Introduction

The only cloud spend monitor that makes sense

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by Gijs in' t Veld

Table of Contents

1 Introduction

Since the introduction of public cloud computing more than 10 years ago it has been widely adopted by a majority of organizations. Microsoft, Amazon and Google (the cloud "mega vendors") are signing up new customers to their public clouds every day and it's not a matter of *if*, but *when* your IT workloads will move to the cloud. Because of its scale, agility, simplicity and security. You shouldn't have to worry about all this.

It however brings significant new challenges to managing and monitoring your cloud infrastructure and the resources deployed, especially when it comes to spend and the efficient use of those resources. You pay for what you use, but you will have to make sure that you don't use too much. After all, you'll have to make sure that your cloud ROI is positive!

1.1 The state of public cloud usage

According to the analysis by Gartner, Inc[1], "Worldwide end-user spending on public cloud services in 2025 is expected to exceed $700 billion.".

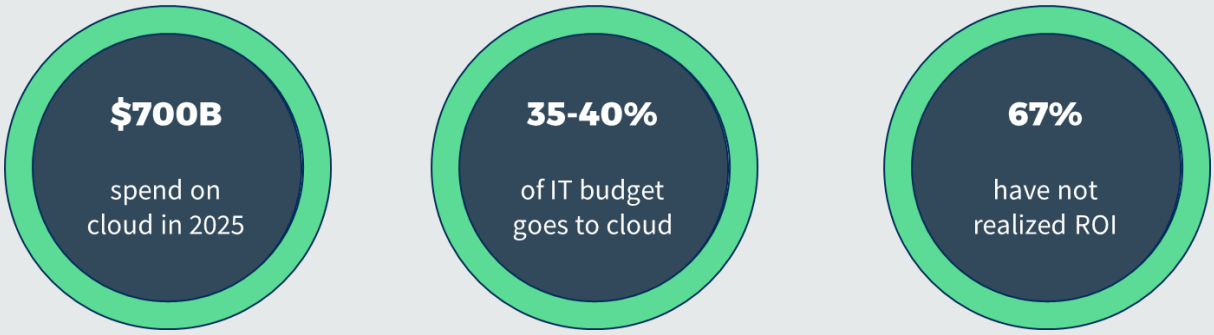
The vast majority of this is spent on the three most used cloud service types:

- IaaS (infrastructure-as-a-service);
- PaaS (platform-as-a-service); and
- SaaS (software-as-a-service).

According to the same analyst, currently 35-40% of IT spend goes to public cloud services. This is expected to grow in 2025.

Most small to medium sized businesses spend between $1M and $10M yearly on the public cloud. Enterprises spend roughly between $10M and $50M per year on it. And you will be surprised that 16% of organizations spend more than $50M yearly, including some that even spend more than $1B.

A survey by KPMG[2] shows that most organizations are struggling with the ROI on public cloud usage. 80% of organizations say their transition to the cloud has been successful, but 67% also say that they have yet to realize substantial ROI from their cloud investments.



Lots of cloud migrations are still focusing on lift-and-shift (moving virtual machines from your on-premises or hosted datacenter to the public cloud), mainly because re-architecting your solutions is very time consuming, risky and expensive. In a few decades from now, the use of virtual machines that simply host your custom developed applications will probably have diminished. But for the foreseeable future, it is the reality that only newly developed applications will use native cloud services, such as PaaS. The only problem with that, is that these PaaS services are highly proprietary per cloud supplier and can therefore not, or not easily be migrated to other clouds. Hence the rapid growth of container based solutions, which are more portable. But containers basically still are IaaS. While PaaS based solutions make more effective use of shared resources provided by

[1] https://www.gartner.com/en/newsroom/press-releases/2024-11-19-gartner-forecasts-worldwide-public-cloud-end-user-spending-to-total-723-billion-dollars-in-2025
[2] https://info.kpmg.us/news-perspectives/technology-innovation/kpmg-2022-technology-survey.html

