

**DELL**Technologies

2ND EDITION

**ATTO**  
**Application Guide**

The Power Behind the Storage



# ATTO Technology, Inc.

## Corporate Overview

For over 30 years, ATTO has been an innovator in network and storage connectivity, from developing the first solid-state storage device to the latest data center appliances. ATTO creates high-performance products that manage latency in the most demanding real-time environments, resulting in accelerated application performance and enhanced transaction processing. ATTO delivers performance-based solutions to applications, infrastructure, big data, cloud and virtualized environments, including:

- **Enterprise** - Database, Web Servers, Back-Office Operations
  - **Departmental** - Business Analytics, Supply Chain, Asset Management
  - **Business Continuity** - MetroClusters
  - **Workgroup** - CAD/CAE, Video Production/Finishing, Scientific, Energy, Medical
- ATTO manufactures the industry's broadest portfolio of high-performance network and storage connectivity products, designed and optimized to work together to help customers better store, manage, analyze and deliver data.
- Fibre Channel, SAS/SATA, iSCSI, Ethernet, Thunderbolt™, NVMe, NVMe over Fabric, Host Bus Adapters, Network Interface Cards, storage controllers, Bridges, Thunderbolt adapters and software

ATTO delivers tested solutions which are qualified and certified with industry-leading workstation, server, storage and application vendors. This ensures:

- Faster access to new technology
- Features that improve your workflow
- Maximized solution performance and productivity

**ATTO provides a unique level of partnership with customers, solution providers and OEMs.**



ATTO founders Dave Snell, CTO, and Tim Klein, CEO

## The Power Behind the Storage

*"We would like to thank our valued industry partners and loyal customers for your continued support. ATTO's primary mission is to provide the best possible customer experience while offering the highest performing, industry leading products and technologies available."*

-Timothy J. Klein, President and CEO, ATTO Technology, Inc.

## ATTO Product Lines



### Host Bus Adapters

Celerity™ Fibre Channel HBAs and ExpressSAS® SAS/SATA HBAs provide faster and more efficient data transfers.



### Network Interface Cards

FastFrame™ 10/25/40/50/100 Gb Ethernet NICs provide flexible and scalable unified LAN and SAN storage connectivity.



### Thunderbolt™ Adapters

ThunderLink® adapters enable high-performance, low latency Thunderbolt connectivity to desktop and mobile workstations for network and storage connectivity.



### Intelligent Bridges

XstreamCORE® Ethernet and Fibre Channel intelligent bridges disaggregate storage from compute by enabling remote access and sharing of SAS, JBOD, JBOF, RAID, tape and optical devices.



### NVMe Switch Host Adapters

ExpressNVM™ host bus adapters offer a unique option to create shareable NVMe storage pools with unparalleled storage performance—all while delivering enterprise-level management and configuration capabilities.



### Software

ATTO software and downloadable tools help to maximize the productivity of a number of ATTO products.

## ATTO Tested Product Solutions

		ATTO Products				
		HBA's	NICs	Storage Controllers	Thunderbolt Adapters	Software
Dell Technologies Products	 Precision Fixed Workstations	★	★	★		★
	 Precision Mobile Workstations				★	★
	 Power Edge Server	★	★			★
	 PowerVault Storage	★	★			★
	 PowerVault Backup & Recovery	★		★	★	★
	 Isilon Solutions		★		★	★

To view more details about ATTO solutions for Dell Technologies visit <https://www.atto.com/solutions/dell>

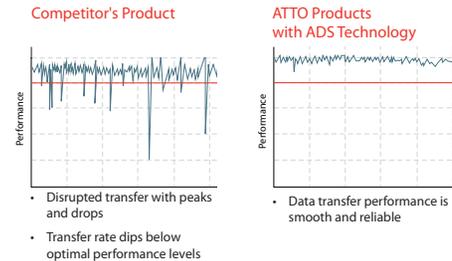
## Technology Leadership

Technology at it's fastest

### ATTO Advanced Data Streaming (ADS™) Technology

ATTO ADS™ is proprietary latency management technology works transparently to smooth data transfers through controlled acceleration. Data moves efficiently giving ATTO users an unmistakable edge in total system performance.

