



HYPERION RESEARCH

State of HPC Cloud

SC23 Virtual Breakfast Briefing
November 2023

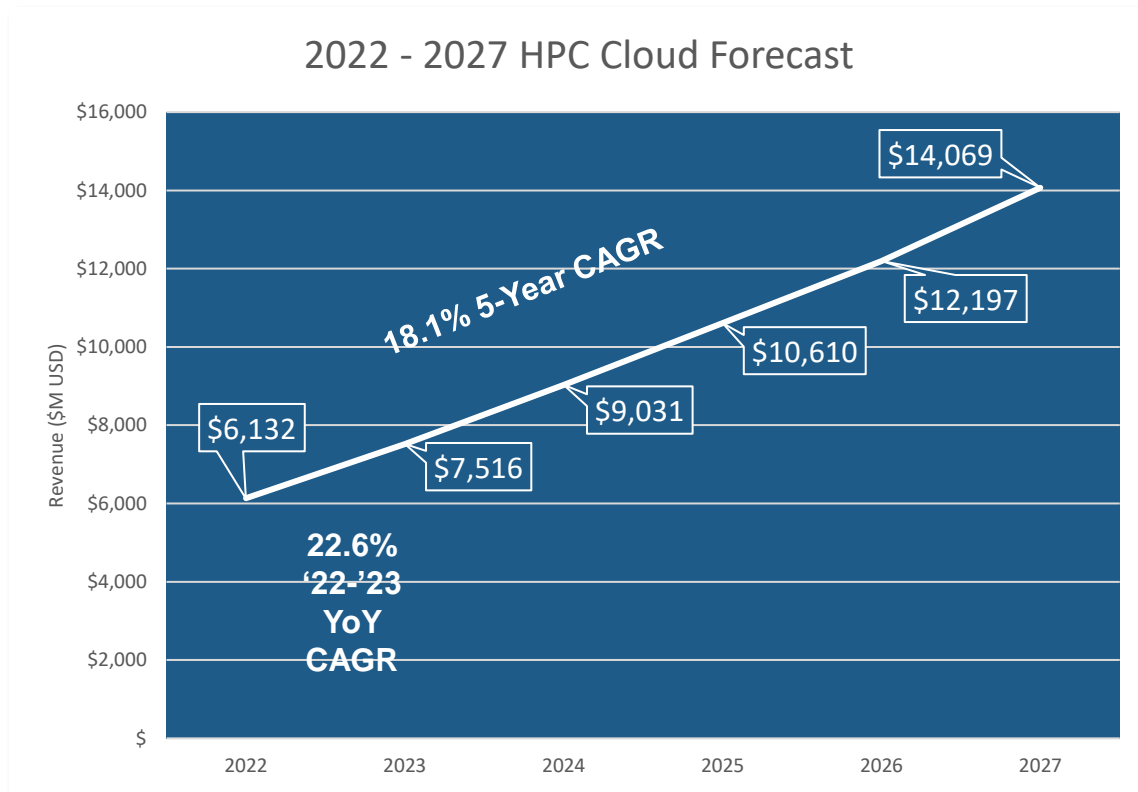
www.HyperionResearch.com
www.hpcuserforum.com

