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# Appliance Series

## DD690: Scalable Deduplication Storage for the Core Data Center

### Key Benefits

**Scalable Nearline Storage**
- Fast, inline deduplication
- Up to 600 GB/hour of single stream throughput
- Up to 1.4 TB/hour of aggregate throughput
- Extended retention providing up to 1.7 PB of deduplication storage
- 10-30x data reduction average

**Easy Integration**
- Supports leading backup and archive applications from:
  - Symantec
  - EMC
  - HP
  - IBM
  - Microsoft
  - CommVault
  - Atempo
  - BakBone
  - Computer Associates
- Supports leading enterprise applications including:
  - Database: Oracle, SAP, DB2
  - Email: Microsoft Exchange
  - Virtual environments: VMware
- 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 60 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 and cooling efficiencies for green operation
- Reduced hardware footprint
- Supports any combination of nearline 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 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 Nearline Storage

The Data Domain Appliance Series is the industry's highest throughput, most cost effective and scalable nearline storage solution for disk backup and network-based disaster recovery (DR).

#### Enterprise Performance and Capacity

The DD690 derives its performance advantages from the Data Domain SISL™ (Stream Informed Segment Layout) scaling architecture. A single DD690 system delivers up to 600 GB/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 industry-leading performance for these critical single stream operations.

DD690 System

The DD690 also provides up to 1.4 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. Backup data, for example, is ideal for this technology, and Data Domain is the only vendor to offer the benefits of data reduction and the throughput to meet backup windows.

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 nearline 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 nearline 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 option 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 nearline 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.

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The DD690 supports replication fan-in from Data Domain systems installed at up to 60 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

Data Domain's 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 throughout 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 simultaneously and the system will remain healthy. Fans and power supplies (N+1) 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 Auto-Support, 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 | DD690 |
|---|---|
| Capacity: Raw [3] | Up to 48 TB [4] |
| Logical Capacity: Standard [1, 3, 4] | 710 TB |
| Logical Capacity: Redundant [2, 3, 4] | 1.77 PB |
| Maximum Throughput | 1.4 TB/hr |
| Power Dissipation [5] | 559 W |
| Cooling Requirement [5] | 1908 BTU/hr |

1. Mix of typical enterprise 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 arithmetic (i.e., 1TB = 1,000,000,000,000 bytes) and the maximum raw capacity configuration.
4. Includes support for up to 6 add-on shelves.
5. Controller only

#### SOFTWARE
Data Domain Operating System (DD OS) 4.5 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 Replicator and Retention Lock optional software

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

#### Protocols
NFS v3 over TCP, CIFS, NDMP v2, Symantec OpenStorage (OST), tape library emulation (VTL) over Fibre Channel

#### SYSTEM EXPANSION
Up to six (6) 8 TB ES20 disk shelves

#### HARDWARE PLATFORM - CONTROLLER
2U 19-inch, rack mountable, use in 4-post rack, hot-plug disks, redundant fans, N+1 power supplies, serial port, 2 copper 10/100/1000 Ethernet ports and optional dual port copper or optical 1Gb Ethernet and dual port copper 10 Gb Ethernet

#### System Weight
51 lbs (23 kg)

#### System Dimensions (WxDxH)
19" x 29" x 3.46" (48.3 cm x 73.7 cm x 8.8 cm)
2 EIA Units

#### Minimum Clearances
**Front, with Bezel:** 1" (2.5 cm)
**Rear:** 5" (12.7 cm)

#### Operating Current
115VAC/230VAC
4.9/2.4 Amps

#### System Thermal Rating
1908 BTU/hr

#### Operating Temperature
5°C to 35°C (41°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
Max 75 dbA, at rear of unit when all drives seek simultaneously

#### REGULATORY APPROVALS
**Safety:** UL 60950-1, CSA 60950-1, EN 60950-1, IEC 60950-1, SABS, GOST, IRAM
**Emissions:** FCC Class A, EN 55022, CISPR 22, VCCI, BSMI, RRL
**Immunity:** EN 55024, CISPR 24
**Power Line Harmonics:** EN 610003-2

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