

2nd Open Cloud, Open Standard Seminar

국내 오픈소스 PaaS 플랫폼 OCE 프로젝트 개발현황

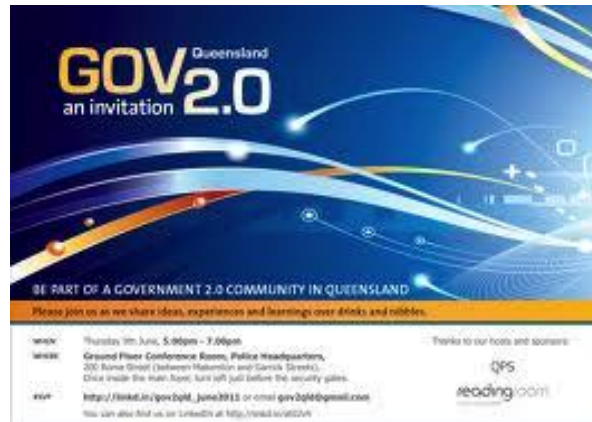
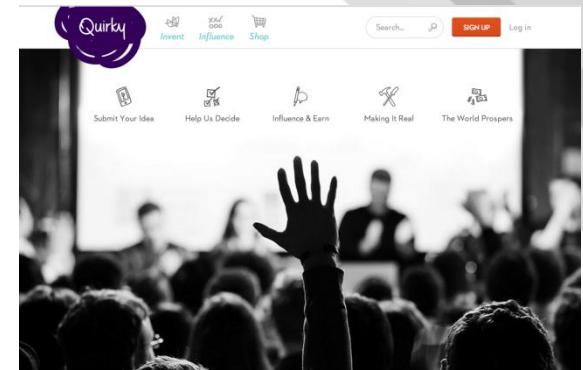
Open Cloud Engine Initiative
JY Jang, James Ahn, BG Kim

www.opencloudengine.org



OPEN CLOUD ENGINE

Innovative Future Applications



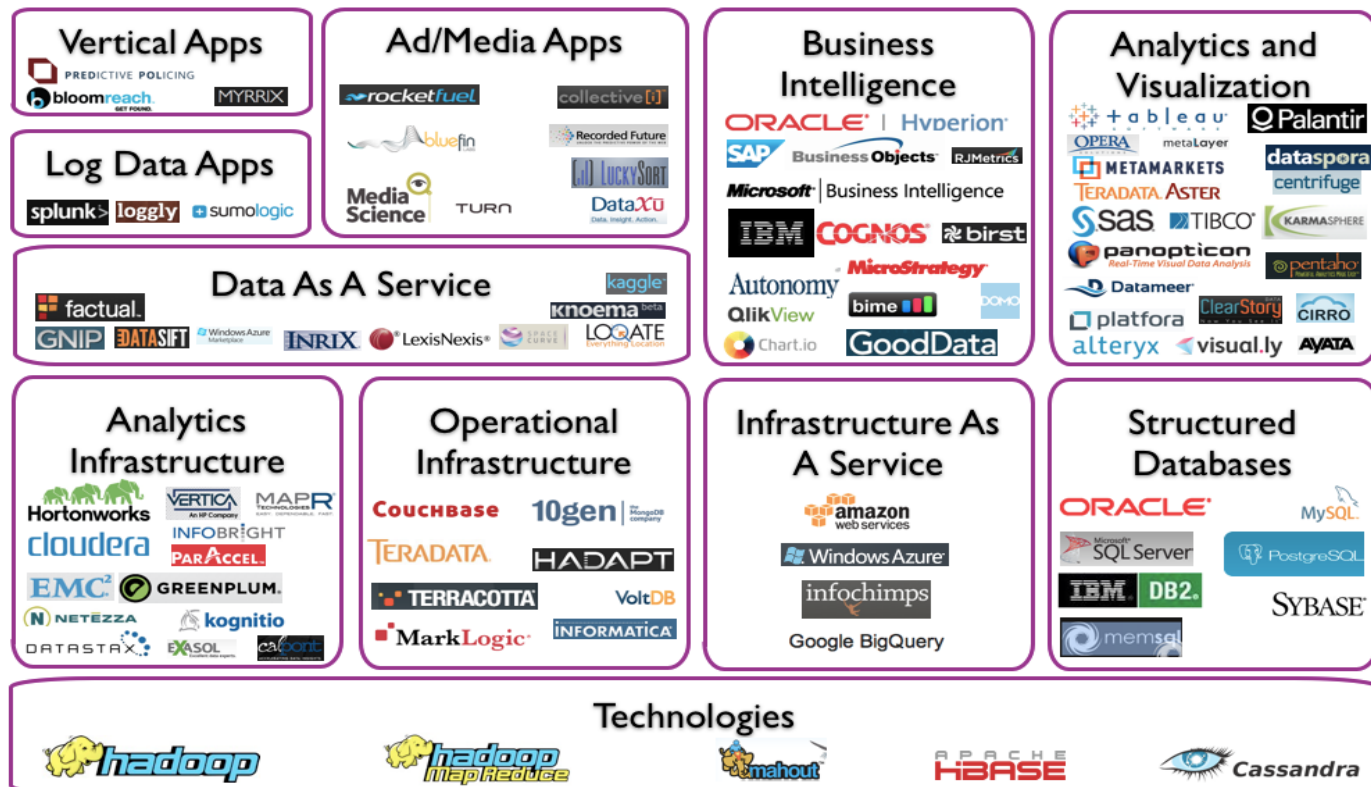
Concerns in Future Applications

- Initial Cost
- Learning Curve
- Monetization



High Hardware Cost and Complex Configuration

Big Data Landscape



Learning Curves

- Social
- Cloud
- Mobile
- Big Data



Standard API



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So, Future App will be

Running on

- Cloud



- Platform



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Cloud Economy

**Shared
Infrastructure
and
Multitenancy**



Learn to share

**On-demand
Self-service
with Simple
Interface**



Get it yourself

**Elasticity and
Scalability**



All you can eat

**Consumption-
Based Pricing**



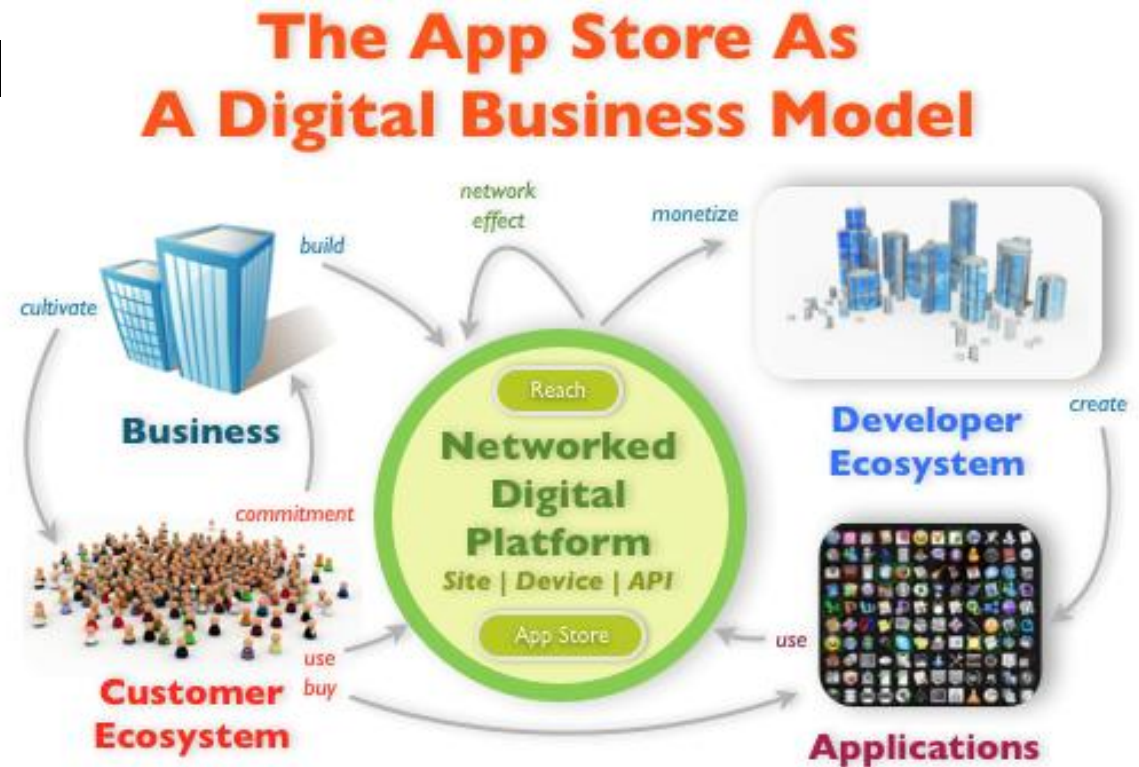
Pay per use



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Platform Business Model

- Win-win model
- Self-Motivated
- Lock-in



From <http://blogs.zdnet.com/Hinchcliffe>



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Remedy is PaaS

A PaaS provides development services on cloud.

Built-in PaaS Services

- 
- A diagram illustrating the flow from built-in PaaS services to future applications. A large blue arrow points from left to right. Inside the arrow, a list of services is provided. At the bottom left of the arrow is a white cloud icon. At the right end of the arrow is a blue box containing the text 'Your Future Apps'.
- Infra. Services
 - Application Services
 - Operations Services
 - Platform Services
 - Mobile Services
 - Social Services

Your
Future
Apps



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But No Initiative here in Korea
So happen to start OCE!!!



