Pivotal Cloud Foundry 2.0
(Small footprint)
AWS 설치

SDS Workshop

2018-02-01

사전 준비

Terraform cli

https://www.terraform.io/downloads.html

AWS CLI 설치

https://aws.amazon.com/cli/

GIT CLI 설치

https://git-scm.com/downloads

PCF CLI 설치

https://github.com/cloudfoundry/cli

Java JDK 1.8+ 설치

Firefox or Chrome (Not IE) 설치

PCF Ops Manager 설치

Pivotal Cloud Foundry 의 다양한 Software Package(Pivotal Application Service, Pivotal Container Service, Pivotal Function Service, 등등)을 설치/관리/구성을 담당하는 도구

1. AWS 계정 정보 취합

env_name	"sds1" ~ "sds7" → 2 번 env_name 참조
access_key	본인 AWS 계정 access key
secret_key	본인 AWS 계정 secret key
Region	"ap-northeast-2" → SEOUL
availability_zones	"ap-northeast-2a", "ap-northeast-2c"
ops_manager_ami	"ami-de6fccb0"
dns_suffix	"cfpush.net"
ssl_cert	"sds1.cert" ~ "sds7.cert"
ssl_private_key	"sds1.key" ~ "sds7.key"

2. 참석자 별 이름 할당

수강자	DNS Domain	env_name	SSL_cert file
SDS1	'sds1.cfpush.net'	'sds1'	sds1.cert, sds1.key
SDS2	'sds2.cfpush.net'	'sds2'	sds2.cert, sds1.key
SDS3	'sds3.cfpush.net'	'sds3'	sds3.cert, sds1.key
SDS4	'sds4.cfpush.net'	'sds4'	sds4.cert, sds1.key
SDS5	'sds5.cfpush.net'	'sds5'	sds5.cert, sds1.key
SDS6	'sds6.cfpush.net'	'sds6'	sds6.cert, sds1.key
SDS7	'sds7.cfpush.net'	'sds7'	sds7.cert, sds1.key

3. PCF AWS Terraform 파일 다운로드 및 작업 폴더에 압축 풀기

   GIT Repo: https://github.com/pivotal-choonghyun-oh/sds-ops.git

   파일명: terraforming-aws-0.5.0.zip

4. 압축 해제한 폴더로 이동 및 "terraform.tfvars" 파일 만들기

```
$ touch terraform.tfvars
```

```
env_name           = "sds1"
access_key         = "YOUR-ACCESS-KEY"
secret_key         = "YOUR-SECRET-KEY"
region             = "ap-northeast-2"
availability_zones = ["ap-northeast-2a", " ap-northeast-2c"]
ops_manager_ami    = "ami-de6fccb0 "
dns_suffix         = "cfpush.net"

ssl_cert = <<SSL_CERT
-----BEGIN CERTIFICATE-----
YOUR-CERTIFICATE            ← sds1.cert 파일 내용 복사
-----END CERTIFICATE-----
SSL_CERT

ssl_private_key = <<SSL_KEY
-----BEGIN EXAMPLE RSA PRIVATE KEY-----
YOUR-PRIVATE-KEY                        ← sds1.key 파일 내용 복사
-----END EXAMPLE RSA PRIVATE KEY-----
SSL_KEY
```

5. nat.tf 의 내용 수정

```
    variable "nat_ami_map" {
      type = "map"

      default = {
        us-east-1      = "ami-303b1458"
        us-west-1      = "ami-7da94839"
        us-west-2      = "ami-69ae8259"
        eu-west-1      = "ami-6975eb1e"
        eu-central-1   = "ami-46073a5b"
        ap-southeast-1 = "ami-b49dace6"
        ap-northeast-1 = "ami-03cf3903"
    ap-northeast-2 = "ami-61e03a0f"
    ap-southeast-2 = "ami-e7ee9edd"
    sa-east-1      = "ami-fbfa41e6"
  }
}
```

6. Terraform init

```
$ terraform init
Initializing modules...
```

```
- module.ops_manager
  Getting source "./ops_manager"

Initializing provider plugins...
- Checking for available provider plugins on https://releases.hashicorp.com...
- Downloading plugin for provider "template" (1.0.0)...
- Downloading plugin for provider "random" (1.1.0)...
- Downloading plugin for provider "tls" (1.0.1)...
- Downloading plugin for provider "aws" (1.8.0)...

The following providers do not have any version constraints in configuration,
so the latest version was installed.

To prevent automatic upgrades to new major versions that may contain breaking
changes, it is recommended to add version = "..." constraints to the
corresponding provider blocks in configuration, with the constraint strings
suggested below.

* provider.aws: version = "~> 1.8"
* provider.random: version = "~> 1.1"
* provider.template: version = "~> 1.0"
* provider.tls: version = "~> 1.0"

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
```

7. terraform plan

```
> terraform plan -out=plan
Refreshing Terraform state in-memory prior to plan...
The refreshed state will be used to calculate this plan, but will not be
persisted to local or remote state storage.
```

8. terraform apply plan

적용 시 오류는 terraform.tfvars 의 값의 설정이 잘못된 경우 임, 수정 후 plan, apply 를 반복

```
> terraform apply plan
Refreshing Terraform state in-memory prior to plan...
The refreshed state will be used to calculate this plan, but will not be
persisted to local or remote state storage.
```

9. terraform apply 성공 시 Outputs

Outputs 의 내용은 향후 작업에 필요한 정보를 포함하고 있어 내용을 capture 하여 저장

```
Apply complete! Resources: 4 added, 0 changed, 0 destroyed.

Outputs:

apps_domain = apps.sds61.cfpush.net
azs = [
    ap-northeast-2a,
    ap-northeast-2c
]
dns_zone_id = Z3RDV191UAM6NF
env_dns_zone_name_servers = [
    ns-1154.awsdns-16.org,
    ns-1861.awsdns-40.co.uk,
    ns-325.awsdns-40.com,
    ns-967.awsdns-56.net
]
iam_user_access_key = XXXXXX
iam_user_name = sds61_iam_user
iam_user_secret_access_key = xxx
isoseg_elb_name =
isoseg_ssl_cert = <sensitive>
isoseg_ssl_private_key = <sensitive>
management_subnet_availability_zones = [
    ap-northeast-2a,
    ap-northeast-2c
]
management_subnet_cidrs = [
    10.0.16.0/28,
    10.0.16.16/28
]
management_subnet_ids = [
```

```
    subnet-d41c6dbc,
    subnet-32cb6c7e
]
ops_manager_bucket = sds61-ops-manager-bucket
ops_manager_dns = pcf.sds61.cfpush.net
ops_manager_private_ip = 10.0.0.251
ops_manager_public_ip = 13.124.2.199
ops_manager_security_group_id = sg-625f2509
ops_manager_ssh_private_key = -----BEGIN RSA PRIVATE KEY-----
MIIJKQIBAAKCAgEAr86lKFcTNxfQ2eLqZ1g2kFyE0+VvMA66AErrt308uRXZnBxc
fiqSMu281cMD7Y/tN97vgMAf2GFtpmVzcR8CMFAzSQg+KsmOtp2d40IPnr4eh4xL
aKJ6XQFZ1r4Oizu5SEKDtc2WFgrLRJiljE0nSkrPXY7rmw3KhRSIrlDBLa/UgnOS
uNASXx7OGZXxlEaHq9oWrRfaD1HAIzL1R6Hea3N7tOJMP69bs1dtzvJEZI8X6Ihl
vkYACImuwwBI9QZCRLYfKm8CcatYYEaQP6o4GTidgb+uDyNEFm68OGyoOpzcw4SZ
mtRQ/tj/y1cdnv2eGNVQr5IozDfOkPGbWwhzYs8AOP90r/AYAOpWv5pQfgDMez2V
c6Dba+5UC/vyfsESTYIW1mNG4RM2td5RKpN7grQfie4BzMBHsdIksxbdjlO86ynr
FgsZsj40+8Jqe8ABLddzfOPofeFVokUEJw0t+QA1HTvNiP50QmkxRenmBjwqUlel
F4hqcIzLfzKnP6isoPwhcRzbFZMEEHHnc7YWRYVLtkdMU6+0fcwCiC3XtL686xpo
bHUvm2Kat3EYsb5++hwPNymXjAujH1NM5jiFXxPfpcp+g0d8/CSeTkxtivaG10rL
+ZWSJXjvWJTCGtiIP5bbiOTLe7fA9EGkK1TvM/AkBgPqBA4MMJBczv9FrokCAwEA
AQKCAgEAmsrAgidAxOZUPjPcHUf/KtY7IXLGljKxNGbC6lj7aR9C7X/PNEr5VJwc
Ar5lK/roa6P/joYaw+Lsr3Bt13Ds9Wr37Nq0GepDnKhkht74b9WHfeNZ1fQQ9uik
mD3ZAmCAf44I977e4eN5G5mnUUPxTylVMVQQQAJBiTEOMyTpIffJjV6DFfQl6Nhv
sPljriD3falVA+yXU5uwJ43LhtmPw1330sjZR813WQ2momqPK1cOPvAxXPm3N806
MXmDwzFSkbsk77C0Hy81bfdTNKsEH7jIfaAueieb4IB5eti4unq4qfGLaVZ9RhX8
CqZWb1FwrP7MvvlasIyGdPo1xk5HgId/JflhoCPq7sXf/UUPzmZsexsrE4zHSC2U
60Xfqmf9dwCDuX4CnLewxNwUs0+avpt/cgGtS8gVoAb86XkX6hy8LNbzDonV9115
wZDQ2UXv5T1S/MTHENkJeaP6BEpQnhj0wR4ZdMcKlabmfh9pB1vlXh6kb/2cDxpF
qwTLDU20Uk0DGp15rlD7GpcuzkyOcA+//cjE7owLQ5ecMu/31KaCyazhglZD/+60
e/fGSrdxTwZzwCxEOmv2MIgr55/arlSppOwWcX3o7nSLCgZOtvVWySLBQxXhx4Qe
S//cKGAaO/M/G8goZ0S0QZc7uHuwpOoA1JCHMoY/pADpBXbvMI0CggEBANlPA/zx
1IKlSgBKRQ2I3IyNNbgmF7OuX2ndL8miT/kzQp7kxWmBkcHuXbDtJfKbgChKTDhs
OXPk0KElqk8YZvZbhNGyFVO5Oh3CSd70xONV3X79pfOpydOE7Mam3hrArwRY55DX
UsHoIdUpMslpXeIQTZ1FLYzLsAAFhcS+Nnw3ubZMsOi4+RdqdggZQ9Qo9kMhuaBw
wkYV9QJ3RMIPn+N8Y7ILVFizFziqcRgAAGR9qfnDn3vDxJMNSJJ1yDvxtLUg4apA
bABQLqqUtRz00ws49I22i7ABdyPKW2aki2jrEeH28jI5FkMiiV/jwbzKTw0FW14X
jDNDgaAIQUxaPC8CggEBAM8b+6FLsPV2W7a4KGGN9n37PD3Z4GR4VjDUyUILnFwS
z+0kuKQ3cvxX6yjapg3QNek8DzSMCOwCltCj0U0/7coOU/fRV2/xPHQmsVzKyLTi
4V/GbaylhEbXO2hepC6vG3Shra0Ucn2yKIxq+AiXWmcdeXT/m5t2hMnjJcUtGI5e
IFezFE72xZvKGuJv1EV6ocW00htRPr0BHFwIubhIBxfHBn9YDafJcuzC/QQK/r5G
THdN5Gv04+dfA8TaeNfPYnLDSMmmKz2id1b5OsU/0+98DMfxSSYCsXBIkJmrSt98
nUPWSQR6WBZ90RRCiV8IR8ULuqKlizjyuP1OlbGV+scCggEAbq9tg5gVuxm/sJgj
xfoRBFIkq5BTgETv+nccESLogzDV3SL/XncNq+7ir+yK6KDFzT/SxOZy+RHyJjKO
Jc1zHEaPR1PiwwtUi7XbdIHOC1FACZ/euFaiI2fQRnrWJGBChP9Xq5HRaEz5dp6O
```

```
bMKLfEr7jYCf69gP5GLruMN98xVbNXyom1EkJwYl6ogb4WOf05/I8eydN5+VdVUU
o5fbw74m9ZgJtUg7KrS9+BCAIq9TNZGrmRmk9ZXNgjQV8lpxxdRivRolKJ+utVob
Sg11tYCkJ850JgkJCyTWG1jyXVVmfWcQA/7J1RYxTLMwih2t2B8DY9Cwq6fVzZKG
2AIaJwKCAQB4P5QK42qcKhs37JathYJfRRaGBtFtJB1O/szXhuxC3T1SP+bgmb0u
XFGSB9kv3frfL1rYtJGdjidIfkTQqFSE42rHUQmGWjcybSC/cpGzzKL0O76D5hn2
E5NPltuWq16yigjPnDaZWm6GkLjwLAh2JDvXvWz4h4izuym74OIIDwiSQsyAyHCV
cnPHkwxZRslUhBcVe0eE73cqzHogT9mmaY0RNOvAxorugovq5ANiMGjHQDdmouoL
9TO4AOz2yFctsMq7Ibqrb4AAxHXl/pgrzQeSszo4Uon5WnhycGzpc23P7EO60NoC
PQy+yZ7+yUz6UEQNmTZLW0oi8JSjZiQTAoIBAQDWrU9BChvEHuJPgAxfrGn6VBCb
mqjcimJYOHulivdlB6LXEAhbBhsk9wn2mLRYmypdluoesbKzR461z2J2ni1FPzLc
R1orkyIHUWPljHshuJwsPLTUfAym+YC+/38DLsX+y1z9wlVDVqbn9UCZaNZxDkFM
pNigXIvlYAc9cbxbOyh1BDD6NLP5nhvG4aoV/+eS5SF+OxRDzdm+0OW4XjGnYaRs
TAnPnXqv8/ZdBVvtM6NH8Fl3oShpK2JicQSYxx4cC3QkZT/WCevTla9H6Ny9beCE
6sRgbbeLN1jg7mQB6Bg6uO2oESl9vyEcDUUwq8uEcvYycW29vBAuB6CWCn4h
-----END RSA PRIVATE KEY-----

ops_manager_ssh_public_key_name = sds61-ops-manager-key
optional_ops_manager_dns =
pas_buildpacks_bucket = sds61-buildpacks-bucket
pas_droplets_bucket = sds61-droplets-bucket
pas_packages_bucket = sds61-packages-bucket
pas_resources_bucket = sds61-resources-bucket
pas_subnet_availability_zones = [
    ap-northeast-2a,
    ap-northeast-2c
]
pas_subnet_cidrs = [
    10.0.4.0/24,
    10.0.5.0/24
]
pas_subnet_ids = [
    subnet-a71e6fcf,
    subnet-13cd6a5f
]
public_subnet_availability_zones = [
    ap-northeast-2a,
    ap-northeast-2c
]
public_subnet_cidrs = [
    10.0.0.0/24,
    10.0.1.0/24
]
public_subnet_ids = [
    subnet-af1f6ec7,
```

