EMC² datadomain

Appliance Series

DD600 Series: Deduplication Storage for Enterprise Data Centers

Key Benefits

Scalable Deduplication Storage
> Fast, inline deduplication
> Up to 1.1 TB/hour of single stream throughput
> Up to 2.7 TB/hour of aggregate throughput
> Extended retention providing up to 1.7 PB of deduplication storage
> 10-30x average data reduction

Easy Integration
> Supports leading backup and archive applications from:

EMC	Symantec
HP	IBM
Microsoft	CommVault
BakBone	CA
Atempo	

> Supports leading enterprise applications including:
> > Database: Oracle, SAP, DB2, SQL
> > Email: Microsoft Exchange
> > Virtual environments: VMware
> > Content management: Microsoft SharePoint
> Simultaneous use of VTL, NAS and Symantec OpenStorage (OST)

Multi-site Disaster Recovery
> 99% bandwidth reduction
> Flexible replication topologies
> Multi-site tape consolidation
> Replication from up to 90 remote sites
> Cost-efficient disaster recovery

Ultra-safe Storage for Reliable Recovery
> Continuous recovery verification
> Continuous fault detection and healing
> Dual disk parity RAID-6

Operational Simplicity
> Lower administrative costs
> Power, cooling and space efficiencies for green operation
> Reduced hardware footprint
> Supports any combination of backup and archive applications in a single system

DEDUPLICATION STORAGE

Today's traditional disk backup systems go no further than providing a front-end to a tape library infrastructure with a fast cache, temporarily alleviating backup window problems. They fail to replace tape automation technology because they lack the requisite economic and operational qualities. Traditional disk cannot cost efficiently retain backup data for any length of time, and backup data is too large to be replicated over a Wide Area Network (WAN).

Data Domain, an EMC company, has revolutionized disk backup and remote office data protection with patented high-speed, inline deduplication. Backup data can be reduced in size by an average of 10-30x, so disk backup storage is now cost-effective for long-term onsite retention and highly efficient for network-based replication to disaster recovery sites.

Scalable Deduplication Storage

The Data Domain DD600 Series is a cost-effective and scalable deduplication storage solution for disk backup and network-based disaster recovery (DR).

Enterprise Performance and Capacity
DD600 Series systems derive their performance advantages from the Data Domain Stream-Informed Segment Layout (SISL) Scaling Architecture. A single DD690 system

DD690 System

delivers up to 1.1 TB/hour of throughput performance per stream, critical in protecting the large databases that are "Job One" in data centers. This CPU-centric approach minimizes the number of disk spindles required to achieve the throughput performance needed for these critical single stream operations.

The DD690 also provides up to 2.7 TB/hour aggregate throughput over many backup policies and offers data protection capacities up to 1.7 PB of logical storage per appliance for a typical enterprise data set and backup policy.

Massive Data Reduction
Data Domain systems store each unique data sequence only once and save significant physical storage capacity by substituting small references for each identical redundant sequence. The Appliance Series offers an average of 10-30x data reduction for enterprise recovery images, enabling cost-efficient retention on disk for high-speed and more reliable recoveries. Snapshot technology further enables extended local and offsite retention on disk.

Easy Integration

The Data Domain Appliance Series is qualified with all leading enterprise backup software and archiving applications and easily integrates into the existing storage infrastructure without change for either data center or distributed office data protection.

Data Domain systems can be used to efficiently store backup and archive data. This improves the efficiency across backup and archive applications and data types, as well as reduces management overhead by combining multiple applications' storage on a single system.

Multi-site Disaster Recovery

Connect an appliance to your backup software's media server as either a file server via Ethernet or a virtual tape library (VTL) via Fibre Channel. Symantec OpenStorage is also supported; all three interfaces can be used simultaneously. It takes just minutes to start backing up and recovering data. If required, duplicating to tape is simple using your existing software for offsite protection and long term retention. For other data protection workloads, simply copy and paste files or use an archiving application to move data to the appliance.

Data Domain Replicator software is also ideal for network-efficient replication to another site for disaster recovery, remote office data protection or multi-site tape consolidation.

The DD600 Series supports replication fan-in from Data Domain systems installed at up to 90 remote offices. Deduplication is 'global' across all of the remote sites, minimizing the required bandwidth, since only the first instance of data is transferred across any of

the WAN segments. Data sets are effectively shrunk by 99%, to a size where network-efficient replication is operationally feasible.

Ultra–safe Storage for Reliable Recovery

The Data Domain Data Invulnerability Architecture provides the industry's best defense against data integrity issues.

Continuous recovery verification along with extra levels of data protection continuously detect and protect against data integrity issues during the initial backup and through-out the data lifecycle. Unlike any other enterprise array or file system, each appliance ensures recoverability is verified and then continuously re-verified.

The systems are configured with dual disk parity RAID-6, so two disks can fail simultane-ously and the system will remain healthy. Fans and power supplies are redundant and easy to replace for added system resilience.

Operational Simplicity

Data Domain systems are very simple to install and manage resulting in lower administrative and operational costs.

All Data Domain systems have an automatic call-home system reporting capability, called autosupport, which provides email notification of complete system status. This non-intrusive alerting and data collection capability enables proactive support and service without administrator intervention, further simplifying ongoing management.