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Open Cloud Engine



SaaS



PaaS



IaaS



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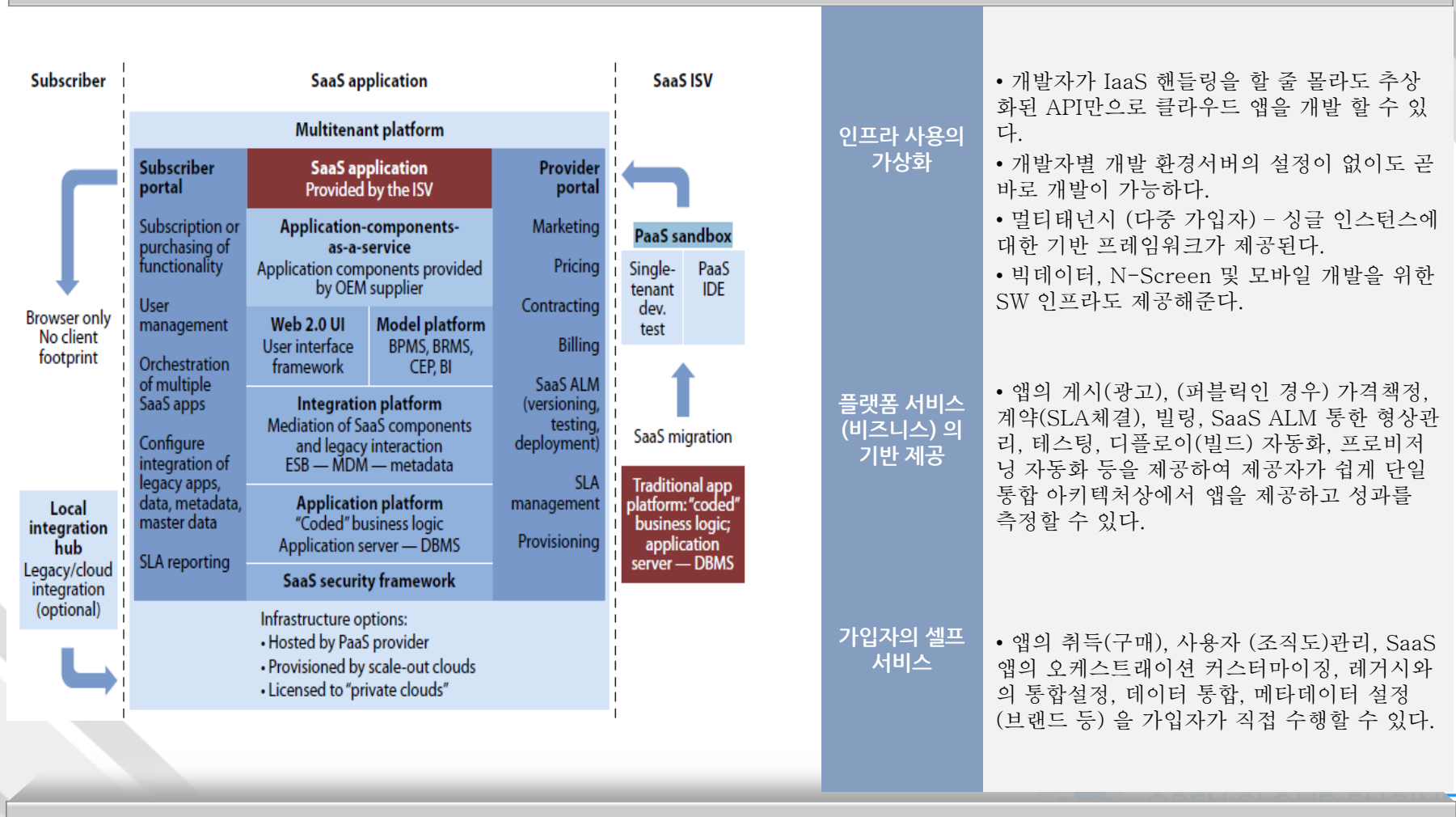
Open Cloud Engine

- Open Source PaaS Project
- Develop, Manage & Monetize Future Application
 - Open Source, Open Standard
 - Focused on Business Applications
 - Full Software Stack For PaaS
 - Simple. Easy of Use



Approach – Standard Model

- Forrester's PaaS Reference Architecture Compliant Open PaaS



Members are...



- SW Dev. & Modeling Tool Expert
- Garuda Main Contributor



MHR

- Open Stack Expert
- Netra Main Contributor



Clouline

- Big Data Expert
- Flamingo Main Contributor



- SW Eng. Tool Expert



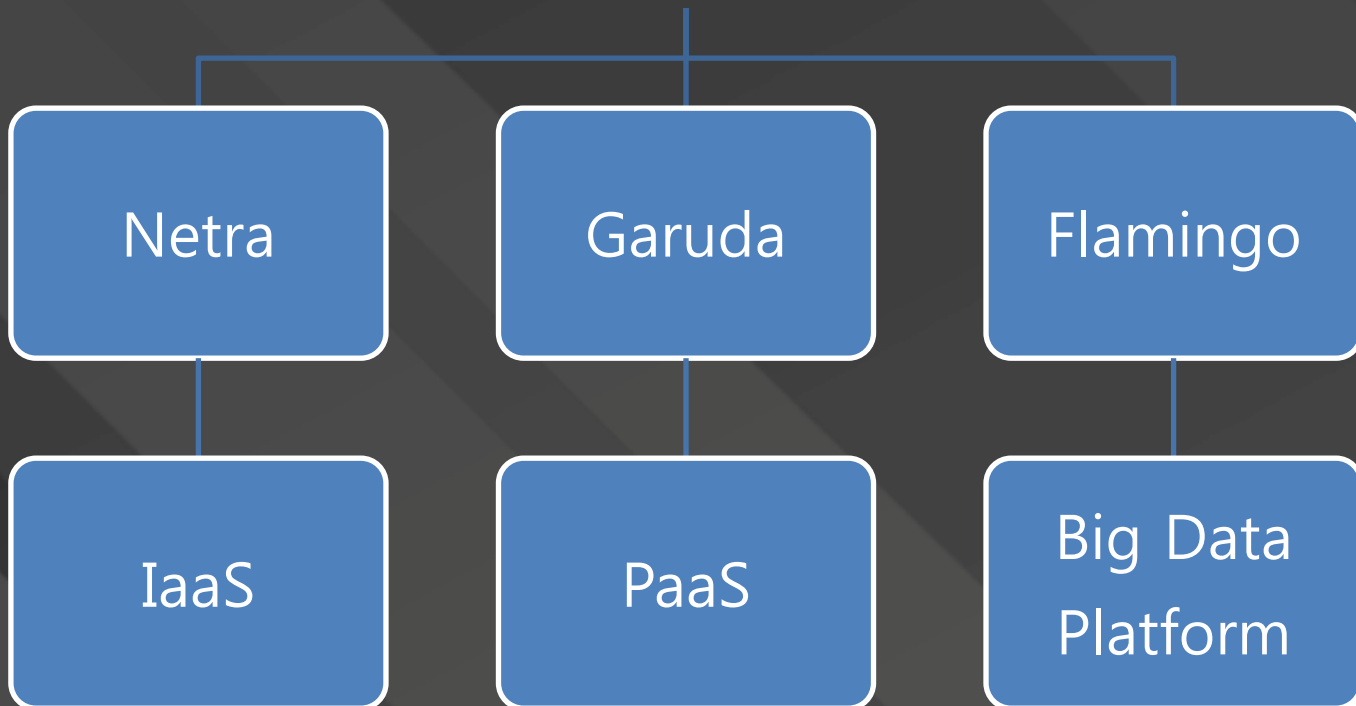
- Database Expert



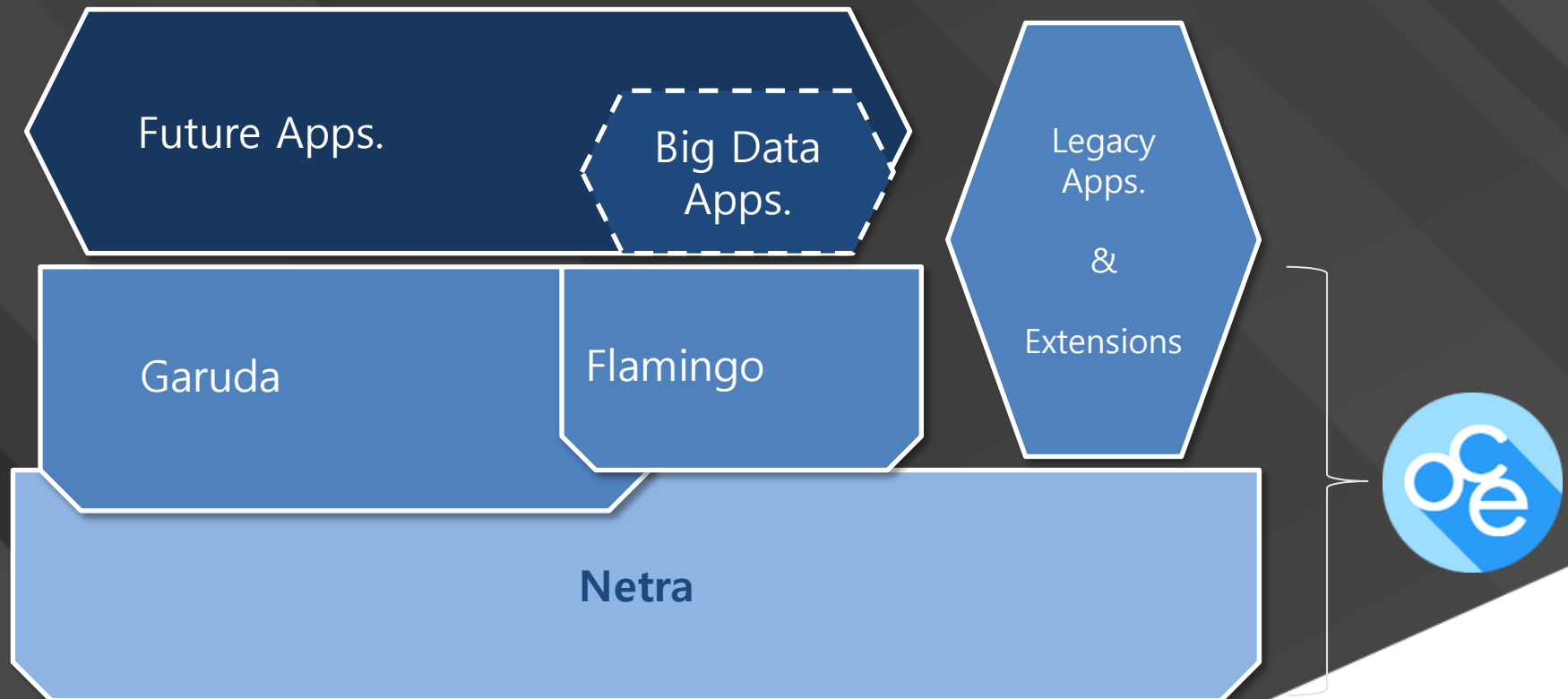
A close-up photograph of several hands giving thumbs up. The hands are of different skin tones, and some are wearing blue or white sleeves. The background is a soft, out-of-focus green, suggesting an outdoor setting with foliage. A semi-transparent white rectangular box is overlaid in the center of the image, containing Korean and English text.

그리고 여러분 모두
...and all of you!

