

# 雲(クラウド)を 操作するための話

あやつる

Eucalyptusユーザ会  
肝付 兼続



# テーマ

各種のクラウド（Eucalyptusを含む）  
を如何にして操作するか。

（クラウド利用者としての視点）



クラウドベンダー（運営・管理者）としての視点

# 大分類

- ・コマンドラインツール
- ・クライアントライブラリ
- ・GUI, Webツール
- ・クラウドコントローラ (GUI, WebUI)

# コマンドラインツール(AWS API用)

- Amazon API/AMI Tools



- euca2ools



- s3curl, s3cmd, s3fs - S3/W用



例: euca2ools

Eucalyptus Systemsで作成されたAWS  
API/AMI Tools互換コマンド群

例: s3cmd

s3tools.orgで作成されたS3アクセス(操作)用のコマンド

## バケットの作成

```
s3cmd -c s3cfg.walrus mb s3://testbucket
```

## バケットの削除

```
s3cmd -c s3cfg.walrus rb s3://testbucket
```

## 全バケットの表示

```
s3cmd -c s3cfg.walrus ls
```

## バケットの内容を表示

```
s3cmd -c s3cfg.walrus ls s3://testbucket
```

## オブジェクトの追加(put)

```
s3cmd -c s3cfg.walrus put <filename>  
s3://testbucket
```



## オブジェクトの取得(get)

```
s3cmd -c s3cfg.walrus get s3://testbucket/<key>  
<filename>
```

## オブジェクトの削除(delete)

```
s3cmd -c s3cfg.walrus del s3://testbucket/<key>
```

# GUI, Webツール(AWS API用)

- Elasticfox (Hybridfox )
- S3 Organizer (S3Fox) - S3 用
- AWS Toolkit for Eclipse
- Cloud42, EC2Dream, tAWS 

# 例: Elasticfox

AWS操作用のFirefoxプラグイン

バージョン 1.7.000112 でEBS Bootに対応

## Hybridfox

Eucalyptus対応のElasticfox

Elasticflex - Mozilla Firefox

chrome://ec2a/content/ec2a\_main\_window.html

Credentials: jeff Account IDs Tools About

APIs and Instances | [Kernels and Ramdisks](#) | [KeyPairs](#) | [Security Groups](#) | [Elastic IPs](#) | [Availability Zones](#)

### Machine Images (APIs)

AMI ID	Manifest	State	Owner	Visibility
ami-9c22c7f5	woxcapro132/image.manifest.xml	available	632925041470	public
ami-af32d7c6	woxcamedaserverpro1.0.3-v06_64.manifest.xml	available	632925041470	public
ami-af32d7c5	woxcamedaserverpro1.0.3-006.manifest.xml	available	632925041470	public
ami-d02ecbb9	woxcamedaserverpro1.0.2-v06_64.manifest.xml	available	632925041470	public
ami-d12ecbb8	woxcamedaserverpro1.0.2-006.manifest.xml	available	632925041470	public
ami-3406a35d	workspace.globus.org/osg07/osghednode.manifest.xml	available	971729951873	public
ami-2ee0b47	workspace.globus.org/osg07/osghednode.manifest.xml	available	971729951873	public
ami-3def0a54	workspace.globus.org/osg06/osgworker.manifest.xml	available	971729951873	public
ami-7ee0b17	workspace.globus.org/osg06/osghednode.manifest.xml	available	971729951873	public
ami-3bef0a52	workspace.globus.org/osg05/osgworker.manifest.xml	available	971729951873	public
ami-2aef0a53	workspace.globus.org/osg05/osghednode.manifest.xml	available	971729951873	public

### Launch Permissions

Empty table for launch permissions.

