

# Accelerating AI: The Critical Role of Networking in Data Centre Performance

Rob Freeman  
AI DC Networking  
Juniper Networks

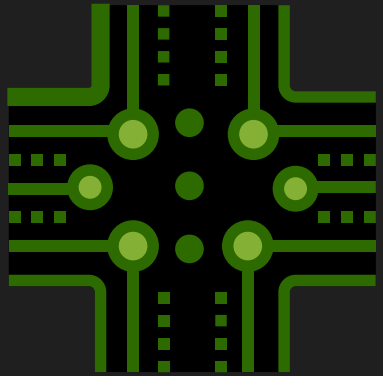
Paul Bonner  
Technical Director  
Kubus

**JUNIPER**  
NETWORKS

**Kubus**



Based in the South of England, Kubus are experts in Digital Transformation. With over 20 years of industry experience, we design, configure, test, ship, install, and manage tailored IT solutions across our technology pillars of:



**Networking**



**Infrastructure**



**Cyber Security**



**Managed Services**

# Kubus<sup>3</sup>

We are experts in Juniper technology, with extensive qualifications, awards, and accolades.

We are a Juniper Elite Plus Partner of Choice, winners of the 2023 Commercial Partner of the Year for EMEA and Worldwide, one of the first partners in the UK to become Partner Assured, as well as recently becoming one of less than 1,000 globally to be JNCIE-DC certified.





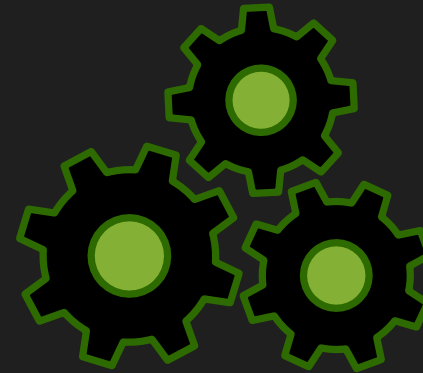
Our Capabilities speak for themselves, but the proof is in the statistics.



20,000 assets  
under PSS Support



Supply and deployment  
anytime, anywhere.



1500 devices  
configured per month.



Global DC  
Relocations.



We are specialists in designing customized solutions to solve your technological pain points. As experts in pre-staging and testing, we will ensure that all your devices are powered up, configured, tested, and pre-staged prior to delivery, so you can simply plug and play.

**We pre-stage and test thousands of pieces of kit each month on our site.**

**We have 12 in-house engineers, trained and certified up to JNCIE level.**

**We have fully equipped in-house tech-ops and lab facilities.**

**Direct Juniper Buying Capability, minimizing lead times and cost.**

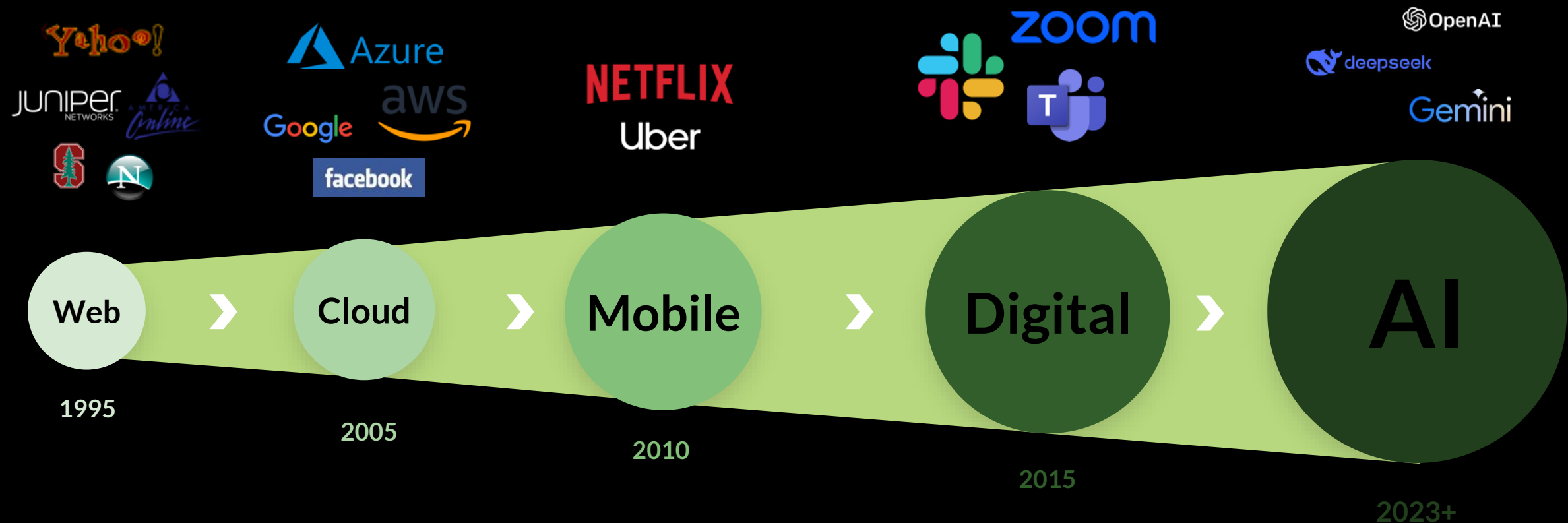
**We are on hand to provide you with 24/7 support, keeping your network moving.**