Mark Nossokoff

HPC Cloud Forecast

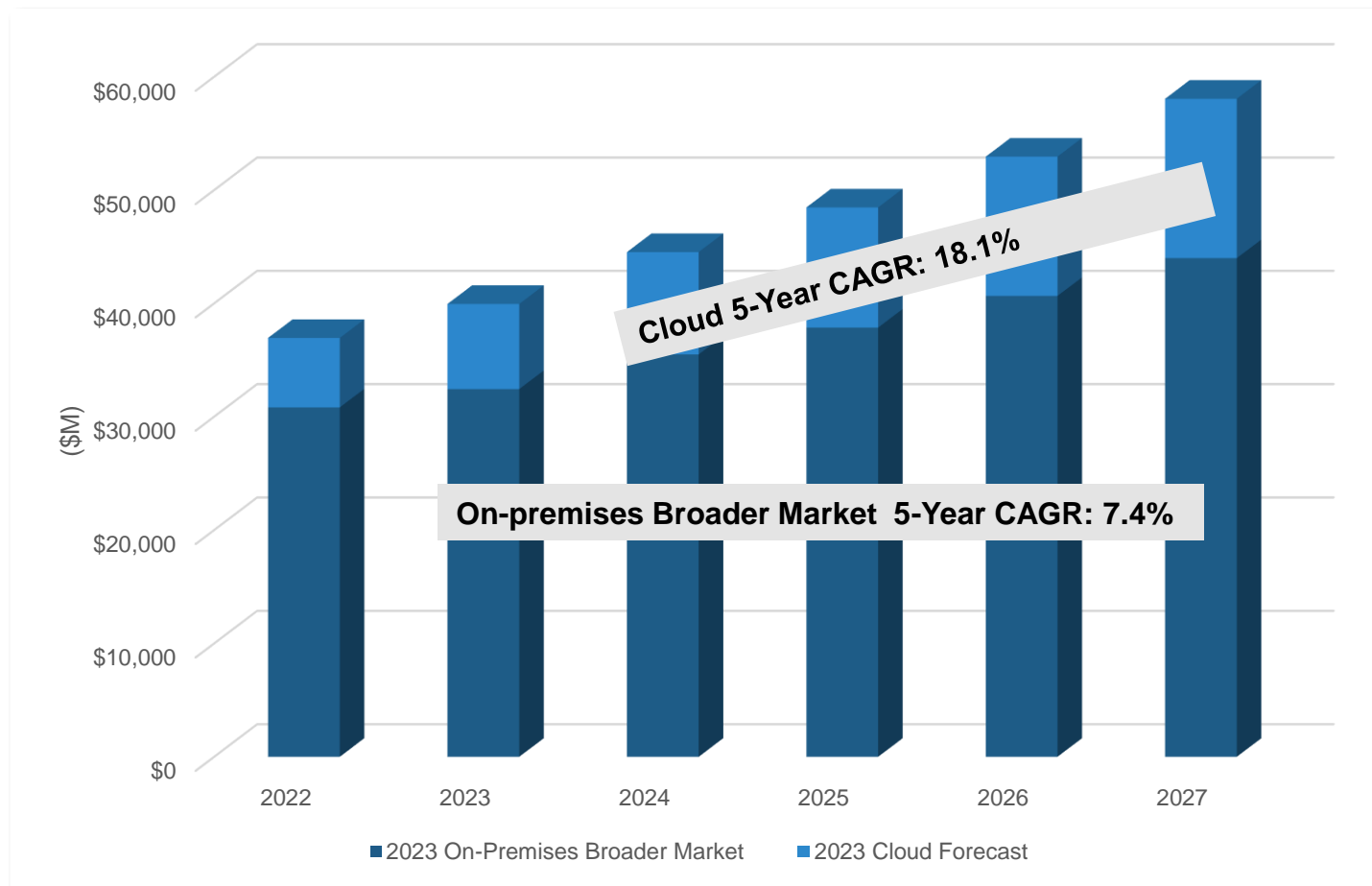
HPC cloud revenue expected to exceed \$14 billion by 2027