From high I/O transactions to large bandwidth real-time streaming, ADS reduces interruptions and maximizes the amount of data processed per CPU cycle.



### ATTO xCORE™ Hardware Acceleration Processor / eCORE™ Offload Processor

xCORE is hardware-based data acceleration technology that manages the data path and assures that all reads and writes are processed software-free with minimal overhead. Latency is limited to a consistent two to four microseconds.

eCORE provides software-based virtualization and management services. ATTO eCORE supplements xCORE to maintain deterministic latency by enabling software functionality only where and when needed. Working together, xCORE and eCORE unleash the full potential of software defined storage, making it possible to add common, open storage services and industry standard API integration and maximize the gains of all-flash storage architectures.

### ATTO SpeedWrite™

Exclusive performance-enhancing capability that significantly boosts tape performance by efficiently managing read and write commands between host and tape, resulting in continuous operation, shorter back-up times and higher overall throughput.

SpeedWrite is a mode of operation in which SCSI Write commands are processed using 'Write-Behind' and 'Deferred Error' handling to return completion status back to the host prior to actual command completion.

## ATTO XstreamCORE® enables 40GbE for SAS LTO tape drives

Share Dell EMC ML3 SAS library resources remotely over Ethernet

### Background:

Tape drives typically only support Fibre Channel or SAS connectivity. The connectivity choice governs the tape library implementation and performance. SAS limits the feasibility of using SAS tape drives for high-speed remote backups. Libraries can connect via a server but are difficult to manage and support, and do not perform as well as a dedicated appliance. Fibre Channel isn't limited like SAS or Ethernet, but is a more expensive technology to deploy.

### Problem:

SAS tape libraries have distance limitations and connect on a one to one basis. Sharing must occur through a server and connectivity is typically done over a LAN connection with the server being the bottleneck and a point of failure if the server goes down.

When connectivity to tape devices is not capable of higher performance it can lengthen the time it takes to backup mission critical data and can leave data stranded in the event of a disaster.

One or more servers are typically reserved strictly to accommodate sharing of tape libraries limiting these assets usefulness in production environments.

### Solution:

By using ATTO XstreamCORE® ET 8200 storage controllers connected to Dell EMC ML3 scalable tape libraries, backup environments gain a high-performance, Ethernet connected LTO tape library that is remotely accessible by multiple servers.

ATTO XstreamCORE ET 8200 storage controllers are hardware accelerated protocol conversion appliances that add shared storage capabilities to SAS tape. XstreamCORE 8200 presents SAS LTO tape drives as iSCSI or iSER targets on an Ethernet network and increases direct-attached performance via ATTO exclusive technologies. Built-in features consolidate and simplify drive management.

### Benefits:

- Servers reserved for sharing tape libraries are no longer needed.
- Decrease backup times, 16 SAS tape drives can be connected to the network via a single XstreamCORE ET 8200.
- Tape libraries can be located anywhere with network access.
- Monitoring and management through RS-232, USB, Ethernet or in-band.
- Build upon existing networking infrastructure.
- Support for advanced ACLs (access control lists), Redfish™ & Swordfish™ management and secure management protocols.

Figure 1:



Figure 1: SAS tape libraries have distance limitations and connect on a one to one basis. Connectivity is typically done over a LAN connection with the server being the bottleneck and a point of failure if the server goes down.

Figure 2:

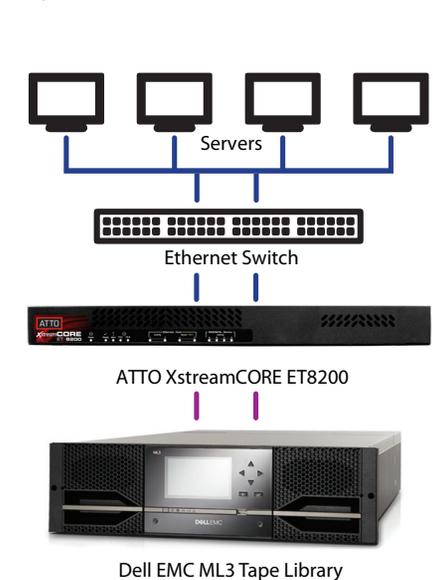


Figure 2: ATTO XstreamCORE connects to LTO SAS tape drives and converts them to Ethernet connected LTO drives allowing all servers to have connectivity over distance using existing resources.