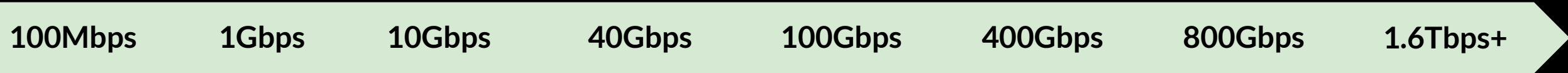
# Networking the AI Data Centre

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# AI is driving the next evolution of the Data Centre



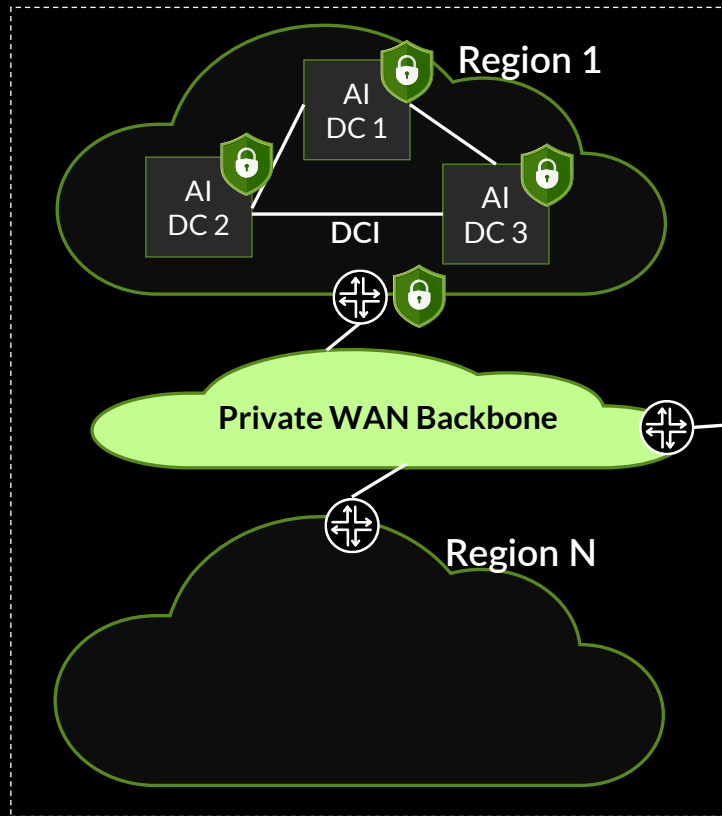
## Ethernet has evolved and continues to evolve



