**DELL**EMC

# DELL EMC SC SERIES SC5020 STORAGE ARRAY

Self-optimizing SSD, HDD or hybrid configuration options provide an affordable high-performance solution for mixed application environments

## Accelerate your workloads, automate your savings

The Dell EMC SC5020 makes storage cost savings automatic with a modern architecture that optimizes your data center for economics while delivering transformational SSD, HDD or hybrid performance.

SC Series provides the lowest effective $/GB for flash and hybrid flash[1], giving companies of any size the technology advantage they need to compete in today's fast-changing markets.  Highlights include:

- **Data Progression** – Achieve IOPS goals with the least expensive mix of storage media, even as your performance needs evolve
- **Deduplication & Compression** – Dramatically reduce the raw capacity required to store data
- **RAID tiering** – Eliminate manual RAID provisioning, increase efficiency and utilization
- **Federation** – Simplify multi-array environments with quick and seamless data movement, plus proactive load balancing assistance via Live Migrate and Volume Advisor
- **ProSupport Services** – Reduce deployment costs with remote installation options that guarantee your project goes right the first time.
- **Persistent software licensing** – Future-proof your investment, minimize the cost of upgrades and expansions

## All-new hardware platform

Designed as the next-generation successor to the popular SC4020 array, SC5020 is a performance powerhouse.   With dual 8-core Intel processors, 4x more memory and a 12Gb SAS back end, the SC5020 delivers

- **Up to 45% more IOPs**[2]
- **Up to 3X more bandwidth**[3]
- **2X greater max capacity**

The new 3U "all-in-one" chassis includes 30 drive bays plus dual hot-swappable controllers, providing up to 460TB raw capacity in a single compact unit.   A variety of expansion enclosures lets you scale up to 2PB per array – with even larger scale-out potential in federated multi-array systems.

But the advantages don't stop with fast hardware.  SC5020 includes all the Storage Center Operating System (SCOS) features you've come to expect from SC Series storage.
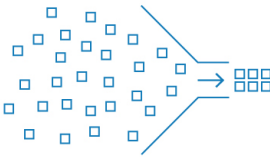
# Intelligent advantage for modern workloads

Based on actual use and application performance requirements, SC Series Data Progression dynamically tunes multiple drive tiers and manages RAID levels for performance and cost savings. By default, all new data is written to fastest Tier 1 drives at RAID 10 performance levels, then converted to economical RAID 5/6 (on the same drives) for subsequent reads.

As data ages, it's moved to less expensive storage until it becomes more active again.  Data is precisely where it's needed, when it's needed – the perfect combination of high IOPs and cost savings.
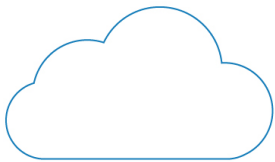
### 0-100% Flash architecture

Target specific price/ performance ratios with any mix of SSDs and HDDs – then modify the mix as your needs change.  Add more flash to boost performance, or "cheap and deep" spinning disk as cold data volumes grow.  Hot data will always be written to your fastest drives at the fastest RAID levels.

### Intelligent Data Reduction

Like many SC services, Deduplication and Compression are applied dynamically at a sub-LUN level to optimize performance and reduce capacity needs throughout the data lifecycle.  Fully integrated with Data Progression, SC data reduction saves money on SSDs, HDDs – or both in hybrid systems.

### Low-Cost Business Continuity

Keep mission-critical apps running during unexpected outages and disasters with seamless volume-level auto-failover between local and remote arrays.  Innovative Live Volume feature is native to SCOS – no extra hardware or software is required to create your "always available" storage environment.

# Reliable SC Series investment protection

Despite its low initial and lifecycle costs, SC5020 includes all the advanced tools and integrations you need to be sure your array continues to provide value as your business grows and matures.

- **Dell Storage Manager** – Intuitive control and monitoring of one or multiple systems with powerful features like multi-hop replication, departmental "chargeback," QoS, VVols support and more.

