Capital Markets Strategy
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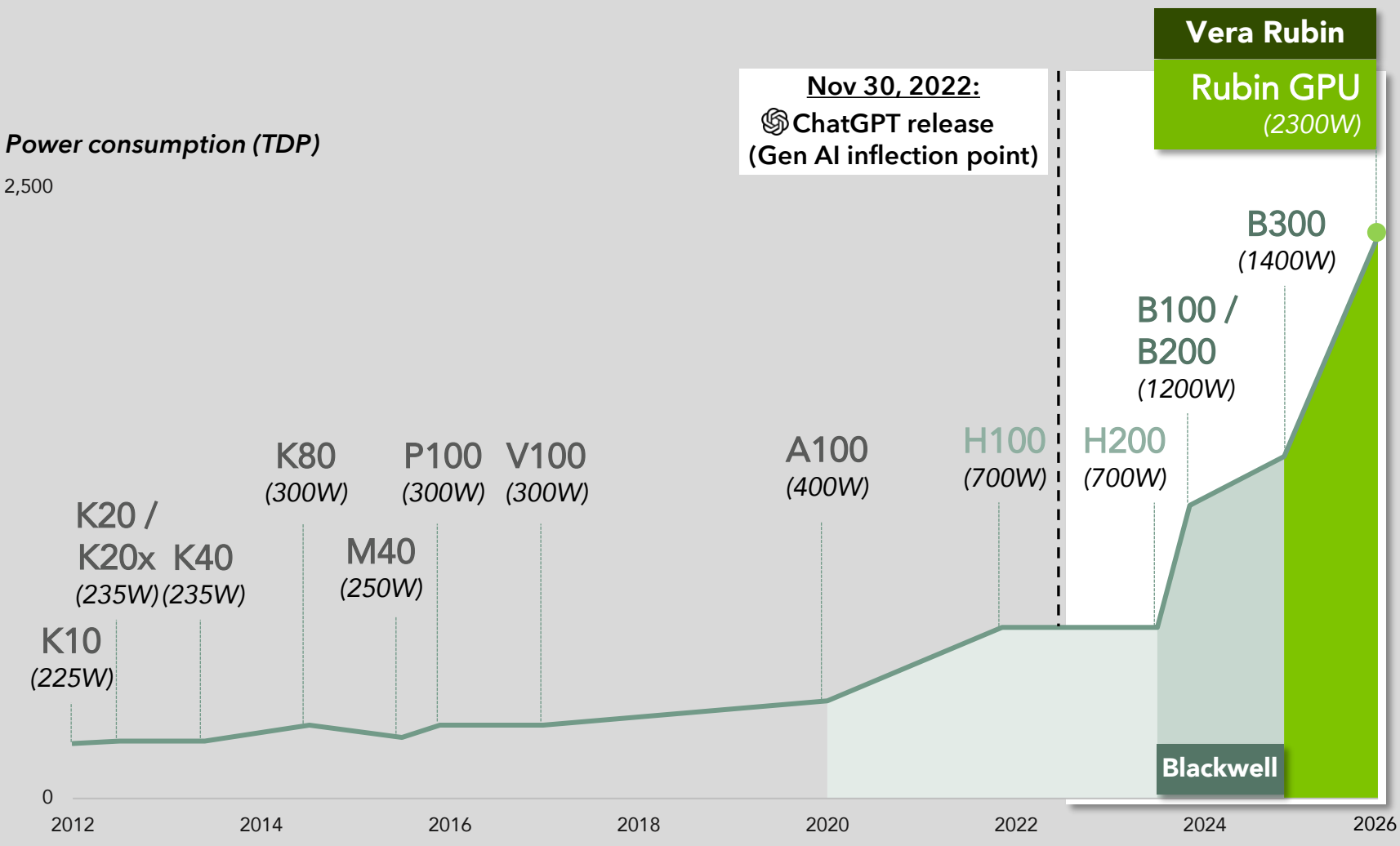
Chart of the Day

Inflection Point for AI Expansion Has Shifted to Data Center Infrastructure

NVIDIA

For the first time in history, the limiting factor for AI's progress is no longer GPU architecture or software, but rather the physical limitations of power grid and cooling systems. The computational performance of the latest Nvidia Rubin GPU is so powerful that it requires a complete rethinking of data center power delivery, cooling systems and physical infrastructure that now require 24-month construction lead times. The Rubin has also transcended the thermal limit of air, with 100% liquid cooling required. Energy has now replaced silicon as the more binding constraint for AI's expansion.