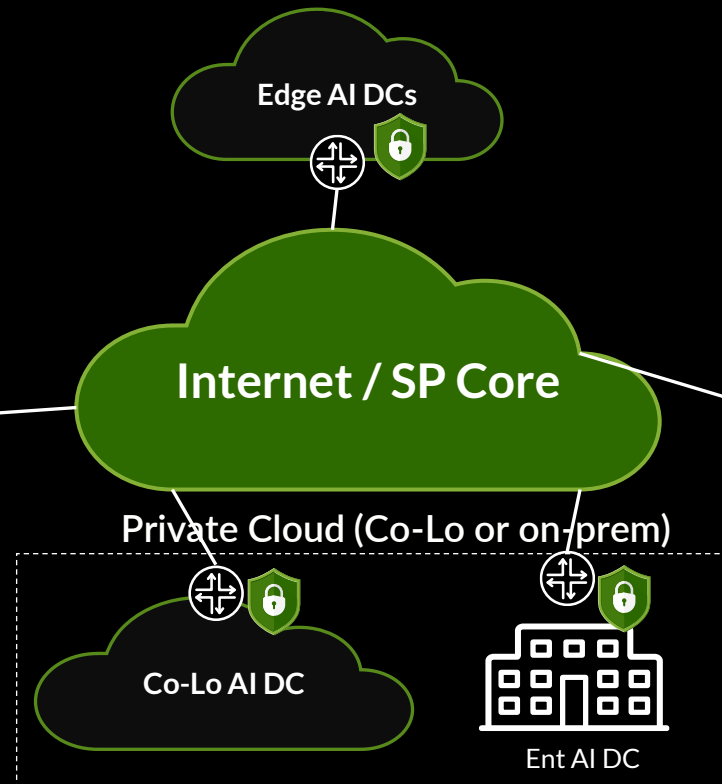
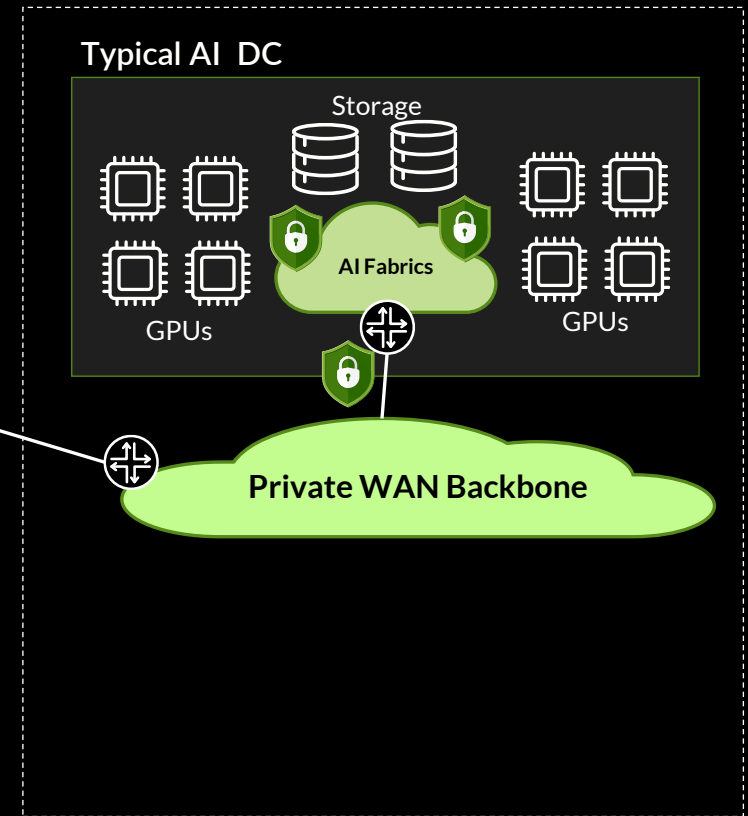
# Distributed AI Clusters in Today's Hybrid AI Cloud

*Driven by Power, Data Gravity, Sovereignty, Privacy, Latency, Regulations & Cost*

