KIV/SI

Přednáška č.9

Jan Valdman, Ph.D.
jvaldman@dns.cz

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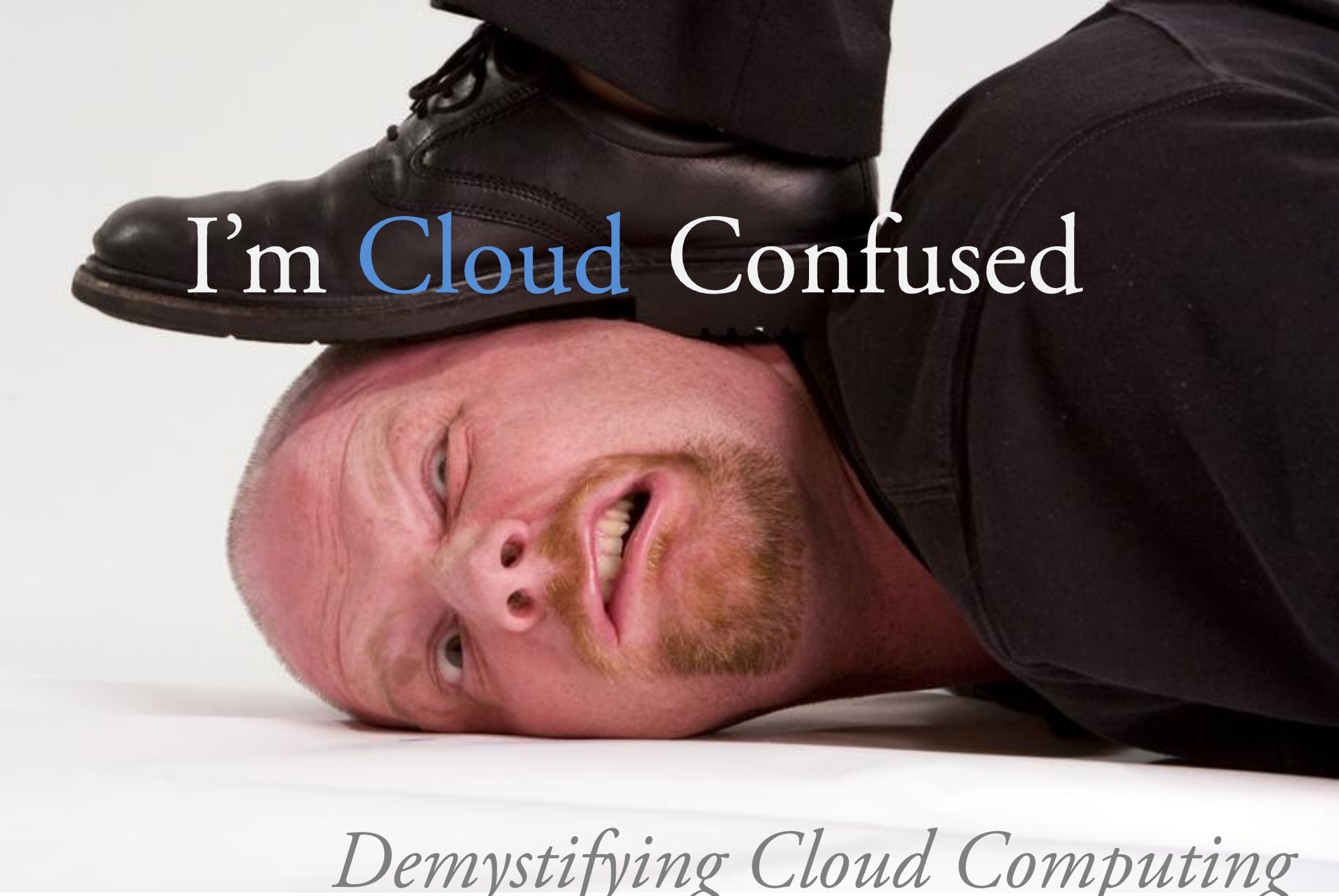
Cloud

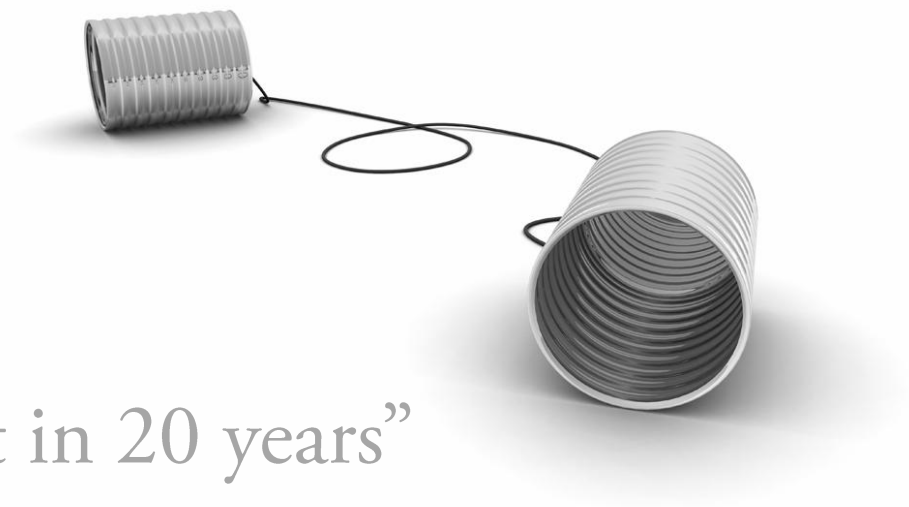


I'm Cloud Confused

Demystifying Cloud Computing

http://www.slideshare.net/Guppers/im-cloud-confused

What the say:



"Biggest Paradigm Shift in 20 years"

