Dynamic Drive Pool

DDP

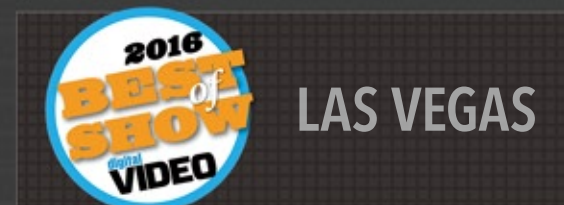## Superior Shared Storage Solutions

DDP - Award winning storage

DDP

D ynamic Drive Pool (DDP) is more than just a shared storage system. It is fast, user-friendly and easy to both manage and maintain. It is the most cost-effective high-performance IP SAN storage available today. The Dynamic Drive Pool is ideal for film, video and audio editors and producers, Web and multimedia developers, corporate communication departments, broadcast, government and educational organizations.

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Ethernet SAN Technology

DDP

DP - Dynamic Drive Pool is a multi-award-winning shared storage system. It is available with SSD caching, load balancing and automatic data redistribution as well as a range of additional advantages including linear bandwidth scaling, mirroring and single namespace.

It all comes from one box, on one Ethernet network.

Simple. An IP-SAN based solution allowing full project and file level based sharing, it uses almost 100% of the available Ethernet bandwidth.

DDP is a simple and effective (not to mention affordable) storage solution dedicated to meeting the demands of film, video and audio users.

DDP - Dynamic Drive Pool refers to a pool of storage from which virtual or logical volumes can be created and used via Ethernet (Ethernet SAN).

People working with multimedia appreciate that desktop drives need to regularly handle large amounts of data. Multimedia software such as those from Adobe, Avid, Apple, Grass Valley, Autodesk, EVS, Playbox, Medeis, Fairlight and other video, film and audio editing applications frequently require direct high-speed shared access to drives or volumes.

Added to the everyday demands of multimedia are issues such as capacity limitations and back-up; data-hungry multimedia applications can easily run into capacity limitations and we are all familiar with the worries presented by the need for regular, reliable back-ups.
FC-SAN (Fibre-Channel Storage Area Network) solutions are usually expensive and complex, frequently requiring two different networks and qualified engineers. This is before you consider licensing, which adds substantial additional cost.

NAS systems are simpler and easier to manage. However, they are much slower; using approximately 50-70% of the available IP bandwidth.
What is the technology behind DDP?
DDP is an IP-SAN based solution. It allows full project and file level based sharing yet it uses almost 100% of the available Ethernet bandwidth. DDP is packed with the most innovative technologies available for Post Production and Broadcast.

DDPs are Ethernet-based SAN systems which utilize the AVFS/iSCSI protocol. DDP drives behave in the same way as local drives with no latency or lag, in contrast to most of the NAS systems. Network Attached Storage Systems (NAS) understand files and metadata and provide both storage and file-system. SAN storage systems only understand block data, leaving file-system concerns to the client computer. Due to the fact that NAS systems are file aware, they operate at a higher layer and for this reason they introduce more latency into the read/write process.

The NAS appears to the client computer as a File Server, requiring the client to map a network drive to share, whereas SAN presents itself to the client as a local disk, allowing the client to deal with the file system.
Because SAN storage operates at a lower layer it is substantially faster. For years, the burning question has been 'which to use - SAN or NAS?' For many companies, the answer is both.

However, as a result of the introduction of Ardis Technologies AVFS/iSCSI system, companies can now use SAN with NAS simplicity and functionality. AVFS combines the performance benefits of the iSCSI SAN protocol with the NAS intelligence, using a single Ethernet network.
It's the best of both worlds!

Dynamic Drive Pool - DDP represents the best of both worlds, all from one box and on one Ethernet network.

Comparing AVFS and NAS

L et's take a quick look at how AVFS accelerates network-attached storage with iSCSI. A Windows, Mac or Linux client accesses an AVFS solution over standard Ethernet wiring and switches. It uses the iSCSI protocol to transfer date over TCIP/IP and allows two hosts to exchange data at high speed.

The diagram below shows how this works.

The DDP AVFS Advantage
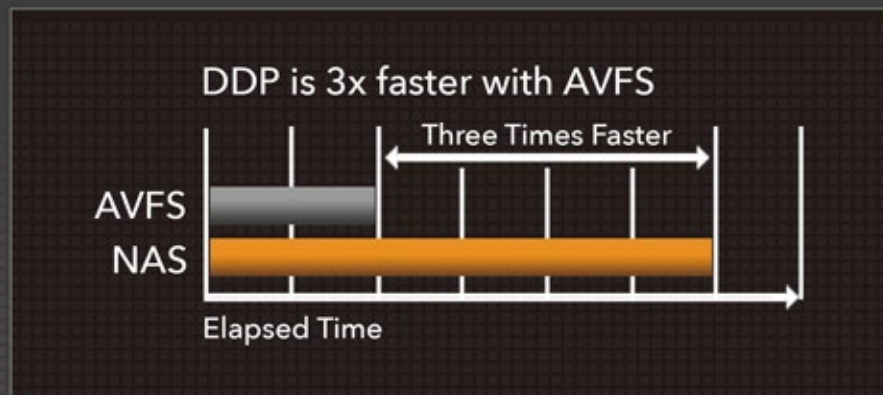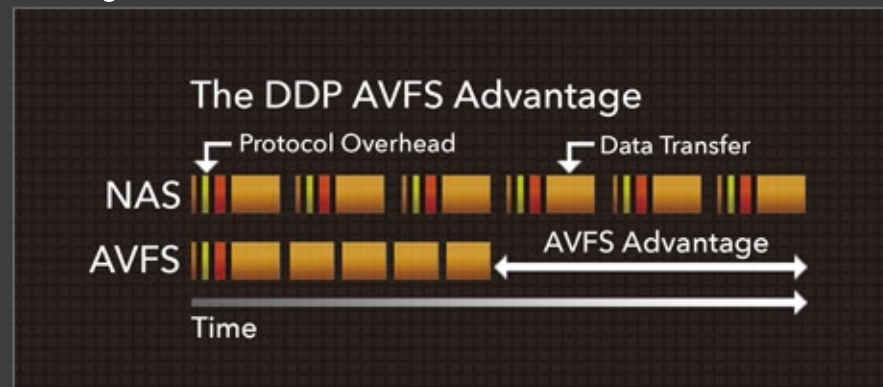
With typical file access the NAS system is burdened by its metadata protocol overhead for each data transfer. The only moving parts of an AVFS solution is the AVFS software installed on the client.

In comparison, the AVFS protocol incurs protocol overhead only at the beginning of each file access. After that initial handshake, data transfers run quickly and efficiently over iSCSI.

DDP is 3x faster with AVFS

AVFS can transfer more file data over a shorter period of time, giving it a performance.

The AVFS protocol explained

NAS is fundamentally slower than iSCSI due to the chatty nature of high-level NAS protocol handling. iSCSI operates over the same Ethernet infrastructure and is a fast and efficient data transfer protocol.

The combination of iSCSI for fast data transfers, and NAS for file system protocol awareness is used in the AVFS protocol to make a system with NAS functionality that runs at much higher speed.

Major Benefits for CPU Utilization

AVFS is not only faster than NAS it is also much more efficient. NAS protocol handshakes between NAS clients and an NAS server can consume a lot of CPU cycles, swallowing CPU resources needed for the client applications.

Switching to the AVFS protocol reduces the burden on NAS clients (approx. 7x less) and the storage server (12x less) by minimising the amount of protocol handshakes per block of data transferred.

