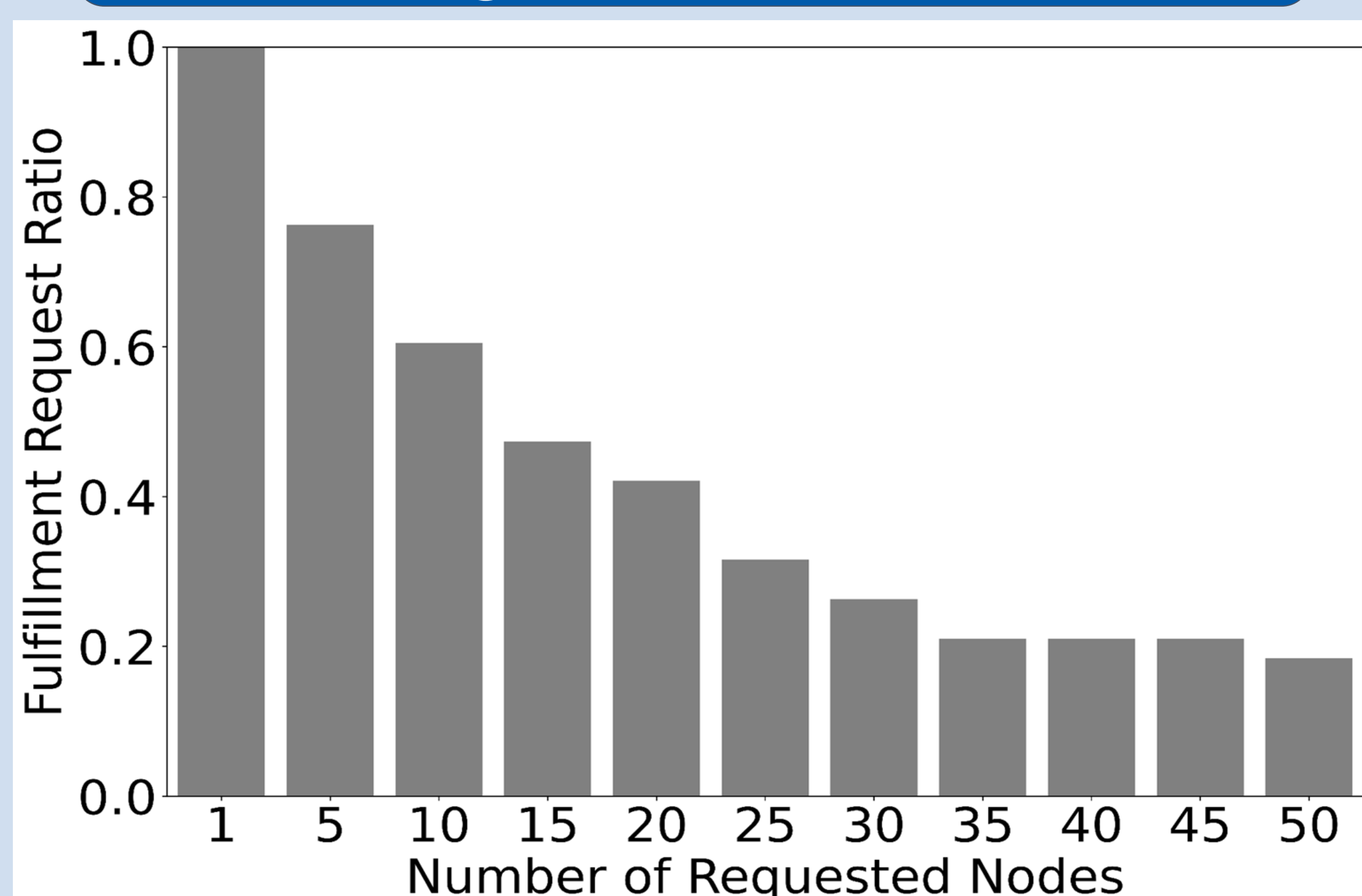


Multi-Node Spot Instances Availability Score Collection System

Sungkyu Cheon, Kyumin Kim, Kyunghwan Kim, Moohyun Song and Kyungyong Lee

What Is Spot Dataset

Success rate variation when single-node SPS is 3



Spot instances are cheap and unstable

- Up to 90% cheaper unused cloud resources
- Could be interrupted or not-fulfilled

Cloud vendors provide their own dataset

- Spot Price Dataset (On-demand, Spot, Savings)
- Spot Availability Dataset (SPS)

Spotlake provides single-node SPS data

- Single-node SPS == 3, High success at 1 node, Drop at 50 nodes

➔ **Single-node SPS is unreliable for large deployments**

Goal

Analysis Single-node SPS

- Can the single-node data useful for large deployments?

