

Different Types of Server SSD Interface

A Basic Guide

Introduction

When it comes to computer storage, HDDs are probably mentioned most of the time. However, SSDs enable faster information processing and better computer performance with lower power. The following will focus on three server SSD interfaces and their differences.

Types of Server SSD interfaces

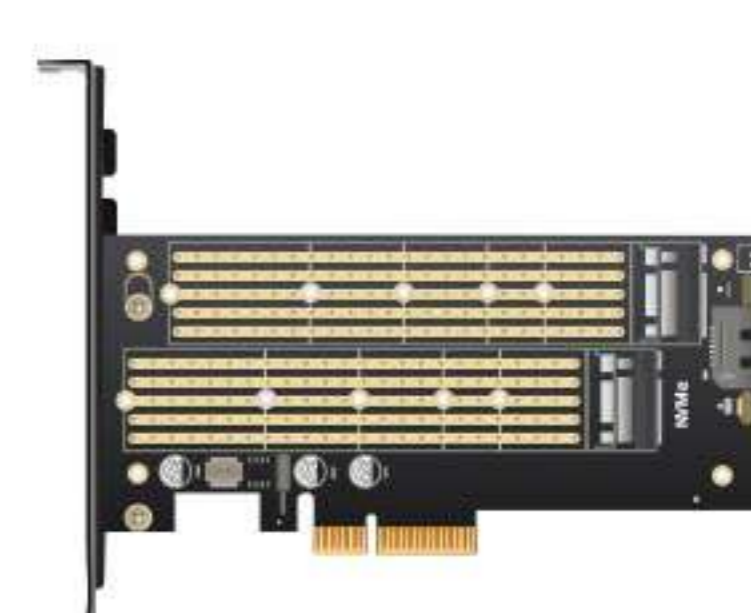
Serial Advanced Technology Attachment (SATA) is used to transmit data between motherboard and storage devices like hard disks over a high-speed serial cable. As a half-duplex interface, SATA can only use one channel/direction to transfer data and cannot perform read and write functions at the same time.



Serial Attached SCSI (SAS) is a new generation of SCSI technology and adopts serial technology for higher transmission speed, which also supports hot swapping. It is a full-duplex interface and supports simultaneous read and write functions.



Non-Volatile Memory Express (NVMe) interface connects to a PCI Express (PCIe) slot on the motherboard. Located directly between device drivers and PCIe, NVMe is able to achieve high scalability, security, and low latency data transmission.