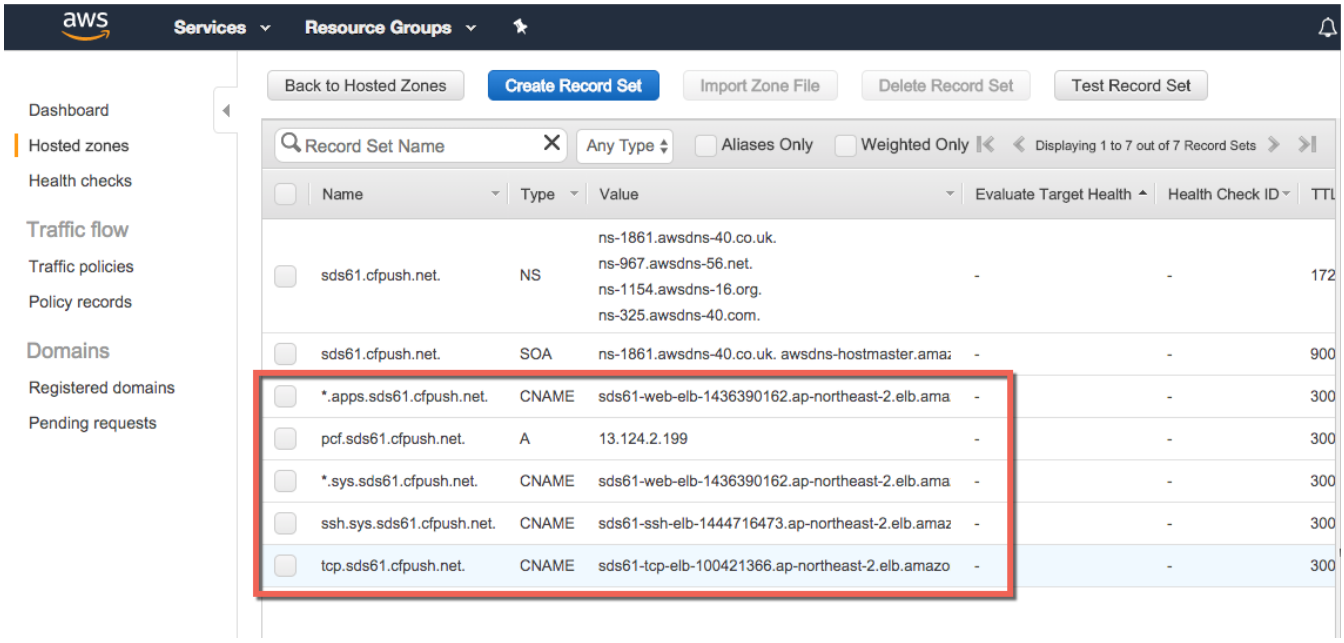
```
    subnet-33cb6c7f
]
rds_address =
rds_password =
rds_port =
rds_username =
region = ap-northeast-2
services_subnet_availability_zones = [
    ap-northeast-2a,
    ap-northeast-2c
]
services_subnet_cidrs = [
    10.0.8.0/24,
    10.0.9.0/24
]
services_subnet_ids = [
    subnet-401e6f28,
    subnet-29cc6b65
]
ssh_elb_name = sds61-ssh-elb
ssl_cert = <sensitive>
ssl_private_key = <sensitive>
sys_domain = sys.sds61.cfpush.net
tcp_domain = tcp.sds61.cfpush.net
tcp_elb_name = sds61-tcp-elb
vms_security_group_id = sg-025f2569
vpc_id = vpc-432c4b2b
web_elb_name = sds61-web-elb
```

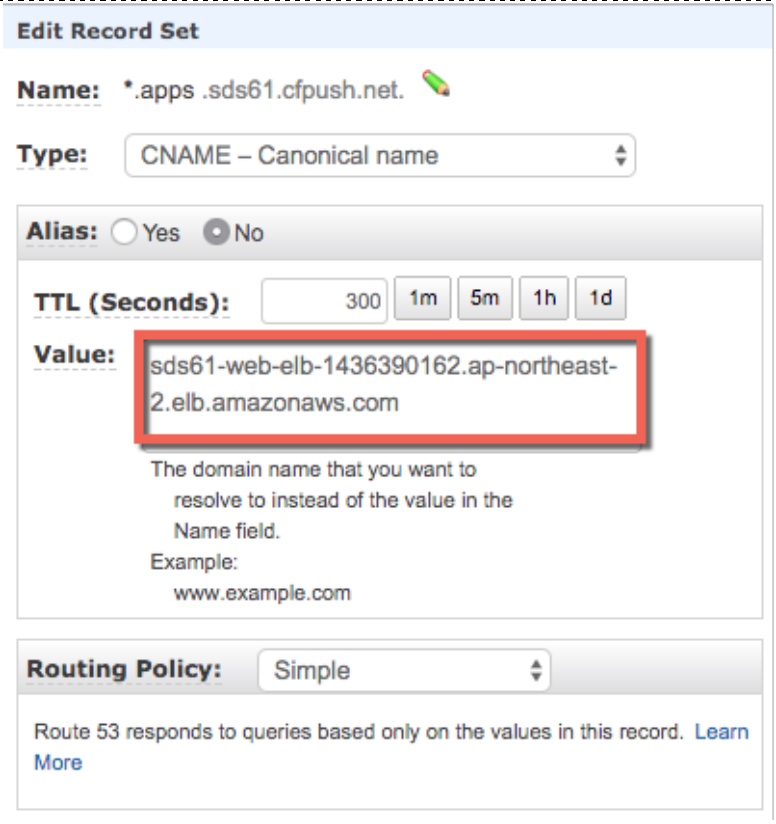
```
aws_route53_record.wildcard_apps_dns: Still creating... (30s elapsed)
aws_route53_record.wildcard_sys_dns: Still creating... (30s elapsed)
aws_route53_record.wildcard_apps_dns: Still creating... (40s elapsed)
aws_route53_record.wildcard_sys_dns: Still creating... (40s elapsed)
aws_route53_record.wildcard_sys_dns: Still creating... (50s elapsed)
aws_route53_record.wildcard_apps_dns: Still creating... (50s elapsed)
aws_route53_record.wildcard_sys_dns: Creation complete after 58s (ID: Z3RDV191UAM6NF_*.sys.sds61.cfpush.net_CNAME)
aws_route53_record.wildcard_apps_dns: Still creating... (1m0s elapsed)
aws_route53_record.wildcard_apps_dns: Creation complete after 1m1s (ID: Z3RDV191UAM6NF_*.apps.sds61.cfpush.net_CNAME)

Apply complete! Resources: 4 added, 0 changed, 0 destroyed.

Outputs:

apps_domain = apps.sds61.cfpush.net
azs = [
    ap-northeast-2a,
    ap-northeast-2c
]
dns_zone_id = Z3RDV191UAM6NF
env_dns_zone_name_servers = [
    ns-1154.awsdns-16.org,
    ns-1861.awsdns-40.co.uk,
    ns-325.awsdns-40.com,
    ns-967.awsdns-56.net
]
iam_user_access_key = AKIAJWBCT2OZ4TXFWNIA
iam_user_name = sds61_iam_user
iam_user_secret_access_key = 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
isoseg_elb_name =
isoseg_ssl_cert = <sensitive>
isoseg_ssl_private_key = <sensitive>
management_subnet_availability_zones = [
    ap-northeast-2a,
    ap-northeast-2c
]
management_subnet_cidrs = [
    10.0.16.0/28,
    10.0.16.16/28
]
```

10. DNS 등록 요청

Route 53 서비스 등록된 DNS Record 를 강사에게 전달, DNS 에 Record 등록 필요함.

