Accelerate > ISR
With DDN Big Data Storage
The Way to Capture and Analyze the Growing Amount of Data Created by New Technologies
The Big Data Challenge and Opportunity

ISR experts understand information is their greatest asset. They also understand that data is not information. Data doesn’t become information until it has been ingested, analyzed, and proliferated to the appropriate users. While the industry has made huge gains in the way they collect data, many agencies are still utilizing yesterday’s storage solutions to try to manage it. Traditional storage platforms were never engineered to process data at the volume or speed it is created today, or to disseminate this information to analysts or end users.

The ISR Data Challenge

ISR agencies are finding it more and more difficult to capture and analyze the growing amount of data created by new technologies. The DARPA Autonomous Real-Time Ground Ubiquitous Surveillance Imaging System (ARGUS-IS), for example, is comparable to 60 to 100 Predator UAVs looking at a particular area all at once, and uses 368 five Megapixel detectors capable of generating more than 260 Giga bits per second of raw data. This is about 3000% more than what a standard network storage system can support today. This problem is projected to get much worse. Current generation drones record video in about 30 directions but there are requirements for as many as 65 with much higher levels of resolution and quality. This means that these sensors are expected to produce 1000x more information just in the next few years.

Not being able to store and analyze this information in time frames necessary to identify relevant intelligence can lead to missed opportunities. Worse yet, it can lead to reduced situational awareness, delays in decision-making and potential lapses in security. Gathering data is only half the challenge, effectively managing it is crucial to extracting the data’s value and translating it into new and emerging threats, and providing real-time decision support to the right people, in the right place, at the right time.

The New Generation of BIG DATA Tools

The DDN solution supports storage arrays, file systems and cloud storage appliances for the world’s most data-intensive environments. These scalable and highly efficient storage solutions enable our customers to accelerate time to results, scale simply as data sets continue to grow and gain competitive advantage through higher performance and increased capacity. By optimizing each element of the I/O environment for performance, capacity and data center efficiency – DDN solutions deliver the highest levels of performance and fastest time to results.
• Concurrently handle thousands of FMV surveillance streams
• Uninterrupted data capture and performance during system correction
• Supports clustered supercomputers with 10,000s-100,000s of CPUs
• Self-Healing & autonomous cloud storage at massive scale

Maximizing the value of ISR Information:

Ingest:
• Traditional storage systems were architected to support point to point transfer, and are essentially repurposing older, open source technology which was engineered for massive ingest. These systems simply cannot scale to accommodate the volumes of ISR data being produced today. More importantly, these systems cannot support adequate QOS, making their consistency of service unacceptable. Due to the nature of ISR data capture, this combination results in lost data and missed opportunities during intelligence gathering activities.

The DDN Difference
• Utilizing Parallel filling systems and purpose built solutions, DDN Platforms are 800% faster than competitive solutions. Single systems provide up to 40GB/s and reaching 1TB/s can be achieved in just 25 systems.
• A single DDN solution can simultaneously ingest multiple streams of surveillance video, at a rate of 3000 MB/sec per stream generated by next gen high resolution ISR cameras. This is an order of magnitude higher that what a traditional storage solution like a NAS can support and allows agencies to survey 100x larger areas of land by supporting higher resolution cameras and much higher number of cameras per storage solution.
• The DDN architecture delivers enormous internal bandwidth which protects performance during drive rebuilds, while competing systems lose as much as 40%.

Analyze:
• Legacy filing systems were never intended to support the new generation of analytics solutions. Today’s analytics have requirements to extract information from enormous data sets. In these situations legacy storage platforms with their limited throughput capabilities are often the bottleneck.
The DDN Difference

• DDN combines unprecedented IOPS, multi disk technologies and bandwidth performance with highly efficient capacity management to maximize analytics application performance.

• DDN is the only solution that offers In-Storage Processing enabling latency-sensitive applications to live right inside the storage appliance.

• DDN parallel file systems provide higher I/O performance by “striping” blocks of data from individual files over multiple disks, and reading and writing these blocks in parallel – hence the term “parallel file system.”

• DDN solutions are optimized to handle a wide range of data and workload types – from highly transactional to highly sequential workloads as well as small to extremely large files. It can tag data with rich contextual information to improve analysis, manageability and search. For example, DDN object based solutions can be used to tag data based on other properties of the data beyond its file name, like geospatial metadata, co-ordinates, altitude, bearing etc.