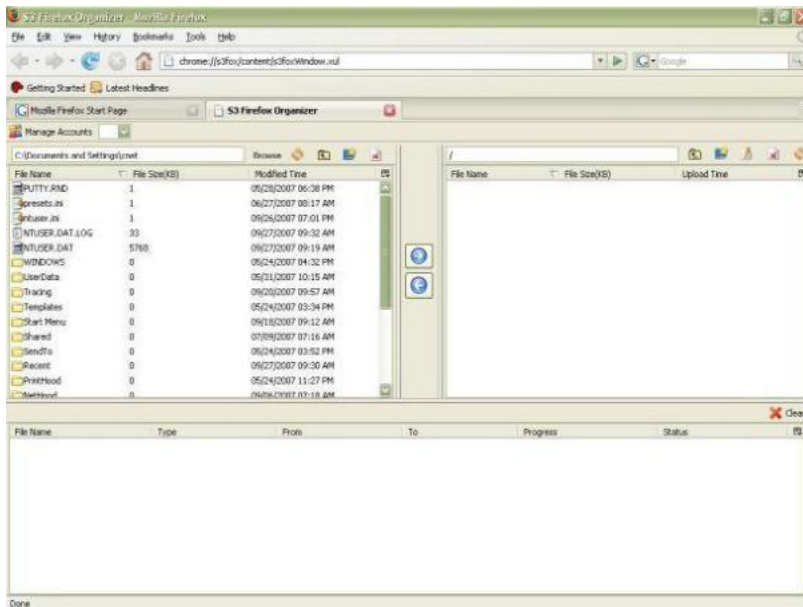
### Your Instances

Reservation ID	Owner	Instance ID	API	State	Public DNS	Key	Groups	Reason	Id:	Type	Local Launch Time	Availab...
Empty table for your instances.												

Done PageRank Alerts Complete Open Notebook

# 例: S3Organizer

## S3アクセス(操作)用のFirefoxプラグイン



# 例: AWS Toolkit for Eclipse

Eclipseプラグイン

AWS基本操作機能

SimpleDBアクセス機能

Eclipse上で作成したWebアプリケーションをEC2上に  
デプロイ可能



AWSでTomcatクラスタを作成

The screenshot displays the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The title bar shows the current file is 'Capcha.jsp' in the 'WebContent' project.

**Package Explorer (Left):** Shows a project named 'JSPWiki' with sub-packages including 'src', 'src1234', 'WebAppLibraries', 'Apache Tomcat v6.0', 'JEE System Libraries', 'build', 'etc', 'WebContent', and 'src\_first\_e2\_application'.

**Editor (Center):** Contains the following Java code for 'Capcha.jsp':

```

1:000 <!-->
2:000 <page contentType="text/html" pageEncoding="UTF-8" />
3:000 <page contentType="text/html" pageEncoding="UTF-8" />
4:000 <page contentType="text/html" pageEncoding="UTF-8" />
5:000 <page contentType="text/html" pageEncoding="UTF-8" />
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```

**Servers Console (Bottom):** Shows the status of three servers:

Name	State	Mode
JSPWiki [dev]	Started	Sync
JSPWiki [debug]	Debugging	Repl
JSPWiki [prod]	Started	Repl

**EC2 Console (Bottom):** Shows a table of EC2 instances:



Instance ID	Public DNS Name	Status	Type	Availability Zone
i-0d074961	ec2-67-202-63-124.compute-1.amazonaws.com	running	m1.small	us-east-1a
i-4769486	ec2-67-202-63-201.compute-1.amazonaws.com	running	m1.small	us-east-1b

# クライアントライブラリ

Java, Python, Ruby, PHP用の様々なライブラリが存在する。

- ・ AWS API用
- ・ マルチクラウド用
- ・ 他クラウド (Rackspace, Slicehost, ...) 用

# AWS API用

- Amazon純正ライブラリ  
(Java, C#, VB.NET, PHP, Perl)
- CloudFusion (PHP) 
- Typica (Java) 
- RightAWS (Ruby)
- boto (Python) 

# 例 : CloudFusion

<http://getcloudfusion.com/>

旧Tarzan AWS

Jeff Berr氏も紹介

EIP, EBSにも対応

Eucalyptusもサポートとされているが、  
動作確認がされていない模様。

- **Download code to development machine**

Add directory to PHP' s include\_path

- **Add AWS keys to config.inc.php**

```
define(' AWS_KEY', ' J35NTGFCQ0IUY20MNSQQ' );  
define(' AWS_SECRET_KEY',  
' 99pizu2vVOK11rk9UAgWVj8PBGzWwertqJlgLV0c' );
```

- **Include one file**

```
require_once(' cloudfusion.class.php' );
```

- **Run an EC2 Instance**

```
// Create the EC2 access object  
$EC2 = new AmazonEC2(AWS_PUBLIC_KEY, AWS_SECRET_KEY);  
// Run an instance  
$Options = array(' KeyName' => "Jeff' s Keys",  
' InstanceType' => "m1.small");  
$Res = $EC2->run_instances("ami-db7b9db2", 1, 1, $Options);
```

# Eucalyptus用修正(例)

- ・ AWS APIのバージョンを指定する。
- ・ 時間文字列の末尾Zを受け入れるようにする。

# マルチクラウド用

AWS API以外もサポートし、複数のクラウドサービスを制御する。クラウドベンダー特有の機能はサポートされ難い。

- libcloud (Python)
- Dasein (Java)
- jclouds (Java)
- Unified Cloud Interface (Python)

# 例: libcloud

Cloudkick(後述)で開発されたライブラリ  
AWS API以外の各種クラウドもサポートし、  
複数のクラウドサービスを制御可能。

但し、クラウドベンダー特有の機能はサポ  
ートしていない。

Python 2.5以上, 要Zope