CNAME, A 레코드 항목을 클릭하면 오른쪽에 상세 내역의 name, type, value 를 복사하여 등록 요청(



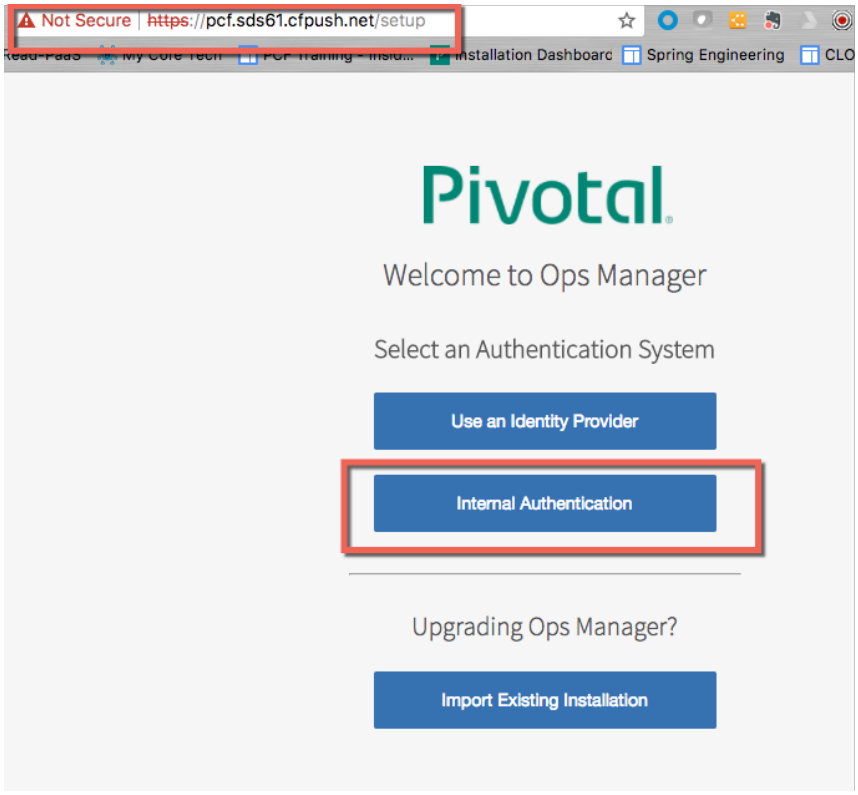


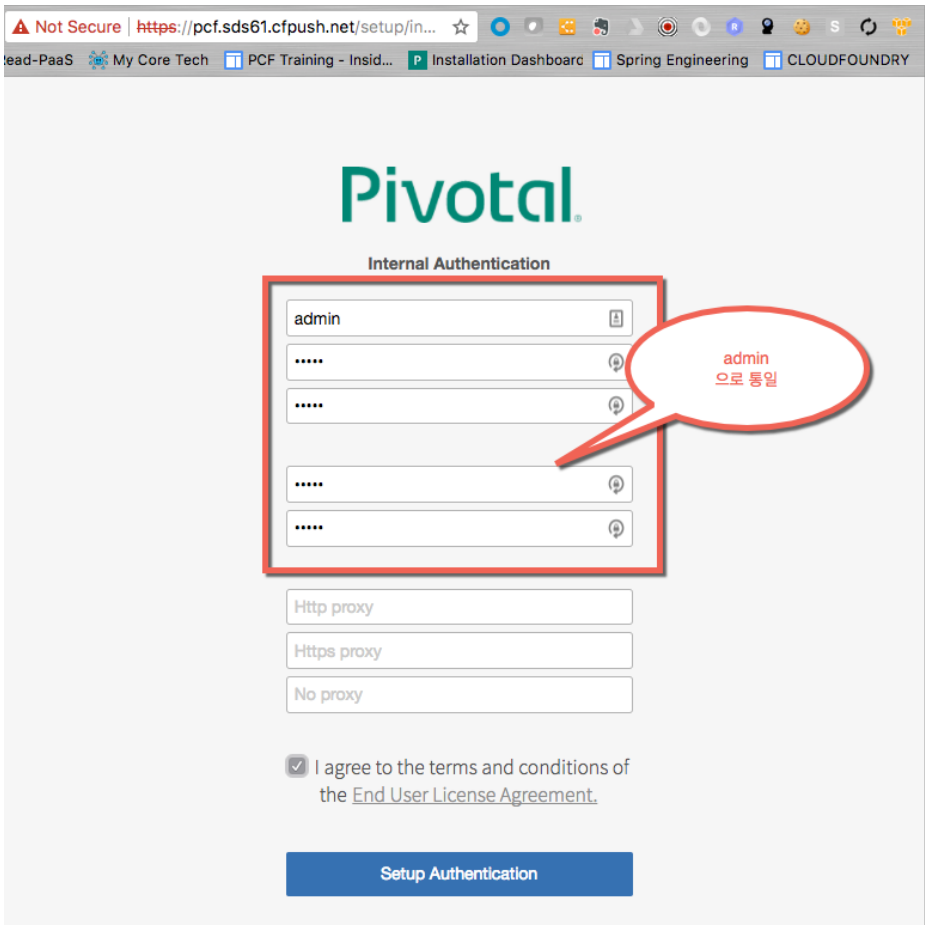
11. Ops Manager 구성

DNS 등록 완료 후 Terraform apply output 에서 ops_manager_dns 을 찾아서 Chrome 에서 접속

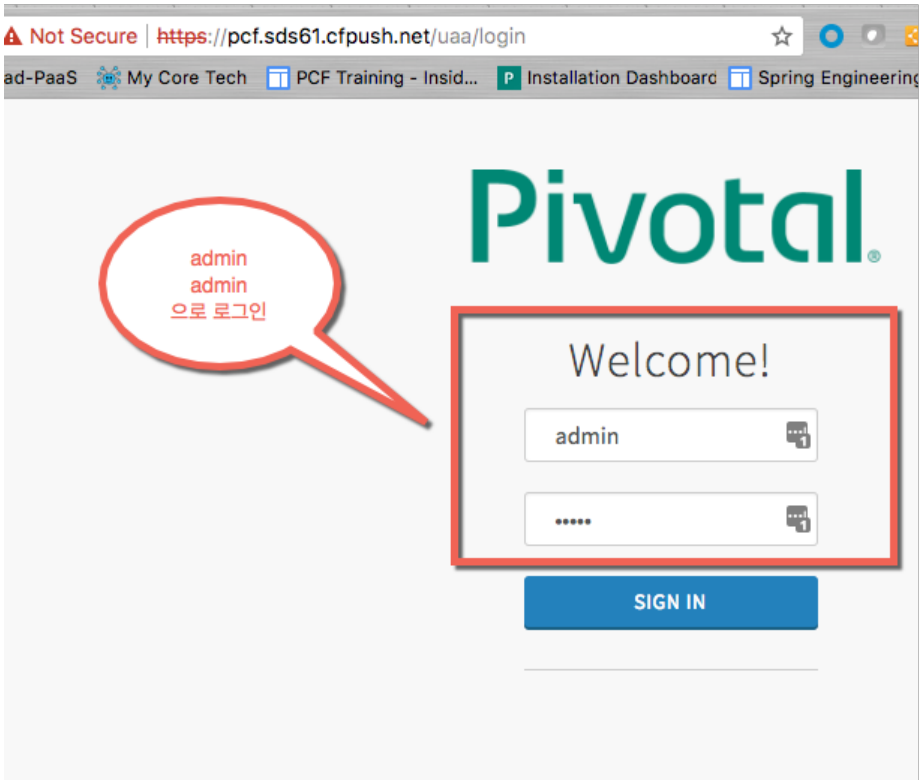
예시> https://pcf.sds61.cfpush.net

아래 화면이 나타나면 "Internal Authentication" 버튼을 클릭하여 구성 시작

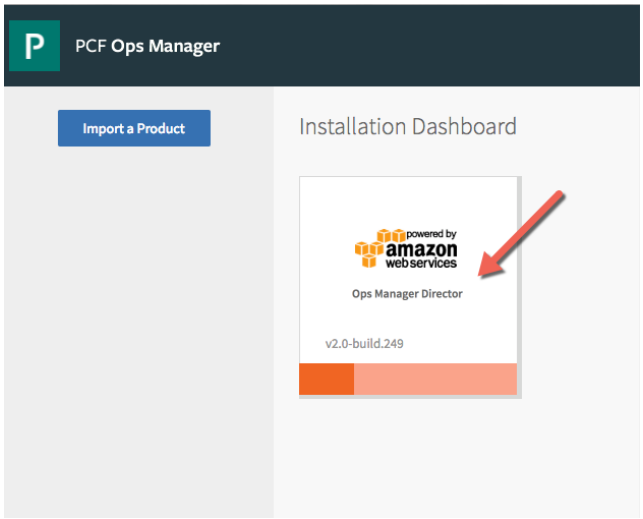




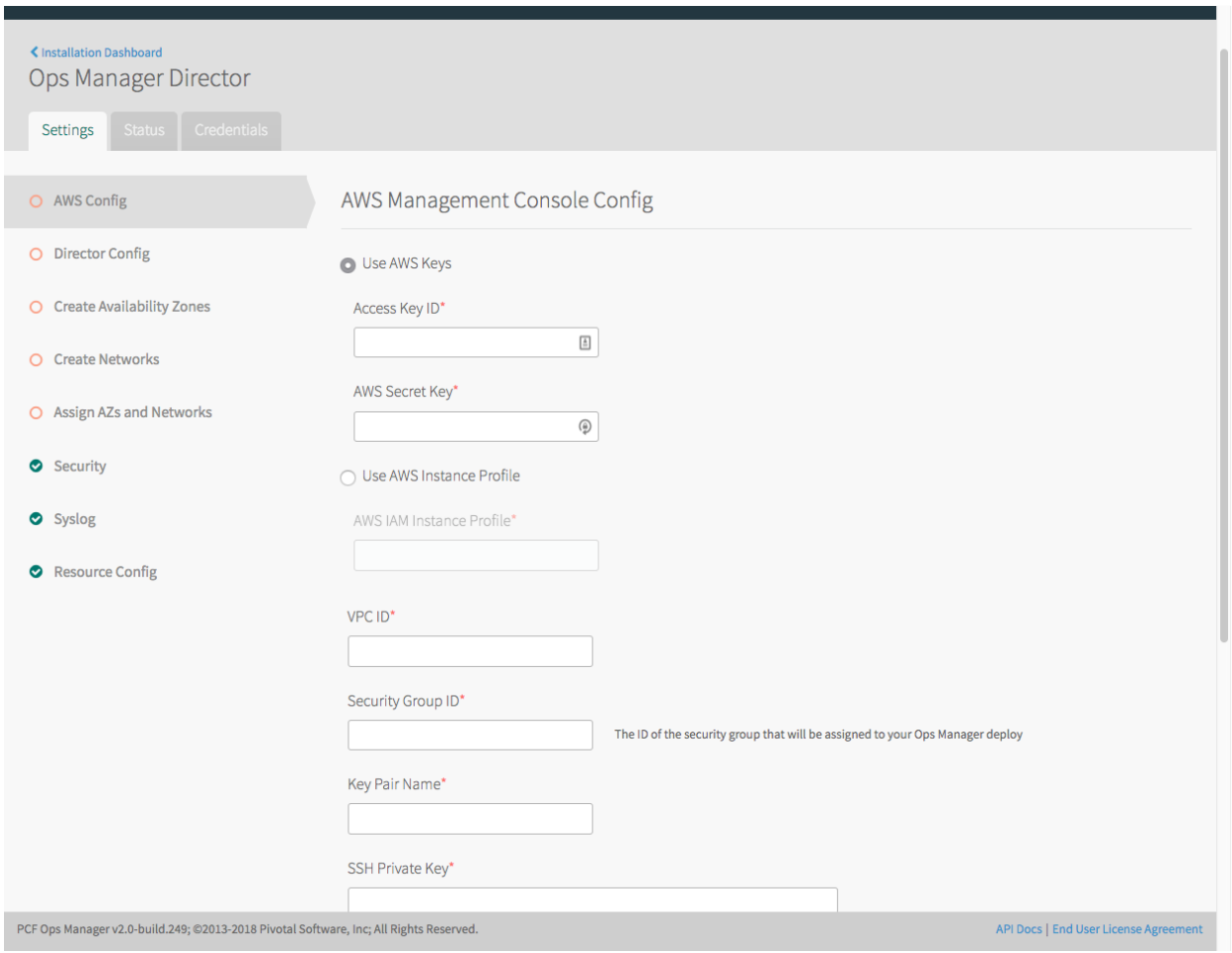
초기화 작업이 끝나고 나면 로그인 화면이 나타남.



Configuring Ops Manager Director on AWS

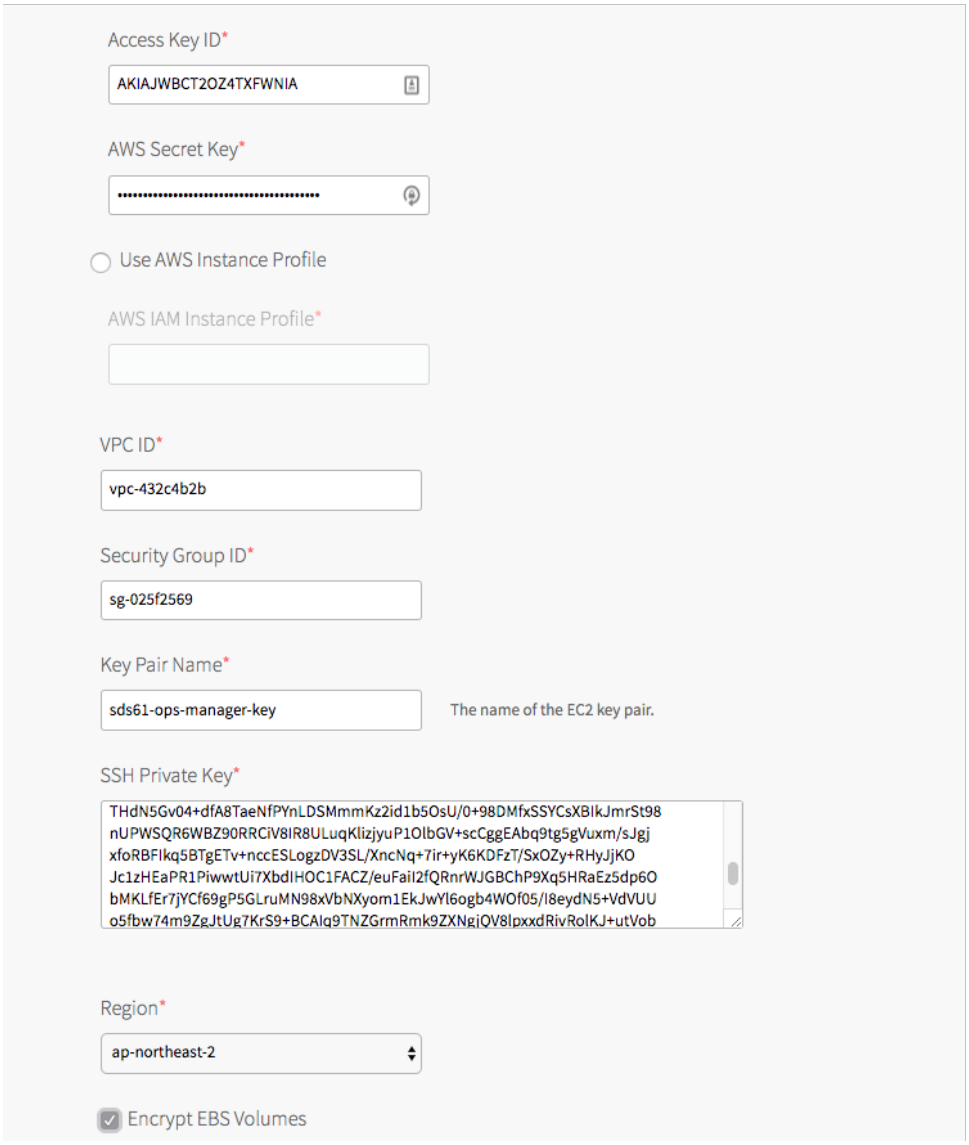


Terraform 결과 Output 에서 각 항목을 찾아서 입력한다.



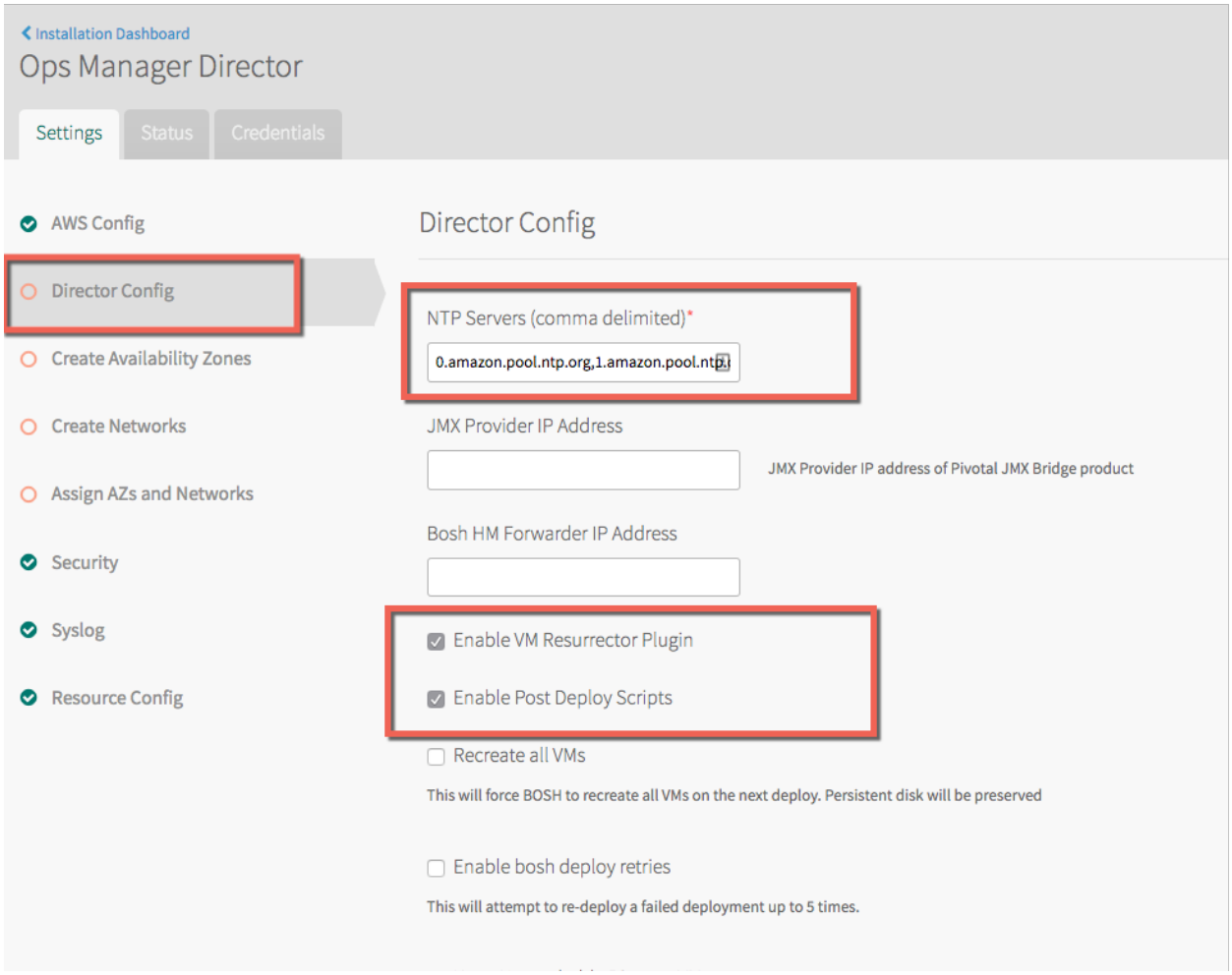
Access Key ID	본인 AWS 계정 key
AWS Secret Key	본인 AWS 계정 secret key
VPC ID	vpc_id 값을 찾아 입력
Security Group ID	vms_security_group_id 값을 찾아 입력
Key Pair Name	ops_manager_ssh_public_key_name 값을 찾아 입력