Because of the massive data reduction, less physical equipment is required. This makes the physical footprint significantly smaller and consequently the systems are energy efficient because they require less power and cooling.

SPECIFICATIONS	DD610	DD630	DD660	DD690
Capacity: Raw [3]	Up to 6 TB	Up to 12 TB	Up to 36 TB [4]	Up to 48 TB [4]
Logical Capacity: Standard [1, 3]	75 TB	165 TB	520 TB [4]	710 TB [4]
Logical Capacity: Redundant [2, 3]	196 TB	420 TB	1.31 PB [4]	1.77 PB [4]
Maximum Throughput	675 GB/hr [5]	1.1 TB/hr [5]	2 TB/hr [6]	2.7 TB/hr [6]
Power Dissipation [7]	329 W	329 W	575 W	564 W
Cooling Requirement [7]	1235 BTU/hr	1235 BTU/hr	1962 BTU/hr	1925 BTU/hr

1. Mix of typical enterprise backup data (file systems, databases, mail, developer files), full backup weekly, incremental backup daily, to system capacity.
2. Mix of typical enterprise data (file systems, databases, mail, developer files), full backup daily, to system capacity.
3. All capacity values are calculated using Base10 (i.e., 1 TB = 1,000,000,000,000 bytes) and the maximum raw capacity configuration.
4. Includes support for add-on shelves.
5. Maximum throughput achieved using VTL interface and 4 Gbps Fibre Channel.
6. Maximum throughput achieved using OpenStorage and 10 Gb Ethernet.
7. Controller only.

SOFTWARE
Data Domain Operating System (DD OS) 4.7 or later

Software Features
Global Compression, Data Invulnerability Architecture including end-to-end verification (ongoing) and integrated dual disk parity RAID-6, snapshots, telnet, FTP, SSH, email alerts, scheduled capacity reclamation, Ethernet failover and aggregation, Data Domain OpenStorage, Replicator and Retention Lock optional software

Management
Data Domain Enterprise Manager, GUI, SNMP, and command line management interface

Protocols
NFS v3 over TCP, CIFS, Symantec OpenStorage, tape library emulation (VTL) over Fibre Channel

SYSTEM EXPANSION
DD690: Up to 48 TB raw capacity
• Up to six 8 TB expansion shelves
• Up to three 16 TB expansion shelves
• Support for a mix of 8 TB and 16 TB expansion shelves up to 48 TB raw capacity
DD660: Up to 36 TB raw capacity; 24 TB external
• Up to three 8 TB expansion shelves
• Up to one 16 TB expansion shelf and one 8 TB expansion shelf
DD630: Up to 12 TB raw capacity
• Seven or twelve 1 TB internal drives
• No external expansion
DD610: Up to 6 TB raw capacity
• Seven or twelve 500 GB internal drives
• No external expansion

HARDWARE PLATFORM
2U 19-inch, rack mountable, use in 4-post rack, hot-plug disks, redundant fans, redundant power supplies, serial port, 2 copper 10/100/1000 Ethernet ports and optional dual-port copper or optical 1 Gb Ethernet. Optional dual-port copper or single-port optical 10 Gb Ethernet on DD660 and DD690 models only.

System Weight
DD690: 51 lbs (23 kg)
DD660: 66 lbs (30 kg)

DD610/DD630, 7 drives: 49 lbs (22.2 kg)
DD610/DD630, 12 drives: 57 lbs (25.8 kg)

System Dimensions (WxDxH)
DD660/DD690
19" x 29.5" x 3.5" (48.3 cm x 74.9 cm x 8.9 cm)
2 EIA Units
DD610/DD630
19" x 22" x 3.5" (48.3 cm x 55.9 cm x 8.9 cm)
2 EIA Units

Minimum Clearances
Front, with bezel: 1.56" (4.0 cm)
Rear: 5" (12.7 cm)

Power (VA)
100-120 / 200-240 V~, 50/60 Hz
DD690: 564 VA
DD660: 575 VA
DD610/DD630, 7 drives: 319 VA
DD610/DD630, 12 drives: 362 VA

System Thermal Rating
DD690: 1925 BTU/hr
DD660: 1962 BTU/hr
DD610/DD630, 7 drives: 1089 BTU/hr, 301 Watts
DD610/DD630, 12 drives: 1235 BTU/hr, 329 Watts

Operating Temperature
10°C to 35°C (50°F to 95°F)

Operating Humidity
20% to 80% non-condensing

Non-operating (Transportation) Temperature
-40°C to +65°C (-40°F to +149°F)

Operating Acoustic Noise
DD660/DD690: Max 7.0 BA, sound power at rear of unit when all disks seek simultaneously
DD610/DD630: Max 7.9 BA, sound power at rear of unit when all disks seek simultaneously

REGULATORY APPROVALS
Safety: UL 60950-1, CSA 60950-1, EN 60950-1, IEC 60950-1, GS, SABS, GOST, IRAM
Emissions: FCC Class A, EN 55022, CISPR 22, VCCI, BSMI, MIC, ICES-003
Immunity: EN 55024, CISPR 24
Power Line Harmonics: EN 61000-3-2