Boost Your Electronics Simulation with HPC on Ansys Gateway Powered by AWS

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Increasing Simulation Value Exponentially

Unique combination of the Ansys product portfolio, platform, and ecosystem expands simulation value





Challenges



Supporting engineers driving to reduce time to market

Study on HPC and Cloud Computing for Engineering Simulation

Insight into best practices for successfully implementing and expanding a cloud and high performance computing (HPC) initiative.



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Said their top business challenge in design activities is pressure to reduce design cycle times

50%

Using 12 or > cores for parallel processing, compared to 44% in 2020.

30%

Reported that most of their simulations run overnight and take 9 hours or more to complete, 21% in 2020

*Based on 2023 Ansys study on HPC and Cloud Computing for Engineering Simulation with the participation of +740 IT Managers, Engineers & C-Levels



Engineers are constrained by compute resources

How often do you "cut corners" due to your compute limitation?



More than half of the time or almost always Almost never





HW constraints negatively impacted simulation effectiveness for almost 78% of users





Solution: Cloud computing can meet fluctuating demand



Advantages of cloud:

 Adding new or occasional simulation users – no matter where they are – can be quickly arranged via user credentials.
 Intermittent workloads and heterogeneous workload requirements can best be addressed with optimized, ondemand compute resources.

Ansys

Why Ansys Gateway powered by AWS?



Ansys Gateway powered by AWS : Workflow, Performance, Support and....Cost!



The classic problem is that the cloud is **there**, and you are **here**. You need to ensure the distance maximizes the benefits of the cloud while minimizing impact to **workflows** Performance of HPC assets for tightly coupled workflows is very much an artform. Ensuring performance is optimally tuned can save thousands of hours and dollars When utilizing an outside as-a-service provider it is critical you understand the roles and responsibilities with regards to **support** Price is an important consideration, but overall cost performance should be the benchmark by which you measure

cost



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Ansys & AWS: A strategic collaboration

DATE: 10/31/2022

PRESS RELEASE

Ansys Announces the Launch of Ansys Gateway powered by AWS

Ansys' cloud-based platform to allow easy access and deployment of Ansys simulations on AWS

Key Highlights

- Ansys Gateway powered by AWS is a solution for developers, designers, and engineers who want to manage their complete Ansys
 simulation and CAD/CAE projects on the cloud
- The Ansys Gateway on-demand platform offers easy, flexible, scalable access to Ansys applications via a web browser for customers away from their desk

PITTSBURGH, PA, October 31, 2022 – Today Answer (NASDAQ: ANSS) announced availability of Ansys Gateway powered by Amazon Web Services (AWS), which allows customers to use popular Ansys products in one unique workspace on AWS – helping simplify access to faster, more flexible, and highly scalable engineering solutions. <u>Ansys Gateway powered by AWS</u> is available in AWS Marketplace and makes it possible for customers to easily access, subscribe and configure Ansys applications from a single location. Customers will also benefit from the accelerated performance of Ansys applications enhanced on AWS.

Ansys Gateway powered by AWS features on-demand access to Ansys applications and high-performance computing (HPC) resources on the cloud as part of a strategy designed to make simulation software more affordable. Customers can manage and control computer-aided design (CAD) (computer-aided engineering (CAE) cloud consumption and costs on AWS while taking advantage of the scalable hardware and compute capacity. This offering provides seamless cloud support for both Ansys applications as well as other popular CAE/CAD software. With control over their hybrid architecture, customers can bring their own licenses to Ansys Gateway powered by AWS and easily manage user access, permissions, data and security.



Ansys Gateway powered by AWS features on-demand access to Ansys applications and high-performance computing (HPC) resources on the cloud.



Ansys Announces the Launch of Ansys Gateway powered by AWS



Ansys Gateway powered by AWS

BEFORE





AFTER





Why Ansys Gateway powered by AWS



Ansys Gateway powered by AWS: Supported Products



- Ansys Mechanical, Ansys Workbench, additive in Mechanical, Ansys Workbench Meshing, Ansys AUTODYN, Ansys Explicit Dynamics, RBD - Rigid Body Dynamics, Ansys Motion, Ansys Composite, Ansys Workbench, Ansys Sherlock, Ansys MAPDL, Ansys DesignXplorer, Ansys LS-DYNA, Ansys LS-PrePost,
- Ansys Fluent, Ansys CFX, Ansys Fluent Meshing, Ansys Turbogrid, Ansys CFD Post, Ansys BladeModeler, BladeEditor, Ansys EnSight, Ansys Rocky
- Ansys HFSS, Ansys HFSS 3D Layout, Ansys Icepak, Ansys Maxwell, Ansys Nexxim, Ansys NuHertz FilterSolutions, Ansys Prep/Post, Ansys Q3D Extractor, Ansys SIwave, Ansys RedHawk-SC, Ansys AQWA, Ansys PrepPost, Ansys Digital Twin, Ansys EMA3D (Cable and Charge), Ansys Motor-CAD, Ansys RaptorH/RaptorX/VeloceRF
- Ansys Granta Selector, Ansys Material Designer, Granta MI Pro