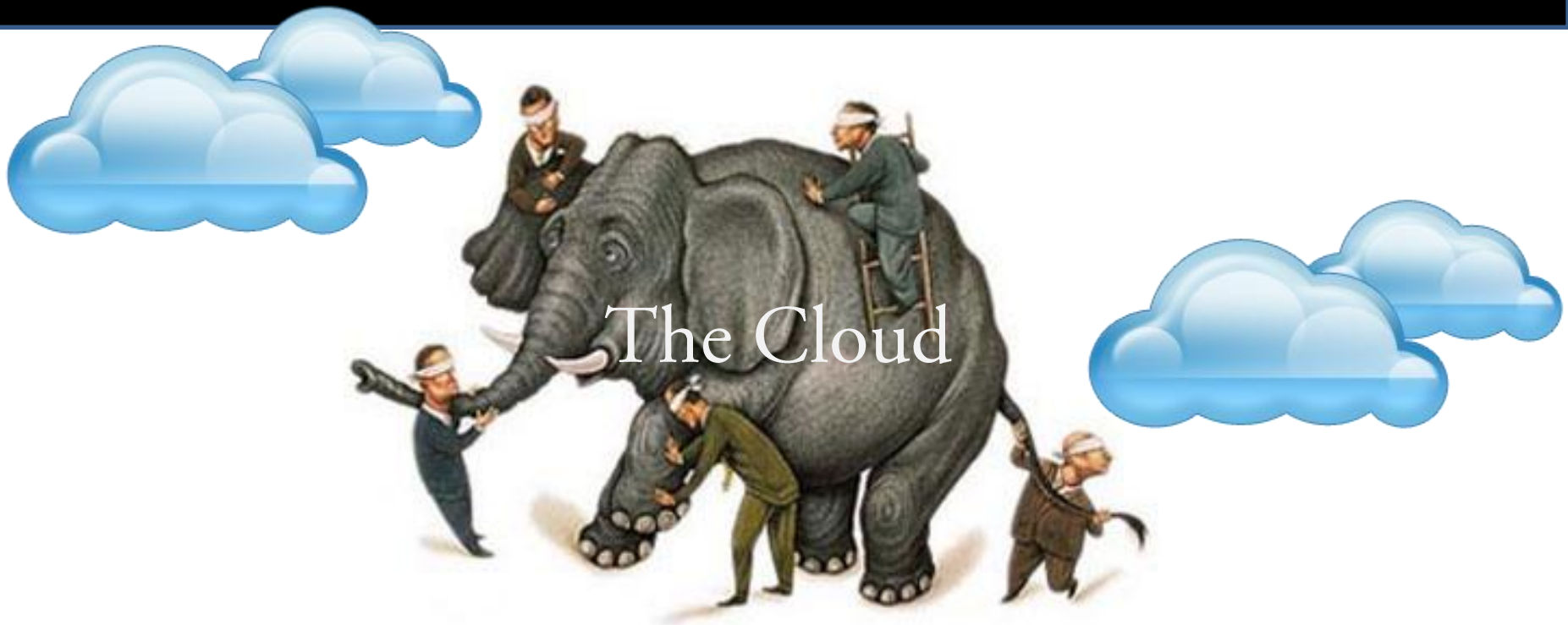
"Game Changers"

"Just On"

"Pay As You Go"

"Tremendous Cost Cutting"

Describe The Cloud To Me



21 experts are defining cloud computing http://bit.ly/C6jIm

*Picture taken under Creative Common license

As an end-consumer, believe it or not you've been using Cloud for long times


Yes, most of them are
Free

In return, you're willing to give away

your information

for ads and other purposes

But you've been enjoying

High Reliability Service

(ok, ok, most of them are)

Unlimited Storage

Connecting, Sharing

OK, Now tell that to the business owner

Give up your data, then
you can use this infrastructure for free

This is how their CEO would feel

My Business Needs…

Security

Privacy

Reliability

High Availability

Building Enterprise Software

is like….

