

전자정부표준프레임워크 기반의 Open PaaS 개발

설치가이드

Open PaaS Controller on OpenStack

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목차

[1. 개요 4](#_Toc429134720)

[1.1. 문서 목적 4](#_Toc429134721)

[1.2. 범위 4](#_Toc429134722)

[1.3. 참고 자료 4](#_Toc429134723)

[2. Prerequisites 5](#_Toc429134724)

[2.1. 개요 5](#_Toc429134725)

[2.2. OpenStack 5](#_Toc429134726)

[2.2.1. Dashboard(Horizon) 5](#_Toc429134727)

[2.2.2 Security Group 6](#_Toc429134728)

[2.3. Bosh Server 및 Bosh CLI 7](#_Toc429134729)

[2.4 DNS Server 7](#_Toc429134730)

[2.5 OP CLI 9](#_Toc429134731)

[3. Open PaaS Controller 설치 10](#_Toc429134732)

[3.1 Release Upload 10](#_Toc429134733)

[3.2 Stemcell Upload 11](#_Toc429134734)

[3.3 Deployment Manifest 13](#_Toc429134735)

[3.3.1 Name & Release 13](#_Toc429134736)

[3.3.2 Networks 13](#_Toc429134737)

[3.3.3 Compilation 14](#_Toc429134738)

[3.3.4 Resource Pools 14](#_Toc429134739)

[3.3.5 Update 16](#_Toc429134740)

[3.3.6 Jobs 16](#_Toc429134741)

[3.3.7 Properties 27](#_Toc429134742)

[3.4 Bosh Deploy 38](#_Toc429134743)

[3.4.1 Deployment Manifest 지정 38](#_Toc429134744)

[3.4.2 Open PaaS Controller Deploy 39](#_Toc429134745)

[3.5 설치형상 확인 40](#_Toc429134746)

[4 설치 검증 41](#_Toc429134747)

[4.1 CF Login 41](#_Toc429134748)

[4.2 Application Deploy 42](#_Toc429134749)

[4.3 Application Access 42](#_Toc429134750)

1. 개요
   1. 문서 목적

본 문서(설치가이드)는, 현 시점에서 지원되는 IaaS(Infrastructure as a Service) 중 하나인 OpenStack(Icehouse) 환경에서 Open PaaS Controller를 설치하기 위한 가이드를 제공하는데 그 목적이 있다.

* 1. 범위

본 문서의 범위는 Open PaaS Controller를 OpenStack Icehouse에 설치하기 데 대한 내용으로 한정되어 있다. vSphere/AWS와 같은 다른 IaaS 환경에서의 설치는 그에 맞는 가이드 문서를 참고해야 하며, Bosh 설치 또한 해당 가이드 문서를 별도로 참조해야 한다.

* 1. 참고 자료

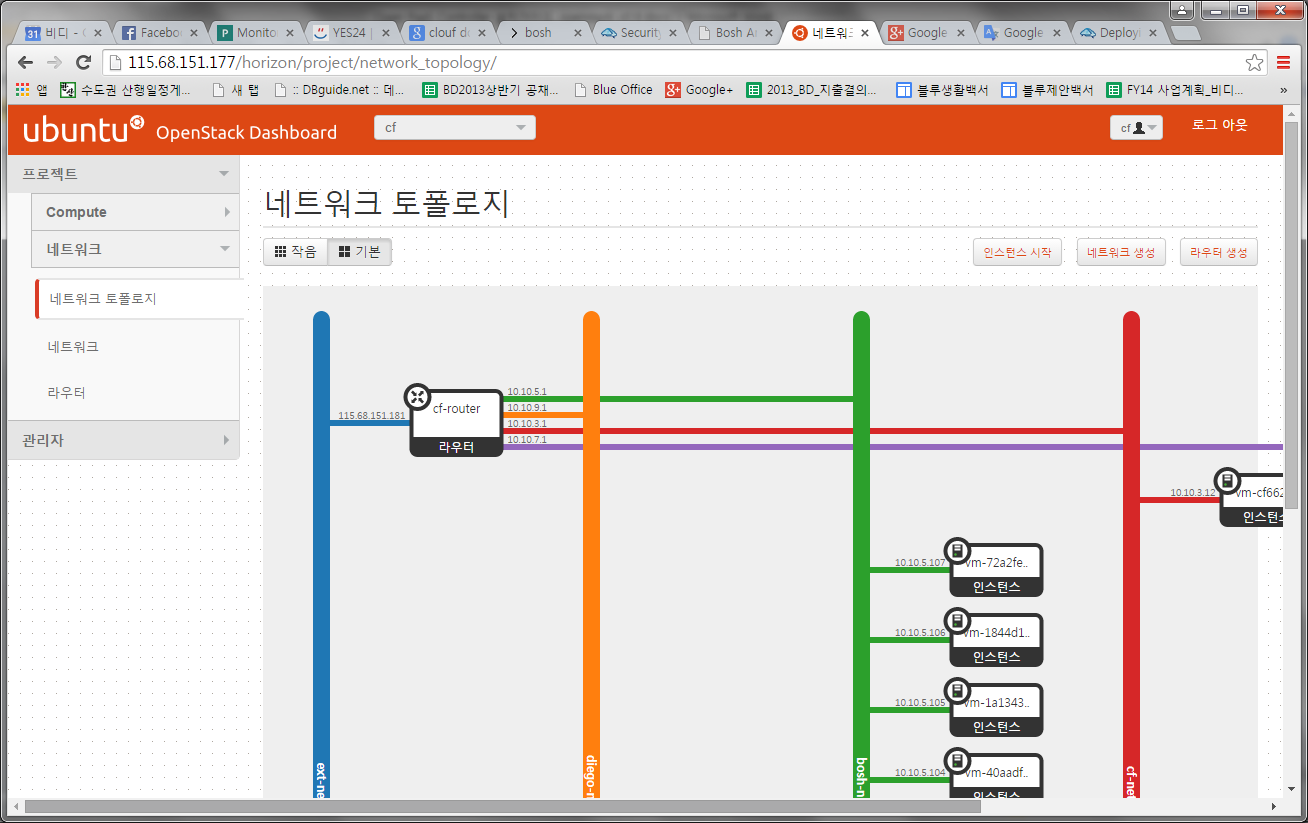
http://docs.cloudfoundry.org/deploying/openstack/

https://github.com/cloudfoundry/cf-release

1. Prerequisites
   1. 개요

Open PaaS Controller를 설치하기 전에 IaaS(OpenStack) 환경이 정상적으로 구성되어 있고, Bosh Server와 Bosh/OP CLI가 설치되어 있는지를 확인해야 한다.

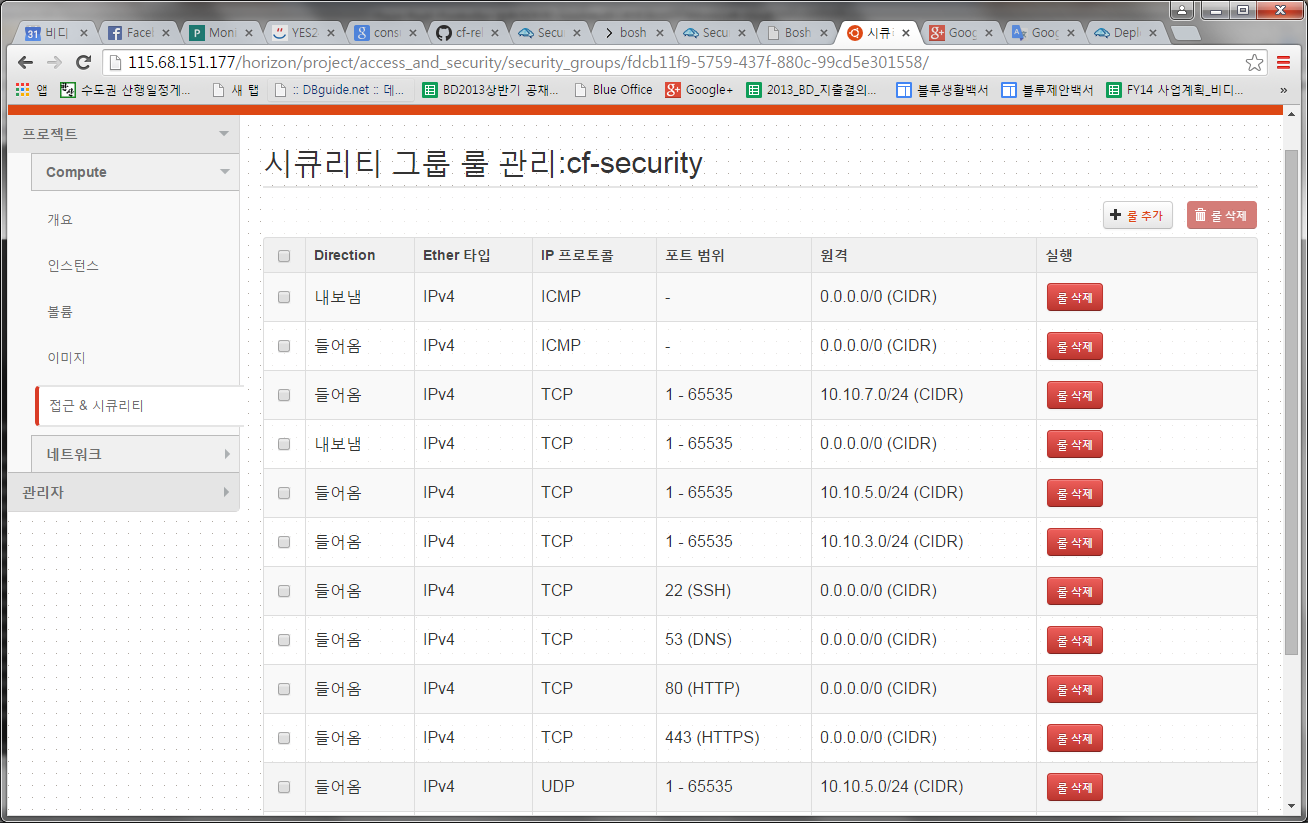
* 1. OpenStack
     1. Dashboard(Horizon)



