



High-Performance-Computing

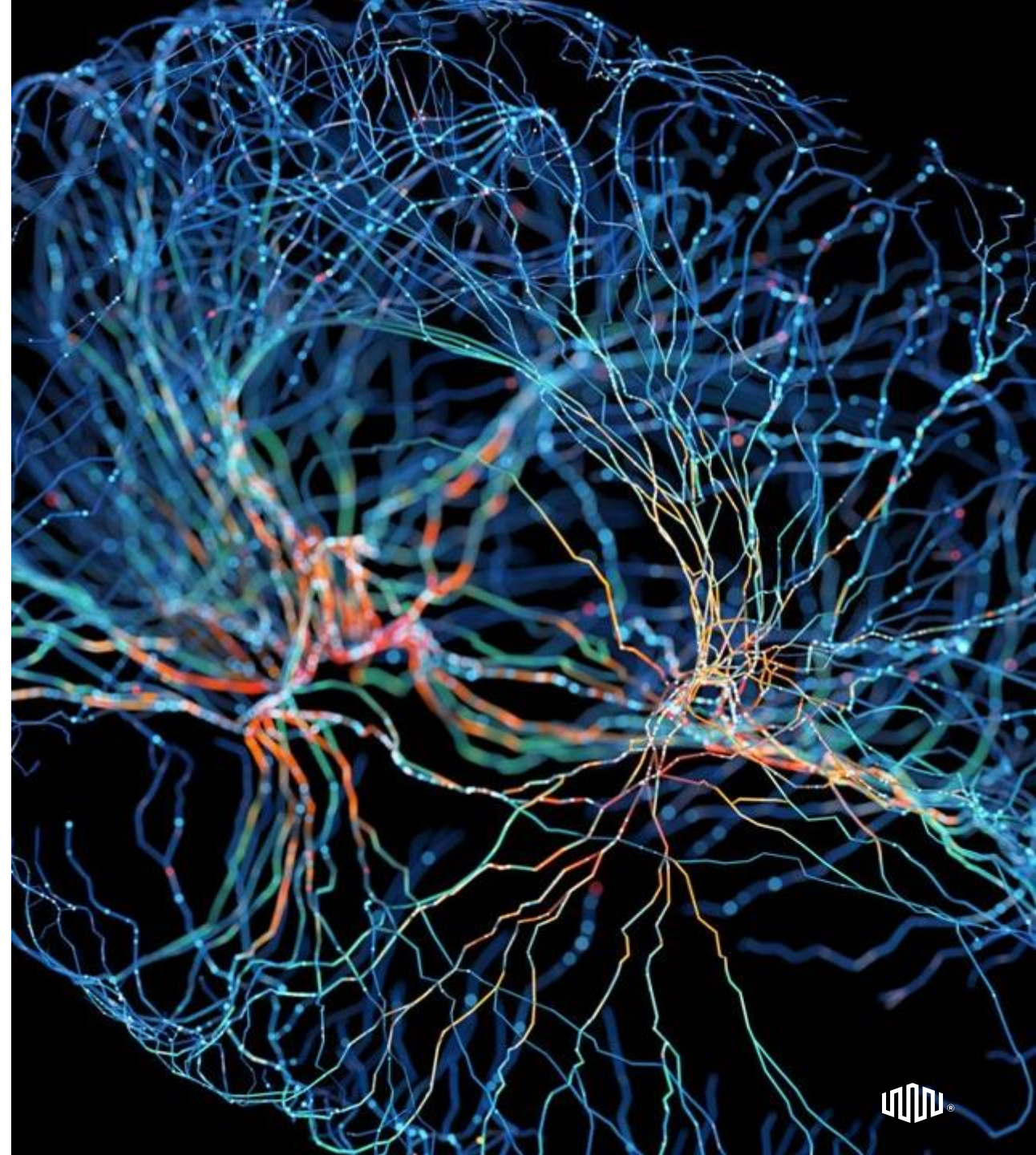
Nachhaltig skalieren mit Liquid Cooling

Mentor Sefedini – Senior Partner Sales Manager, Equinix Germany

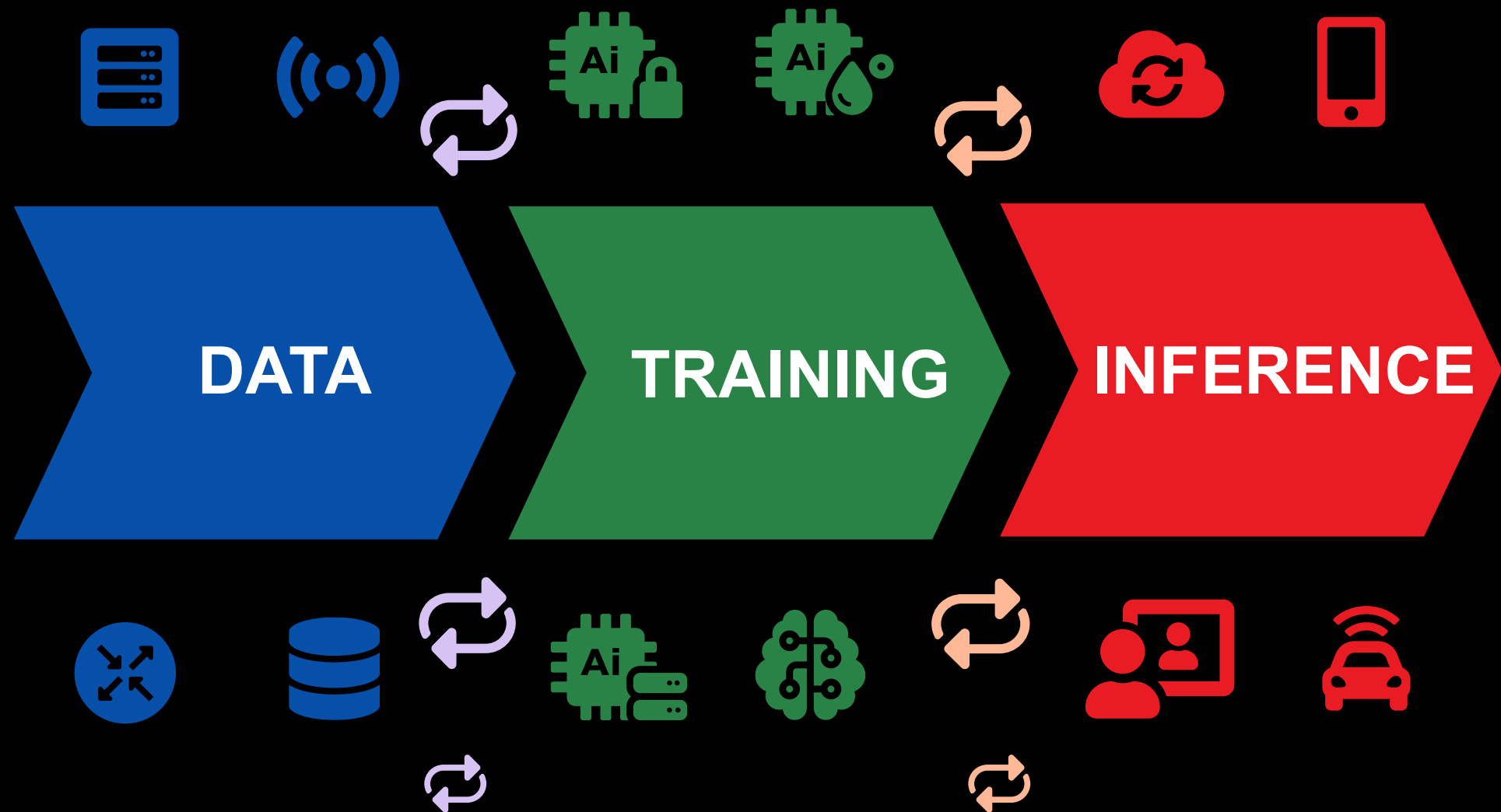
Trends in AI

- Die KI entwickelt sich von experimentellen Ansätzen zu vielfältigen realen Anwendungen.
- Der Markt für hybride KI verschiebt sich hin zu privater KI, die Herausforderungen wie Sicherheit, Datenschutz und Nachhaltigkeit adressiert.
- Unternehmen investieren in KI, um wertvolle Erkenntnisse zu gewinnen und intelligente Entscheidungen zu treffen.
- Gleichzeitig erhöht die zunehmende Nutzung den Druck auf die IT-Infrastruktur.
- Es gibt einen Trend zur Anpassung von KI-Modellen, die weniger Energie benötigen und auf privaten Daten basieren.