Building

Medieval Castle

Stone Wall

Fire-proof

Moat

Army

Death Hole

Let's Hire an Army of IT Engineers

Support

Software Upgrade

Backup/Restore

Service Pack

Development

Network issues

Let's Build Huge Data Center

Capacity Planning

Cooling Management

Disaster Plan

Server Crashes

Requires

a New Way

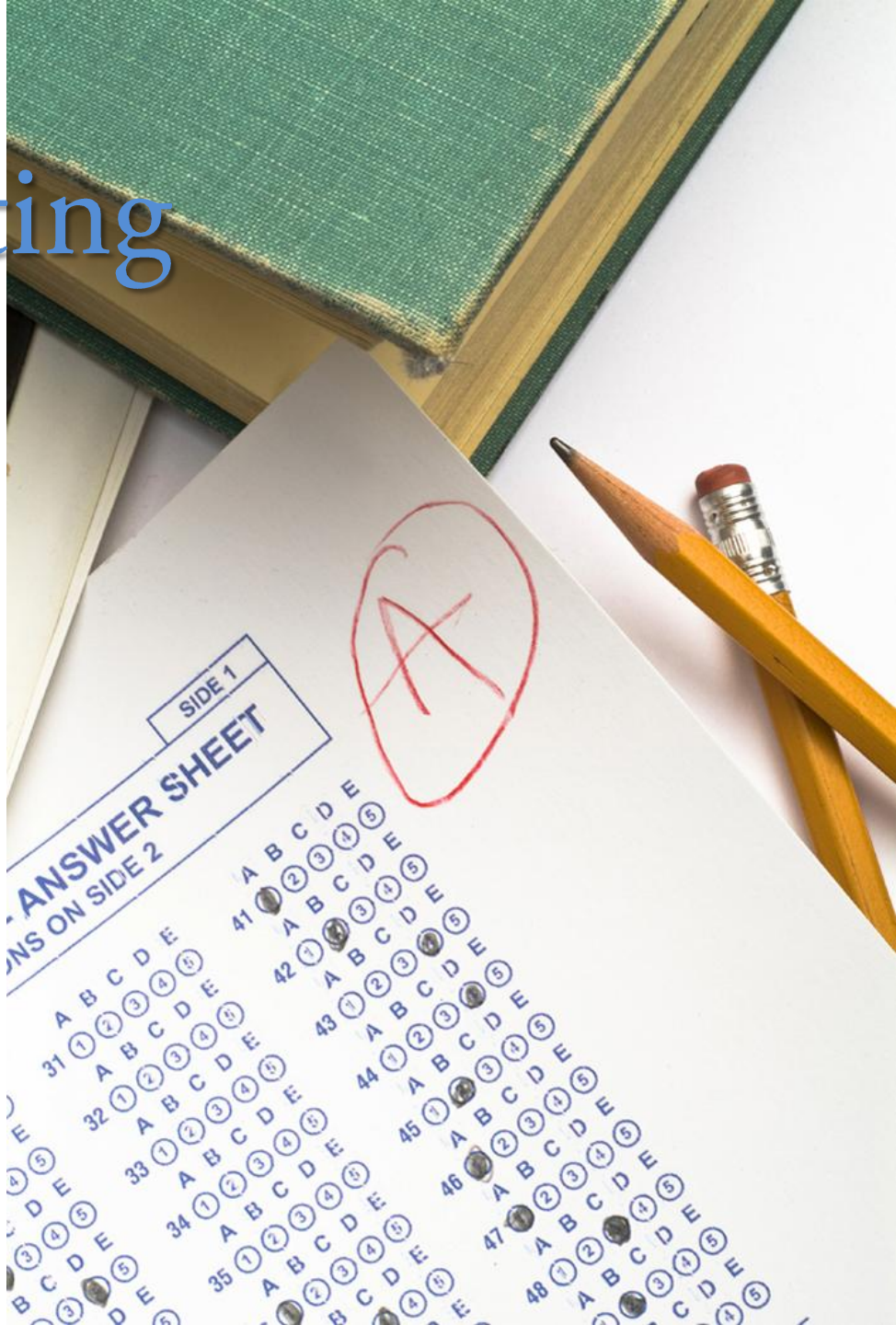
of Thinking

Cloud Computing

is *not*

the **answer**

for all

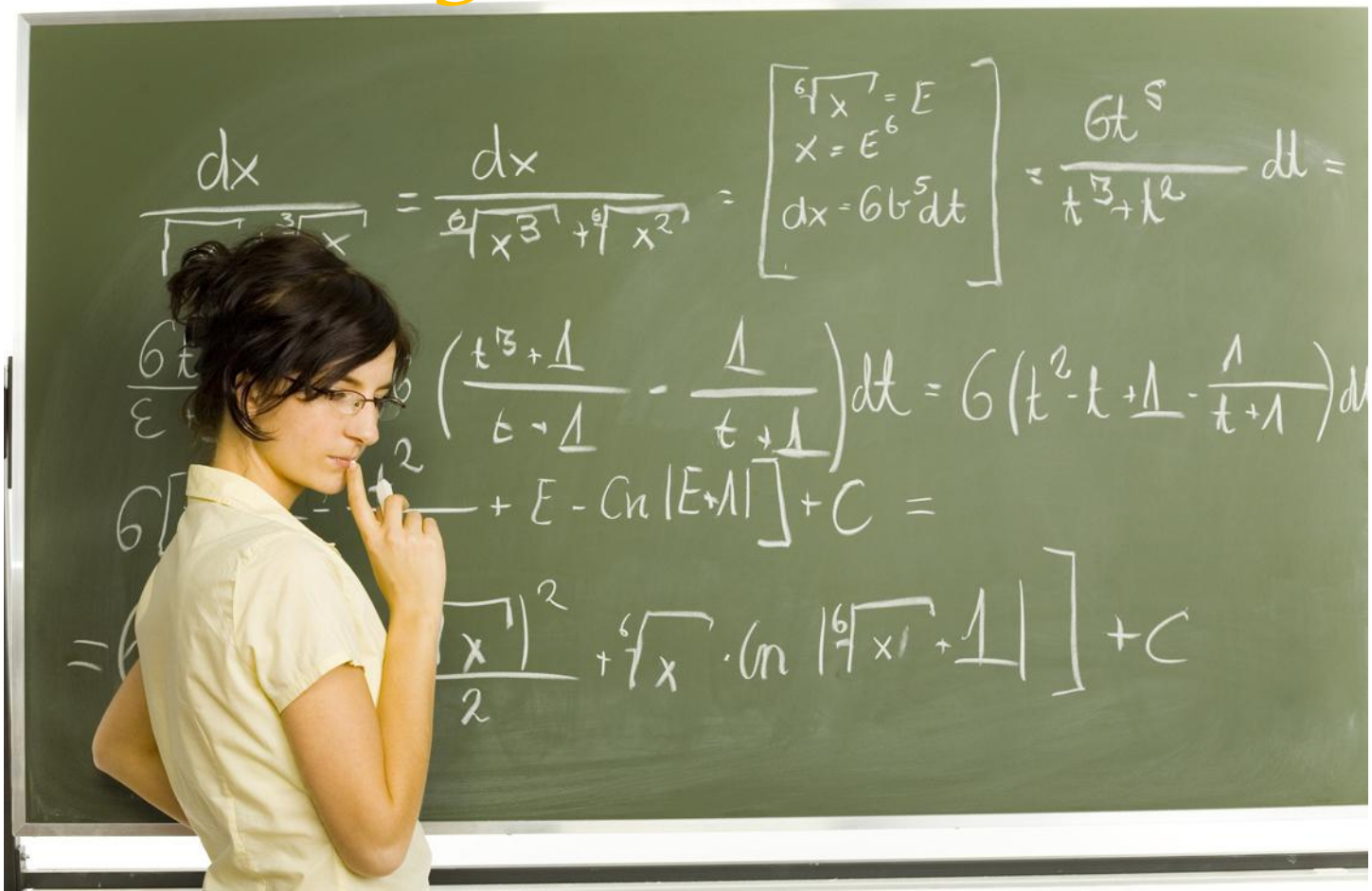


But it could simplify our lives….

Leave it the experts

who have a lot of money to spend to build

giant datacenters across the globe



Your data is replicated
3 or 4 times in their data center

High Availability

High Traffic?

Adding "servers" is a click away.