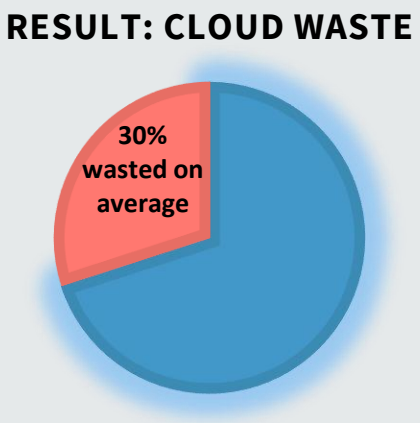
the cloud suppliers, virtual machines and containers are dedicated to your organization and therefore less cost-effective.

This means that **getting in control of your cloud spend is in the top 3 issues CIOs are facing**. This will probably not change in the foreseeable future either.

1.2 The state of public cloud spend

One of the biggest motivations for moving to the cloud was, and probably still is, saving costs. But once most of the workloads run in the cloud, the biggest challenge seems to be keeping the cloud spend under control. There are many reasons for this:

- The cloud providers such as Microsoft, Amazon and Google continuously evolve;
- Organizations continuously migrate workloads to the cloud and develop and deploy new solutions in the cloud;
- There is **no focus on cost control** because the IT department is fully focused on keeping things up-and-running and delivering new features as per business request;
- Pricing of cloud resources is not very transparent and very complex. For example, every single resource type you can deploy in Microsoft Azure (more than 300 already) has its own parameters for determining the monthly cost;
- There is a **general lack of insight**. The cloud providers give lots of detail on every resource deployed, but nobody fully understands that or has the time to analyze it;
- Architects are having a hard time understanding both the technical ins and outs and the pricing details of the enormous list of cloud resource types;
- It's so easy to spin up new services in the cloud and it's not clear that some services are **redundant**;
- Developers tend to spin up services in non-production environments that are **oversized** and not controlled. Lots of **waste** can be found in non-production environments;
- You pay for usage of cloud resources, but lots of resources are **not used 24/7** and some **are not used at all (anymore)**;
- The is no cloud cost owner. **It has no business priority**.



This is why we started Nubovi. We will help organizations with gaining business level insights in cloud spend and help them tackle overspend issues.

2 Cloud spend challenges

There are many reasons why staying in control of cloud spend is challenging. Nubovi takes every effort to make that easier. Just keep on reading and you will find out how we do that.

2.1 Most common cloud overspend issues

The following are the most important cloud overspend issues:

- No awareness of savings opportunities
- Oversized solutions
- Wrong cloud resources
- Zombie services
- 24/7 services not used 24/7
- Resources that are not used anymore
- Redundant cloud resources
- Old versions of cloud resources
- Not making the best use of shared cloud services
- No insight in optimal use of reserved capacity

The IT department is typically spending most of its time on keeping the environment up-and-running and building new features requested by the business. There is no focus on cloud spend or waste. Because there is simply no time, or focus.

When developer time is scarce, and pushing out features as fast as possible is the highest priority, business leaders can choose to allow the following things that are terrible for cloud spend:

- Developers ignore annoying administrative tasks, like **rightsizing the infrastructure or turning off resources that are not in active use**;
- **Architects choose suboptimal designs** that are easier and faster to implement, but which will cost more to run and are more difficult to maintain;
- Developers implement crude algorithms and inefficient solutions in order to more rapidly deliver a feature, **without thinking about performance optimizations that would result in less resource consumption**;
- Developers ignore implementing support for more **efficient consumption patterns**, such as autoscaling;
- Developers skip implementing deployment automation that would make it easier to **automatically rightsize** — potentially compounded by implementing the application in ways that are fragile and make it too risky and effortful to manually rightsize;
- It is **easier to just migrate a virtual machine or container** to the public cloud as-is, without taking the time to re-architect the solution to use cloud native, shared PaaS services.