As a result, more clients can share the same storage system and more CPU cycles remain available for client applications.
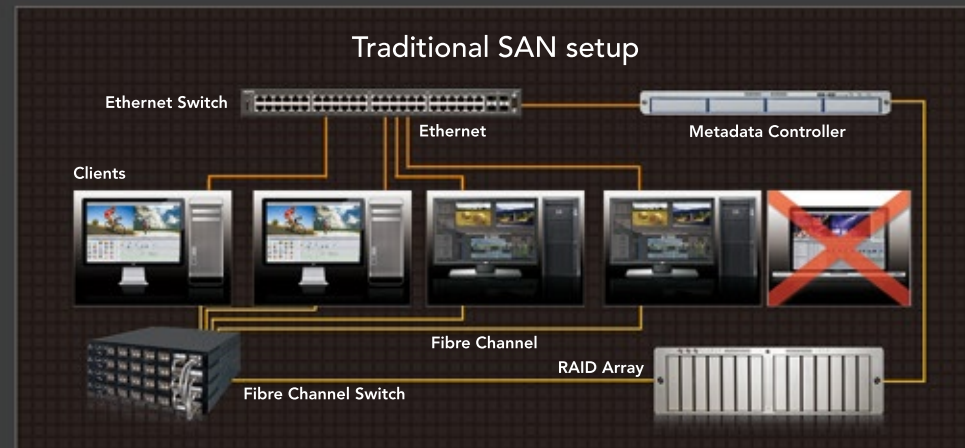
Traditional SAN in a Film, Video or Audio Environment

T o overcome the problem of bottlenecks, AV and Film companies often turn to expensive SAN-based solutions. In a traditional SAN system there are separate data and communication paths, with Fibre channel for the data and Ethernet TCP/IP for the communication, or metadata, path. Managing two completely different network infrastructures can be difficult.

To make matters worse, an additional server is often needed to handle the metadata traffic via the communication channel.
So here we are with a Fibre channel network, an Ethernet network, a storage server and a metadata server.

For many pro Video, Film and Audio companies such a set up is too expensive and complicated to install, operate and maintain.
In the event of failure in such a set up, to quickly identify a problem requires highly qualified technical personnel, which is not always available.

Traditional SAN setup

Ethernet Switch

Ethernet   Metadata Controller

Clients

Fibre Channel

RAID Array

Fibre Channel Switch

Dynamic Drive Pool: The best of SAN and NAS

DDP: SAN performance with NAS simplicity and functionality

Ethernet Switch

Ethernet

Clients
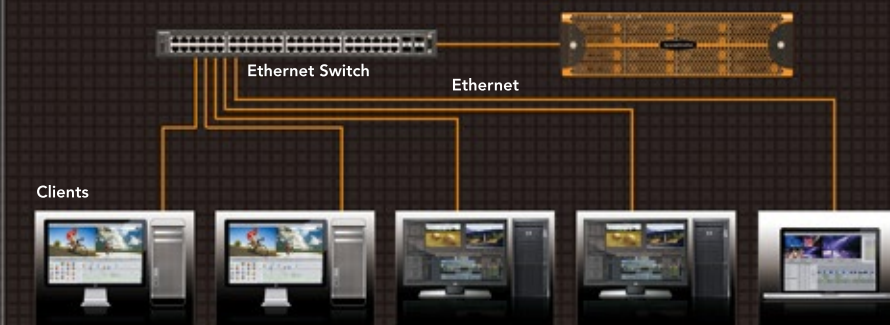
I t was only natural for Ardis Technologies, as iSCSI experts, to develop a solution which combines the benefits of both technologies into one product - the Dynamic Drive Pool. Because iSCSI exclusively uses Ethernet, suddenly there is only one network infrastructure to consider; standard Ethernet with standard Ethernet switches.

With Dynamic Drive Pool, Ardis Technologies simplify things one step further by integrating the metadata handling within DDP itself.

So there you have it - the DDP; a storage server which connects to standard Ethernet and provides high bandwidth project- and file-level sharing for many applications, including those from Avid, Apple, Adobe, Autodesk, Grass Valley, Primestream, Medeis, BlackMagic Design, Softron, EVS and many others.
All out of one box.

Multiple Connections Per Session & Bandwidth Manager

W ith the DDP MCS (Multiple Connections per Session) feature, you can combine several 1GbE, 10GbE, or 40GbE connections for increased performance on client machines. By simply using two 1 GbE links from a client machine to a DDP, you can double the usable bandwidth. This means you can playback 10 Bit HD Uncompressed video 160 -180MB/s with no drop frames without the need for costly high-speed network adapters. For higher bandwidth workflows, such as 4K Open EXR sequences, two 10GbE links between the client and the DDP can deliver over 1600MB/s.

MCS is not limited to only two connections - you can use even more cables to further increase performance. Moreover, it is completely switch transparent; this means that as long as DDP can communicate with the client machine, you can work with it. Other Ethernet linking methods often deployed by NAS solutions require switches to be compatible with their supported protocols. Furthermore, such protocols do not increase the bandwidth to client machines consistently for the demands of video.
Some of them are only capable of failover and slight read-speed increases with no increase for writes. MCS is a superior yet cost-effective method of increasing client performance in shared network environments.

BANDWIDTH MANAGER

DDP is designed to sustain sufficient bandwidth to allow playback without dropped

frames, and recording without unexpected interruptions. Typical IO processes such as copying or rendering may also be active at the same time. DDP also offers bandwidth control at the iSCSI block IO level, to further fine-tune performance across various connected clients. In contrast to the continuous stream of data that is required for playback or recording, processes such as copying or rendering are highly irregular,

where bandwidth spikes are only limited by the port's wire speed. In some cases, such spikes in data can cause interruptions for other real-time clients.
For example, a fast render machine may be silent for a second and then give a short second-long burst of data. There is a risk that this could potentially overload a shared GbE port.
The differences between how these processes operate can be easily observed by looking at the DDP Monitor. In order to control interference in sustained bandwidth due to these IO processes, one of the most useful tools is bandwidth limiting. Bandwidth Manager settings can be altered by the user so that the bandwidth limits are subject to negotiation between the target and the source. This way, upload and download bandwidth can be adjusted without any loss of TCP/IP frames.

Both read and write bandwidth can be set independently on each desktop; giving you, the user, the reassurance of having complete control.

# Advanced SSD Caching with On-Demand & Pinned Algorithm

T here are several ways that caching has been utilized in storage systems to balance performance in high-demand environments. Methods which use RAM for caching databases, and others that use SSDs, might specifically ignore larger files typically used in media environments. Caching to memory is more expensive and less scalable than using SSDs because motherboard RAM slots are limited. Due to the larger nature of files in multimedia environments, using SSDs for cache purposes is a more economical way of achieving capacity and performance.

One of the more popular methods of caching is the 'On-Demand' method. This uses a process whereby the cache is filled by the most frequently accessed files, whereas the least used data is pushed out of cache.

The problem with this method is that we don't usually know what exactly is in the cache, and we generally don't have much control over the process.
It makes sense then that the general rule for storage manufactures would be 'the bigger the cache, the better', however this will add substantial cost, pushing up the price of the storage server.

