



HYPERION RESEARCH

HPC in the Cloud Update

SC22

November 2022

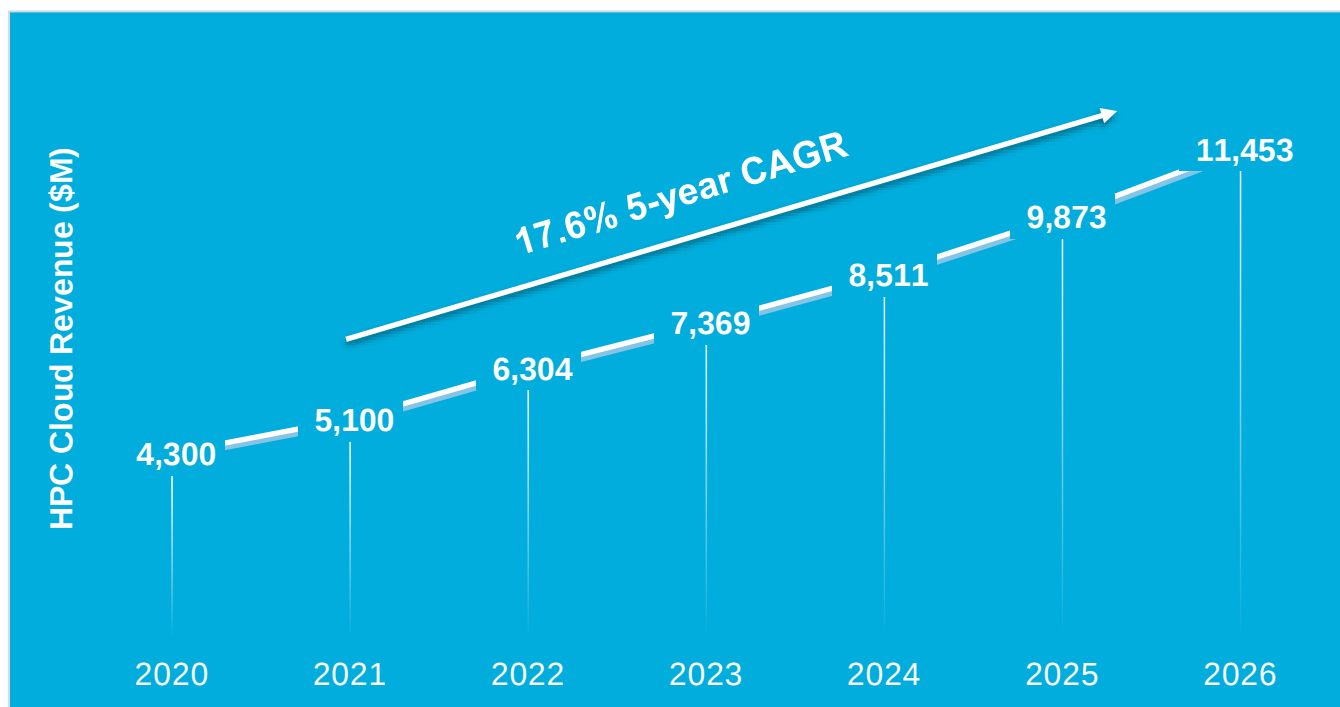
Alex Norton and Mark Nossokoff

www.HyperionResearch.com
www.hpcuserforum.com

HPC Cloud Forecast

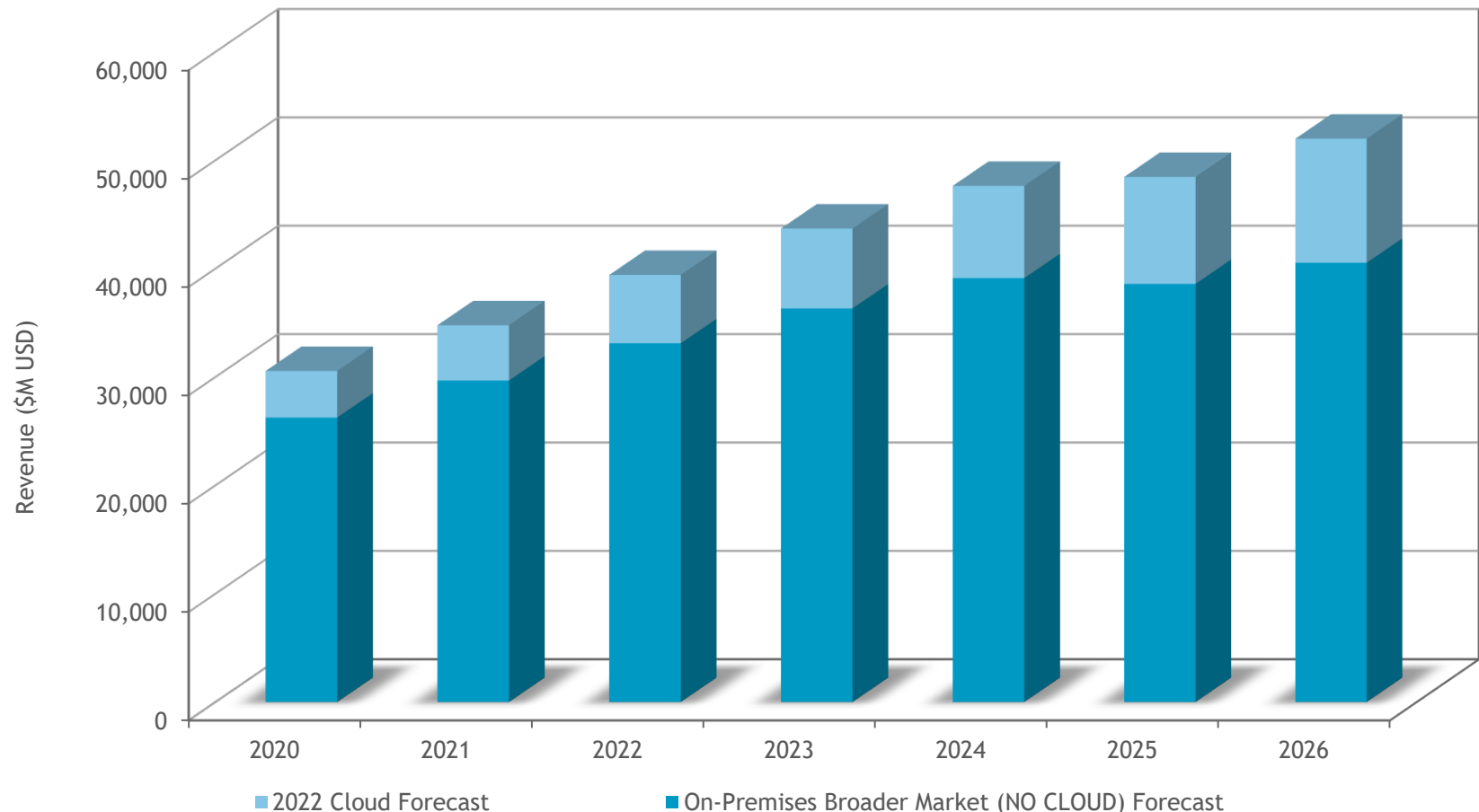
HPC cloud revenue is expected to exceed \$11 billion by 2026

- **Storage-specific components comprise roughly 1/3 of cloud revenue for HPC**
- **AI and other data-intensive applications are a high growth segment for cloud adoption in HPC**