Running in just minutes, not days


It can even load balance
your server traffic

Expect your *Cloud*

Network

is always up

You can pick where your data resides

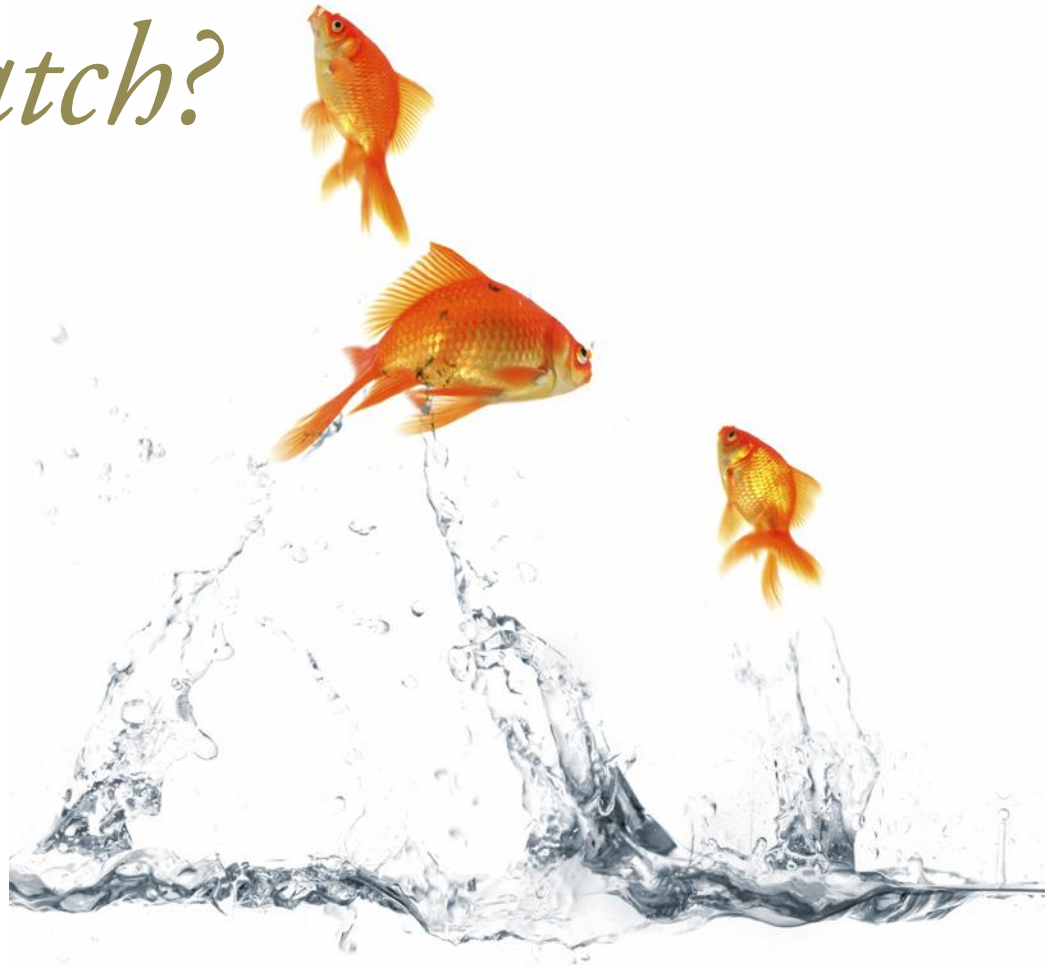
Business Contraction?

Just reduce your

computing power, storage

Wait,

What is the catch?



Cloud Computing

is relatively **new** technology

Growing Pains

We all learn from it

Only a handful of major players can build this massive infrastructure

Microsoft
Windows Azure Platform

amazon.com
amazon web services

Google
Google app engine

Not many software written yet to take advantage of cloud infrastructure

Sensitive Data in the Cloud?

are there yet?

Encryption

Data at Rest

Data in Motion

Yes, you're loosing some controls

some configurations

physical security

only subset of APIs

Let's pick a simple story

You worked hard this year,
you bought a pile of gold bars

Where should you store them?

House?

Bank?

Your House

Your Bank

Let's clear common **confusions**

about Cloud Computing

Who is paying whom?

Typical Scenarios

Software/Service Providers

Cloud/Infrastructure Provider

Microsoft

amazon.com

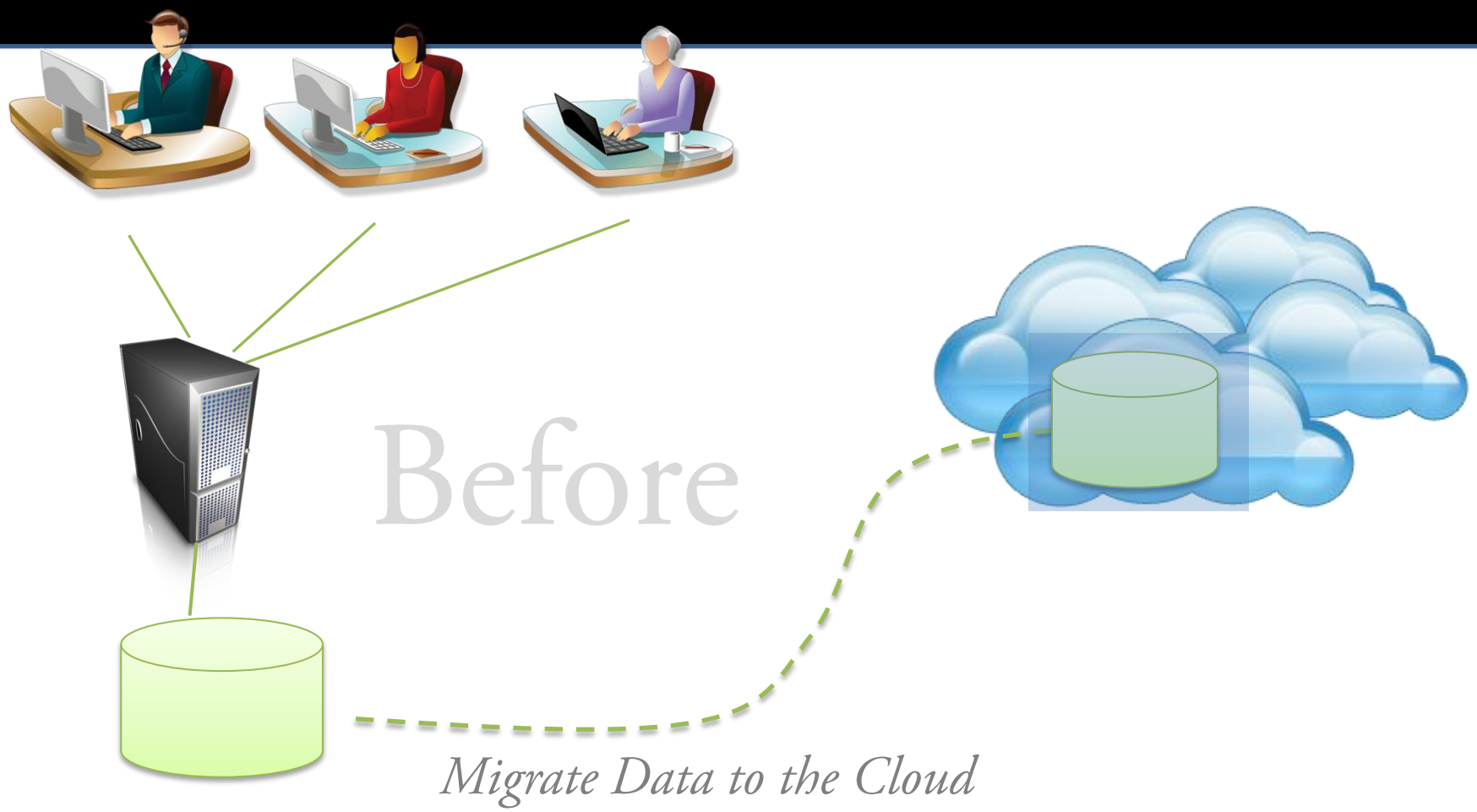
Google

You
(Business, Individual)

