

---

# Open Technology 생태계를 통한 CloudComputing 기술의 진화



Song, KiHeung

Enterprise Solutions Group

---

# IT

## - Economist study\*

### 'Complete overhaul'

of the IT function predicted by **12%** executives while **6 in 10** expect **significant changes** in the next **three** years.

**38%**

**Cost** most IT firms want to cut.

**42%**

Improved in **Efficiency** expected.

There is a clear demand for

**IT to add value in new ways.**



Companies whose CIOs are involved in business strategy development **realize superior financial performance.**

Companies who use IT to drive revenue **outperform those who focused on IT solely to cut costs.**

*\*2012 Dell sponsored study with the Economist.*



**Cloud**



**Virtualization**



**Mobility**



**Convergence**



**Big Data**

Multi-tenant, hosted,  
managed, hybrid,...  
cloud options



Ultra high-speed,  
virtualized, on-server  
memory pools



Heterogeneous device  
form factors and  
operating systems



Convergence across  
infrastructure,  
operations, applications  
and services



Store & analyse  
heterogeneous data.

# 주요 트렌드의 도입에 대한 기업의 고민



## How can I...

- Enable my organization to scale?
- Accelerate results?
- Maximize operational efficiency?



Embrace  
consumerization:  
BYOD and beyond



Accelerate adoption:  
virtualization,  
convergence, cloud

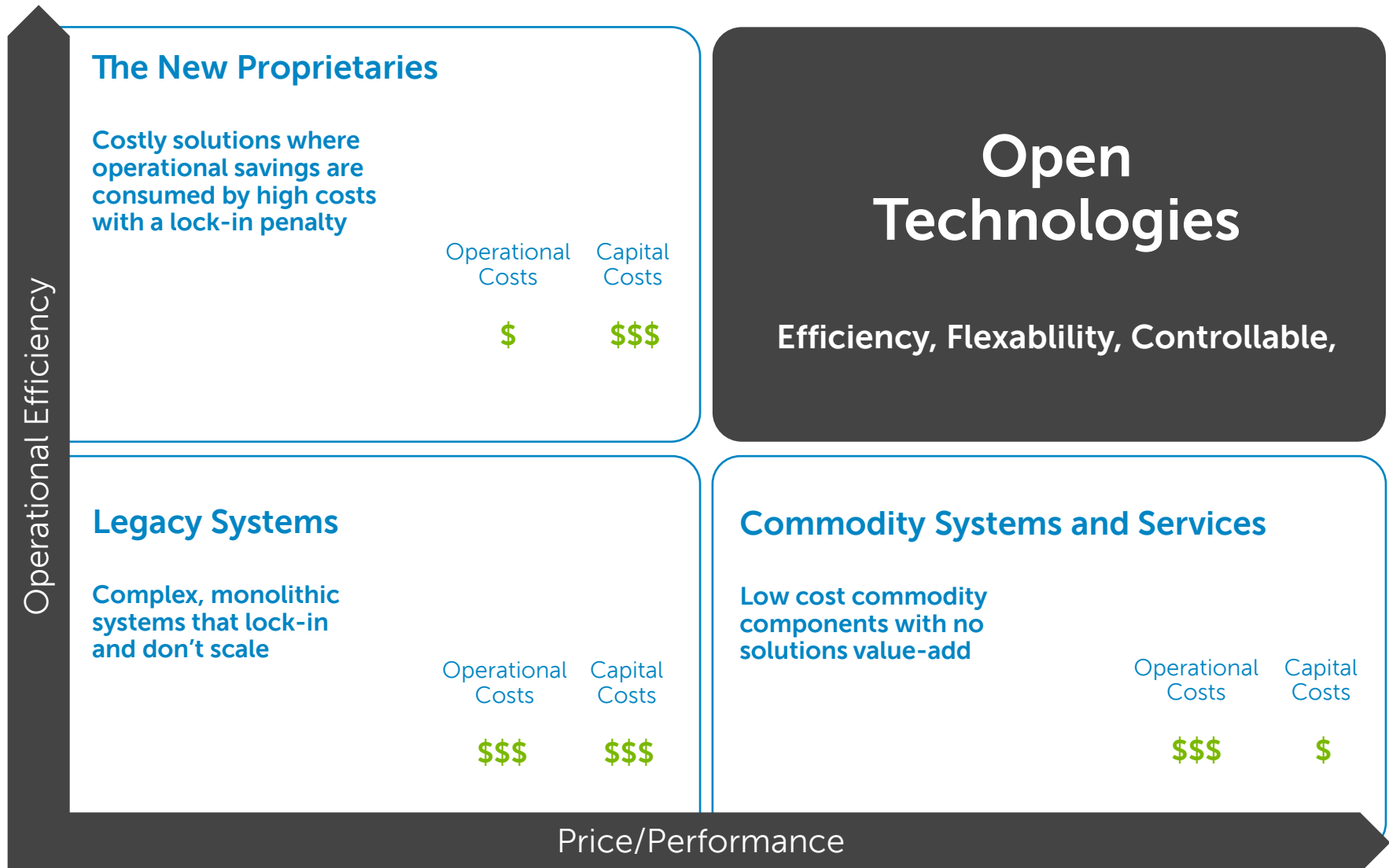


Turn data  
into insights,  
BigData & Hadoop



Overcome  
the evolving  
security threat &  
ensure compliance

# 해결을 위한 대안 – Open Technology



# 왜 Open Technology 인가?

**Flexible**

**Scalable**

**Open**

**No Vendor Lock-In**

**Community Driven**

**Echo System**

Investments in skills, services, and hardware are preserved regardless of vendor choice.



Core and related projects are expanding at a rapid pace.



The ecosystem includes dozens of complementary hardware, software, and services firms.