Share:

• Traditional storage systems were designed to be deployed in a single location. They provide no mechanisms to create a common data pool across multiple geographically dispersed sites, leaving the systems architect to attempt to solve this problem with a multitude of individual storage systems, file systems, replication software instances, custom coding, and management points. Now, the storage architect must deal with massive scale in multiple sites, and devise schemes to keep content synchronized between them. Content Delivery Networks (CDNs) can help solve this problem for very frequently accessed content, but quickly become too expensive to aid in the distribution of content at Petabyte scale.

The DDN Difference

• DDN offers a private cloud infrastructure that can process 256 Billion objects a day from any device. This cloud solution also leverages metatags to insure analysts have easy access to the information they need.

• DDN’s elegant building block architecture scales seamlessly on demand to hundreds of Petabyte in size and billions of data objects. Each object can be an asset like an individual image or video that is deemed valuable. This scale gives ISR agencies the ability to deploy a single large system that provides them with a consolidated view of all their intelligence data. Compare this with a traditional storage solution that can only scale to a fraction of this size, forcing agencies to deploy multiple small storage islands with added overhead and complications.
This secure, shared “drop-in” file access for enterprise users improves productivity and accelerates workflows.

The DDN Difference

The DDN solution improves performance at every step of moving data, processing it and sharing it with analysts or end users. Engineered specifically for Big Data challenges the DDN solution delivers peak performance from data intensive applications to reduce latency, deliver richer results in less time and disseminate that information to users. With a massive I/O infrastructure and multi-disk technologies that maximize system performance and lower storage investment costs, the DDN architecture delivers unrivaled benefits:

- **Supports Multiple High Speed Connectivity Protocols** – Such as Infiniband, Fibre Channel and Ethernet to enable the highest data ingest rates in the industry
- **Balanced Storage Performance** – For both highly transactional and high-bandwidth applications
- **ReACT™ Intelligent Cache Management** – Optimizes writes in real-time: sequential data goes directly to disk media while small, random IO utilizes extremely fast cache
- **Read I/O Quality of Service** – Read IO doesn’t suffer due to a single, unresponsive disk
- **DirectProtect™ Real-Time Error Detection & Correction** – Increases data resiliency and reliability with little performance impact
- **Unparalleled Back-end SSD Support** – Fully utilizes SSDs for unprecedented levels of sustained random IOPS
- **Journaled Drive Rebuilds** – Reduces rebuild times by only requiring new/changed blocks to be written to recoverable drives
- **Delivers Enterprise-class Data Protection at ½ the Price** –
  - Making large SATA pools reliable (not just less expensive)
  - Enabling large SATA deployments with high duty-cycles
  - Minimizing SATA administration

Long recognized as the leading Big Data solution by the Intel Community, DDN products are rapidly being deployed by ISR agencies to tackle the largest data challenges and help analyze and visualize the entire dataset efficiently – rather than sampling it and getting fragmented views.

DDN delivers unmatched performance and decisioning capabilities for any organization trying to extract vital information from huge, ever-changing, data sets derived from a wide variety of data sources. With the ability to scale in-line with requirements up to multi petabyte environments, the solution can process Petabytes or Exabytes of data from hundreds or thousands of data sources in less time at a lower total cost of ownership. Utilizing a solution that can deliver data to the analytics faster, (or better yet bring the application to the data through In-Storage Processing), process it in real time, and scale to virtually any size can mean all the difference between being able to store data and being able to turn that data into actionable information.
DDN FEDERAL | About DataDirect Networks

DataDirect Networks (DDN) is the world leader in massively scalable storage. We are the leading provider of data storage and processing solutions and professional services that enable content-rich and high growth IT environments to achieve the highest levels of systems scalability, efficiency and simplicity. DDN enables enterprises to extract value and deliver results from their information. Our customers include the world’s leading online content and social networking providers, high performance cloud and grid computing, life sciences, media production organizations and security & intelligence organizations.

Deployed in thousands of mission critical environments worldwide, DDN’s solutions have been designed, engineered and proven in the world’s most scalable data centers to ensure competitive business advantage for today’s information powered enterprise.

For more information, go to www.ddn.com or call +1.800.837.2298