

Workshop 4

How to design an effective benchmarking for public and private Cloud Infrastructure as a Service (IaaS)?



CIO AICA Forum

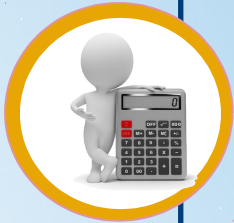


CIOs need constantly to **evaluate the adequacy of ICT spending** compared to their stakeholders, and to monitor how management choices reflect on basic KPIs over time



Traditional benchmarks and surveys focus mainly on ICT expenditure levels, but they seldom reveal whether the company is **spending properly** in relation with its **operating framework** (technological pervasiveness and complexity)

A different approach in ICT expenditure analysis is therefore needed



CIO AICA Forum developed last year an **experimental, tailored benchmark model**, covering main ICT process areas



The goal of this workshop is to **share with you** the structure of the model and to **build together** a new benchmark area for **Cloud Infrastructure Compute Services (IaaS)**

Our work could be the first step for the preparation of a EuroCIO benchmark initiative

Introduction

Sharing experiences (11:30 - 11:50)

AICA benchmark model

Discussion and topics selection

Let's start

Break out & feed back sessions

Preparation of synthesis paper

○ What kind of ICT benchmark did you experience?

○ What did you get out of it, what kind of conclusions, consequences ?

○ What might be an important question to be answered by our workshop?

Introduction

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AICA benchmark model (11:50 -12:05)

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ICT spending breakdown by processes and management areas

Evaluation and choice of adequacy analysis meaningful for each area

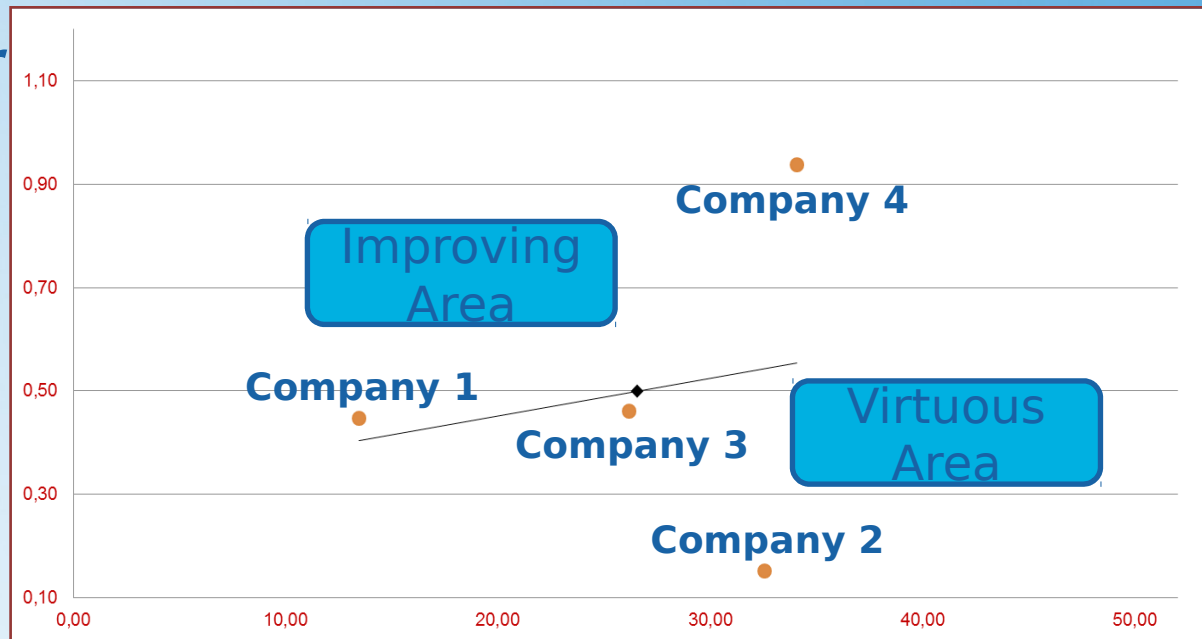
KPIs definition for each analysis:

- Cause-effect principle
- Managerial experience
- Data dictionary

Methodological approach: the scatter chart results

Process X - Volume or Cost Adequacy Analysis

**Primary
KPI**



**Framework
synthetic
KPI**

According to the model, companies positioned “close to” the average values of the benchmark panel (the line in the chart) have volume/expenditure levels considered adequate

Methodological approach: investigated areas

Process	Area	Volume analysis	Cost analysis
Operations	Server	±H	±H
	Storage	±H	
	End User devices	(±H)	±H
	Network (LAN, WAN, MAN)	±H	±H
	Security	±H	
80 KPIs, 25 correlation analysis, Data Dictionary			
Development	Application	±H	±H
	IT Infrastructure	±H	

Features that make CIO AICA Forum benchmark different

- It breaks the rules**, as ICT expenditure is analyzed in relative terms (“Am I spending right considering my operational framework?”)
- It’s the CIO’s benchmark**, because it has been developed by a multi-company team, based on CIOs’ needs
- It’s a social tool**, because results allow comparison and sharing of best practices among CIOs
- It’s an open model**, because each CIO can help to develop the model, suggesting new KPIs and analysis

