

Densify Cloud Optimisation & Automation: Right-sizing The Cloud Put To The Test

A Broadband-Testing Report



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EXECUTIVE SUMMARY

- The public cloud has much to offer businesses of all sizes in terms of building their business apps in the cloud, or migrating part, or all, of their IT infrastructure from existing OnPrem environments, but getting it right is anything but trivial.
- For businesses that have moved all, or part of their business, to their cloud, it is all too easy to assume the cloud will prove both optimal for simplifying day-to-day administration, and in terms of cost savings, but this would be a very dangerous assumption to make. Equally, there are many, very high-profile companies Digital Service Providers (DSPs) whose business is completely cloud-based; Netflix being such an example. The reality is that Cloud Service Providers (CSPs) can offer such a vast array of options that selecting the right resources for the applications let alone the right CSP can be complex, time-consuming and costly; potentially self-defeating, in other words.
- More to the point, this is not a one-time scenario, but an ongoing requirement from DevOps through technical, to data admin and beyond – that needs continuous adjustment and optimisation which is arguably beyond the reasonable capabilities (in a cost-effective way) of a cloud admin team. And, as more cloudnative applications appear, so that requirement increasingly becomes "the norm".
- There are tools available that assist with the basic differentials between CSP offerings, but are ultimately purely advisory, meaning that the cloud teams still have significant work to do and decisions to make time after time. Densify has grasped the limitations of such an approach and has levelled the playing field by automating the management of cloud resource selection, using AI in the form of what it calls Cloe (Cloud-Learning Optimisation Engine).
- Densify analyses requirements in terms of every aspect of compute resource and cloud options and then selects the best fit in each case. In this way, under or over-engineering is avoided and – with that efficiency – comes the anticipated cost-savings IT expects (or even demands) when running applications in the cloud.
- Infrastructure as code (IaC) tools such as Terraform and AWS CloudFormation are used to simplify and automate the process of managing and provisioning infrastructure, but result in hard-coded requirements/changes which are both restrictive and costly and often simply wrong. Densify over-rides these hard-coded entries with a link to Cloe, so all is then automated in some cases using just one line of code.
- Importantly, Densify has grasped that for some businesses, running their applications purely in the public cloud is not the only scenario, but that the hybrid cloud (OnPrem & public cloud) approach is preferred – or is simply essential – for many companies.
- It therefore fully supports a hybrid environment, so that users can continue to work in this mode, or migrate to the public cloud over whatever timespan they choose.

Fully automating cloud migration and management has two fundamental benefits that make it a potential "no brainer"; first and foremost, it hugely assists IT in getting the right application performance and reliability results – optimised, efficient, instant... and secondly it rewards the CFO retrospectively in terms of the cost savings attained.

THE NON-TRIVIAL TASK OF MOVING TO THE CLOUD

Ah – the public cloud; latest and greatest incarnation of outsourcing in its broadest definition, and the resolution of all IT head scratching over future deployments and strategy?

If only it were that simple. Not only is the starting point very different from one IT department to the next, in terms of what's virtualised and what is it running on, albeit most likely VMware - but so is the potential endgame too, in terms of which CSP, or combination thereof, is the best fit. Or even within the realms of one CSP, such as AWS, what are the best options – the best fit – today, tomorrow, next week, next year...?

As one sage IT professional commented recently: "AWS – easy to get into, very difficult to get out of", as he looked at his company's cloud costs rising in dramatic (and seemingly unmanageable) fashion. And then there's the "what stays OnPrem and what goes into the cloud?" discussion to be had too. And what resource fit is best – storage, compute, access...?



Figure 1 – Matching Applications To The Cloud

The reality is, IT never truly becomes simplified, just different. A callous outsider might suggest that this is how to keep everyone in a job, but the reality is that demands and requirements change. The IT world changes; look at the nature of the applications now commonly used by the masses, within and outside of the work space, compared with those during the 90s, for example – they are unrecognisable. Think "big data" versus "transaction processing".

Think also how users are accessing those applications or, indeed, apps now, compared to 10, or even five years ago. Capacity planning within IT has never been straightforward, at least not since the advent of PC networks, but as we rapidly move towards the next decade, never has the landscape been more complex to manage. That IS the reality.

Hence the attraction of the public cloud – how to shift a massive IT workload onto the shoulders of someone else, albeit paying for the privilege. The early worries of security issues within that public space are surely over – is anyone really still suggesting that the likes of AWS don't have the best security available on the planet (and beyond)? No, the problem with public cloud is the sheer range of options available, and how to work out the best – and most cost-effective – fit, right now, later in the day, next week, next month, next year... and again and again, every time you add workloads, migrate applications, data, users...