You may also build software directly on the provider's platform and pay them directly

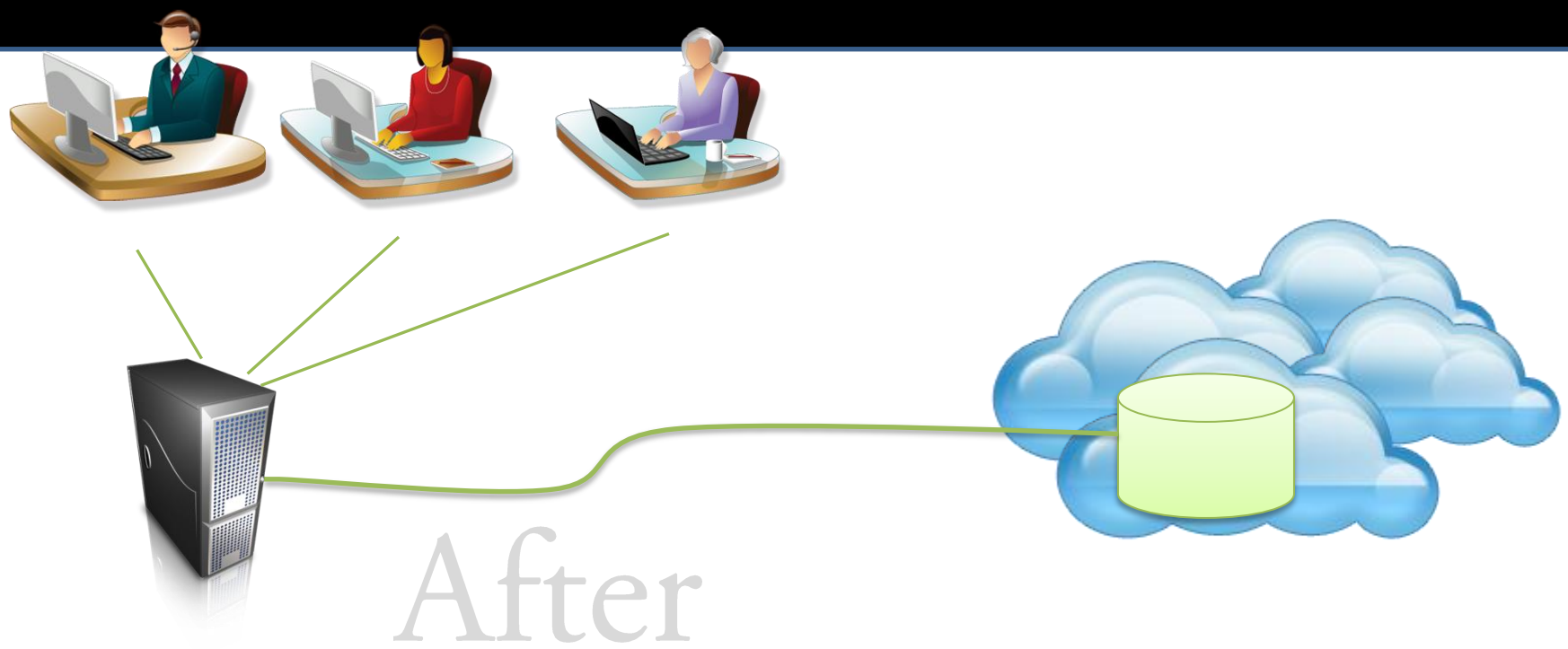
Do I have to start over?

