

**USJI Forum**

# **Cyber Securities on Cloud Computing Systems**

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# 5-6 years ago...

- I did not like the word “Cloud Computing”.  
Because
  - “Cloud computing” is an undefined term.
  - All difficult software problems can be easily solved by cloud computing.
  - Cloud computing is realized at very low cost.  
and so on.

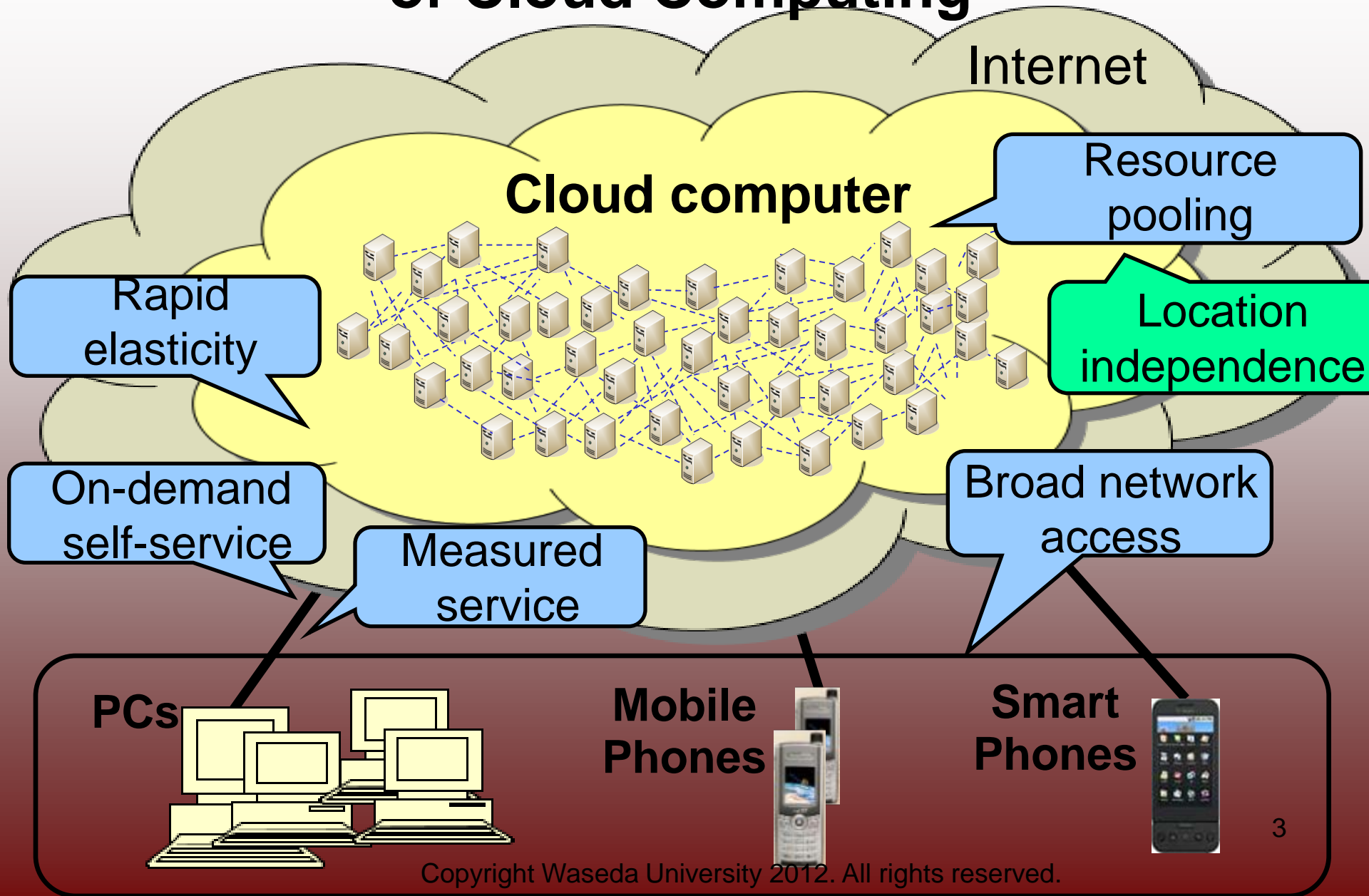


Unbelievable for me!  
It must be only a buzz word.



But now it is getting to be clear!