To get an idea of just how complex the configuration and deployment scenario is, just consider the number of instance types and options within AWS' EC2 service: <u>https://aws.amazon.com/ec2/instance-types/</u> - it's mind-blowing. We worked out there are around 1.4m permutations available. And that's just one offering from one CSP.

Densify, the subject of this test report, believes that help is required – it might just have something there! – and that such help is at hand. Let us now look at what the company is offering as its cloud management lifesaver and how this works out, with a hands-on review.

DENSIFY – PRODUCT OVERVIEW

Densify describes itself as "an analytics service that makes your cloud self-optimising by continuously and perfectly matching your applications' demands to the optimal cloud supply". This is a pretty bold claim, but certainly the potential answer to many IT techs' prayers if it stands up to the test – see next section. Whether an existing cloud-based business, in hybrid mode, or moving to the cloud – in part of whole – means understanding the public cloud options, and being able to manage them. In other words, matching applications to required resource as accurately as possible. When a single application can run on over 600,000 permutations on AWS alone, that is a tough call for the IT team, especially when CSPs continue to evolve and change their offerings and pricing on an ongoing basis.

According to Gartner, cloud services can have a 35% underutilisation rate in the absence of effective management, as resources are oversized and left unused. Then, as an organisation grows in its use of public cloud infrastructure as a service (IaaS), its ability to monitor, manage, and optimise those resources in a cost-effective manner often fails to keep pace. The aim behind Densify, then, is to take this seemingly insurmountable – in human terms – problem and resolve it through automation, thereby minimising operational risk, suboptimal choices, application performance degradation and wasted IT budget. And, as an aside, you get to rejoice with the "IT hero" accolade...

Densify's solution is delivered as a cloud-based optimisation service, with the much overhyped 'machine-learning' at its heart. However, as we'll see in the hands-on section that follows, the software clearly is 'learning' about the user requirements and options.

In other words, it is pro-active and decision-making in its own right, rather than simply proffering analysed data for you to then apply to your own decision-making process, again and again, and again. In this sense it is very much a second generation tool. What could be described as the first generation of cloud recommendation tools are the 'bill readers'; basically, they evaluate relative CSP costs and display those relative costs so IT



can use that information as part of its decision-making process. While this provides a starting point, it has no interactive capabilities, so has no means of effecting under/over-capacity issues and real-time adjustment.

Optimisation is therefore not a reality with such tools, which is where Densify steps in. Being totally SaaS-based, there is no installation procedure as such, but a deployment process that is admirably brief – see next section – and then Densify can completely take over. The company claims its customers see typically a 40-80% improvement in efficiency across their cloud environments, in terms of application performance, reduced administration time and lower cloud costs. The service is driven from a single, browserbased user interface, so can be controlled from anywhere, as you would expect in this era of IT. It shows, in real-time, what the service is doing/has done, and what impact it is having on operations, including actual cost savings, as well as the efficiency improvements.



Figure 2 – The Densify Management UI

From a VM/hypervisor perspective, Densify's current focus is on VMware specifically. Pricing is based on per instance, per month, designed to be easy to calculate. Moreover, Densify auto-calculates the savings the software is making for you, so that job is taken care of too. An important point to make here is that one issue for companies well-versed in using VMware OnPrem is that, if they spin up an instance – even if it never gets used – there is no cost impact, other than potentially wasted resource. However, every time an instance is spun up in the cloud it costs – on an ongoing basis. This is a mind-set issue as much as anything else but, in reality, is another reason for the focus on optimisation = cost-reduction.

Cloe – Cloud-Learning Optimisation Engine

At the heart of Densify's optimisation engine is its Cloe technology (patented, for the record). This uses machine-learning to continuously model applications' utilisation patterns

and compare those models against a complete – and continuously updated - knowledge of offerings from CSPs, currently supported are AWS, Azure, GCP, IBM Cloud, and VMware for on-prem environments. By replacing fixed resource assignments in your infrastructure as code templates (Terraform, for example) with calls to reference Cloe's recommendations, it defines optimal instance types and sizes for each application and workload and can then automatically apply those requirements, in the form of tags for each cloud instance so you can see and run reports on what is out of place and need adjustment, or if permitted it can fully automate and make changes as required, in order to maintain the optimal state, 24x7.