**[그림출처]: Open PaaS 사업단 개발환경**

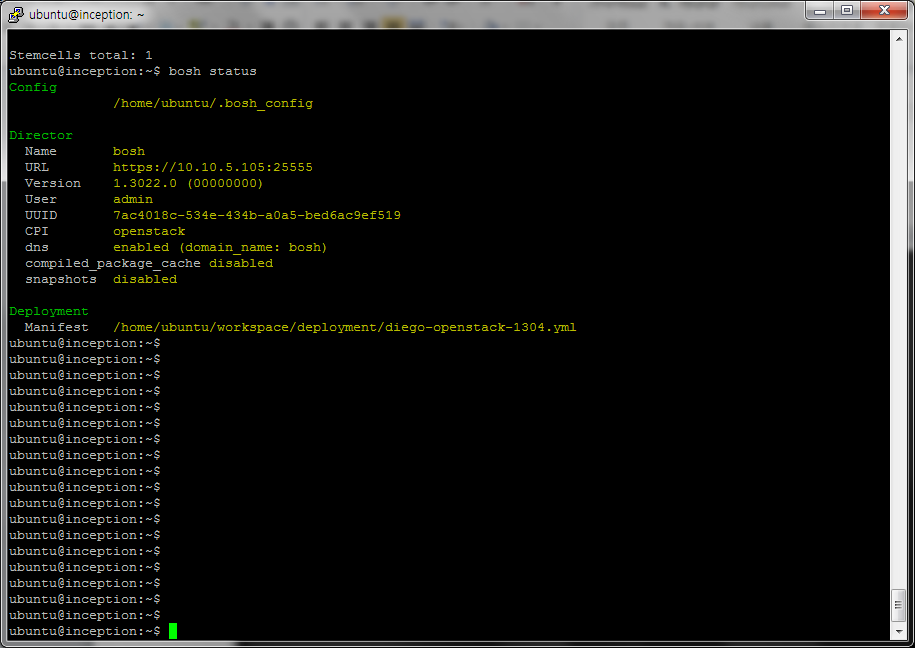
OpenStack Dashboard(Horizon)으로 정상 접속되어야 하고, Open PaaS Controller가 설치될 Subnet이 구성되어 있어야 한다. 별도 Subnet 은 필수적인 구성은 아니나, 관리의 용이성을 위해서 사용하는 것을 권장한다.

2.2.2 Security Group



SSH, HTTP, HTTPS, DNS Protocol을 받을 수 있고, 모든 통신 Protocol을 엑세스 할 수 있도록 Security Group을 설정한다.(주의: 내부 네트워크 구간에서는 모든 Procotol이 사용 가능하도록 구성해야 한다.)

* 1. Bosh Server 및 Bosh CLI



**[그림출처]: Open PaaS 사업단 개발환경**

“bosh status” 명령을 실행하여 위와 같이 정상적으로 출력되는 지를 확인한다. 만약 문제 발생 시에는 Bosh 설치가이드를 참조하여 정상적으로 Bosh 환경을 구성한 후 이후 작업을 진행한다.

2.4 DNS Server

Open PaaS Controller는 독자적인 Zone을 DNS에 등록해야 한다. 사용 가능한 DNS Server가 존재하지 않는다면, VM 등에 별도로 구축하여야 한다. 예를 들어 Linux의 경우에는 bind9 Package를 설치하고 아래와 같이 Platform Zone을 등록한다.

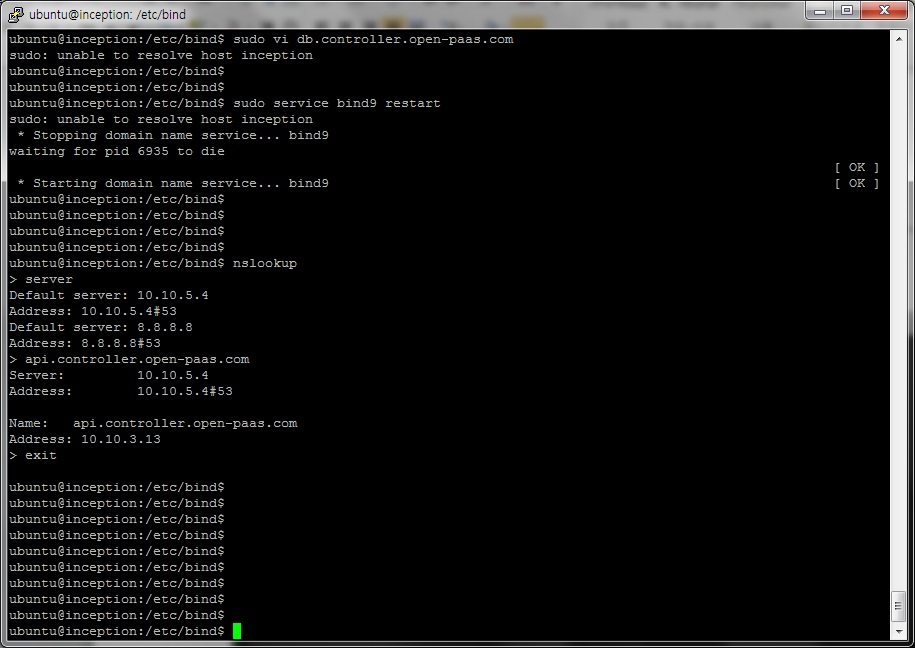
/etc/bind/named.conf.local

|  |
| --- |
| zone "controller.open-paas.com" {  type master;  file "/etc/bind/db.controller.open-paas.com";  }; |

/etc/bind/db.controller.open-paas.com

|  |
| --- |
| ;  ; BIND data file for local loopback interface  ;  $TTL 604800  @ IN SOA ns.controller.open-paas.com. root.controller.open-paas.com. (  2 ; Serial  604800 ; Refresh  86400 ; Retry  2419200 ; Expire  604800 ) ; Negative Cache TTL  ;  @ IN NS ns.controller.open-paas.com.  \* IN A 10.10.3.13 **# HA Proxy VM IP 주소**  @ IN AAAA ::1 |

NSLOOKUP 등으로 DNS Server에 Platform Domain이 정상 등록 되었는지 확인한다.

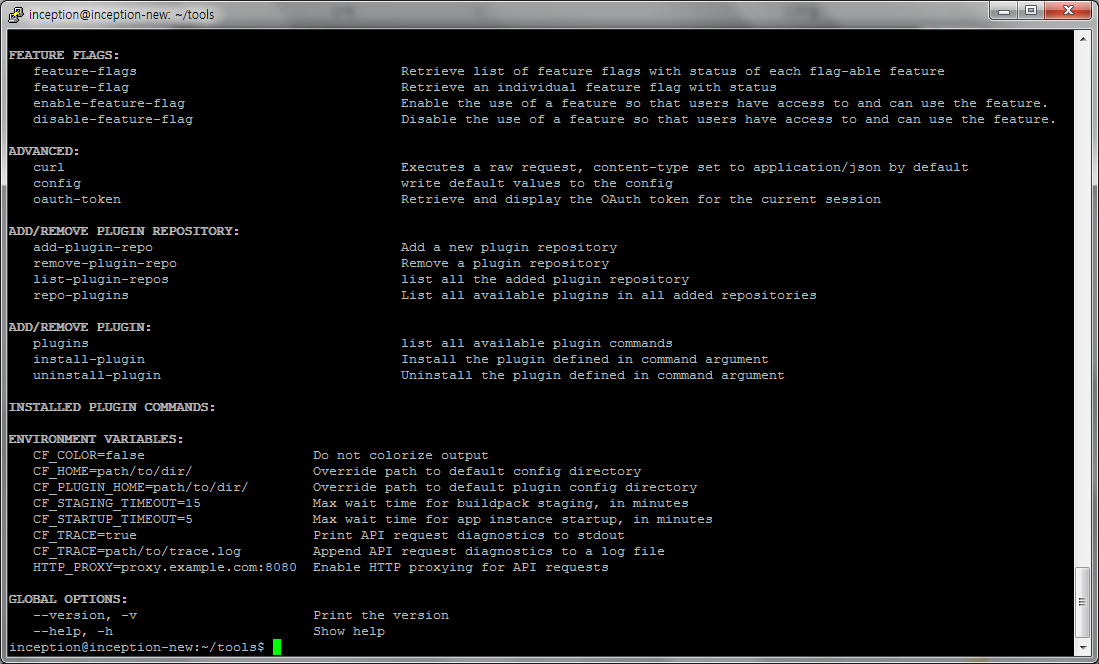


2.5 OP CLI

Open PaaS 설치 패키지 내에 포함되어 있는 OP CLI 압축 파일을 풀고 명령어 Path Folder에 실행 파일을 복사한다.

|  |
| --- |
| sudo tar -xvzf $INSTALL\_PACKAGE/OpenPaaS-Dev-Tools/op-CLI/cf-linux-amd64.tgz  sudo cp cf /usr/bin |

“cf” 명령어를 입력하면 아래와 같은 Help 화면이 출력됨을 확인한다.