# ATTO FastFrame™ NICs and ThunderLink® adapters combine with Dell® PowerScale Hybrid NAS for collaborative workflows

Generating more content in less time with greater flexibility

## Background:

Creating professional digital content is often a collaborative process involving teams of individuals assigned to specific tasks. Storage architects and IT administrators frequently turn to scale-out network-attached storage (NAS) platforms like the Dell® PowerScale product family to handle the data load generated by production teams.

## Problem:

Ultra HD, 4K and 8K video editing is demanding on network resources and can quickly consume bandwidth and create bottlenecks in environments that aren't optimized for the task.

It is common for terabytes of media content to be generated daily, which can lead to storage shortages in unprepared data centers. Adding storage and solving connectivity challenges while storage is critically low can not only slow down productivity, it puts all of the data on that storage at risk.

Portable workstations, all-in-ones, and other devices limited to 1GbE connectivity cannot natively take advantage of high-performance storage platforms, diminishing their productivity and flexibility.

## Solution:

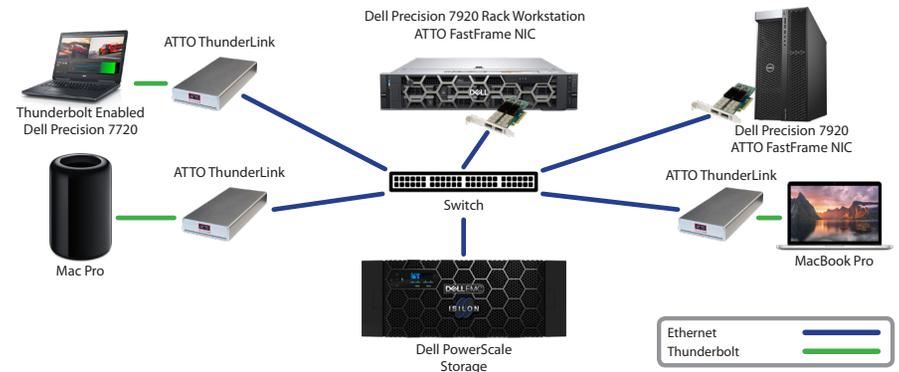
PowerScale Hybrid NAS storage solutions utilize standard file-sharing protocols over existing Ethernet infrastructures, are simple to manage and are designed to scale easily.

ATTO FastFrame™ 10/25/40/50/100GbE network interface cards (NICs) meet the high bandwidth, low latency performance needs of scale-out NAS storage platforms like Isilon and are optimized for media workflows.

ATTO ThunderLink® Thunderbolt™ to 10/25/40GbE adapters provide all-in-ones, mobile workstations and other Thunderbolt-enabled devices high-performance access to enterprise NAS storage.

## Benefits:

- ATTO FastFrame NICs and ThunderLink Thunderbolt adapters are interoperable with Dell Precision™ and Isilon solutions.
- ATTO 360 Tuning, Monitoring and Analytics software available for complete optimization of Ethernet networks, including 1-click tuning for Dell PowerScale and OneFS.
- ATTO has developed performance optimizations that take advantage of the latest features in the OneFS file system.
- ATTO Advanced Data Streaming (ADS™) Technology manages network latency to provide high-performance media file transfers and reliable playback of streaming media.
- ATTO tests and tunes for interoperability and performance with industry leading application developers.
- High-performance, low latency 10/25/40/50/100GbE connectivity supporting Windows®, macOS® and Linux®-based operating systems.