It can also work directly with a service desk solution, generating tickets, so the whole process is incorporated within the rest of IT management, where the proper approvals are checked off before Densify makes the changes. Indeed, the aim is to link every IT element from DevOps through to finance, and all stops in between – so everyone benefits, the point of moving to the public cloud in the first place. Such is the reasoning behind the concept of optimisation as code: developers can embed it directly into their applications, so they are self-optimising. Cloud ops teams can provide API-based optimisation services to the application teams to extend efficiency, and finance benefits from cost reductions – the ultimate win-win scenario.

If you don't need it, don't spin it up. However, that decision is not trivial for an IT team under pressure to ensure resource is always available. Densify takes that decision-making process out of their hands and automates it. Let us now look at that automation process, as we go hands-on with the Densify solution, and see if it delivered on its promises...

DENSIFY HANDS ON

Densify provides a number of options for evaluating or getting a taste of the product.

From the home page of the Densify.com website, you can click on the 'START NOW' button, fill in your details and start a time-limited evaluation of the full product on any of the AWS, Google Cloud, MS Azure or VMware platforms. Following a confirmation/welcome email you are assigned a Densify consultant to assist with initial use of the product, then away you go.

As mentioned in the previous section, since the product is SaaS, there is no installation required in order to control and manage Densify; you simply access the product via a link provided by email. In order to optimise a given environment, the software needs to understand the specific working scenario, on a case by case basis – i.e. every customer is different. Typically, Densify analyses the previous 60 days data as a starting point to make recommendations on past behaviour, but this is very much case dependent. Visibility is the critical starting point here. If you can't see it, you can't optimise it – simple as that.

How The Automation Process Works

We've already noted that identifying the perfect cloud resources to match an application's demands is anything but trivial. While IaC tools such as Terraform can enable short-cuts in the process, the current scenario of hard-coding requirements is both fundamentally limiting and costly. There is no doubting that IaC simplifies and automates the process of

managing and provisioning infrastructure, but two issues are, firstly, that developers often have to resort to the "best estimate" approach, resulting in under or overprovisioning, or simply the wrong instance types. Secondly, these incorrect requirements become hard-coded through declarative IaC. So, even if you change the instance type and size on the fly, the instance will be kicked back to the original misconfiguration after every restart. It becomes a vicious circle, in other words, as in the AWS example below.



Figure 3 – Hard-coded IaC Replaced By Cloe-Coded IaC

What might – just possibly - be right one time only, becomes a fixed constant, even when it needs to be changed. This is what led to Densify's concept of automation through IaC – it describes that concept as "12 years in the making – one line of code". This might sound somewhat trite, but in reality, it works. Exactly how the automation is deployed will be different on a per case basis, depending on the orchestration in each company and how optimisation is scheduled, but the fundamentals are the same. By removing the hard-



coded instance type setting with a Cloe variable, that guesswork and rigid limitation is instantly removed. Now we have a single line of code that automatically generates machine readable codes for complete automation and self-optimisation – as opposed to either a fixed line of code that will be inaccurate (and costly) or enormous manhours of coding – and the inherent costs and timescales involved – to equate to what Cloe can generate. Let us now step through an example of Cloe in action:

Cloe In Action: Step By Step

1. Here we have an AWS console - four instances running in an EC2 environment in a Data Centre (DC) in Ohio. The issue is that the applications are not aware of their resource requirements and are therefore potentially running on the wrong resources, creating wasted resource/cost as well as potential performance issues.



Figure 4 – Four Instances In Ohio Wrongly Resourced

2. So we run a tagger across the Densify API that will identify the correct instance type/size.



Figure 5 – Running A Tagger Across The Densify API

3. The AWS EC2 instances now are tagged and become 'self-aware' of their exact resource requirements. The tags show a "Downsize - Optimal Family" recommendation for this instance, and the application is aware that it should be running on a "t2.medium" with monthly savings, predicted uptime and the optimal purchasing strategy (Reserved vs. On-Demand).



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Network Interfaces	Densify-recommend-RI-coverage	No	Show Column
LOAD BALANCING	Densify-recommended-family	12	Show Column
Load Balancers	Densify-recommended-size	medium	Show Column

Figure 6 – AWS Instances Become Self-Aware

4. In the Terraform template file, the hard-coded line of resource specification (instance_type = "m4.large") is commented out. It is replaced with a call to Cloe, looking up the optimal instance type/size for that specific cloud application. Now, the cloud application can continuously get the optimal cloud resources with 'optimisation as code', even as the application demand evolves over time.