SSH Private Key	ops_manager_ssh_private_key 값을 찾아 입력
Region	ap-northeast-2

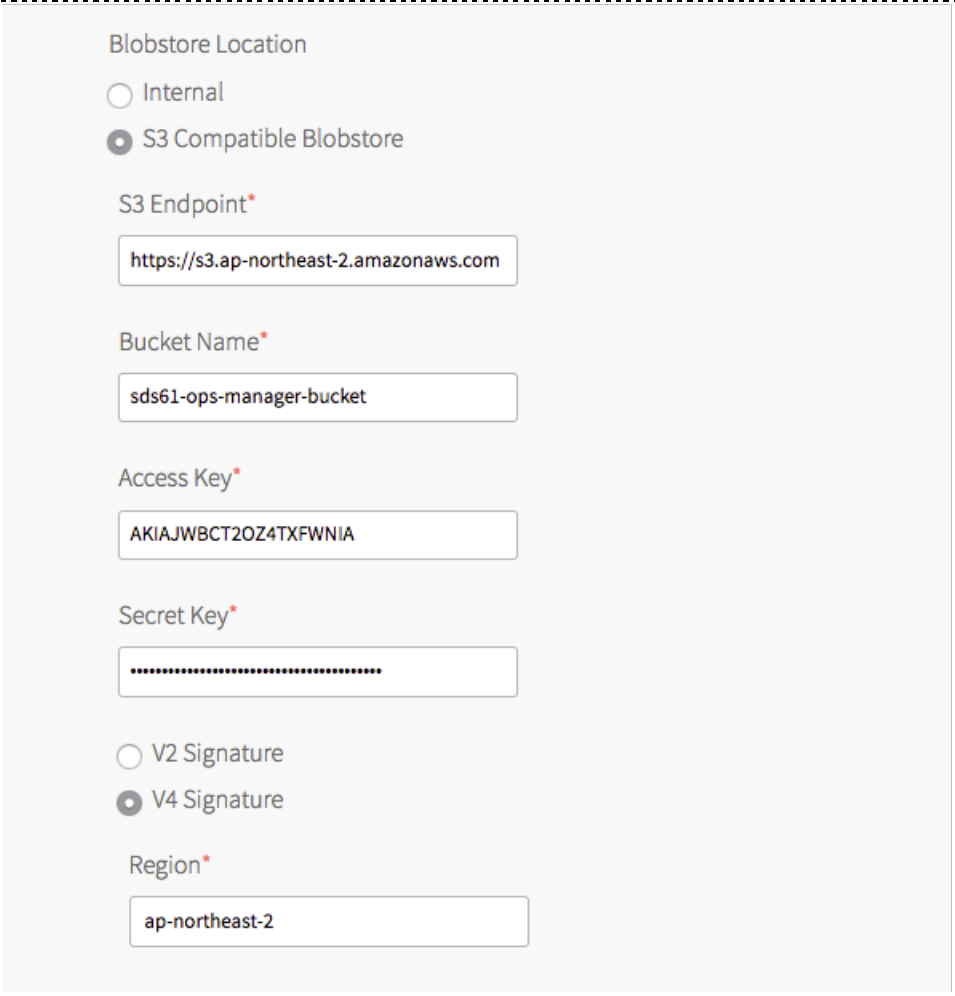


입력 후 저장

Director Config



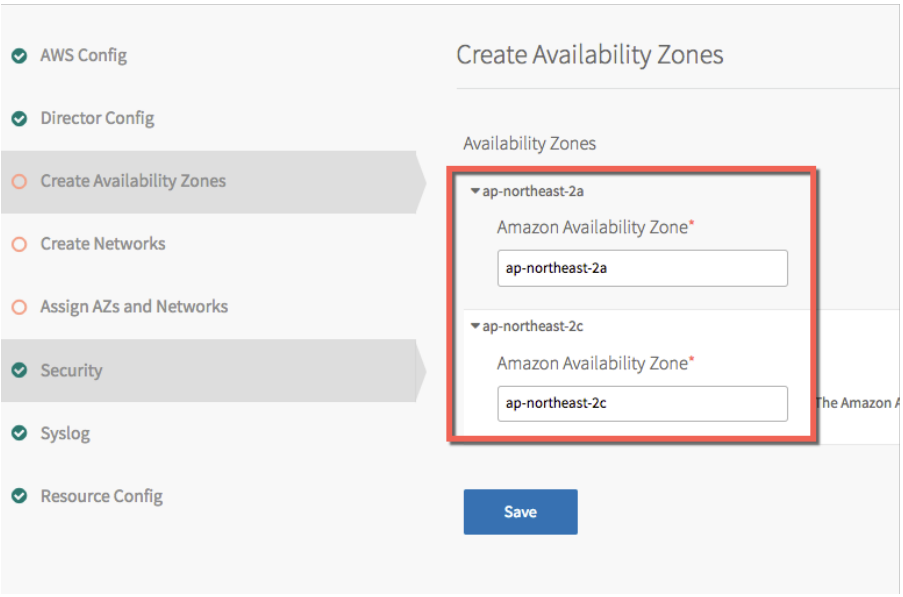
NTP Servers	0.amazon.pool.ntp.org,1.amazon.pool.ntp.org,2.amazon.pool.ntp.org
Enable VM Resurrector Plugin	선택
Enable Post Deploy Scripts	선택
S3 EndPoint	https://s3.ap-northeast-2.amazonaws.com
Bucket Name	ops_manager_bucket 값을 찾아 입력
Access Key	iam_user_access_key 값을 찾아 입력
Secret Key	iam_user_secret_access_key 값을 찾아 입력
V4 Signature	선택
Region	ap-northeast-2



"Save" 를 클릭하여 저장

AZ 등록

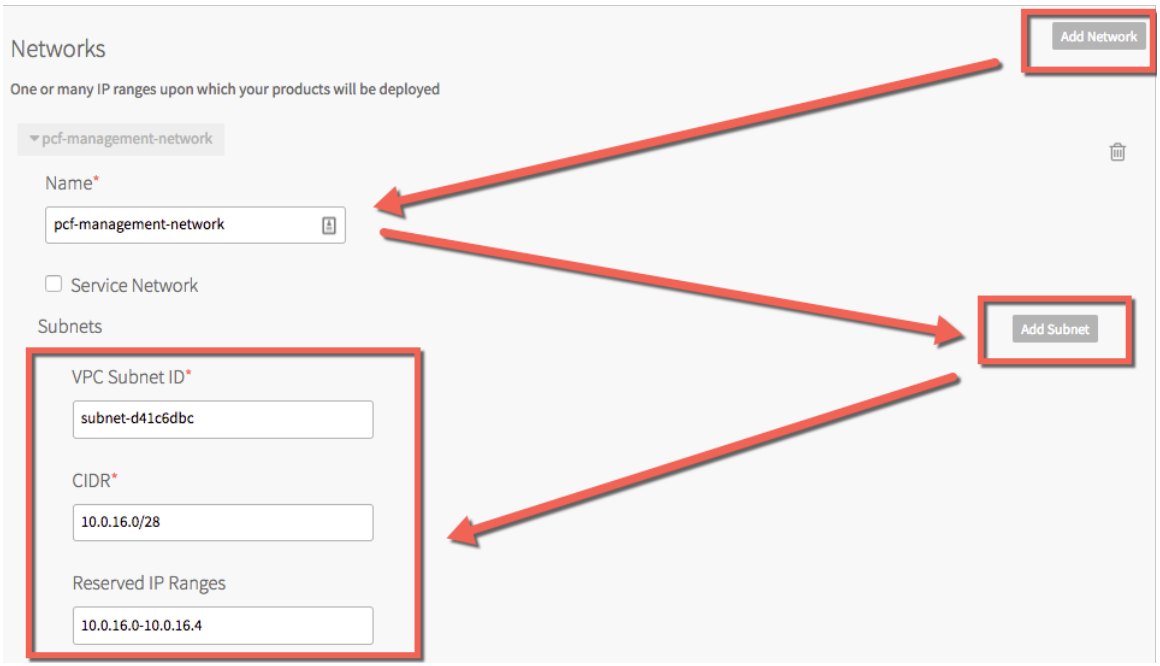
ap-northeast-2a, ap-northeast-2c 두 개의 존을 추가



Network 등록

3 개의 network 를 등록한다.

pcf-management-network, pcf-pas-network, pcf-services-network



pcf-management-network 등록

VPC Subnet ID	CIDR	Reserved IP Ranges	DNS	Gateway	Availability Zo
The first value of management_subnet_ids from the Terraform output.	10.0.16.0/28	10.0.16.0-10.0.16.4	169.254.169.253	10.0.16.1	The first value of manageme Terraform out
The second value of management_subnet_ids from the Terraform output.	10.0.16.16/28	10.0.16.16-10.0.16.20	169.254.169.253	10.0.16.17	The second va of manageme Terraform out

pcf-pas-network 등록

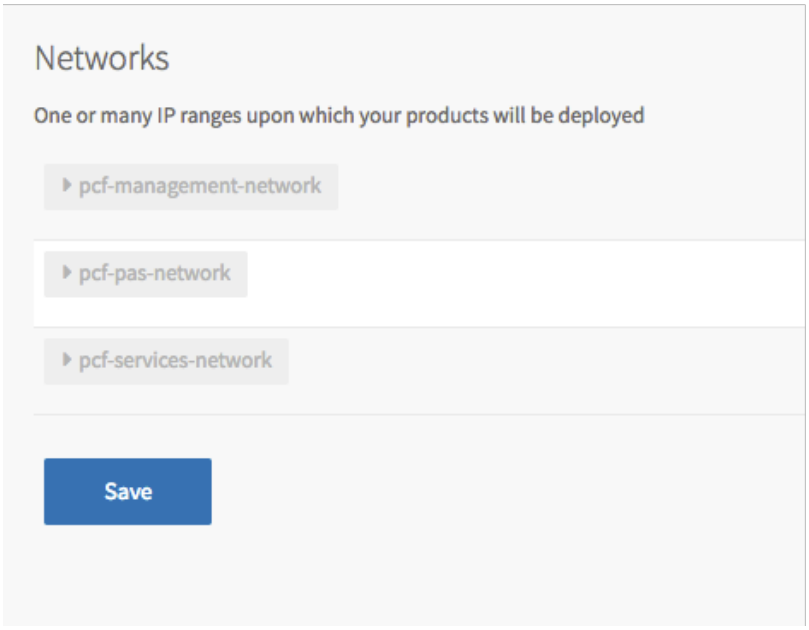
VPC Subnet ID	CIDR	Reserved IP Ranges	DNS	Gateway	Availability Zones
The first value of pas_subnet_ids from the Terraform output.	10.0.4.0/24	10.0.4.0-10.0.4.4	169.254.169.253	10.0.4.1	The first value of pas_subnet_availability_ Terraform output.
The second value of pas_subnet_ids from the Terraform output.	10.0.5.0/24	10.0.5.0-10.0.5.4	169.254.169.253	10.0.5.1	The second value of pas_subnet_availability_ Terraform output.

pcf-services-network

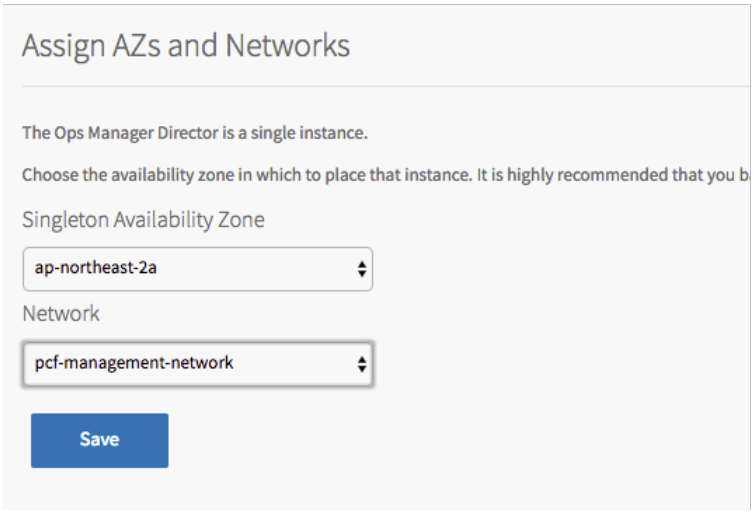
* Service Network 선택

VPC Subnet ID	CIDR	Reserved IP Ranges	DNS	Gateway	Availability Zone
The first value of services_subnet_ids from the Terraform output.	10.0.8.0/24	10.0.8.0-10.0.8.3	169.254.169.253	10.0.8.1	The first value of services_subne Terraform output
The second value of services_subnet_ids from the Terraform output.	10.0.9.0/24	10.0.9.0-10.0.9.3	169.254.169.253	10.0.9.1	The second value of services_subne Terraform output

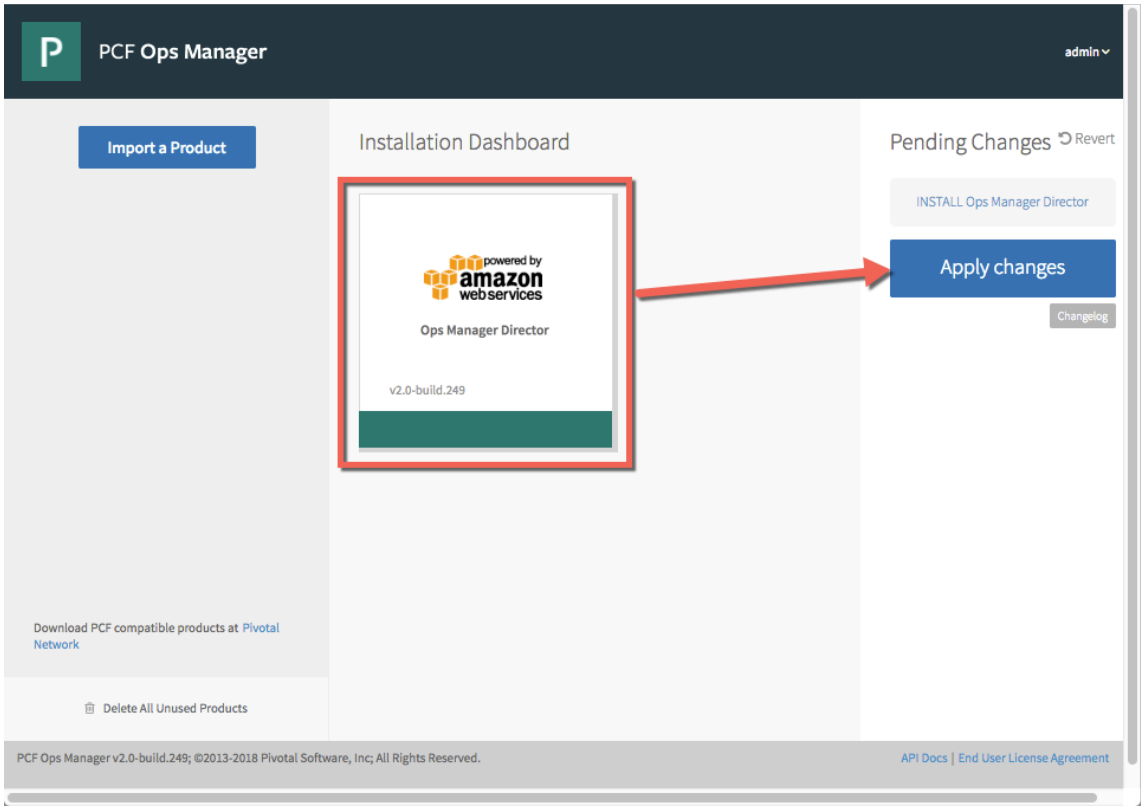
Network 등록 완료 화면



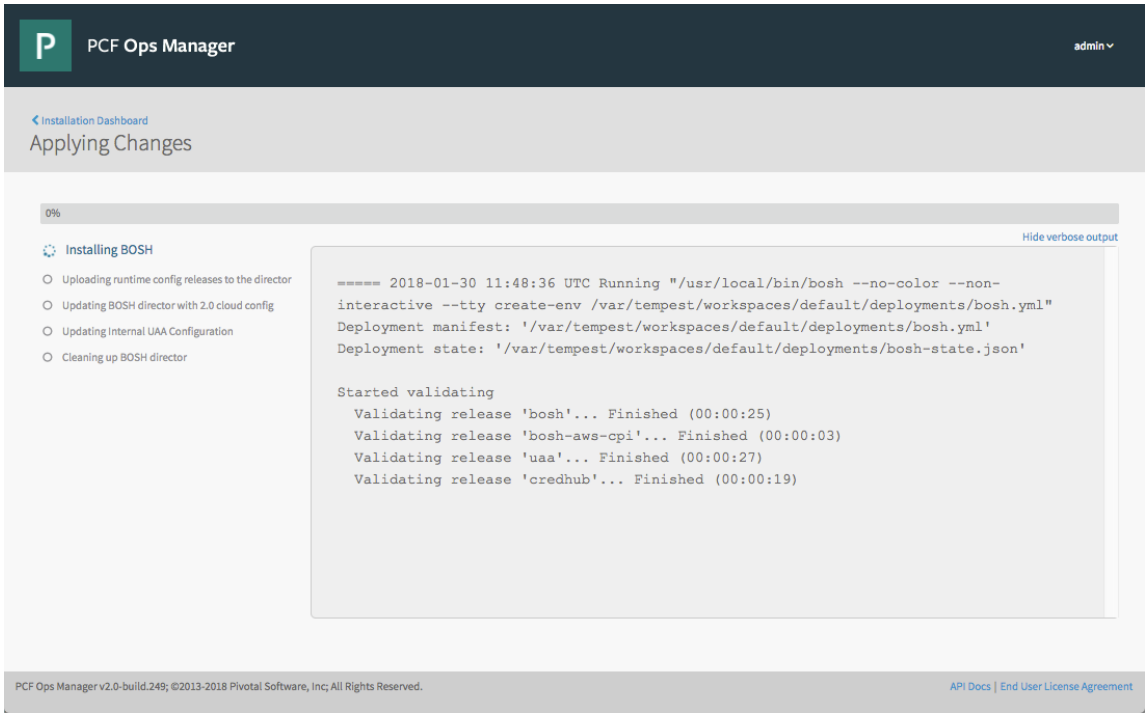
Assign AZs and Networks



Ops Manager Director 설치 시작



설치는 10 분 이상 소요



Ops Manager SSH 로 연결하기

설치가 진행되는 동안 ops manager ssh 연결을 위한 key 파일 생성 및 접속 테스트.