We have developed our own, unique 'DDP way' of doing it. In addition to the traditional On-Demand method, we have introduced the 'Pinned' method. With Pinned Caching, an operator selects folders or Folder Volumes in their DDP, and specifies where the files to be cached are located.
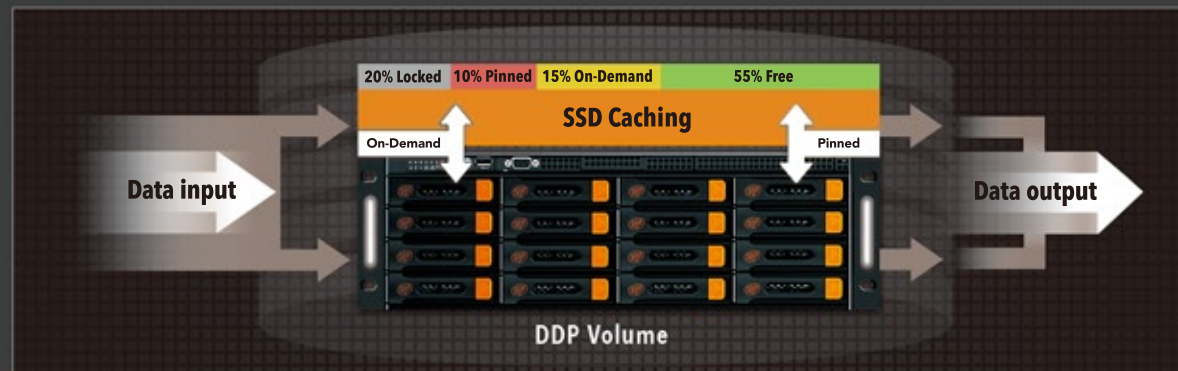
Next, data from HDDs is copied internally to the DDP Cache and it stays there until deleted.

The operator has full control over the Cache and decides which files to cache and when.
For example, when a very high transfer rate video such as a DPX Uncompressed sequence needs to be played, and/or when lots of rendering and transcoding processes need to be completed, they can be Pinned to cache for ultimate performance.

All of these processes require lots of seek time on the regular HDDs, but because SSD drives do not require any seek time, this operation is flawlessly efficient - no matter how many clients are connected or how many files need to be rendered or transcoded.

DDP's Pinned Cache process can also be fully automated on the DDP. For example, once a task is completed and stored to cache, it can initiate an internal application which will copy the data to HDDs.

DDPs Pinned Cache is permanent; it is guaranteed to always be there - even in the event of power failure or reboot of the DDP. As industry workflows are more and more file-based ingests with lots of transcoding and background processes, being able to control and remain aware of what is being cached will enable all DDP clients to make use of this innovative technology.

Another unique advantage of DDPs Caching methods is that different algorithms can be partitioned within the available SSD Drive Group. In addition to the Pinned and On-Demand methods, DDP also enables you to Lock a percentage of the SSD Drive Group to act as primary storage.
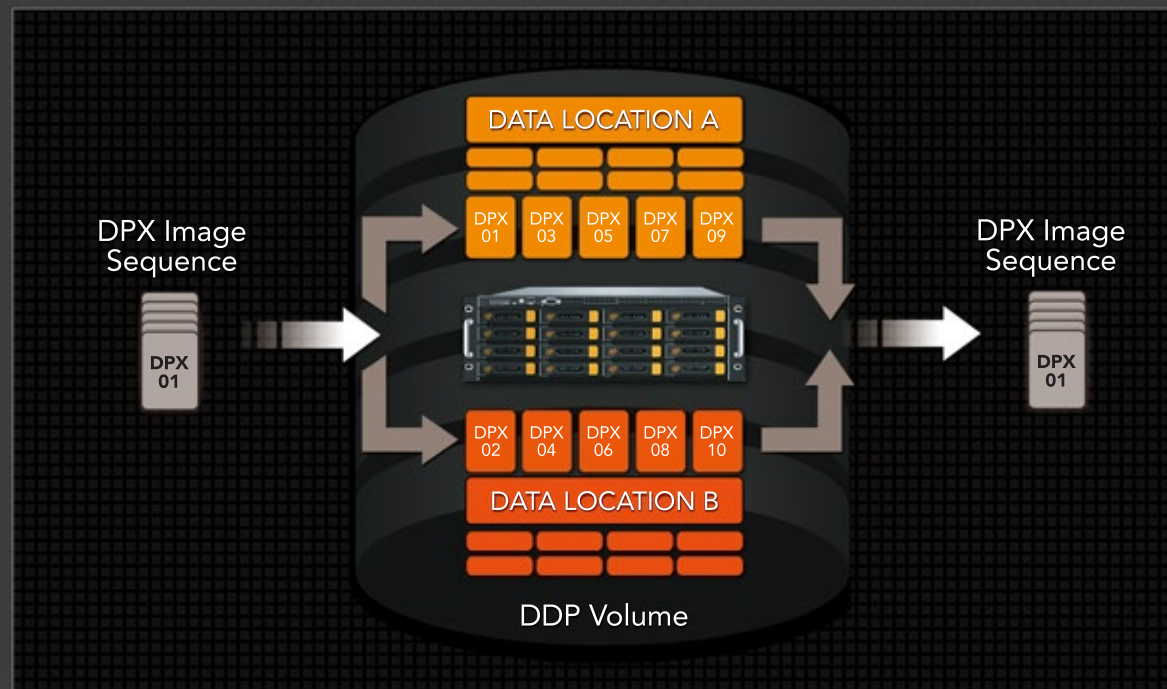
Load Balancing

D epending on how storage is designed, simply adding additional spindles will not necessarily increase performance for all volumes.
With DDP, volumes are now Load Balanced across the storage. For example, in a 16 Disk system, instead of a 16 Disk RAID 6 where all the drive heads have to seek together to find files, or instead of two separate RAID 5 volumes with disparate files and directory paths, DDP can load balance any volume across two 8 Disk RAID5/6. In this way every volume created on the SAN can benefit from a balanced load across all the disks.

Load Balancing alters which underlying RAIDs, or Data Locations (DLs), that files are written and read from. For example, with a 24 frame image sequence, the odd numbered frames would be stored on Data Location A, and the even numbered frames would be stored on Data Location B, thus decreasing latency in seeking and playing the files. With a batch of .MXF, .MOV, .etc files, every other file would be written/read from DL A and DL B and so on.

The balancing of files happens at a lower level of the storage, transparent to the user.

To the user this all appears as a single volume, with all files stored in their chosen folder hierarchies. With Load Balancing, the more disks and RAID groups you add, the faster the storage becomes.

With DDP OS V4 and V5, the metadata is completely separated from the data.