Figure 7 – Cloe Call Made In Terraform Script

5. We now run the `Terraform apply' command and accept the recommended changes, as shown in the highlighted section below.





Figure 8 – Terraform Apply Command Enables Cloe Proposed Changes

6. Now the recommended changes are being automated, and the AWS EC2 instances are being stopped and restarted to their optimal instance type/size. This results in immediate optimisation of the cloud resource and – just to reiterate – is an ongoing, automated optimisation process, not just a one-off occurrence. This is where the real value of Densify lies – we see it as a future-proofed optimisation technology, or at least as far as anyone can future-proof currently.

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Figure 9 – EC2 Instances Are Restarted To Their Optimal Type/Size

7. The EC2 instances are now up and running using the optimal type/size, precisely matched with the cloud application demands on an ongoing basis.



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Figure 10 – EC2 Instances Are Now Fully Optimised

Seeing The Results Of The "Cloe Effect"

While significantly reduced bills from the likes of AWS and Microsoft will reveal the positive impact of Cloe, the management user interface itself does all the calculations for you, as evidenced in this AWS EC2 optimisation example. Densify will also show in its build-in Business Intelligence (BI) reports that the applications are actually running better and risk is reduced in avoiding a potential brownout or even blackout.

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<u>12</u>	Savings Opportunity	Modernize - Optimal Family	m3.medium-Linux	t2.medium-Linux	On-Demand	48.91	29.42	33.87	80.4	0	472.12	326.94	145.
37 📍	Savings Opportunity	Downsize - Optimal Family	m4.xlarge-Linux	r5.large-Linux	Reserved	146.00	84.42	54.08	81.4	745.8	4,141.69	2,000.96	2,140.
<u>17</u>	Savings Opportunity	Downsize - Optimal Family	m4.large-Linux	t3.large-Linux	Reserved	73.00	42.25	35.50	81.5	372.9	945.76	603.50	342.
11	Savings Opportunity	Downsize - Optimal Family	c4.large-Linux	t3.medium-Linux	On-Demand	73.00	42.92	30.37	89.7	0	720.42	299.72	420.
10	Savings Opportunity	Downsize - Optimal Family	m4.xlarge-Linux	r4.large-Linux	Reserved	146.00	84.42	57.08	80	74.6	1,144.32	570.80	573.
<u>10</u>	Savings Opportunity	Downsize - Optimal Family	m4.xlarge-Linux	z1d.large-Linux	Reserved	146.00	84.42	80.08	83	111.9	1,166.87	800.80	366
8	Savings Opportunity	Downsize - Optimal Family	c4.xlarge-Linux	m5.large-Linux	Reserved	145.27	86.58	41.75	80.1	0	931.46	334.00	597
6	Savings Opportunity	Downsize - Optimal Family	c4.2xlarge-Linux	r5.large-Linux	Reserved	290.54	173.17	54.08	80.7	0	1,406.62	324.48	1,082
<u>6</u>	Savings Opportunity	Downsize - Optimal Family	c4.xlarge-Linux	m4.large-Linux	Reserved	145.27	86.58	42.25	80.6	0	702.38	253.50	448
4	Savings Opportunity	Downsize - Optimal Family	m4.large-Linux	t3.large-Linux	On-Demand	73.00	42.25	60.74	93.4	0	272.84	227.02	45
4	Savings Opportunity	Downsize - Optimal Family	t2.2xlarge-Linux	r5.xlarge-Linux	Reserved	270.98	156.67	108.17	80.5	400	626.68	432.68	194
4	Savings Opportunity	Downsize - Optimal Family	c4.2xlarge-Linux	r5.large-Linux	On-Demand	290.54	173.17	91.98	91.4	0	1,061.81	336.15	725
4	Savings Opportunity	Downsize - Optimal Family	c4.large-Linux	t3.medium-Linux	Reserved	73.00	42.92	17.75	83	0	242.25	71.00	171
3	Savings Opportunity	Downsize - Optimal Family	c4.xlarge-Linux	t3.large-Linux	Reserved	145.27	86.58	35.50	82.1	0	357.93	106.50	251
3	Savings Opportunity	Downsize - Optimal Family	m4.4xlarge-Linux	r5.2xlarge-Linux	Reserved	584.00	337.67	216.33	80.6	111.9	1,262.82	648.99	613
3	Savings Opportunity	Downsize - Optimal Family	m4.2xlarge-Linux	r5.xlarge-Linux	Reserved	292.00	168.83	108.17	76.5	74.6	634.03	324.51	309
2	Savings Opportunity	Family	m4.xlarge-Linux	r5.large-Linux	On-Demand	146.00	84.42	91.98	91.3	0	266.71	168.03	98
2	Savings Opportunity	Elevensize - Optimal Family	c4.xlarge-Linux	m5.large-Linux	On-Demand	145.27	86.58	70.08	89.8	0	261.02	125.92	135

Figure 11 – AWS EC2 Optimisation Example



Using that same scenario, Densify looks at all aspects of potential optimisation, for example with this Spot Instances analysis, with explanations of where further savings can be incurred. Here we see opportunities for both modernising and downsizing instances, with significant savings applied.