OCE Components

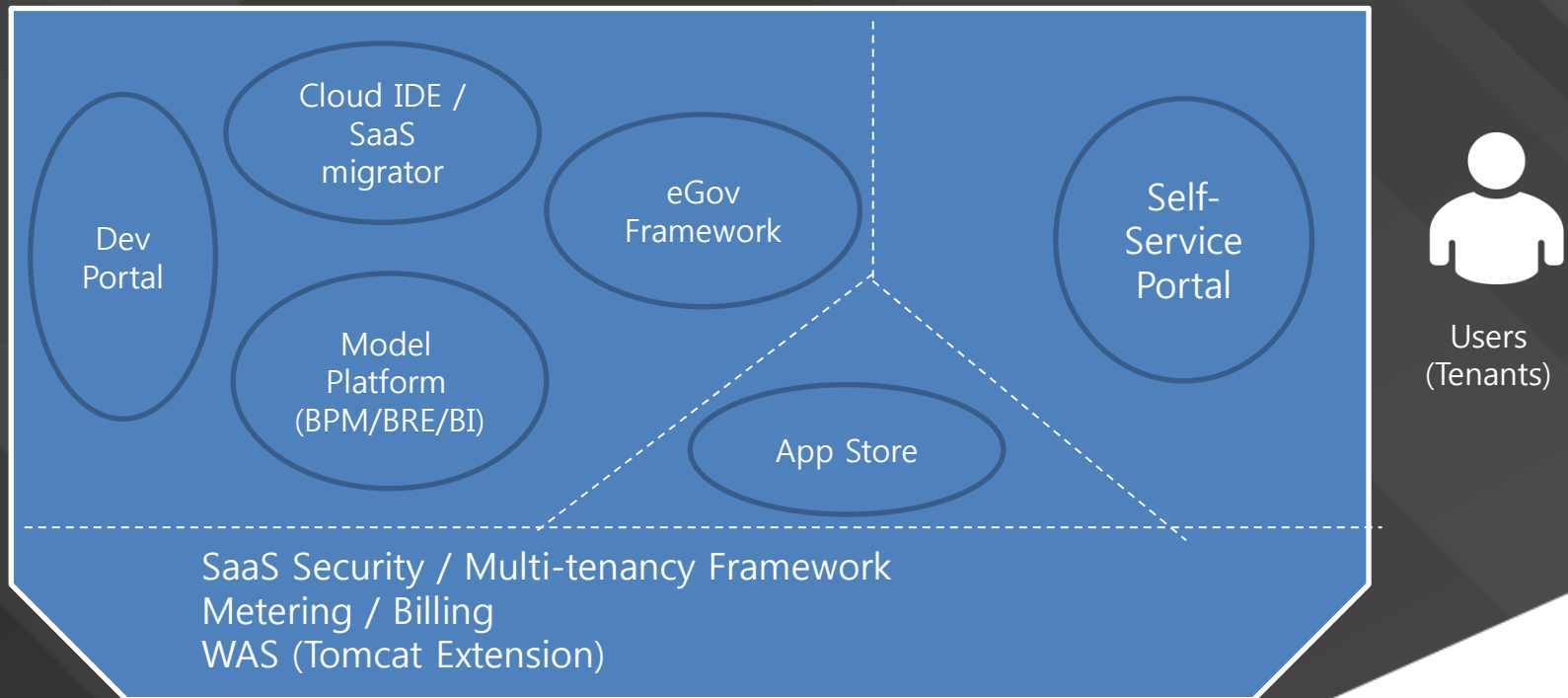


OCE Architecture



OPEN CLOUD ENGINE

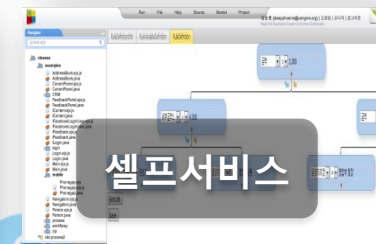
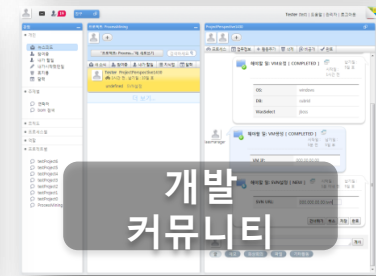
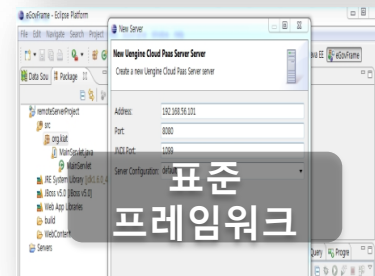
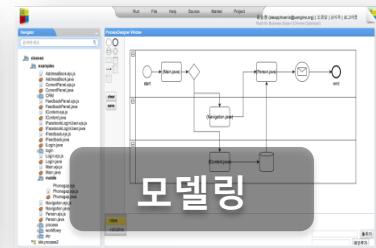
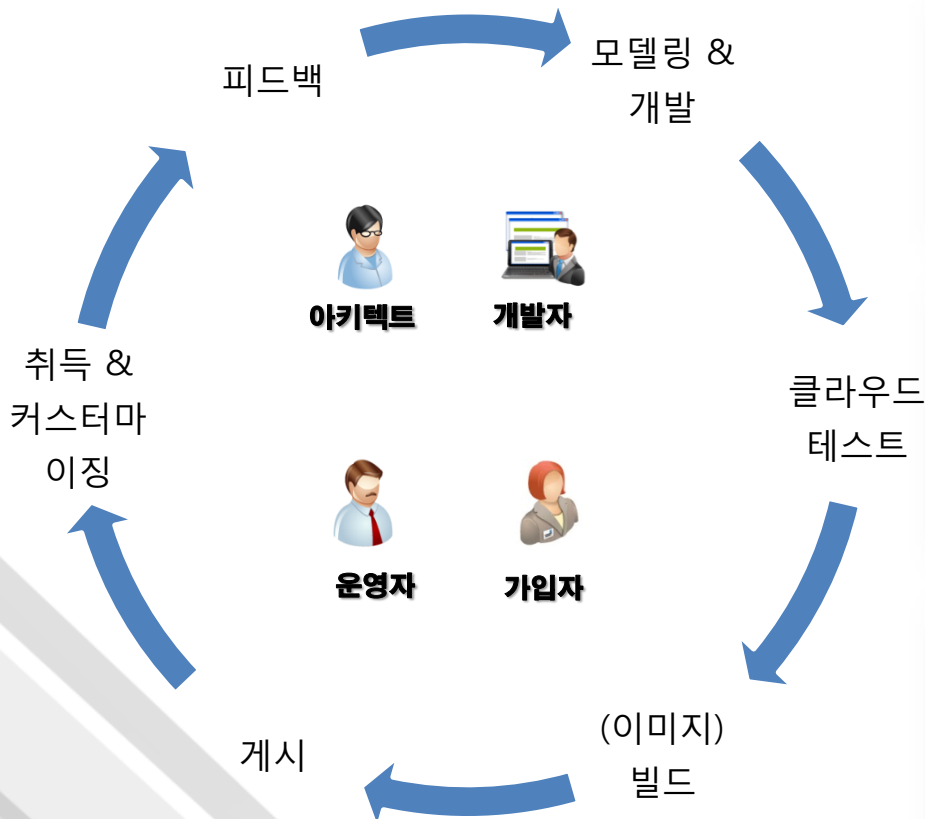
What Garuda Provides



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Development Process using Garuda

제공자-운영자-소비자가 참여하여 개발~앱스토어까지의 생태계 사이클을
참여자가 IaaS의 직접적인 핸들링 없이 지원



eGov Framework based Garuda IDE

❖ 표준 프레임워크 (이클립스) 기반의 개발 / 디버깅 / 개발자 협업 도구:

✓ 기존 표준 프레임워크 (eGov Frmwk)의 확장 플러그인

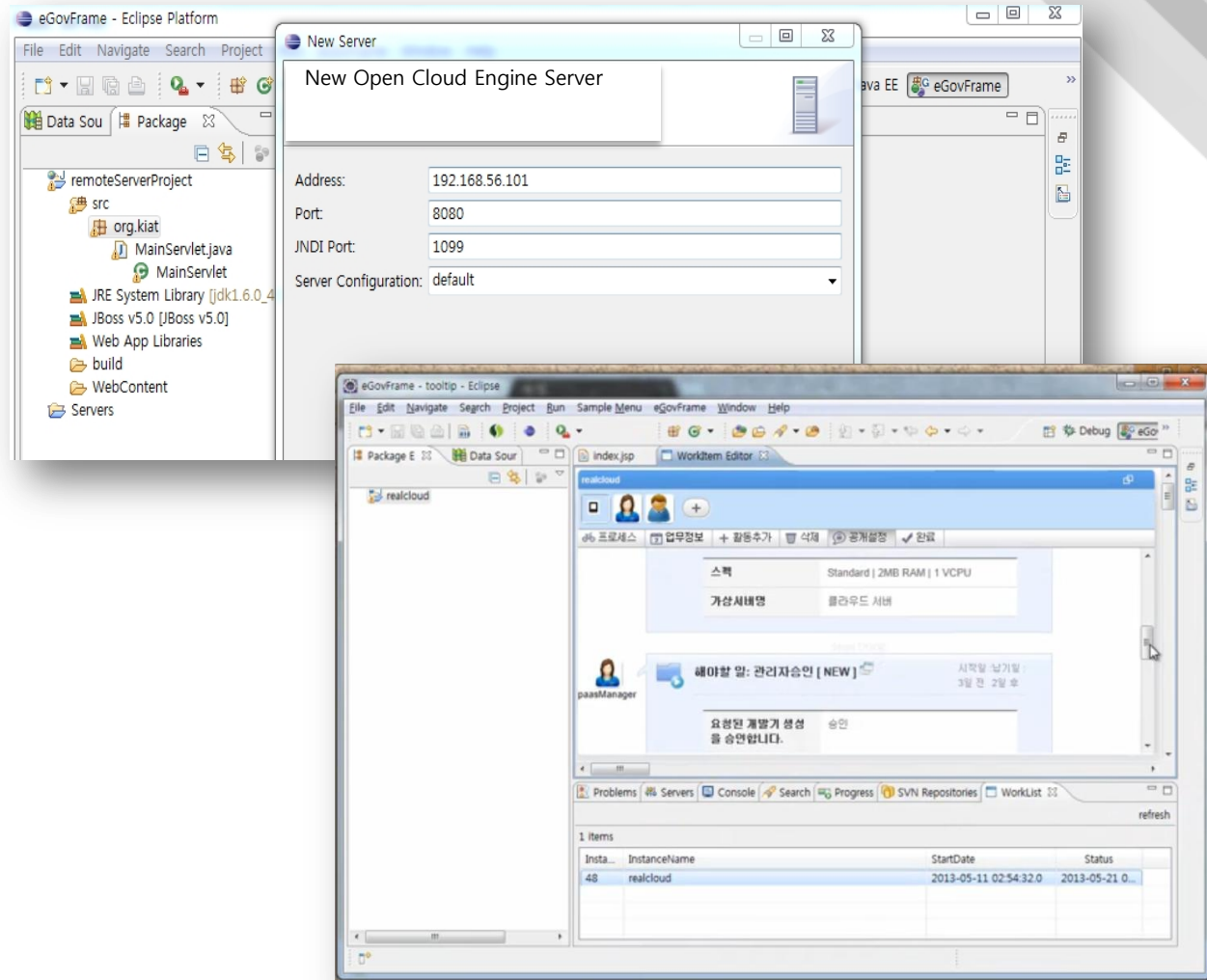
- 기존 표준 프레임워크 기반에서 개발한 제품을 클라우드 전환 용이
- 표준 프레임워크의 다양한 개발 지원 도구 재사용

