

# Preface

It is difficult to understate the impact of NAND flash memory in the last decade. Although flash memory has existed for a few decades, the most recent generations of NAND memory have enabled wholesale change in many aspects of our daily lives. The digital music player revolution was greatly accelerated with a conversion from miniature Hard Disk Drives (HDDs) to NAND flash memory, providing the ability for customers to carry more than just the initial ground-breaking (at the time) “1000 songs in your pocket”. Now we’re carrying movie collections, video podcasts, albums, video games, and home videos in that same pocket, due in large part to advances made in NAND flash technology. Who would have guessed that a major feature for today’s smart phone buyer would be the amount of local storage (i.e., NAND flash) maintained in the phone?

In addition to the huge advances enabled by NAND flash in consumer devices, a similar dynamic is emerging in the systems that power the internet. The introduction of NAND flash (and SSDs) to storage architectures has completely disrupted the existing storage giants, causing many of them to acquire start-ups versus building their own systems that can capitalize on the performance benefits of NAND-based SSDs over traditional HDDs. Entire racks of HDDs are being replaced by a single instance of an all-flash-array, and end customers are finding themselves paying less in total cost of ownership. The presence of NAND flash, as well as other next-generation nonvolatile memories, in future storage architectures is also driving an entirely new cycle of innovation in software and hardware design, creating a Storage Renaissance of sorts.

To put it simply, NAND flash continues to disrupt our world, and it doesn’t appear to be slowing down. 3D NAND is the next enabler of continued advancement and disruption, and this book provides an excellent foundation for anyone interested in the technology, where the technology is heading next, and its impact on the industry.

Derek D. Dicker  
Vice President and Performance  
Storage BU Manager, Microsemi Corporation

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