- **Global buyers accelerating shift of on-premises HPC budgets to the cloud**



The Total HPC Market: On-Premises and Cloud Computing

The cloud market continues to outpace on-premises growth

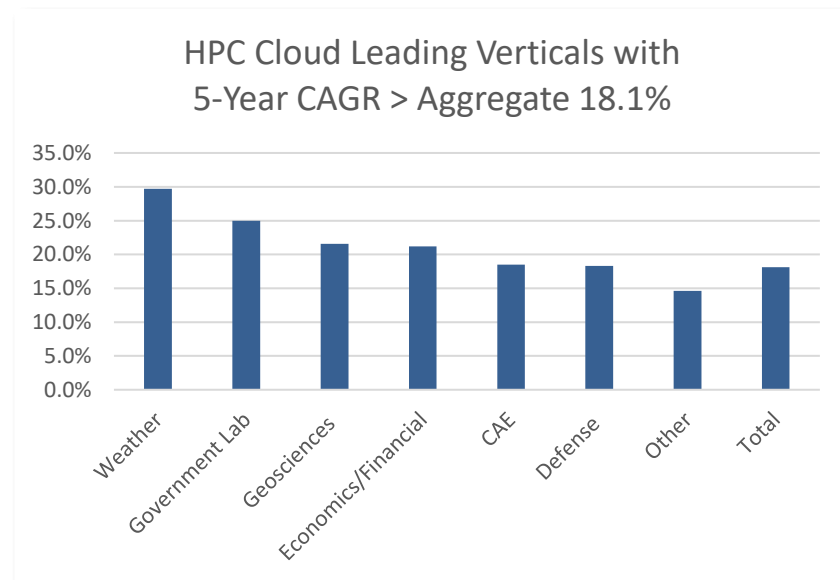


HPC Cloud Forecast by Verticals

Changes emerging in vertical adoption of cloud resources

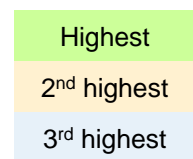
HPC Cloud Forecast by Vertical 2022-2027 – All Verticals			
	2022 (\$M)	2027 (\$M)	CAGR 22- 27 (%)
Bio-Sciences	\$1,557	\$2,821	12.6%
CAE	\$1,289	\$3,017	18.5%
Defense	\$471	\$1,091	18.3%
Government Lab	\$443	\$1,351	25.0%
EDA	\$443	\$975	17.1%
Geosciences	\$403	\$1,069	21.6%
Economics/Financial	\$398	\$1,041	21.2%
DCC & Distribution	\$347	\$732	16.1%
University/Academic	\$276	\$549	14.7%
Weather	\$184	\$675	29.7%
Chemical Engineering	\$154	\$267	11.7%
Mechanical Design	\$27	\$45	10.6%
Other	\$141	\$436	25.3%
Total	\$6,132	\$14,069	18.1%

Source: Hyperion Research, 2023



Other: EDA, DCC, Univ/Academic, BioSciences, Chem Engr, Mech Engr

Source: Hyperion Research, 2023



HPC Cloud Market Drivers

Rapid adoption of LLMs not fully reflected in market numbers...yet

- **AI & LLMs, including availability of GPUs**
- **Investments by cloud service providers (CSPs) to ease migrations to and integration with the cloud**
- **Users' maturing understanding of an expanding number of cloud-appropriate workloads**
- **Other recurring drivers with shifting priority order**
 - Cost-effectiveness relative to same job on-premises
 - Flexibility with surge workloads
 - Scale of available resources relative to on-premises infrastructure
 - Access to new technologies

Supply-Side Cloud Service Trends

Increasing CSP internal investments across multiple fronts are facing competition from focused entrants

- **CSP investments**
 - Integration of latest merchant CPU and GPU vendors
 - Intel, AMD, NVIDIA
 - Development of captive application-specific accelerators
 - AWS: Graviton, Inferentia, Trainium
 - Google: TPUs
 - Networking
 - Google: Apollo OCS
 - Solution-focused
 - Vertical market integrations
 - Range of price and performance capabilities
- **GPU Cloud**
 - Providing access to scarce supply of GPUs
 - Coreweave
- **Previously vertically focused cloud service providers are expanding their market coverage**
 - CGG
- **System vendors offering on-premises OPEX business models and cloud hosting services**
 - Dell: APEX, HPCaaS
 - HPE: HPE Greenlake, HPE Greenlake for LLMs
 - IBM: IBM Cloud HPC
 - Lenovo: TruScale

Questions?



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