An example: Server Management Volume Analysis

Primary KPI	Description
Y = Average Cores per Application User	Company computational capacity (metric independent from technology or architectural strategy)
Framework KPIs	Description
X1 = Average Applications per Application User (on premise)	“Size” of application portfolio on premise, linked to the request of raw computational capacity
X2 = Percentage of Applications in Disaster Recovery	Need for additional cores for DR services
X3 = Percentage of HA Cores	Need for additional cores for physical high availability architecture
X4 = Average Landscapes per Application	Landscapes or environments managed for each application

Primary KPI	Description
Y = Average Management Cost per Server (physical & virtual)	Server management costs: labour cost, services, HW maintenance, SW maintenance
Framework KPIs	Description
X1 = Percentage of physical Servers on total Servers	Efficiency related to the degree of virtualization implemented
X2 = Weekly average extra time support hours per Server	Proxy for Contractual Service Level
X3 = Average FTE per Server (weighted by total weekly support hours)	Productivity of internal and external resources allocated server management activities

Introduction

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AICA benchmark model

Discussion and topics selection (12:05 - 12:25)

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Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.

This model is composed of five essential characteristics:

- ✓ *On demand self service*
- ✓ *Broad network access*
- ✓ *Resource pooling*
- ✓ *Rapid elasticity*
- ✓ *Measured service*

Source: National Institute of Standards and Technology (NIST), September 2011

○ Capability provided to the consumer **to provision processing, storage, networks, and other fundamental computing resources** where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls)

Source: National Institute of Standards and Technology (NIST), September 2011

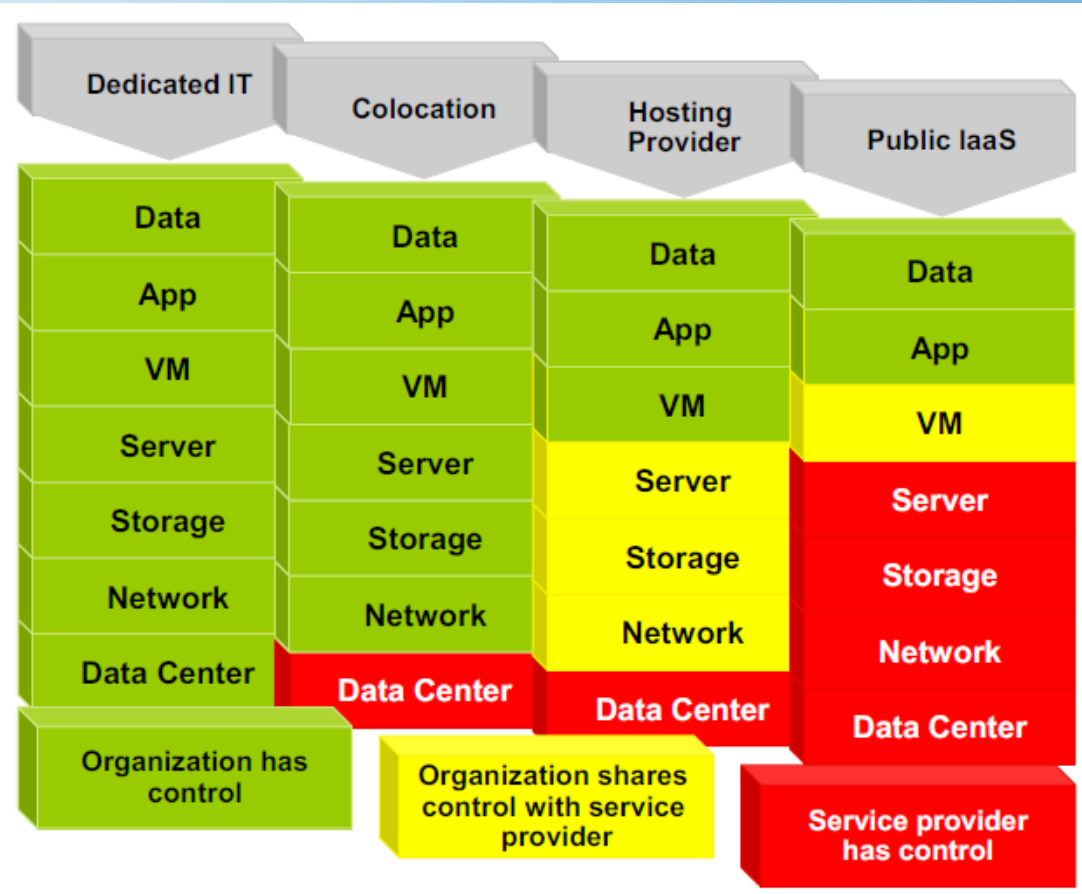
Private & Public Cloud Deployment models

Private Cloud: the cloud infrastructure is provisioned for **exclusive use by a single organization** comprising multiple consumers (e.g. business units). It may be owned, managed, and operated by the organization, a third party, or some combination of them, and it may exist on or off premises.

