

# Zabbix for Hybrid Cloud Management

**TIS Inc. Daisuke IKEDA**  
21 September, 2012  
Riga, Latvia

# Agenda

## About myself

- Server Engineer working at Research & Dev. Division

## Approaching to Hybrid Environment Management System

- Integration and Automation

## System Architecture

- Products component and Processing flows

## Demonstration

# Daisuke Ikeda

**Belongs To:** TIS Inc.

**Division:** Strategic Technology Center

**Research Subject:** Managing Hybrid Cloud environment

**My Recent Activities:**

- Chrome Extension for checking Zabbix Trigger "[Chromix](#)"
- Android application for Zabbix "[ZabiroiD](#)"
- Articles for Technology sharing website by TIS "[Tech-Sketch](#)"
- Presentation at Zabbix study meeting in Japan(12 May,2012)



OSS統合監視ツール「Zabbix」を利用して大規模環境監視(2)  
須田大輔 (2011年12月18日 12:00) | [ブログ](#) | [Twitter](#) | [Facebook](#)  
前回の記事では、Zabbixのテンプレート機能の有効な利用方法について紹介いたしました。第2回目の今回は、「Zabbix」の「自動登録機能」を紹介したいと思います。  
サーバの運用管理をされている担当の方で、数十台、数百台と大量のサーバを管理されている方も多いかと思いま



## What you see here today

### Zabbix Instead of You - AUTOMATION

- **Host Registration done by Zabbix**

  - VMware Virtual machines

  - AWS EC2 instances

- **Machine Setup Details kept trackable by Zabbix**

  - VM resource status(CPU,Memory,Storage)

  - AWS EC2 instance info.( Instance Type, AZ, IP address etc.)

  - AWS Billing info.

### Just Zabbix Dashboard - INTEGRATION

- **Machine Control from Zabbix Dashboard**

  - Start/Stop/Reboot/Terminate

## **Complex and Mixed Machine Circumstances**

**We manage machines both on-cloud and on-premise;**

- Many Cloud Services offered (AWS,Rackspace,...)
- Cloud services are prevailing
- But, we still need to manage on-premise machines too

**Typical Scenario:**

- Sensitive data needs to remain stored on-premise
- What happens ...

DB server -> located on-premise for security reason

AP server -> located on-cloud for scalability

# To Manage Hybrid environments

## 1. VMs have their private client software

- How many client s/w required to manage hybrid configuration?  
e.g.)
  - vSphere client ( for VMware ESXi )
  - AWS management console ( for AWS )
  - System insight Manager ( for HP Physical Machine )