Terraform output 중에 ops_manager_ssh_private_key 를 ops.key 로 저장

$ chmod 400 ops.key

$ ssh –i ops.key ubuntu@pcf.sds61.cfpush.net

Windows 에서는 putty 를 이용해서 아래 내용을 참조

https://docs.aws.amazon.com/ko_kr/AWSEC2/latest/UserGuide/putty.html

PAS Download

PC 로 download 및 opsmanger uploads 는 시간이 많이 소요됨으로 아래 ops manager 에 ssh 로 접속하여 진행한다.

$ ssh –i ops.key ubuntu@pcf.sds61.cfpush.net

$ curl -i -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Token bDFRn1EcD3Ly9AmrxdkN" -X POST https://network.pivotal.io/api/v2/products/elastic-runtime/releases/32638/eula_acceptance

```
ubuntu@ip-10-0-0-251:~$ curl -i -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Token b
DFRn1EcD3Ly9AmrxdkN" -X POST https://network.pivotal.io/api/v2/products/elastic-runtime/releases/32638/eula_acceptance
HTTP/1.1 200 OK
Cache-Control: max-age=0, private, must-revalidate
Content-Type: application/json; charset=utf-8
Date: Tue, 30 Jan 2018 12:26:19 GMT
Etag: W/"acd74853cfaf04a2cbc6869e8130218c"
Strict-Transport-Security: max-age=15552000; includeSubDomains
X-Request-Id: 5259f925-8575-424e-9bbf-ca129d76a6cc
X-Runtime: 0.299236
X-Vcap-Request-Id: 97a8181e-3f1f-4e57-70a1-c260cbee8163
Content-Length: 101
Connection: keep-alive

{"accepted_at":"2018-01-29","_links":{"eula":{"href":"https://network.pivotal.io/api/v2/eulas/120"}}}ubuntu@ip-10-0-0-251:~$
```

$ wget --post-data="" --header="Authorization: Token bDFRn1EcD3Ly9AmrxdkN" https://network.pivotal.io/api/v2/products/elastic-runtime/releases/32638/product_files/63747/download -O "cf-2-small.pivotal"

```
ubuntu@ip-10-0-0-251:~$ wget --post-data="" --header="Authorization: Token bDFRn1EcD3Ly9AmrxdkN" https://network.pivotal.io/api/v2/products/elastic-run
time/releases/32638/product_files/63742/download -O "cf-2.pivotal"
--2018-01-30 12:32:47--  https://network.pivotal.io/api/v2/products/elastic-runtime/releases/32638/product_files/63742/download
Resolving network.pivotal.io (network.pivotal.io)... 52.1.11.18, 52.7.239.110
Connecting to network.pivotal.io (network.pivotal.io)|52.1.11.18|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://d13k9s5899twdr.cloudfront.net/product-files/elastic-runtime/28367786-1a7f-4da8-b073-f2ea57d4ba42?Expires=1517401967&Signature=AJOkSXu
EqlI2g5-HRHbuANNNMK28EOXECyHXtxWmEMADOsHXdutjnCfKyIf9-N39S7PCU2Qs1HKCdgFajq2odBUzFPI6%7EJ-IScllsFH9CwKREh-hncb0MVlH15Nq2Sm7EbLhjtWO-UYHC9IeW4AF5naNSQMX
AkTZHs3IBlRC%7EelQCi54FUhNTVbEo4YO2mEKj7AIFsxKRNrVSgU0jpV62k3nhDO64e4I0r7ziA8HZLpQmXkN9t%7Er8VKM8In77XUPh8s8MpZz5Wy%7EdOP2W1U33cLDr07q24ni8Xs8KZoLPktVv
5lU3ccIt7F5b1w5QyJEFcsf6LGkA1hBQ7rSC7qg6g__&Key-Pair-Id=APKAIXHUNWNBZWMQSZHA&filename=28367786-1a7f-4da8-b073-f2ea57d4ba42 [following]
--2018-01-30 12:32:48--  https://d13k9s5899twdr.cloudfront.net/product-files/elastic-runtime/28367786-1a7f-4da8-b073-f2ea57d4ba42?Expires=1517401967&Si
gnature=AJOkSXuEqlI2g5-HRHbuANNNMK28EOXECyHXtxWmEMADOsHXdutjnCfKyIf9-N39S7PCU2Qs1HKCdgFajq2odBUzFPI6%7EJ-IScllsFH9CwKREh-hncb0MVlH15Nq2Sm7EbLhjtWO-UYHC
9IeW4AF5naNSQMXAkTZHs3IBlRC%7EelQCi54FUhNTVbEo4YO2mEKj7AIFsxKRNrVSgU0jpV62k3nhDO64e4I0r7ziA8HZLpQmXkN9t%7Er8VKM8In77XUPh8s8MpZz5Wy%7EdOP2W1U33cLDr07q24
ni8Xs8KZoLPktVv5lU3ccIt7F5b1w5QyJEFcsf6LGkA1hBQ7rSC7qg6g__&Key-Pair-Id=APKAIXHUNWNBZWMQSZHA&filename=28367786-1a7f-4da8-b073-f2ea57d4ba42
Resolving d13k9s5899twdr.cloudfront.net (d13k9s5899twdr.cloudfront.net)... 54.230.253.182, 54.230.253.200, 54.230.253.208, ...
Connecting to d13k9s5899twdr.cloudfront.net (d13k9s5899twdr.cloudfront.net)|54.230.253.182|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 8371579419 (7.8G)
Saving to: ‘cf-2.pivotal’

 0% [                                                                                                  ] 251,478     63.4KB/s  eta 37h 6
```

PAS Tile 올리기

opsmanger access token 받기

아래 url 은 본인 ops manager url 로 변경

$ curl -s -k -H 'Accept: application/json;charset=utf-8' -d 'grant_type=password' -d 'username=admin' -d 'password=admin' -u 'opsman:' https://pcf.sds61.cfpush.net/uaa/oauth/token

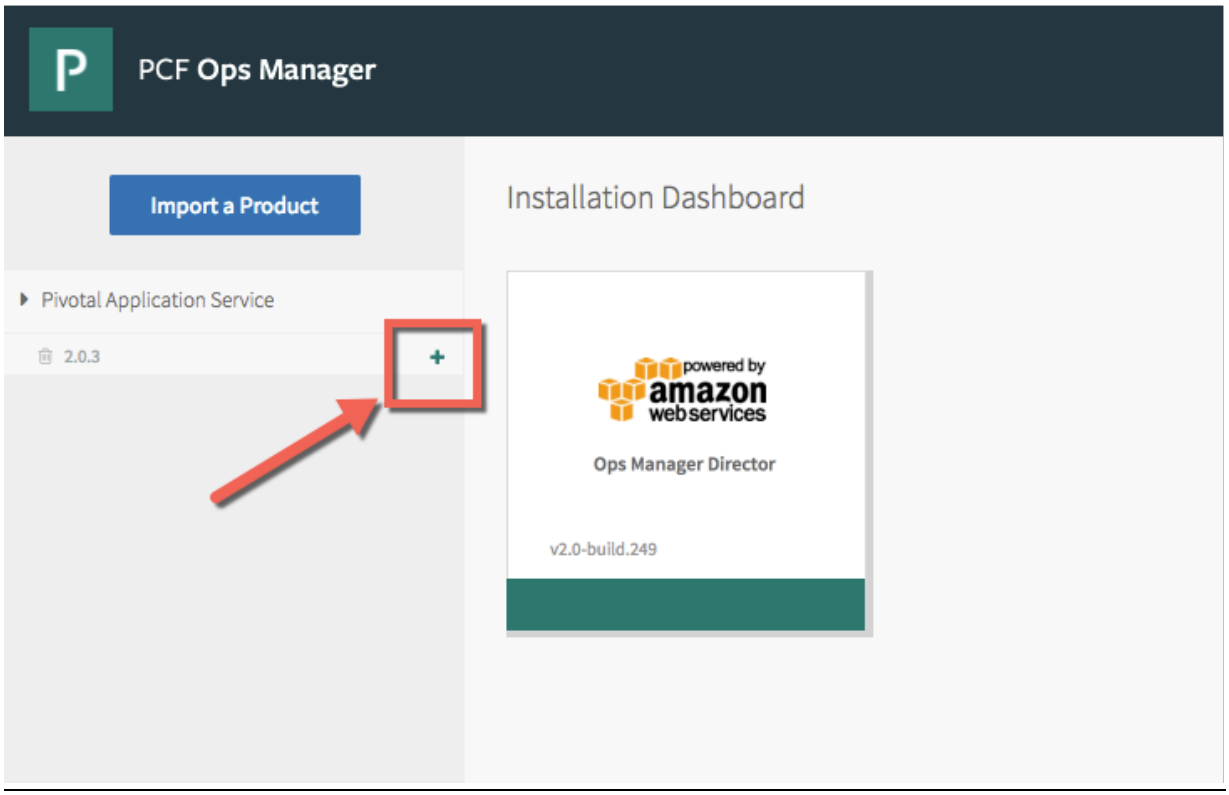
Authorization header 의 token 을 이전 요청에서 받은 Access token 으로 교체

$ curl -vv -H 'Authorization: bearer eyJhbGciOiJSUzI1NiIsImtpZCI6ImtleS0xIiwidHlwIjoiSldUIn0.eyJqdGkiOiJjMjQwZWUxYWRkYmQ0OWI5YWNhNzIxYmRlODkyODk3NCIsInN1YiI6IjM2YTkzNGI2LWExNGItNDBlOC1iMzVhLWQ4YjJjNzdkNzJjZSIsInNjb3BlIjpbIm9wc21hbi5hZG1pbiIsInNjaW0ubWUiLCJjbGllbnRzLmFkbWluIiwidWFhLmFkbWluIl0sImNsaWVudF9pZCI6Im9wc21hbiIsImNpZCI6Im9wc21hbiIsImdyYW50X3R5cGUiOiJwYXNzd29yZCIsInVzZXJfaWQiOiIzNmE5MzRiNi1hMTRiLTQwZTgtYjM1YS1kOGIyYzc3ZDcyY2UiLCJvcmlnaW4iOiJ1YWEiLCJ1c2VyX25hbWUiOiJhZG1pbiIsImVtYWlsIjoiYWRtaW5AdGVzdC5vcmciLCJhdXRoX3RpbWUiOjE1MTczMzA0NjMsInJldl9zaWciOiI3ZTdlYzEzMCIsImlhdCI6MTUxNzMzMDQ2MywiZXhwIjoxNTE3MzczNjYzLCJpc3MiOiJodHRwOi8vbG9jYWxob3N0OjgwODAvdWFhL29hdXRoL3Rva2VuIiwiemlkIjoidWFhIiwiYXVkIjpbInNjaW0iLCJvcHNtYW4iLCJjbGllbnRzIiwidWFhIl19.KkPBzKXEQ7wqXpjagi7avsEy2yR2ZUJ5JnLqhvthJ2C1X5Sgo9W9EO3-t3PYr9VkeqJGHDsKjNbqN3EuIh2DDPrkljgWE8CokSx2XgSCf01uqpJj3BMTXvyT6OaodJvorsIh_mJ9gXJ4ySo0xtR6ooxoD_BEYHi-8StB6V7sA3bU7auy6YNu8TqQBfTBlGEtTz_Nn0kGXdR_AwawBqJpvmp9842rjfINtjRTcb_1m_FLsVNh_bNQhA7A-yIebXZQv73Oyw2sKu35yp-HutMFoyJeOQivdPRGVogn7MFPAR-incAR452Qi9-cFxqa7HjRYKS2roKaxtJOp-Rvp3FhSw' -k -X POST https://pcf.sds61.cfpush.net/api/v0/available_products -F 'product[file]=@/home/ubuntu/cf-2-small.pivotal'

```
ubuntu@ip-10-0-0-251:~$ curl -vv -H 'Authorization: bearer eyJhbGciOiJSUzI1NiIsImtpZCI6ImtleS0xIiwidHlwIjoiSldUIn0.eyJqdGkiOiIwNzUxMDZkMm
UyYWE0ZDMyYWQ2NTliZTEwMjQ4NDU2NyIsInN1YiI6IjM2YTkzNGI2LWExNGItNDBlOC1iMzVhLWQ4YjJjNzdkNzJjZSIsInNjb3BlIjpbIm9wc21hbi5hZG1pbiIsInNjaW0ubWU
iLCJjbGllbnRzLmFkbWluIiwidWFhLmFkbWluIl0sImNsaWVudF9pZCI6Im9wc21hbiIsImNpZCI6Im9wc21hbiIsImF6cCI6Im9wc21hbiIsImdyYW50X3R5cGUiOiJwYXNzd29y
ZCIsInVzZXJfaWQiOiIzNmE5MzRiNi1hMTRiLTQwZTgtYjM1YS1kOGIyYzc3ZDcyY2UiLCJvcmlnaW4iOiJ1YWEiLCJ1c2VyX25hbWUiOiJhZG1pbiIsImVtYWlsIjoiYWRtaW5Ad
GVzdC5vcmciLCJhdXRoX3RpbWUiOjE1MTczMTY0ODksInJldl9zaWciOiI3ZTdlYzEzMCIsImlhdCI6MTUxNzMxNjQ4OSwiZXhwIjoxNTE3MzU5Njg5LCJpc3MiOiJodHRwOi8vbG
9jYWxob3N0OjgwODAvdWFhL29hdXRoL3Rva2VuIiwiemlkIjoidWFhIiwiYXVkIjpbInNjaW0iLCJvcHNtYW4iLCJjbGllbnRzIiwidWFhIl19.mSWQ7r3K8CGf4gE7dYQlBPF-Dl
5bz1SKgE8qzUFLtcaaxfXEL9zx6NQwCu4IPId7fn3dWyCy7eFAAsbw560me86uJklbdYj1flVARzz2GWTWwKwAarbZcJ5XCx0U2yqgnJW8lM-dkDt9_FpQr1HcMGnBIbQ-7MgzssI
dhqMnrC43MARhi_AqcSrnUUMWu9r3KceK8123F3zuGhnE3sS-bUA_WKLzJhtmDnugN9Z6mAJE5SgtthqZGqJwNTndkdZjtD337qskRJTjKY88xlkGrYwsxMg_84FtIrQjdW0fPSzx
jm-9qWy3djJ9ppNCSrHRTaS9ggKkqN87FpkmxUUtxg' -k -X POST https://pcf.sds61.cfpush.net/api/v0/available_products -F 'product[file]=@/home/ub
untu/works/cf-2.pivotal'
* Hostname was NOT found in DNS cache
*   Trying 13.124.2.199...
* Connected to pcf.sds61.cfpush.net (13.124.2.199) port 443 (#0)
* successfully set certificate verify locations:
*   CAfile: none
  CApath: /etc/ssl/certs
* SSLv3, TLS handshake, Client hello (1):
* SSLv3, TLS handshake, Server hello (2):
* SSLv3, TLS handshake, CERT (11):
* SSLv3, TLS handshake, Server key exchange (12):
* SSLv3, TLS handshake, Server finished (14):
```