DATA LOCATION A

DPX Image Sequence

| DPX 01 | DPX 03 | DPX 05 | DPX 07 | DPX 09 |

DPX 01

DATA LOCATION B

| DPX 02 | DPX 04 | DPX 06 | DPX 08 | DPX 10 |

DDP Volume

DPX Image Sequence

DPX 01

It is a small footprint that can be replicated, but the data itself remains on the DDP. When the data is not load-balanced then the 'Folder Volumes' (addressing the other two DDPs) can be used. When load-balanced only, the files on the other two DDPs can be used until the broken one has been repaired or replaced.
The upcoming V5 allows multiple DDPs on the same network to stream (and I/O) data in parallel, controlled by one master DDP which holds the metadata. The master DDP tells all desktops connected to the network where to write or read the data to and from.
Without changes to the DDP web GUI, any DDP can be expanded by adding additional DDPs any time, increasing the capacity and bandwidth and providing load balancing, SSD caching and mirroring.
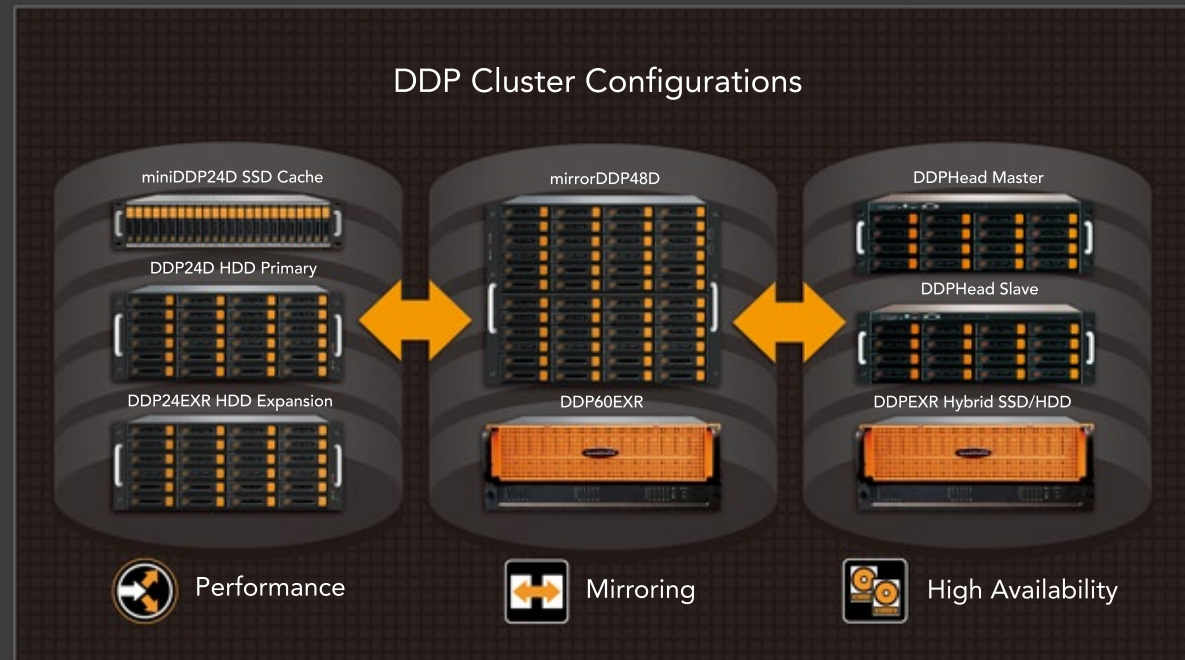
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Heterogeneous DDP Cluster

DP Cluster configurations can be used individually or together as part of one system - one DDP volume, one namespace. DDP OS V5 takes full advantage of Data Locations, enabling volumes to be configured from multiple DDPs. Data stored within a Folder Volume can come from one Data Location or from a group of Data Locations (e.g. a group of DDPs).

Within a cluster, one DDP is assigned as the master. This DDP controls metadata communication with other DDP members and client computers, all over a single iSCSI network. Our task management interface lets you specify priority and choose data location among multiple DDPs, giving you control over where your files are stored and ensuring maximum availability. All clustered DDPs are able to act as a substitute for the one that failed, ensuring that important data is still available.

As data replication is carried on in the background, all this is transparent for the client. Data can be transferred between Data Locations without requiring changes in directory/folder/file tree structure within the DDP cluster.

Data can also be redistributed between Data Locations or concentrated in one place. Individual DDPs within a cluster don't have to be physically next to one another; as long as DDPs and desktops can communicate on the same Ethernet network, they can be in separate geographic areas.

DDP Cluster Configurations

miniDDP24D SSD Cache
DDP24D HDD Primary
DDP24EXR HDD Expansion

mirrorDDP48D
DDP60EXR

DDPHead Master
DDPHead Slave
DDPEXR Hybrid SSD/HDD

Performance   Mirroring   High Availability

DDPs can be removed from the cluster, used as individual units or added again as and when they are required. Data is available immediately, without the need for copying.
Additional DDPs can be added as Data Locations within a single DDP cluster.

As each desktop has parallel access to all DDPs in the cluster; two identical DDPs double the throughput, ten identical DDPs increase the throughput tenfold.
Each DDP configuration can be tailored to suit your unique requirements; as your requirements change, the DDP can change too.

All DDP members in a cluster don't need to be identical; there is no limit in bandwidth and capacity. You can alter the system, adding additional components and expanding it as your own work demands.

Instant Replication – Mirroring

D DP Mirror models use MAID architecture (Massive Array of Idle Disks) to save energy.
Intended to complement the Standalone DDP Series, users can leverage Asset Management and Archive solutions to duplicate data. This is an extremely effective, but much less expensive, solution when it comes to Disaster Recovery.
The Mirror DDP models will spin the hard drives down to idle when not in use to save energy. Mirror DDPs are an efficient, cost-effective way to maintain backups and data integrity.
Instant Replication takes Disaster Recovery and Redundancy to the next level.

NLE/SDI Ingest
Color/VFX
Virtual VR
Camera

Web
Cloud & Archive
Programme
Monitoring
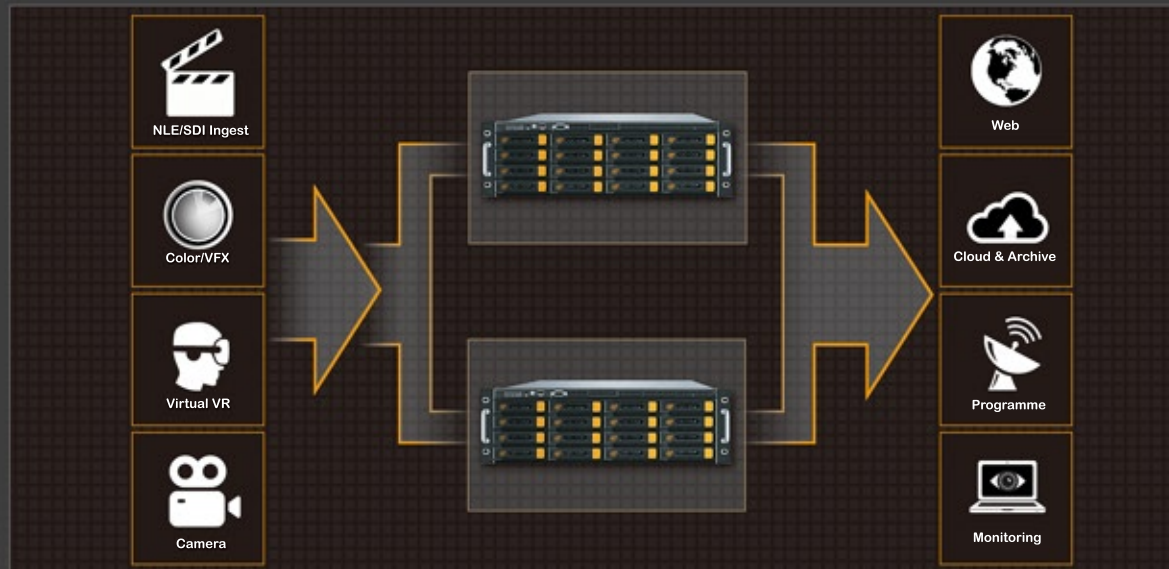
With the intelligence of the Ardis AVFS driver and the flexibility and performance of iSCSI, client computers can now initiate 'Instant Replication' of data without having to rely on other backend servers and scripts to duplicate data. With Instant Replication, client-initiated writes are duplicated in real time to another DDP in a Cluster configuration with Data Locations set to Mirror. Using this method, data is mirrored in real-time to a device that can be extracted from the Cluster and used independently in another location.
Instant Replication is a perfect solution for TV and Broadcast environments where 24/7/365 data availability is essential.
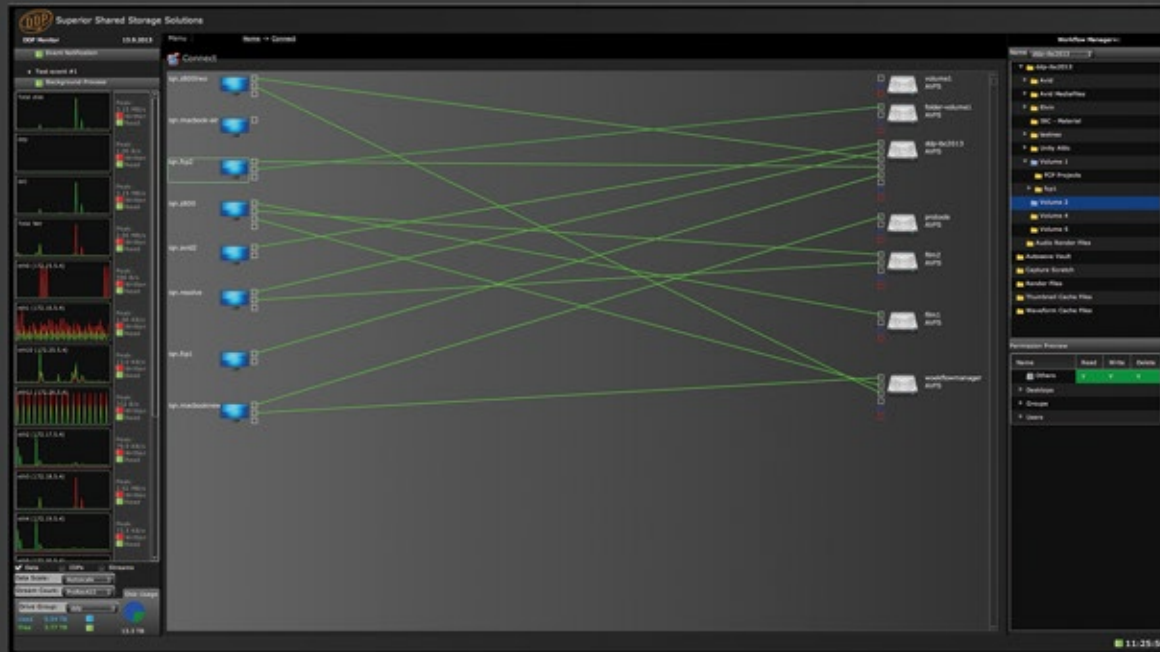
A Few Words from Our Clients