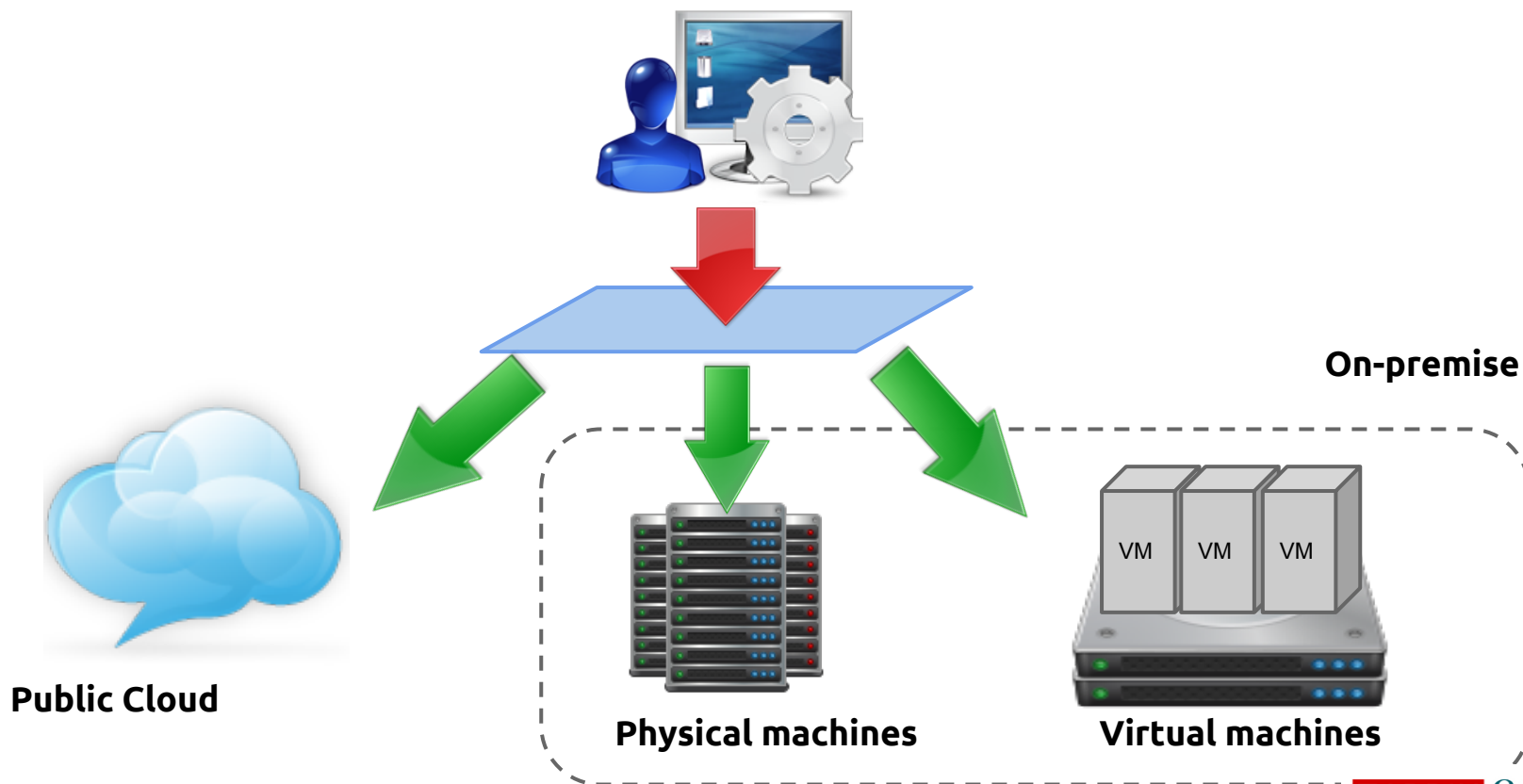
## 2. More VMs to manage

- Configuring numbers of VM manually is impractical.