In some cases,
you could redirect your data to the cloud

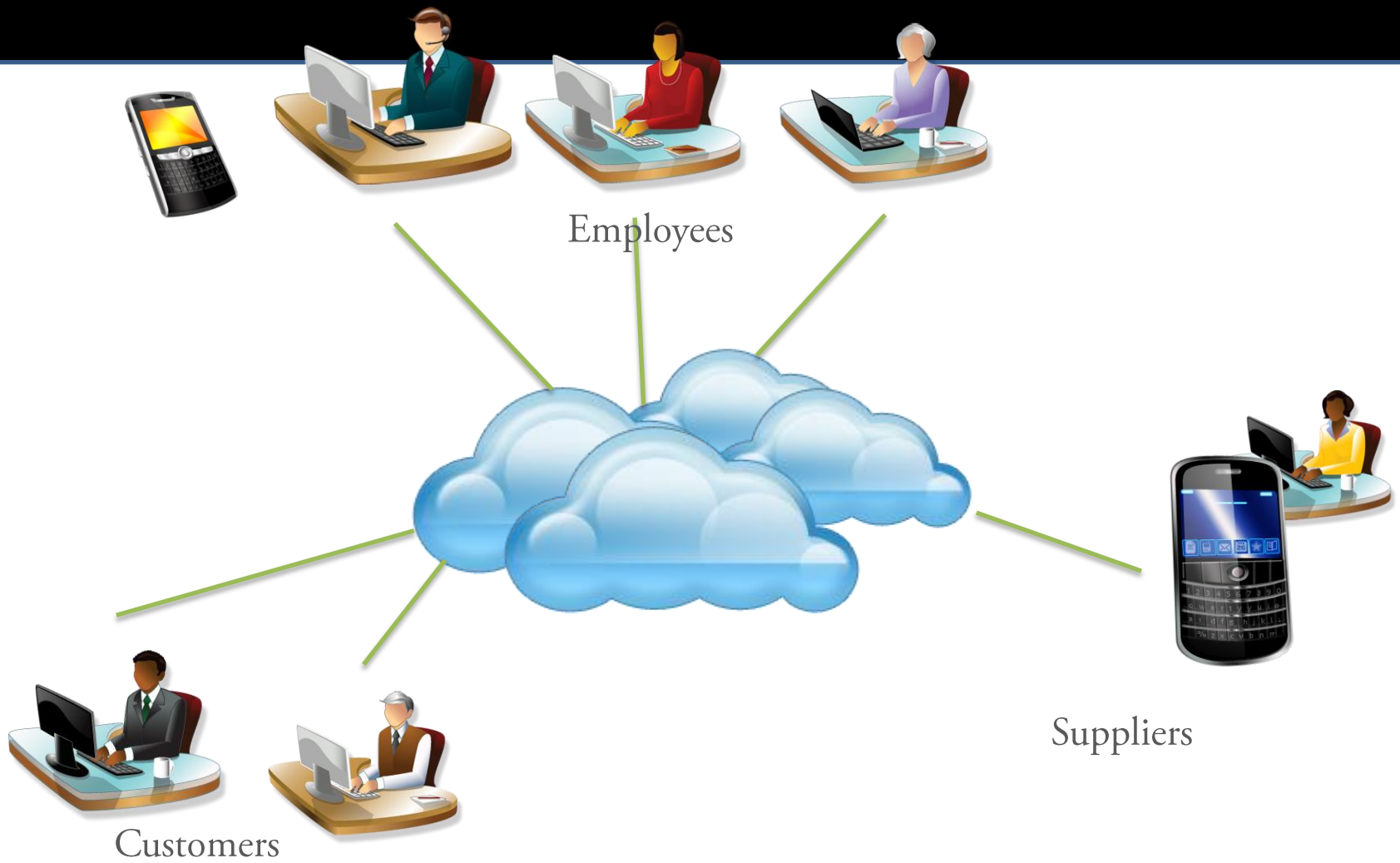


In some cases,

you could **redirect** your data to the cloud



However, to take advantage fully, migrate all or create new apps on the cloud



Is this just Hosting 2.0?

No, they have different architectures and business model

Cloud Players

Microsoft

amazon.com

Google

IBM

Only few can afford billions dollar investment on data centers

Hosting Players

Hundreds of them around the world

Your contracts

Cloud Players

Pay As You Go

Pay only what you use

Hosting Players

Often yearly

Reliability, High Availability, Capacity Elasticity

Cloud Players

Virtually unlimited storage, computing power

Built-in Redundancy

Hosting Players

Bring your own or rent servers to increase capacity

You have to manage reliability, fail over yourself

The end of PC ?

NO

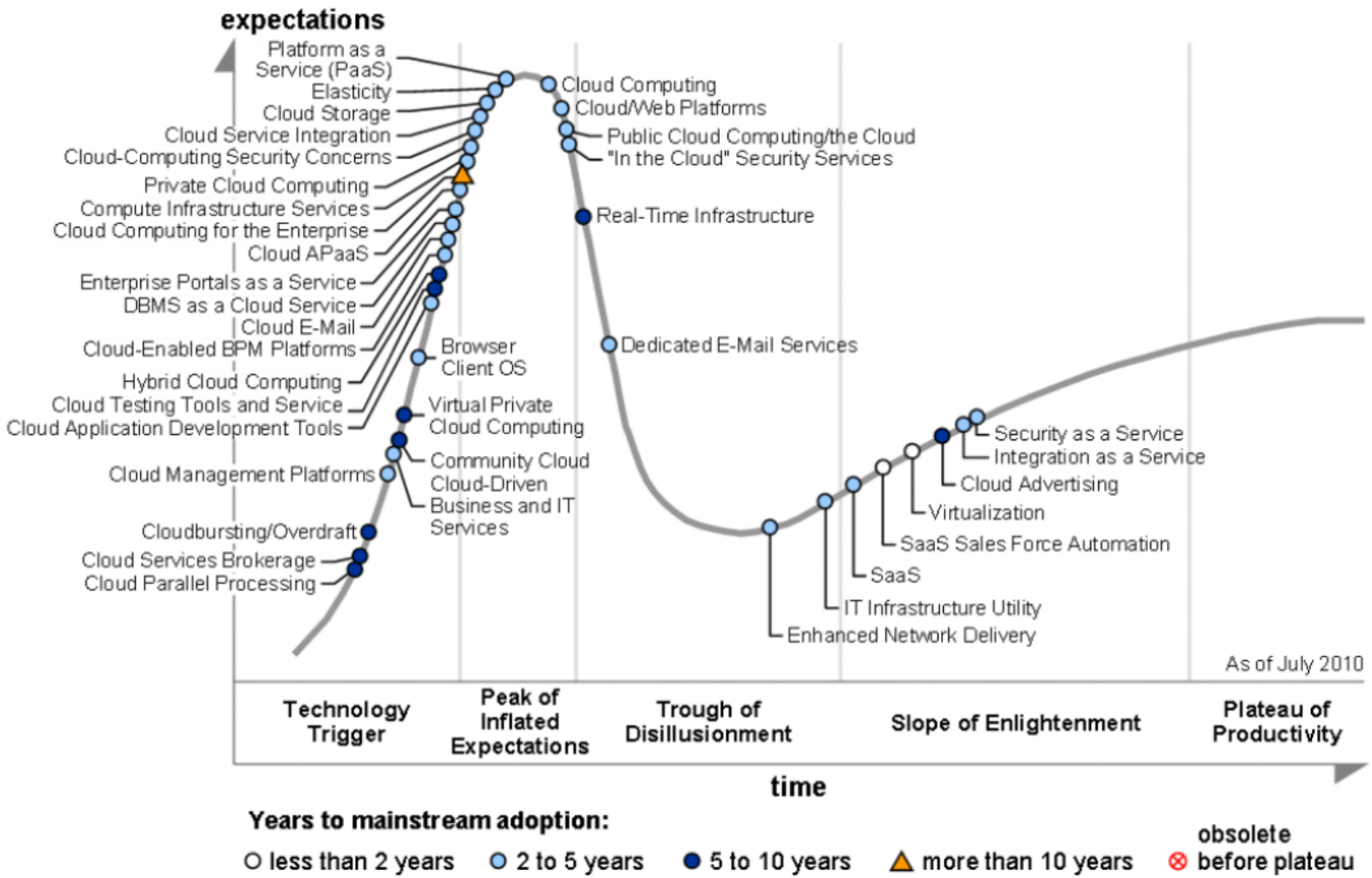
Most cloud applications that will be built are accessible from PC.