 Ansys SCADE Display Advanced Modeler Seat, Ansys SCADE Display ARINC 661 Advanced Modeler, Ansys SCADE Display KCG, Ansys SCADE LifeCycle Reporter, Ansys SCADE Suite Advanced Modeler Seat, Ansys SCADE Suite Design Verifier, Ansys SCADE Suite Gateway for Simulink, Ansys SCADE Suite KCG Code Generator - C and ADA, Ansys SCADE Suite Timing and Stack Optimizer, Ansys SCADE Test Environment for Host, Ansys SCADE Test Model Coverage, Ansys SCADE UA DF Generator for ARINC 661 Compliant Systems, Ansys Medini, Ansys ModelCenter (MBSE, Remote Execution).



• Ansys Speos , add-on applications (Optical part design, Optical sensor test, HUD Design and Analysis), Ansys Lumerical FDTD, Ansys Lumerical INTERCONNECT, Ansys Lumerical MODE, Ansys Lumerical Multiphysics



• Ansys Discovery (Modeling), Ansys Discovery (Live), Ansys SpaceClaim, Ansys SpaceClaimMeshing, Ansys DesignModeler

2022 R1 & 2023 R1 Supported



Demo – How to Run Ansys HFSS in AEDT?

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How to Run Ansys HFSS Model in AEDT Using a Virtual Machine in Ansys Gateway powered by AWS - YouTube



How to Run Ansys HFSS in AEDT on a HPC Cluster in Ansys Gateway powered by AWS - YouTube



Ansys HFSS Benchmarks on Ansys Gateway powered by AWS

5G End User Equipment Model







Sub 6GHz Operating Frequency Range

Millimeter Wave Operating Frequency Range

Instance type Amazon EC2	No. of physical cores	Memory (GB)	Initial Mesh	Adaptive Mesh	Frequen cy Sweep	Total Sim Time	Instance type I Amazon EC2	No. of physical cores	Memory (GB)	Initial Mesh	Adaptive Mesh	Frequency Sweep	Total Sim Time
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m6i.32xlarge	64	512	00:02:05	00:33:10	00:13:15	00:48:33	m6i.32xlarge	64	512	00:01:48	03:03:53	05:48:57	08:54:41
r6id.32xlarge	<mark>64</mark>	<mark>1024</mark>	00:02:04	<mark>00:29:48</mark>	00:12:33	<mark>00:44:29</mark>	r6id.32xlarge	64	1024	00:01:38	03:00:21	05:26:13	08:28:15
r5dn.24xlarge	48	768	00:02:42	00:38:19	00:14:28	00:55:34	r5dn.24xlarge	48	768	00:01:53	04:12:57	06:43:55	10:58:49
c5d.24xlarge	48	192	00:02:27	01:08:53	00:39:40	01:51:04	c5d.24xlarge	48	192	00:01:53	19:54:33	20:23:38	40:20:09
Hpc6id	<mark>64</mark>	<mark>1024</mark>	00:02:04	<mark>00:31:50</mark>	00:13:12	00:47:09	Hpc6id	<mark>64</mark>	<mark>1024</mark>	<mark>00:01:41</mark>	<mark>02:57:49</mark>	<mark>05:22:14</mark>	<mark>8:21:47</mark>

Results are showing good results for Amazon EC2 r6i.32xlarge and Amazon EC2 Hpc6id



Benchmarks / AEDT GPU Acceleration

- V22 Installed Blade Antenna Performance Study @ 5.9 Ghz
- Parametric Study of Rotation (71 variations)
- Solving 8 // 6 cores (8//GPUs)









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Benchmarks / AEDT GPU Acceleration

Near field radar modeling in dynamic scenes – Helicopter above 2 Tanks









aws



Learn how to use

/ Ansys Gateway powered by AWS official How-to Video Playlist!

Now available on YouTube!

WATCH NOW!