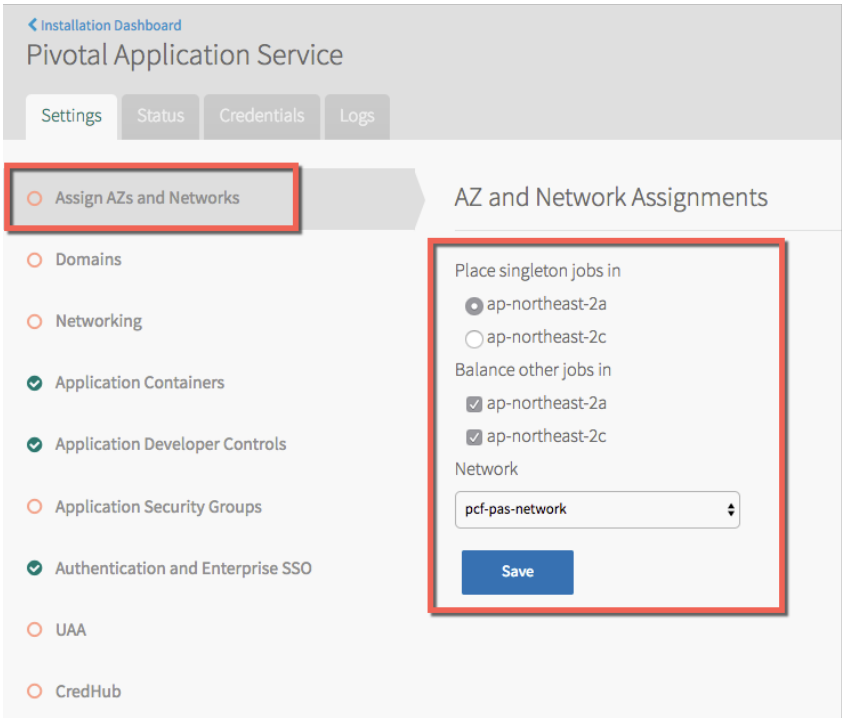
upload 완료 후 Ops Manager 접속 확인

"Pivotal Application Service"가 왼쪽에 등록 되었는지 확인



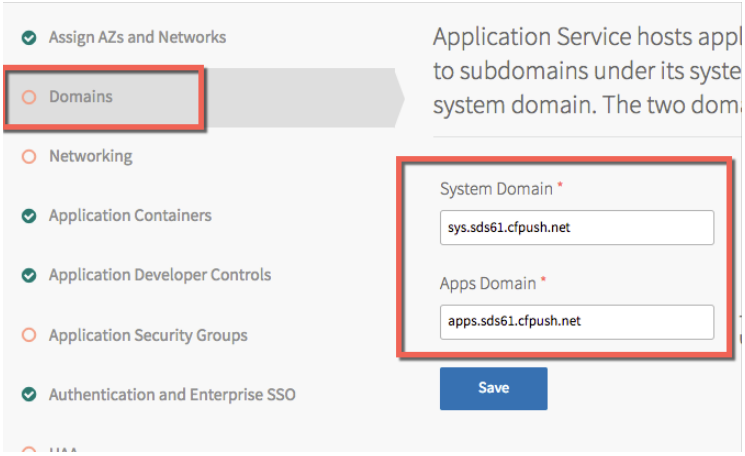
PAS 구성 및 설치

AZ and Network Assignments

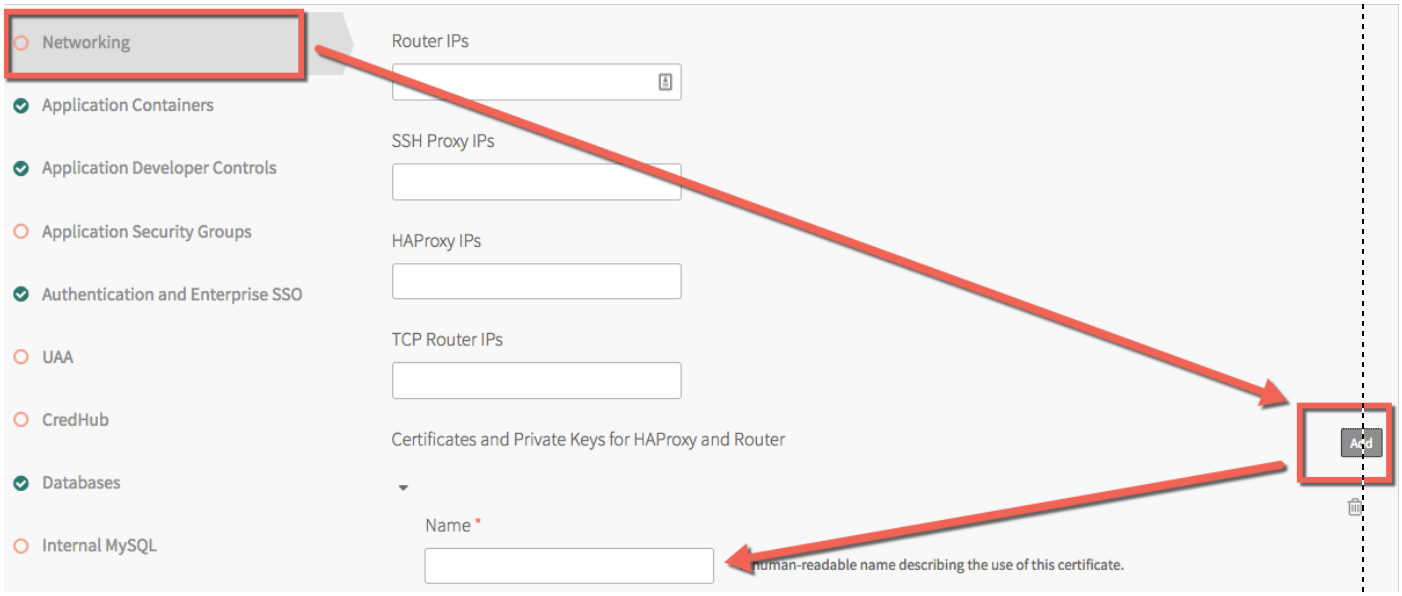


Domains

System Domain	Terraform 의 output 에서 sys_domain sys.sds61.cfpush.net
Apps Domain	Terraform 의 output 에서 apps_domain apps.sds61.cfpush.net



Networking



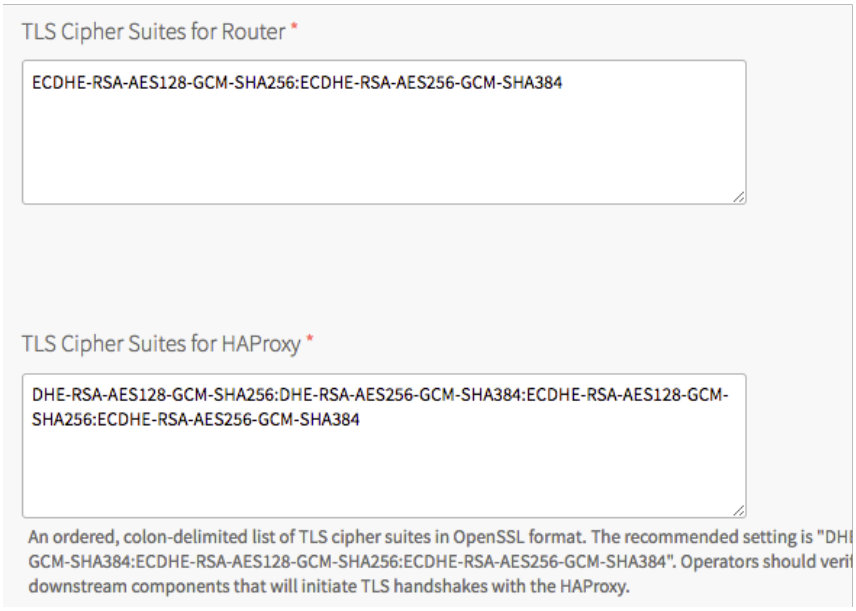
cert/private key 는 기존에 배포된 sds*xx*.cert, sds*xx*.key 의 내용을 복사해 넣는다.

TLS Cipher Suites for Router

ECDHE-RSA-AES128-GCM-SHA256:ECDHE-RSA-AES256-GCM-SHA384

TLS Cipher Suites for HAProxy

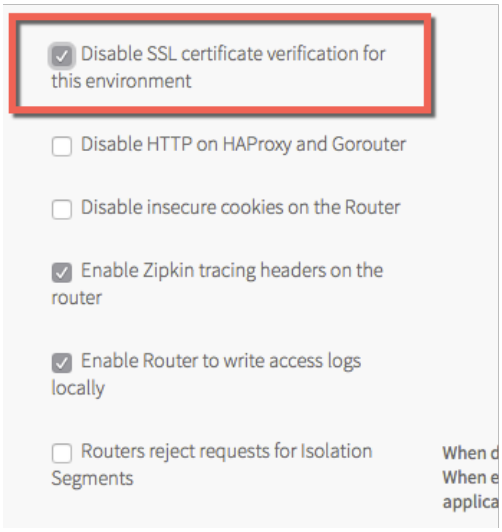
DHE-RSA-AES128-GCM-SHA256:DHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-RSA-AES256-GCM-SHA384



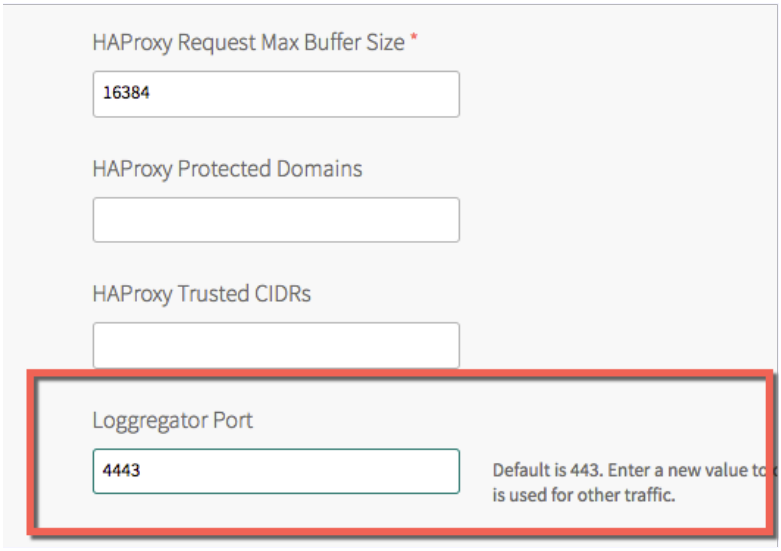
HAProxy forwards requests to Router over TLS. When enabled, HAProxy will forward all requests to the Router over TLS. HAProxy will use the CA provided to verify the certificates provided by the Router. *

- ○ Enable
- ◉ Disable

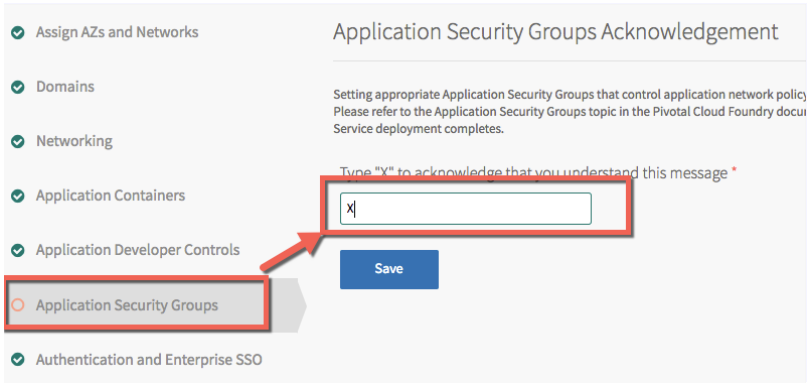
Disable SSL certificate verification for this environment