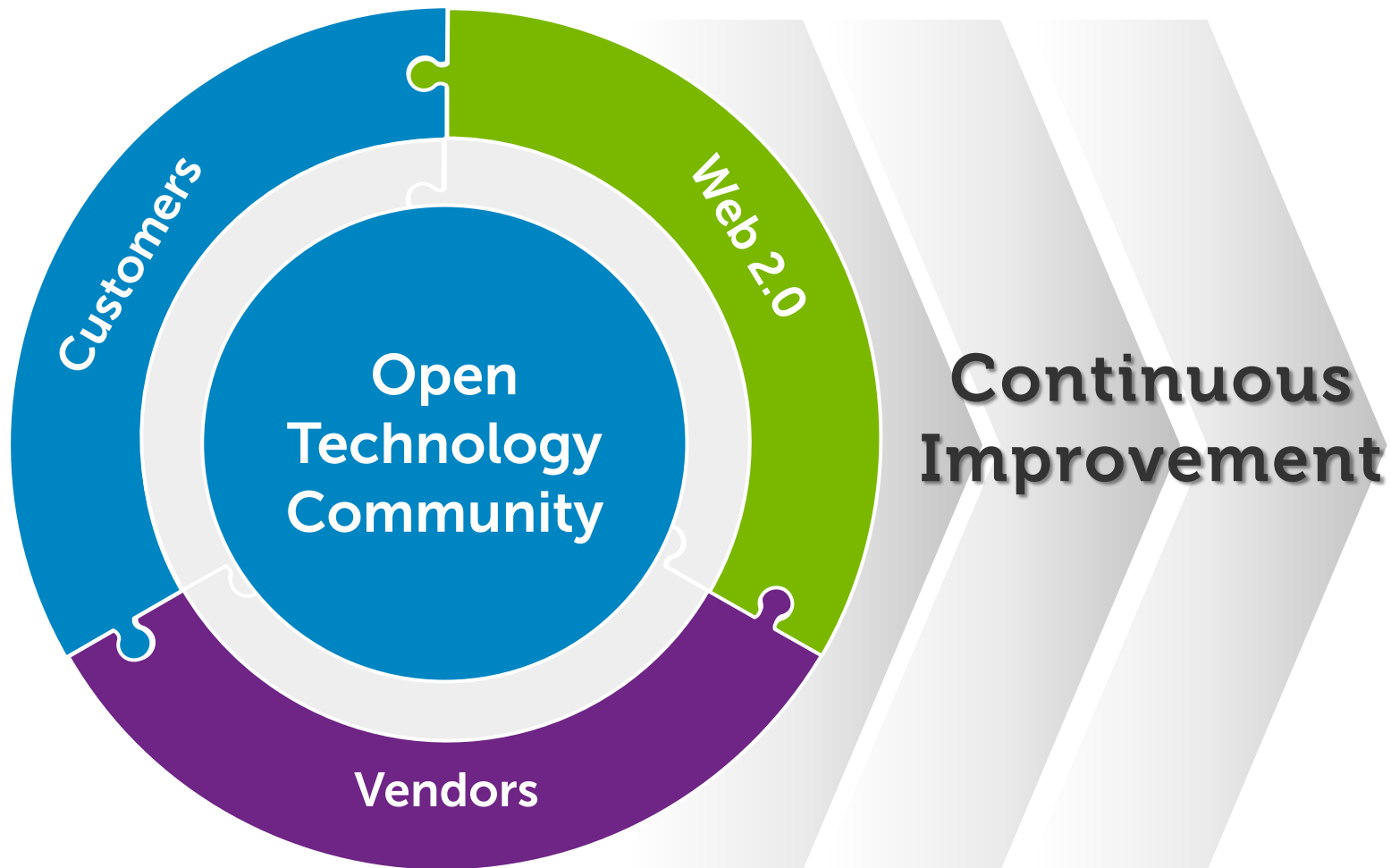


Came from Web 2.0 Services like Amazon, Facebook, Google...





# Open Technology의 생태계





# Cloud Computing –

## New Cloud Computing Technology

### Service provider challenges

- Cost-effectively scaling and competing
- Quickly launch new cloud services
- License costs down
- Maintenance costs down
- Flexibility to rapidly add/change features
- Lack of features

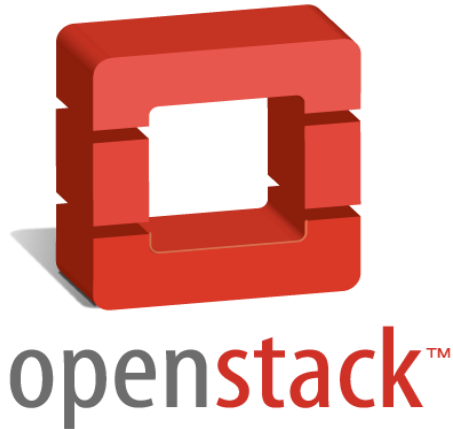
### Enterprises challenges

- Poor resource utilization
- Cost escalation
- Slow application delivery
- Vendor Locked-in & license costs
- cost allocations
- Building a cloud is too complex and takes too long



# OpenStack – Open Technology

for building private and public clouds



The OpenStack project aims to deliver solutions for all types of clouds by being **simple to implement**, **massively scalable**, and **feature rich**

- Support from major industry players
- Collaboratively developed without a single owner
- An API that is service provider license friendly
- Demonstrated to run at scale
- Global reach and support
- Community-driven since July 19, 2010
- > 10,000 members
- > 230 companies
- 124 countries
- [www.openstack.org](http://www.openstack.org)