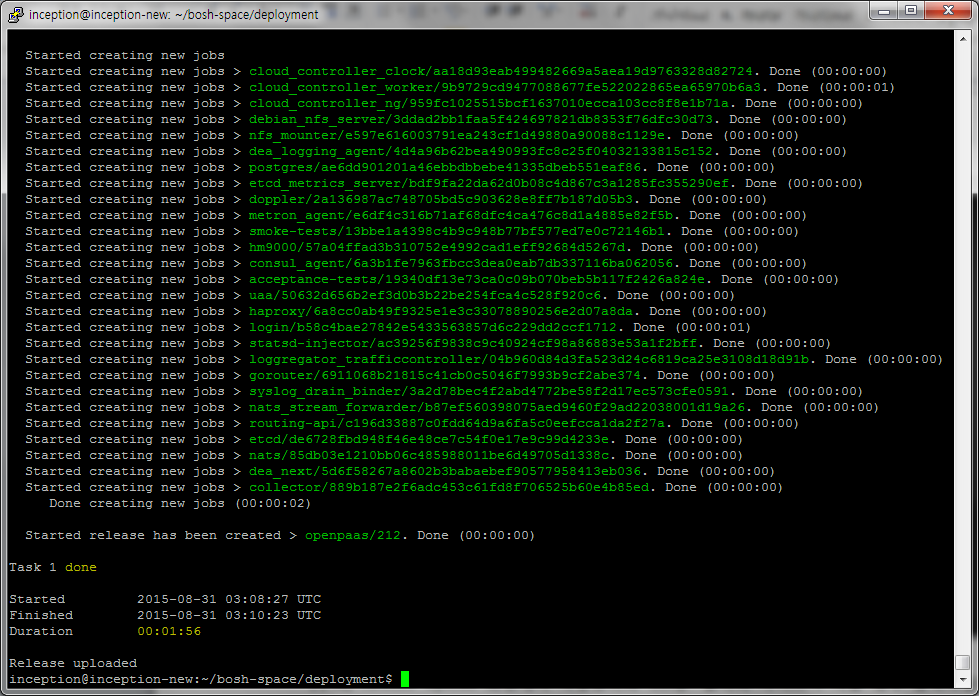


1. Open PaaS Controller 설치
   1. Release Upload

배포된 설치 패키지의 OpenPaaS-Controller 폴더에 있는 Open PaaS Controller Bosh Release를 Bosh Server로 아래와 같은 명령으로 Beta-1.0 버전을 Upload 한다.

|  |
| --- |
| bosh upload release $INSTALL\_PACKAGE/OpenPaaS-Controller/openpaas-beta-1.0.tgz |

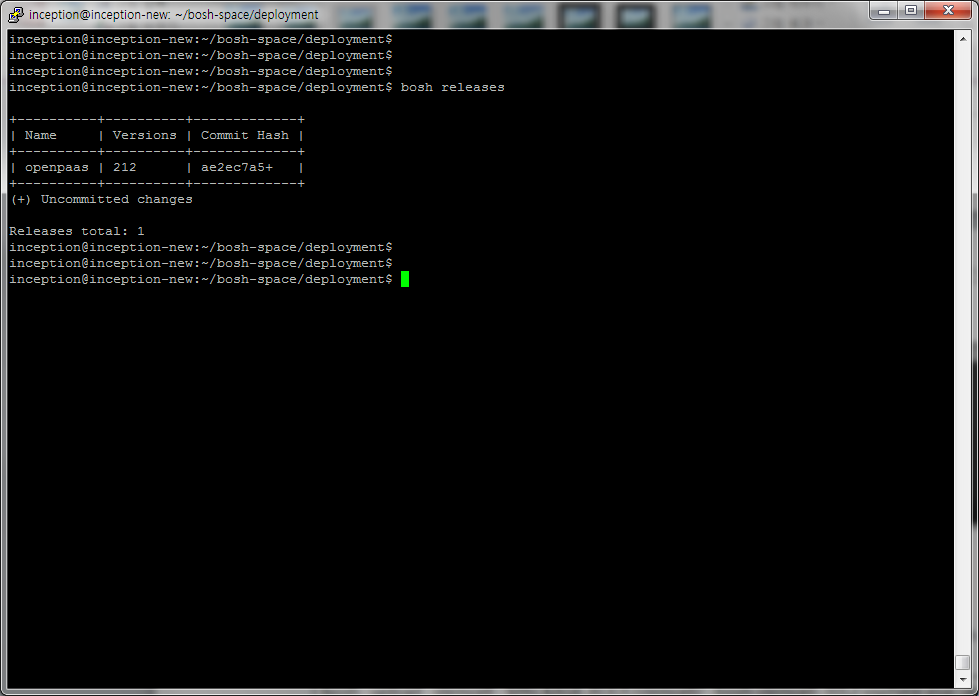
Release Upload는 상황에 따라 다소 차이는 있으나 보통 20-30분 정도 소요가 되며, 정상 Upload가 되면 아래의 그림과 같은 메시지가 출력된다.



[주의] Release Upload 과정에서 작업장비의 “/tmp” 폴더의 사이즈가 작을 경우 압축파일을 풀거나 묶을 때 에러가 발생할 수 있으므로, 10GB 이상 Free Size가 있는지를 확인해야 한다.

Bosh Sever에 Release가 정상적으로 Upload 되었는지는 “bosh releases” 명령으로 확인한다.

|  |
| --- |
| bosh releases |

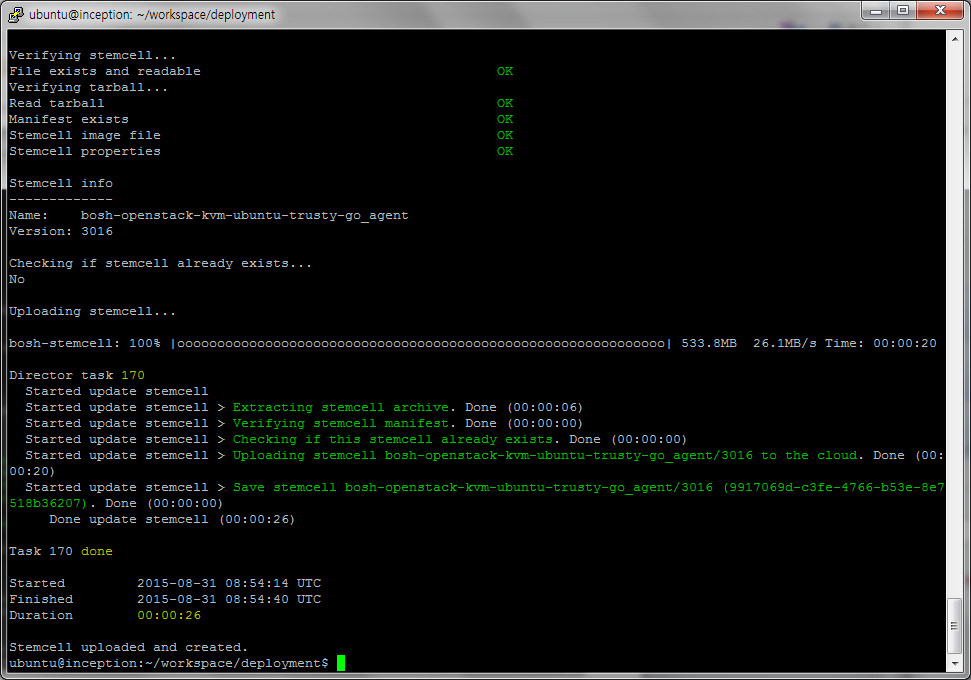


* 1. Stemcell Upload

배포된 설치 패키지의 OpenPaaS-Stemcells 폴더에 있는 Open PaaS OpenStack용 Stemcell[[2]](#footnote-2)을 Bosh Server로 아래와 같은 명령으로 3016 Version을 Upload 한다.

|  |
| --- |
| bosh upload stemcell $INSALL\_PACKAGE/OpenPaaS-Stemcells/bosh-stemcell-3016-openstack-kvm-ubuntu-trusty-go\_agent.tgz |