As a result, the main reasons for cloud waste therefore are:

- **Developers pushed to release features** – no focus on cost effectiveness
- **Ungoverned costs** – there is no insight
- **Unanticipated usage** – you are more successful than anticipated
- **No commitments** – buying longer term commits can be cost saving
- **Dev/Test waste** – developers tend to use the biggest and most expensive
- **Suboptimal architecture designs** – wrong (too expensive) services implemented
- **Too much production headroom** – the parameters for scaling are not good
- **Wrong-sizing production** – production is not autoscaled and oversized
- **Not making optimal use of shared cloud resources** – too much IaaS, dedicated to you only

Example: by simply migrating a Virtual Machine that has been running for 2 years or more to a newer version with the exact same CPU, Memory and Disk specs can save you 70% of the cost. For an average machine that already saves you $300 per month. For one machine.

2.2 Cloud spend as a business priority

There is always that dilemma for every business owner: **time-to-market versus efficiency**. Getting to the market quickly, will get your business up-and-running quickly. Without focusing on the efficiency of your IT solutions though, the operational cost will be much higher than expected. This will decrease your margins. At the same time, errors made during the architecture phase of software development are often more expensive than errors made during later stages. It is very difficult to change architecture when your solution is already half or even completely built. So, think hard before you have your development team start building a solution.

Every organization also has to deal with legacy architecture and solutions. Most business processes comprise of multiple, connected software solutions. Some of them modern, some of them pure legacy. Some of them running in the public cloud, built using PaaS services, some of them running as monoliths on servers and some of them using multi-tier architecture. It's just a mix we all have to deal with.

When migrating to the cloud, tough decisions have to be made. Your current hosting provider seems too expensive and not very agile, the public cloud providers can provide lower cost because of their sheer scale and at the same time you want to modernize your legacy applications. But you cannot do it all at once. IT people are scarce. And most of them want to work with modern tools.

Cloud providers will try to push you to use their cloud native PaaS services to build your solutions. But what is often overlooked is that you will get locked into their proprietary services. Because there are no standards these services have been built on. It is for example not easy to migrate an Azure Logic App to AWS AppSync or the other way around!

And although the time-to-market for solutions will be shorter and the operational costs will be lower when using these proprietary PaaS services, the risk is vendor lock-in. Not to mention that the re-architecting of your solutions to a set of combined PaaS services will cost you a lot of effort and money.

That's why many organizations use virtual machines in the cloud. And why containers are increasingly popular. First of all, you can use traditional development skills to build solutions with these. And secondly, you can easily port them between environments. From on-premises to private or public cloud, and to other clouds. You are fully in control.

So, what to do?

First of all, you need to get insights! Preferably before your products are built or migrated. Solution architects need to provide you with the details about operational costs when scaling from a thousand to tens of thousands of web orders per day. That's a tough cookie to crack. That's something that you, as a business leader, should give priority to, even before thinking about functionalities. You want to keep your cloud spend per web order as low as possible.

Then, when your solutions are up-and-running, you still need to have continuous insights. Are the cloud resources deployed for your solutions or business processes efficiently used? Are the right resources still used? Can you stay in control when your business evolves? This is where Nubovi comes in. We will help you

monitor this continuously. Automatically learning from your organization, your peers and from your cloud provider. Because clouds constantly evolve; what is true this year, often changes the next year.