# Essential Characteristics of Cloud Computing



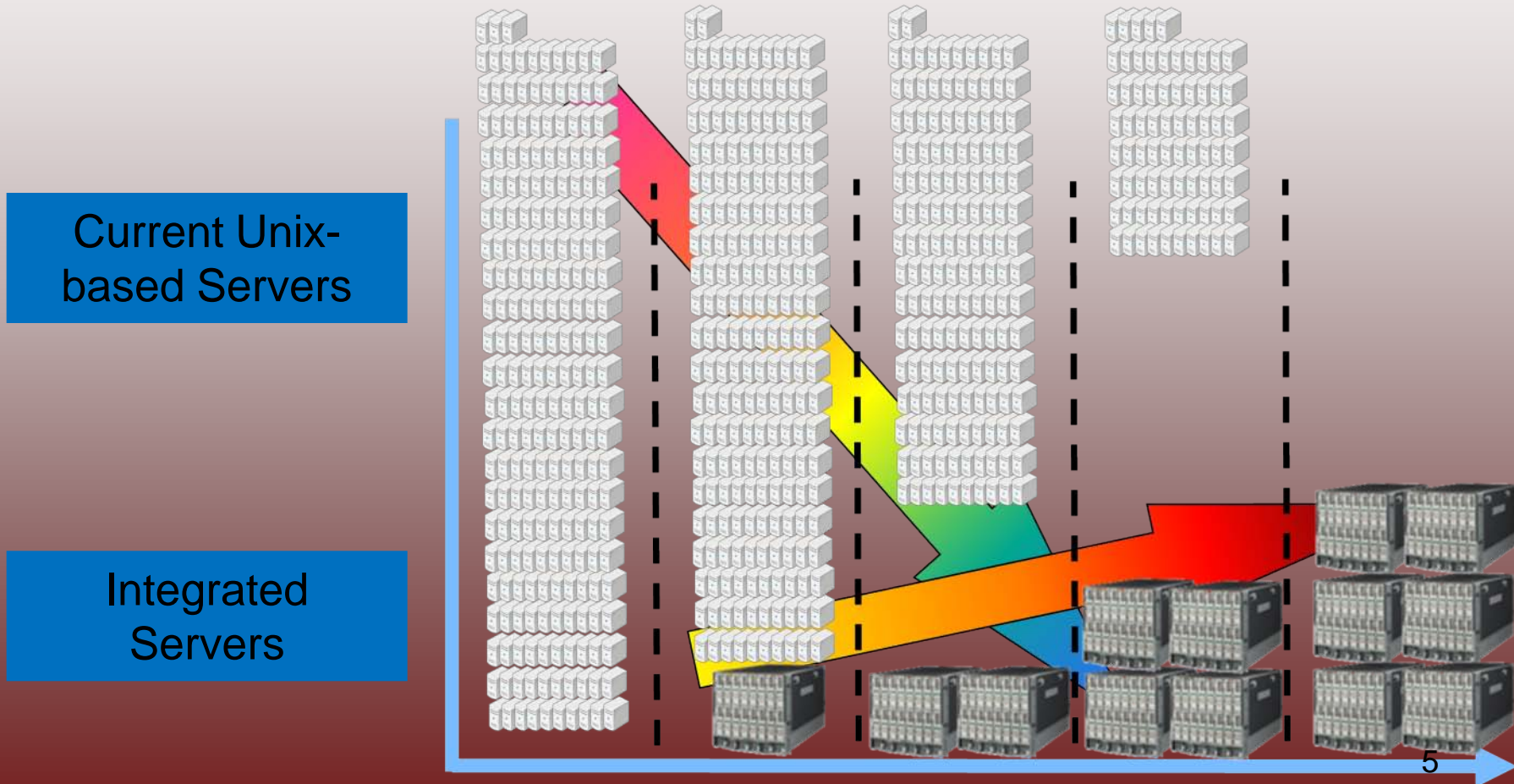
# Classification of Cloud Computing

- Service Models
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)
- Deployment Models
  - Private cloud
  - Community cloud
  - Public cloud
  - Hybrid cloud

