



For Data Centers

Sustained performance for Samsung data center SSDs

Maintain consistent high performance
under various workloads

Application note

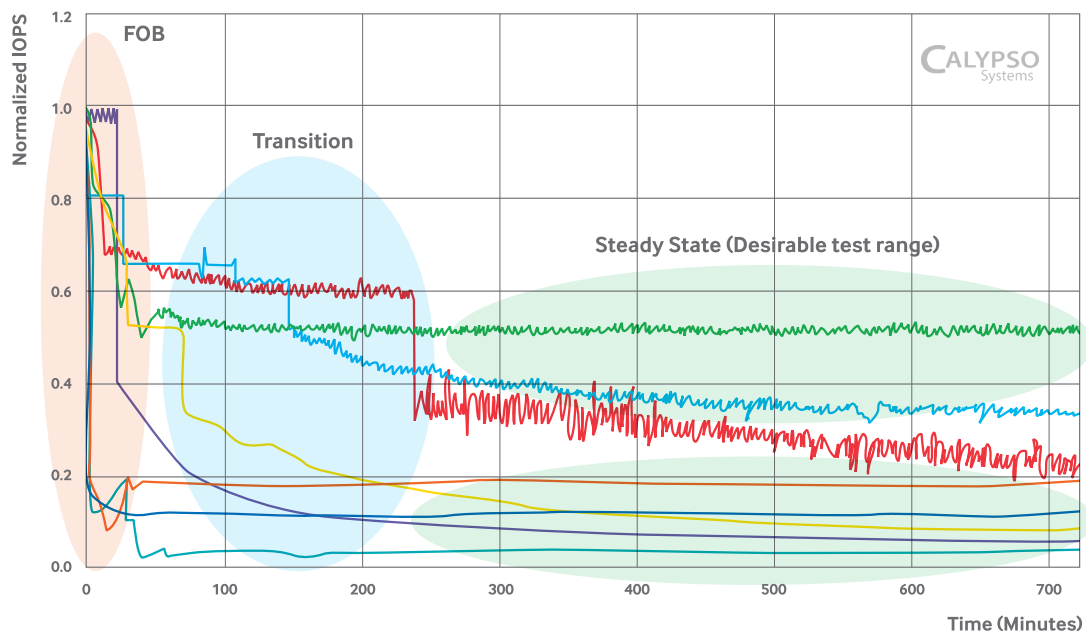
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1. What is sustained performance?

Based on the Storage Networking Industry Association (SNIA) test specifications, all NAND-based solid-state drives (SSDs) exhibit three distinct performance states : fresh-out-of-box (FOB), transition and steady state.

- FOB : The condition of a new/unused state (the factory state/after a secure erase).
- Transition : The period of time between the FOB state and the time-invariant state.
- Steady state : A relatively small change in performance over a large time frame.



[Figure. 1] SSD performance states

Most SSDs migrate through these performance states sequentially. The steady state mostly reflects the SSD's performance in long-term use. Unlike SSDs for a client PC, data center SSD performance is measured in the steady state condition and this also applies to sustained performance.

2. What state is most aligned with data center SSD performance?

In server/data center applications, the SSD operates 24/7 with a high workload and the status of the SSD quickly becomes steady state. Therefore, sustained performance in the steady state more closely represents SSD performance in data centers than maximum performance in the FOB state.

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3. How do I determine the correct SSD performance level?

Due to the different viewpoints of SSD performance between a client PC and a server/data center, users should check the SSD's datasheet or specifications and see if the SSD performance is based on maximum performance or sustained performance and compare them on the same basis.

Most data center-exclusive SSD datasheets use sustained performance to illustrate a more reliable performance level in the data center. However, in cases where SSDs target both a client PC and a server/data center, maximum performance might be used.

4. Samsung SSDs for data centers are

Samsung SSDs for data center 845DC PRO and 845DC EVO are more optimized for sustained performance and stability than for peak performance in the FOB state. Below is the performance comparison chart between the 845DC EVO and 840 PRO in different performance states.

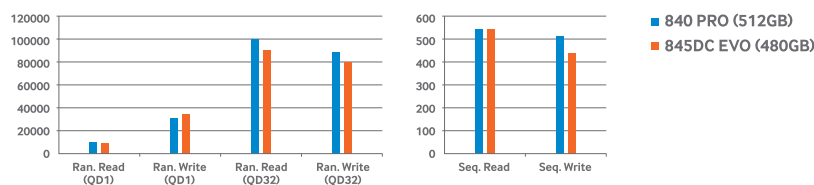


Figure 2. Maximum performance (FOB state)

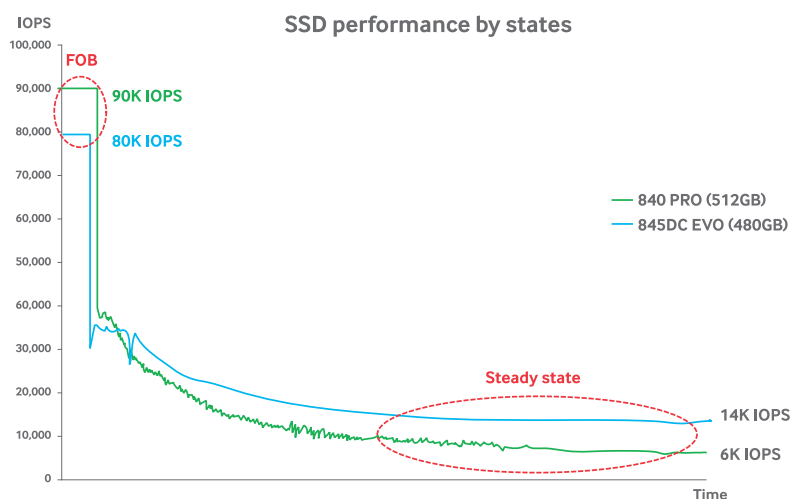


Figure 3. Sustained performance (steady state)

Even though the maximum performance in the FOB state is higher in 840 PRO, as shown in Figure 2, the sustained performance of 845DC EVO (Figure 3) is much better than that of 840 PRO since 845DC EVO is best optimized for server and data center usages by enhancing the sustained performance in the steady state. The focusing performance key factors are different according to the target applications, and these factors are reflected in the product design of Samsung SSD.

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