Create new VM within Ansys Gateway powered by AWS



Select workload

•Choose what kind of workload you want to create in your cloud



Select operating system
Filter by operating system type Windows
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Select image / operating System
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gi.4cinge	2.16 USD	26x Intel Xeon E5 2585 v4 (Treadwolf)	18 NVIDIA Testa M80	124.018 GB	ANS	723	
g3.50alarge	8.04 USD	04x Intel Xeon ES-2080 v4 (Broadwolf)	4x NVIDW Tesia Milo	499.712 GB	AINS	728	
gis.starge	1.12 USD	4x Intel Xeon 85 2585 v4 (Broadwell)	tic NVIDW Testa M60	31.232.08	ANS	728	
g3.8xlarge	4.32 USD	32x Intel Xeon ES-2585 v1 (Rroadwolf)	2x NVIDW Tesla Milo	219.850 GB	AINS	728	
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Select VM / Cloud Ressource
Based on the applications you select, the best fitting VM types are recommended to you

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•Select specific settings like name or disc size



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What is currently available ?



50+ Pre-configured Ansys and 3rd party applications.



400 + Hardware configurations available with recommendations from Ansys



Ansys gateway powered by AWS : benchmarks available

+ Add application	£ 8	Search apps Q
		Applications
		7-Zip 19.00 7-Zip 19.00
		Ansys CFD Enterprise 2022 R1 Ansys CFD Enterprise 2022 R1 installation (Fluent and CFX)
		Ansys DCS Evaluator 2022 R1 for Beta Ansys DCS Evaluator 2022 R1 for Windows
		Ansys Discovery 2022 R1 Ansys Discovery 2022 R1
		Ansys Electronics Desktop 2022 R1 Includes HFSS, HFSS 3D Layout, Maxwell, Q3D Extractor, Icepak, Slwave, Prep/Post, Nexxim, NuHertz Filter Solutions
		Ansys Full 2022 R1 for Beta Ansys Full Installer 2022 R1 for Windows
		Ansys License Manager 2022 R1.2 2022 R1 test from west eu
		Ansys LS-DYNA 2022 R1 LS-DYNA R12.1 for Windows
		Ansys LS-PrePost 2022 R1 LS-PrePost 4.8.25 for Windows
		Ansys Lumerical 2022 R1
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r3.8xlarge	3.5 USD	E5-2670 v2 (Ivy Bridge)	AWS Elastic Graphics	249.856 GB	AWS	16064
m5a.16xlarge	5.7 USD	64x AMD EPYC 7571	N/A	262.144 GB	AWS	16064
c5n.2xlarge	0.8 USD	8x Intel Xeon Platinum 8124M	AWS Elastic Graphics	21.504 GB	AWS	16064
m5a.4xlarge	1.42 USD	16x AMD EPYC 7571	N/A	65.536 GB	AWS	16064
i2.2xlarge	1.95 USD	8x Intel Xeon E5- 2670 v2 (Ivy Bridge)	N/A	62.464 GB	AWS	16064
c6i.8xlarge	2.83 USD	32x Intel Xeon 8375C (Ice Lake)	N/A	65.536 GB	AWS	16064
m5d.8xlarge	3.28 USD	32x Intel Xeon Platinum 8175 (Skylake)	AWS Elastic Graphics	131.072 GB	AWS	16064
c6i.4xlarge	1.42 USD	16x Intel Xeon 8375C (Ice Lake)	N/A	32.768 GB	AWS	16064
c6i.2xlarge	0.71 USD	8x Intel Xeon 8375C (Ice Lake)	N/A	16.384 GB	AWS	16064
c4.4xlarge	1.53 USD	16x Intel Xeon E5-2666 v3 (Haswell)	AWS Elastic Graphics	30.72 GB	AWS	16064
c5ad.12xlarge	4.27 USD	48x AMD EPYC 7R32	AWS Elastic Graphics	98.304 GB	AWS	16064
g5.4xlarge	2.36 USD	16x AMD EPYC 7R32	1x NVIDIA Tesla A10G	65.536 GB	AWS	780
m5dn.12xlarge	5.47 USD	48x Intel Xeon Platinum 8259 (Cascade Lake)	AWS Elastic Graphics	196.608 GB	AWS	16064
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r5d.4xlarge	1.89 USD	16x Intel Xeon Platinum 8175	AWS Elastic Graphics	131.072 GB	AWS	16064
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List of Ansys applications supported : <u>Ansys Gateway</u> powered by AWS <u>Datasheet</u>



Ansys Gateway powered by AWS

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Your Cloud Journey with Ansys Gateway powered by AWS





NSYS / GATEWAY

"Ansys Gateway powered by AWS unleashes the computing resources we need to quickly solve electromagnetics-related challenges in our Smart Motor System[™] designs. We get tremendous acceleration during development with the added computational power, going from weeks to days to come up with answers to our most pressing technological challenges which otherwise would not have been possible."

aws

Avisekh Banerjee, Ph.D. Director of Simulation and Analysis / Turntide Technologie

Access it directly from the marketplace!

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