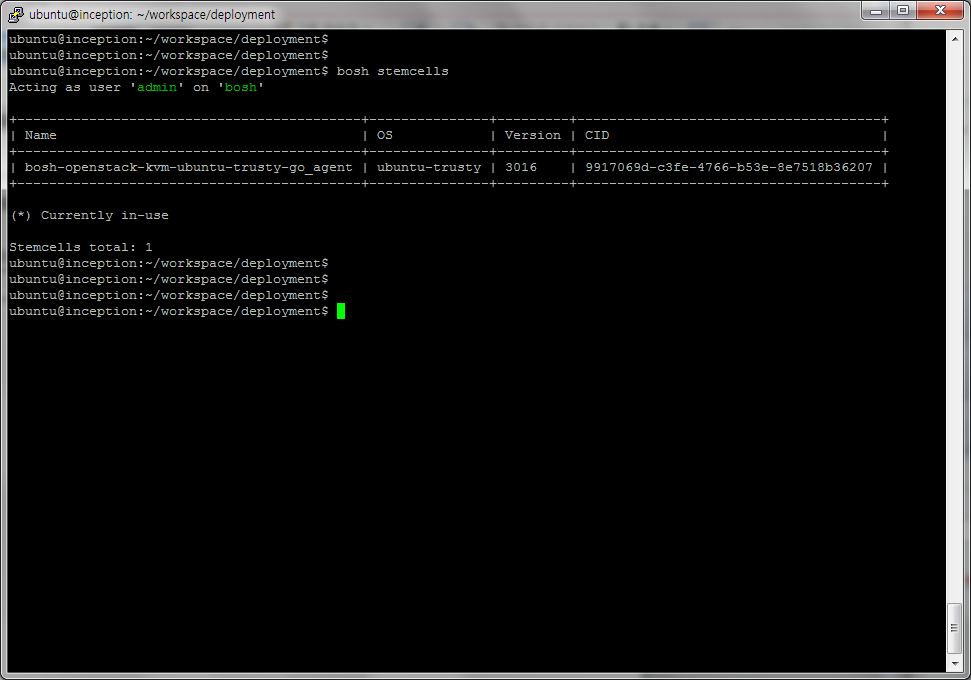
Stemcell Upload는 상황에 따라 다소 차이는 있으나 보통 5-10분 정도 소요가 되며, 정상 Upload가 되면 아래의 그림과 같은 메시지가 출력된다.



[주의] Stemcell Upload 과정에서 작업장비의 “/tmp” 폴더의 사이즈가 작을 경우 압축파일을 풀거나 묶을 때 에러가 발생할 수 있으므로, 10GB 이상 Free Size가 있는지를 확인해야 한다.

Bosh Sever에 Stemcell이 정상적으로 Upload 되었는지는 “bosh stemcells” 명령으로 확인한다.

|  |
| --- |
| bosh stemcells |



* 1. Deployment Manifest

배포된 설치 패키지에 포함된 Sample Deployment Manifest File($INSTALL\_PACKAGE/OpenPaaS-Deployment/openpaas-openstack-beta-1.0.yml)을 아래의 순서대로 설치환경에 적합하게 수정한다.

3.3.1 Name & Release

|  |
| --- |
| name: openpaas-openstack-beta-1.0 **# Deployment Name**  director\_uuid: 6e0f7c41-2415-4319-98aa-38109597aff4 **# Bosh Director UUID**  releases:  - name: openpaas **# Bosh Release Name**  version: beta-1.0 **# Bosh Release Version** |

Deployment Name은 설치자가 임의로 부여하는데, IaaS와 Version을 표시할 것을 권장한다. Bosh Director UUID는 “bosh status” 명령을 실행하면 출력되는 UUID 값을 넣고, Release Name과 Version은 “bosh releases” 명령의 결과로 나오는 값들을 입력하도록 한다.

3.3.2 Networks

|  |
| --- |
| networks:  - name: op\_network **# Open PaaS Controller가 설치될 Network Name**  subnets:  - cloud\_properties:  net\_id: 55248d09-809f-42db-b8a0-dec39903bcc1 **# Neutron Subnet ID**  security\_groups:  - cf-security  dns:  - 10.10.5.4 **# DNS Server**  - 8.8.8.8  gateway: 10.10.3.1 **# Gateway IP Address**  name: default\_unused  range: 10.10.3.0/24 **# Network CIDR**  #reserved:  static:  - 10.10.3.11 - 10.10.3.70 **# VM에 할당될 Static IP 주소 대역**  type: manual |

Network Name은 설치자가 임의로 부여 가능하다. Neutron Subnet ID, Gateway, DNS Server, Network CIDR은 OpenStack 구성을 직접 확인하거나 인프라 담당자에게 문의하여 정보를 얻도록 한다. Static IP 주소는 Open PaaS Controller를 설치할 때 개별 VM에 할당될 IP의 주소 대역으로 마찬가지로 인프라 담당자에게 할당을 받아야 한다.

3.3.3 Compilation

|  |
| --- |
| compilation:  cloud\_properties: **# Compile용 VM의 사양**  instance\_type: m1.medium  network: op\_network **# Network Name**  reuse\_compilation\_vms: true  workers: 6 **# 동시 동작하는 VM 수** |

Network Name은 3.3.2에서 정의한 것과 동일한 이름을 줘야 한다. Workers는 동시에 Compile을 수행하는 VM의 개수로 별다른 환경적 특성이 없다면 Default 값을 사용토록 한다.

3.3.4 Resource Pools

|  |
| --- |
| resource\_pools:  - name: small **# Resource Name**  cloud\_properties:  instance\_type: m1.small  env:  bosh:  password: $6$4gDD3aV0rdqlrKC$2axHCxGKIObs6tAmMTqYCspcdvQXh3JJcvWOY2WGb4SrdXtnCyNaWlrf3WEqvYR2MYizEGp3kMmbpwBC6jsHt0  network: op\_network **# Network Name**  size: 3 **# Small을 사용하는 VM 개수**  stemcell:  name: bosh-openstack-kvm-ubuntu-trusty-go\_agent **# Stemcell Name**  version: 3016 **# Stemcell Version**  - name: medium  cloud\_properties:  instance\_type: m1.medium  env:  bosh:  password: $6$4gDD3aV0rdqlrKC$2axHCxGKIObs6tAmMTqYCspcdvQXh3JJcvWOY2WGb4SrdXtnCyNaWlrf3WEqvYR2MYizEGp3kMmbpwBC6jsHt0  network: op\_network  size: 10  stemcell:  name: bosh-openstack-kvm-ubuntu-trusty-go\_agent  version: 3016  - name: large  cloud\_properties:  instance\_type: m1.large  env:  bosh:  password: $6$4gDD3aV0rdqlrKC$2axHCxGKIObs6tAmMTqYCspcdvQXh3JJcvWOY2WGb4SrdXtnCyNaWlrf3WEqvYR2MYizEGp3kMmbpwBC6jsHt0  network: op\_network  size: 1  stemcell:  name: bosh-openstack-kvm-ubuntu-trusty-go\_agent  version: 3016  - name: runner  cloud\_properties:  instance\_type: m1.large  env:  bosh:  password: $6$4gDD3aV0rdqlrKC$2axHCxGKIObs6tAmMTqYCspcdvQXh3JJcvWOY2WGb4SrdXtnCyNaWlrf3WEqvYR2MYizEGp3kMmbpwBC6jsHt0  network: op\_network  size: 1  stemcell:  name: bosh-openstack-kvm-ubuntu-trusty-go\_agent  version: 3016  - name: router  cloud\_properties:  instance\_type: m1.medium  env:  bosh:  password: $6$4gDD3aV0rdqlrKC$2axHCxGKIObs6tAmMTqYCspcdvQXh3JJcvWOY2WGb4SrdXtnCyNaWlrf3WEqvYR2MYizEGp3kMmbpwBC6jsHt0  network: op\_network  size: 2  stemcell:  name: bosh-openstack-kvm-ubuntu-trusty-go\_agent  version: 3016 |

각 Resource의 Size는 Jobs에서 해당 Resource를 사용하는 VM 개수와 정확하게 일치해야 한다. Stemcell Name과 Version은 “bosh stemcells” 명령어 결과로 출력되는 값들을 입력하도록 한다.

3.3.5 Update

|  |
| --- |
| update:  canaries: 1  canary\_watch\_time: 30000-600000  max\_in\_flight: 1  serial: true **# VM의 순차적 Update**  update\_watch\_time: 5000-600000 |

Default 값들을 수정 없이 사용한다.