Standard configuration power consumption of Nvidia microchips since 2012

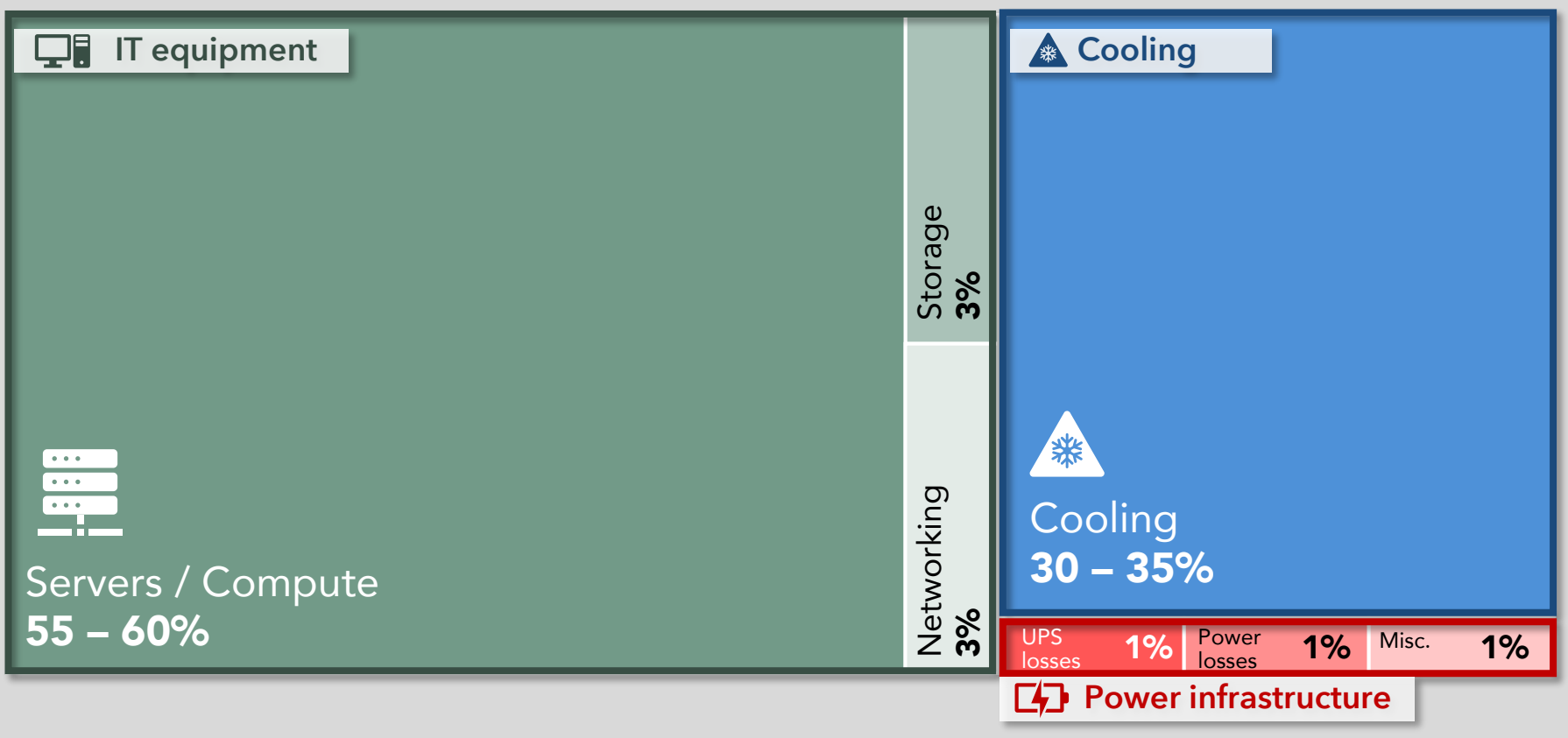


Source: (1) Nvidia. Various news sources.

The Evolving Ratio of Data Center Power Requirements

Historically, the ratio of data center power demand has been split at roughly 60% for compute and 40% for non-compute requirements (i.e., cooling, power conversion, lighting, etc). The new horizon of data centers, purpose-built for advanced Nvidia Rubin-class GPUs, pushes that balance toward a world where more than 90% of used power is for computational and IT demands. The move to the more thermally efficient, direct-to-chip liquid cooling requirements of Nvidia's Blackwell and Rubin generation chips contribute to this shift.

Breakdown of energy consumption of a data center



Source: (1) IEA, "Energy and AI (2025)". Uptime Institute Global Data Center Survey (2025). Lawrence Berkeley National Laboratory US Data Center Energy Usage Report (2024).

Global Corporate & Investment Banking Capital Markets Strategy Team

Tom Joyce
Managing Director
Tom.Joyce@mufgsecurities.com
(212) 405-7472

Stephanie Kendal
Vice President
Stephanie.Kendal@mufgsecurities.com
(212) 405-7443

Angela Sun
Associate
Angela.Sun@mufgsecurities.com
(212) 405-6952

"Macro stability isn't everything, but without it, you have nothing."