Why Mobile Applications Need UFS

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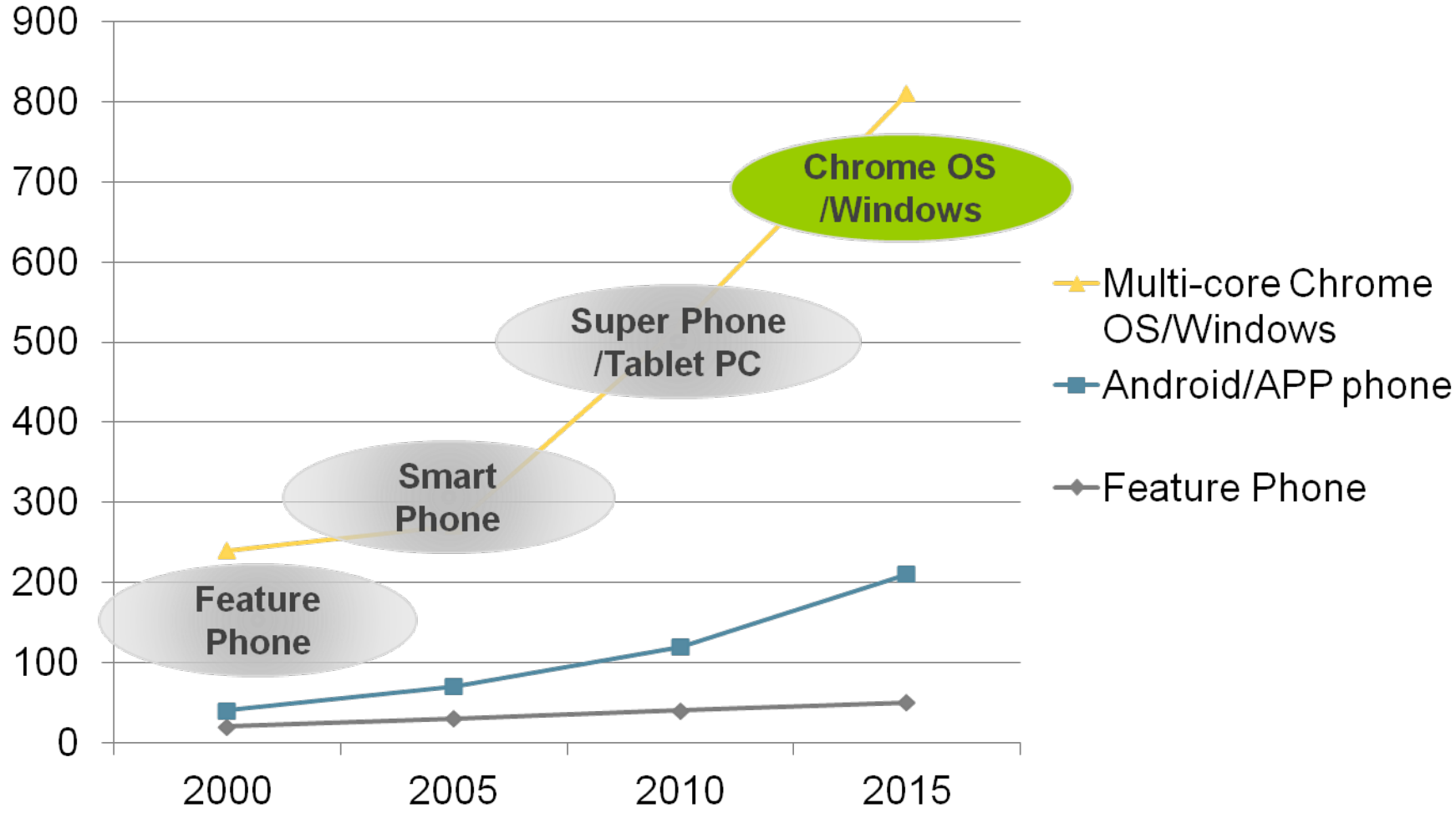
Mike Chaowei Chen joined Marvell Semiconductor in 2008 and is the Senior Manager of SSD and Strategic Marketing with Storage Business Unit. With more than a decade of data storage experience, Mr. Chen worked in various areas from storage system infrastructure to SSD development. He also works on compatibility and performance evaluation of mobile storage platforms with application processor vendors including Marvell mobile processor team.

