LET THE TRANSFORMATION BEGIN
Modernize with All Flash

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All Flash Primary Storage, Dell EMC
Southeast Asia
Modern business requirements

Efficiency

Agility

Speed
Pillars Of The Modern Data Center

**Protection and trust**

- Security/Governance
- Encryption
- Data Protection
- Services/Support

**Flash**
Reduce costs (# of drives, power, floor space, etc.)
Consistent and predictable performance

**Cloud-enabled**
Policy driven service delivery
On/off premises data and/or application mobility

**Scale-out**
Lower entry costs and scale as you grow
Manage massive capacity with fewer resources

**Software-defined**
Automated provisioning and business agility
Flexible and programmable data services
Every Day More Customers Choose Flash

10% of companies are all flash today (they’re not telling anyone) – 80% have a plan to get there.

— Eric Burgener, IDC
Flash – A Fundamental Market Shift...

Source: © Wikibon Server SAN Research Project 2015
Runaway Market Leader In All-flash

Sources: DELL EMC All-In Bookings, Pure Storage S1 Filing, Public Earning, Gartner Market Share Report
Architecture Matters

Use Flash

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Go Faster  Go Faster  Get Smarter

It’s about the right architecture
It unlocks unique business value
The year of all flash for primary storage
Rack-scale Flash

High-end All-flash Arrays

Mid-range All-flash Array

SMB All-flash Arrays
SC Series Flash Arrays

Value-optimized, mid-market proven solutions

Built-in business continuity solution
Auto-tiering, auto-RAID provisioning
Lowest $/GB AFA
All-flash or hybrid options

Great choice for PowerEdge installs
Leverages Dell EMC server design, 90% PowerEdge attach

1 Net usable capacity price 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 May 2016.

2 Over 90% of SC arrays are sold into PowerEdge environments. Source: Dell internal analysis of worldwide known end customer SC array sales, as of August 2016, for the four previous quarters.
SC Series Flash Arrays

Value-optimized, mid-market proven solutions

Easy
• Self-optimizing platform
• Built-in virtualization features

Expandable
• Modular, “right-sized” design
• Multiprotocol, SAN/DAS/NAS option
• Multi-array federation

Efficient
• Dedupe/compression savings
• Pervasive “thin methods”

Great choice for PowerEdge installs
Leverages Dell EMC server design, 90% PowerEdge attach²

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Unity – The New Midrange Product Line

**Simple**
Slick UX, Couldiq™ Proactive Assist

**Modern**
All flash design with integrated copy data management

**Flexible**
Virtual & purpose-built & converged Unified NAS & SAN & VVOLS

**Affordable**
IALL Flash Starting Under $18k
Hybrid Option Starting > $8k,
< $1/Gb
The all flash market leader

- Purpose-built all-flash array
- Inline all the time data services
- Scale-out IOPS & bandwidth
Biggest all-flash array on the planet

150 GB/s Throughput
4 million IOPS per second

Powered by Intel® Xeon® Processors

½ Millisecond Response time
Architected For All Flash

- **Gigantic Scale**
  - Intel Multi-core, multi-threaded
  - Designed for +1M VM’s
  - Scalable low latency IB fabric

- **3D/TLC Flash Optimized**
  - Massive global memory
  - Write folding to minimize cell wear
  - Advanced flash wear analytics

- **Ultra Low Latency**
  - Huge write cache
  - Intelligent read/write algorithms
  - Flash Boost technology

- **Ultra High IOPS**
  - Pooled cores with dynamic allocation
  - Advanced QoS, priority controls
  - Tunable FE/BE profiles

- **Unmatched Bandwidth**
  - Industry leading SPC throughput
  - Supports BI and DW use cases
  - Enables in memory computing
Rack-scale

FLASH

Performance Centric

Enterprise Grade

Native & Flexible

Dense & Shared

Powered by Intel® Xeon® Processors
Modern Business Model

Modern pricing approach

All inclusive software licensing

Maintenance = 11% of net per year

Promoting 2X longer storage lifecycle
Xpect more

- **Lifetime** Maintenance price protection
- **3-year** Money-back warranty
- **Lifetime** Flash endurance protection

*See EMC.com/XpectMore for details, terms and conditions.*
Modernize With Converged Infrastructure
Fundamental shift from building to buying infrastructure

A comprehensive set of storage offerings
Buy Your Outcomes

Build what hasn’t been solved

5X more apps deployed

96% reduction in downtime

41% more time to innovate

4X faster time-to-market

Converged operations
Flash is the foundation for the future
But it doesn’t solve everything
What About?