The Total HPC Market: On-Prem and Cloud Computing

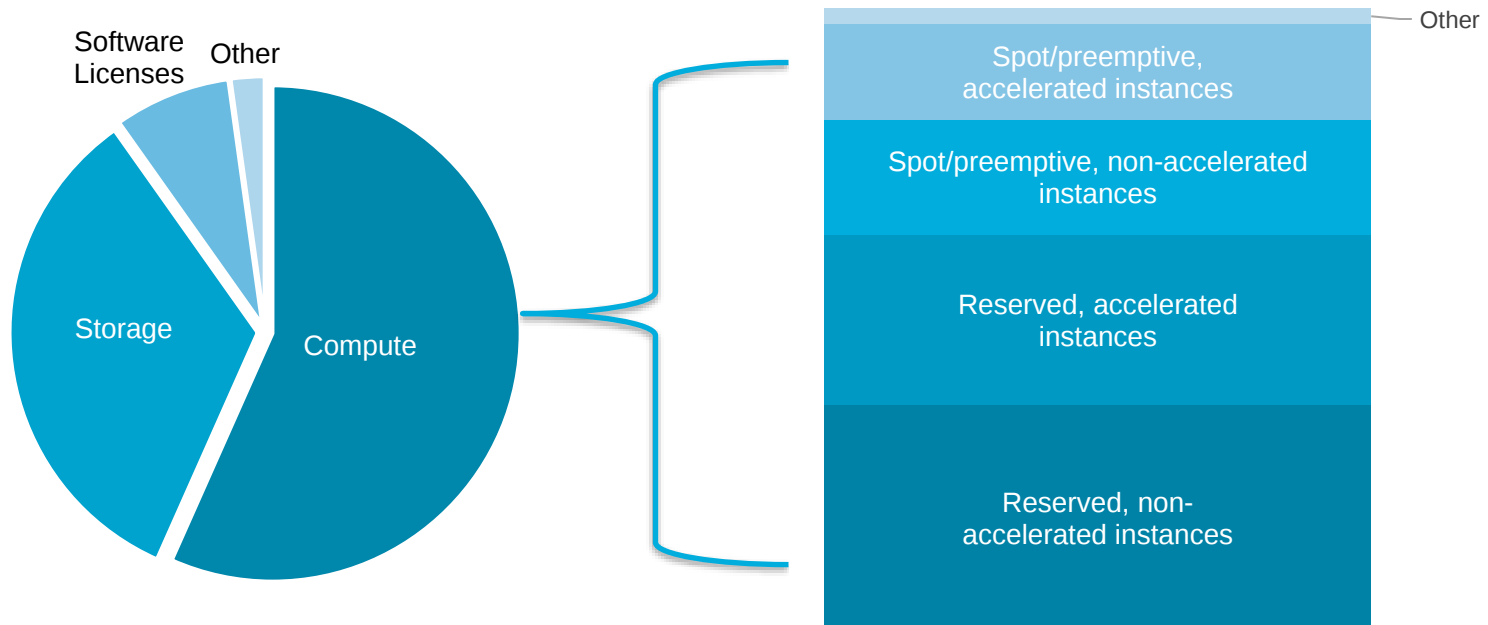
The cloud market is smaller, but growing faster



Cloud Spend Distribution

Compute comprises more than half of cloud spend

- **57% of cloud spend focused on compute instances:**
 - Roughly 50/50 split between accelerated and non-accelerated compute instances in the cloud
 - Slightly more spend on reserved instances over preemptive



Source: Hyperion Research Multi-Client End User Study 2022

Impact of HPC Cloud

Organizations are increasingly factoring cloud into future on-premises deployment plans