T Publ	Y Public Cloud Optimization for AWS													
Guest Filter	s: AWS Account	All	 Virtual Technol 	ogy All	▼ Business	Unit All	Ŧ	Application	All	•	Set More	Filters Ap	ply Reset	
EC2 RDS	Auto Scaling Gr	oups Reserved l	nstances Spot Instance	Advisor Insight			S	Sort by: Overall	Status & Optimi	ization Type 💌	62 Inst	ances \$5,44 () Savings/Month	
	Catalog Instance Per Instance Cost (\$) Avg. Predicted Cost (\$) Estimated Cost (\$)								Estimated Cost (\$)			CPU Allo	CPU Allocation (vCPU)	
Count	Overall Status	Optimization Type	Current	Recommended	On-Demand	Recommended	Uptime (%)	Current	Recommended	\$ Savings/Month		Current	Recommende	
5	Savings Opportunity	Modernize	r3.xlarge-Linux	r5.xlarge-Linux	243.09	183.96	80.6	980.16	741.75	238.42	Moderate	4	4	
2	Savings Opportunity	Modernize	r3.xlarge-Linux	r4.xlarge-Linux	243.09	194.18	80.4	391.13	312.44	78.70	Low	4	4	
2	Savings Opportunity	Modernize	i2.xlarge-Linux	i3.2xlarge-Linux	622.69	455.52	80.8	1,005.89	735.85	270.05	Low	4	8	
1	Savings Opportunity	Modernize	m3.large-Linux	m4.large-Linux	97.09	73.00	80.8	78.42	58.96	19.46	Low	2	2	
1	Savings Opportunity	Modernize	r3.2xlarge-Linux	r5.2xlarge-Linux	485.45	367.92	80.8	392.10	297.17	94.93	Moderate	8	8	
1	Savings Opportunity	Modernize	c3.large-Linux	c5.large-Linux	76.65	62.05	80.6	61.79	50.02	11.77	Moderate	2	2	
5	Savings Opportunity	Downsize	i2.xlarge-Linux	i3.xlarge-Linux	622.69	227.76	79.9	2,487.77	909.95	1,577.82	Low	4	4	
30	Savings Opportunity	Downsize - Optimal Family	m4.2xlarge-Linux	r5.xlarge-Linux	292.00	183.96	80.6	7,056.27	4,445.45	2,610.82	Low	8	4	
<u>6</u>	Savings Opportunity	Downsize - Optimal Family	m4.large-Linux	t3.large-Linux	73.00	60.74	72.5	317.59	264.25	53.34	Low	2	2	
4	Savings Opportunity	Downsize - Optimal Family	c4.large-Linux	t3.medium-Linux	73.00	30.37	80.7	235.61	98.02	137.59	Low	2	2	
1	Savings Opportunity	Downsize - Optimal Family	c3.4xlarge-Linux	r5.xlarge-Linux	613.20	183.96	80.8	495.28	148.58	346.70	Moderate	16	4	
3	Optimal	Just Right	d2.xlarge-Linux	d2.xlarge-Linux	503.70	503.70	80.5	1,216.49	1,216.49	0.00	None	4	4	
1	Optimal	Just Right	m4.large-Linux	m4.large-Linux	73.00	73.00	69.7	50.91	50.91	0.00	None	2	2	
<u>62</u>								14,769.41	9,329.82	5,439.59				
Currently there a	surrently there are a total of 62 instances. Estimated Cost is based on Per instance Cost, Predicted Uptime and RI Coverage if applicable. RI Price is based on 'Reserved Pricing Option' in the Policy.													

Figure 12 – AWS Spot Instances Optimisation Example

The less visible aspects of this optimisation – financially – are where application and business performance improve in tandem. The point is that the whole company potentially benefits from IT tech, through the user base to the board of directors, and not least the CFO. Somewhere along the way, the idea of IT being deployed to actually improve a business, rather than simply for the sake of it, was lost, but with Densify that rationale has been rediscovered. IT is not for ITs sake, but to improve the business and the bottom line figure.