✓ 개발자 지원 도구

- 마켓플레이스, ALM접근
- 워크리스트 컨셉

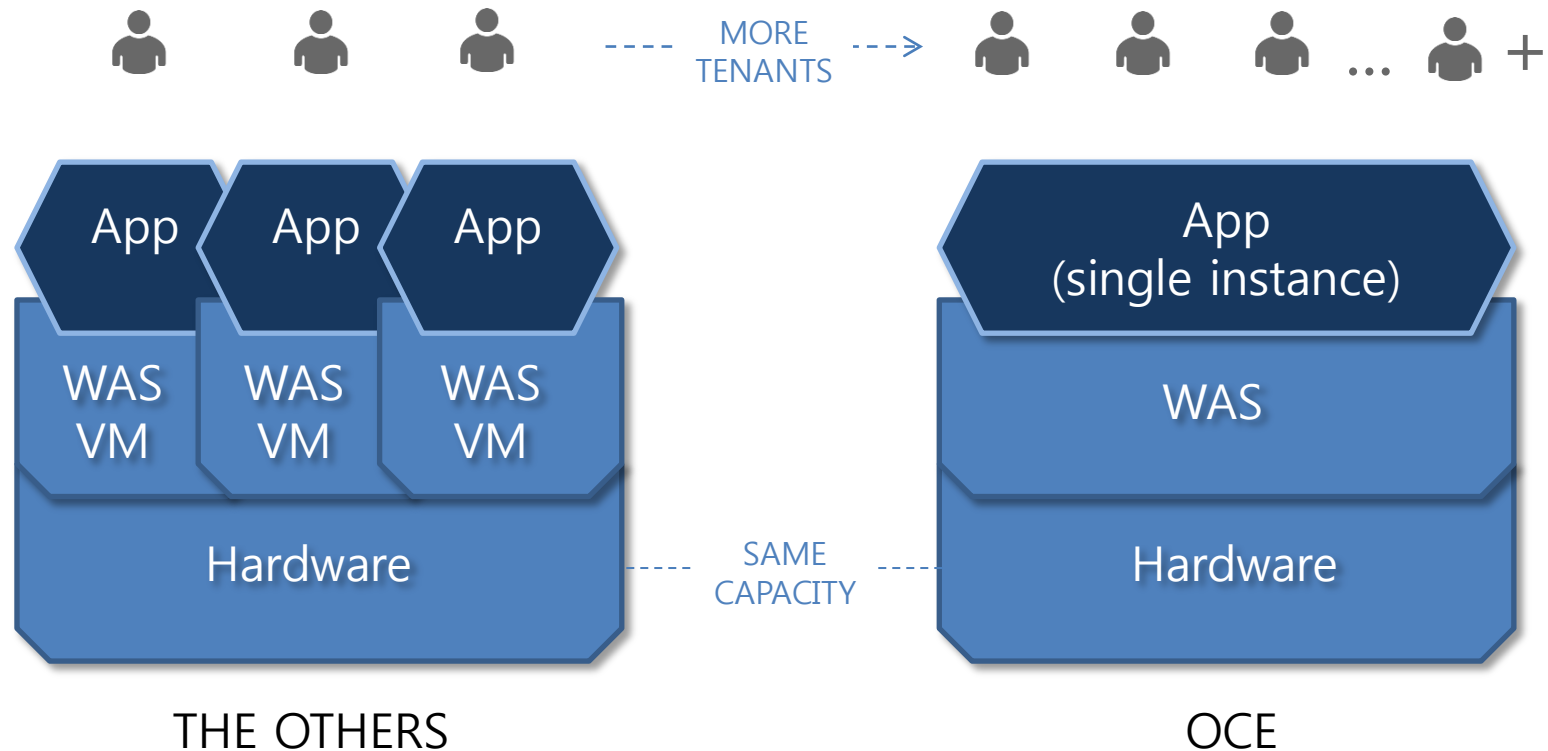
✓ 데이터 전자정부 1위 브랜드 밸류

- 해외시장 접근 전략



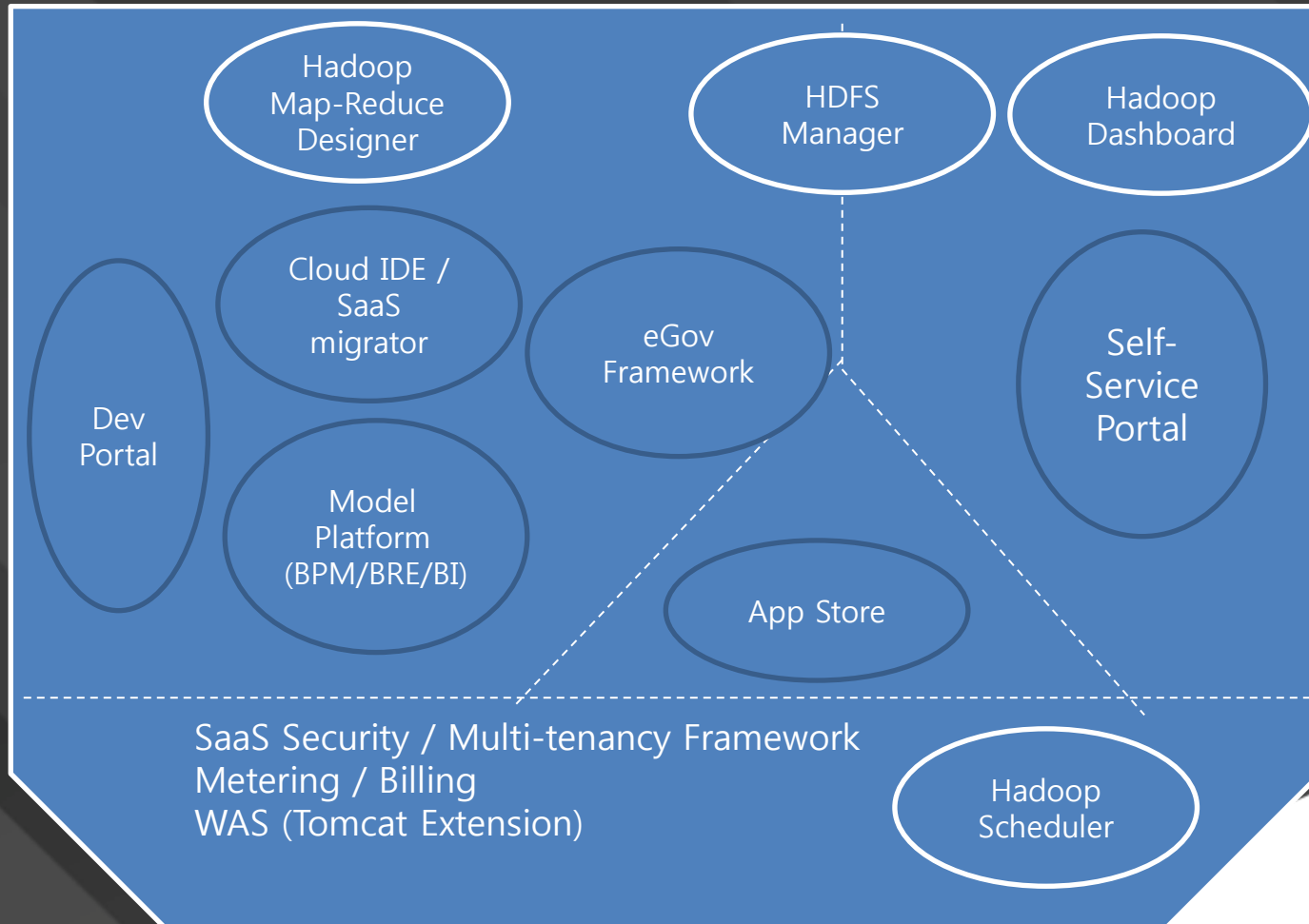
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Garuda's Multi-tenancy Framework



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What Flamingo Provides



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Flamingo Big Data Platform

➔ 빅데이터 분석 플로우 설계 및 실행, HDFS 관리, 배치 스케줄링

✓ MapReduce Designer

- 웹 브라우저 기반 도구
- Hadoop의 MapReduce 지원
- 빅데이터 분석 모듈 연계 동작 지원
- DAG(Directly Acyclic Graph) 기반 그래프 엔진 탑재 (OpenGraph)
- 워크플로우 관리
- 워크플로우 실행

✓ MapReduce 전처리

- 재사용 가능한 MapReduce 기반 전처리 모듈
- Clean, Group By, Filter, Replace, Generate, Union, Rank 등등 지원

MapReduce 기반 협업 필터링 알고리즘

협업 필터링 알고리즘을 드래그 앤 드롭

더블클릭 후 협업 필터링 파라미터 설정

Pig Script 편집기를 이용하여 Pig Script를 작성 (예시)

```
1 A = LOAD '/INPUT/' Using PigStorage('');
2
3 B = LIMIT A 10;
4
5 C = STORE B INTO '${outputPath}' Using PigStorage('');
```

Flamingo Big Data Platform

➔ 빅데이터 분석 플로우 설계 및 실행, HDFS 관리, 배치 스케줄링

✓ HDFS 브라우저

- Hadoop의 HDFS를 원도의 익스플로러 스타일로 관리
- 파일 및 디렉토리 관리
- 업로드 및 다운로드

✓ 작업 스케줄링

- MapReduce Designer의 분석 플로우를 배치 작업 행태로 스케줄링
- Scale Out 형태의 클러스터링 기반 스케줄러로 대용량 배치의 분산 처리
- Cron Expression 지원
- 배치 작업의 생명 주기 관리

✓ 대쉬보드

- MapReduce Designer에서 설계한 분석 워크플로우의 실행 이력 모니터링
- 워크플로우, 액션 단위의 모니터링

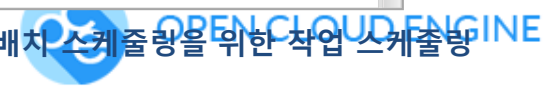
The image displays three screenshots of the Flamingo Big Data Platform interface. The top screenshot shows a table of workflow jobs with columns for ID, name, status, and execution time. The middle screenshot shows the HDFS browser interface with a file tree on the left and a file list on the right. The bottom screenshot shows the job scheduling and monitoring dashboard with various configuration options and a status overview.

이력 번호	워크플로우 ID	워크플로우 명	노드명	처리 단계	시작일	종료일	처리 시간	상태코드	사용자명
647	WF_201211161255_53	Apache Pig Workflow	Apache Pig	2 / 3	2012-11-17 16:12:37		43시간 24--	● RUNNING	user
646	WF_201211161255_53	Apache Pig Workflow	Start	1 / 3	2012-11-17 16:12:37	2012-11-17 16:12:37	0초	● SUCCESS	user
645	WF_201211161706_56	Hive Workflow	Apache Hive	2 / 3	2012-11-16 17:09:18	2012-11-16 17:09:24	5초	● FAIL	user
644	WF_201211161706_56	Hive Workflow	Start	1 / 3	2012-11-16 17:09:18	2012-11-16 17:09:18	0초	● SUCCESS	user
643	WF_201211161706_56	Hive Workflow	Apache Hive	2 / 3	2012-11-16 17:08:01	2012-11-16 17:08:01	0초	● FAIL	user
642	WF_201211161706_56	Hive Workflow	Start	1 / 3	2012-11-16 17:08:01	2012-11-16 17:08:01	0초	● SUCCESS	user
641	WF_201211161706_56	Hive Workflow	Start	1 / 3	2012-11-16 17:06:56	2012-11-16 17:06:56	0초	● SUCCESS	user
640	WF_201211161335_55	Diamond Phase Workflow	End	7 / 7	2012-11-16 13:48:49	2012-11-16 13:48:49	0초	● SUCCESS	user

분석 플로우 실행 이력을 모니터링하는 대쉬보드

분산 파일 시스템 (HDFS) 관리를 위한 HDFS 브라우저

▼ 분석 워크플로우의 배치 스케줄링을 위한 작업 스케줄링



BTW, How about Infra for Legacy Apps. and Extensions ?