Applications can be a browser base, application running on PC accessing data and services on the cloud

So will the mobile applications

Hype Cycle for Cloud Computing, 2010

Figure 1. Hype Cycle for Cloud Computing, 2010



Source: Gartner (July 2010)

Benefits

Virtualized

Higher utilization
Economy of scale benefits
Lower capital expense

Standardized

Easier access
Flexible pricing
Reuse and share
Easier to integrate

Automated

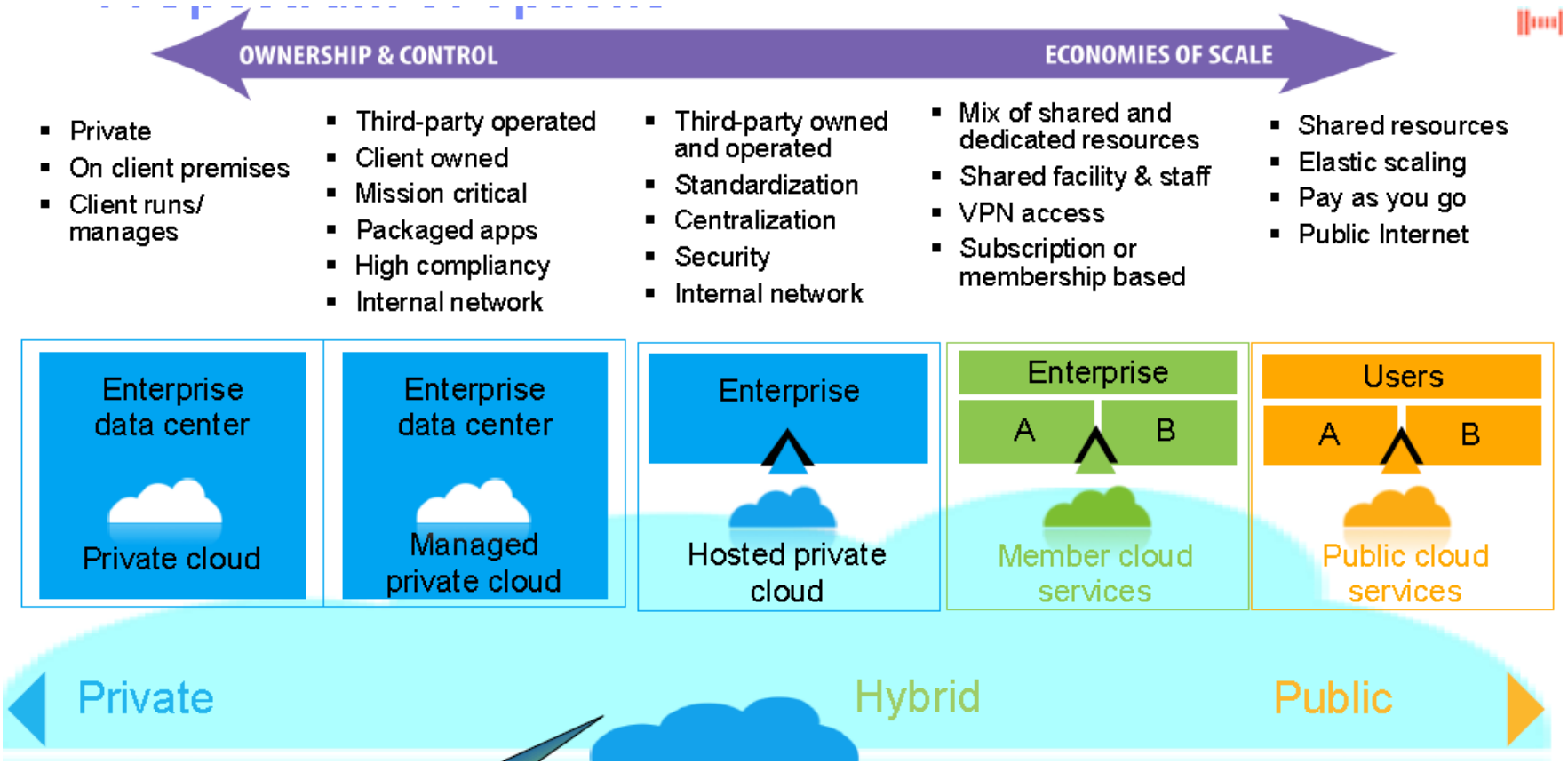
Faster cycle times
Lower operating expense
Optimized utilization
Improved compliance
Optimized security
End user experience

Doing more with less

Higher quality services

Breakthrough agility and reducing risk

Různé typy cloudů



Různé role firem

CLOUD APPLICATION PROVIDERS

"I want to deliver my application / asset as a cloud service"

LotusLive™

SuccessFactors
Business Execution Software

salesforce.com

CLOUD TECHNOLOGY PROVIDERS

"I want to extend and add value other providers' clouds"

RIGHTSCALE
Cloud Computing Delivered.

Corent
SMARTER SAAS NOW

CAST IRON SYSTEMS
An IBM Company

CLOUD INFRASTRUCTURE PROVIDERS

I want to build and operate a public cloud infrastructure (IaaS and PaaS)"

amazon web services™

iTricity
empowering your business

WUXI · CHINA
简体 · 繁體 · 日本語 · 한글

CLOUD SERVICES RESELLERS

"I want to resell a portfolio of public cloud services"

silanis

bluewolf™

LOGICALIS

CLOUD BUILDERS

"I want to help my clients to design, build, manage their private cloud"