3.3.6 Jobs

아래 Sample Jobs를 참고하여 설치 환경에 맞게 수정한다.

|  |
| --- |
| jobs:  - name: consul  instances: 1 **# VM Instance 개수**  networks:  - name: op\_network **# VM이 설치될 Network**  static\_ips: 10.10.3.50 **# Consul에 할당된 IP 주소**  persistent\_disk: 1024  properties:  consul:  agent:  mode: server  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  resource\_pool: medium  templates:  - name: consul\_agent  release: openpaas  - name: metron\_agent  release: openpaas  update:  max\_in\_flight: 1  serial: true  - name: ha\_proxy  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.13 **# HAProxy IP 주소**  properties:  ha\_proxy:  disable\_http: false  ssl\_pem: | # SSL Key  -----BEGIN CERTIFICATE-----  MIICyTCCAjICCQD6oXQcZiA41jANBgkqhkiG9w0BAQsFADCBqDELMAkGA1UEBhMC  S1IxDjAMBgNVBAgMBVNlb3VsMRUwEwYDVQQHDAxZZW9uZ2RldW5ncG8xEjAQBgNV  BAoMCW9wZW4tcGFhczESMBAGA1UECwwJb3Blbi1wYWFzMR8wHQYDVQQDDBYqLmNm  LWRldi5vcGVuLXBhYXMuY29tMSkwJwYJKoZIhvcNAQkBFhphZG1pbkBjZi1kZXYu  b3Blbi1wYWFzLmNvbTAeFw0xNTA4MjYwNjEwNThaFw0xNTA5MjUwNjEwNThaMIGo  MQswCQYDVQQGEwJLUjEOMAwGA1UECAwFU2VvdWwxFTATBgNVBAcMDFllb25nZGV1  bmdwbzESMBAGA1UECgwJb3Blbi1wYWFzMRIwEAYDVQQLDAlvcGVuLXBhYXMxHzAd  BgNVBAMMFiouY2YtZGV2Lm9wZW4tcGFhcy5jb20xKTAnBgkqhkiG9w0BCQEWGmFk  bWluQGNmLWRldi5vcGVuLXBhYXMuY29tMIGfMA0GCSqGSIb3DQEBAQUAA4GNADCB  iQKBgQDwguc5oQBT4U2evWMYVh5seX4rRWG696s6XqzQ6fTGiTEQa2kQaSvKCqOb  h4eptlOTVjqdFUfRB5kX4HPnMqTDXUPy7JLm4ymtLBqEhSAQvtutHSfsy0b5eF54  nSXryOcfAYyeULLxOlN2xZ5Yvy5x0LZ2fqUm58UuzUFlpCT8jwIDAQABMA0GCSqG  SIb3DQEBCwUAA4GBADcvW+KAjWkX1GZ22ZCaBkJbID6eH5GdNcVKUlI7Wuy4A/fs  X/Zd9S0K4GExXBgNKsI8AtpcJb1LrSVL+0qcxhMCoPSVYZeSe/vTgjWHXrmVB5x6  a/qUhfcQugC0bW2zJL/M+NeC1XNtQyNQVmPaBGzMl9WCUhfqKFsVaKu6JMXJ  -----END CERTIFICATE-----  -----BEGIN RSA PRIVATE KEY-----  MIICXQIBAAKBgQDwguc5oQBT4U2evWMYVh5seX4rRWG696s6XqzQ6fTGiTEQa2kQ  aSvKCqObh4eptlOTVjqdFUfRB5kX4HPnMqTDXUPy7JLm4ymtLBqEhSAQvtutHSfs  y0b5eF54nSXryOcfAYyeULLxOlN2xZ5Yvy5x0LZ2fqUm58UuzUFlpCT8jwIDAQAB  AoGBAMpCq8WRGj9wN+CJEG8E7Wz39xzYqkmbwsnBmL/QIGNeOH7AdYixiXvN2q0P  Gw2kIUDEwWIc5Vpqc1rbDV2e/2MTClXRHu3Mkwu+Xao5a4yfA/PUk4jY2ZT6CDcm  hqvDBwgxYWSf6goQudkz8hj7S5nnUBUBy4WZoK11KH8goxuRAkEA+tFZSdEsH6dc  eYzVO2PVFsZXOuaCBYbiH3AIdclS1e3MsrGDGrcKZFnTLlNPCY99uqs+XflzWxnu  hubf+00fNQJBAPV7CmX4SzRSJVz1rCI8Z5qqiR1jZuf2e+cBLfNxD8bcsaEN5NAU  qMHyWMpJzE50X2EklpsW9vEgwM9Ll45IUTMCQQDR6OMRJD4JP8fk8jiCu8pahSP7  525psbkNFnX+Hb91ys7Fvko60XWhBov2+UHsfmp7D1Xi0CH63HkD7bUGXEUBAkBD  WtVJkU0hOADkdswaQLS0rWId3C5aKzln8tzm1PjdOaTLagKETYbYYGSYbJNQW4Ho  J5/jQfPTyYbd2gHlmlYdAkAfKutj2aTiuv9fIDekrU350pFeNOGR00yt7S6bt0cx  mAIkLL4WmtZiOxysK7xXWOk+aLdgMRCj3kUQynssYLW2  -----END RSA PRIVATE KEY-----  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  router:  servers:  z1:  - 10.10.3.15 **# Router IP 주소**  resource\_pool: router  templates:  - name: haproxy  release: openpaas  - name: metron\_agent  release: openpaas  - name: consul\_agent  release: openpaas  update: {}  - name: nats  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.11 **# NATS IP 주소**  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: nats  release: openpaas  - name: nats\_stream\_forwarder  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: etcd  instances: 1  networks:  - name: op\_network  static\_ips:  - 10.10.3.24 **# ETCD IP 주소**  persistent\_disk: 10024  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: etcd  release: openpaas  - name: etcd\_metrics\_server  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: stats  instances: 1  networks:  - name: op\_network  static\_ips:  - 10.10.3.40 **# Stats(Collector) IP 주소**  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: small  templates:  - name: collector  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: nfs  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.12 **# NFS Server IP 주소**  persistent\_disk: 102400  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: debian\_nfs\_server  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: postgres  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.22 **# DB Server(PostgreSQL) IP 주소**  persistent\_disk: 4096  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: postgres  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: uaa  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.41 **# UAA IP 주소**  properties:  consul:  agent:  services:  - uaa  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: uaa  release: openpaas  - name: metron\_agent  release: openpaas  - name: consul\_agent  release: openpaas  update: {}  - name: login  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.37 **# Login Server IP 주소**  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: login  - name: metron\_agent  release: openpaas  update: {}  - name: api  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.42 **# Cloud Controller IP 주소**  persistent\_disk: 0  properties:  consul:  agent:  services:  - cloud\_controller\_ng  - routing-api  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  nfs\_server:  address: 10.10.3.12 **# NFS Server IP 주소**  allow\_from\_entries:  - 10.10.3.0/24 **# 허용 Network CIDR 값**  share: null  resource\_pool: large  templates:  - name: cloud\_controller\_ng  release: openpaas  - name: routing-api  release: openpaas  - name: metron\_agent  release: openpaas  - name: statsd-injector  release: openpaas  - name: consul\_agent  release: openpaas  - name: nfs\_mounter  release: openpaas  update: {}  - name: clock\_global  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.43 **# Cloud Controller Clock IP 주소**  persistent\_disk: 0  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: cloud\_controller\_clock  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: api\_worker  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.45 **# CC Worker IP 주소**  persistent\_disk: 0  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  nfs\_server:  address: 10.10.3.12 **# NFS Server IP 주소**  allow\_from\_entries:  - 10.10.3.0/24 **# 허용 Network CIDR 값**  share: null  resource\_pool: small  templates:  - name: cloud\_controller\_worker  release: openpaas  - name: metron\_agent  release: openpaas  - name: consul\_agent  release: openpaas  - name: nfs\_mounter  release: openpaas  update: {}  - name: hm9000  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.46 **# Health Manager IP 주소**  properties:  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: medium  templates:  - name: hm9000  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: runner  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.44 **# DEA IP 주소**  properties:  dea\_next:  zone: z1  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: runner  templates:  - name: dea\_next  release: openpaas  - name: dea\_logging\_agent  release: openpaas  - name: metron\_agent  release: openpaas  update:  max\_in\_flight: 1  - name: doppler  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.47 **# Doppler IP 주소**  properties:  networks:  apps: op\_network  doppler:  zone: z1  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  resource\_pool: medium  templates:  - name: doppler  release: openpaas  - name: syslog\_drain\_binder  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: loggregator\_trafficcontroller  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.48 **# Loggregator Controller IP 주소**  properties:  networks:  apps: op\_network  traffic\_controller:  zone: z1  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  resource\_pool: small  templates:  - name: loggregator\_trafficcontroller  release: openpaas  - name: metron\_agent  release: openpaas  update: {}  - name: router  instances: 1  networks:  - name: op\_network  static\_ips: 10.10.3.15 **# Router IP 주소**  properties:  consul:  agent:  services:  - gorouter  metron\_agent:  zone: z1  deployment: openpaas-beta-1.0  networks:  apps: op\_network  resource\_pool: router  templates:  - name: gorouter  release: openpaas  - name: metron\_agent  release: openpaas  - name: consul\_agent  release: openpaas  update: {} |

3.3.7 Properties

아래 Sample Manifest를 참조하여 설치 환경에 맞게 값을 수정한다.