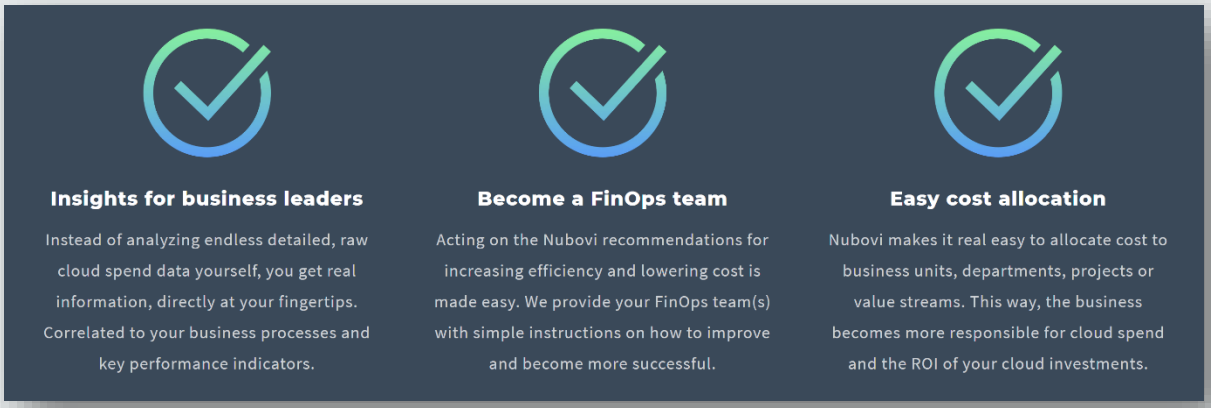
The most important lesson here? Not only think about features and time-to-market (which are of course very important to your business), but also consider resource efficiency and thus potential cloud overspend. Some of it can be fixed during architecture, design and development, some of it during operations. Business leaders should pay attention to that, and sometimes need to give a higher priority to the non-functional aspects of their solutions than to the functional features. A good balance is needed!

3 How Nubovi will help

Transparency is key when it comes to monitoring your cloud spend. We often see that the way cloud environments and their resources are set up doesn't provide a good insight in what the resources are actually used for, to what business unit or process they are allocated. It's also hard to get the right insights using the tools provided by the cloud suppliers, but what makes it even more challenging is that IT organizations just have a fixed yearly IT budget and most of the resources are just seen as a "shared service". It also does not help that the available monitoring tools are very technical. And even the technology specialists have a hard time understanding the data presented. It's very hard to stay in control like that.

3.1 The value we deliver

Nubovi helps with both allocating cloud resources to business processes and making insights easily understandable. We focus on delivering real value to your business. So that your organization will show better results from cloud usage. By improving the efficiency of your cloud resources you will be able to improve your cloud ROI. The core value we deliver focuses on these 3 areas:



We can even correlate your cloud operations to business KPIs, such as revenues, profits and number and value of business transactions. At the same time we transform the raw pricing and usage data of cloud resources into actionable information. The models we use to do that are self-learning. They learn from your organization, your peers in the same industry and the cloud providers. Because all of these never stay the same. They are continuously evolving. And to stay on top of these continuous changes takes a lot of time and effort as well. We just take care of that for you, automatically! How do we differentiate from our peers? Here's the top 3:

We deliver the promised value by providing the following innovative features:

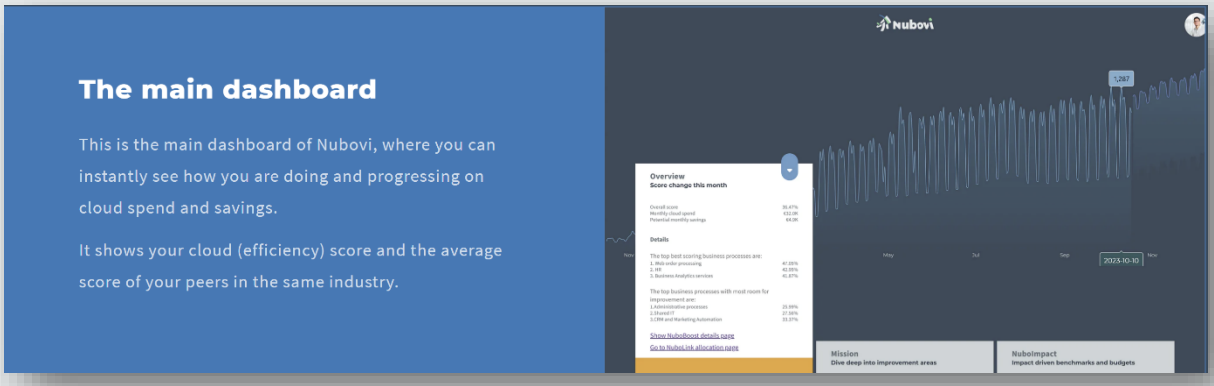
Please read on to find out how these features help you gain control and stay in control of your cloud spend.