- **Thin clones** – Easily create thousands of discrete volume copies for VDI, test/dev and other applications, without consuming additional storage space.

- **Data-at-rest encryption** – Supports optional FIPS 140-2 certified self-encrypting drives (SEDs), auto-lock on power down or removal.

- **File and block in same storage pool** – via optional FS8600 scale-out NAS appliance

- **Integration with PS Series (EqualLogic™) arrays** — Unified management and bi-directional replication lets you combine two platforms in a single solution.

- **Dell EMC ecosystem support** – PowerPath, ViPR, VPLEX, RecoverPoint, Connectrix, Data Domain and more.

- **Broad 3rd-party integration** – VMware, Microsoft, Oracle, OpenStack, IBM, CommVault, VERITAS, Foglight and more.

## 4:1 All-Flash Storage Efficiency Guarantee

SC Series arrays are efficient in ANY configuration (all-flash, hybrid or HDD) – but we know many businesses are especially concerned about expense when deploying all-flash configurations.  That's why we're taking the risk out of AFAs by guaranteeing 4:1 efficiency for all-flash SC configurations.  Dell EMC promises our all-flash arrays will provide an effective logical storage capacity at least four times the physical capacity of your purchased drives – or we'll give you more drives at no charge.[4]

## SC5020

### Chassis Overview

| | |
|---|---|
| Chassis format | All-in-one (dual controllers, internal drive bays, networking) with expansion options |
| Rack size | 3U |
| Controllers | 2 hot-swappable per chassis (active/active) |
| Processors | Intel® Xeon® Processor E5-2630 v3, 2.4GHz, 8 cores |
| Internal storage capacity | 30 x 2.5" drive bays |
| System memory | 128GB per SC5020 array (64GB per controller) |
| Operating system | Dell Storage Center OS (SCOS) 7.2 or greater |

### Expansion Capacity

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|---|---|
| Supported expansion enclosures | Dell SC420: 24 x 2.5" drive bays (12Gb SAS)<br>Dell SC400: 12 x 3.5" drive bays (12Gb SAS) |
| Maximum drive count | 222 (30 internal, plus 192 external), more in federated systems[5] |
| Max raw capacity | 2PB per array (SSD or HDD), more in federated systems[5] |
| Max raw capacity (NAS) | 2 PB per array with optional FS8600<br>4PB in single namespace (with FS8600 and multiple SC Series arrays) |
| Storage media | SAS and NL-SAS drives; different drive types, transfer rates, rotational speeds can be mixed in the same system.<br>SSD: write-intensive and read-intensive drives<br>HDD: 15K, 10K, 7.2K RPM |

### Network and Expansion I/O

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| Front-end-network protocols | FC, iSCSI, SAS[7] (supports simultaneous multiprotocol) |
| Max 32Gb FC ports | 8 per array (SFP+) |
| Max 16Gb FC ports | 8 per array (SFP+) |
| Max 10Gb/1Gb iSCSI ports | Up to 8 SFP+ or BaseT ports per array |
| Max 12Gb SAS ports | Up to 8 12Gb SAS[7] ports |
| Management ports | 2 per array (1Gb BASE-T) |
| Back-end expansion protocols | 12Gb SAS |
| Max back-end expansion ports | 4 per array<br>Up to 16 expansion enclosures per array |

## SC5020

### Functional

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| Array configurations | All-flash, hybrid or HDD arrays |
| Storage format | Native block (SAN), file (NAS) from same pool with optional FS8600 |