## 3. VMs change their setups very dynamically

- Keeping configuration documents up-to-date is really hard

# 1. Integrated Management for Hybrid Environment



## 2. Automated Management for Hybrid Environment



**Manual config**



**Automatic config**



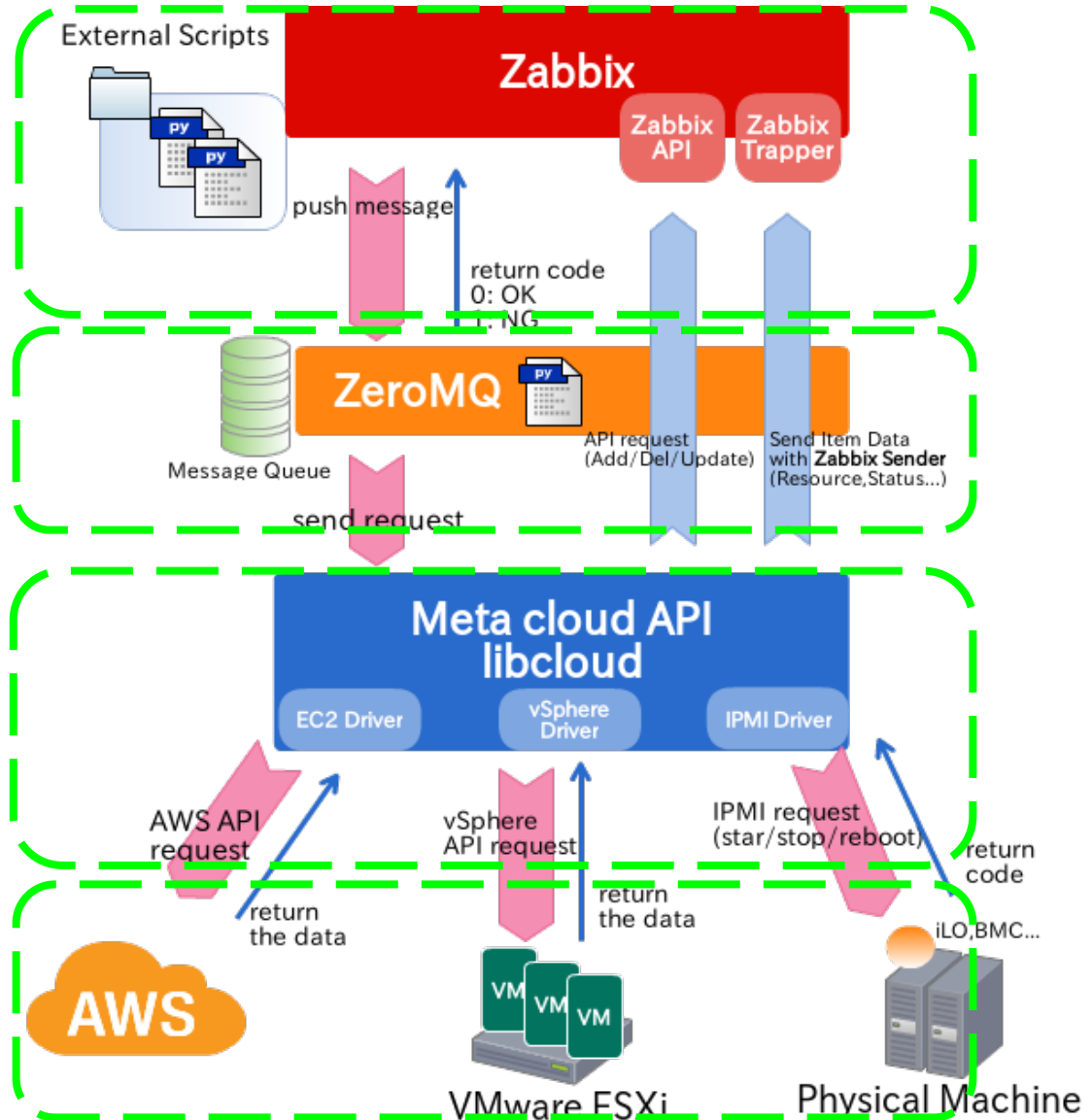
## Architecture

Zabbix layer

Message queueing layer

API Integration layer

Target Environments  
(They are hybrid ... mixture)