3.2 The Nubovi dashboard

Nubovi provides its service through a simple dashboard:

- Targeted at the CFO, CIO and **business leaders**
- Only **a few easy to understand controls**
- Built on **standard** cloud supplier frameworks
- **Using AI** to show **insights** instead of raw usage data
- Correlated to **business processes** and even **business KPIs**
- Making use of anonymized data of other users to **improve results** and gain better insight in **healthiness**
- Looking into the future; **we predict future cloud spend and potential savings**
- Delivered as a **SaaS solution**
- Through a **Secure** read-only connection to your cloud
- Help IT with simple insights and actions to **fix the spend issues** by implementing our automated recommendations

The first thing you will see when opening your Nubovi dashboard, is an overview of how your organization is doing when it comes to cloud spend. We use the score indicator for that. The higher your score, the more efficiently you use your cloud resources. It is basically a cloud efficiency score. We call that **NuboScore**.



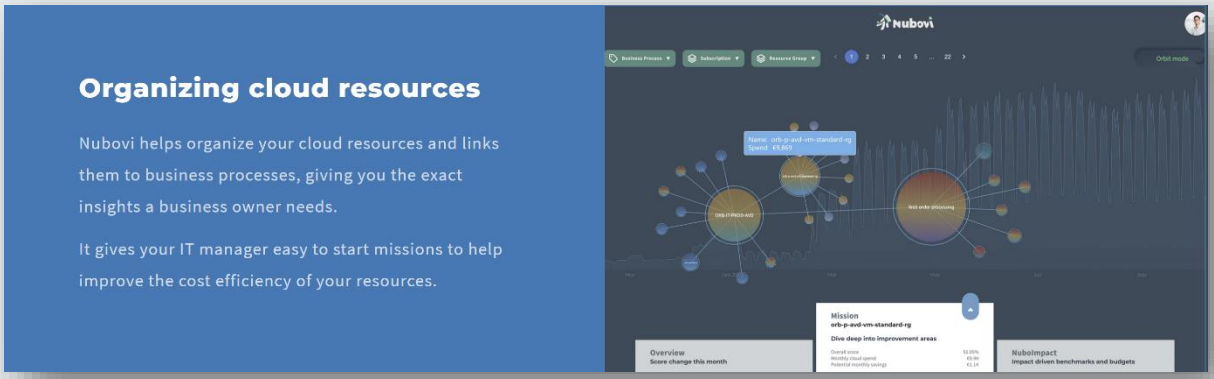
And we will show how your business evolves over time, so you can see how you performed in the past and how you will probably perform in the near future, based on our prediction models. This is called **NuboPredict**.

Because Nubovi is a SaaS service, and during onboarding you have selected the industry your organization is operating in, we can show you how your peers are doing as well. Depending on the results, this will give your CFO an immediate good feeling (“we are doing okay!”) or it will be the trigger to drill down more and helps your IT manager start missions to identify opportunities and fix overspend issues. We call this **NuboBoost**.

3.1 Cloud spend per business process

By using our features you can easily allocate cloud resources to business processes, so you can see exactly how each business process is doing when it comes to cloud spend and potential cost savings. In the example below, the business process “Web orders” is shown in the middle, with the cloud resource groups belonging to it shown as satellites, each having their own set of resources. The colors of the resource groups and the resources belonging to it, show how they are scoring. That makes it easy to identify possible improvements.