### Data Optimization

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| Auto-tiering method | Policy-based migration based on real-time data usage, customizable 512KB-4MB page size. |
| Auto-tiering structure | Up to 3 primary (media-based) tiers total, up to 2 SSD tiers (write- and read-intensive SSDs) |
| Tiering customizations | User-defined profiles, option to "pin" volumes to any tier |
| RAID support | RAID 0, 1, 5, 6, RAID 10, and RAID 10 DM (Dual Mirror); any combination of RAID levels can exist in single array |
| RAID tiering | Auto-provisions and dynamically restripes multiple RAID levels on the same tier; no need to pre-allocate RAID groups |
| Thin provisioning | Active by default on all volumes, operates at full performance across all features |
| Thin snapshots | Records changes only, snapshots auto-migrate to lower-cost storage |
| Intelligent deduplication and compression | Selectable option per volume on SSD and/or HDD tiers in hybrid configurations<br>Compression-only option also available on any configuration |
| HDD optimization | FastTrack moves frequently accessed data to outer tracks for quicker response times |

### Data Mobility and Migration

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| Replication | Synchronous/Asynchronous via FC or iSCSI<br>Target/source relationships may be one-to-many or many-to-one<br>Supports all SC data services on source and target volumes<br>Change replication types and topologies on demand<br>Supports cross-platform replication with PS Series/EqualLogic arrays (either direction) |
| Volume mobility | Live Migrate (included in base product) enables host-transparent data movement among arrays; see also Federation section |
| Federated multi-array systems | Live Migrate (included in base product) enables host-transparent movement of volumes among arrays<br>Snapshots maintained/preserved during migration |
| Thin Import | Space-efficient, non-disruptive data migration from PS Series (EqualLogic) arrays |
| Thin Clones | Clone standalone volumes with zero duplication of data<br>Clones maintain independent snapshots and replication<br>Ideal for VDI, test/dev, other applications that require discrete instances of common data<br>More efficient than dedupe for database copies |

### Data Protection, Disaster Recovery, Security

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|---|---|
| Business continuity | Live Volume bi-directional auto-failover, auto-repair[6]<br>Continuous operations, disaster recovery, disaster avoidance<br>Includes third-site (tertiary) replication options with Live Volume Managed Replication[6]<br>Zero RTO/RPO with customizable site failover SLAs per volume<br>Does not require identical hardware at each site<br>VMware Metro Stretch Cluster, VMware Site Recovery Manager support |
| Thin snapshots | Records changes only, snapshots auto-migrate to lower-cost storage |
| Replay Manager | Application-consistent snapshots in Microsoft or VMware environments |

## SC5020

### Data Protection, Disaster Recovery, Security (cont.)

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|---|---|
| Data-at-rest encryption | Self-encrypting drives (SEDs) in SSD or HDD formats<br>Full Disk Encryption (FCE) based on AES-256<br>Drives certified to FIPS 140-2 Level 2<br>Key Management Server (KMS) options available for FIPS 140-2 Level 1, 2 and 3 |
| External key manager support | Gemalto's SafeNet KeySecure k460, SafeNet KeySecure k250, SafeNet KeySecure k150v<br>Thales EMS 200 |

### Management

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|---|---|
| Management interface | Dell Storage Manager<br>Multi-array, multi-site and cross-platform (PS Series) management from single interface |
| Federation | Create large multi-array systems under unified management, with seamless workload migration between arrays via included Live Migrate feature. Add arrays non-disruptively, efficiently utilizing their combined capacity and performance. Volume Advisor monitors federated arrays to suggest optimal data placement and load balancing. Volume movement does not impact snapshots or replication data protection.  Federate like or unlike arrays: SC9000, SC8000, SC7020, SC5020, SC4020.[5] |
| Scripting support | Microsoft PowerShell API<br>RESTful API |
| Host OS support | Microsoft® Windows Server®, Oracle® Solaris, HP®-UX, Oracle Linux, IBM® AIX®, Novell® NetWare, SLES, Apple, HPTru64, VMware®, Citrix® XenServer®, RedHat® |
| Third-party application integration | VMware, Microsoft, IBM, OpenStack, Oracle, Symantec, Commvault, Foglight, Docker (see SC Series Management spec sheet for more details) |
| Coexistence with PS Series arrays | Replication in either direction<br>Day-to-day management from a single interface<br>Thin import: space-efficient, non-disruptive data migration from PS Series arrays |
| Certifications | VMware vSphere Metro Storage Cluster, VMware SRM, Veritas Storage Foundations Suite, IBM VIOS Recognized, Oracle Validated Infrastructure (OVI); see Dell Storage Support Matrix for additional certifications and details |
| Reporting/alerts | Support assist (phone home), remote diagnostics and performance monitoring, automated alerts, reports and notifications, departmental chargeback |
| Workload management | QoS, VVOLs |

