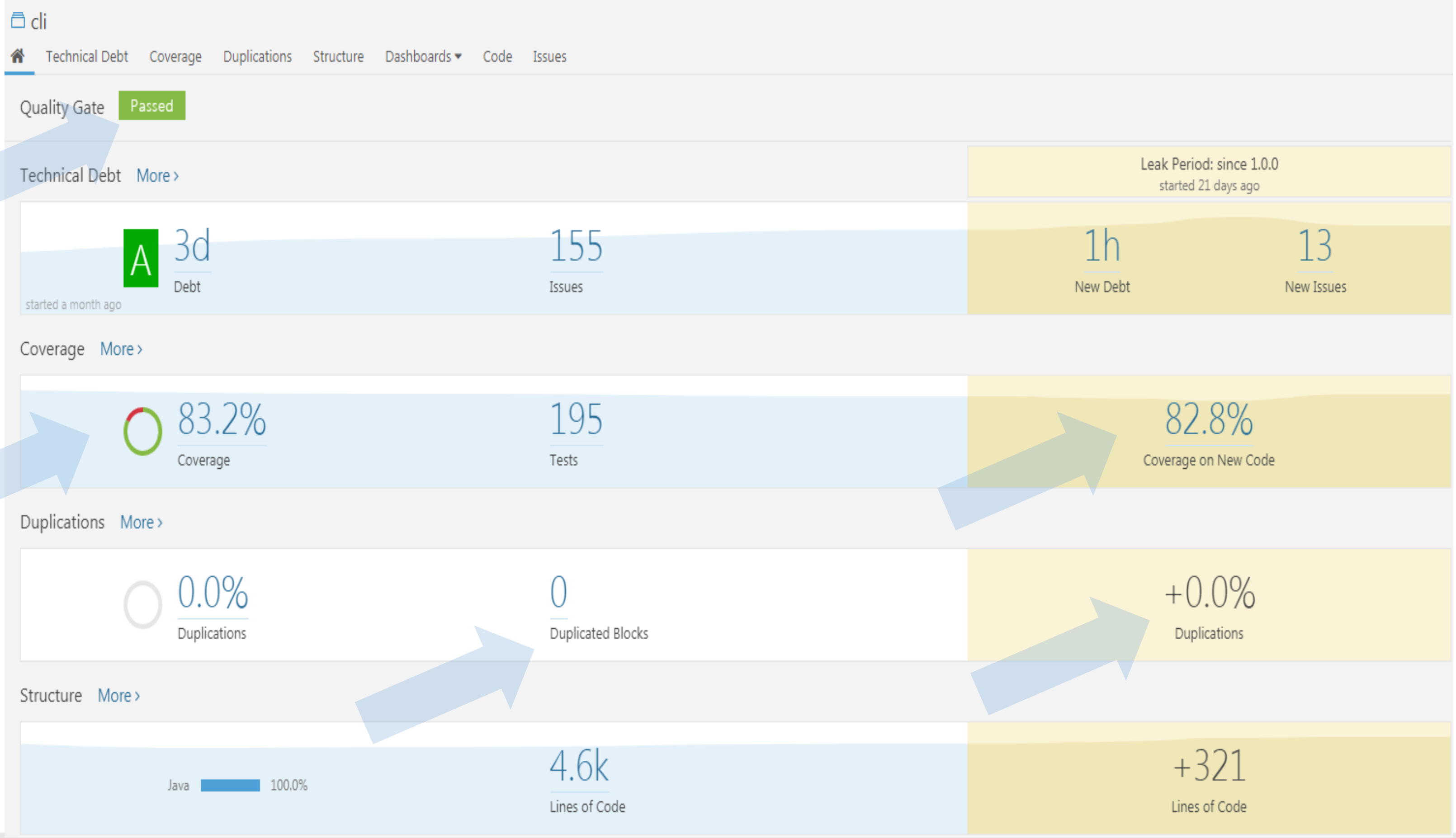
Package

- **use sample-1.0**
  - hello-world --name mkr
  - hello-world-http -m http://192.168.99.100:8080 --name mkr
- **use onap-1.1**
  - microservice-create -m http://192.168.99.100 --service-name test --service-version v1 --service-url /test/v1 192.168.99.100 8080
  - microservice-list -m http://192.168.99.100
  - microservice-show -m http://192.168.99.100 --service-name test --service-version v1

Thank you

Useful resources:

- Wiki : https://wiki.onap.org/display/DW/Command+Line+Interface+Project
- Documents: http://onap.readthedocs.io/en/latest/submodules/cli.git/docs/index.html
- Installers: Binaries & Installers
- Developer guide: TBD



cli

Quality Gate Passed

Technical Debt More ›

Leak Period: since 1.0.0
started 21 days ago

A 3d Debt
started a month ago
155 Issues
1h New Debt
13 New Issues

Coverage More ›

83.2% Coverage
195 Tests
82.8% Coverage on New Code

Duplications More ›

0.0% Duplications
0 Duplicated Blocks
+0.0% Duplications

Structure More ›

Java 100.0%
4.6k Lines of Code
+321 Lines of Code

Kanagaraj Manickam

- Sr. System Architect in Huawei
- OpenStack
  - Core-reviewer for OpenStack HEAT & TACKER
  - OpenStack Presentations
    - Heat Orchestration Template (HOT)
    - Monasca based Auto-scaling
  - Namos (OpenStack inventory controller)
- ONAP
  - CLI PTL
  - VFC committer
- Domain Experiences
  - Data-center storage, server Management & Orchestration (7 yrs)
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