"DDP GUI is very intuitive and easy to understand...
We have 2 x DDP48D running 31 seats of FCP, few seats with Autodesk Flare and 9 graphics stations...
We actually exceeded the performance we expected...
The system works seamlessly for 2 years... DDP is out of all systems the one I don't have to worry about..."

Leland Johnson - Daystar Television

"Installation was so easy... an engineer arrived onsite to complete the installation process only to find when he arrived that we had actually set it up ourselves and it was working perfectly!".
"We were really surprised about the system speed; no lag time, no waiting around, it makes life so much easier."
"Now we have Flame, Smoke, After Effects and Final Cut Pro all connected, and not only that but everyone can read and write at the same time. It makes it so much easier for multiple editors to work together; the boost to productivity has been incredible."

Victor Wolanski - National Media/E3 Post

The Dynamic Drive Pool Shows Virtual Drives

F orget Cloud manipulations, make way for Task Manager!

Cloud manipulations which involve uploading and downloading between desktops aren't so different from the endless copying required before affordable shared storage hit the market.

This copying between desktops had chaotic (and sometimes unpredictable) results; many different versions of the same file, problems with locations, file name issues etc.

One of the major advantages of shared storage is that there is no longer any need for all this copying.

The Task Manager built into the DDP enables you to easily transfer data between Data Locations in a DDP cluster, anywhere on the network.

Using the Task Manager, data can quickly and easily be transferred to the most appropriate Data Location according to the priorities the user has assigned.

All of this takes place without unnecessary changes in the directory/folder, file paths and access rights settings. So you get all the benefits of shared storage, with no complicated or time-consuming copying.

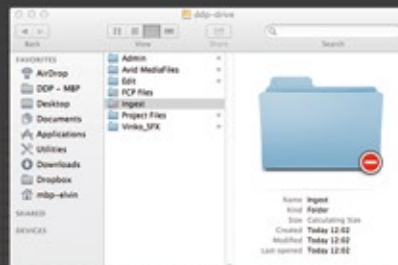*Forget Cloud Manipulations, Task Manager makes transferring data easy.*

The Dynamic Drive Pool is just as the name says: a pool of storage which can be used dynamically. From that pool, you can create any number of virtual drives. The figure shows the Connect Screen: Desktops are displayed on the left and DDP volumes on the right.
Once you drag the line between the Desktop and the drive, the connection line (Ethernet connection) will turn from blue to green, indicating that drives are mounted on your desktop, ready for use.
This is the basic principle behind the DDP. It's as simple as that.
As DDP is IP SAN, drives are directly attached in a same way as your internal storage with the difference that DDP drives can be shared between multiple platforms Windows, Mac and Linux.

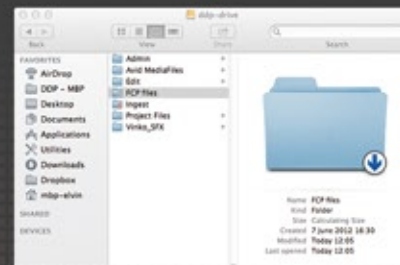# The Workflow Manager with all the Required Access Right Management tools

For some applications, managing Access Rights is essential in order to be able to collaborate properly. In a shared environment, there is always the possibility that two or more editors may access the same project file simultaneously. Therefore, there must be a mechanism in place which ensures that only one of these editors has the read/write privilege.
Some applications such as Avid Media Composer, GV Edius, Image Systems use a lock file mechanism.
The application itself then handles the protection dynamically. Other applications such as Pro Tools and Final Cut Pro do not have this lock mechanism but at least give a warning message when two persons have the same project file opened and are trying to save. Unfortunately, other applications do not have such mechanisms. For these applications, access rights management is essential. Handling Access Rights in a shared environment can be a difficult task. Many people assume that they need a separate computer with Active Directory (AD), Open Directory (OD) or similar, and that they require qualified personnel to manage it. Because the DDP is at the heart of such a shared environment we were able to fill the gap between companies not needing any access rights management and large companies using AD or OD. The Workflow Manager allows intuitive centralized handling of accounts and drive, folder and subfolder access right management with inheritance down to the file level. This can all be managed using the GUI - the graphical user interface of the DDP. Creating users with passwords, setting up groups, adding users and groups to DDP drives and editing permissions for folders and sub-folders all takes place on the DDP.

The access rights, which can be established right down to sub-folder level, include 'Read/Write'. 'Read/Write/No Delete', 'Read Only' and 'Write Only' (Drop Box). Special permissions such as extending the DDP drive capacity, changing permissions or making DDP drives visible can also be managed this way. This functions equally well in a heterogeneous Windows, Mac and Linux environment. Workflow Manager has been developed for the industry with a non-IT user in mind.
Applications also benefit from one "namespace" and direct on-screen overview.
Another of DDP's special features is the ability to create Folder Volumes. Multiple folders can be created on a DDP volume, and any of those folders can be converted into a Folder Volume. This results in a folder with volume properties. This is useful for MAM systems or if multiple Avid Media File directories are needed. It is also very useful if a back-up solution is used, as there is just one DDP Volume to be managed (one namespace).

Folder permission with No Access

Folder permission set as Write Only (Drop Box)

Folder Volumes

With DDP Folder Volumes, it is possible to assign volume properties to any folder or subfolder in the AVFS DDP Volume.
With Folder Volumes, there is one namespace with any number of roots, solving a common problem with media editing applications, asset management solutions, and archival systems. For example, with Avid editing applications the Avid MediaFiles directory must reside under the root of a given volume and has unique file names generated by Avid. When multiple jobs are stored on a singularly large volume, it can be quite difficult to visualize which data in the file system is associated with a particular project in Avid. DDP Folder Volumes enhance media management in Avid Workflows by allowing administrators to create a volume specific to a job and/or media set. When using Folder Volumes, there is no need to move data across multiple SAN volumes. In some traditional SAN environments, when users want to share resources contained in a given volume without allowing full access to all its data, they usually start by copying; this takes up time, bandwidth and space, as well as generating duplicate data.
By giving volume properties to specific folders, a user can connect it as if it was an actual volume. This operation can be completed in seconds, any time you want.