### Physical

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|---|---|
| Rack size | 3U |
| Height | 13.33 cm (5.25 inches) |
| Width | 44.5 cm (17.52 inches) |
| Depth | 78.5 cm (30.9 inches) |
| Weight at max configuration | 24.22 kg (53.4 lb) |
| Weight empty | 15.15 kg (33.4 lb) |

### Power

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|---|---|
| Power/wattage | 2 hot-swappable 1485W power supplies; 1485W maximum power |
| Heat dissipation | 5,067 BTU/hr maximum |
| Voltage | 200-240 VAC |
| Frequency | 50/60 Hz |
| Amperage | 1485/100 – 14A, 1485/240 – 6.2A |

## SC5020

| Environmental Operating Conditions | |
|---|---|
| Operating temperature | 50 - 95°F (10 - 35°C) |
| Non-operating temperature | -40 - 149°F (-40 - 65°C) |
| Operating humidity ranges (non-condensing) | 10% to 80% with 29°C (84.2°F) maximum dew point |
| Non-operating humidity (non-condensing) | 5% to 95% with 33°C (91°F) maximum dew point |
| Inlet type | NEMA 5-15/CS22.2, n°42 |

| Services, Warranties[1] | |
|---|---|
| Services | Dell ProSupport with deployment and consulting services. Optional ProSupport Plus is available offering proactive and preventative services to improve performance and stability. Dell Optimize is available for additional ongoing strategic counsel and guidance from a highly trained system analyst. |
| Diagnostics engine | Integrated Dell Remote Access Controller (iDRAC) |
| System sizing | Dell Performance Analysis Collection Kit (DPACK) tool |
| Drive warranty | All SSDs and HDDs are warrantied for full lifetime wear-out replacement with valid service agreement. SSD warranty covers all formats: SLC, MLC and TLC |

## OEM-ready version available

From bezel to BIOS to packaging, your storage arrays can look and feel as if they were designed and built by you.[8]   For more information, visit Dell.com/OEM.

## Footnotes

1 – Net usable capacity of Dell array with 5 years of support, after 4:1 data reduction, vs. major competitors net of data reduction.  Street price analysis is based on a variety of sources including analyst data, price sheets when available, and public information as of January 2017.

2, 3 -- Based on April 2017 internal Dell EMC testing, compared to previous-generation SC4020.  Actual performance will vary depending upon application and configuration.

4 – See sales rep for details.  Terms and Conditions apply. The Dell EMC Flash Storage Efficiency Guarantee applies to new system sales only.  Registration and acceptance of guarantee terms and conditions required prior to purchase.   Includes SC9000, SC7020, SC5020 and SC4020 arrays. Does not apply to SCv2000.  Additional information available at www.dellemc.com/4to1guarantee.

5 – Multiple SC Series (SC9000, SC7020, SC5020, SC4020) arrays may be deployed in federated configurations using the Live Migrate feature included with firmware version 7.1 and above. Transparent, non-disruptive volume movement among arrays is enabled, allowing the combined capacity and cache of the entire federated cluster to be seamlessly utilized for maximum performance and scalability in expanding data centers. For example, a cluster of eight SC9000 arrays can provide a total of 8,192 drives (up to 48PB raw capacity) with over 4TB of system memory.

6 – Requires optional Live Volume feature.

7 – Front-end SAS only supported with Dell PowerEdge 13th generation servers or later.

8 – OEM-ready available on certain models.  See your Dell representative for details.

Learn more about Dell EMC SC5020 solutions

Contact a Dell EMC Expert

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