*“Content consumers and producers are showing an insatiable appetite for higher resolution video and better quality images, which is driving up the requirements for storage and network infrastructure performance.”*

-Simon Hayward, CTO  
Media and Entertainment, EMEA  
Dell Technologies

# ATTO Ethernet solutions pack the punch that high-end workflows need

When standard Ethernet performance isn't enough

## Background:

Dell® Precision™ workstations are known for their high-end performance and proven reliability. Precision workstation scalable solutions include mobile, tower and rack workstations, all with powerful graphics, processors and memory designed for the most demanding computing environments.

An investment in high-end workstations is only one part of a larger solution. Servers, storage, applications and network connectivity all play a prominent role in workflow performance and productivity.

## Problem:

Standard components might lack the flexibility or power needed for the traffic and workflows expected of the environment. Client systems attached to network resources and storage can experience latency and bottlenecks, which affect user productivity.

The problems compound as workloads increase. IT administrators may spend an inordinate amount of time and resources attempting to optimize the environment with few to no gains overall.

## Solution:

These challenges can be overcome by using ATTO FastFrame™ Network Interface Cards (NICs) and ATTO ThunderLink® Thunderbolt™ adapters. These solutions eliminate the bottlenecks of traditional corporate Ethernet networks and maximize the performance of Dell Precision workstations.

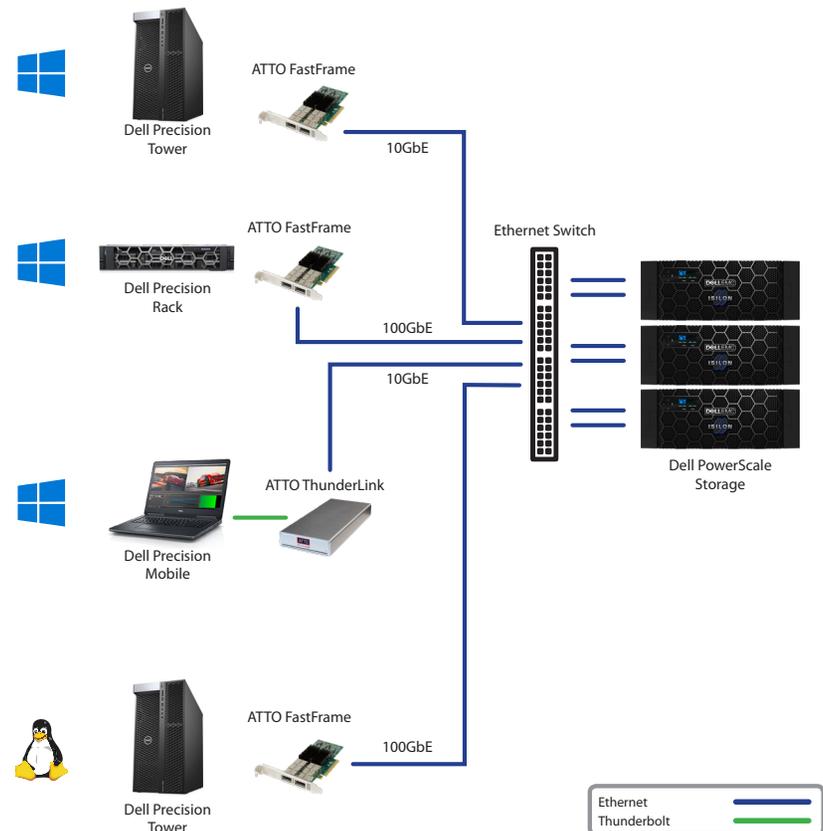
ATTO drivers and performance-tuning applications for FastFrame NICs and ThunderLink Thunderbolt adapters will help system administrators optimize the environment with powerful, yet easy to use tools.

ATTO FastFrame 10/25/40/50/100GbE NICs, in a variety of port configuration options, are tested interoperable with Dell Precision fixed workstations.

ATTO ThunderLink Thunderbolt adapters add high-performance, tested connectivity to Dell Precision mobile workstations with Thunderbolt 3 ports.