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| properties:  acceptance\_tests: null  app\_domains:  - controller.open-paas.com # DNS Server에 등록된 Platform Domain Name  app\_ssh: null  cc: **# 여기서부터 Cloud Controller Properties**  allow\_app\_ssh\_access: true  allowed\_cors\_domains: []  app\_events:  cutoff\_age\_in\_days: 31  app\_usage\_events:  cutoff\_age\_in\_days: 31  audit\_events:  cutoff\_age\_in\_days: 31  billing\_event\_writing\_enabled: false  broker\_client\_default\_async\_poll\_interval\_seconds: 60  broker\_client\_max\_async\_poll\_duration\_minutes: 10080  broker\_client\_timeout\_seconds: 70  buildpacks:  buildpack\_directory\_key: controller-paas.com-cc-buildpacks  cdn: null  fog\_connection: null  bulk\_api\_password: admin **# Bulk API Password 설정**  client\_max\_body\_size: 2048M  db\_encryption\_key: admin **# DB Encryprion Key 지정**  db\_logging\_level: debug2  default\_app\_disk\_in\_mb: 1024  default\_app\_memory: 1024  default\_buildpacks:  - name: java\_buildpack\_offline  package: buildpack\_java\_offline  - name: java\_buildpack  package: buildpack\_java  default\_health\_check\_timeout: 60  default\_quota\_definition: default  default\_running\_security\_groups:  - public\_networks  - dns  default\_staging\_security\_groups:  - public\_networks  - dns  default\_to\_diego\_backend: false  development\_mode: false  diego\_docker: false  directories: null  disable\_custom\_buildpacks: false  droplets:  cdn: null  droplet\_directory\_key: controller.open-paas.com-cc-droplets  fog\_connection: null  external\_host: api  external\_protocol: https **# HTTP or HTTPS**  install\_buildpacks:  - name: java\_buildpack\_offline  package: buildpack\_java\_offline  - name: java\_buildpack  package: buildpack\_java  internal\_api\_password: admin **# Internal API Password**  internal\_api\_user: internal\_user  jobs:  app\_bits\_packer:  timeout\_in\_seconds: null  app\_events\_cleanup:  timeout\_in\_seconds: null  app\_usage\_events\_cleanup:  timeout\_in\_seconds: null  blobstore\_delete:  timeout\_in\_seconds: null  blobstore\_upload:  timeout\_in\_seconds: null  droplet\_deletion:  timeout\_in\_seconds: null  droplet\_upload:  timeout\_in\_seconds: null  generic:  number\_of\_workers: null  global:  timeout\_in\_seconds: 14400  model\_deletion:  timeout\_in\_seconds: null  logging\_level: debug2  maximum\_app\_disk\_in\_mb: 2048  maximum\_health\_check\_timeout: 180  min\_cli\_version: null  min\_recommended\_cli\_version: null  newrelic:  capture\_params: false  developer\_mode: false  environment\_name: null  license\_key: null  monitor\_mode: false  transaction\_tracer:  enabled: true  record\_sql: obfuscated  packages:  app\_package\_directory\_key: controller.open-paas.com-cc-packages  cdn: null  fog\_connection: null  max\_package\_size: 1073741824  quota\_definitions: **# Application Instance Default Quota 값 지정**  default:  memory\_limit: 10240  non\_basic\_services\_allowed: true  total\_routes: 1000  total\_services: 100  resource\_pool:  cdn: null  fog\_connection: null  resource\_directory\_key: controller.open-paas.com-cc-resources  security\_group\_definitions:  - name: public\_networks  rules:  - destination: 0.0.0.0-169.253.255.255  protocol: all  - destination: 169.255.0.0-172.15.255.255  protocol: all  - destination: 172.32.0.0-192.167.255.255  protocol: all  - destination: 192.169.0.0-255.255.255.255  protocol: all  - name: dns  rules:  - destination: 0.0.0.0/0  ports: "53"  protocol: tcp  - destination: 0.0.0.0/0  ports: "53"  protocol: u에  srv\_api\_uri: <https://api.controller.open-paas.com> **# Platform API Target URL**  staging\_upload\_password: admin **# Staging Upload Password**  staging\_upload\_user: staging\_upload\_user  system\_buildpacks:  - name: java\_buildpack\_offline  package: buildpack\_java\_offline  - name: java\_buildpack  package: buildpack\_java  thresholds:  api:  alert\_if\_above\_mb: null  restart\_if\_above\_mb: null  restart\_if\_consistently\_above\_mb: null  worker:  alert\_if\_above\_mb: null  restart\_if\_above\_mb: null  restart\_if\_consistently\_above\_mb: null  user\_buildpacks: []  users\_can\_select\_backend: true  ccdb: **# CCDB Properties**  address: 10.10.3.22 **# DB Server(PostgreSQL) VM IP 주소**  databases:  - citext: true  name: ccdb  tag: cc  db\_scheme: postgres  port: 5524  roles:  - name: ccadmin  password: admin **# ccadmin 계정 Password**  tag: admin  collector:  deployment\_name: openpaas-beta-1.0  consul:  agent:  log\_level: null  servers:  lan:  - 10.10.3.50 **# Consul VM IP 주소**  databases:  address: 10.10.3.22 **# DB Server VM IP 주소**  databases:  - citext: true  name: ccdb  tag: cc  - citext: true  name: uaadb  tag: uaa  db\_scheme: postgres  port: 5524  roles:  - name: ccadmin  password: admin  tag: admin  - name: uaaadmin  password: admin  tag: admin  dea\_next:  advertise\_interval\_in\_seconds: 5  allow\_host\_access: null  allow\_networks: []  default\_health\_check\_timeout: 60  deny\_networks: []  directory\_server\_protocol: http  disk\_mb: 32768  disk\_overcommit\_factor: 2  evacuation\_bail\_out\_time\_in\_seconds: 600  heartbeat\_interval\_in\_seconds: 10  instance\_disk\_inode\_limit: 200000  kernel\_network\_tuning\_enabled: true  logging\_level: debug  memory\_mb: 16384  memory\_overcommit\_factor: 3  rlimit\_core: 0  staging\_disk\_inode\_limit: 200000  staging\_disk\_limit\_mb: 6144  staging\_memory\_limit\_mb: 1024  description: Open PaaS sponsored by OCP Team  disk\_quota\_enabled: true  domain: controller.open-paas.com  doppler:  blacklisted\_syslog\_ranges: null  debug: false  maxRetainedLogMessages: 100  unmarshaller\_count: 5  doppler\_endpoint:  shared\_secret: admin **# Doppler Endpoint Password**  dropsonde:  enabled: true  etcd:  machines:  - 10.10.3.24 **# etcd VM IP 주소**  etcd\_metrics\_server:  nats:  machines:  - 10.10.3.11 **# NATS Server VM IP 주소**  password: admin  username: nats  hm9000:  url: <http://hm9000.controller.open-paas.com> **# HM9000 URL(DNS Name 확인)**  logger\_endpoint:  use\_ssl: false  port: 80  loggregator:  blacklisted\_syslog\_ranges: null  debug: false  maxRetainedLogMessages: 100  loggregator\_endpoint:  shared\_secret: admin  login:  analytics:  code: null  domain: null  asset\_base\_url: null  brand: oss  catalina\_opts: -Xmx768m -XX:MaxPermSize=256m  enabled: true  invitations\_enabled: null  links:  home: <http://console.controller.open-paas.com> **# Web Console URL(DNS Name 확인)**  network: null  passwd: http://console.controller.open-paas.com/password\_resets/new  signup: http://console.controller.open-paas.com/register  signup-network: null  logout: null  messages: null  notifications:  url: null  protocol: http  restricted\_ips\_regex: 10\.\d{1,3}\.\d{1,3}\.\d{1,3}|192\.168\.\d{1,3}\.\d{1,3}|169\.254\.\d{1,3}\.\d{1,3}|127\.\d{1,3}\.\d{1,3}\.\d{1,3}|172\.1[6-9]{1}\.\d{1,3}\.\d{1,3}|172\.2[0-9]{1}\.\d{1,3}\.\d{1,3}|172\.3[0-1]{1}\.\d{1,3}\.\d{1,3}  saml: null  self\_service\_links\_enabled: null  signups\_enabled: null  smtp:  host: null  password: null  port: null  user: null  spring\_profiles: null  tiles: null  uaa\_base: null  uaa\_certificate: null  url: null  metron\_agent:  deployment: null  metron\_endpoint:  shared\_secret: admin  nats:  address: 10.10.3.11 **# NATS Server VM IP 주소**  debug: false  machines:  - 10.10.3.11 **# NATS Server VM IP 주소**  monitor\_port: 0  password: admin  port: 4222  prof\_port: 0  trace: false  user: nats  nfs\_server:  address: 10.10.3.12 **# NFS Server VM IP 주소**  allow\_from\_entries:  - 10.10.3.0/24 **# NFS Mount 허용 Range 지정**  share: null  request\_timeout\_in\_seconds: 900  router:  cipher\_suites: null  enable\_routing\_api: null  enable\_ssl: null  requested\_route\_registration\_interval\_in\_seconds: 20  secure\_cookies: false  ssl\_cert: null  ssl\_key: null  status:  password: admin  user: router\_status  smoke\_tests: null  ssl:  skip\_cert\_verify: true  support\_address: http://support.ocp.com  syslog\_daemon\_config: null  system\_domain: controller.open-paas.com **# DNS Server에 등록한 Platform Domain Name**  system\_domain\_organization: OCP  uaa:  admin:  client\_secret: admin **# admin 계정 Password**  authentication:  policy:  countFailuresWithinSeconds: null  lockoutAfterFailures: null  lockoutPeriodSeconds: null  batch:  password: admin  username: batchuser  catalina\_opts: -Xmx768m -XX:MaxPermSize=256m  cc:  client\_secret: admin  clients:  cloud\_controller\_username\_lookup:  authorities: scim.userids  authorized-grant-types: client\_credentials  secret: admin  doppler:  authorities: uaa.resource  override: true  secret: admin  gorouter:  authorities: clients.read,clients.write,clients.admin,route.admin,route.advertise  authorized-grant-types: client\_credentials,refresh\_token  scope: openid,cloud\_controller\_service\_permissions.read  secret: admin  login:  authorities: oauth.login,scim.write,clients.read,notifications.write,critical\_notifications.write,emails.write,scim.userids,password.write  authorized-grant-types: authorization\_code,client\_credentials,refresh\_token  override: true  redirect-uri: http://login.controller.open-paas.com  scope: openid,oauth.approvals  secret: admin  notifications:  authorities: cloud\_controller.admin,scim.read  authorized-grant-types: client\_credentials  secret: admin  database: null  issuer: <http://uaa.controller.open-paas.com>  jwt:  signing\_key: |  -----BEGIN RSA PRIVATE KEY-----  MIICXAIBAAKBgQDHFr+KICms+tuT1OXJwhCUmR2dKVy7psa8xzElSyzqx7oJyfJ1  JZyOzToj9T5SfTIq396agbHJWVfYphNahvZ/7uMXqHxf+ZH9BL1gk9Y6kCnbM5R6  0gfwjyW1/dQPjOzn9N394zd2FJoFHwdq9Qs0wBugspULZVNRxq7veq/fzwIDAQAB  AoGBAJ8dRTQFhIllbHx4GLbpTQsWXJ6w4hZvskJKCLM/o8R4n+0W45pQ1xEiYKdA  Z/DRcnjltylRImBD8XuLL8iYOQSZXNMb1h3g5/UGbUXLmCgQLOUUlnYt34QOQm+0  KvUqfMSFBbKMsYBAoQmNdTHBaz3dZa8ON9hh/f5TT8u0OWNRAkEA5opzsIXv+52J  duc1VGyX3SwlxiE2dStW8wZqGiuLH142n6MKnkLU4ctNLiclw6BZePXFZYIK+AkE  xQ+k16je5QJBAN0TIKMPWIbbHVr5rkdUqOyezlFFWYOwnMmw/BKa1d3zp54VP/P8  +5aQ2d4sMoKEOfdWH7UqMe3FszfYFvSu5KMCQFMYeFaaEEP7Jn8rGzfQ5HQd44ek  lQJqmq6CE2BXbY/i34FuvPcKU70HEEygY6Y9d8J3o6zQ0K9SYNu+pcXt4lkCQA3h  jJQQe5uEGJTExqed7jllQ0khFJzLMx0K6tj0NeeIzAaGCQz13oo2sCdeGRHO4aDh  HH6Qlq/6UOV5wP8+GAcCQFgRCcB+hrje8hfEEefHcFpyKH+5g1Eu1k0mLrxK2zd+  4SlotYRHgPCEubokb2S1zfZDWIXW3HmggnGgM949TlY=  -----END RSA PRIVATE KEY-----  verification\_key: |  -----BEGIN PUBLIC KEY-----  MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDHFr+KICms+tuT1OXJwhCUmR2d  KVy7psa8xzElSyzqx7oJyfJ1JZyOzToj9T5SfTIq396agbHJWVfYphNahvZ/7uMX  qHxf+ZH9BL1gk9Y6kCnbM5R60gfwjyW1/dQPjOzn9N394zd2FJoFHwdq9Qs0wBug  spULZVNRxq7veq/fzwIDAQAB  -----END PUBLIC KEY-----  ldap: null  login: null  newrelic: null  no\_ssl: true  restricted\_ips\_regex: 10\.\d{1,3}\.\d{1,3}\.\d{1,3}|192\.168\.\d{1,3}\.\d{1,3}|169\.254\.\d{1,3}\.\d{1,3}|127\.\d{1,3}\.\d{1,3}\.\d{1,3}|172\.1[6-9]{1}\.\d{1,3}\.\d{1,3}|172\.2[0-9]{1}\.\d{1,3}\.\d{1,3}|172\.3[0-1]{1}\.\d{1,3}\.\d{1,3}  scim:  external\_groups: null  userids\_enabled: true  users:  - admin|admin|scim.write,scim.read,openid,cloud\_controller.admin,dashboard.user,console.admin,console.support  spring\_profiles: null  url: http://uaa.controller.open-paas.com  user: null  zones: null  uaadb:  address: 10.10.3.22 **# DB Server VM IP 주소**  databases:  - citext: true  name: uaadb  tag: uaa  db\_scheme: postgresql  port: 5524  roles:  - name: uaaadmin  password: admin  tag: admin |

