

AWS Outposts: a pricing analysis

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Introduction

At re:Invent, AWS formally launched Outposts, a managed private cloud service that provides a hardware and software stack built upon AWS's EC2 public cloud expertise, but hosted in an on-premises datacenter. In this analysis, we find Outposts to be a relatively small premium compared with its public cloud offering, EC2, and thus good value considering enterprise desire for hybrid cloud.

The 451 Take

Private cloud was once a custom deployment, with bespoke pricing, fixed capacity and cloak-and-dagger negotiations. More recently, however, this model has been disrupted, with consumption-based pricing models making private cloud more transparent and, dare we say, more 'cloud-like.' As a result, when Outposts was announced, we predicted that AWS would need to make it easy to order, simple to understand and at a premium of 20-50% (with transparent pricing) to win trust from an enterprise audience that is more used to buying servers and installing hypervisors. This is exactly what it's done, and although this analysis looks at just one specific use case, we think the premium is good value, considering enterprises still desire on-prem implementations, but naturally don't want to spend more than they have to.

Analysis

Outposts is ordered through the AWS Console, and can be installed in the US, the EU, Switzerland, Norway, Australia, Japan and South Korea. Delivered as an integrated platform, the 42U device is installed into the datacenter by the customer and requires internet connectivity (it isn't designed for long-term offline, remote operations). A range of configurations of virtual machine sizes and numbers is available, and these can be paid for up front, on a monthly basis (36 months) or a mixture of both (similar to reserved instances used in EC2). Paying up front is about 33% cheaper than a monthly commitment. The console shows details on configurations, power requirements and weight to prepare the site for implementation. The Outposts device is connected to the nearest region through the internet to provide a hybrid capability. A fuller report on Outposts can be [found here](#).

To perform our pricing analysis, we chose an AWS-native Outposts General-Purpose Large Unit (OR-KPUCKWN) – primarily because it has a homogeneous virtual machine size. Each unit offers 12 x M5.24xlarge instances (96 vCPUs, 384GB memory), with about 11TB of EBS gp2 block storage. We chose the cheapest method of purchase, an up-front payment for three years costing \$738,314.48 and hosted in the US. For simpler calculations, we assume that each VM gets an equal share of the total capacity (11TB/12VMs = 938GB per VM) and that this capacity is fully provisioned from day one.

For public cloud, we priced up the cost of 11 x M5.24xlarge EC2 instances charged at \$46,462 each. We chose the cheapest US region, US-east (Virginia), and the cheapest pricing model: a three-year up-front nonconvertible reserved instance. We also priced up EBS gp2 block storage at \$0.10 per GB-month.

Both models are susceptible to utilization. If 10 reserved instances are purchased for \$10, for example, but only five are consumed, the effective price per reserved instance is \$2. The same applies to Outposts, which has a fixed capacity. You pay a price for the whole Outposts capacity; if you fail to use any compute, you still have to pay. This was a consideration in our model.

Furthermore, EC2 provides colocation, hardware, infrastructure management software and the skills to manage these areas bundled into the price. In Outposts, the same are included, without the colocation element. For a comparison, we also need to factor in colocation costs. Since these vary by specific hosting requirements, we've created a table of possible costs depending on use case.

Outposts-EC2 cost comparison

		Resource Utilization Over 36 Months						Premium for Outposts
		50%	60%	70%	80%	90%	100%	
Monthly Colo Cost	\$ 500	OP \$126 EC2 \$100	OP \$105 EC2 \$83	OP \$90 EC2 \$71	OP \$79 EC2 \$62	OP \$70 EC2 \$55	OP \$63 EC2 \$50	26%
	\$ 1,000	OP \$129 EC2 \$100	OP \$108 EC2 \$83	OP \$92 EC2 \$71	OP \$81 EC2 \$62	OP \$72 EC2 \$55	OP \$65 EC2 \$50	29%
	\$ 1,500	OP \$132 EC2 \$100	OP \$110 EC2 \$83	OP \$94 EC2 \$71	OP \$83 EC2 \$62	OP \$73 EC2 \$55	OP \$66 EC2 \$50	32%
	\$ 2,000	OP \$135 EC2 \$100	OP \$113 EC2 \$83	OP \$96 EC2 \$71	OP \$84 EC2 \$62	OP \$75 EC2 \$55	OP \$68 EC2 \$50	35%
	\$ 2,500	OP \$138 EC2 \$100	OP \$115 EC2 \$83	OP \$99 EC2 \$71	OP \$86 EC2 \$62	OP \$77 EC2 \$55	OP \$69 EC2 \$50	38%
	\$ 3,000	OP \$141 EC2 \$100	OP \$118 EC2 \$83	OP \$101 EC2 \$71	OP \$88 EC2 \$62	OP \$78 EC2 \$55	OP \$71 EC2 \$50	41%

*Values shown are total cost per virtual machine over 36-months in \$1000's for OP = AWS Outposts (Private Cloud) and EC2 = Amazon EC2 (Public Cloud)
451 Research Cloud Price Index*

Source: 451 Research's Cloud Price Index

The rows represent varying costs for collocating the Outposts unit, and need to include the physical space, air conditioning, power, connectivity port and labor associated only with management of that datacenter cabinet. The columns represent the utilization of the capacity over the lifetime (36 months) of the unit – for example, a utilization of 50% could represent all 12 virtual machines being fully used for 18 months of the 36-month term. The cells show the unit price of each virtual machine consumed over three years for Outpost (OP) and EC2. The premium shows how much of an uplift Outposts is compared with public cloud EC2.