# OpenStack – Open source community

## The fastest growing global open source community

COMPANIES

231

INDIVIDUAL MEMBERS

10,149

TOTAL CONTRIBUTORS

1,036

AVERAGE MONTHLY CONTRIBUTORS

238

COUNTRIES

121

CODE CONTRIBUTIONS

70,137

As of July 2013



# OpenStack – Open source community

## The open source cloud operating system

OpenStack is a set of **interrelated software components**

Developed and maintained collaboratively by a **large, active community**

**Dashboard** (Horizon)  
**Compute** (Nova)  
**Object Storage** (Swift)  
**Block Storage** (Cinder)  
**Network** (Neutron)  
**Identity** (Keystone)  
**Image Service** (Glance)  
**Metering** (Telemetry)  
**Orchestrator** (HEAT)

**Designed with open standards and versatility in mind**

- Multiple hypervisors (Xen, KVM, VMWare, Hyper-V)
- Amazon and Rackspace APIs are supported
- Distributed under Apache 2.0 license



# OpenStack Values

## OpenStack versus commercial alternatives?

### Cost

"Implementing private cloud with commercial software is too expensive."

"We're unable to quickly address consumer demand."

"We want options for cloud – on premise, off premise, hybrid."

**OpenStack is  
cost effective**

### Control

"I want to be in control of my infrastructure and the software to manage it!"

"We want to develop our own features rather than wait for vendors – it's faster, more cost efficient, and specific to our environment."

**OpenStack  
allow operators to  
control their destiny**

### Scale

"The cost to implement private cloud at scale was a dead end."

"Traditional cloud offerings are incomplete, unable to massively scale, difficult to manage."

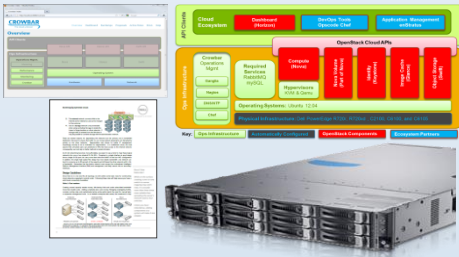
**OpenStack is  
proven at scale**

**OpenStack allows companies to  
aggressively innovate on an open platform and framework to accelerate  
time-to-market of new capabilities at cloud scale**



# OpneStack with Dell

# Dell OpenStack-Powered Cloud Solution



- **Flexible, end-to-end OpenStack cloud solution**
- **Target market** : **Advanced** private cloud, **public** cloud
- **Includes** : PowerEdge C/R, Force10, Crowbar, OpenStack platform, Partner Software, Canonical OpenStack distribution, Ubuntu Operating System, RedHat OpenStack distribution, Dell and partner Services
- **Dell OpenStack Reference Architecture**

**InkTank Ceph**  
(Dell OpenStack Ecosystem  
Partner)



- **Ceph is an open source self-managing universal storage system**
- Ceph has massive scalability, no single point of failure, and rapid provisioning to provide software-defined storage infrastructures for OpenStack
- **Integrated with Crowbar**
- **Tested with OpenStack**
- **Dell Ceph Reference Architecture**

## CrowBar

(Open source DevOps tool)



- **Crowbar is an open source modular framework accelerates multi-node deployments, simplifies maintenance, and streamlines ongoing updates**
- Deploy an OpenStack cloud in hours instead of days
- Build and use barclamps to install and configure software modules
- Leverage a DevOps model to interact, modify, and build based on changing needs



# Case Study - Centralized storage cloud based on OpenStack, Crowbar and Ceph



- **Flexible, fully open-source infrastructure based on Dell reference design**

- OpenStack, Crowbar and Ceph
- Standard PowerEdge servers and storage
- 400+ TBs at less than 41¢ per gigabyte

- **Distributed scale-out storage provisions capacity from a massive common pool**

- Scalable to 5 petabytes

- **Data migration to and from HPC clusters via dedicated 10Gb Ethernet fabric**

- **Easily extendable framework for developing and hosting additional services**

- Simplified backup service now enabled

“We’ve made it possible for users to satisfy their own storage needs with the Dell private cloud, so that their research is not hampered by IT.”