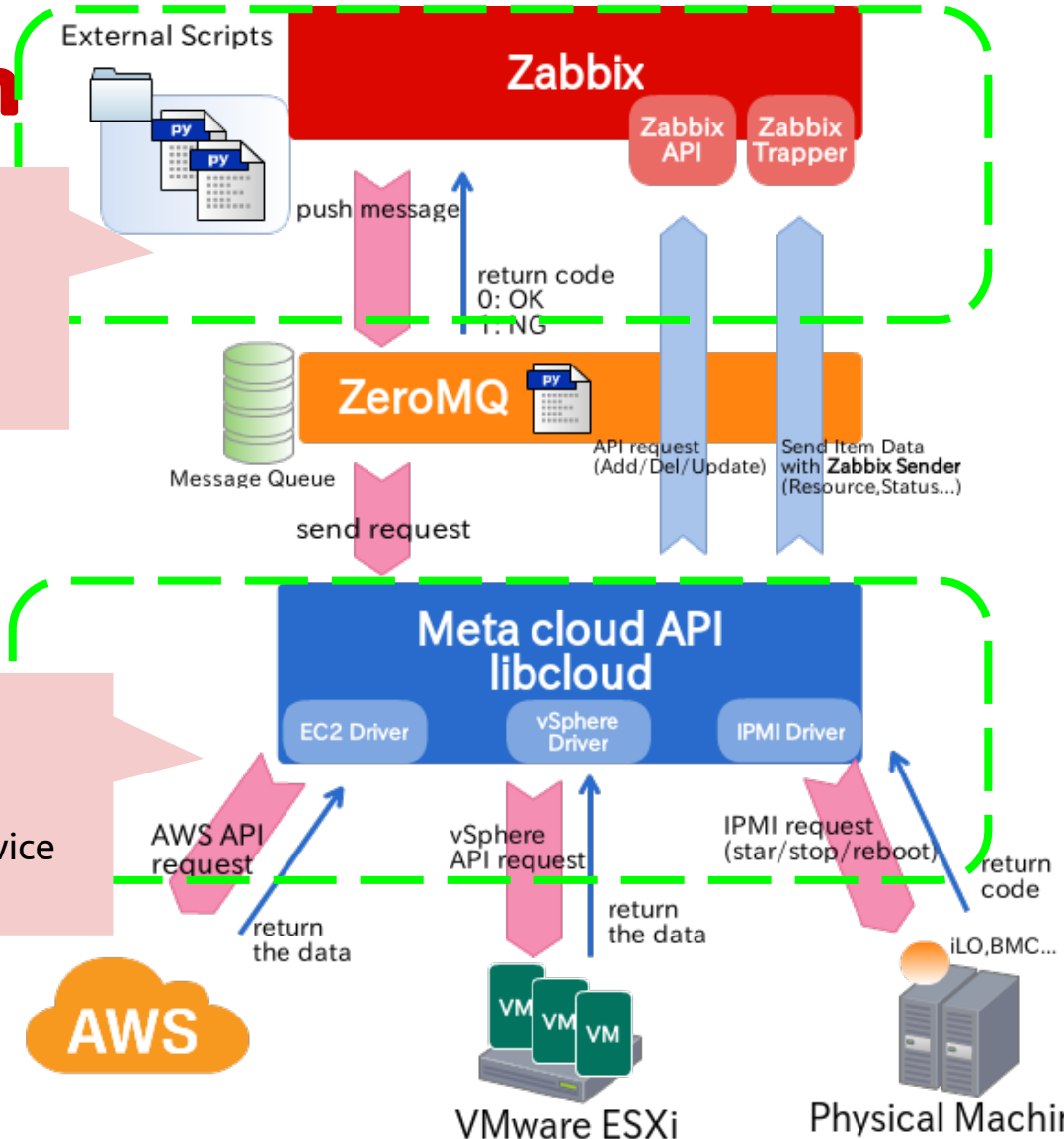
## For integration

### Customized Dashboard

- Check ALL instances here
- Operate ALL instances here

### libcloud implemented

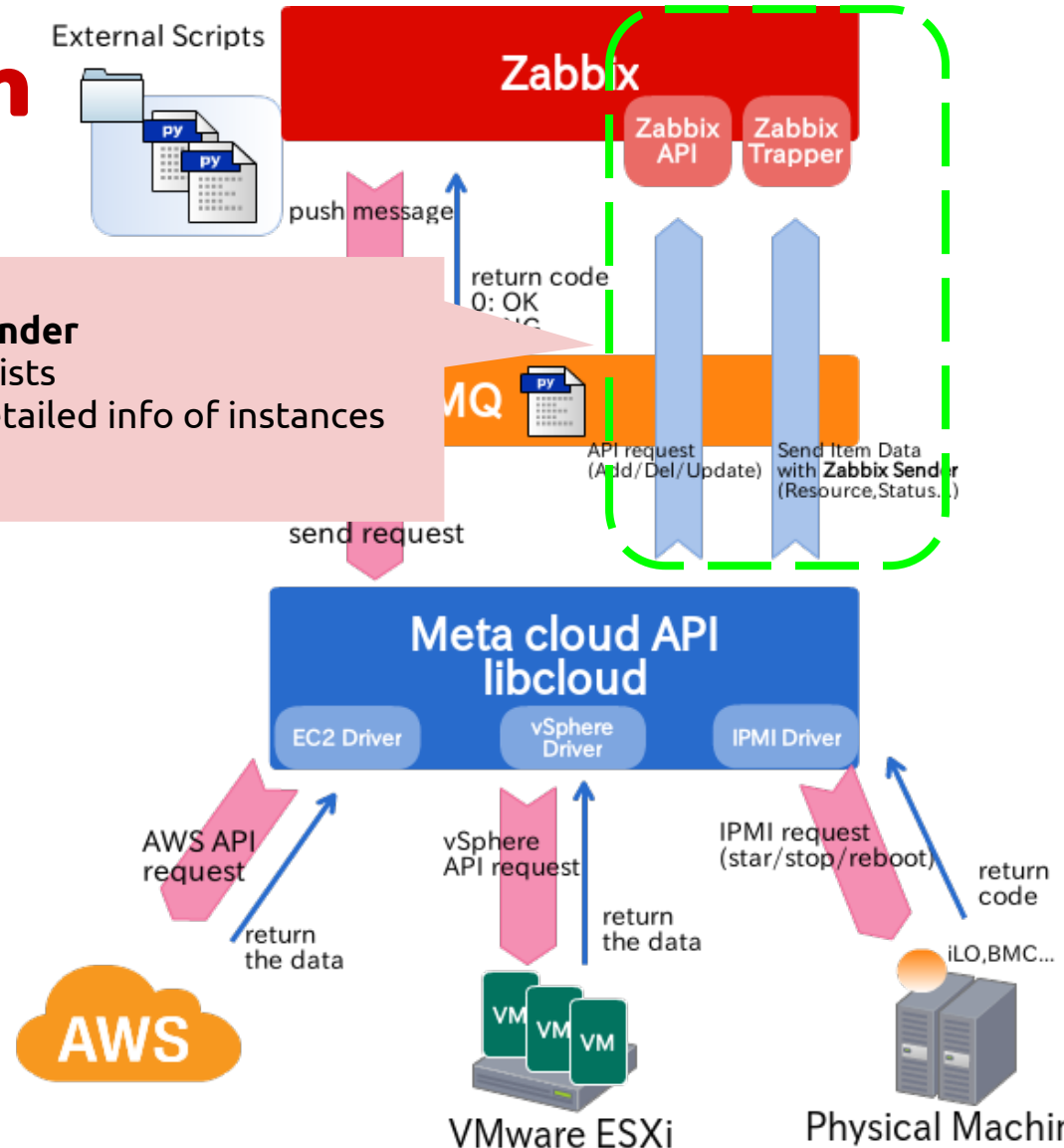
- Exclusive APIs abstracted
- Easy to add a new type of cloud service



## For automation

### The Use of ZabbixAPI and Zabbix Sender

- Zabbix API is used to sync instance lists
- Zabbix Sender is used to register detailed info of instances