As an example, a buyer that hosts this Outposts configuration in their own datacenter at an internal cost of \$1,000 per month for space and power can expect to pay \$65,000 per virtual machine over

three years for Outposts if all the virtual machines are in active service from day one (i.e., resource utilization = 100%). If only half the virtual machines are actively used (utilization = 50%), the per-VM cost increases to \$129,000. In this latter case, the equivalent cost on EC2 would be \$100,000, meaning Outposts is at a premium of 29%. This is what we predicted shortly after the announcement in 2018.

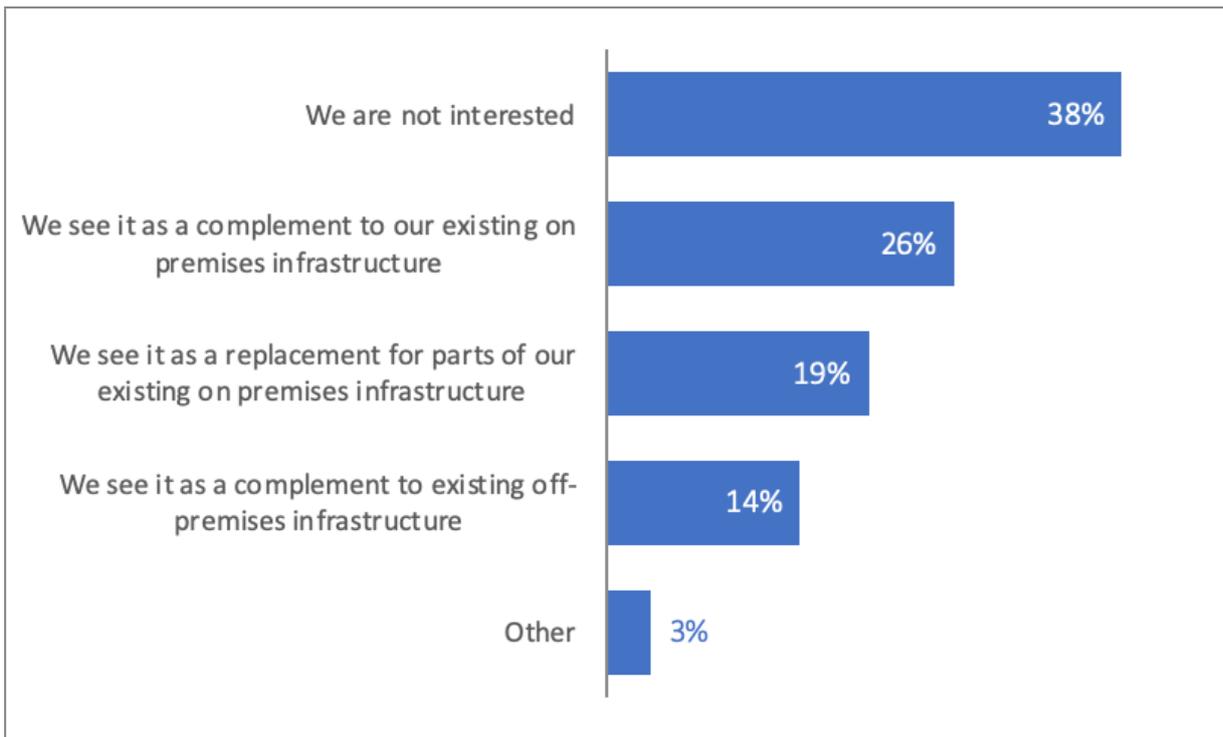
We've performed the analysis this way so enterprises with different datacenter requirements (e.g., location, Uptime certifications, security requirements, etc.) can position where they fit in the analysis. Enterprises need to conduct their own analyses to get specific feedback before making any decisions. However, as an analogy to the cost of the datacenter element, we searched colo pricing calculator datacenters.com for quotes for a Virginia-located full cabinet, with a minimum 5kW of power and internet connectivity. Quotes were typically in the region of \$1,000-\$1,500 per month. As a result, we think many enterprises could host an Outposts deployment for about a 30% premium over the equivalent EC2 public cloud price. Note: Our analysis doesn't include enterprise discounts, bandwidth, support plans, the recent launch of AWS Savings Plans or free tiers, and this analysis only applies to the specific hardware cited. Bandwidth for Outposts is charged at the same rates as EC2, so is excluded from our analysis since they are equivalent.

Competitiveness

According to Cloud Price Index deliverables, this premium seems reasonable. An enterprise hosting its own private cloud for the CPI's 'General' VM benchmark of two hyperthreads, 8GB of memory and 100GB SSD drive would pay a premium of 63% compared with the CPI's public cloud best-case benchmark. Of course, this isn't a perfect comparison, but AWS seems to have priced its offering reasonably, and we think enterprises that desire the luxury of cloud services in their datacenter of choice will be willing to pay.

The majority of enterprises we surveyed are interested in such clouds. In our Voice of the Enterprise: Cloud, Hosting & Managed Services, Org Dynamics 2019 study, we asked 239 enterprise decision-makers their opinion of on-premises implementations of public cloud services (i.e., AWS Outposts, Azure Stack, GKE On-Prem, IBM Bluebox). Fifty-nine percent (59%) had a favorable view of such implementations.

What is your opinion of on-premises implementations of public cloud services?



Source: 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services, Org Dynamics 2019