Densify In a Hybrid/OnPrem Scenario

We mentioned earlier that Densify has not lost sight of the reality that many companies – for now at least – wish to go down the hybrid route, mixing and matching existing OnPrem solutions with some migration to the public cloud.

The solution is therefore designed to handle this transformation and fully optimise a hybrid/OnPrem deployment equally as it would a pure cloud-based environment. A key element of this optimisation is to increase workload density – the company has described it as playing "a batter game of Tetris" – i.e. the basics are in place, but not optimally located. So, the idea is to proactively avoid contention, with the workload analysis designed to right-size and, thereby, reclaim virtual resources, rebalance VMs to increase their density, optimise software licensing, cluster design and minimise hardware purchasing requirements.





Figure 13 – Optimising In A Hybrid Environment

The same logic applies to the transformation management, as OnPrem moves into the public cloud. Densify again removes the guess work and, at the same time, shows the results of its endeavours beneath the surface, such as with this VMware to external cloud example:

Transform to Cloud for Total Estate	Set Filter						±?å
Guest Filters: Application All	Application Tier All	Operational Environ	Ment All	 Security 	rity Zone All	Group by Cluster	Set More Filters Apply Rese
Transformation Candidates (1,625) Move Groups	s (50) Advisor Insight					Analyze Onto Bare Me	tal Create Move Group
iroup by (Cluster)	Suggested Hosting Venue			Monthly Cost (\$)	Guests That Can Move	Total Guests	At Risk Guests
ondon-BA-Apps				0.00	0	122	24
ondon-BC-Apps	-			0.00	0	79	6
ndon-Internal-Apps	-			0.00	0	61	18
w York-EngDev	US West - Azure			5,712.98	49	60	5
w York-General Apps	US West - Azure			8,062.85	42	52	10
w York-Production Apps1				0.00	0	<u>81</u>	7
w York-Production Apps2				0.00	0	<u>58</u>	2
onto-Gen-Apps	US West - Azure			8,892.86	64	<u>66</u>	5
onto-Infra-App1	US West - Azure			10,923.72	59	<u>62</u>	3
ronto-Infra-App2	US West - Azure			6,793.38	35	<u>37</u>	6
ıtal				48,427.47	293	1,625	95
		Toronto	Infra-App1				
Cost Comparisor	n - Average Guest Cost (\$	/Month)			% Guests That	Cannot Move	
300 - 200 - 100 - 224.98	185.15	215.66	5 -	od %		~	2005
US East-AWS +21.52%	US West-Azure BEST PRICE	US Central-GCP +16.48%		US East-AWS 3 of 62 Cannot Mo	US We 3 of 62 Ca	est-Azure l annot Move 6 o	JS Central-GCP f 62 Cannot Move

Figure 14 – Analysis Of Moving App From VMware To Public Cloud, Comparing the Three Major Clouds Against Each Other.



IN CONCLUSION

First and foremost, what Densify has done is to highlight the cloud-shaped "elephant in the room" that is, if not correctly managed, moving to the public cloud can – ironically – become prohibitively expensive.

By enabling the automation of the process, Densify takes all the costly guess work out of said process – under and over-provisioning immediately become things of the past – and this process is ongoing, 7x24, continuously updating and re-analysing to ensure the optimal state is always in situ. For years, the IT world has over-hyped the concepts of AI/Machine-Learning and automation, but here we have a perfect example, where a task is not humanely possible to accomplish manually - a real application or Machine-Learning and the net results that can bring.

Key to the optimisation is that all aspects of compute are analysed, not just a sub-section which would leave an unbalanced deployment. The same law applies equally to OnPrem, so hybrid environments are equally well optimised. Moreover, the solution impacts positively on all human aspects of IT, from tech/CloudOps, through DevOps, all the way to the CFO and CEO and – not least – gives the user base an optimised application performance platform to appreciate.

It's probably too late to describe Densify as a cloud-enabler; companies have simply taken the plunge (and often found themselves quickly out of their depth) but it is both a potential lifesaver for those who are drowning in ever-increasing cloud complexity and cloud bills and a means of efficiently managing the transformation from OnPrem to cloud.

We don't know of any solution that is remotely close to where Densify is right now (we do understand the amount of man hours it has taken to get to this stage, however) so if you're tasked with improving your cloud environments – whole or part thereof – it would be folly to not take a look at the Densify solution.