The global explainable AI market is forecast to grow from \$6.2 billion in 2023 to \$16.2 billion by 2028.



AI in Phases



RAG Retrieval-Augmented Generation

RAG, Reinforced Learning, Fine-Tuning



AgenticAI (Phases blur into each other)

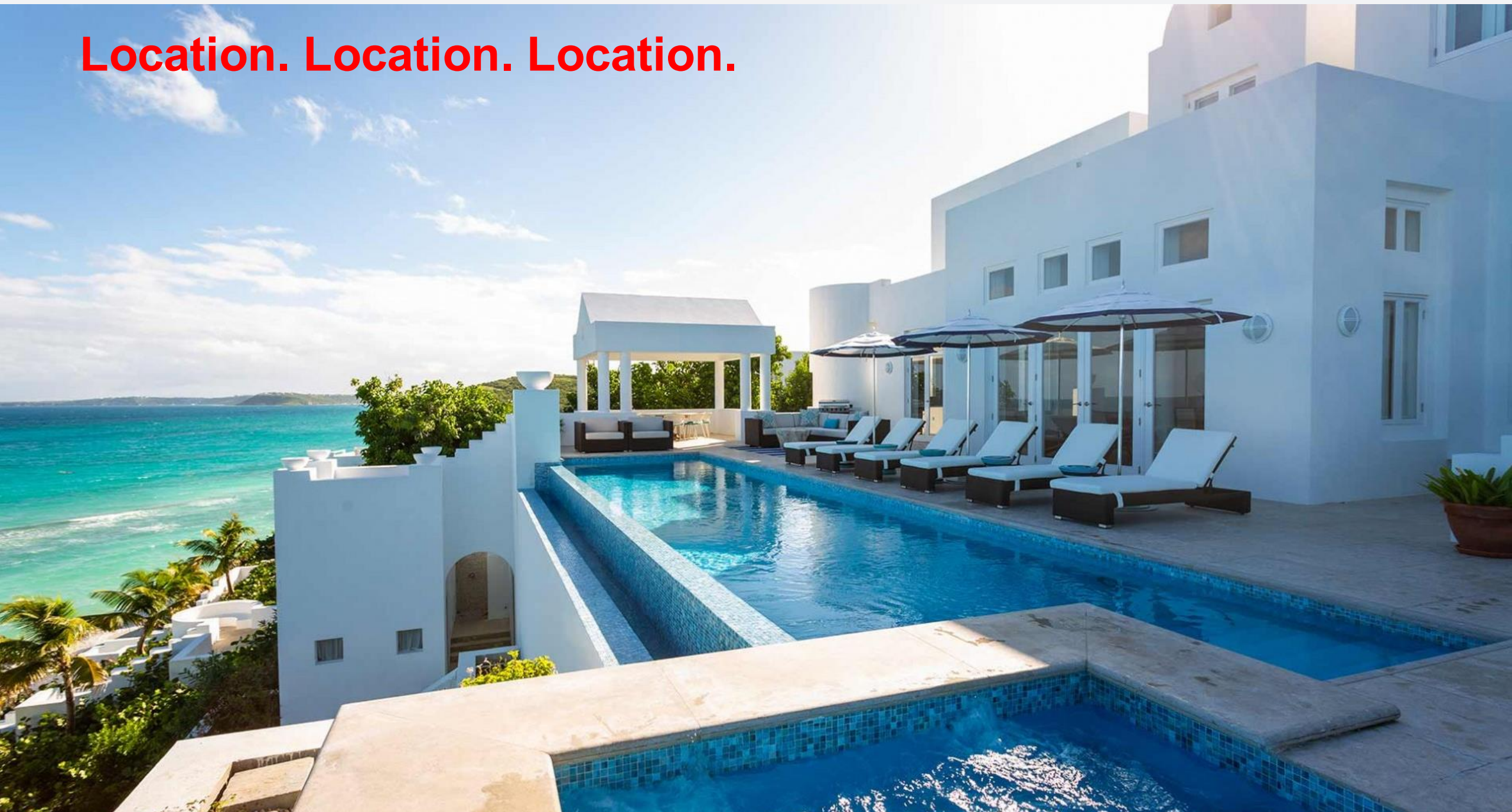


Re-Training (on the fly)