Read/Write speed



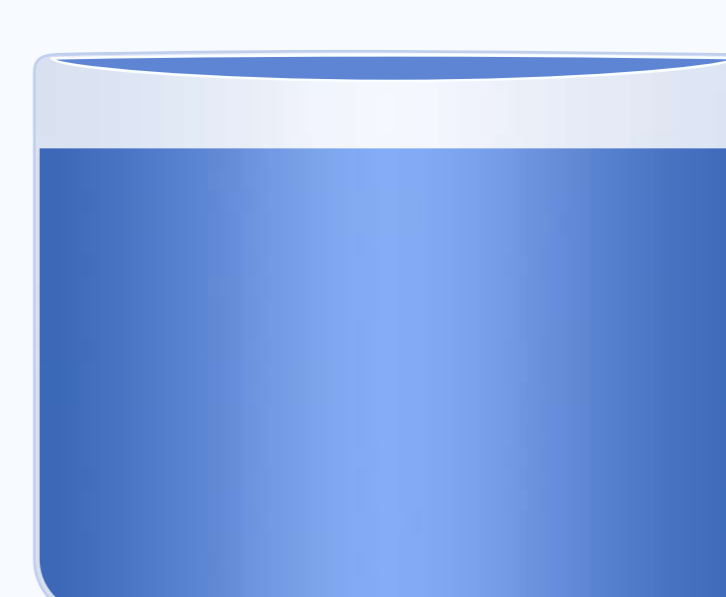
Throughput

SATA: 600MB/s



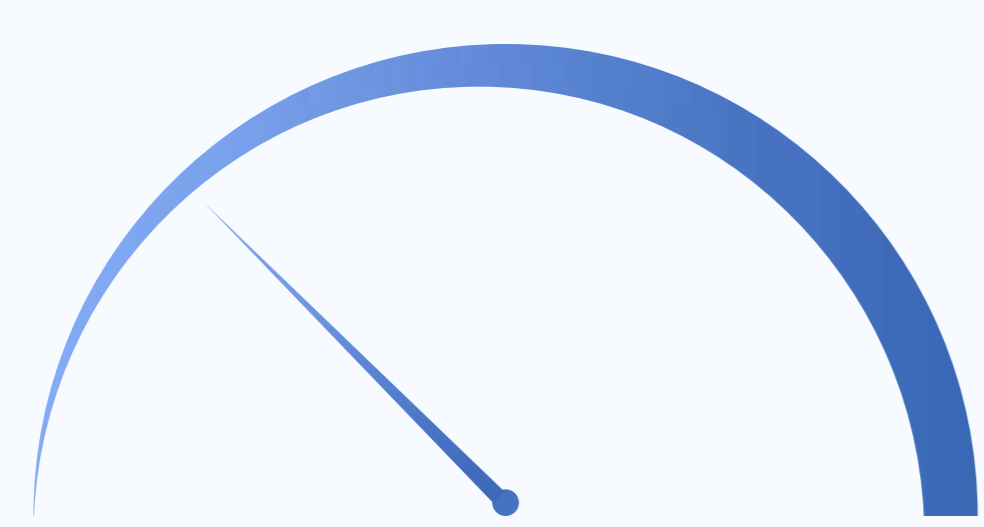
Throughput