```
from libcloud.types import Provider
from libcloud.providers import get_driver

EC2 = get_driver(Provider.EC2_US_EAST)
Slicehost = get_driver(Provider.SLICEHOST)
Rackspace = get_driver(Provider.RACKSPACE)

drivers = [ EC2('access key id', 'secret key'),
            Slicehost('api key'),
            Rackspace('username', 'api key') ]

nodes = [ driver.list_nodes() for driver in drivers ]

print nodes
# [ <Node: provider=Amazon, status=RUNNING, name=bob,
ip=1.2.3.4.5>,
# <Node: provider=Slicehost, status=REBOOT, name=korine,
ip=6.7.8.9.10>, ... ]

# grab the node named "test"
node = filter(lambda x: x.name == 'test', nodes)[0]

# reboot "test"
node.reboot()
```

# クラウドコントローラ (GUI, WebUI)




海外：以前から商用サービスとして提供されている (クラウドブローカー)

- ・ RightScale 

- ・ cloudkick

# クラウドコントローラ (GUI, WebUI)

国内：2009年頃より開発する企業が出始めている

- ・ 自動化基盤アプリケーション (CSKシステムズ) 
- ・ OHCC (クロス・マーケティング) 
- ・ Wakame (あくしゅ)
- ・ ClassCat Cloud (クラスキャット) - ? 

# RightScale

**RIGHTSCALE** Manage Clouds Design Report Settings Support | Logout

**SYSTEM ALERTS**  
New Feb 24th release live! Email support for problems. (1h ago)

**BOOKMARKS**  
Add new bookmark

**QUICKMONITORING**  
Customize graphs

**EVENTS** 02:46  
Tools ▾

I-D6F1E1BE 1 ▾  
operational 5m

## Dashboard

Overview | Deployments | Monitoring

### RightScale News

Feb 23rd, 2010 release notes

New to RightScale? Check out our [video tutorials](#) on how to set up a Deployment in RightScale.

Results 1 Deployment

### Deployments Budget Estimate

Deployment	Current Runrate*	Month to Date*	Projection*	Prior Month*	Servers
Default	-	-	-	-	
<no deployment>	\$0.09 / \$2.04	-	-	-	●
<b>Total</b>	<b>\$0.09 / \$2.04</b>	-	-	-	

\* Estimates are based on EC2 Instance and EBS Volume usage only. They do not include charges for data transfer, EBS snapshots, elastic ips, S3 or other services. Amazon reserved instances are currently calculated at the regular on-demand instance rate.

- runrate: current hourly runrate
- month to date: the total cost from beginning of the month to date
- projection: month-to-date + runrate \* hours-left-in-month
- prior month: prior month usage

### Cloud Service Credential Validity

Service	Validity
Amazon Web Services ▾	● Online
EC2	● Update (Your account does not have a x.509 certificate. You have limited RightScale functionality.)
S3	● Online
SQS	● Online
CloudFront	● Online