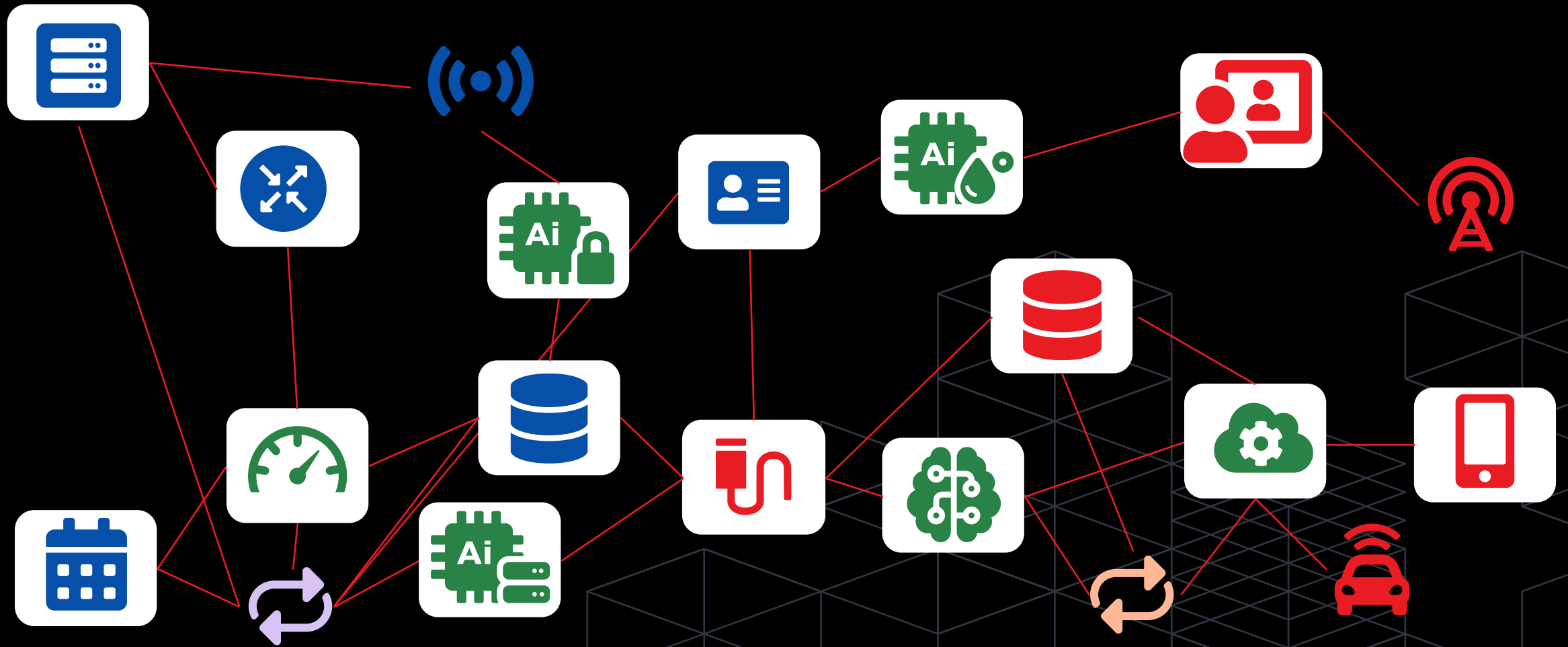
RAG, Reinforcement Learning,
Fine-Tuning (on the fly)



Location. Location. Location.