Public/AI Cloud X



Public/AI Cloud Y



Juniper uniquely positioned to provide DC Fabric, DCI and Security solutions



# AI Infrastructure is an Ecosystem

Systems



Accelerators

GPU, TPU, LPU, xPU

Open  
Ethernet  
Fabric  
Optimise  
d for AI



Storage



# AI workloads are a whole different story for Networks

General Purpose Server



2x25G still the most  
common configuration  
we sell

50G per server

NVIDIA DGX B200 Server



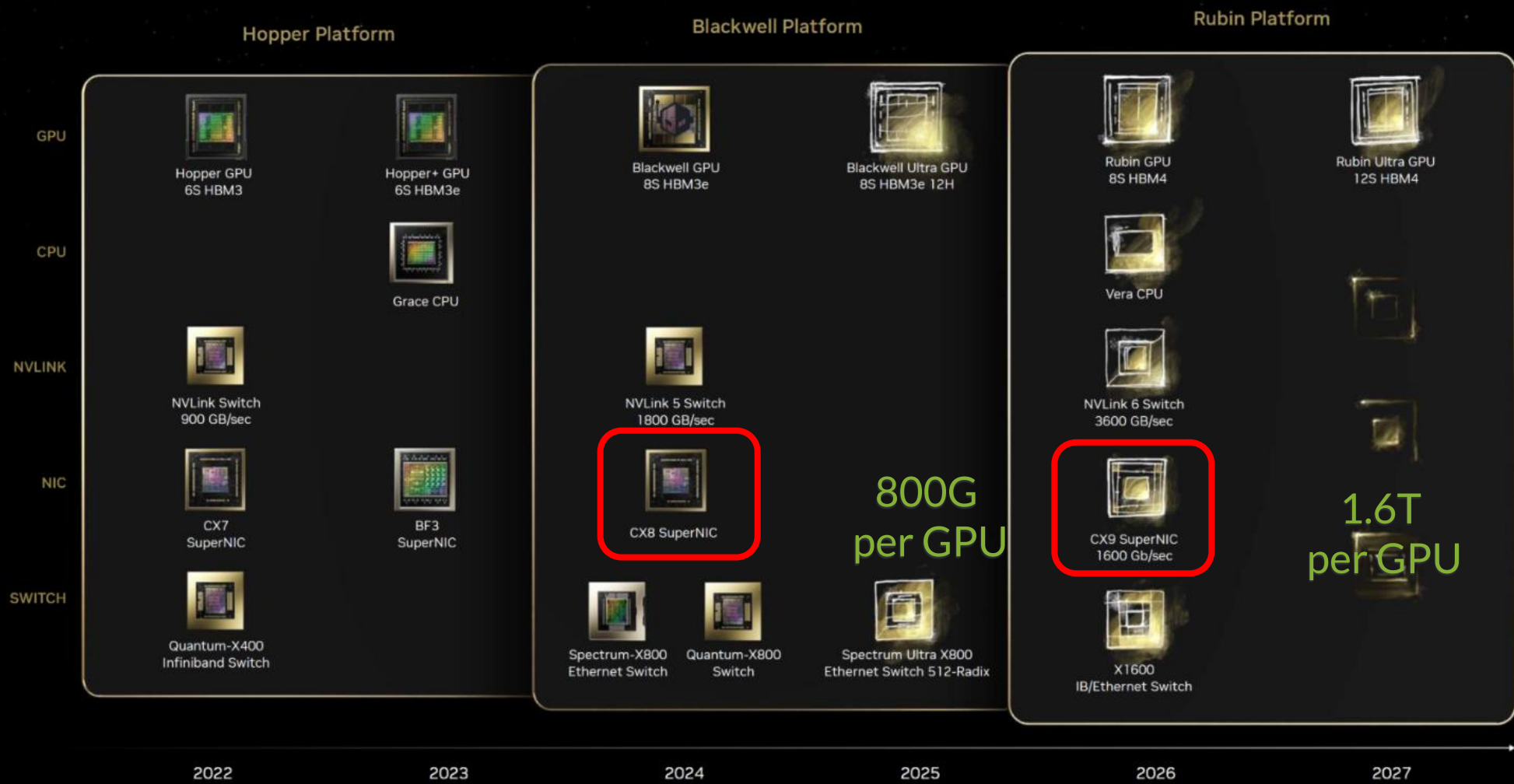
8x400G Backend  
GPU Network

2x100G  
Frontend  
Network

4x200G Storage  
Network

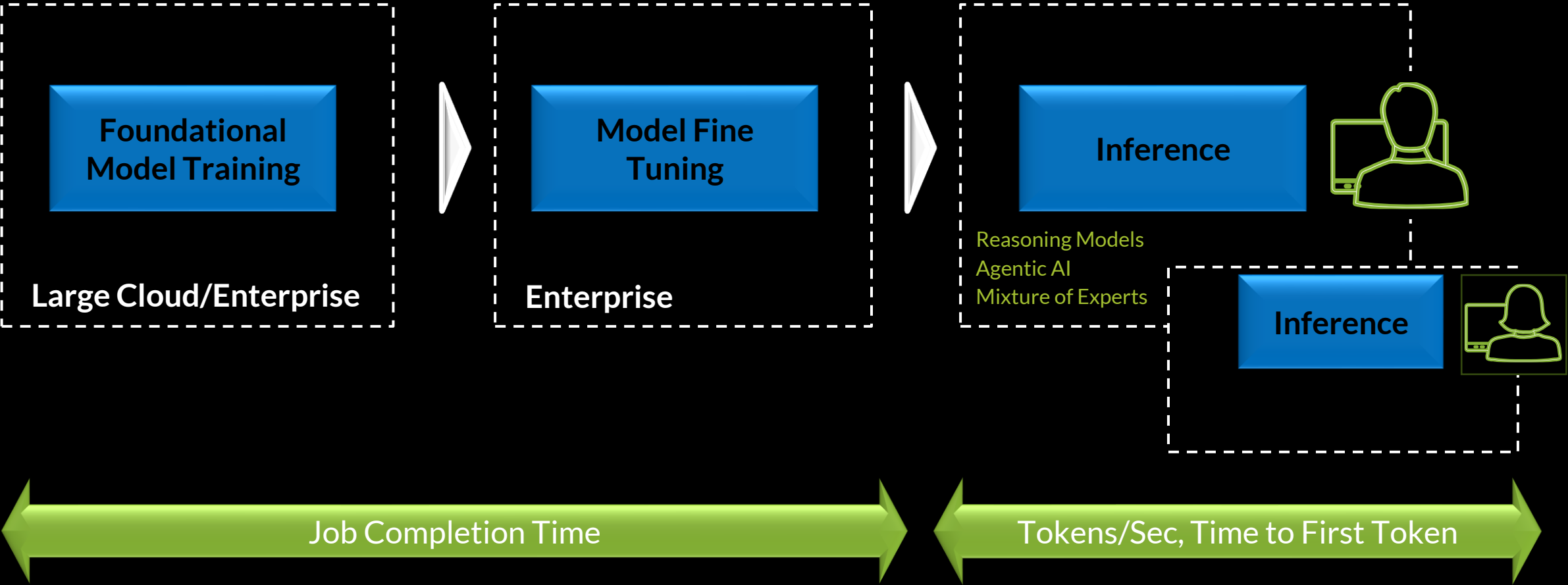
~4Tbps per server

# ... Quadruples by 2027



Nvidia Roadmap shown at GTC March 2025

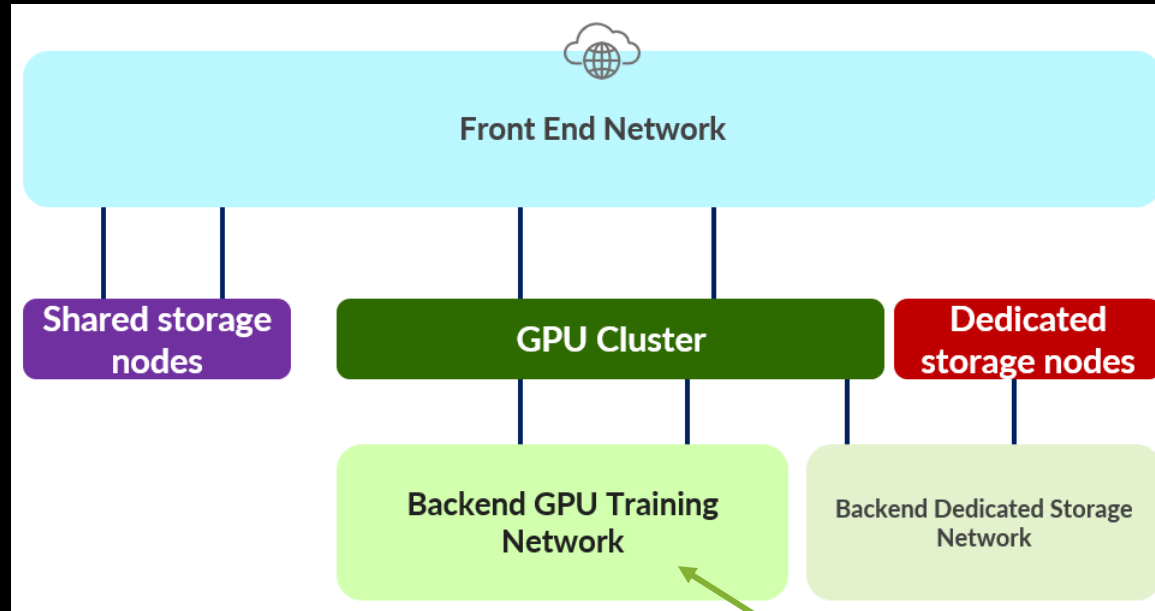
# Networking plays a role in each phase of AI lifecycle