SAS: 1200MB/s



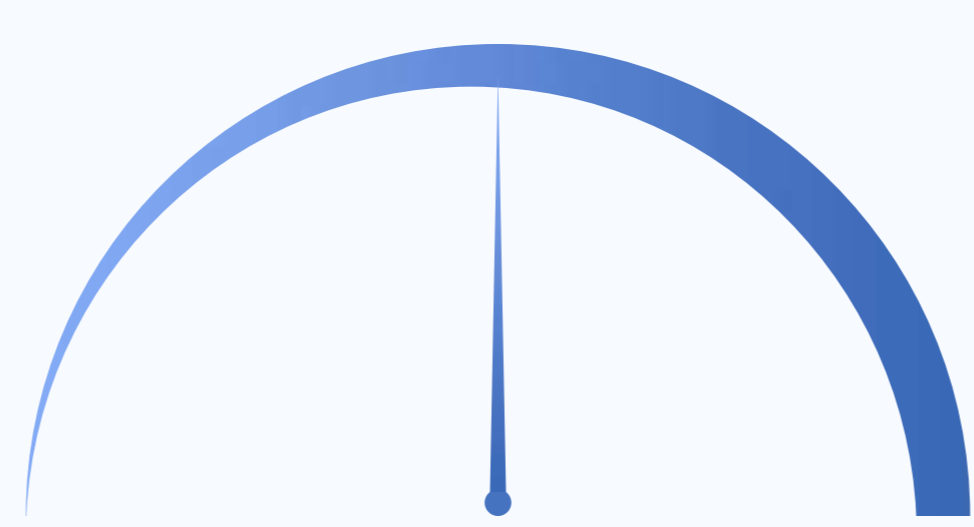
Throughput

NVMe: 3.9GB/s



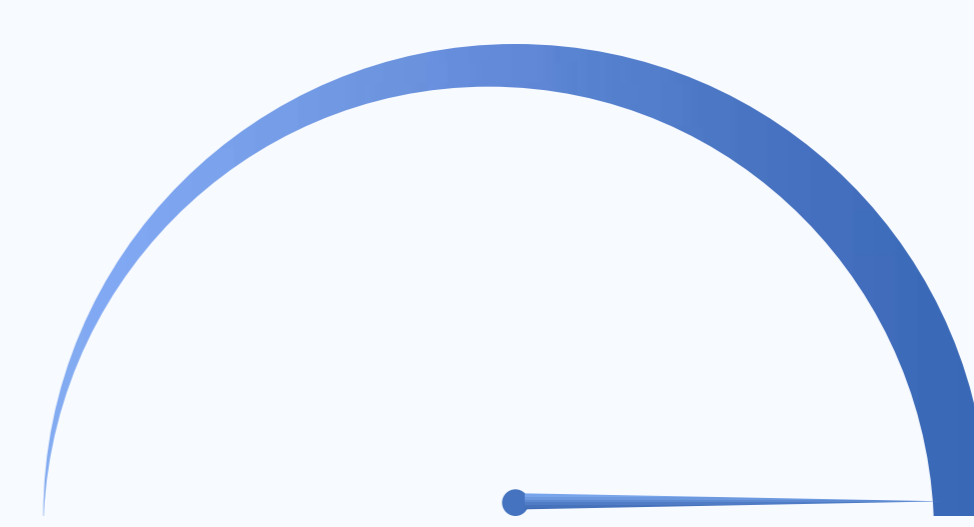
Interface rate