- Embedded Platforms – Garuda and Flamingo
- Extension Platforms (Middleware such as DBMS, memory cache)
- And many of Open Source Applications out there
- Are needed to be hosted on top of an IaaS



Our New Project : Netra



Building Infrastructure
for
developer & operator



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Netra

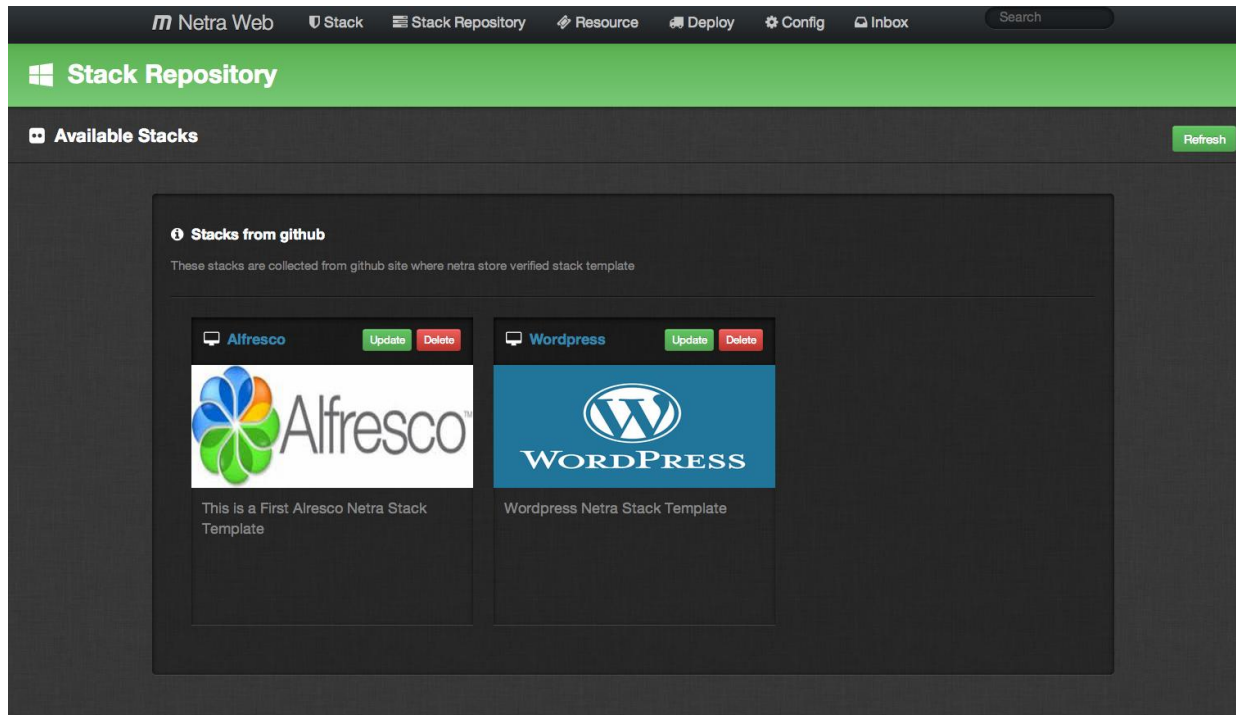
1. 100+ Open Sources Template
2. Full Software Provisioning
3. Deployment



100+ Open Sources Template

100+ great open sources at your fingertip

Just Click to provision



OPEN CLOUD ENGINE

Full Software Stack Provisioning

Netra DSL Template

```
Template "build-essential" do
  action :install
end

directory node[:redis][:data_dir] do
  owner "redis"
  mode "0755"
  action :create
end

remote_file "#{Chef::Config[:file__path]}/" do
  source "https://github.com/v2.0.4-stable"
  action :create_if_missing
end

bash "compile_redis_source" do
  cwd Chef::Config[:file_cache_path]
  code <<-EOH
  tar xzf redis.tar.gz
  cd antirez-redis-55479a7
  make && make install
  EOH
  include templateA
end
```