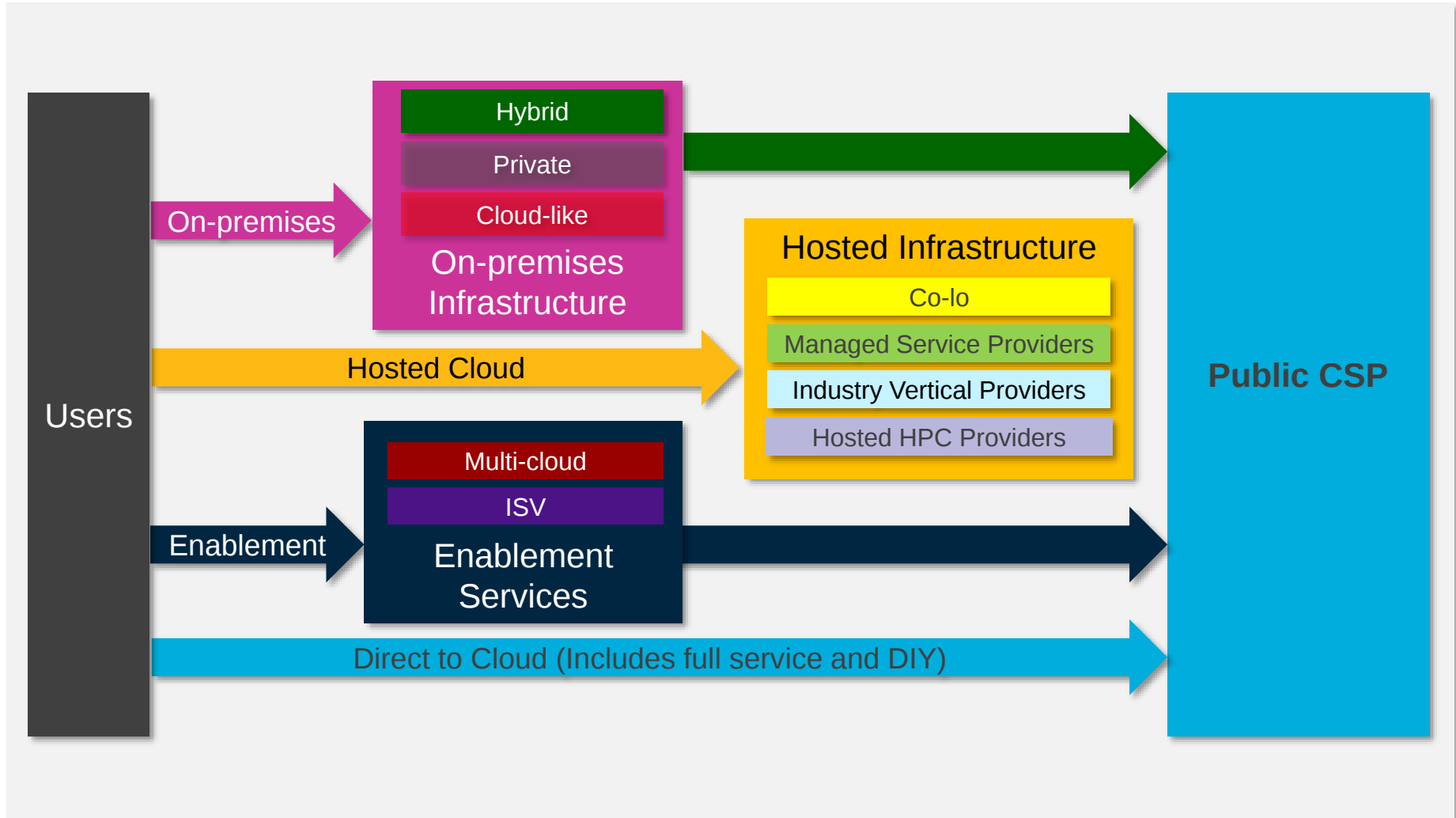
- **Public cloud resources have historically been seen as complementary to on-premises**
 - Many longitudinal studies show that cloud is used primarily for burst capabilities by many HPC users
 - This perception is shifting:
 - A recent study showed that almost 50% of the users are altering on-premises deployments due to cloud
- **Migrating HPC workloads to cloud platforms requires new skills for center managers & researchers**
 - Much of the education and training on using the cloud focuses on which workloads can and should be run in the cloud versus remain on-premises
 - IT departments are factoring in data movement and security as they expand their resource pools to consist of cloud resources

No One-Size-Fits-All

Cloud and on-prem decisions depend on variety of factors

- **Choosing where to run HPC applications depends on a wide set of factors:**
 - Internal skillsets and knowledge
 - Budget and cost
 - Performance characteristics
 - Hardware availability
 - Time constraints
 - Other
- **Understanding which applications can be run cost-effectively and performant in the cloud can aid in on-premises system design and optimization**
 - What technologies to invest in?
 - What scale to deploy on-premises?
 - Which middleware and software tools are necessary to optimally run HPC applications across platforms?
- **There is no single solution for all HPC user sites**

Models for Accessing HPC Cloud



Continue the conversation



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