# RightScale

**RIGHT SCALE** Manage Clouds Design Report Settings Support | Logout

AWS Global AWS EU AWS US-East AWS US-West **euca-test1**

## euca-test1 Instances

Hide Help

Below is a list of all active virtual machine instances (VMI) that are running on the private Eucalyptus cloud.

**More Information:** [Eucalyptus](#) | [Eucalyptus User Guide](#)

**Launch**

Name	Resource UUID	DNS	State	Actions
<a href="#">i-3CB906FA</a>	i-3CB906FA	192.168.122.27	running	
<a href="#">i-54EB09E3</a>	i-54EB09E3	192.168.122.223	running	

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February 25, 2010 09:52 JST  
Logged in as zcm@pocketstudio.jp

Rackspace, Eucalyptus対応

## Simple, powerful tools to manage cloud servers

### Track critical metrics

Monitor and set alert thresholds for Load, CPU, Memory, and Disk usage. Monitors you create can be dynamically added to new servers you boot.



SMS + email alerts to multiple addresses

Visualize performance data

Mix and match cloud providers

Sign up FREE for 30 days!  
see plans and pricing

"Cloudkick has been a  
great partner."

- Lew Moolman, President, Rackspace Cloud

### Who uses Cloudkick?

posterous

Need help choosing a Cloud Provider?

[Check out our Cloud Provider index](#)

It's filled with useful information about features, pricing, services, locations, and support.

CUSTOM	GOLD	SILVER	BRONZE
<b>CALL FOR PRICING</b>	<b>\$599</b> per month	<b>\$249</b> per month	<b>\$99</b> per month
Advanced monitoring: 45+ nodes Unlimited basic monitoring 10+ Users 12+ Months data retention 600+ SMS alerts/month 24x7 Phone, email, chat support	Advanced monitoring: 45 nodes Unlimited basic monitoring 10 Users 12 Months data retention 600 SMS alerts/month 24x7 Phone, email, chat support	Advanced monitoring: 15 nodes Unlimited basic monitoring 5 Users 6 Months data retention 200 SMS alerts/month Email, chat support	Advanced monitoring: 5 nodes (Unlimited basic monitors) 1 User 1 Month data retention 50 SMS alerts/month Email, chat support
<a href="#">Sign up</a>	<a href="#">Sign up</a>	<a href="#">Sign up</a>	<a href="#">Sign up</a>

The Developer plan is FREE forever and includes: unlimited basic monitors, 1 user, 1 week data retention, email alerts, wiki support

[Sign up free](#)

The screenshot shows the Cloudkick dashboard with a dark green header containing navigation links: OVERVIEW, MONITOR, GRAPH, ACTMITY, LAUNCH, CHANGE LOG, and ACCOUNT. The user is logged in as 'acid5!' and can click 'Logout'. The main content area is divided into several sections:

- Providers:** A list of providers including EC2, EC2-eu, and acid5.xxx@gmail.com.
- Announcements:** Two sections: 'New Monitoring Agent & SMS' and 'Amazon EC2 US-West support'.
- Notifications:** A yellow box titled 'Notifications since you last logged in:' containing the message 'i-af884fc4 added to your account.'
- nodes:** A table listing active nodes with columns for name, provider, ip, tags, size, tag, color, state, and time.

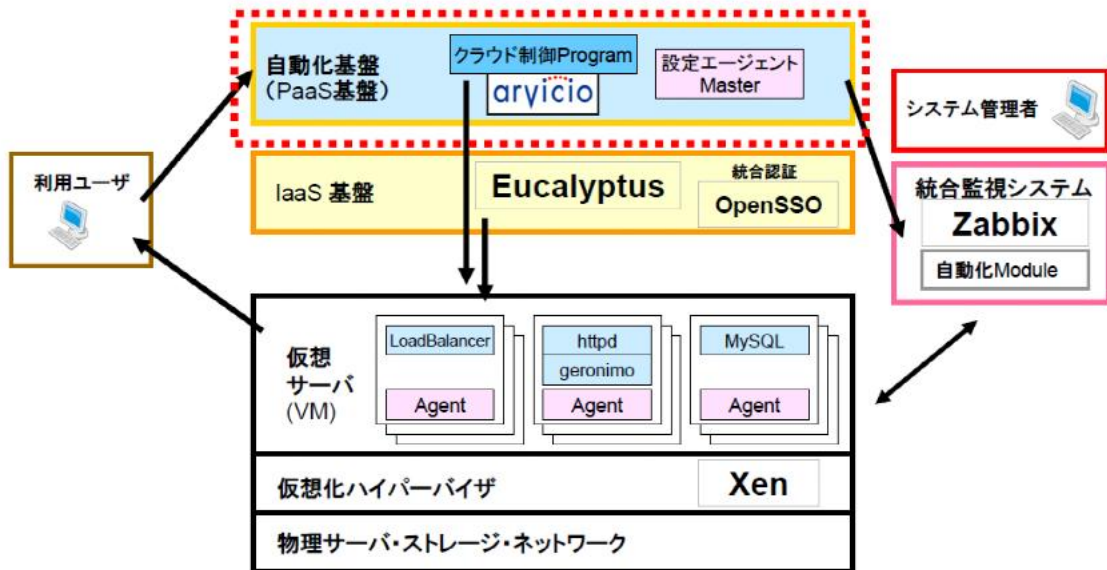
name	provider	ip	tags	size	tag	color	state	time
i-af884fc4	EC2	184.73.32.248						
acid5-1	acid5.xxx@gmail.com	173.203.206.174						

多数のクラウドサービスに対応 (Eucalyptus未対応)

# 自動化基盤アプリケーション (CSKシステムズ)

## Eucalyptusを活用して、プライベートクラウド環境を(1/2)

- 全ての課題をEucalyptusで解決はできないので、Eucalyptusにかぶせる、自動化基盤アプリをCSKシステムズ社で開発し、実装。



# 自動化基盤アプリケーション (CSKシステムズ)

## Eucalyptusを活用して、プライベートクラウド環境を(2/2)

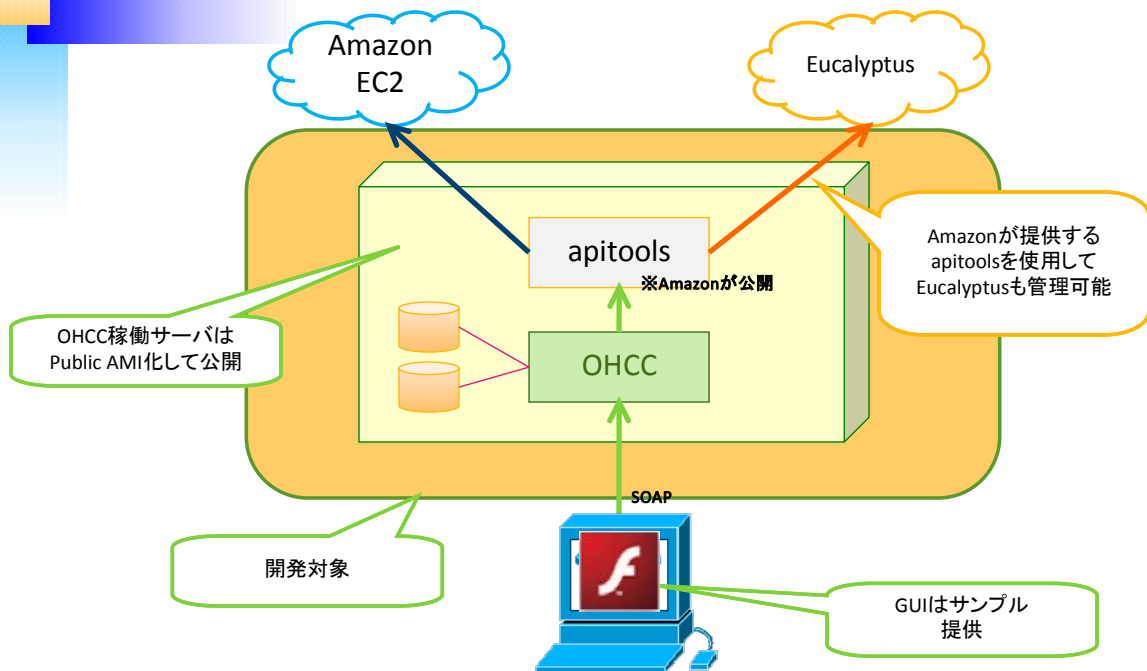
### I. 自動化基盤の主な機能



- ユーザーインターフェイス (Web)
  - 仮想マシンの追加・削除・起動・停止
  - OS、アプリケーションサーバ、データベースサーバイメージの選択
  - 各仮想マシン状況の一覧表示
  - ユーザ認証、ユーザ管理
- 管理・制御機能
  - OS, アプリケーションサーバ, データベースサーバの設定変更自動化
  - 運用監視ツールへの監視ノード登録・削除の自動化
  - Eucalyptus APIを使った制御
  - ログ管理

# OHCC (クロス・マーケティング)

## 実装イメージ



# OHCC (クロス・マーケティング) 開発中画面

The screenshot displays a user interface for the OHCC development environment. On the left, a vertical sidebar titled "FILTERING" contains buttons for "Security Groups", "OS", "DB", and "Project Groups". The main area features a large, stylized character of a woman with short brown hair, red glasses, and a black business suit, standing with her hands on her hips. To the right of the character is a dark grey configuration panel with a red close button in the top right corner. The panel contains the following information and controls:

- Instance ID : xxxxxxxxxxxx
- Instance Name : Jeff's Diary
- Security Group : Web, DB
- Project Group : freshman (with a dropdown arrow)
- A button with a suit icon and the text "CHANGE"
- OS : Linux(CentOS)
- DB : MySQL 5.0.88
- HD\_Size : 11,964MB / 512,000MB
- Since : 2009-12-04-17:12:30.0
- A "Detail Setting" button at the bottom.

A small, semi-transparent version of the character is visible in the bottom right corner of the panel area.

# 最後に

国内のクラウドサービスは  
始まったばかり

(但し、APIを公開しているサービスはまだ  
見られない。)

今後、クラウドを利用するための  
各種ソフトウェア・サービスが  
出てくると思われる。