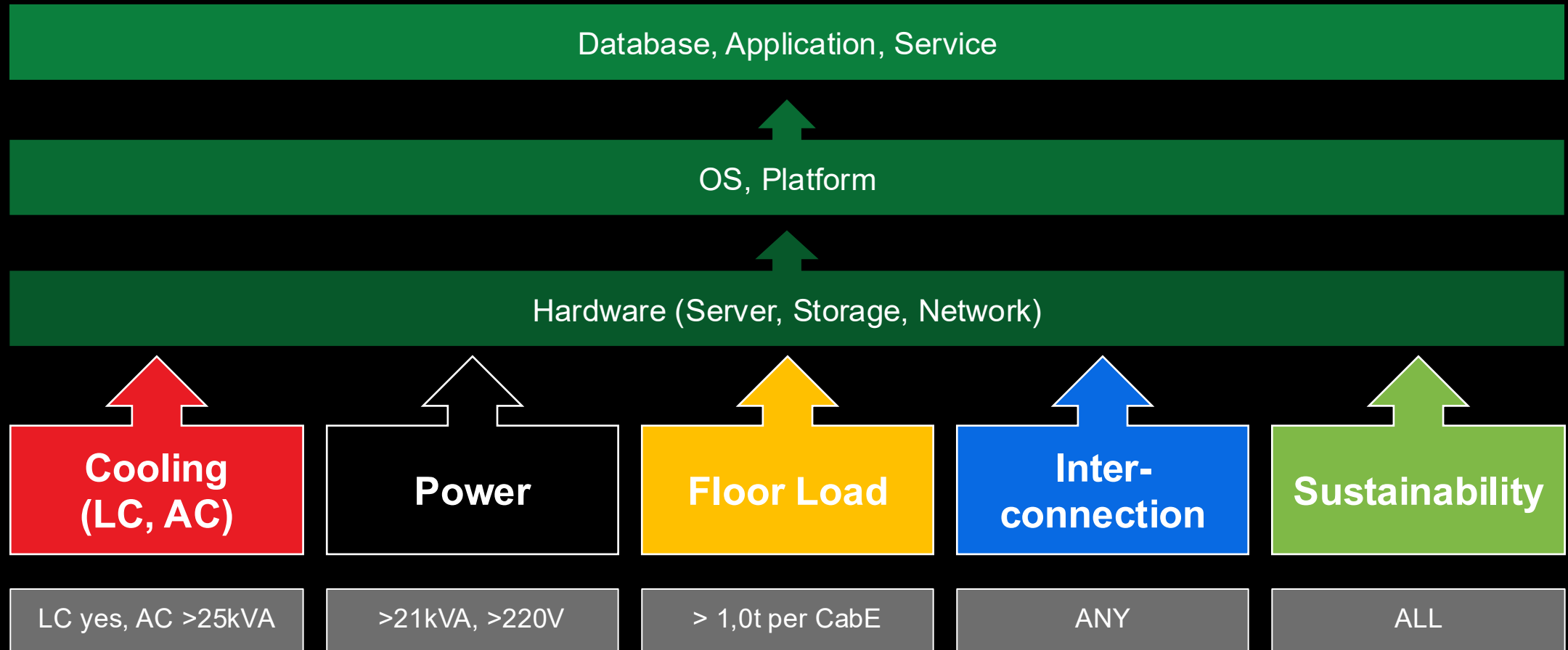


Distributed AI (Components need location and connection)