## Processing Flow

**Auto registration of Host by "Zabbix API"**

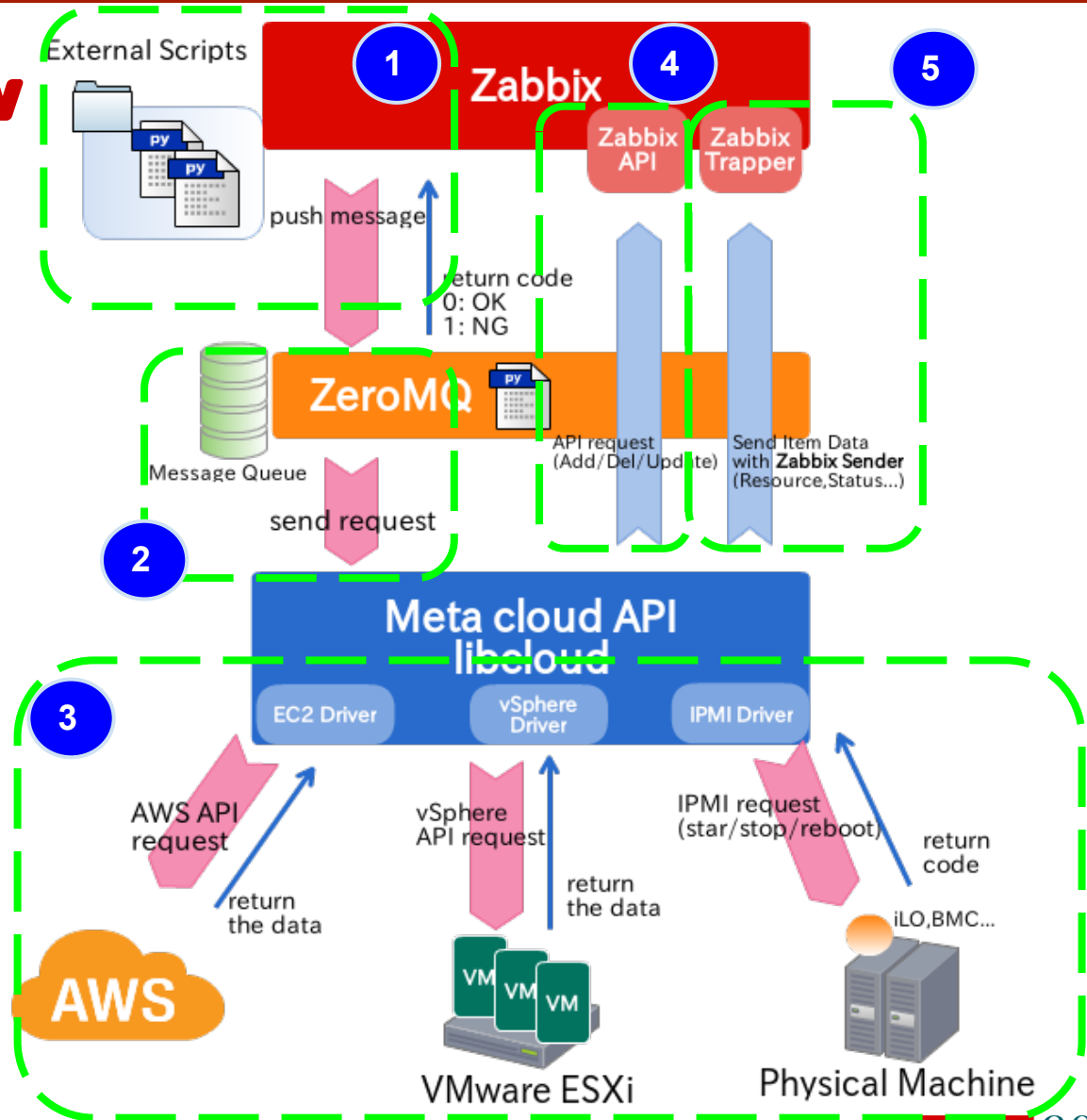
Flow: 1 → 2 → 3 → 4

**Detailed info are stored to Zabbix item by "Zabbix Sender"**

Flow: 1 → 2 → 3 → 5

**Execute action from Zabbix dashboard**

Flow: 1 → 2 → 3



# What is libcloud ? - A Meta Cloud API

## libcloud(<http://libcloud.apache.org>)

- OSS Meta Cloud API (latest ver. 0.11.1)
- Apache top level project
- Written in Python
- Wrapping many native cloud services API  
AWS, Rackspace, CloudStack, OpenStack...