Collect Multi-node SPS

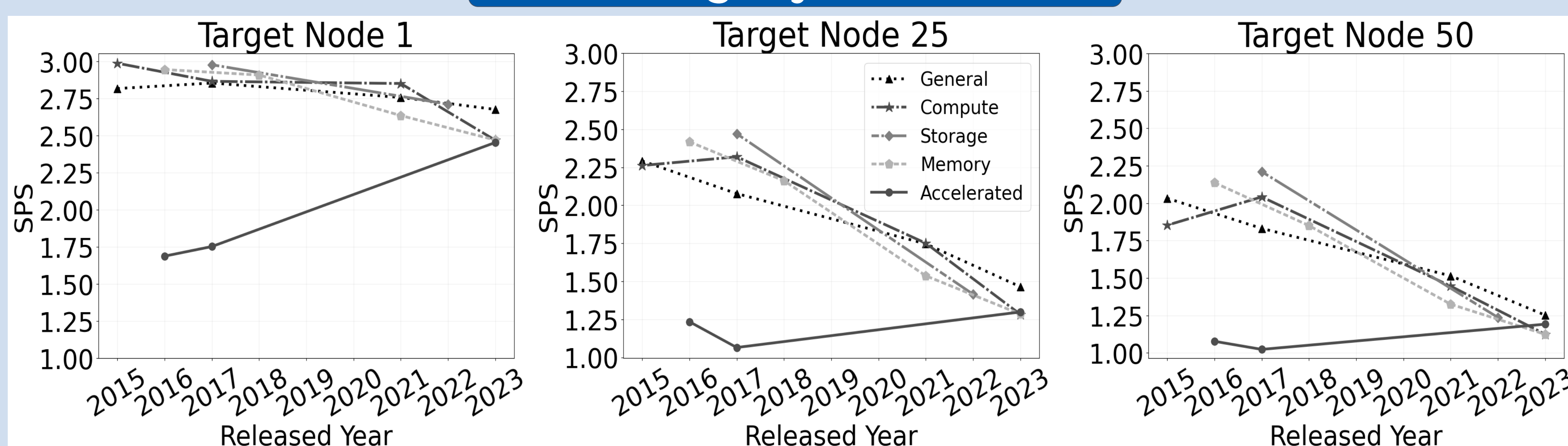
- Can we collect a multi-node availability collection system?
- Can we provide multi-node SPS dataset?

Analysis Multi-node SPS

- How does multi-node SPS differ?