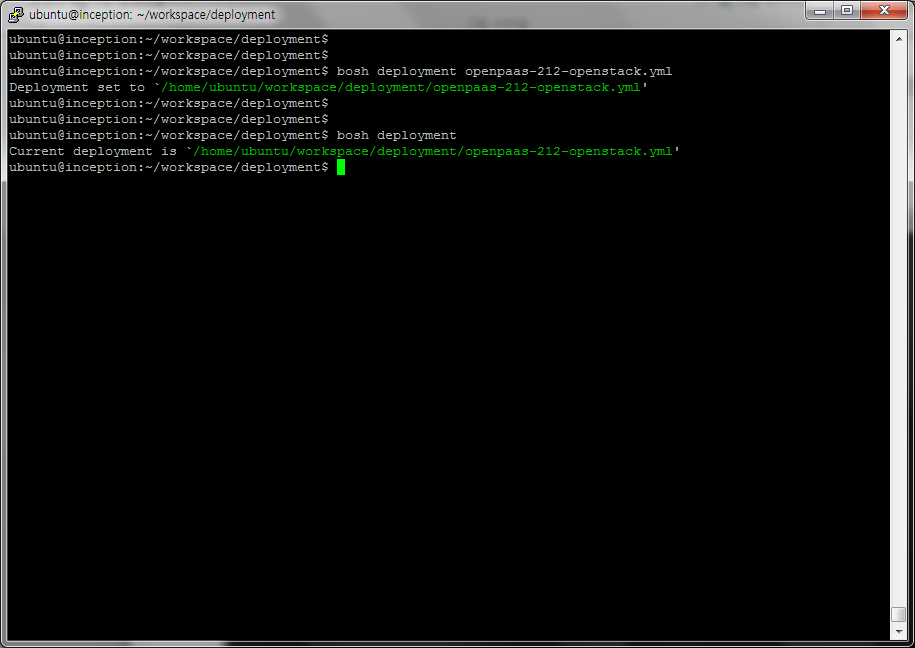
* 1. Bosh Deploy

지금까지 설치를 위한 준비 과정이 정상적으로 수행되었으면, 지금부터 Open PaaS Controller를 IaaS 환경(OpenStack)에 아래의 절차로 설치한다.

* + 1. Deployment Manifest 지정

|  |
| --- |
| bosh deployment openpaas-openstack-beta-1.0.yml |

“bosh deployment” 명령어로 생성한 Deployment Manifest File을 지정하고, 아래의 그림과 같이 동일한 명령어로 정상 지정 되었는지를 확인한다.

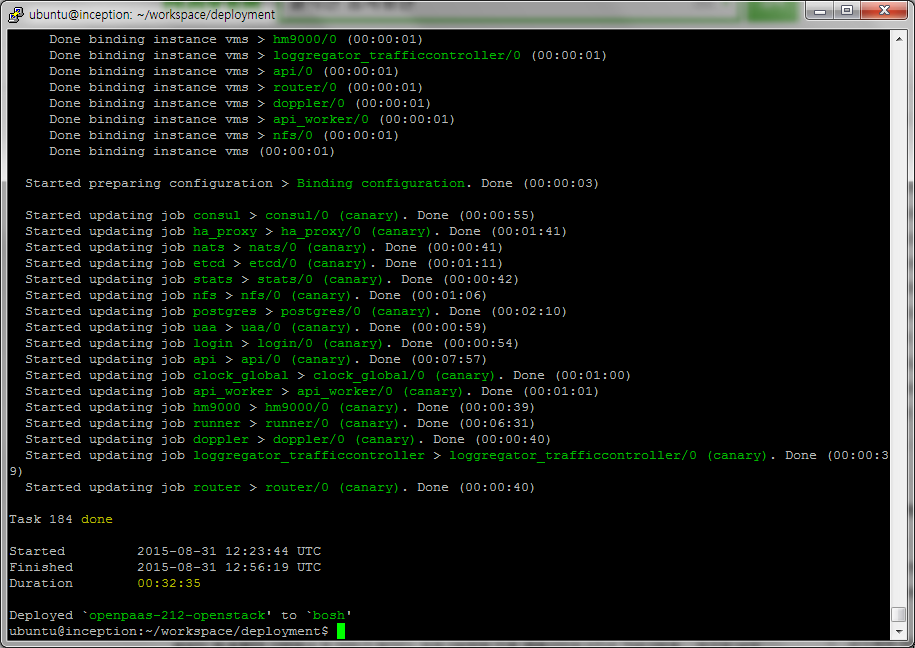


* + 1. Open PaaS Controller Deploy

“bosh deploy” 명령으로 Open PaaS Controller 설치를 수행한다.

|  |
| --- |
| bosh deploy |

보통 설치 과정은 1-2시간 정도가 소요되며 정상적으로 설치가 완료되면 아래 그림과 같은 메세지를 출력하게 된다.