The network plays a critical role in maximizing these metrics

# Networking bottlenecks in training are a NO-GO!

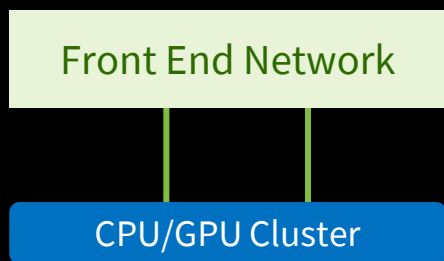
## TRAINING



High Speed Networking – 400G today going to 800G/1.6T  
Requires congestion-free, lossless networking, RoCE v2...  
... because GPUs sitting idle is criminal

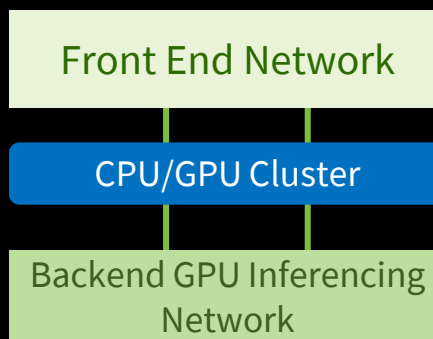
Job Completion Time (JCT) is key metric

# Inferencing is increasingly multi-GPU



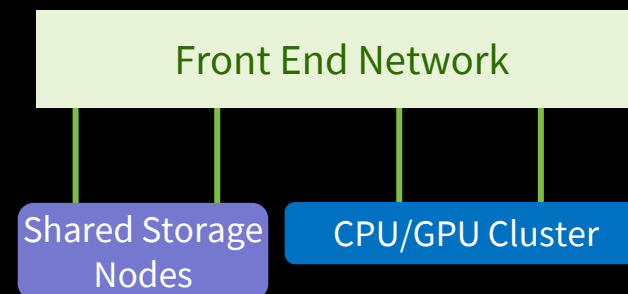
## Single-node Inferencing

CPU or a GPU  
Single-node or even a single GPU



## Multi-node Inferencing

Required for very large models (e.g., Llama-3, GPT-4o)  
Desire to improve throughput or latency with multi-node  
Agentic AI, Reasoning models



## Retrieval-Augmented Generation (RAG)

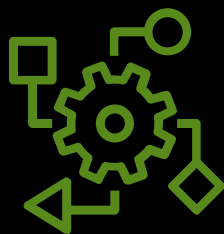
LLM + supplemental data  
More precise responses  
Requires higher-end GPU (e.g., H100) & storage  
Latency sensitive