Quota Control

A common problem encountered by post-production facilities using shared storage, is the need to temporarily extend the volume capacity while importing new media and then shrink it back down after other temporary or unapproved files are deleted. In some architectures, shrinking is a complex and expensive operation as the data needs to be redistributed on the volume(s) before some space can actually be released. With DDP Folder Volumes, administrators can leverage Quota Control to set up space restrictions, limiting the available space a user can see and use for a given folder volume. If no quota limits are set, users can use the entire capacity of the parent DDP Volume and freely copy data until there is no space left for other Folder Volumes.
Quota Control does not require any data redistribution, making the process of extending or shrinking folder volumes instant and on-demand. When you need extra space on a folder volume, the quota size can be increased temporarily and then set back to its original value whenever you are ready. Quota Control enables administrators to dynamically maintain limits on Folder Volumes in order to better manage how much capacity is consumed in the SAN for various jobs and clients; making better use of their investment.

The High-Performance Data Backup and Restore Solution

ARCHIWARE

Every DDP now comes with Archiware P5 pre-installed and the license for P5 Backup is included with the DDP hardware.

E   very installation comes with immediate professional-grade back-up to LTO tapes - technology used by large corporations, banks and broadcasters. The included P5 Backup License allows for back-up to LTO tapes using a single tape drive.

An unlimited number of tapes can be written and P5 Backup keeps track of all tapes and files written. P5's Backup catalog can be searched and browsed using a web browser.

To connect the LTO tape drive to the DDP, it must have an SAS card.
After activating and entering the license using the P5 Set-Up Assistant, the Backup can be configured and running within minutes, including auto-detection for LTO drives and libraries.

The resulting Backup plan can be modified and includes incremental, full and progressive Backup modes.

BACKUP/ARCHIVE
LTO - TAPE LIBRARY

SYNCRONIZE
DISK
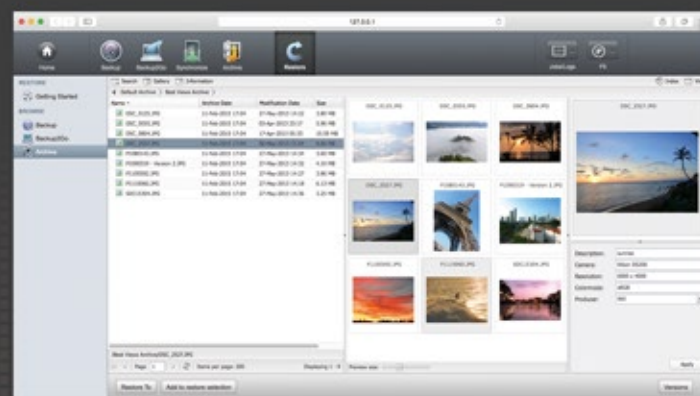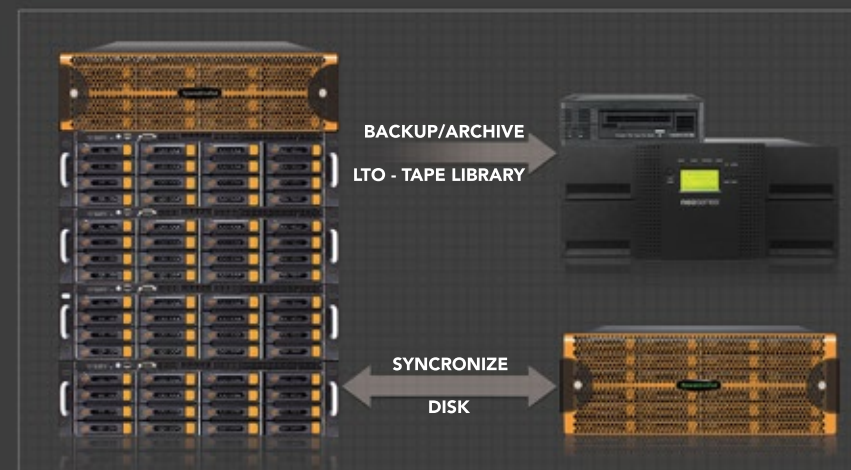
P5 Archive catalog view

Archiware P5 Backup

• Automatic scheduled Backup
• Incremental, full and progressive Backup
• Up to 300MB/s with LTP-7 single drive
• Unlimited number of tapes
• Expansion for tape libraries
• Expansion for multiple drives
• Search and browse Backup index

Archiware P5 Syncronize

• Clone DDP volumes to disk for data availability/failover

• Activate by entering license (no install required)
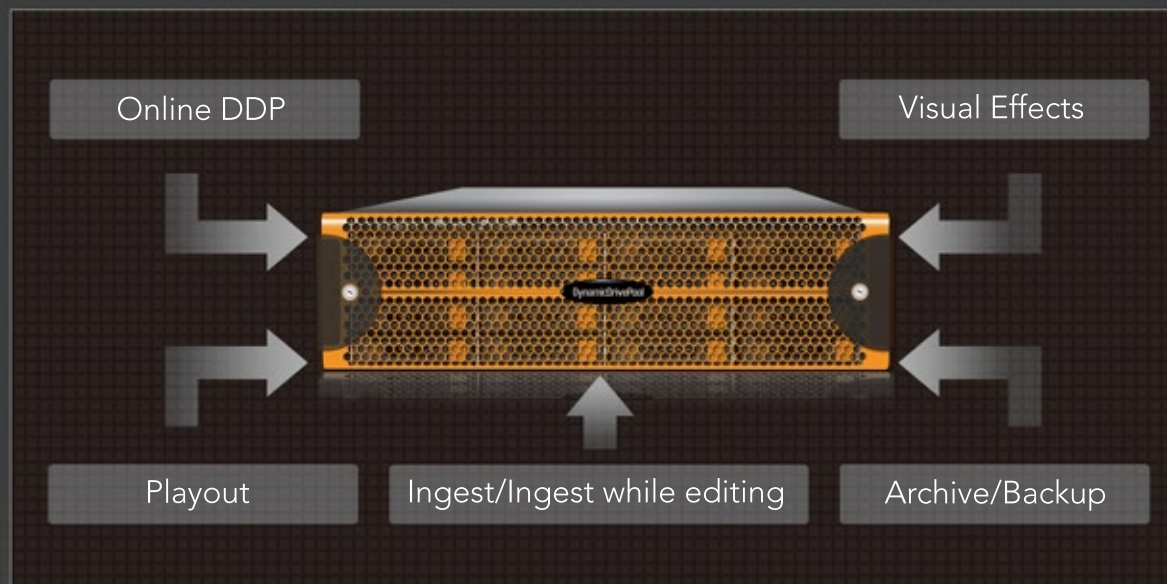• Unlimited storage volume

Archiware P5 Archive

• Long-term asset protection
• Activate by entering license (no install required)
• Share tape hardware with P5 Backup
• Browse and search Archive index
• Add metadata
• Proxys and media previews
• Disk, Tape libraries and Cloud

Standalone DDP Series

T he Standalone DDP is a modular Ethernet SAN Shared Storage Server in a box with a built-in meta data controller. It uses enterprise HD and SSD drives which can be configured in Raid 5 or 6.
DDP is called hybrid when both HD and SSD drives are installed. Both HD and SSD drives can be of different capacity.
DDPs can come partly populated so that additional HD and/or SSD drives can be added later.
A DDP48DF base system is required for very high bandwidths.

