



FACT SHEET

HIGH PERFORMANCE COMPUTING (HPC) ON AWS CLOUD FOR ENGINEERING SIMULATION (CAE)

Empowering Manufacturers to Harness Limitless Computational Power for Accelerated Product Development

WE ENABLE #HUMANFIRSTDIGITAL

Apexon is a digital-first technology services firm specializing in accelerating business transformation and delivering human-centric digital experiences. For over 20 years, Apexon has been meeting customers at every stage of their digital lifecycle and helping them outperform their competition through speed and innovation.

Our reputation is built on a comprehensive suite of engineering services, a dedication to solving our client's toughest technology problems, and a commitment to continuous improvement. We focus on three broad areas of digital services: Experience, Digital Engineering, and Data. Apexon also possesses deep expertise in Automotive and Manufacturing.



APEXON FOR MANUFACTURING

In today's manufacturing landscape, efficiency, precision, and innovation are paramount. High-Performance Computing (HPC) is transforming the way manufacturers approach Computer Aided Engineering (CAE) by delivering the computational power required to optimize processes, improve product designs, and drive industry leading advancements.

CAE simulation can be applied to model Finite Element Analysis (FEA) or Computational Fluid Dynamics (CFD) across a wide range of physical phenomena, including fluid flow, heat transfer, and structural mechanics. However, these simulations can incur high computational costs, especially when dealing with complex products and processes.

ABOUT APEXON

-  5500+ Digital Engineers
-  Headquartered in Silicon Valley
-  25+ Accelerators and Solutions
-  Backed by Goldman Sachs and Everstone Capital
-  18+ Global Delivery Centers
-  Additional Locations: New York, Chicago, London, Mexico and India

WHY HPC MATTERS FOR MANUFACTURERS?

High Performance computing can assist manufacturers at every stage of product development ranging from conducting advanced design simulations to process automation.



Precision and Accuracy:

HPC enables manufacturers to run highly detailed simulations, ensuring that designs comply with strict quality standards and regulatory requirements.



Time-to-Market:

By significantly reducing the time for infrastructure provisioning and simulation, HPC accelerates product development and shortens time-to-market.



Complexity Handling:

Manufacturers can tackle complex simulations involving materials, processes, and systems with confidence.



Access to latest technologies:

Continuous refresh and access to latest technologies on both infrastructure and applications.



Enhanced Product Quality:

HPC-driven CAE enables manufacturers to identify and rectify design flaws early in the development cycle, resulting in higher-quality products.



Innovation Catalyst:

Manufacturers can explore innovative designs and materials, fostering competitiveness and market leadership.



Sustainability:

HPC helps optimize processes for energy efficiency and environmental impact reduction.

HPC ON CLOUD TO IMPROVE COMPUTER AIDED ENGINEERING (CAE) SIMULATION

Apexon's HPC services for manufacturers represents a comprehensive portfolio of offerings to lay the foundation for designing, building, and managing HPC (high performance computing) environments tailored to meet the requirements of Computer Aided Engineering (CAE). Our HPC services for engineering simulation encompass the following at high level:



Scalable Capacity:

Access to scalable capacity is important for improving agility and productivity, ensuring that you have the required resources available when you need them.



Financial Flexibility:

The flexibility of a pay-as-you-go model enables you to align costs with actual usage, thereby optimizing your financial strategy.



Global Collaboration:

A global infrastructure that fosters collaboration among geographically dispersed teams, allowing teams from different parts of the world to work together seamlessly.



Total Cost of Ownership:

Economies of scale lead to a decreased Total Cost of Ownership (TCO), enhancing cost-effectiveness in your operations and the improved Return of Investment (ROI).

AWS HPC SERVICES AND BUILDING BLOCKS

HPC on AWS unlocks essentially unlimited amounts of computing power and data storage to solve the most complex problems quickly and enable them to run simulations at optimal scale. Well optimized and secured HPC clusters can be automatically created, operated and torn down in just minutes.



Data Transfer

Data Transfer is an essential component of HPC. By leveraging Snowball, Snowmobile, AWS DataSync and Direct Connect, we facilitate transferring terabytes and petabytes of data from on premises to AWS.



Storage

AWS and Apexon can support sophisticated HPC systems that have streamlined storage components that efficiently and instantly send and receive data from the compute servers. For that, manufacturers can take advantage of EBS, Amazon S3, and Amazon FSx for Lustre.



Compute & Networking

HPC focuses on distributed computing to solve complex and larger problems quickly and efficiently. Apexon follows the AWS architecture best practices for Compute & HPC and takes advantage of AWS EC2 and Elastic Fabric Adapter to support and run HPC applications at scale.



Orchestration & Networking

Apexon can help customers run their HPC workloads using AWS ParallelCluster or AWS Batch. AWS Parallel Cluster allows you to easily deploy and manage High Performance Computing (HPC) clusters on AWS. AWS Batch, a cloud-native batch scheduler, allows you to scale hundreds of thousands of computing jobs across all AWS compute services and features.