Public Cloud: The cloud infrastructure is provisioned for **open use by the general public**. It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them. It exists on the premises of the cloud provider.

Source: National Institute of Standards and Technology (NIST), September 2011

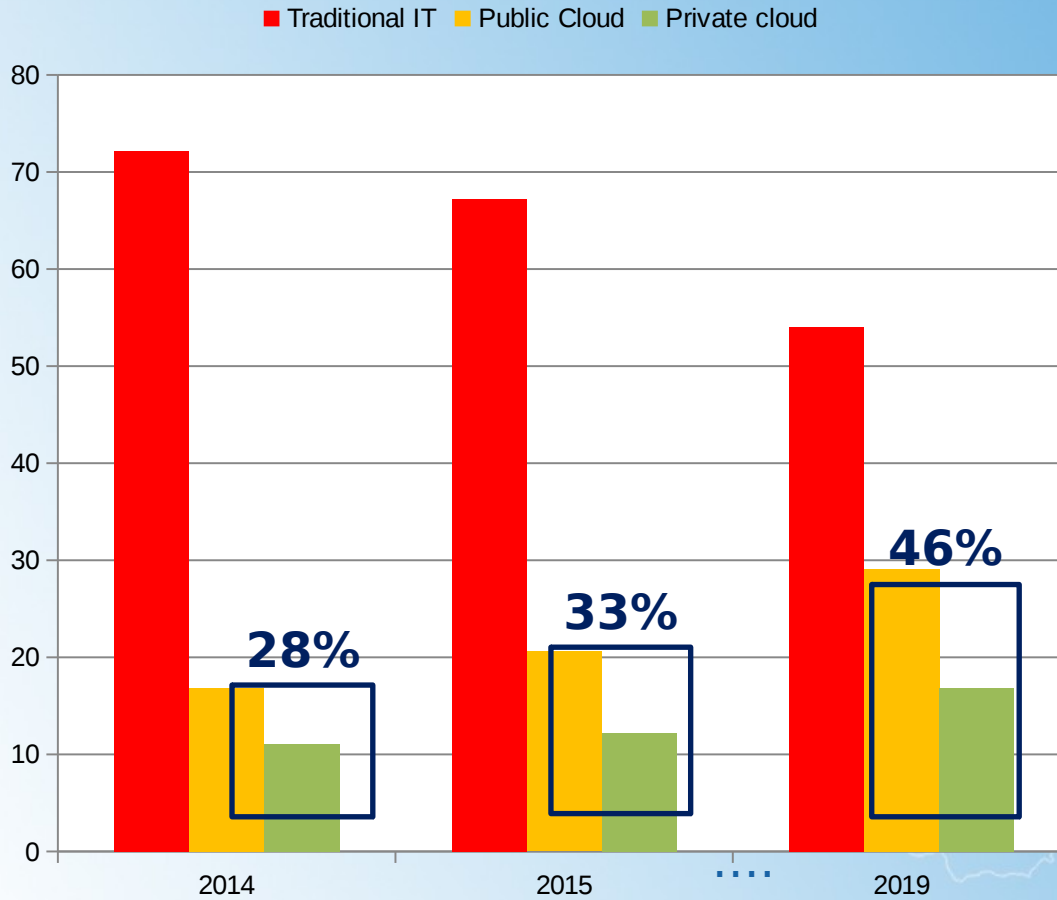
How Third-Party Infrastructure Services Compare with Traditional On-Premises IT



In Public IaaS the service provider is responsible for operating the virtualization management and the hypervisor layer. However, the subscriber is normally responsible for everything at the OS layer and above

Source: Gartner, July 2015

Worldwide Cloud IT Infrastructure Market Forecasts (b\$)



2015/2014 Forecast


Traditional IT -1,6%
 Public Cloud +29,6%
 Private Cloud +15,8%

CAGR 2015/2019

Traditional IT -1,7%
 Public Cloud +16,3%
 Private Cloud +13,2%

Source: IDC Worldwide Quarterly Cloud IT Infrastructure Tracker Q2 2015

Let's try to shape a NEW benchmark model for Cloud IaaS

Process	Area	Volume analysis	Cost analysis
Operations 	<i>Server Management</i>	↑H	↑H
Cloud IaaS (compute serv.)	↑H	↑H	
Storage	↑H	↑H	
End User devices	(↑H)	↑H	
Network (LAN, WAN, MAN)	↑H	↑H	
Security		↑H	
Application	↑H	↑H	
Development	Application		↑H

- Up to what point the presented model and its application to IaaS services may meet our and EuroCIO needs?
- Could it allow any comparison between traditional IT infrastructural organization vs Cloud services?
- If we all agree that this work is valuable, what do we have to do and how are we going to do it?
- What will be still open even if we achieve our goal?

Topics to be tackled in the afternoon

○ Define new Public Cloud IaaS benchmark model, made up of:

- ✓ Computational resources volume analysis
- ✓ Computational resources cost analysis

both made up of a primary KPI and related framework KPIs

○ Evaluate if the new model should be differentiated for Private Cloud and if any adjustment to Server Management model is needed to allow cross comparisons