

Discussion on cost evaluation process

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Introduction

- Presentation this morning
 - Objectives of cost assessment exercise on an example use case
 - Data gathered so far from some sites
- What to do now & how ?
- What to include in infrastructure cost ?

What to do now ?

- Gather more feedback from sites
 - → who pays what ?
 - Power, network
 - Take the numbers carefully
 - Make statistics ~ average/deviations
- Dig deeper into use case profile descriptions

What is a cost ?

- Hardware cost
 - Licence
 - Maintenance (?)
 - Server, rack, switch
 - Memory
- Power cost
 - Energy needed to run my application
 - Cooling not « free » everywhere
- Infrastructure
 - I paid for a computing room to host my resources
 - My routers are very expensive ones
- Manpower ?

We must agree on the definitions and decide what we are talking about

What about performance ?

- We talk about HS06 and Tbytes
- HS06
 - How efficient my CPU is to make my computation
- Tbytes
 - How much my servers can store
 - → but how efficient are they to deliver the data ?
 - And tape system ? :-)

Marginal cost (1st approach)

- I don't change ~ anything in my infrastructure
- → what is the cost to add capacity X for a given time ?

- Is that the way to prepare for RUN 4 ?

- Large capacities to deploy
- On the long run, think more globally

Common spreadsheet

CONSTANTS	seconds per year	hours per year	seconds per hour	TB -> GB	kW -> W
	31536000 s / y	8760 h / y	3600 s	1000 GB / TB	1000 W / kW
APPLICATION PROFILE	normalised CPU time	storage need			
	8000000 HS06.s	6,7 GB.y			
SITE INPUT DATA	name	Site A	Site B	Site C	Site D
	CPU cost	8 EUR / HS06			
	CPU consumption	1,3 W / HS06			
	CPU lifetime	5 y			
	CPU price drop	-20,0 % / y			
	Disk cost	80 EUR / TB			
	Disk consumption	12,0 W / TB			
	Disk lifetime	5 y			
	Disk price drop	-15,0 % / y			
	Power cost	0,08 EUR / kWh			
Datacentre PUE	1				
COSTS OF RUNNING THE APPLICATION	CPU hardware	0,39 EUR			
	Disk hardware	0,11 EUR			
	CPU power cost	0,23 EUR			
	Disk power cost	0,06 EUR			
COSTS FOR CAPACITY REPLACEMENT	CPU hardware	0,19 EUR			
	Disk hardware	0,09 EUR			
FINAL COSTS	CPU hardware	0,58 EUR			
	Disk hardware	0,19 EUR			
	CPU power cost	0,23 EUR			
	Disk power cost	0,06 EUR			
	Total CPU	0,81 EUR			
Total Disk	0,25 EUR				

GBP -> EUR	USD -> EUR	CHF -> EUR
1,14	0,81	0,85

<https://goo.gl/ZtigK>
(there is a trick here)

From a site perspective

- Yearly budget, yearly purchases → yearly cost
- Application needs to runs for 5 years
 - But my hardware life time is 4 years, what should I pay ? → yearly cost
- Price evolution seems to slow down → replacement budget is significant
 - Site is a mix of different machine types, some older than others
 - → Has to be accounted for

There are formulas to modelize infrastructure costs in an ~analytical way
(yearly costs)

Putting the right parameters is our job now