## Install

```
$ pip install apache-libcloud
```

## Programming step(python script)

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

EC2_ACCESS_ID = 'AWS API Key'
EC2_SECRET_KEY = 'AWS Secret Key'
Driver = get_driver(Provider.EC2)
conn = Driver(EC2_ACCESS_ID, EC2_SECRET_KEY)
nodes = conn.list_nodes()
```

### Support Action

- get node\_list
- start instance
- stop instance
- reboot instance
- terminate instance
- create instance
- manage storage
- manage LB
- etc...

# Demo

- You can watch FULL machine list on Zabbix Dashboard
- You can Operate VM on Zabbix Dashboard
- You can connect to ssh,VNC,IPMI console (a feature)

Physical machine status

Host name	IPMI interface	Status	Problems
<input type="checkbox"/> Diver02	[redacted]	running	0
<input type="checkbox"/> Oz	[redacted]	[redacted]	[redacted]

Start selected

Updated: 14:47:06

vSphere status

Instance name	Status	Interface	Availability zone
<input type="checkbox"/> ide[redacted]nt	running	ec2-5[redacted].compute.amazonaws.com	ap-northeast-1a
<input type="checkbox"/> Pet[redacted]	running	ec2-1[redacted].compute.amazonaws.com	ap-northeast-1b
<input type="checkbox"/> p[redacted]l	running	ec2-[redacted].compute.amazonaws.com	ap-northeast-1b
<input type="checkbox"/> s[redacted]e	running	ec2-5[redacted].compute.amazonaws.com	ap-northeast-1a
<input type="checkbox"/> sp[redacted]e	running	ec2-1[redacted].compute.amazonaws.com	ap-northeast-1a
<input type="checkbox"/> sp[redacted]p	running	ec2-5[redacted].compute.amazonaws.com	ap-northeast-1a
<input type="checkbox"/> th[redacted] server	running	ec2-4[redacted].compute.amazonaws.com	ap-northeast-1a
<input type="checkbox"/> th[redacted] server	running	ec2-4[redacted].compute.amazonaws.com	ap-northeast-1b