SATA: 6Gb/s



Interface rate

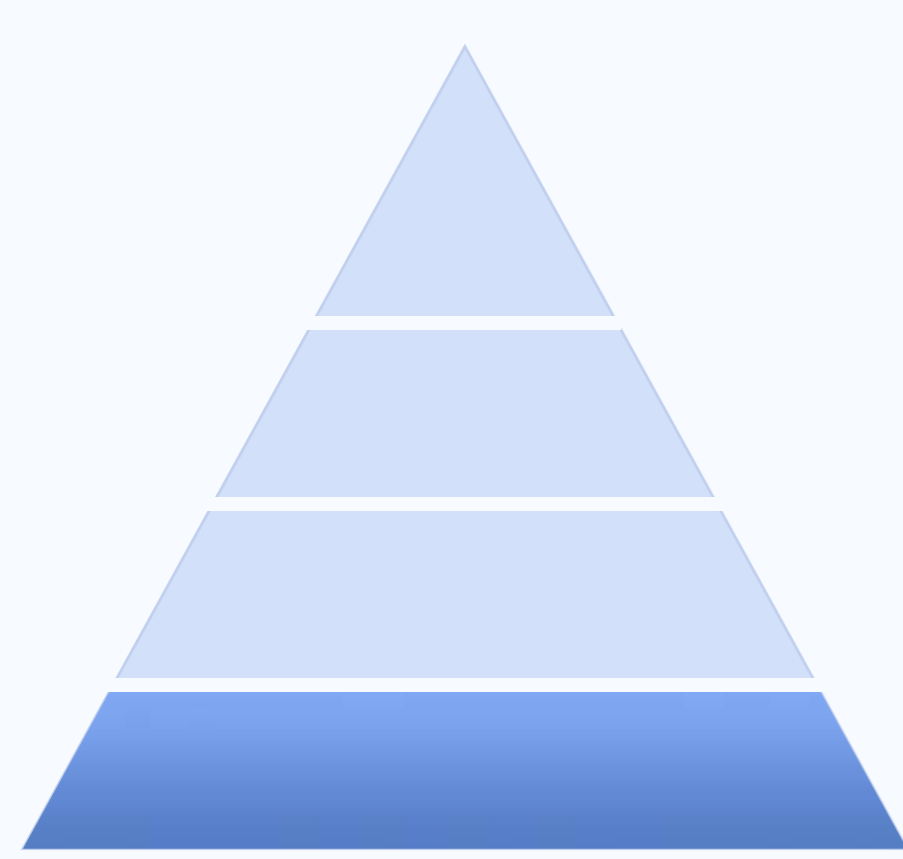
SAS: 12Gb/s



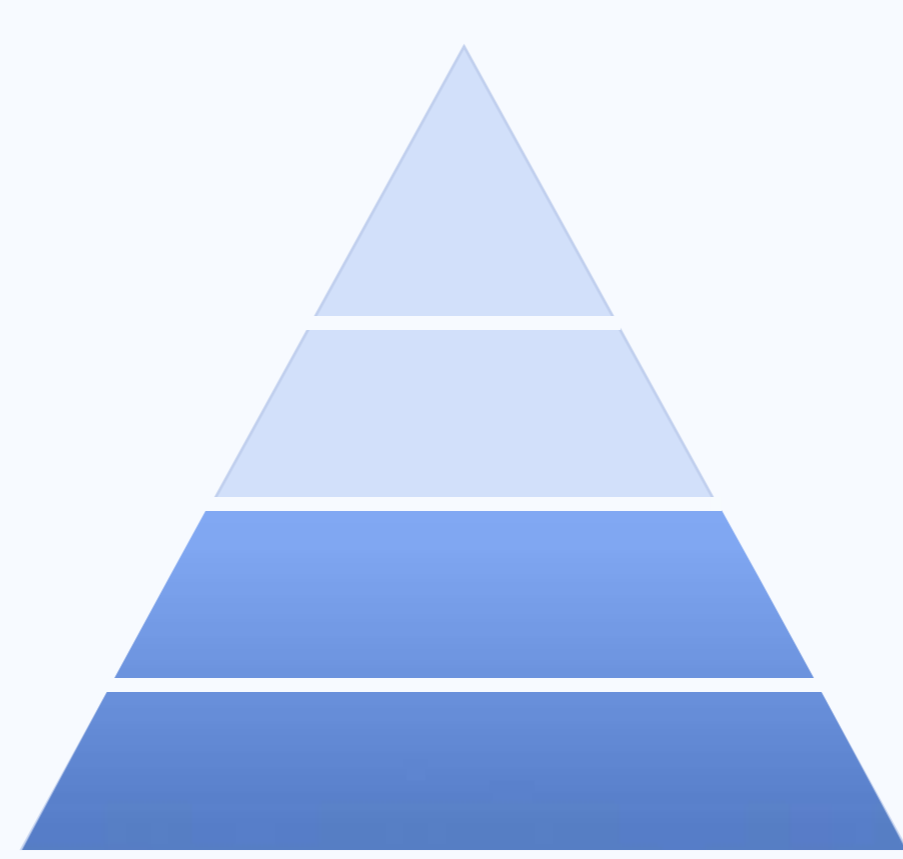
Interface rate