AWS HIGH PERFORMANCE COMPUTING SERVICES



AWS
Parallel Cluster



HPC Instances



NICE DCV



FSx for Lustre



AWS Batch



EC2

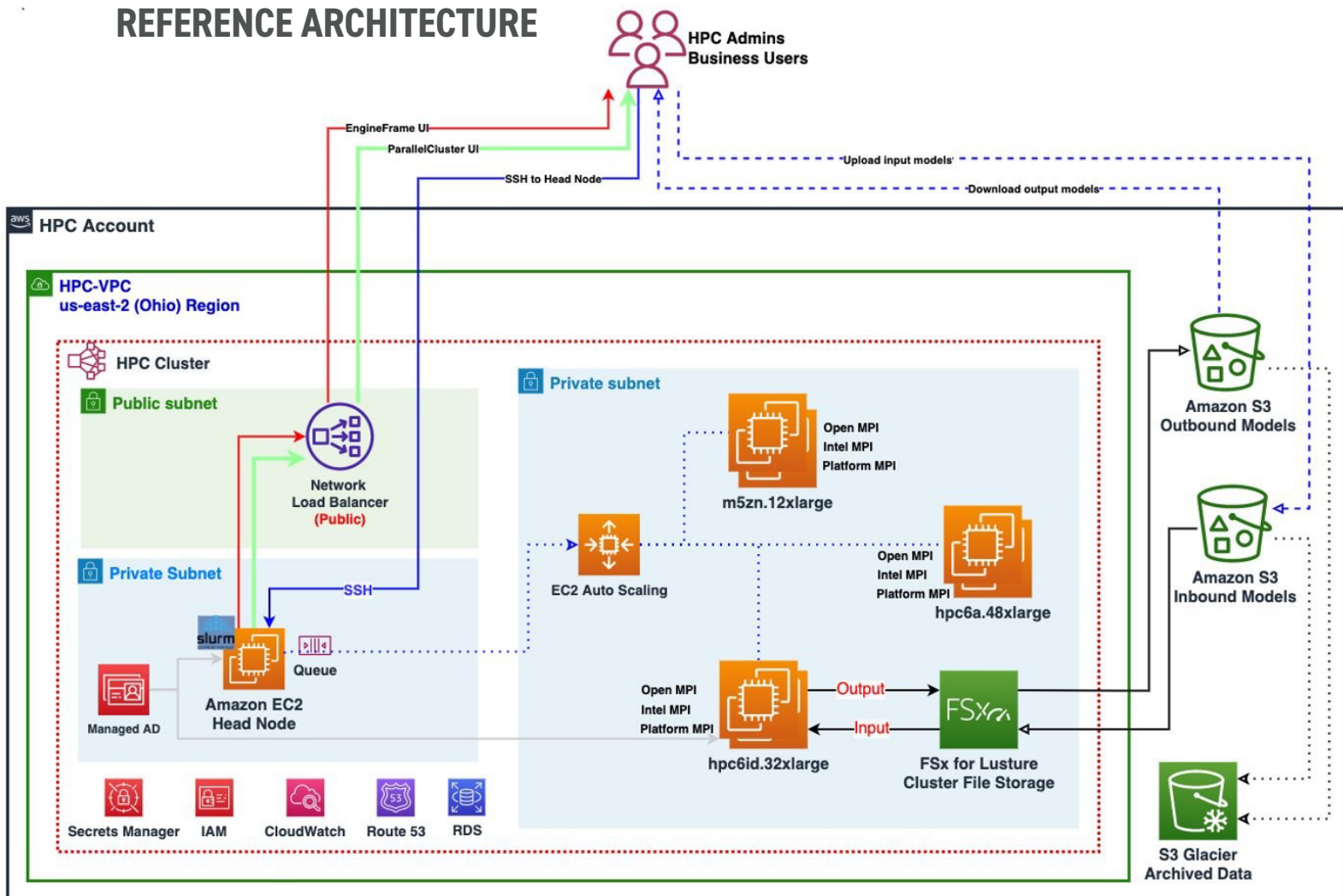


Elastic Fabric Adapter



S3

REFERENCE ARCHITECTURE



APEXON VALUE PROPOSITION (OUTCOME WE DELIVER)



Accelerated adaption of HPC Cloud for engineering simulation



Access to state-of-the-art HPC infrastructure



Capability to tap into vast capacity depending on business needs



Option of running hybrid HPC workload across existing on premise and in the cloud clusters



Ability to utilize the same software team by enabling them on cloud technologies



Flexibility to experiment and revise engineering simulation



Only pay for the services used and no fixed cost unused assets



Improved turnaround time with multiple simulation running at the same time and on latest hardware



Reduce per job cost of simulation



Ability to visualize output without need to download to local setup



Further reduction in cost utilizing cost saving features of cloud provider



Conduct Well-Architecture Framework review for customer workloads



Expert consulting and support



HPC Services management and operations

REIMAGINE MANUFACTURING OPERATIONS WITH APEXON

Partner with us to optimize your operations and reinvent supply chains, leveraging our proven methodologies and expertise.



Here are few ways we bring value:

- **Free Assessment:** Start your journey with a complimentary assessment to identify opportunities for improvement.
- **Proof of Concept (POC):** Perform sample HPC workloads migrating to AWS cloud by leveraging POC funding.
- **Opportunity to Avail Partner Opportunity Accelerators (POA) Funding:** We offer opportunities to access Partner Opportunity Accelerators (POA) funding, jumpstarting your modernization initiatives.



Funding may include:

- **AWS Promotional Credits:** Offset AWS usage costs to reduce your expenses.
- **AWS Migration Accelerator Program (MAP) funding:** Opportunity to avail POC funding for Assess, Mobilize and Migrate phase for the HPC workload migration
- **Cash to Co-Fund Apexon Professional Services:** Partner with us to co-fund the implementation of our professional services.

CONTACT

GIVE US YOUR TOUGHEST DIGITAL CHALLENGES



EMAIL US

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TALK TO US

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