Throughput and Time To First Token are the key metrics

# AI Infrastructure Challenges



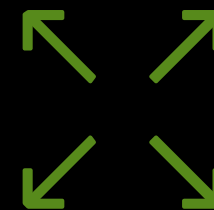
**Performance  
(DC/DCI)**



**Operational  
Complexity**



**Security**

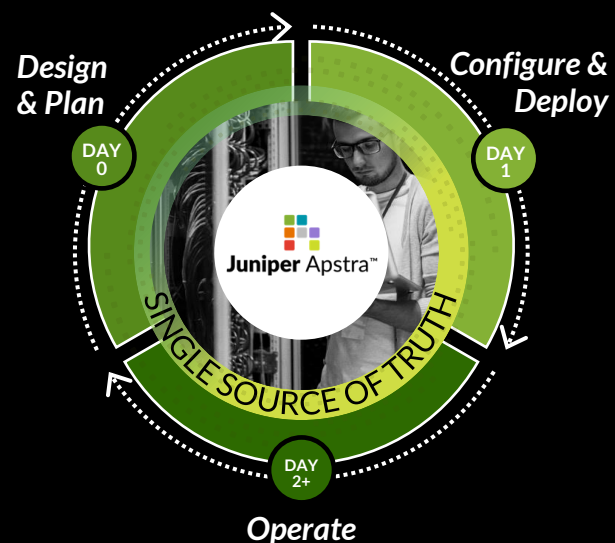


**Open vs.  
Proprietary**



# Juniper AI DC strategy & focus

## Management, Automation & Context



AI-Infrastructure aware  
Integrated with industry-leading Mist AIOps  
Auto-tune the network to optimize AI workloads

## Platforms

Scale out with QFX

The industry's #1\* 800Gb RoCEv2 platform



Scale up with PTX



Comprehensive & robust software stack to support the highly specific and rigorous demands AI workloads place on the network.