NVMe: 32Gb/s

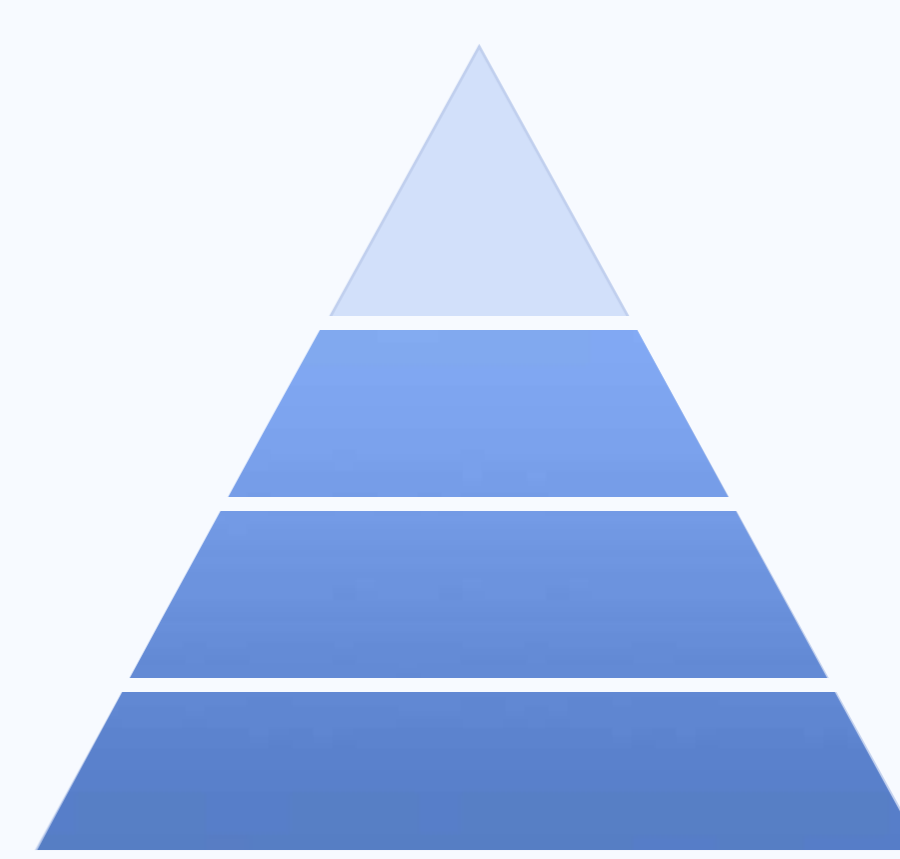
Scalability & Performance



SATA

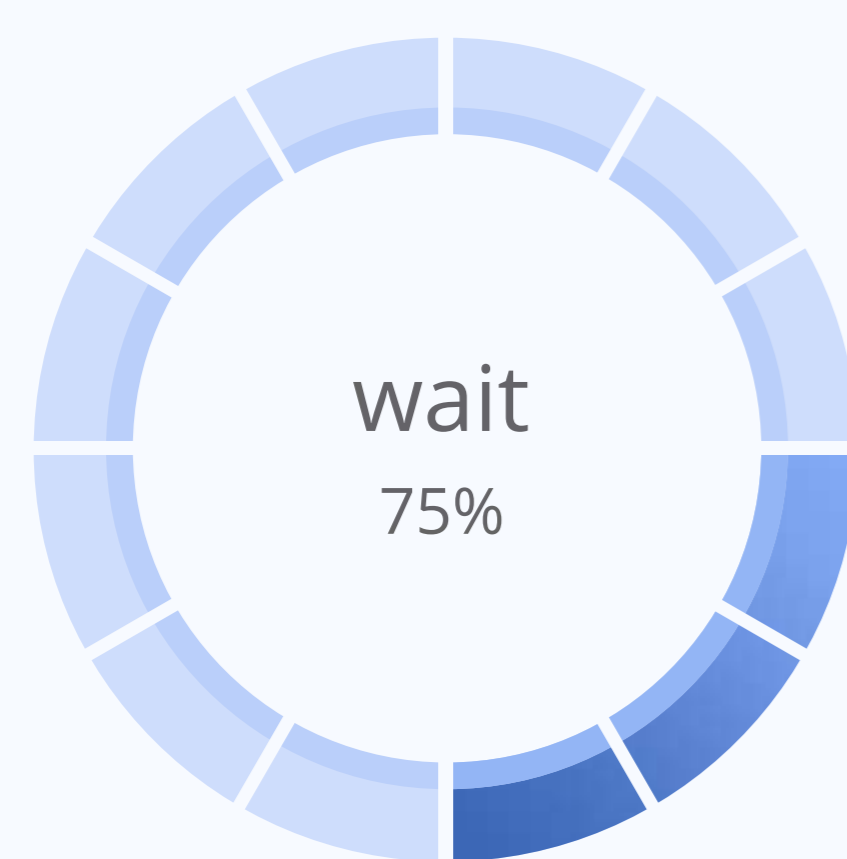


SAS