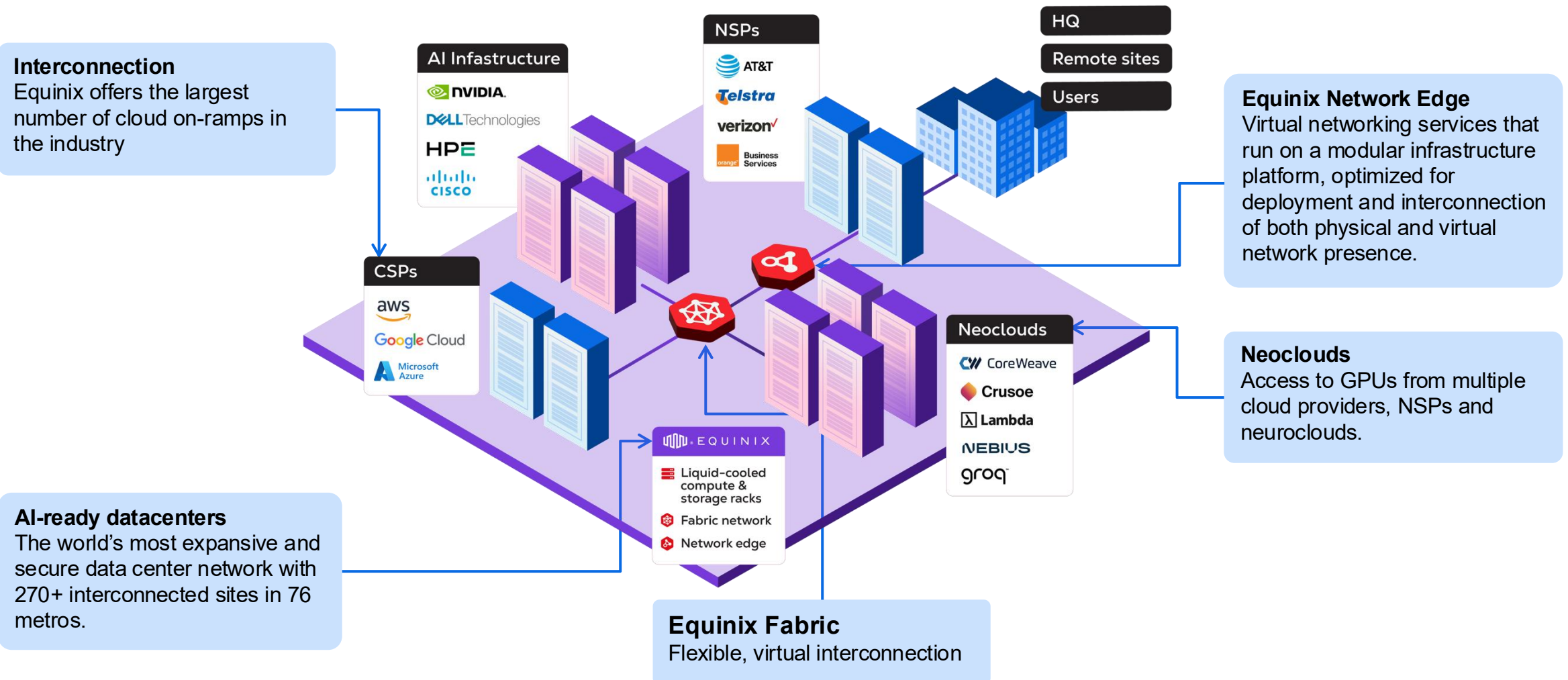
High Performance Data Center

For Enabling High Performance Computing (HPC) and AI



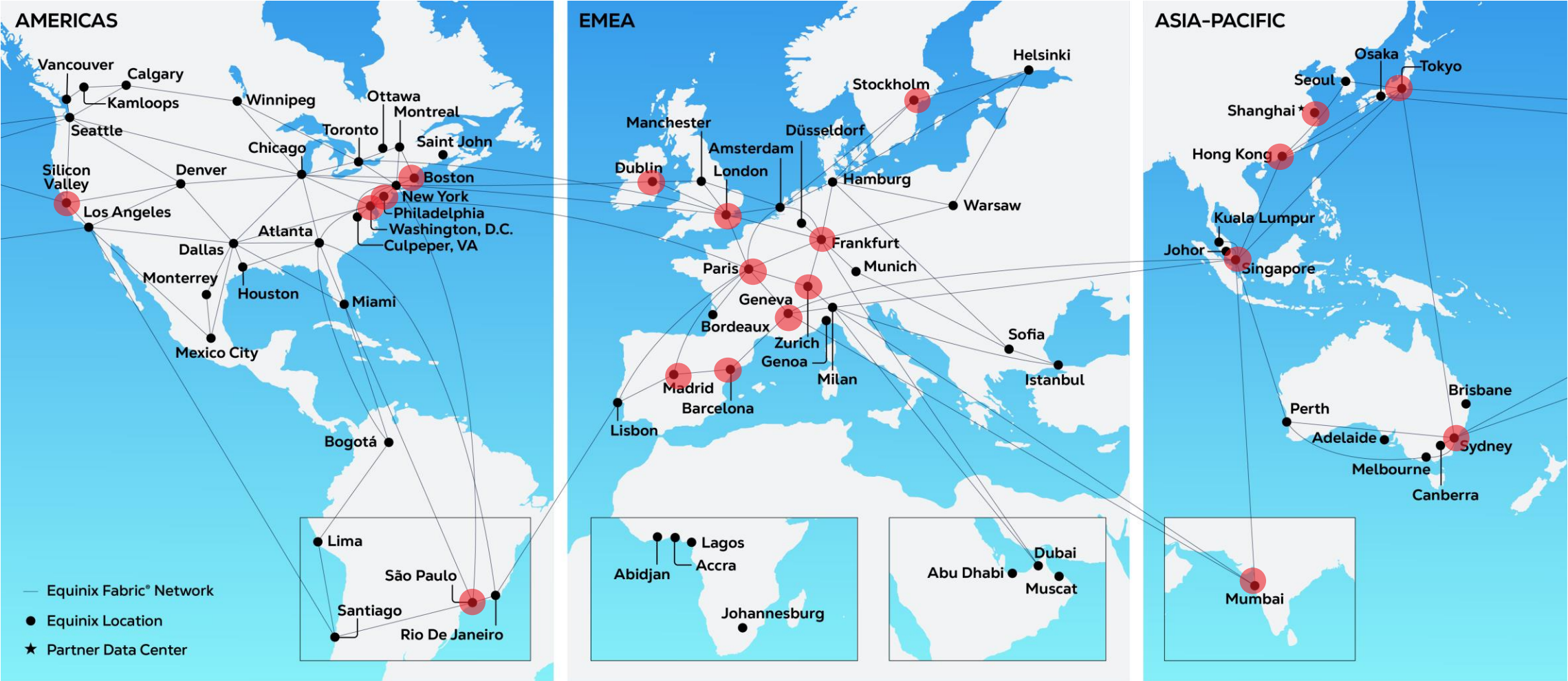
Distributed AI Architecture at Equinix

How does Equinix enable AI?



Equinix alignment to research hubs

270+	73	34	99.999%+
Data centers	Metros	Countries	Uptime record*



*As measured from Jan. 1–Dec. 31, 2023, for International Business Exchange™ (IBX®) operations



Cooling

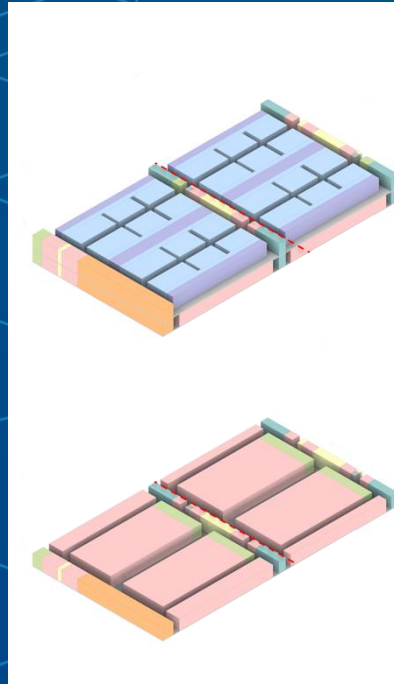
Air Cooling

Up to 41 kVA electrical power consumption can be air-cooled

To generate sufficient air volume to be circulated, floor layout configurations need adoptions:

- Widen air containment
- Space active cabinets
- Swap cold/hot aisle config
- Introduce rear-door cooler
- Introduce in-row cooler

Liquid-cooled, high-power drawing cabinets also have a share of air cooling (e.g. 100kVA: 75kVA LC + 25kVA AC)



Liquid Cooling

Augmented AC

- (active) rear-door coolers
- (active) in-row coolers

Direct-to-chip

- hoses are directly connected to gear
- in-rack LC distribution with in-rack CDU

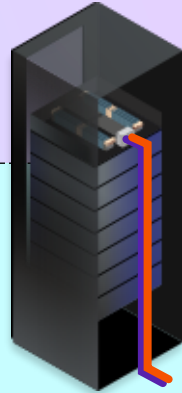
Immersive Cooling

- Submerging gear into coolant (still experimental)