Online DDP		Visual Effects
Playout	Ingest/Ingest while editing	Archive/Backup

DDP8D

DDP12D

DDP16D

DDP24D

DDP48D

All standalone DDPs use hardware Raid technology with redundant power supplies. Optional 1GbE, 10GbE and 40/100 GbE ports can be added. Additional Raid cards can be added when expanding DDP with DDP16EX or DDP60EX JBODs. In order to guarantee the highest performance, an iSCSI initiator and AVFS client driver must be installed on each desktop.
For clients wishing to use DDP as an NAS, no drivers are required.
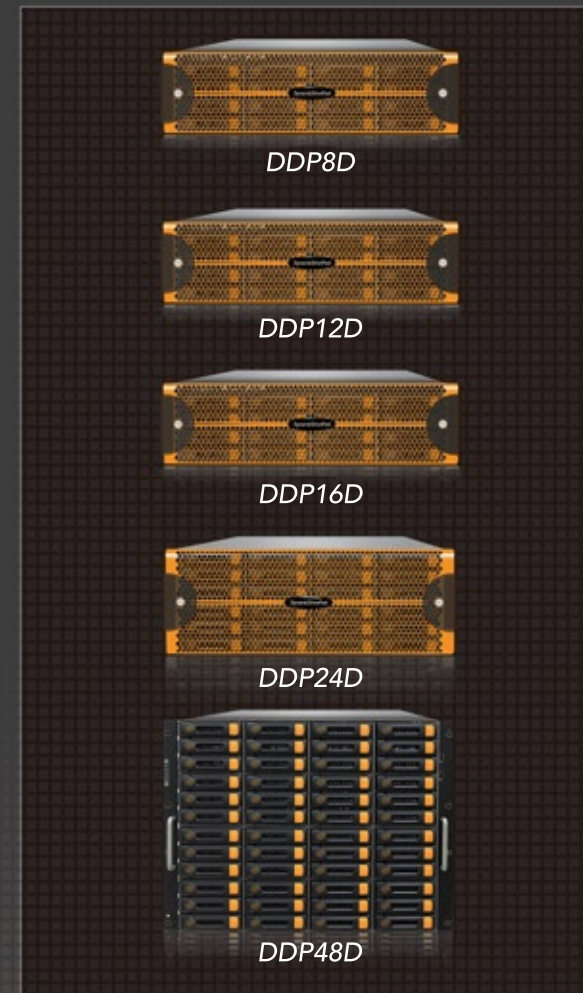
For ultimate DI workflow with 2K, 4K, or even 8K, choose DDP with SSD drives

Micro & Mini DDP series

DDP

The miniDDP series are for companies seeking a compact storage solution with very high bandwidth, MiniDDPs can be delivered with up to 48 x 2.5" HDD hard disks or up to 48 x 2.5" Solid State Disks (SSD) or any combination of the two.

miniDDP48SSD

DDP48SSD is targeted at video and film companies requiring the highest video and film quality and at large audio post-production companies requiring thousands of audio tracks.

DDP48SSD is available with a total Solid State Disk capacity of over 192TB in a Raid 5 or Raid 6 configuration.

The standard 19" 4U system is targeted at video and film departments requiring a collaborative workflow with the highest quality of uncompressed HD and DI formats. Heavy duty render engines in combination with applications using formats such as 1080p, 2K, 4K, 8K whether standard or as DPX, TIFF or Cineon can be integrated with a bandwidth of over 6GB/s.

Workflow for several thousands of audio tracks as well as 2K and 4K

EXPANSION

Expansion of all DDP Series is possible using a simple daisy chain of one or more DDP16EX JBOD arrays with an SAS cable.

DDP for Film Applications

1U microDDP with up to 8 SSD drives

As an Ethernet-based SAN system with pre-allocations and pre-read, DDP is the first choice when working with image sequences. Using the 10GbE connection, up to two 2K streams at 320MB/s each can be sustained on Windows, Mac and Linux.

Applications such as Autodesk Lustre, Smoke, Flame, Inferno, DVS Clipster, Assimilate Scratch, DaVinci Resolve and others from Image Systems and many render machines can be used without any limitations.

Operators within your film department can work with DDP while their colleagues in the audio or video departments also access the same DDP. Regular 4K work with 1.3GB/s per stream can be undertaken using MCS (Multiple Connections per Session), pairing the 2x10GbE for the required workstation or using the single 40GbE network interface.

Fully Redundant Systems for the Most Critical Environments

No Single Point of Failure

DDP

D DPxEXR has "no single point of failure" and is meant for critical environments such as post production and broadcast as well as system rental companies. Bandwidth can be as high as requested.

The DDPHead and DDPHeadF can be combined with DDP16EXR, 24EXR and DDP60EXR.
The Head and HeadF can be combined with Ethernet and EX Raid cards.
The scalable redundant DDP consists of one or two Heads
and a number of non-redundant DDP16EX, DDP24EX or
fully redundant 16EXR, 24EXR or 60EXR storage arrays.
A setup consisting of two Heads is fully redundant,
hot swappable with no single point of failure.
A typical use case may be a mixture of Avid,
FCP, Premiere, Pro Tools, Autodesk or similar,
edit-while-ingest like EVS, MEDEIS,
and all accessing the system
simultaneously.

All new DDP60EXR

*The all new DDP60EXR
is a 4U expansion bay and
can be filled up to 60 SAS
HDD or SSD drives.*

Technical specifications:

Redundant Power Supplies
*Single or Redundant SAS
controllers*
*4x 12/6 Gb mini SAS HD ports
/controller*
Drive configurations:
4x15, 2x30, 1x60 with 4 zones
Raid 5 or Raid 6 sets
Expandable up to 4.2PB
Perfect Cooling
*With 1- 4 Raidcards
guaranteed throughput
from 1,5 up to 6GB/s*
*2 years warranty/free
software updates/remote
support*
(extended warranty available)

Mirror DDP - Energy Saving Technology

DDP

T he mirrorDDP series of products uses MAID (Massive Array of Idle Disk) technology to save energy. mirrorDDP is not your basic backup solution; it uses advanced technology to make a complete mirror of a production DDP.

The synchronization process can also be scheduled. The included Archiware P5 Synchronize applications actually clone DDP volumes to mirrorDDP for better data availability and failover. In extreme situations, the mirrorDDP can even be temporarily used instead of the DDP, minimizing downtime.

| Online DDP | Oracle DIVArchive |

| Storage DNA | MEDEIS Archive | Archiware Syncronize |
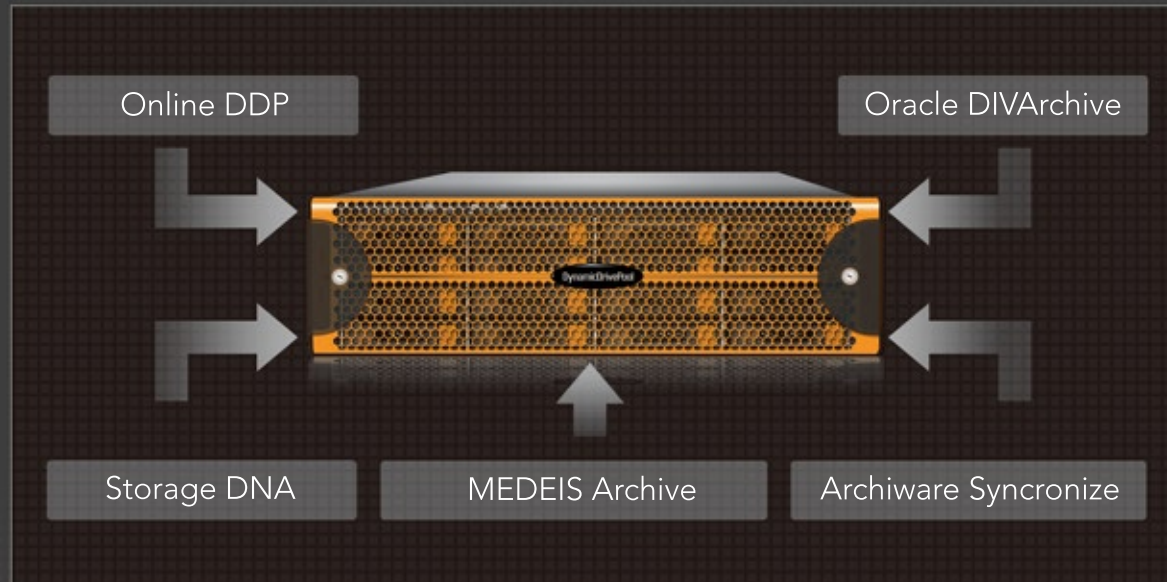
There are many different mirrorDDP versions. mirrorDDPs can be directly connected to the miniDDPs, Standalone DDPs and scalable redundant DDPs. Data on these DDPs are synchronized on mirrorDDPs.

