

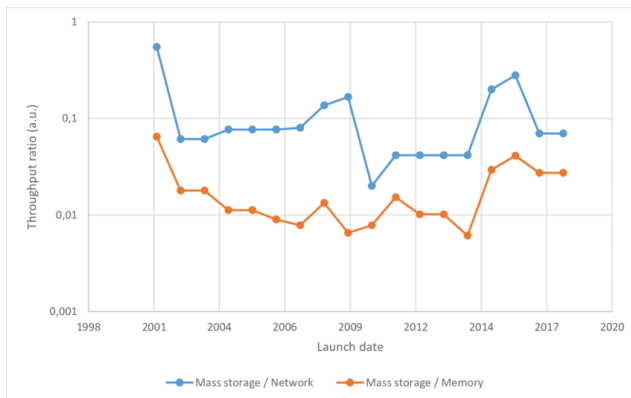
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FIGURE 3 -
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EVOLUTION OF MASS STORAGE (SSD AND HDD) THROUGHPUT RELATIVE TO NETWORK AND MEMORY BASED ON THE DATA IN FIGURE 1 (WEBER, 2018). THE MASS STORAGE THROUGHPUT IS DIVIDED BY THE NETWORK AND MEMORY THROUGHPUT TO HIGHLIGHT RELATIVE CHANGES. IT SHOWS A DYNAMIC DEVELOPMENT WITH FAST NETWORK CONNECTIONS EMERGING BETWEEN 2009 AND 2014, AND A DRAMATIC INCREASE OF MASS STORAGE PERFORMANCE AFTER 2014 DRIVEN BY INNOVATIONS IN THE SSD MARKET. RECENTLY INTRODUCED FAST NETWORKING STANDARDS LIKE 100 GBIT ETHERNET AND 400 GBIT ETHERNET MAY AGAIN CHANGE THE THROUGHPUT RATIO IF THEY FIND MORE WIDESPREAD APPLICATION.

Source publication






Next-Generation Information Technology Systems for Fast Detectors in Electron Microscop

Preprint

Full-text available

Mar 2020

 Dieter Weber ·  Alexander Clausen ·  Rafal E. Dunin-Borkowski

The Gatan K2 IS direct electron detector (Gatan Inc., 2018), which was introduced in 2014, marked a watershed moment in the development of cameras for transmission electron microscopy (TEM) (Pan & Czarnik, 2016). Its pixel frequency, i.e. the number of data points (pixels) recorded per second, was two orders of magnitude higher than the fastest cam...

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Contexts in source publication

Context 1

... a result of a dynamic development in IT between the years 2000 and 2018, the boundary conditions for designing such systems have changed considerably over time, resulting in a profound impact on the design of high-performance computing infrastructure. The read rate of traditional hard disk drives (HDDs) fell behind the increase of network performance between 2010 and 2014 (Figure 3). As a result of relatively slow mass storage before 2014 compared to the available fast network interfaces (Figure 3), it then made sense to build systems that were based on dedicated storage nodes with large disk arrays (RAIDs) of relatively slow magnetic disks with fast network connectivity to worker nodes. ...

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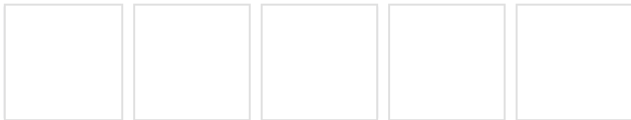
Context 2

... read rate of traditional hard disk drives (HDDs) fell behind the increase of network performance between 2010 and 2014 (Figure 3). As a result of relatively slow mass storage before 2014 compared to the available fast network interfaces

(Figure 3), it then made sense to build systems that were based on dedicated storage nodes with large disk arrays (RAIDs) of relatively slow magnetic disks with fast network connectivity to worker nodes. This used to be the most attractive solution for high IO performance at computation nodes (Intel High Performance Data Division, 2014). ...

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Similar publications



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Jan 2020

● Oleksii Nalyvaiko · ● Anastasiia Vakulenko ·
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