MICRO STRATEGIES
People | Passion | Technology

Mainline™
INFORMATION SYSTEMS

FRITZ & MACZIOL group

CLOUD AGGREGATORS

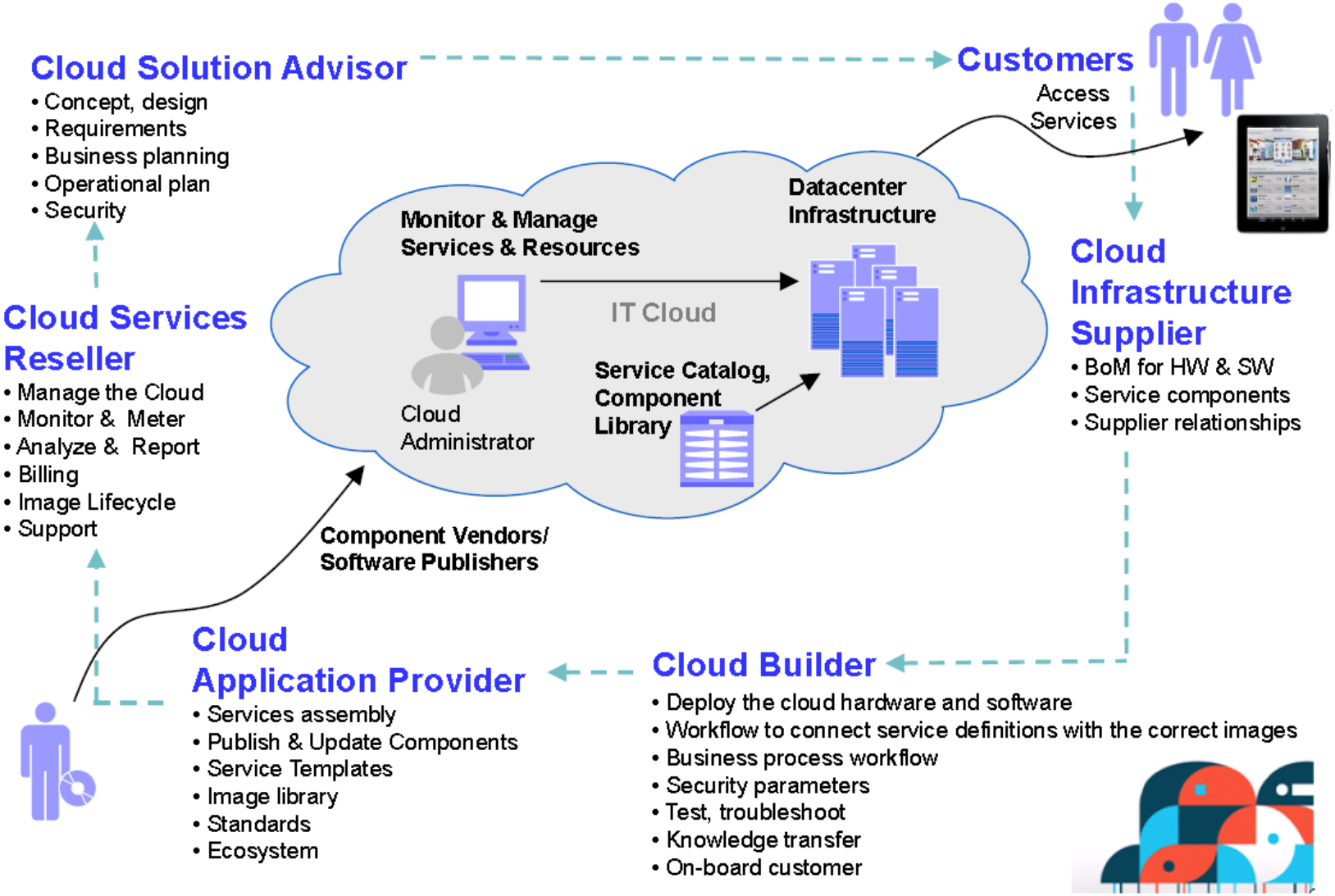
"I want to aggregate a portfolio of public cloud services for my clients "

Google™

jamcracker

GetApp.com

Cloud a role IT firem



Byznys a IT benefity jsou reálné…

Increasing speed and flexibility	Provisioning	Weeks	Minutes
	Change management	Months	Days/hours
	Release management	Weeks	Minutes
	Service access	Administered	Self-service
	Standardization	Complex	Reuse/share
Reducing costs	Metering/billing	Fixed cost	Variable cost
	Server/storage utilization	10–20%	70–90%
	Payback period	Years	Months

Bezpečnost v cloudu

People and identity
Mitigate the risks associated with user access to corporate resources

Data and information
Understand, deploy and properly test controls for access to and usage of sensitive data

Application and process
Help keep applications secure, protected from malicious or fraudulent use, and hardened against failure

Network, server and end point
Optimize service availability by mitigating risks to network components

Physical infrastructure
Provide actionable intelligence on the desired state of physical infrastructure security and make improvements

WebSphere Cloudburst

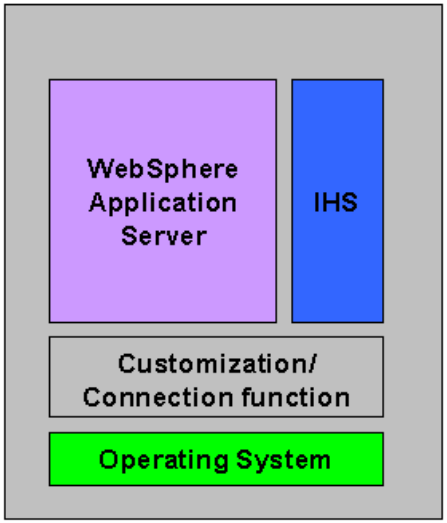
1) WebSphere CloudBurst Appliance (hardware)

2) CloudBurst dispenses WebSphere Application Server Hypervisor Edition Servers into a set of other machines

1) User requests WebSphere Application Server Hypervisor Edition Environment to be dispensed

3) User can access WebSphere Application Server Hypervisor Edition Servers (Virtual Image)

2) WAS Hypervisor (Virtual Image-software)



The WebSphere CloudBurst appliance dispenses these virtual images into a private cloud

Adopce cloudu bude „worload-driven“

Private

Public

OWNERSHIP & CONTROL

ECONOMIES OF SCALE

Top private workloads

- Data mining, text mining, or other analytics
- Security
- Data warehouses or data marts
- Business continuity and disaster recovery
- Test environment infrastructure
- Long-term data archiving/preservation
- Transactional databases
- Industry-specific applications
- ERP applications

Top public workloads

- Audio/video/Web conferencing
- Service help desk
- Infrastructure for training and demonstration
- WAN capacity, VOIP Infrastructure
- Desktop
- Test environment infrastructure
- Storage
- Data center network capacity
- Server

Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

Four main Cloud Service categories

Industry-specific Processes | Employee Benefits Mgmt. | Business Travel | Procurement | Smart Business Expense Reporting on the IBM Cloud

Business Process as a Service (BPaaS)

Fidelity.com · IBM · northgate INFORMATION SOLUTIONS · ADP

Collaboration | CRM/ERP/HR | Business Processes | LotusLive www.lotuslive.com | Industry Applications

Software as a Service (SaaS)

salesforce.com Success. Not Software. · Constant Contact · RIGHT NOW TECHNOLOGIES · Google Docs BETA · NETSUITE · IBM · workday · Descartes HELPING CUSTOMERS DELIVER™ · ORACLE

Middleware | Web 2.0 Application Runtime | Java Runtime | Database | Development Tooling | IBM Development & Test Cloud

Platform as a Service (PaaS)

force.com platform as a service · Archer · Google · Engine Yard · db FLEX · LONGJUMP · intuit · IBM · BUNGEEconnect · Rollbase Roll your own business apps

Servers | Networking | Data Center Fabric | Storage

Shared virtualized, dynamic provisioning | IBM Computing on Demand

Infrastructure as a Service (IaaS)

OpSource The SaaS Experts · rackspace · vmware V-Cloud · amazon webservices™ · IBM · MOSSO the hosting cloud · EMC² where information lives · terremark · UNISYS imagine it. done. · Microsoft

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