Computing Resource



Server

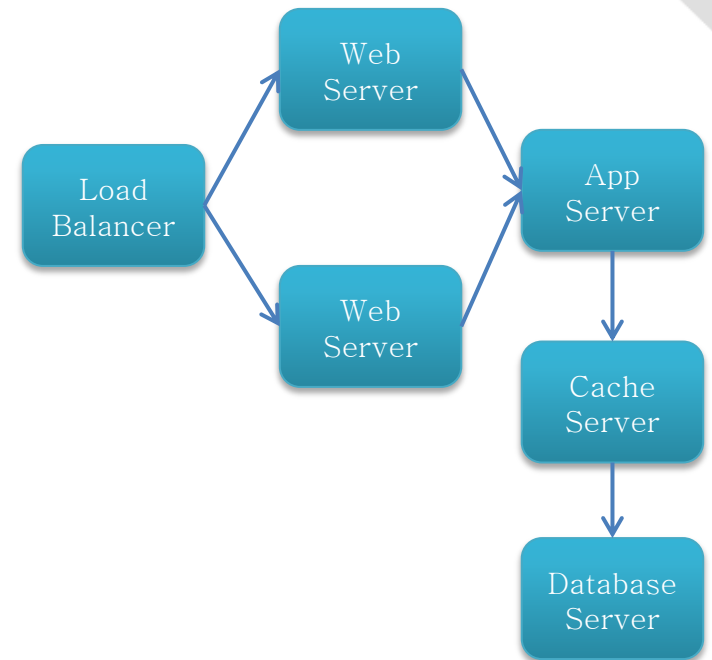


Storage



Network

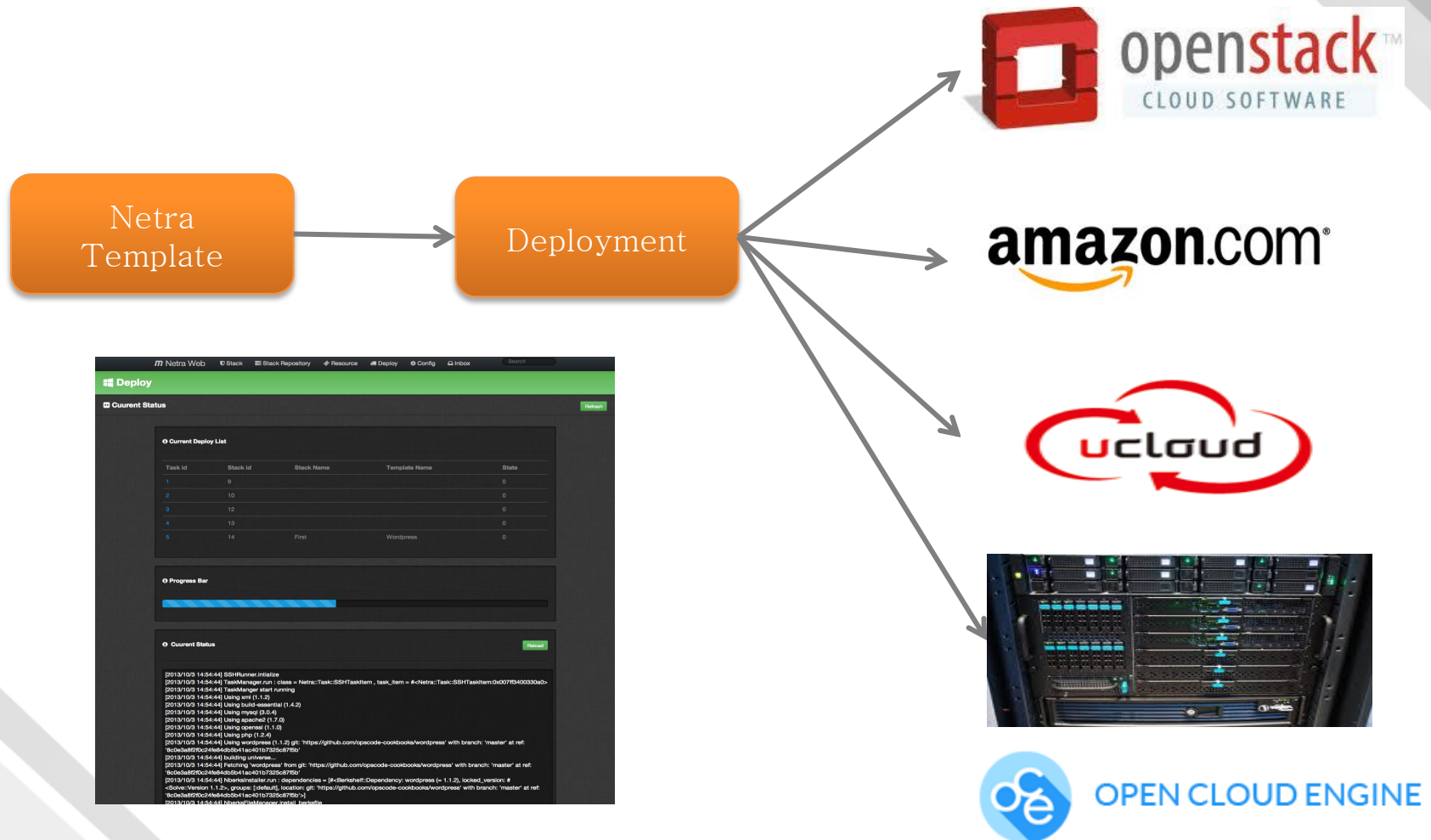
Software Stack



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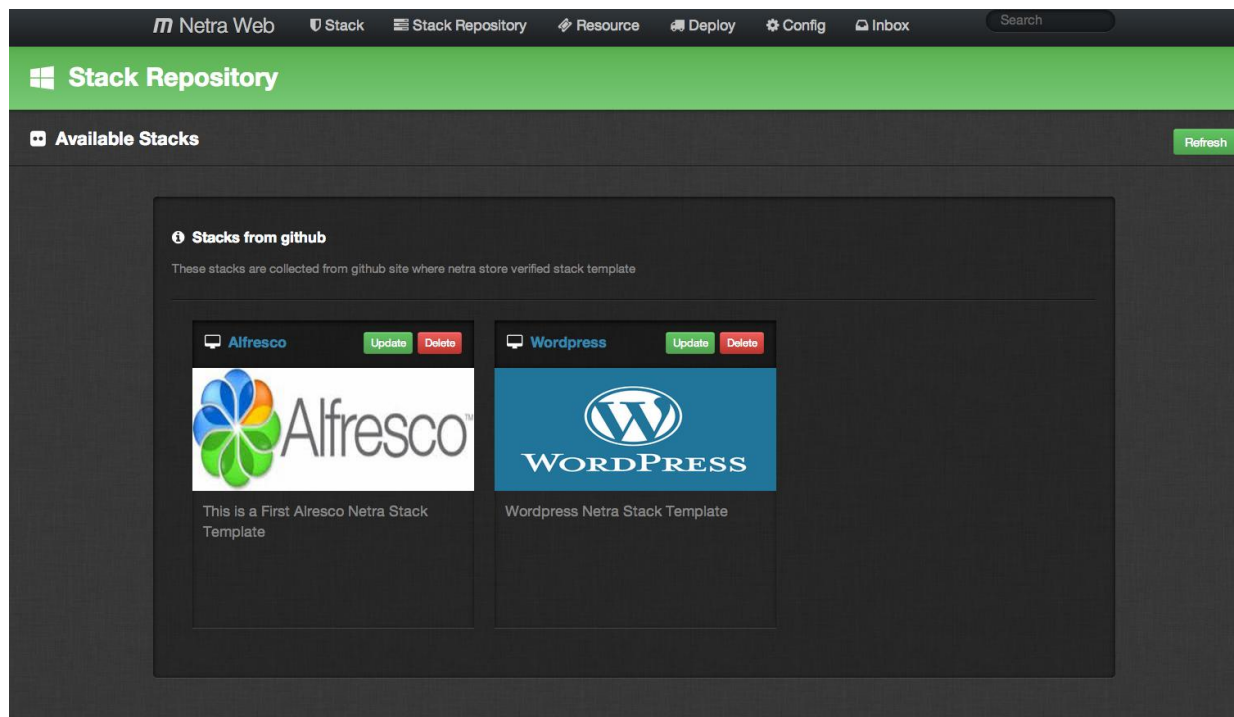
Deployment

Portability & Mobility



Deploy Wordpress with Netra

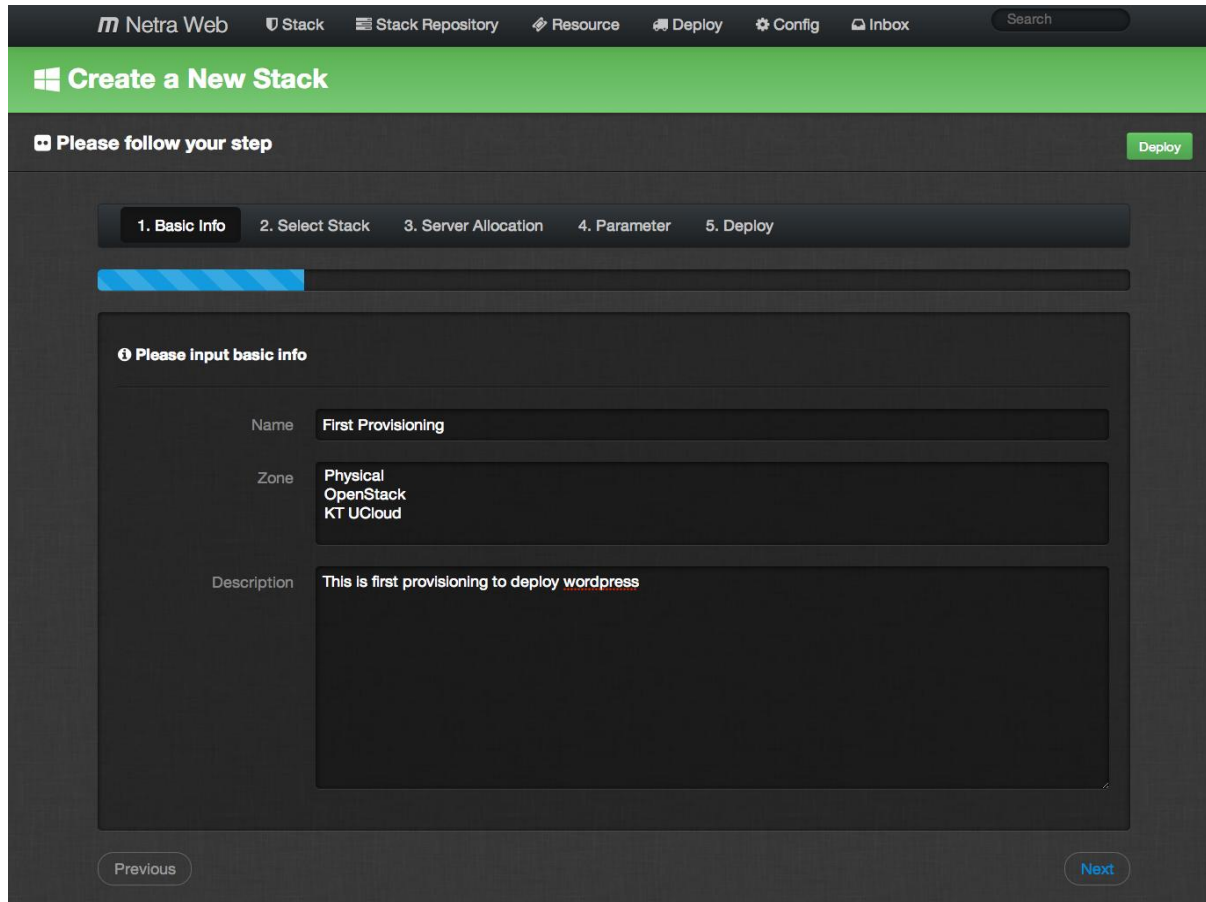
1. Visit Stack Repository



OPEN CLOUD ENGINE

Deploy Wordpress with Netra

2. Fill out forms



The screenshot displays the Netra Web interface for creating a new stack. The top navigation bar includes links for Netra Web, Stack, Stack Repository, Resource, Deploy, Config, and Inbox, along with a search bar. A green banner at the top reads "Create a New Stack". Below this, a dark grey bar contains the instruction "Please follow your step" and a green "Deploy" button. A progress bar shows five steps: 1. Basic Info (active), 2. Select Stack, 3. Server Allocation, 4. Parameter, and 5. Deploy. The main form area is titled "Please input basic info" and contains three input fields: "Name" with the value "First Provisioning", "Zone" with a dropdown menu showing "Physical", "OpenStack", and "KT UCloud", and "Description" with the text "This is first provisioning to deploy wordpress". At the bottom of the form are "Previous" and "Next" buttons.

Netra Web Stack Stack Repository Resource Deploy Config Inbox Search

Create a New Stack

Please follow your step Deploy

1. Basic Info 2. Select Stack 3. Server Allocation 4. Parameter 5. Deploy

Please input basic info

Name First Provisioning

Zone Physical OpenStack KT UCloud

Description This is first provisioning to deploy wordpress

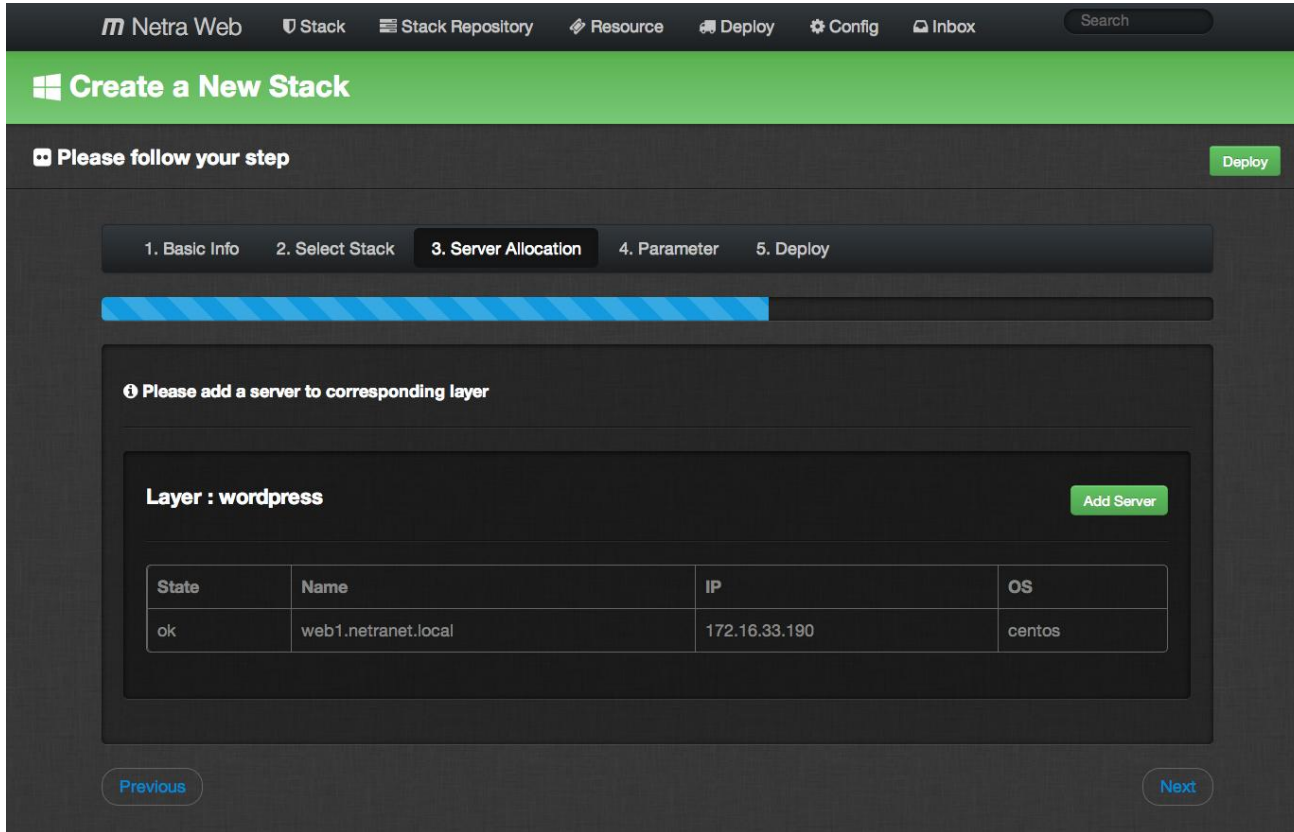
Previous Next



OPEN CLOUD ENGINE

Deploy Wordpress with Netra

3. Select Servers



m Netra Web Stack Stack Repository Resource Deploy Config Inbox Search

Create a New Stack

Please follow your step Deploy

1. Basic Info 2. Select Stack **3. Server Allocation** 4. Parameter 5. Deploy

Please add a server to corresponding layer

Layer : wordpress Add Server

State	Name	IP	OS
ok	web1.netranet.local	172.16.33.190	centos

Previous Next



OPEN CLOUD ENGINE

Deploy Wordpress with Netra

4. Type or skip parameters

The screenshot shows the Netra Web interface for creating a new stack. The top navigation bar includes links for Netra Web, Stack, Stack Repository, Resource, Deploy, Config, and Inbox, along with a search bar. The main heading is "Create a New Stack". Below this, a progress bar indicates the current step is "4. Parameter", with previous steps being "1. Basic Info", "2. Select Stack", "3. Server Allocation", and the next step being "5. Deploy". A "Deploy" button is visible in the top right corner. The main content area is titled "Please type necessary parameters" and contains two input fields for WordPress database parameters. The first field is labeled "default['wordpress']['db']['database']" and contains the value "wordpressdb". The second field is labeled "default['wordpress']['db']['user']" and contains the value "wordpressuser". At the bottom of the form, there are "Previous" and "Next" buttons.