Data Analysis

SPS Change by Release Year



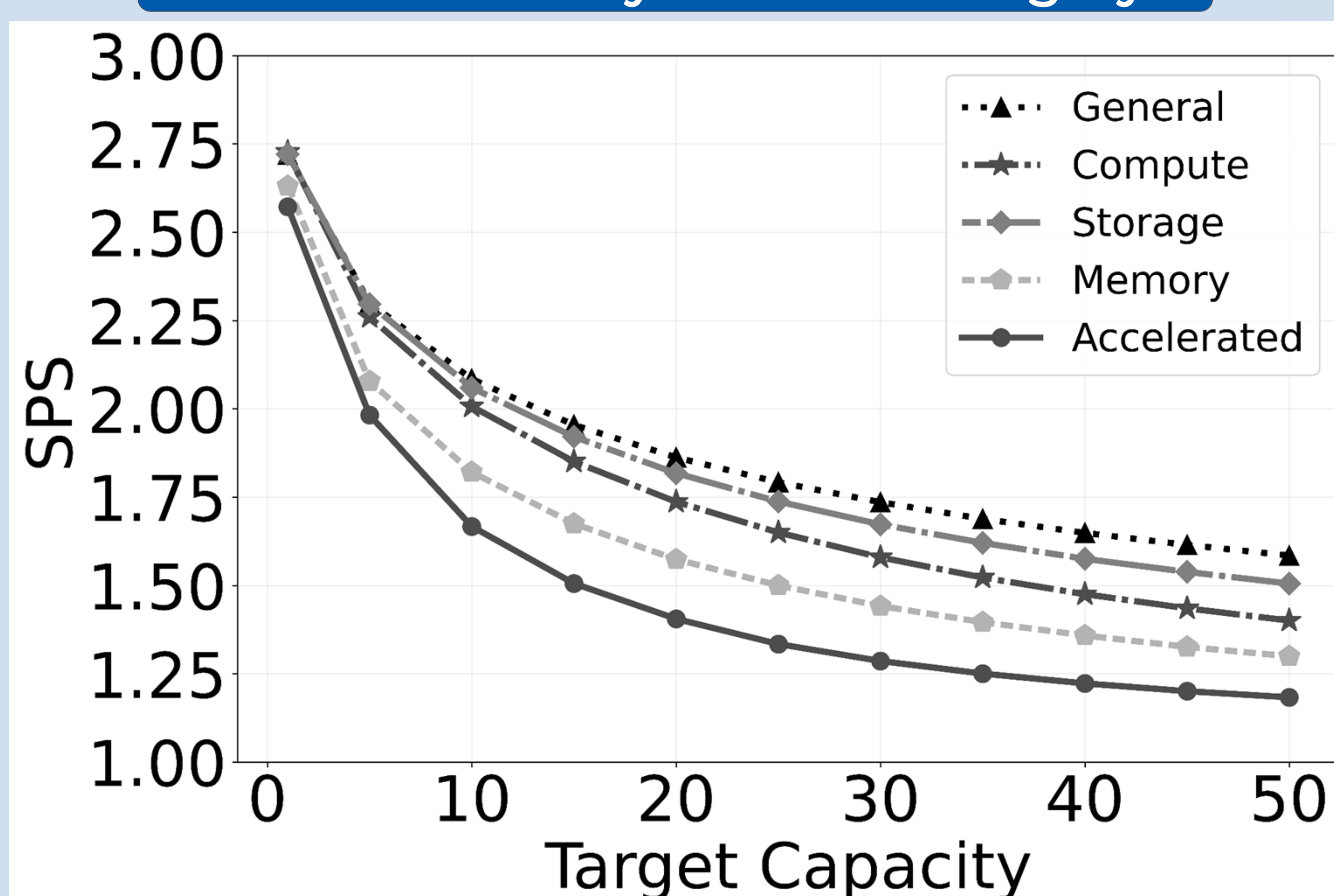
Newer Instance Type ➔ Lower SPS

Accelerated Computing ➔ Higher SPS

↳ High cost & Software Complexity

➤ Release year and category influence multi-node availability

SPS variations by instance category



Node Count ▲, SPS ▼

Accelerated Computing shows the sharpest decline (high GPU demand)

➤ Instance category is critical for multi-node deployments

Spot Instance Dataset Archive Service Online

- Periodic SPS queries to AWS (every 10 minutes)
- Collects availability for single- and multi-node
- Enhanced Spotlake with real-time/historical multi-node views

SpotLake

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aws Amazon Web Services Google Cloud Platform Microsoft Azure

Instance Region AZ Start date: 2025. 04. 14 End date: 2025. 04. 15 QUERY

▼ Max Nodes with SPS 3

InstanceType	Region	AZ	Availability	T2	T3	Interruption Ratio	SpotPrice (\$)	Savings (%)	Date
c3.2xlarge	us-east-1	use1-az4	3	50	50	3	0.205	51	2025-04-15 00:40:00
c3.2xlarge	us-east-1	use1-az6	3	50	50	3	0.196	53	2025-04-15 00:40:00
c3.2xlarge	us-west-2	usw2-az1	3	50	50	3	0.17	60	2025-04-15 00:40:00
c3.2xlarge	us-west-2	usw2-az2	3	50	50	3	0.166	61	2025-04-15 00:40:00
c3.8xlarge	us-east-1	use1-az4	3	50	50	3	0.785	53	2025-04-15 00:40:00

▲ Single-Node SPS Values



Public Web Service Link
<https://spotlake.ddps.cloud>