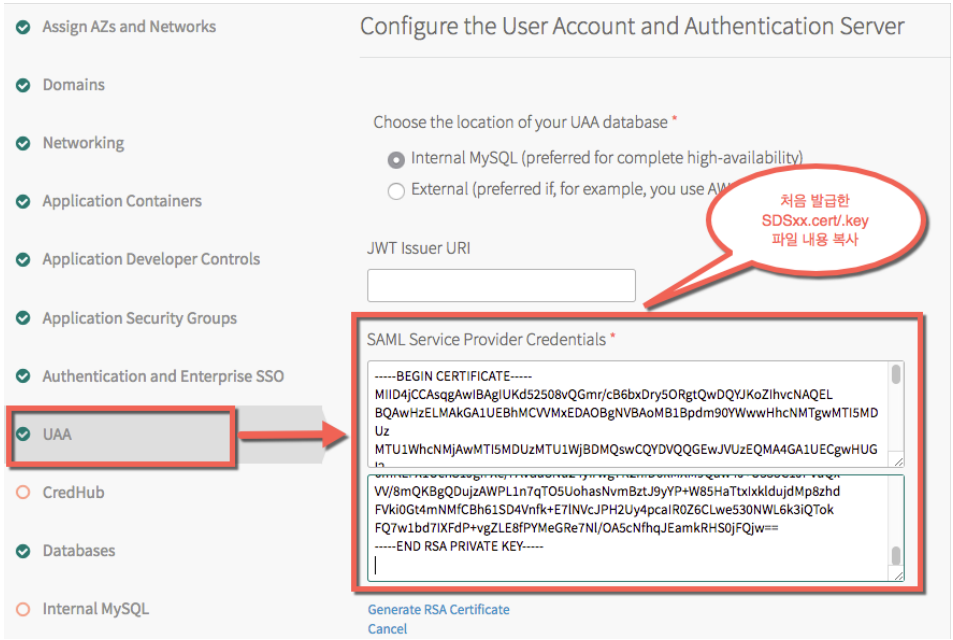
Loggregator Port



Application Security Groups



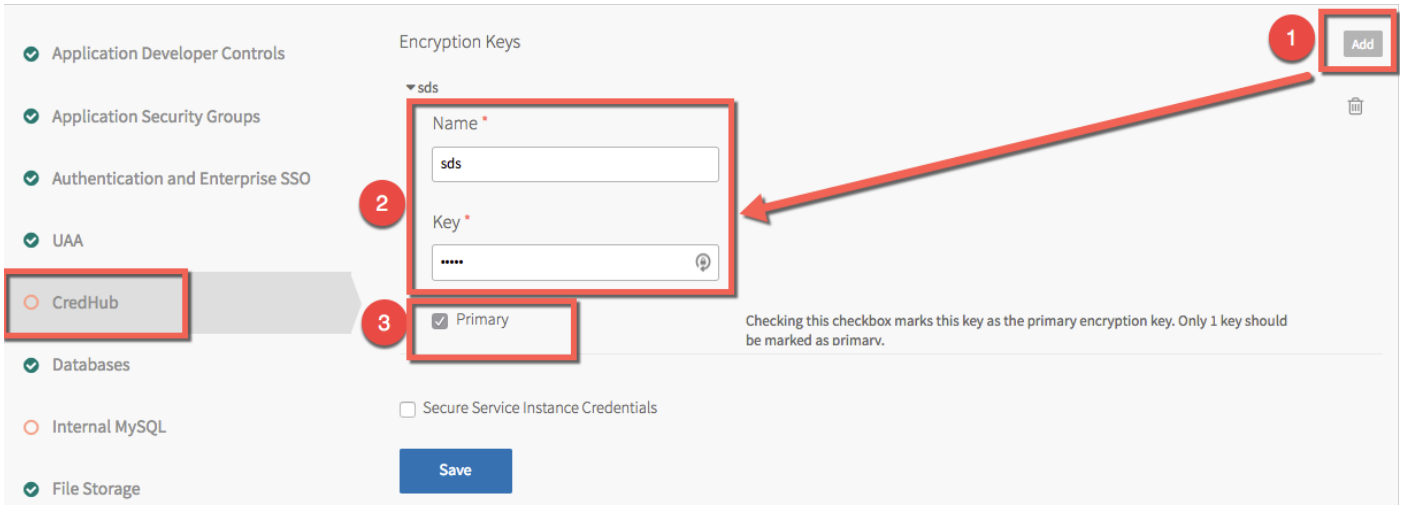
UAA



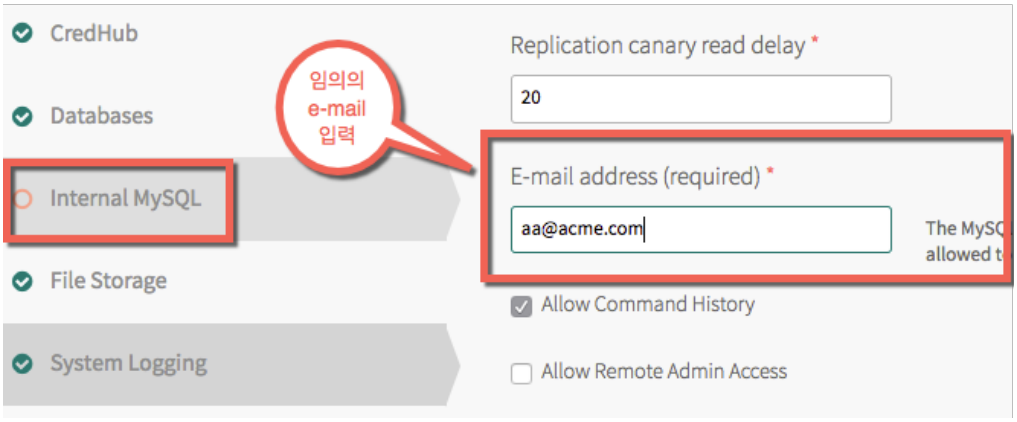
CredHub

암호화 key 추가 : 최소 20 자

ex> adminadminadminadminadmin



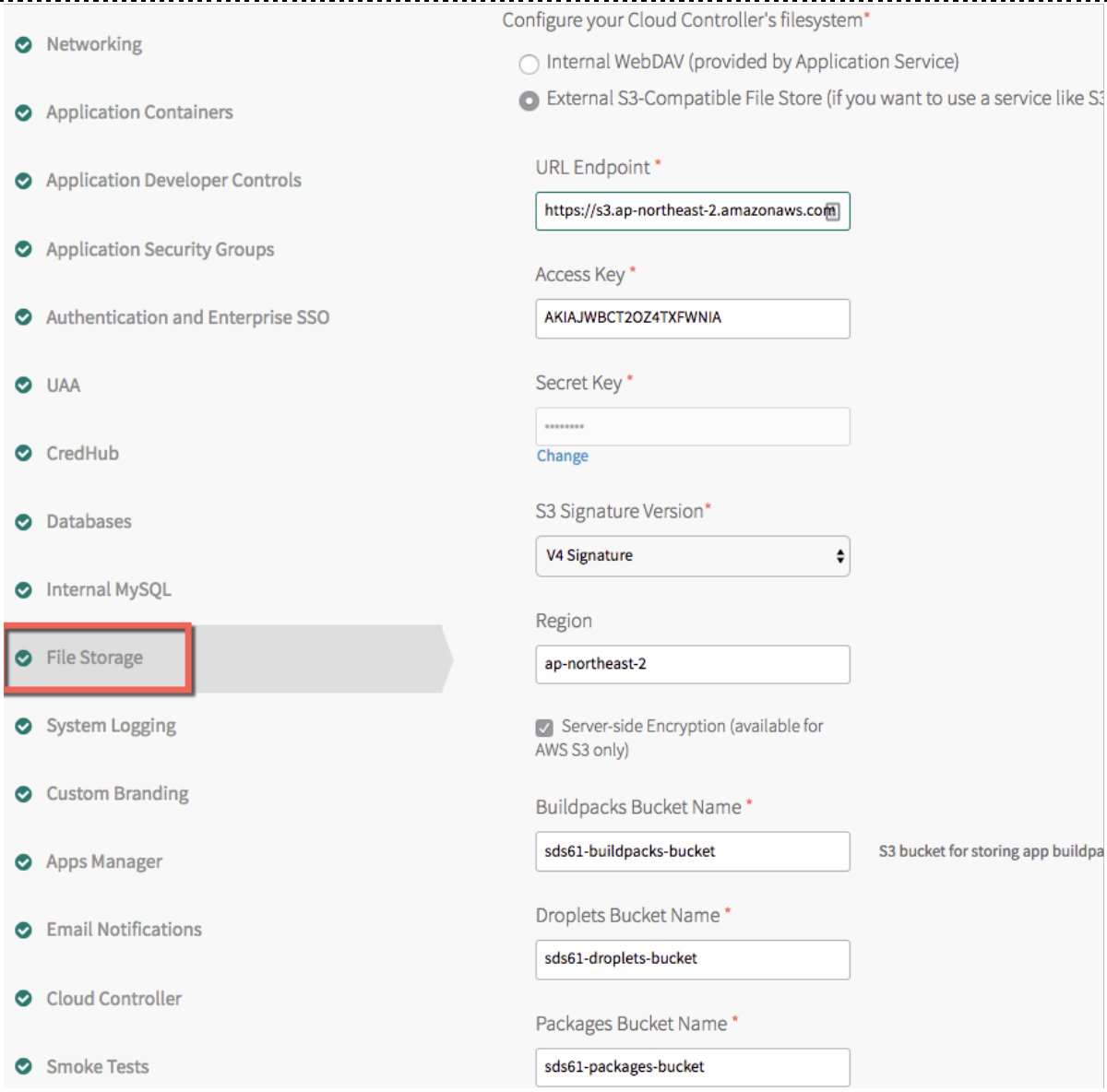
Internal MySQL



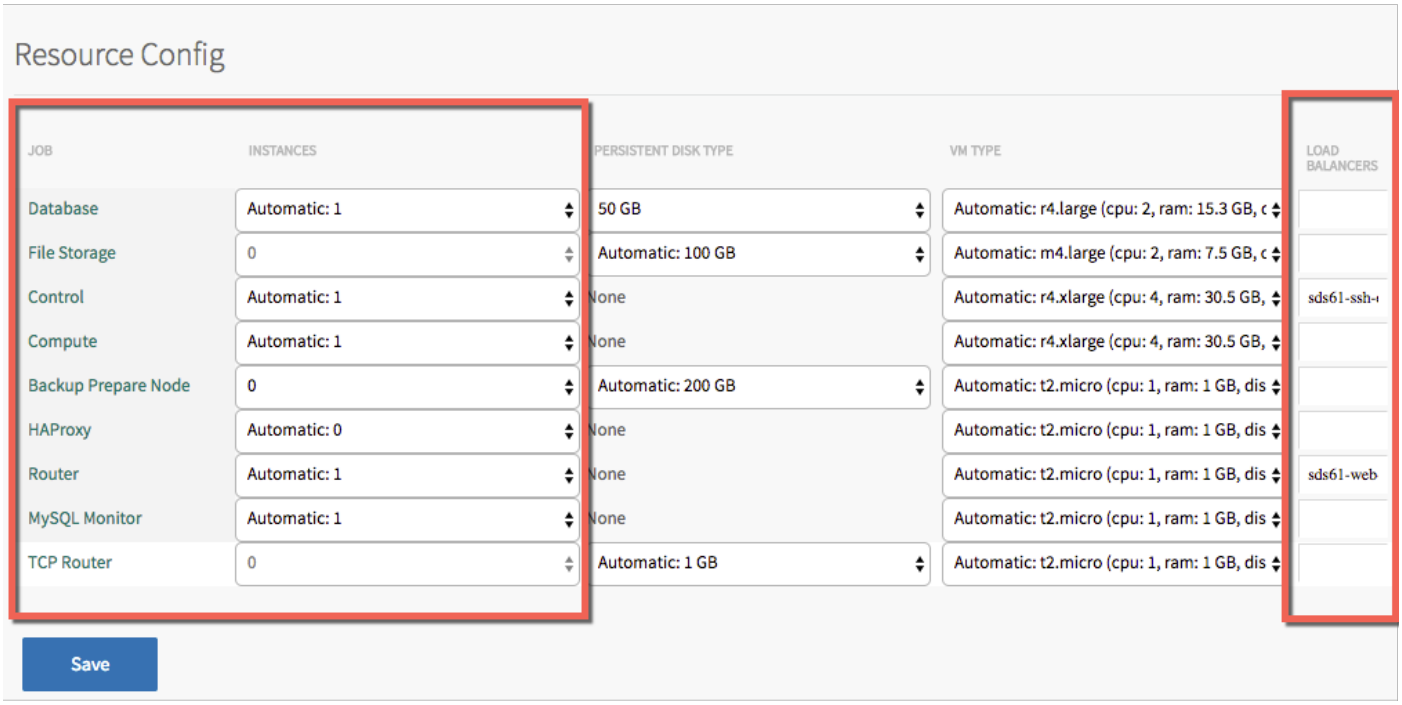
File Storage

External S3-Compatible File Store 선택

Ops Manager Field	terraform output
URL Endpoint	https://s3.ap-northeast-2.amazonaws.com
Buildpacks Bucket Name	pas_buildpacks_bucket
Droplets Bucket Name	pas_droplets_bucket
Packages Bucket Name	pas_packages_bucket
Resources Bucket Name	pas_resources_bucket
Access Key ID	iam_user_access_key
AWS Secret Key	iam_user_secret_access_key
Region	ap-northeast-2

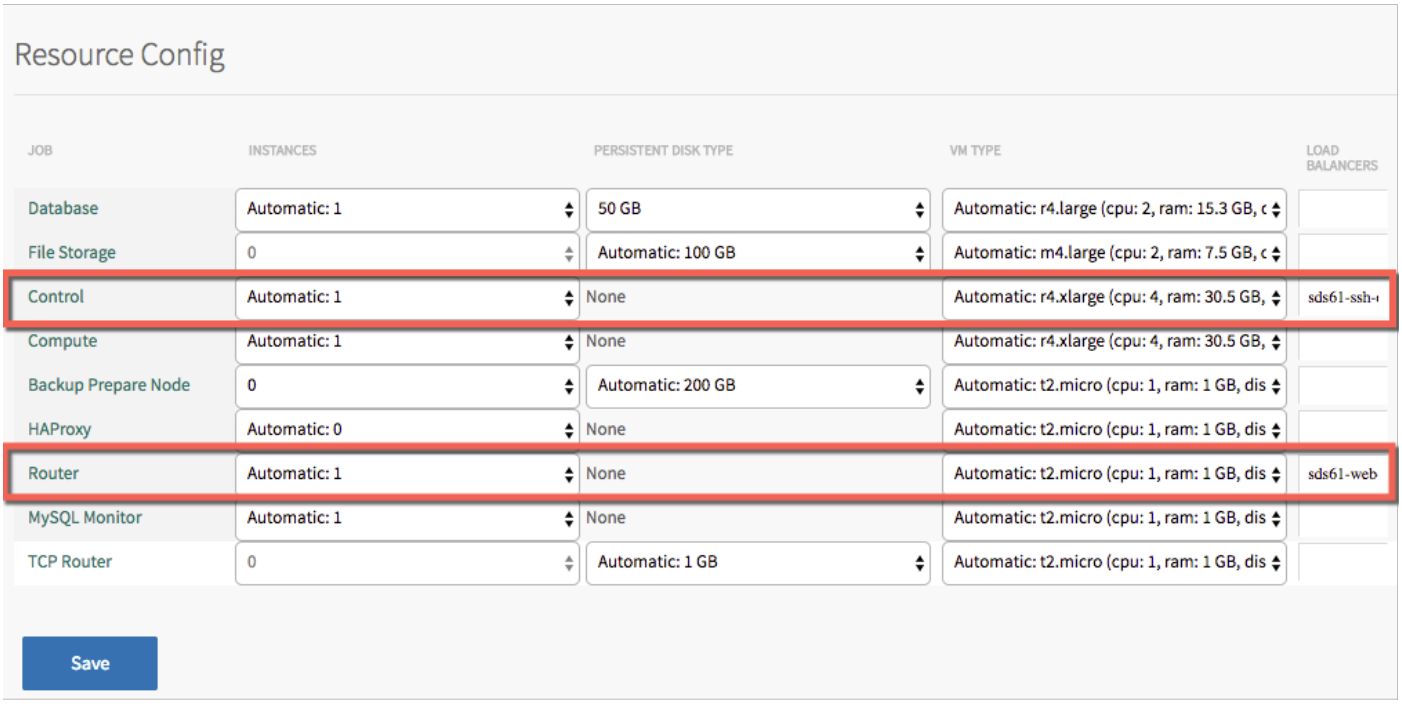

Networking
Application Containers
Application Developer Controls
Application Security Groups
Authentication and Enterprise SSO
UAA
CredHub
Databases
Internal MySQL
File Storage
System Logging
Custom Branding
Apps Manager
Email Notifications
Cloud Controller
Smoke Tests
Configure your Cloud Controller's filesystem*
Internal WebDAV (provided by Application Service)
External S3-Compatible File Store (if you want to use a service like S3
URL Endpoint *
https://s3.ap-northeast-2.amazonaws.com
Access Key *
AKIAJWBCT2OZ4TXFWNIA
Secret Key *
Change
S3 Signature Version*
V4 Signature
Region
ap-northeast-2
Server-side Encryption (available for AWS S3 only)
Buildpacks Bucket Name *
sds61-buildpacks-bucket
S3 bucket for storing app buildpa
Droplets Bucket Name *
sds61-droplets-bucket
Packages Bucket Name *
sds61-packages-bucket