Netra Web Stack Stack Repository Resource Deploy Config Inbox Search

Create a New Stack

Please follow your step Deploy

1. Basic Info 2. Select Stack 3. Server Allocation **4. Parameter** 5. Deploy

Please type necessary parameters

default['wordpress']['db']['database']

default['wordpress']['db']['user']

Previous Next



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Deploy Wordpress with Netra

5. Start Deployment

Netra Web

Stack

Stack Repository

Resource

Deploy

Config

Inbox

Search

Create a New Stack

Please follow your step

Deploy

1. Basic Info

2. Select Stack

3. Server Allocation

4. Parameter

5. Deploy

Your Summary

Name

First Deploy Test

Stack

Wordpress

Description

This is to deploy wordpress on Cloud Computing Service

Layers

wordpress

No.	State	Name	IP	OS
0	ok	web1.netranet.local	172.16.33.190	centos

Parameters

default["wordpress"]["db"]["database"]

wordpressdb

default["wordpress"]["db"]["user"]

wordpressuser

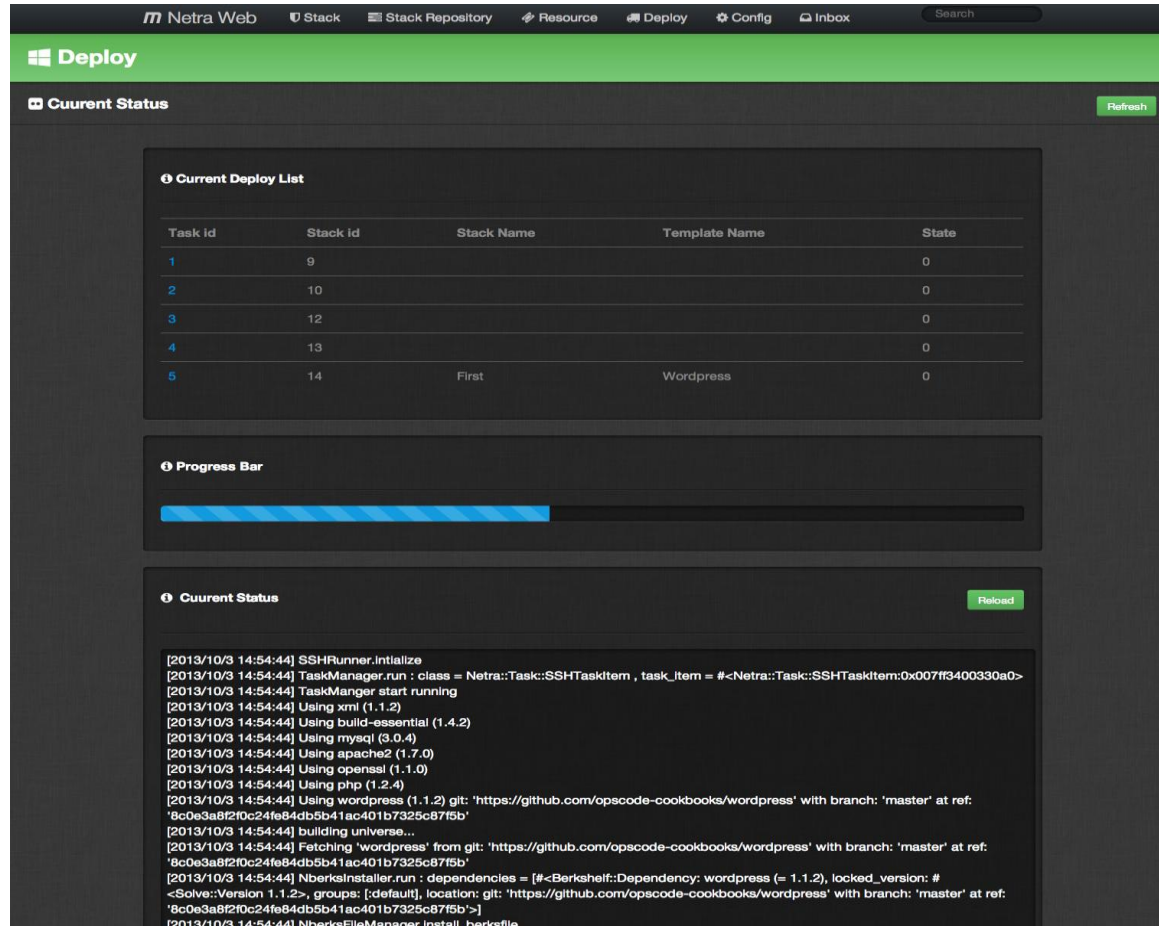
Deploy



OPEN CLOUD ENGINE

Deploy Wordpress with Netra

6. Progress



The screenshot displays the Netra Web interface, which is a dashboard for managing deployments. The top navigation bar includes links for Stack, Stack Repository, Resource, Deploy, Config, and Inbox. The main section is titled "Deploy" and shows the "Current Status" of a deployment. A table lists the current deployment tasks, and a progress bar indicates the overall status. Below the progress bar, the "Current Status" section provides a detailed log of the deployment process, including the installation of dependencies and the fetching of the Wordpress source code.

Current Deploy List

Task id	Stack id	Stack Name	Template Name	State
1	9			0
2	10			0
3	12			0
4	13			0
5	14	First	Wordpress	0

Progress Bar

Current Status

```
[2013/10/3 14:54:44] SSHRunner.initialize
[2013/10/3 14:54:44] TaskManager.run : class = Netra::Task::SSTaskItem , task_item = #<Netra::Task::SSTaskItem:0x007f3400330a0>
[2013/10/3 14:54:44] TaskManager start running
[2013/10/3 14:54:44] Using xml (1.1.2)
[2013/10/3 14:54:44] Using build-essential (1.4.2)
[2013/10/3 14:54:44] Using mysql (3.0.4)
[2013/10/3 14:54:44] Using apache2 (1.7.0)
[2013/10/3 14:54:44] Using openssl (1.1.0)
[2013/10/3 14:54:44] Using php (1.2.4)
[2013/10/3 14:54:44] Using wordpress (1.1.2) git: 'https://github.com/opscode-cookbooks/wordpress' with branch: 'master' at ref:
'8c0e3a8f2d0c24fe84db5b41ac401b7325c87f5b'
[2013/10/3 14:54:44] building universe...
[2013/10/3 14:54:44] Fetching 'wordpress' from git: 'https://github.com/opscode-cookbooks/wordpress' with branch: 'master' at ref:
'8c0e3a8f2d0c24fe84db5b41ac401b7325c87f5b'
[2013/10/3 14:54:44] NberksInstaller.run : dependencies = [#<Berkshelf::Dependency: wordpress (= 1.1.2), locked_version: #
<Solve::Version 1.1.2>, groups: [:default], location: git: 'https://github.com/opscode-cookbooks/wordpress' with branch: 'master' at ref:
'8c0e3a8f2d0c24fe84db5b41ac401b7325c87f5b'>]
[2013/10/3 14:54:44] NberksFileManager.install_berkshelf
```



Deploy Wordpress with Netra



Welcome

Welcome to the famous five minute WordPress installation process! You may want to read the [documentation](#) at your leisure. Otherwise, just fill in the information below and you'll have the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Don't worry, you can always change the

Blog Title

Your E-mail

Double-check your email address before continuing.



Allow my blog to appear in search engines like Google and Technorati.