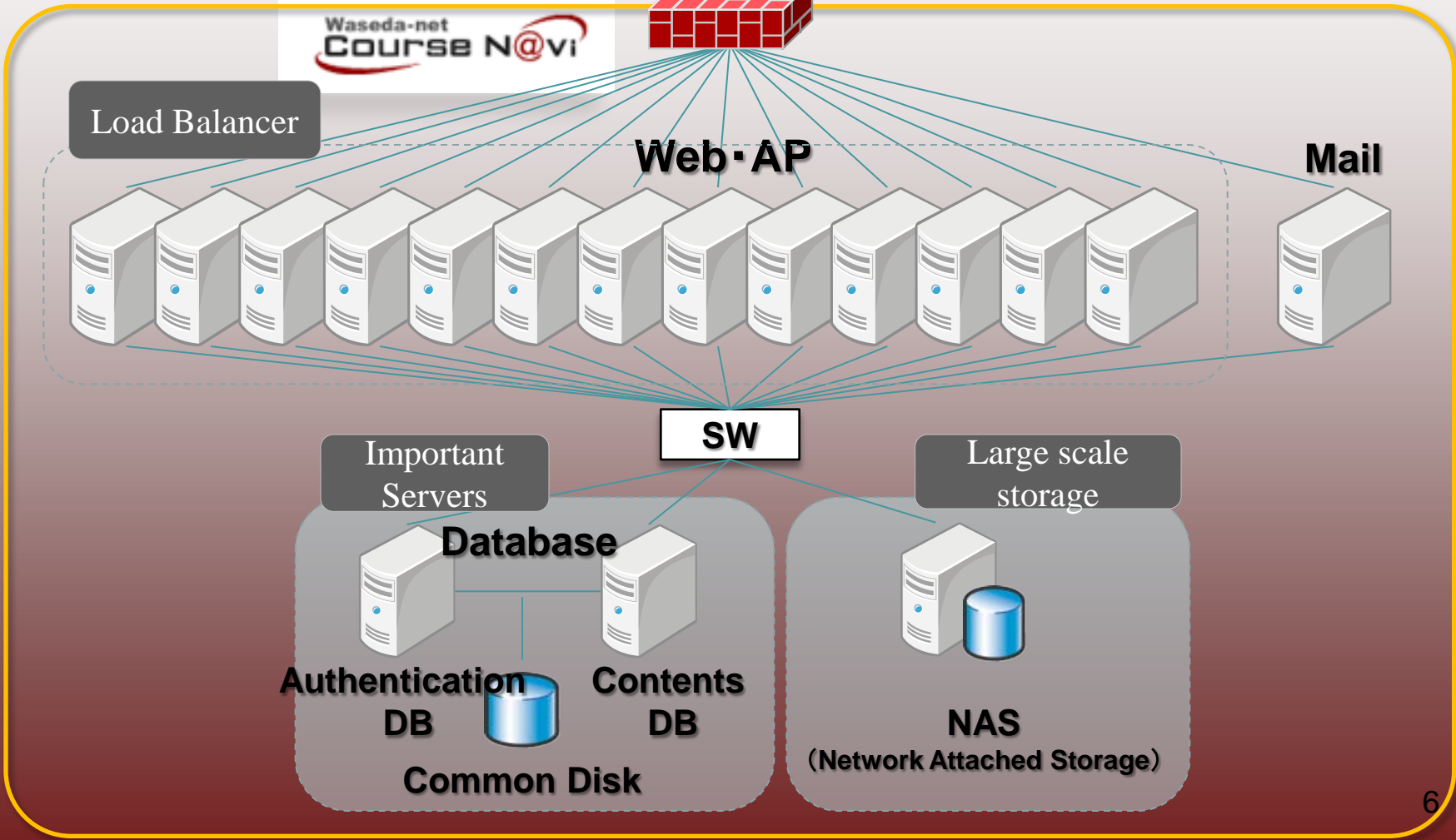
Peter Mell and Timothy Grance "The NIST Definition of Cloud Computing", Special Publication 800-145, NIST, Sept. 2011

# Our Schedule for Cloud Computing

Fiscal year	2010	2011	2012	2013	2014
number of current servers	223	202	152	75	0
number of cloud servers		8	15	30	45



# CMS of Waseda Univ. (before Cloud)



# CMS of Waseda Univ. (After Cloud)

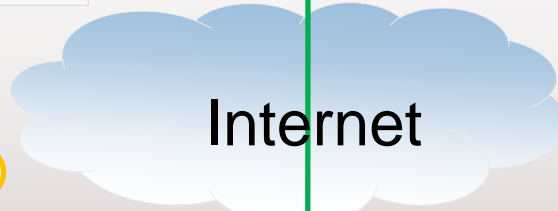
## Smooth migration

(Migration period: about 2 months)

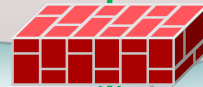
As  
the power shortage  
provision because  
of the earthquake



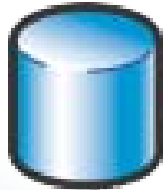
Students,  
Faculties



Internet



## Private Cloud Environment



Common NAS

## Web·AP·Mail

AP	AP	...	AP	AP
OS	OS		OS	OS

Server virtualization Environment

## Database

Authenticati on DB	Contents DB
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Physical servers

Common network environment



VPN

Secure telecommunication

In Waseda Univ.

# Some problems in Cloud Computing

- Reliability problems
  - Internet dependence
  - Large scale servers
- Security problems
  - Location independence
  - User privacy
- Legal problems
- Service provider problems and so on

# The Washington Post

(Wednesday, Jan. 25, 2012)

- “Google to track users across all its sites”  
Company’s decision not to let people opt out raises privacy concerns
- Google will soon know far more about who you are and what you do on the Web.



Some problems in cloud computing will become more and more important!

These problems are solved by powerful cloud suppliers.



Thank you...

Questions and comments  
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