Mobile Storage Grows to SSD Class



UFS Facilitates Applications

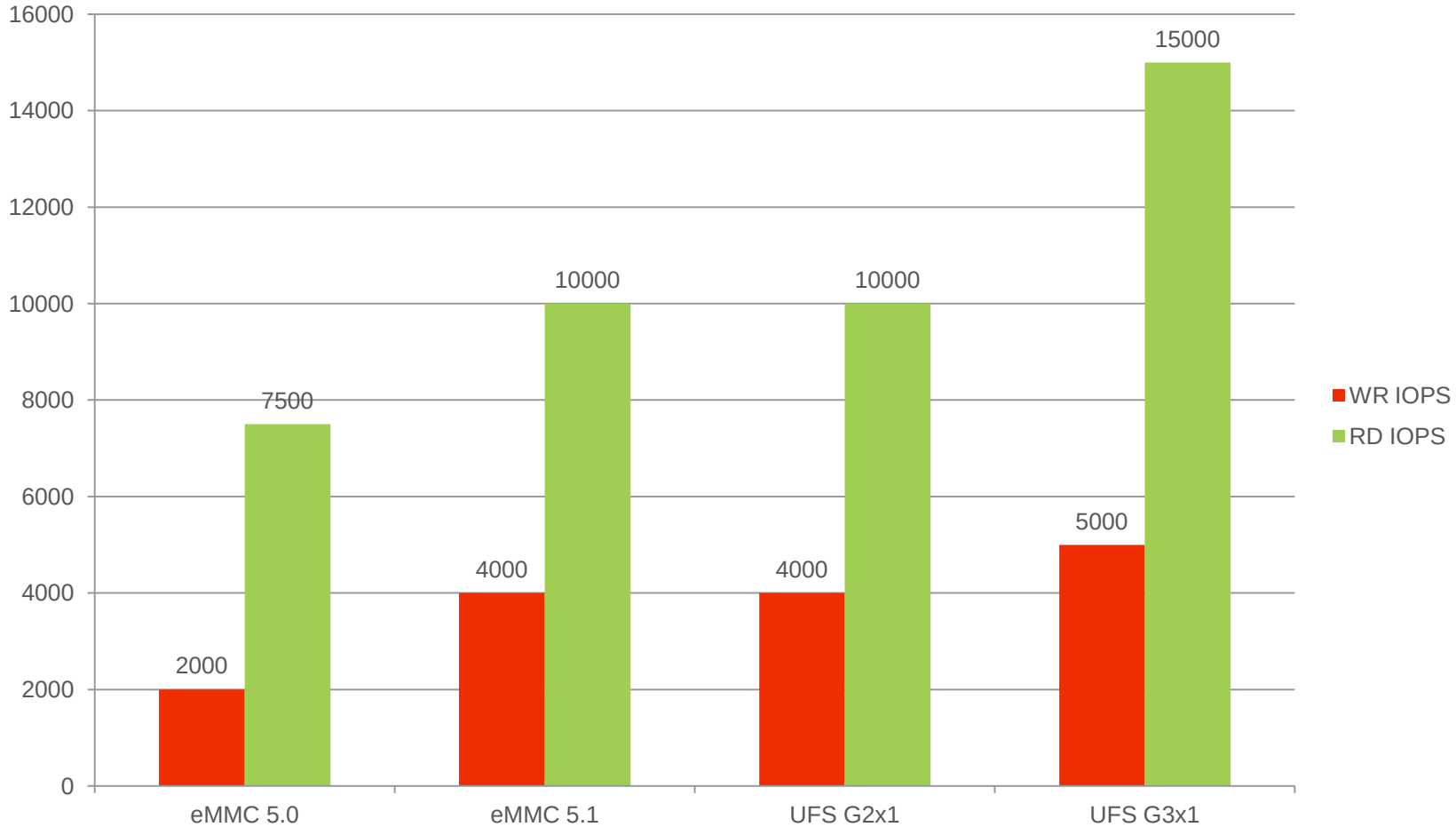
- User Experience
  - Fast response, better experience
  - SSD performance in a BGA form factor
  - Low power MIPI PHY and power management for battery life
- SCSI Queuing for New Multi-core Environment
  - Low latency
  - Deep queue , high random
  - Match with multi-core, multi-thread
- High Sequential Storage Access for Mobile
  - HD steaming
  - Data download
  - Online gaming
- Drivers
  - Android/Chrome OS
  - Window inbox

Command Queuing – UFS vs. eMMC

	eMMC 5.1	UFS 2.0
Issuing tasks	Host issues CMD44 and CMD45 to specify a single read/write task	Host issues one command UPIU with queue tag inside to specify a single read/write task
Ready for execution	Host keeps on polling task state with CMD13	No need for host to poll queue state
Data transfer	Host issues CMD46 for read data transfer. Host issues CMD47 for write data transfer. Half Duplex	Device sends Data IN UPIU to transfer read data. Device sends Ready To Transfer to start write data transfer Full Duplex
Queue depth	32	Could be up to 256

- UFS improves applications performance

Random IOPs Performance Comparison



UFS Platform: Development/Validation