\*44% 2024 market share by units shipped, 650 Group

## Tested Solutions, Ecosystem Partnerships & AI Expertise



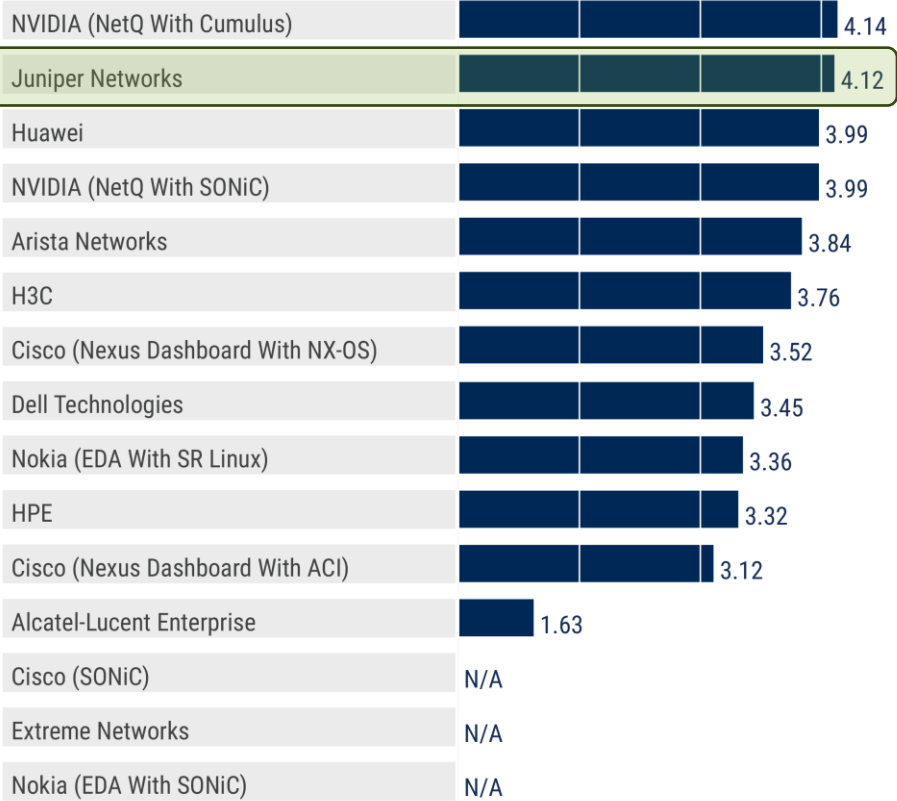


# 2025 Gartner® Critical Capabilities™ for Data Center Switching

Juniper scored second highest for AI Ethernet Fabric Build-Out

Figure 2: Vendors' Product Scores for AI Ethernet Fabric Build-Out Use Case

Product or Service Scores for AI Ethernet Fabric Build-Out



As of 21 March 2025

1 2 3 4 5 © Gartner, Inc

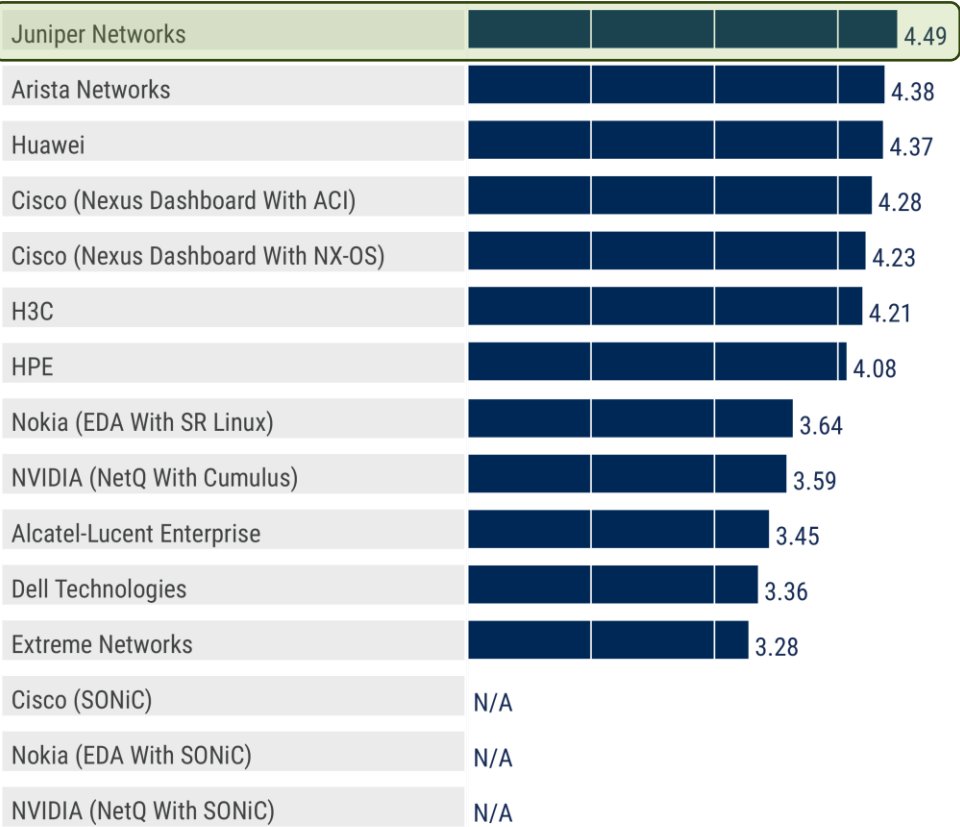
Gartner.

# 2025 Gartner® Critical Capabilities™ for Data Center Switching

Juniper scored highest for Enterprise Data Center Network Buildout

Figure 1: Vendors' Product Scores for Enterprise Data Center Network Build-Out Use Case

Product or Service Scores for Enterprise Data Center Network Build-Out



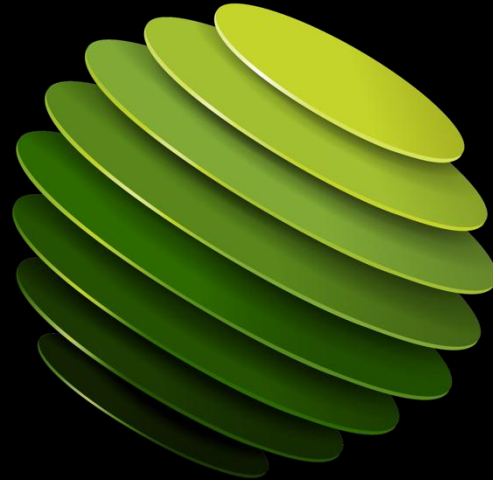
As of 21 March 2025

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# Juniper Networks AI Data Centre (public) customers





# Thank you