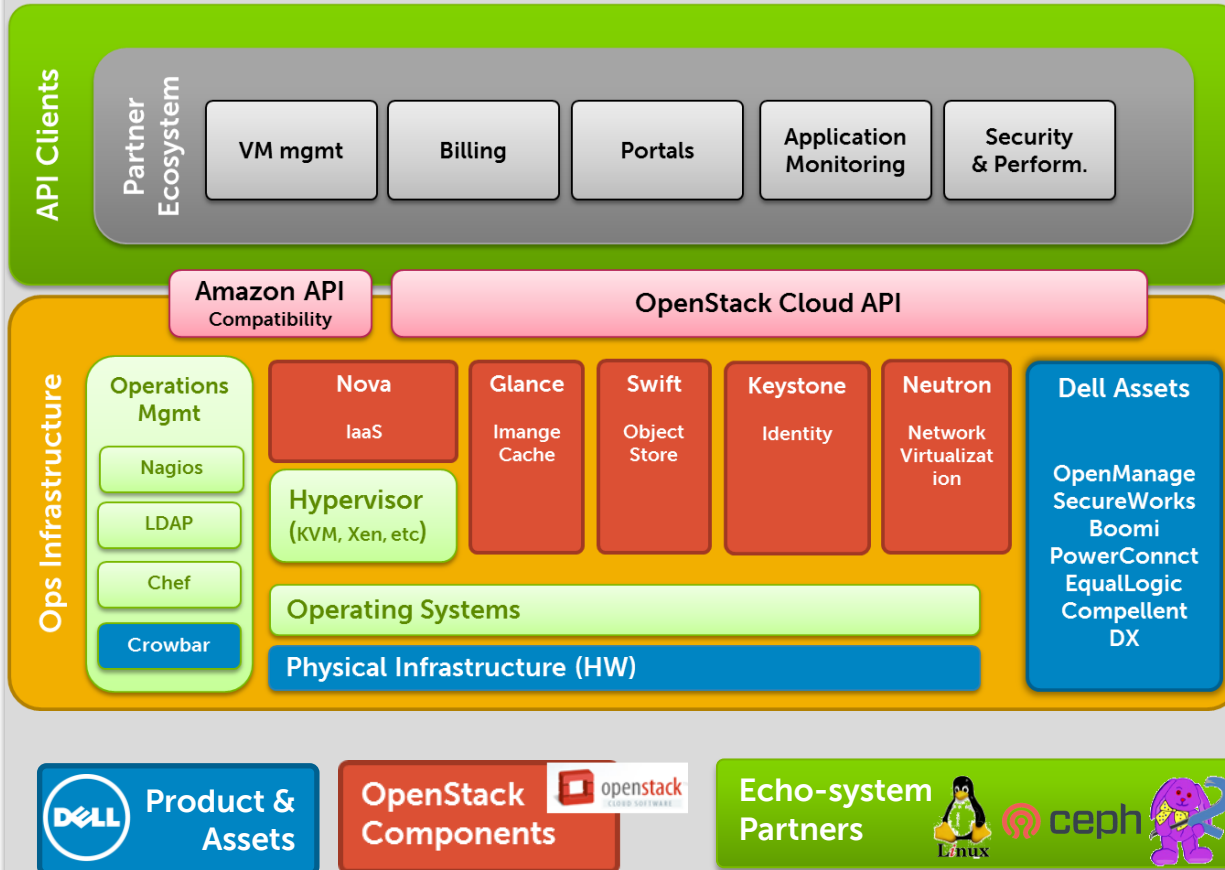
David L. Shealy, PhD  
Faculty Director, Research Computing  
Chairman, Dept. of Physics





# Conclusion

## Dell End-to-End OpenStack Echo-system



Enables...

Use Case Discovery

Proof of Concept

Process and Team

Production Pilot

Production





The power to do more