

# DELL EMC POWERSCALE FOR SEMICONDUCTOR DESIGN AND MANUFACTURING

## All-Flash performance to accelerate time-to-market

### Essentials for Semiconductor Design and Manufacturing

- Ultra-high all-flash performance
- Small-form factor, expandable and single chassis cluster
- No single point of failure
- Self-healing design protects against disk or node failure.
- Multi-protocol, enterprise-ready solution for business-critical data
- No more islands of storage with seamless, policy-based automated tiering
- Complete family of storage platforms offering a wide range of price-performance-density options

### Importance of performance and storage optimization in semiconductor industry

In this era of growing design size and complexity coupled with shrinking schedules, leading semiconductor design tools must access millions of files concurrently across thousands of high-performance servers. Every transition to a new technology node, more than doubles data storage capacity and performance requirements for the semiconductor industry.

This situation drives performance demands that outstrip legacy storage solutions – creating the need for ever increasing throughput and IOPs on high-performance storage solutions that are optimized specifically for concurrency, low latency, high performance and massive scalability.

### All-flash performance for semiconductor design and manufacturing workloads

Dell EMC PowerScale provides scalable performance in a single, ever-expanding namespace—permitting the consolidation of a semiconductor company's high-performance computing file shares and scratch storage. We combine ultra-high-performance all-flash storage, the latest Intel® Xeon® CPUs and a scale-out architecture to support millions of semiconductor design data files and thousands of servers.

Semiconductor companies implement smart manufacturing technologies to achieve and sustain higher levels of performance. Powered by the Dell EMC PowerScale OneFS operating system, our storage platforms are the ideal solutions that enable the smart manufacturing techniques to be executed at the speed of business. Isilon F800 and F810 provide extreme performance and efficiency for the most demanding manufacturing workloads. PowerScale F200 provides the performance of flash storage and PowerScale F600 provides larger capacity with massive performance in a cost-effective compact form factor to address the needs of manufacturing workloads.



PowerScale F200



PowerScale F600



Isilon F800 and F810

## Ready for the enterprise

OneFS is enterprise-ready – meaning you can rely on our storage systems for safely storing your business-critical data – not just transient data. OneFS provides the highest levels of reliability, availability, efficiency and serviceability in the industry.

- Data protection including data replication, backup, and recovery with snapshots
- Inline compression on PowerScale F200 and F600 and Isilon 810 delivers up to a 3:1 reduction in storage requirements, increasing the effective storage capacity while lowering costs.
- Highly available: can withstand multiple simultaneous component failures while still providing access to the entire file system and dataset
- Push-button failover and failback simplicity
- File system auditing
- Data at Rest Encryption (DARE) with self-encrypting drives (SEDs)
- Write once, read many (WORM) data protection to help you meet regulatory requirements — including the stringent SEC 17a-4 rule
- Role-based access control (RBAC) options and, if needed, isolated storage pools

## Scale-out by design

With our native scale-out architecture, you get no compromises on features or performance. Other platforms may claim to be scale-out, but in reality, are thinly veiled scale-up solutions running performance-degrading software in an attempt to create the illusion of scale-out. You get high performance that grows with capacity— storage that scales from 10's of TBs to 10's of PBs capacity in a single file system. The usable capacities and \$/GB claims on our storage solutions are based on real-world results. Our customers see over 80% utilization on average.

## No new islands of storage

Our All-Flash integrate seamlessly with lower cost storage tiers, allowing automatic alignment of data with the optimal price/performance media. In addition, it can be added to existing clusters, maintaining investment in current infrastructure. And as always, added capacity can be configured to extend an existing volume – avoiding the creation of new islands of storage.

## The PowerScale All-Flash Family

### PowerScale F200 and F600

Performance and cost-efficiency with enterprise grade software capabilities for semiconductor design workloads

- F200: 3.84 TB to 15.36 TB per node (raw), up to 3.8 PB in a single cluster (raw)
- F600: 15.36 TB to 61.4 TB per node (raw), up to 15.48 PB in a single cluster (raw)