Liquid Cooling

Enabling next generation of data center cooling innovation

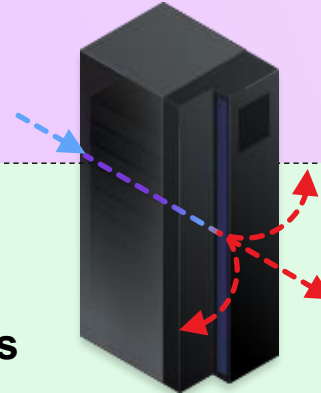
Liquid Cooling



Direct-to-chip

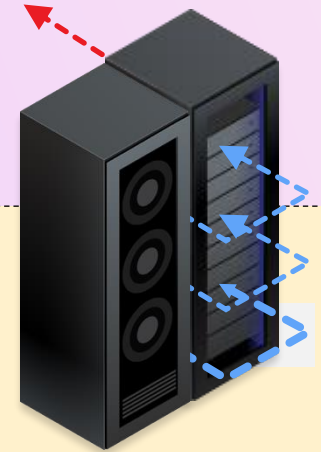
- Most efficient heat transfer
- True liquid cooling
- Enables highest power densities
- Bring your own cooling distribution unit (can be purchased from Equinix)

Augmented Air Cooling



Rear-door heat exchangers

- Enhanced air cooling
- Does not require server-level retrofit
- Bring your own cooling distribution unit (can be purchased from Equinix)



In-row coolers

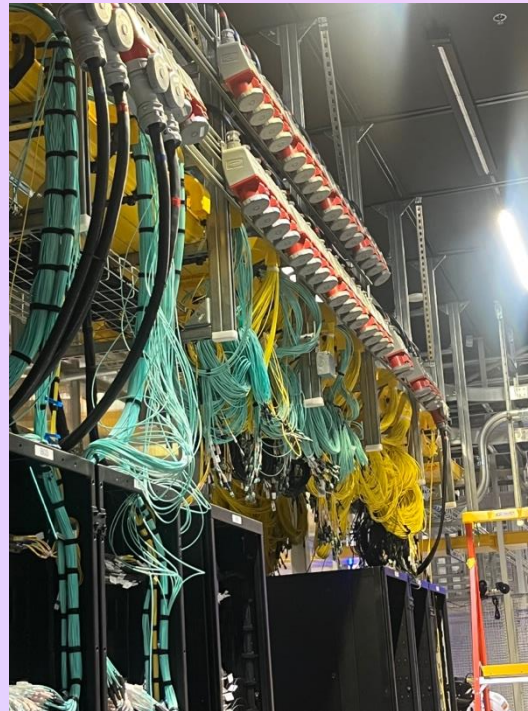
- Enhanced air cooling
- Does not require server-level retrofit
- Only available in cage environments

Build your preferred solution — enabled by a controlled liquid flow from Equinix-provided liquid circuits at a demarcation point within your cage or cabinet.

Leveraging Equinix' HPC Competence

Adding expertise, experience, and best practices to HPC projects

- Equinix has numerous liquid cooling and/or augmented air cooling projects in various locations around the world
- We have created a global group of Subject Matter Experts (SME) that support HPC opportunities
- Also, Equinix Smart Build contributes first-hand experience to the HPC opportunities and will be responsible for cage solutions and coordination with Ops.
- ESB will lead the build and hand over to Ops.

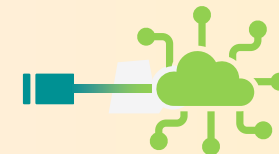


Leverage Platform Equinix for HPC sustainability

Choose to colocate in hubs
for direct services access



Interconnect virtually for
higher efficiency



Physical Infrastructure 100%*

Co-locating at an Equinix IBX covered with 100% renewables can reduce associated scope 3 market-based emissions by 100%

Interconnection

Virtual interconnection over shared resources and on demand. Architect exactly to your needs, without having to oversize resources right away.

Flexibly leverage virtual
network functions



Host your private cloud in
highly efficient environments



Virtual Network Functions

Move as much as you can to the public clouds, consolidate and virtualize your networking via virtualized network devices on Platform Equinix.

Hybrid Cloud Solutions

Move as much as you can to public clouds, consolidate your IT/networking, move the rest of your IT/networking infrastructure to Equinix. Emissions from workloads moved to Equinix at sites that are 100% covered by renewables can claim zero scope 3 market-based emissions.



**Enterprise AI
under your
complete control**



Cooling

specialized for performance



Compliancy

for residency/privacy



Connected

to clouds, Internet, partners



Close

to industry-leading AI partners





Location

**for your High Performance Data Center
building AI landscapes**

Location

**for your Multi-Cloud/Hybrid-Cloud
Architecture**

Location

for your Network Modernization



EQUINIX