## Benefits:

- Network latency is reduced and performance enhanced thanks to exclusive ATTO Advanced Data Streaming (ADS™) Technology.
- ATTO drivers and software simplify configuration and management and are optimized to provide the maximum throughput for today's most demanding applications.
- Interoperable with a wide breadth of industry leading software applications and hardware.
- High-speed, high-performance Ethernet connectivity for collaborative workflows that include Windows® and Linux®-based operating systems.
- ATTO 360™ Tuning, Monitoring and Analytics software available for complete optimization of Ethernet networks.



# Fibre Channel Connectivity that Matches the Power of Clients and Hosts

High-performance storage connectivity for Dell Precision™ workstations

## Background:

Dell® Precision™ workstation scalable solutions include tower and rack workstations, all with powerful graphics, processors and memory designed for the most demanding computing environments. These environments may require higher-performing network connectivity than can be provided by standard equipment.

Dell high-end workstations can also be deployed in environments that may not include or necessitate server access or support, yet require a high-performance storage solution. There may also be a need to archive directly from a workstation.

## Problem:

Ethernet connectivity using NAS or iSCSI may not provide guaranteed or sufficient speeds, low latency or adequate security to accomplish the objectives of the workflow.

Workstations connecting to enterprise-class storage are not able to connect to Fibre Channel storage to utilize the full performance potential of the workstation and storage due to inadequate connectivity.

Archiving over networks, via USB or other standard ports might be impractical, too slow, or too unreliable.

## Solution:

These challenges can be solved by ATTO certified solutions for Dell Precision Fixed Workstations, which include ATTO Celerity™ Fibre Channel HBAs.

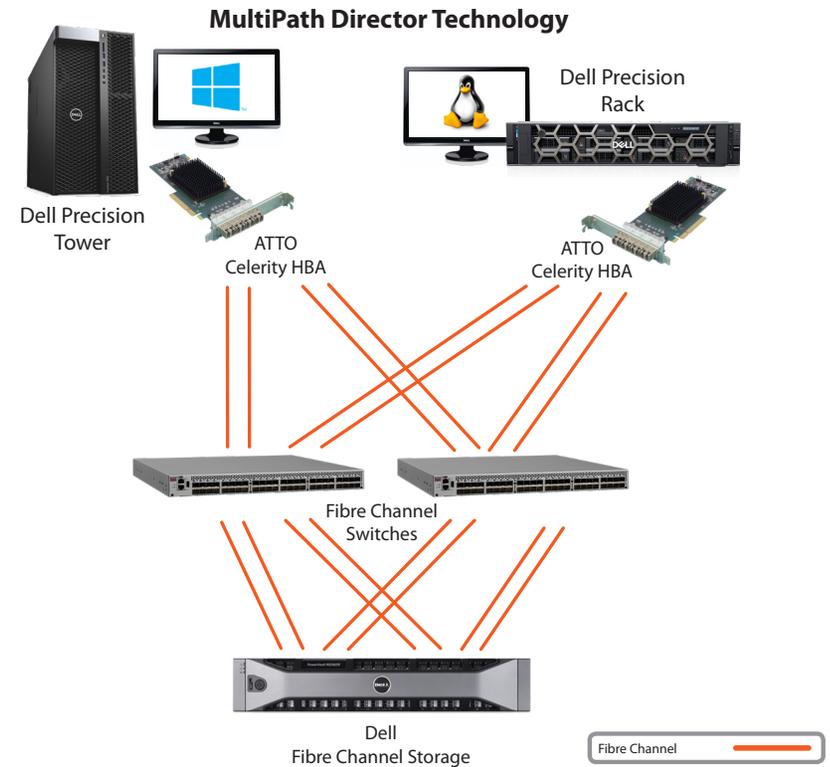
ATTO Celerity 32Gb, 16Gb and 8Gb Fibre Channel HBAs are optimized for extremely low latency, high-bandwidth data transfers. Workstations can share access to the same enterprise class storage as a server. This enables features normally only supported in server-based environments.