<input type="checkbox"/> vo[redacted]-server	running	[redacted]	ap-northeast-1a

Host name | Interf | redOff | Others

Diver02 | [redacted] | 0

Oz | [redacted] | 0

Updated: 14:47:07

Amazon Web Serv

Account name | Po | Stop selected | Go

aws | 9 | 31 | 659.930000

Updated: 14:47:09

# Demo

- You can watch FULL machine list on Zabbix Dashboard
- **You can Operate VM on Zabbix Dashboard**
- You can connect to ssh,VNC,IPMI console (a feature)

The screenshot shows a Zabbix dashboard interface for VM management. At the top, there are summary statistics for VM states:

res	PoweredOn	Suspended	PoweredOff	Others
	0	0	2	0

Below this is a table of VM instances:

<input type="checkbox"/>	Instance name	Status	CPU threads	Memory(GB)
<input type="checkbox"/>	CloudStack	stopped	2	4
<input checked="" type="checkbox"/>	OpenStack-Controller	stopped	2	2

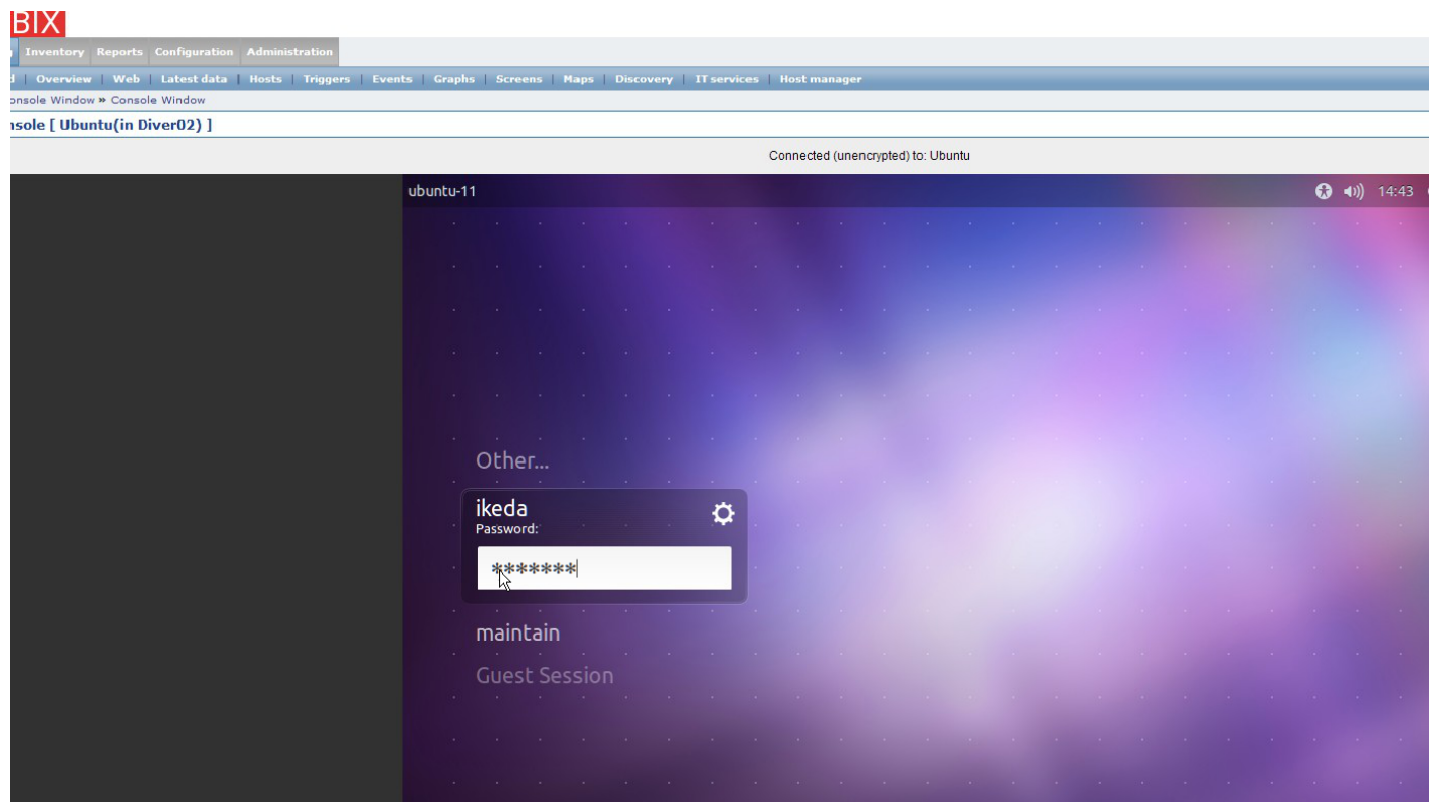
At the bottom, there is a dropdown menu for actions on the selected instance, with a 'Go' button. The dropdown options are:

- Start selected
- Start selected
- Destroy selected

Other visible elements include a 'Billing/ Mon' section with a value of '131.610000' and a 'Close' link.

# Demo

- You can watch FULL machine list on Zabbix Dashboard
- You can Operate VM on Zabbix Dashboard
- **You can connect to ssh,VNC,IPMI console (a feature)**





## Future Prospects - Features to Add

### Strong cooperation between Hybrid Environments

- Easy **BACKUP** from machine to machine
- Simple **MIGRATION** from service to service

### Strong cooperation between Results and Action

- Complex **JOB EXECUTION** from monitored events to be scheduled

# Questions?

**Thank You!**



**Twitter:** [@ike dai](https://twitter.com/ikedai)

**Facebook:** <https://www.facebook.com/ikedai>