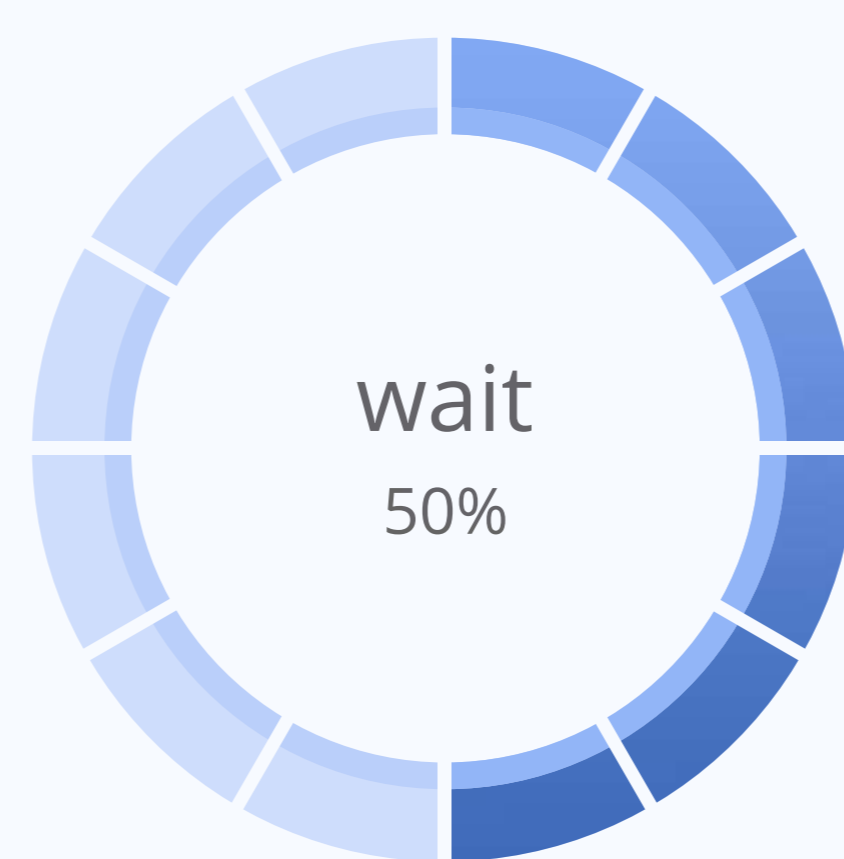


NVMe

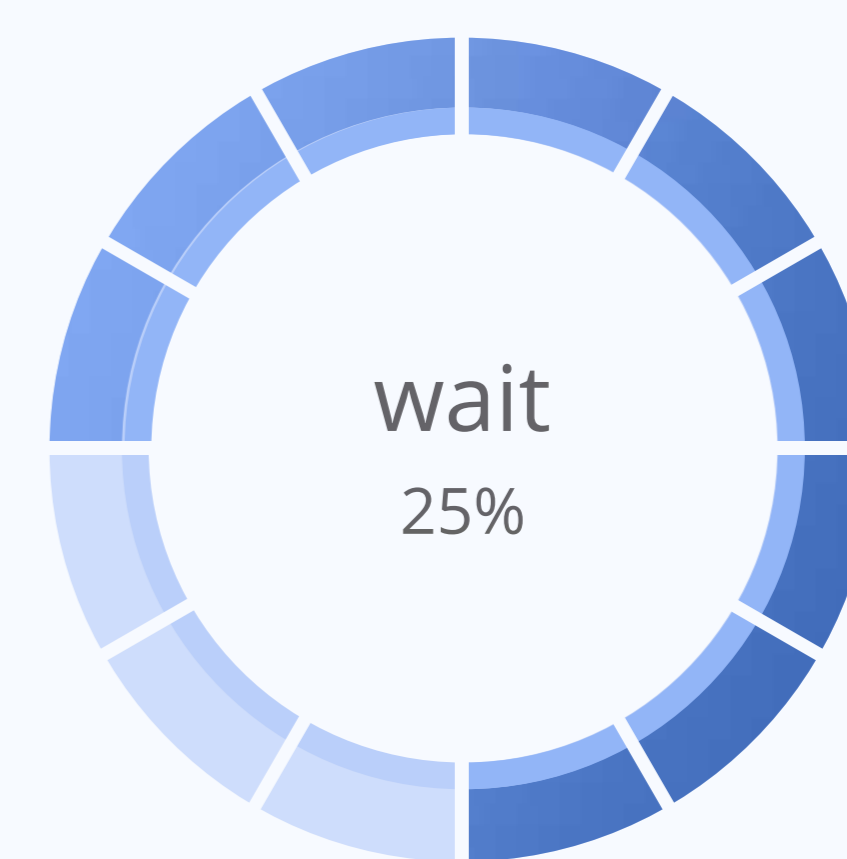
Latency



SATA



SAS



NVMe

Price



SATA



SAS



NVMe