ATTO Multipath Director™ is a specialized ALUA multipathing driver that recognizes and takes advantage of all paths within a Fibre Channel storage network. Being the only way to connect to enterprise-class storage systems, data is moved across multiple paths ensuring it is available for anyone who needs it, when they need it. This can only be done on workstations using ATTO Multipath Director.

ATTO MultiPath Director enables failover and load balancing capabilities for high-availability storage. Load balancing across multiple paths increases overall system performance. It also can mix Windows®, macOS® and Linux® workstations in a heterogeneous environment.

## Benefit:

- Powerful, centralized configuration and management of data paths using the GUI-based utility ATTO ConfigTool™.
- Fail over and load balancing for Windows® and Linux® based client workstations enabled by industry exclusive ATTO MultiPath Director™ for Celerity™.
- Low, deterministic latency provided by ATTO Advanced Data Streaming (ADS™) Technology.
- Certified interoperable with Dell Precision.
- Storage scalability and flexibility with simultaneous connectivity to multiple disk, RAID and tape devices.



## Storage Freedom for Mobile Workstations

Connect Dell® Precision™ to high-performance storage via Thunderbolt™

### Background:

Dell® Precision™ mobile workstations and all-in-ones can be used for specialized, compute-intensive applications like media production, data-mining, and game development. These applications and their associated workflows often require high-performance, low latency connectivity to storage and networks.

### Problem:

The smaller form factors of mobile workstations limit the ability to natively connect to and utilize feature-rich storage, restricting the full potential of these machines.

The built-in USB and network ports lack the specifications needed to meet the expectations of high-performance workflows.

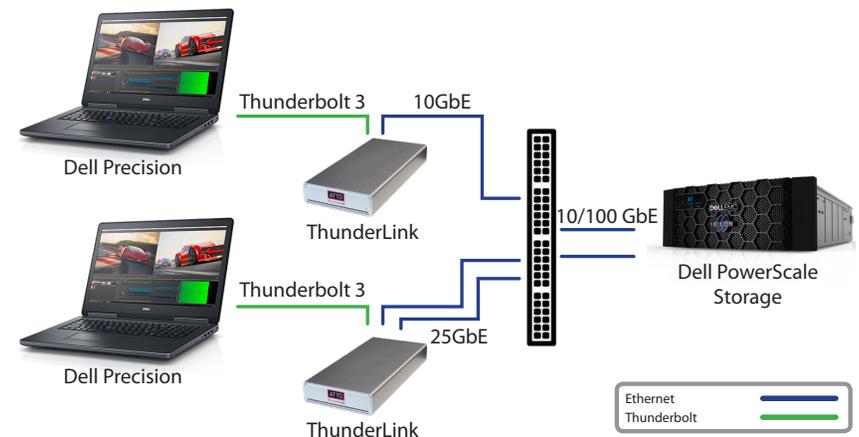
### Solution:

By utilizing ATTO ThunderLink® Thunderbolt™ adapters, mobile workstations and all-in-ones gain access to enterprise-class network resources and peripheral devices.

ATTO ThunderLinks are purpose-built adapters incorporating 32Gb, 16Gb and 8Gb Fibre Channel, 100Gb, 25Gb and 10Gb Ethernet, and 12Gb SAS/SATA. ThunderLink enables seamless integration of Thunderbolt 3 and 2 desktop and mobile workstations to high performance, high capacity storage, like SSD/HDD RAID arrays, LTO tape drives, and shared storage systems.

### Benefits:

- Designed for the rigors of the field with locking power supplies and built in Kensington® Security Slots.
- Certified interoperable with Dell Precision and Isilon™ solutions and dozens of other Fibre Channel, SAS/SATA and LTO storage solutions.
- Low latency, high-performance data transfers ensured by ATTO Advanced Data Streaming (ADS™) Technology.
- Powerful, centralized configuration and management of data paths using the GUI-based utility ATTO ConfigTool™.
- Fail over and load balancing for Windows® and Linux® enabled by industry exclusive ATTO MultiPath Director™ for Fibre Channel solutions.





**The Power Behind the Storage**

## **How to Buy**

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