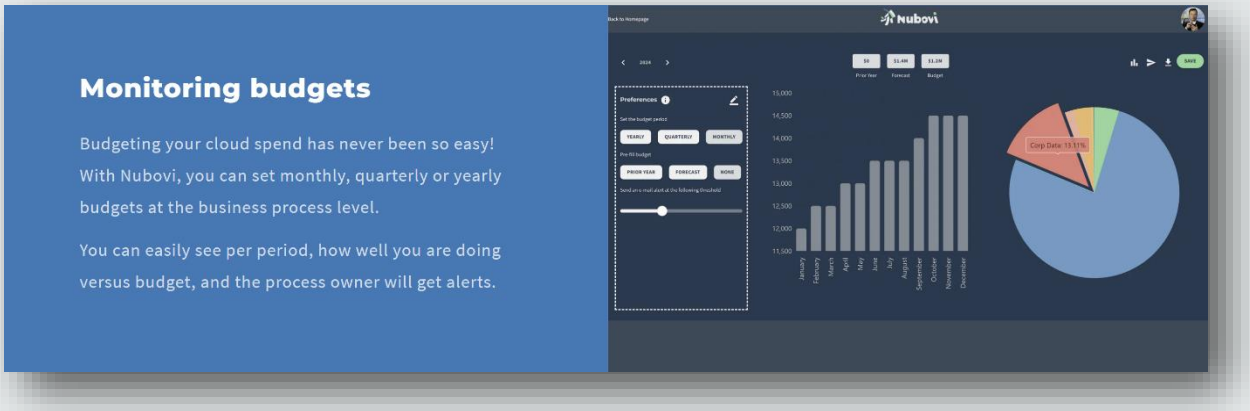
Within your cloud, the admins have probably setup some tagging on resources and resource groups to help them organize. Usually, these tags are either very technical or they are used to indicate for example a cost center. This information typically shows up on your cloud bill provided by your cloud supplier. It is very hard to maintain these tags and most of the times they are not very useful. Plus, making sense of your cloud bill correlated to these tags is a tedious job. Nubovi makes life easier, so that you can easily allocate cloud resources to business processes.



We add that extra layer of “business processes” to the topology. By just graphically linking resource groups or complete subscriptions to business processes we can provide you with that extra insight. This is typically a task executed by the business owners sitting down with the IT manager or cloud admin. The system helps you do that as quickly and efficiently as possible, making use of already existing tags. We call this **NuboLink**.

We will also keep track of the health of your tagging. Because your organization will continuously keep on adding resources to your cloud subscriptions, this is not a one-time task. So depending on the tagging health, you once in a while have to revisit this page to improve the tags and hence improve your cloud spend insights related to business processes.

NuboBudget is used to allocate budgets at the business level, so that you can see the progress on your cloud spend compared to your budgets per business process, and you will get alerts.



Nubovi gives you “missions” to be accomplished when it comes to improving your cloud spend. We provide you with all the actionable details that you need to help your IT manager improve the efficiency of your cloud solutions.

We can even provide you with a dashboard that shows the correlation between your primary business KPIs and the cloud spend. This gives you insights like cloud spend per web order, or cloud spend per active insurance policy. This is called **NuboImpact**.

4 About Nubovi and the author

Nubovi makes cloud spend monitoring and management easy. Our dashboards, with only a few controls on it, can be used by business leaders, CFOs and CIOs to allocate spend to value streams or business processes and help create budgets based on forecasts, and at the same time helps IT managers improve cost efficiency. Through the use of AI, we automatically transform raw usage data into actionable information. Additionally, we automatically keep track of the latest updates from your cloud providers, relieving you of that concern. We do all that to help you become more successful, sustainable and decrease your IT eco footprint.

Gijs in 't Veld | CEO

Gijs started Nubovi in January 2022, together with Derrick Bakhuis (CTO). Before that he was the co-founder and CTO at the Microsoft SI Partner Motion10 (2008-2021) and prior to that he was the co-founder and CTO at the B2B integration software company Covast (1995-2007). He has helped many organizations with their cloud strategy and ROI.

gijs@nubovi.com

www.twitter.com/nubioviofficial

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