Always-on availability

Insight & analytics

Automation

Storage efficiency
World-class Data Protection

In the array

- Instant copies

- No Impact
- Consistent Performance
- Almost Unlimited

In the datacenter

- ProtectPoint

  - 20 times faster backups
  - Reduces backup storage requirement by 10-30 times
  - Eliminates production impact

Across datacenters

- Active/Active
- Sync/Asynch replication
- Metro & Geo
- Multi Site
- Heterogeneous Replication
- Continuous availability
- Federated Live Migrations
- Zero RTO
## Copy Data Management Approaches

… And the new integrated CDM option

<table>
<thead>
<tr>
<th></th>
<th>Costs</th>
<th>Performance</th>
<th>Agility</th>
<th>Scalability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full copies “clones”</td>
<td>$$$$$</td>
<td></td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Traditional snapshots “copy/redirect-on-write”</td>
<td>$</td>
<td></td>
<td>Moderate</td>
<td>Limited</td>
</tr>
<tr>
<td>Subsets</td>
<td>$$</td>
<td></td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>3rd party CDM Tools</td>
<td>$$$</td>
<td></td>
<td>Moderate</td>
<td>Very limited</td>
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</tbody>
</table>

**DELL EMC In-memory integrated CDM**

- **Costs**: $$$$$, $, $$, $$$
- **Performance**: Limited, Moderate, Limited, Moderate
- **Agility**: Limited, Moderate, Limited, Moderate
- **Scalability**: Limited, Limited, Limited, Very limited

**Free**: Limitless, Massive
Dell EMC Integrated Copy Data Management

Workflow consolidation and self service

App self-service

App integration and orchestration

DELL EMC all-flash copies

Consistent scale-up or scale-out performance & data services

Data analytics

Operations

Data protection

More Copies? Why Not?
Dell EMC ViPR SRM


Capacity utilization  Performance analysis  Infrastructure monitoring
# Dell EMC ViPR Controller

## Improve efficiency & increase agility

<table>
<thead>
<tr>
<th>&lt;60 seconds</th>
<th>5 Simple Steps</th>
<th>63%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discover and ingest new storage</td>
<td>End-user self-service access to storage resources</td>
<td>Average reduction in time to provision storage</td>
</tr>
</tbody>
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<tr>
<th>Up to 73%</th>
<th>100%</th>
<th>to 63%</th>
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<tbody>
<tr>
<td>Reduction in storage provisioning costs</td>
<td>Savings in SAN zoning task costs</td>
<td>Reduction in VM provisioning costs</td>
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Realizing Software-Defined Storage with DELL EMC ViPR, Principled Technologies, 2014
Reducing Operating Expense with DELL EMC ViPR Controller and ViPR SRM, Principled Technologies, 2014
Dell EMC ViPR Controller

Improve efficiency & increase agility

“Reduces the risk of human error and the need for lengthy management reviews and can make your organization more nimble.”

— Principled technologies

Realizing Software-Defined Storage with DELL EMC ViPR, Principled Technologies, 2014

Reducing Operating Expense with DELL EMC ViPR Controller and ViPR SRM, Principled Technologies, 2014
FLASH
Where you need it
CLOUD
Where you don’t
Modernize Without Compromise

- **Agility**: 90% reduction in provisioning tasks
- **Speed**: 10–100x reduction in planning & architecture
- **Efficient**
Modernize Without Compromise

Agility

75%
reduction in batch processing

Speed

10–20x
improvement in application performance

Efficient
Modernize Without Compromise

83+%
reduction in floor space

2–10x
reduction in physical storage capacity

71%
reduction in power & cooling
Flash-sessment

Performance Impact
- IOPS
- Response time
- Bandwidth

Operational Impact
- Power
- Cooling
- Floor space
- Data efficiency services
- Ease of use

Financial Impact
- Current costs
- Future costs
- TCO

Business Impact
- Application data
- Workload improvement

DATA

Performance Impact

DATA

Operational Impact

DATA

Financial Impact

DATA

Business Impact

DATA
Validate The Value

KPIs

- **$85K** annual cooling and power savings
- **8x** less avg. latency
- **2.2:1** data reduction
- **66% / 45%** less power/cooling
- **75%** less floor space
- **15x** more performance

- 2.3 PB useable (@1.8:1 reduction)
- Cooling: 85k BTU/hour
- Power: 27 kW
- <1 ms avg. response latency
- 4.8M IOPs
- Operational management

Dell EMC VMax All-flash proposed