Resource Config

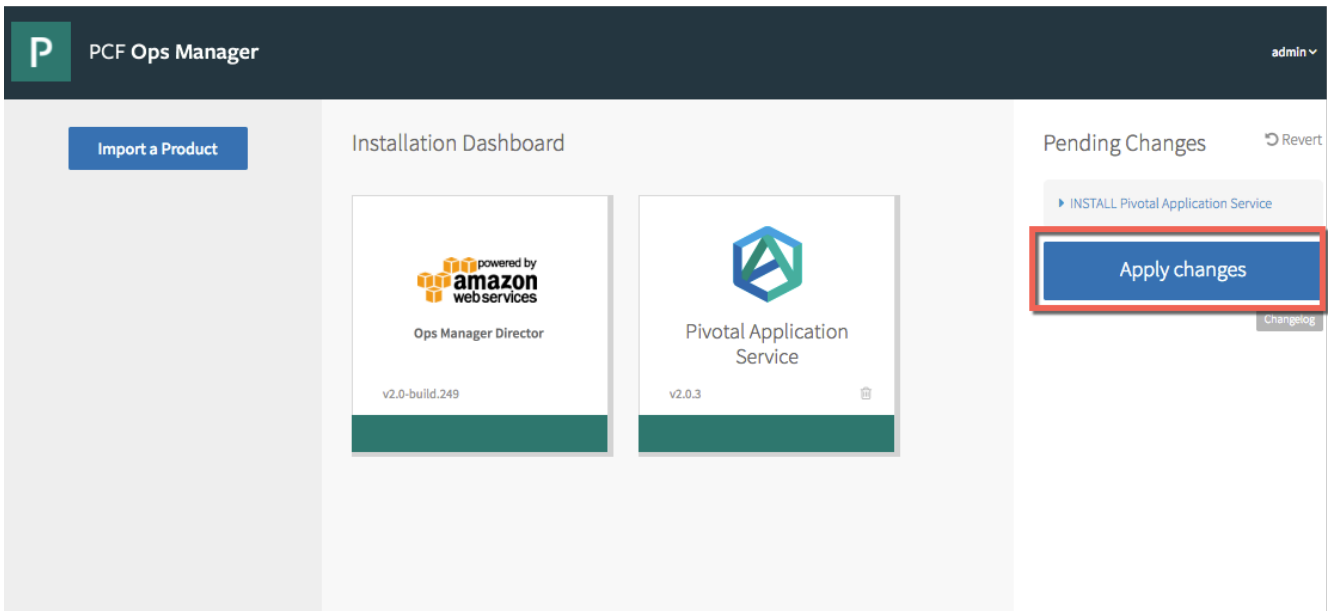


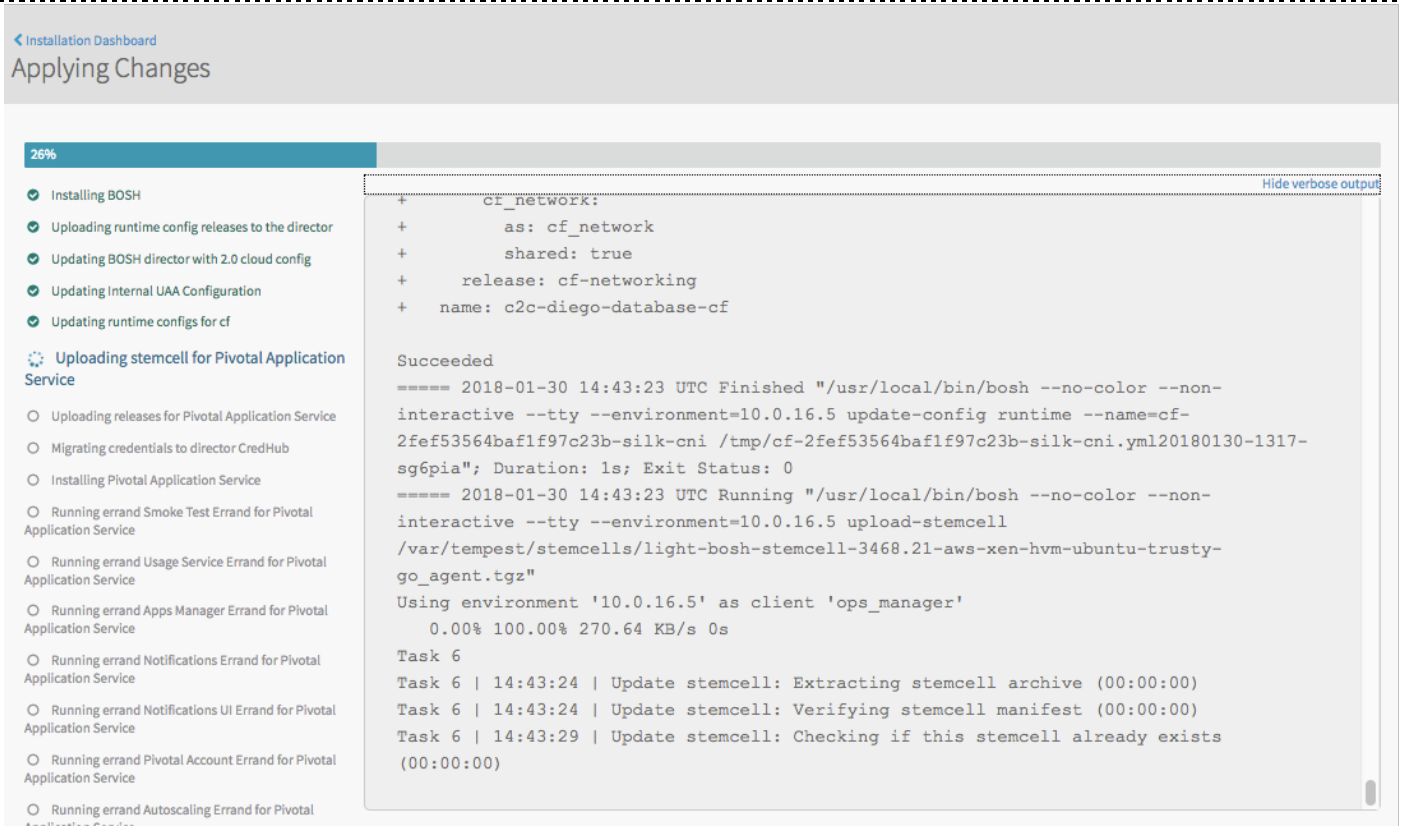
ELB 명 입력

Controller	ssh_elb_name 의 값 입력
Router	web_elb_name 의 값 입력



적용 – 설치





참석자 별 접속 RUL

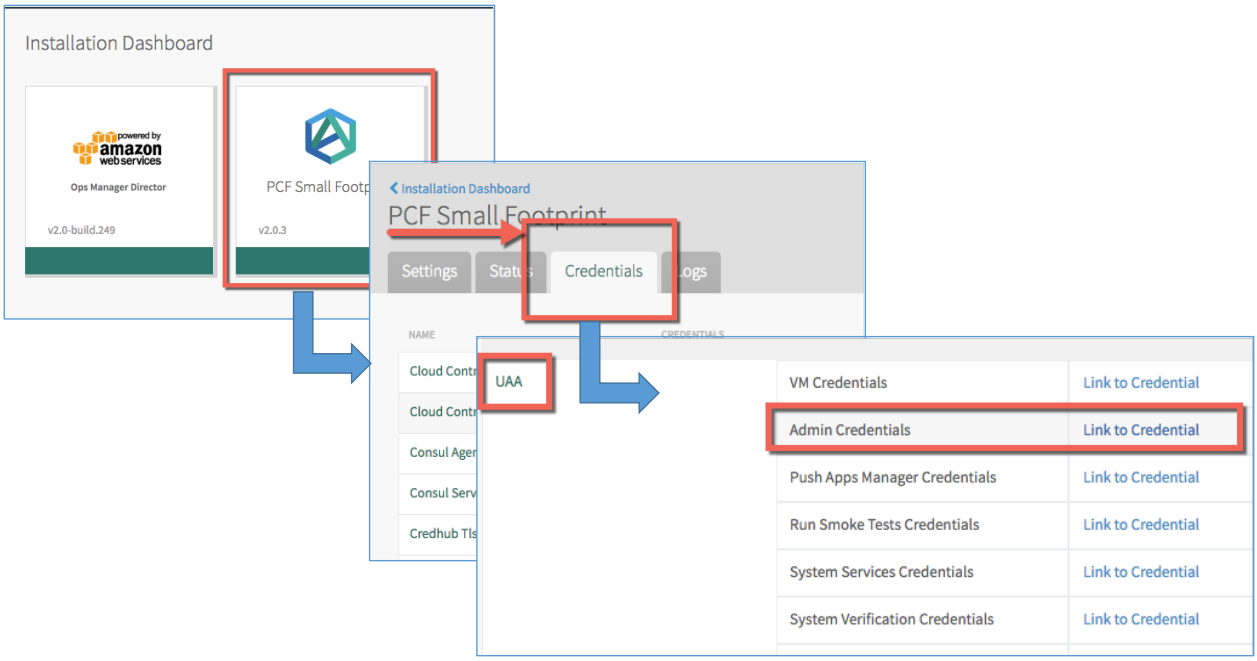
수강자	Ops Manager	Apps Manager	CF API endpoint
SDS1	https://pcf.sds1.cfpush.net	https://apps.sys.sds1.cfpush.net	https://api.sys.sds1.cfpush.net
SDS2	https://pcf.sds2.cfpush.net	https://apps.sys.sds2.cfpush.net	https://api.sys.sds2.cfpush.net
SDS3	https://pcf.sds3.cfpush.net	https://apps.sys.sds3.cfpush.net	https://api.sys.sds3.cfpush.net
SDS4	https://pcf.sds4.cfpush.net	https://apps.sys.sds4.cfpush.net	https://api.sys.sds4.cfpush.net
SDS5	https://pcf.sds5.cfpush.net	https://apps.sys.sds5.cfpush.net	https://api.sys.sds5.cfpush.net
SDS6	https://pcf.sds6.cfpush.net	https://apps.sys.sds6.cfpush.net	https://api.sys.sds6.cfpush.net
SDS7	https://pcf.sds7.cfpush.net	https://apps.sys.sds7.cfpush.net	https://api.sys.sds7.cfpush.net

Apps Manager 접속

1. **Ops Manager 에 접속하여 admin 암호 확인**

   - 최초 설치 후 접속할 수 있는 계정은 admin 이고 사용자를 추가하여 사용

   admin / admin 으로 로그인 후 "PCF Small Footprint" tile 을 선택하고, "Credentials" 탭을 선택하며, UAA Section 에 Admin Credentials 의 link 를 클릭

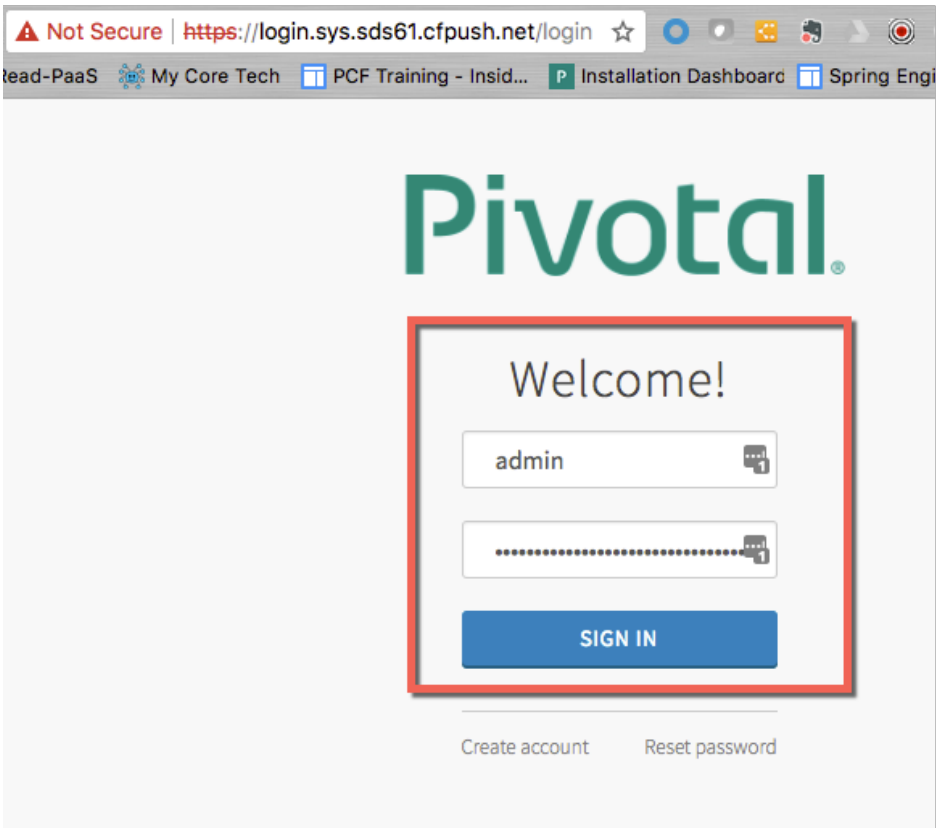


Link 를 클릭하면 아래와 같이 admin 계정과 password 를 확인할 수 있다.


```
{
  - credential: {
        type: "simple_credentials",
      - value: {
            identity: "admin",
            password: "BuVkQ-K9n7wxzZ_XwjcUZ_QSTCxunop1"
        }
    }
}
```

2. App Manager 접속

참석자 별 접속 URL 에 본인의 apps manager url 로 접근하여 로그인



Apps Manager 초기 화면