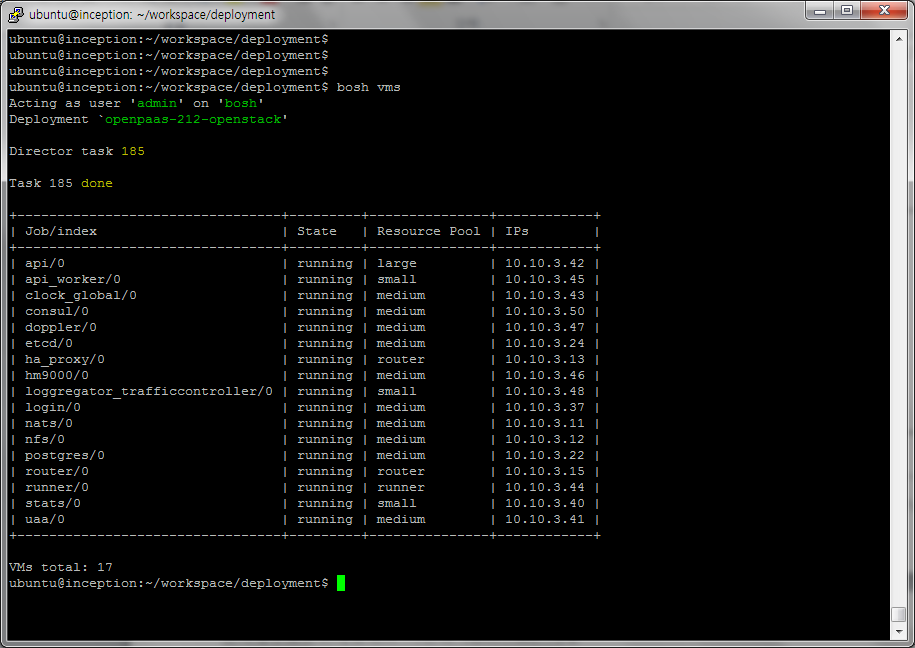


* 1. 설치형상 확인

설치가 정상적으로 완료된 후 “bosh vms” 명령으로 설치된 Open PaaS Controller의 형상을 확인한다.

|  |
| --- |
| bosh vms |

아래 그림과 같이 Deployment Name, Virtual Machine, IP 주소 등의 정보를 확인할 수 있다.



1. 설치 검증
   1. CF Login

|  |
| --- |
| cf api <https://api.controller.open-paas.com> **–skip-ssl-validation # 사설키**  …  cf login  Email> admin  Password> admin  OK  …  cf create-space dev  cf target -o OCP -s dev  … |

CF Target을 지정하고, Login을 수행한다. 이 때 계정은 admin/admin을 사용한다.

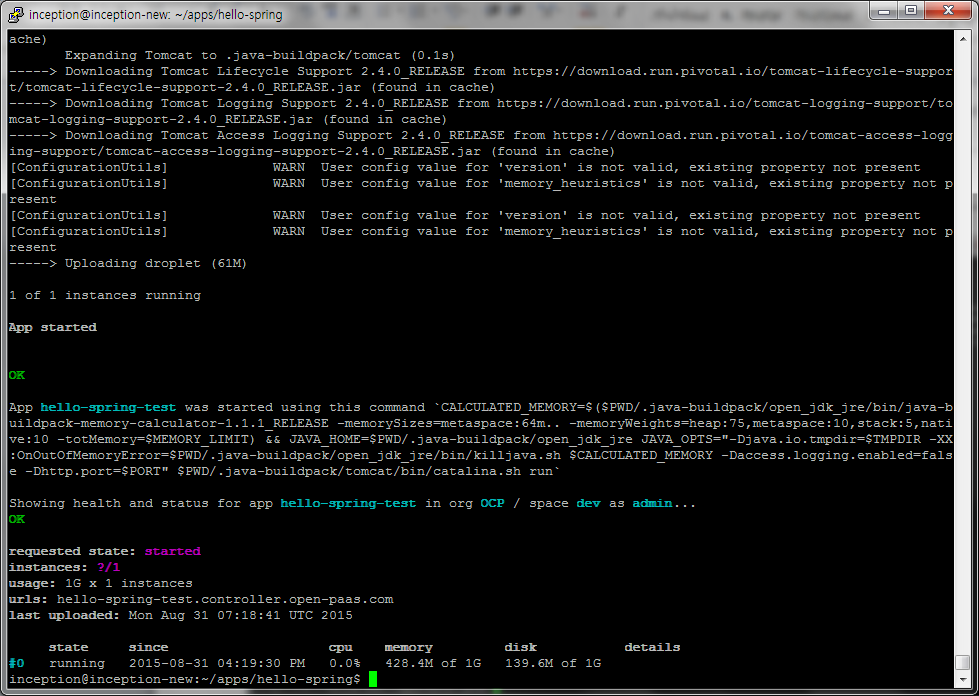
Application을 Deploy할 ORG(Default: OCP)와 Space를 생성하고, 해당하는 ORG/Space로 Targetting 한다.

* 1. Application Deploy

설치 패키지와 함께 배포된 Sample Application이 위치하는 디렉토리로 이동하고 Application을 Deploy 한다.

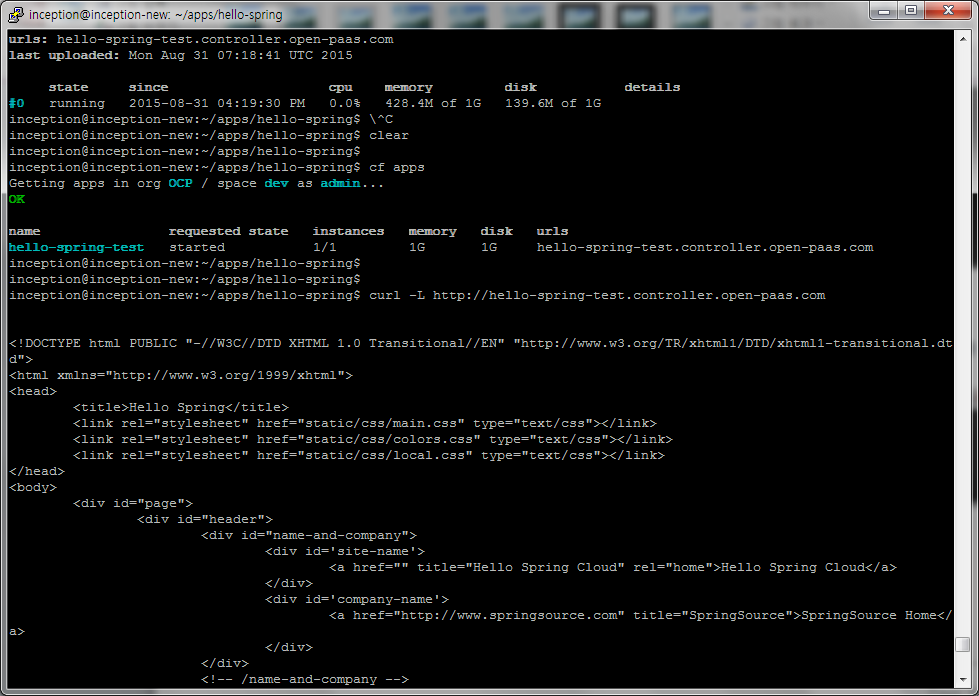
|  |
| --- |
| cd $INSTALL\_PACKAGE/OpenPaaS-Sample-Apps/Etc/hello-spring  cf push |

Application이 정상 Deploy가 되면 아래와 같은 메시지가 출력된다.



* 1. Application Access

Deploy한 Application URL을 Browser 또는 curl 명령어로 Access하여 정상 접근 되는지를 확인한다.



1. 변경 내용: 변경이 발생되는 위치와 변경 내용을 자세히 기록(장/절과 변경 내용을 기술한다.) [↑](#footnote-ref-1)
2. Open PaaS에서 사용하는 VM Template Image로 Bosh Agent를 포함하고 있다. [↑](#footnote-ref-2)