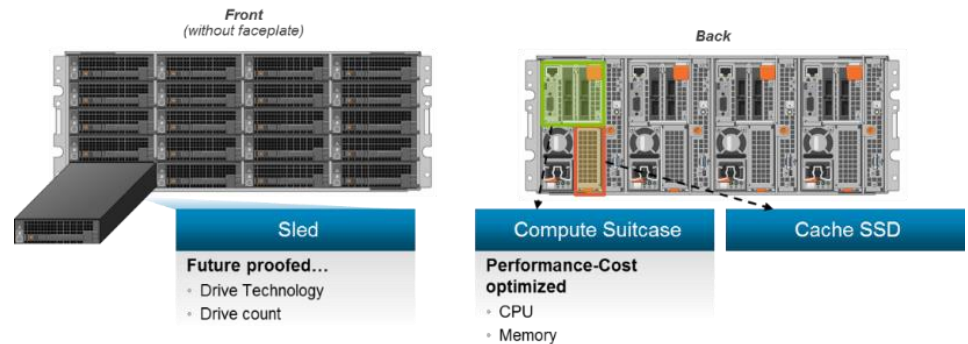
### Isilon F800 and F810

Ultra-performance and scalability for massively concurrent semiconductor design workloads

- Up to 250K IOPS and 15 GB/s aggregate throughput per chassis
- F800: 96 TB to 924 TB capacity per chassis
- F810: 547 TB to 2.2 PB effective capacity per chassis

## Future-proof, modular architecture

PowerScale All-Flash is architected to meet the growing storage requirements driven by the growing complexity of silicon design. To take advantage of the inevitable, rapid changes in available technology, PowerScale All-Flash is architected to be easily upgradable, separating storage compute and storage into upgradable components. Need more performance? Simply upgrade the compute suitcase to a newer approved processor. Need more capacity? Simply swap out the drive sleds for higher-density or higher-performance drives. By combining high-performance commodity drives and processors with the powerful OneFS operating system, upgrades come rapidly. No need to wait months – or years – for upgrades, as is common with proprietary technologies.



## Small footprint for tight spaces

The modular architecture associated with our All-Flash delivers maximum flexibility and capacity in a small form factor. Our All-flash chassis can be configured with small number of terabytes. Need more ultra-fast storage but tight on rack space? For small and mid-sized organizations, we offer entry-level All-Flash storage with flexibility and longevity for future expansions. In addition, we offer inline data compression which delivers significant reduction in storage requirements, increasing the effective storage capacity while lowering costs. And thanks to its modular architecture, as higher density drives become available and certified, you can simply swap out the sleds for even more capacity – preserving your investment and making our scale-out solutions truly future-proof.

## Manage semiconductor design tool flows - not storage

PowerScale makes managing petabytes of file data a simpler task for storage architects and admins. Organizations can consolidate divisions, projects, teams and entire semiconductor design workflows into a unified storage solution that reduces costs and improves operational efficiency. PowerScale is simple to manage, highly scalable, predictable, efficient, available, enterprise ready storage to suit your specific project needs.

## Key Benefits

### Simplicity

- Powerful yet simple to install, configure and manage to virtually any size

### Scalability

- Scale easily from tens of terabytes to tens of petabytes without disruption to design

### Performance

- All-flash models with up to 250,000 IOPS/chassis are ideal for IOPS-intensive semiconductor design workloads

### Predictability

- Easy and predictable upgrades, eliminating unexpected downtimes

### Efficiency

- Delivers up to 80% storage utilization
- Reduce storage requirements by up to 30%

## Multi-protocol support for a data first world

With PowerScale, you can streamline your storage infrastructure by consolidating large-scale file and unstructured data assets, eliminating islands of storage across the enterprise. PowerScale scale-out NAS includes integrated support for a wide range of industry-standard protocols, including Internet Protocols IPv4, and IPv6, S3, NFS, SMB, HTTP, FTP and OpenStack Swift-based Object access for your cloud initiatives. Whether you're managing a foundry or simply tracking chip failures, native Hadoop Distributed File System (HDFS) allows you to consolidate analytics workloads as well. As a result, you can simplify workflows, accelerate business analytics projects, support cloud infrastructure initiatives, and get more value from your enterprise.



## About PowerScale

PowerScale OneFS provides the intelligence behind the highly scalable, high-performance modular storage solution that can grow with your business. PowerScale provides the efficiency, flexibility, scalability, security and protection for you to store massive amounts of unstructured data within a cluster. The new PowerScale all-flash platforms co-exist seamlessly in the same cluster with your existing Isilon nodes to drive your traditional and modern applications.



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