Install WordPress



OPEN CLOUD ENGINE

Netra



Dev Store

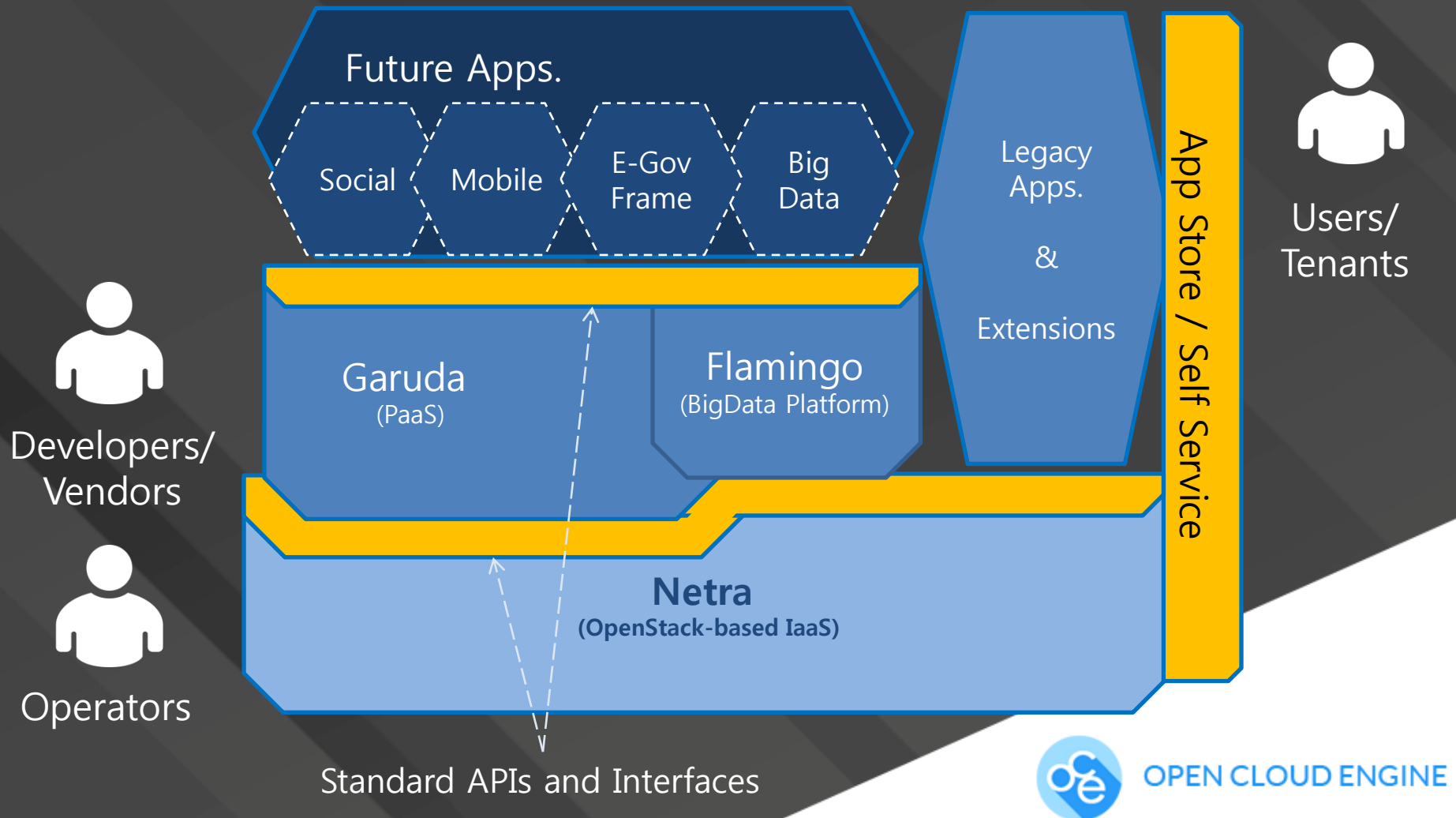
for infrastructure

By Stack Template & Automation



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Big Picture



OCE Umbrella

- 클라우드 환경 구축
- SaaS 프레임워크
- 소셜/빅데이터 환경
- SOA 아키텍처

- 가입자 포털 구현
- 제공자 포털 구현
- 앱스토어 구현



Developers



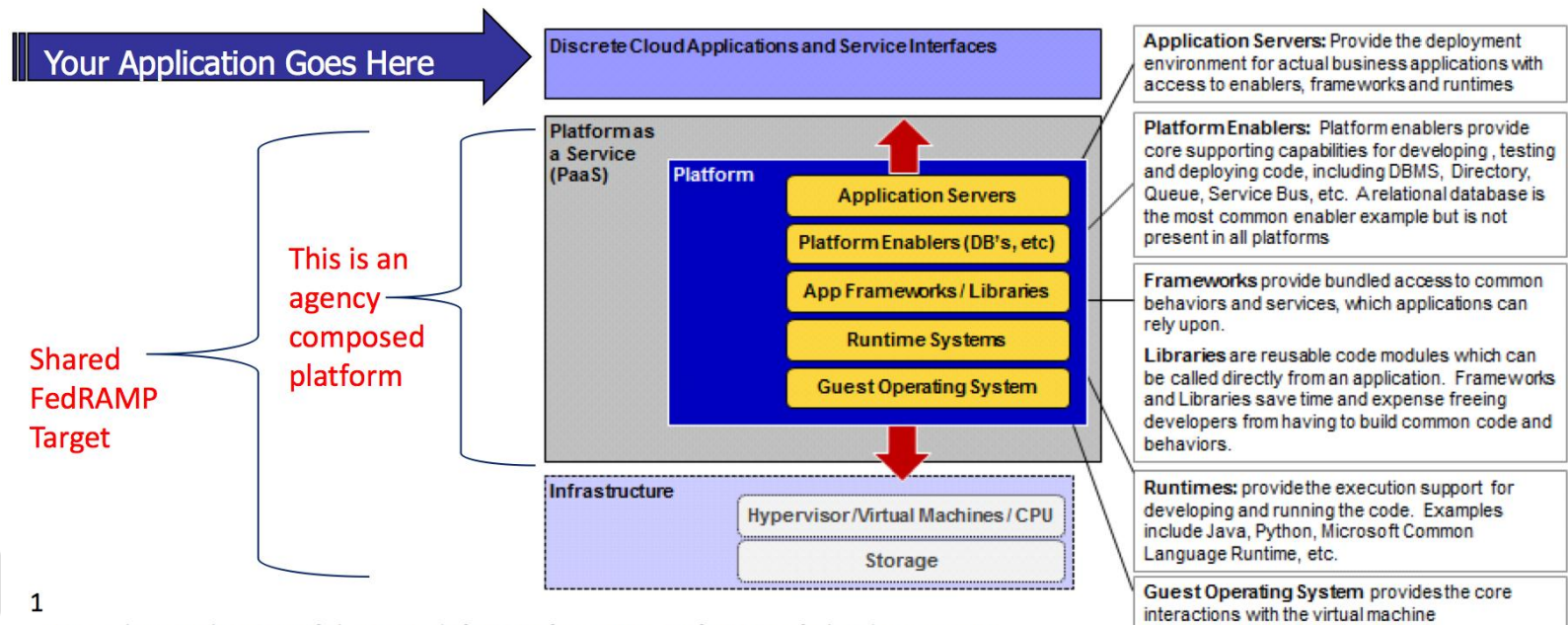
Operators



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Reference: GSA's G-PaaS Issue

- Vision: Government PaaS savings are achieved in license consolidation, reduced maintenance and enterprise process improvement.



1

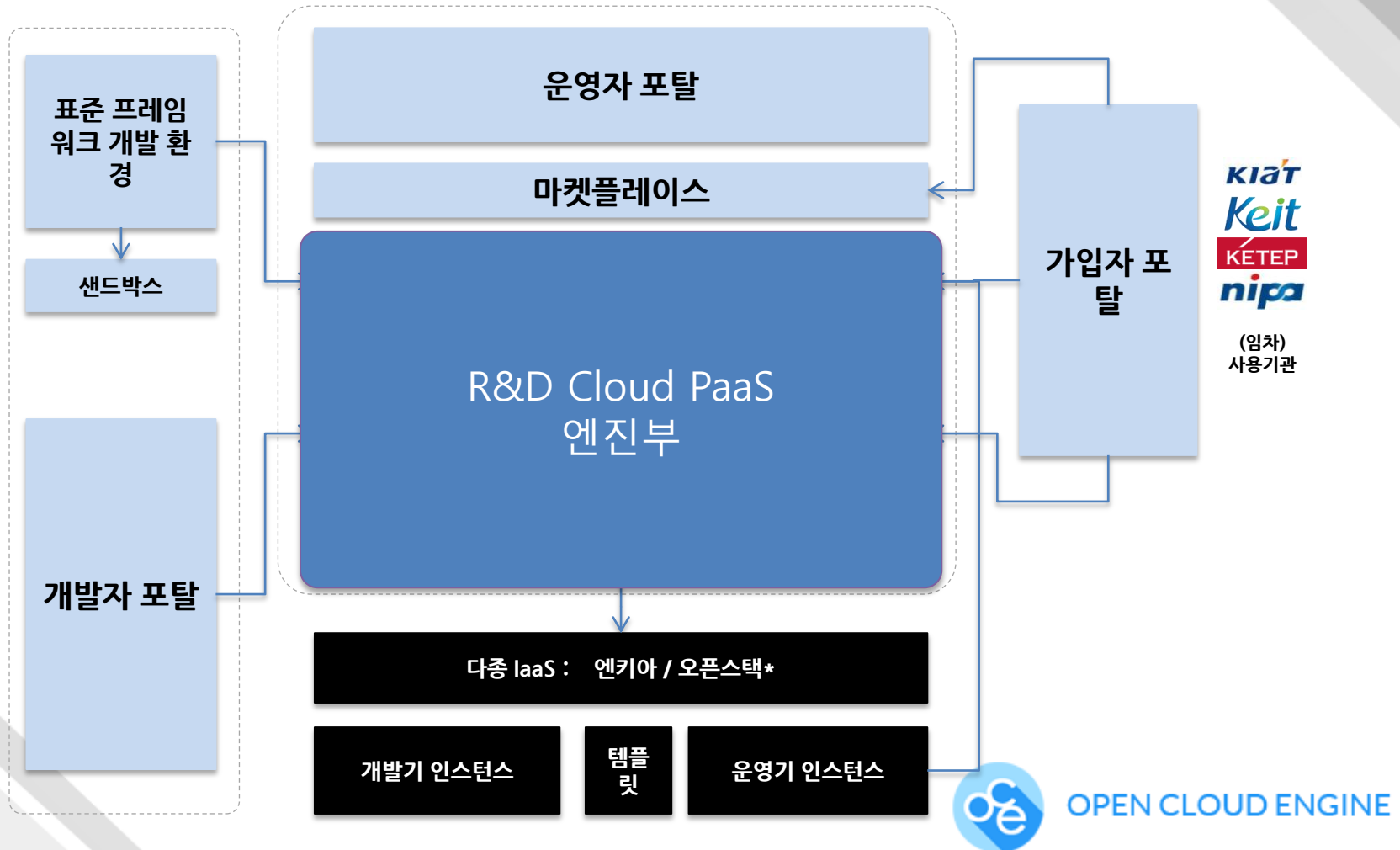
A rough paraphrasing of the PaaS definition from the NIST Definition of Cloud Computing

NIST Definition of Cloud Computing, p2-3, Paraphrase



OPEN CLOUD ENGINE

Case: KIAT's R&D Cloud



Roadmap to Open Standard

기술관점

전략관점

기대효과

Yr. 1

표준 프레임워크의 클라우드-Enabling

- IaaS 노하우 없이 멀티태넌시 애플리케이션을 만들 수 있다.
- 표준 프레임워크의 개발 프로세스
- 마켓플레이스 제공

국산/공개우선의
클라우드 스택화

외산 플랫폼의 위협 방어

Yr. 2

컴포넌트-애즈-어-서비스

- 표준 프레임워크의 공통 컴포넌트들을 오픈-API (SOA) 로 매시업할 수 있도록함
- 셀프서비스 포탈에서 모델링/GUI도구를 통하여 현업이 도입기관 각자의 프로세스, 비즈니스 룰을 관리

한국대표 오픈 소스 프로젝트

국내 클라우드 기술의 보편화

Yr. 3

QoS & 인터-클라우드

- 클라우드 운영을 위한 SLA 준수, 보안
- 애플리케이션들을 융합하여 새로운 조합서비스가 가능하다(*CSB)
- 가입기관별 공통영역 (공통 라이브러리, 공통 기능)이 중복없이 운영된다

공공/민간 스마트 오피스
시나리오 커버리지

공공 표준 클라우드
플랫폼으로의 혁신의 기회



OPEN CLOUD ENGINE

Activity Plan

- First Official Release : 20 Nov, 2013
 - 릴리즈 기념 행사
 - 제목: "클라우드 컴퓨팅과 비즈니스 프로세스 인텔리전스"
 - 장소: 대우 푸르지오 벨리 (선릉) 11월 20일 12시~저녁 6시
 - 참가신청: www.opencloudengine.org
 - 내용: 제품소개 및 체험 행사
- Open User Meeting & Design Summit
 - 정식 릴리즈 이후 매월 2~3회 계획
 - 사용자 의견 수렴 및 아키텍트들과의 공동 설계
- Committer Meeting
 - 현재 매주 수요일 오픈 클라우드 엔진 센터 (선릉/역삼)에서 진행중 (커미터 참가 환영)



Resources

- Official Web Site:
www.opencloudengine.org
- Wiki:
<http://wiki.opencloudengine.org/>
- Jira Issue Tracker:
<http://jira.opencloudengine.org/>



www.facebook.com/groups/opence



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Thank You



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