There are more than 40 different DDP versions, for any company size and any budget

DDP8D

DDP12D

DDP16D

DDP24D

DDP48D
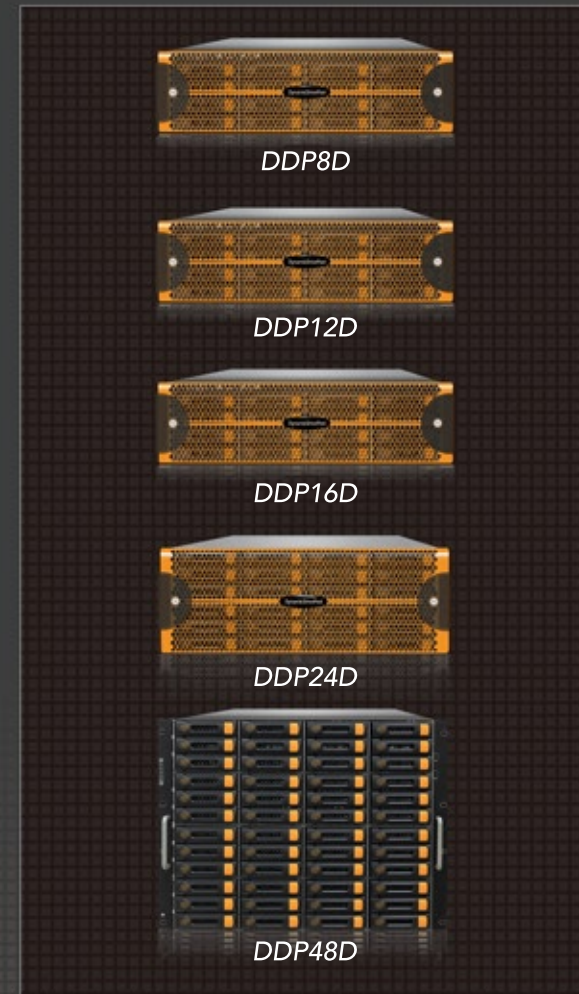
Calculate Required Bandwidth With Ease

T he DDP Configurator can easily calculate required bandwidth. For example it makes it possible to assign all your transcoders, proxy files or smaller files which require lots of seek time, as well as 4K 10-Bit uncompressed files to SSDs, or assign ProRes to an HDD group. You can instantly see if the stated number of drives will fulfil your request and check how much data per hour is required for your selected number of streams.

To calculate required bandwidth, visit **www.ddpsan.asia** where you can select DDP model, type of drives (HDDs, SSDs or Hybrid), drive capacity, Raid 5 or 6 protection and hot spare if required. The Configurator will calculate your Raw and Net capacity. You can also view specifications such as the weight of the system (when populated with HDDs, SSDs or a combination of the two) and dimensions (with and without packaging) as well as max power consumption. You might be surprised how little space the microDDP takes up, and how affordable the system is.
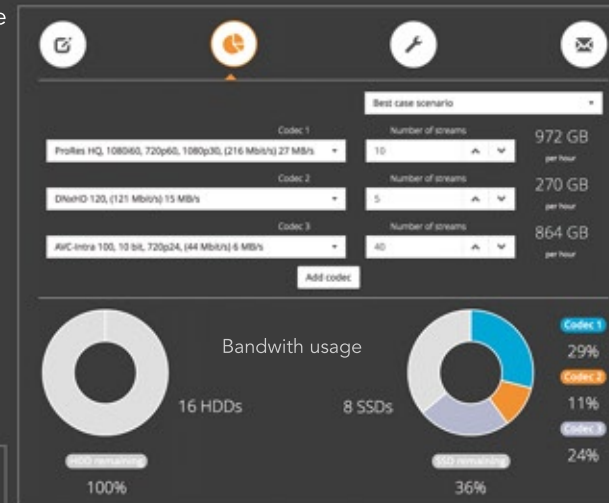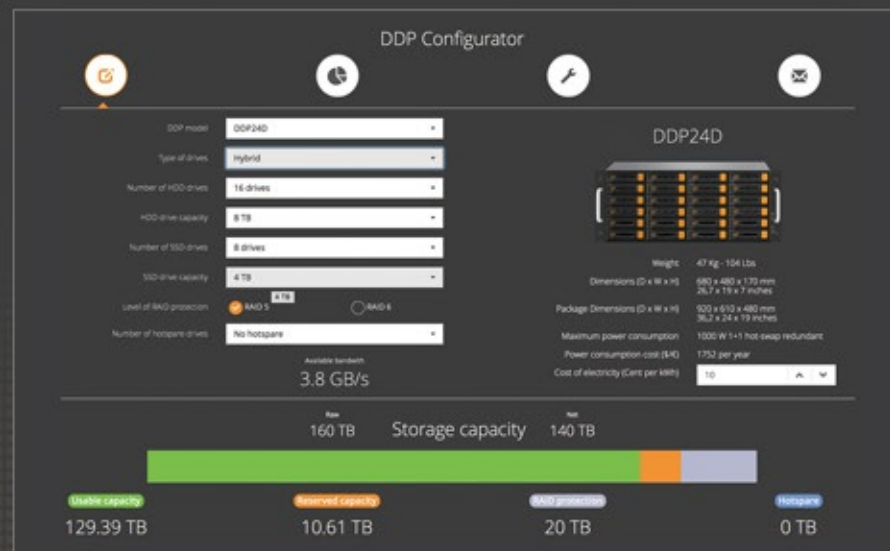
On image above, select Ethernet and/or SAS cards for either expansion or card for external LTO.

Write your request and we will come back to you with quotation.

All specs are in EU/US value so mm/inch, kg/lbs, and we even calculate weight correctly when you mix SSDs and HDDs.

On the 2nd image, you can select maximum (best) and guaranteed (worse case scenario) for HDDs.

You can enter up to five different codecs. SSDs always have guaranteed bandwidth as there is no seek time.

We have compared DDP values with our competitors. While we have similar figures, DDP is IP SAN storage so it always gets the maximum amount of data out of the box.

The advantage of DDP is that we can retrofit SSDs to older systems, so that all our customers can benefit from new technology.

DDP for Professional Editing, Color Correction and Audio

Originally designed for Hollywood's elite colorists, DaVinci Resolve has been used on more feature films and TV shows than anything else because it lets you create images that are simply impossible with other tools. DaVinci Resolve is also the world's fastest growing and most advanced editing software! With DaVinci Resolve, you get incredible new Fairlight audio tools specifically designed for film and television post production. It's like getting 3 high end applications in one! All it takes is a single click to switch between editing, color correcting, audio mastering and delivery!

Best of all, if you are collaborating, everyone can work on the same project at the same time with no loss of speed, thanks for DDP shared storage.

Blackmagic Design DaVinci Resolve

■ *Familiar multi track timeline with quick edit pop-up, seven different types of edits, customizable keyboard shortcuts and more.*
■ *A world-class set of creative grading tools that let you manipulate light and color in breathtaking ways.*
■ *DaVinci Resolve features a whole new Fairlight audio page with professional tools designed for file and television audio post.*
■ *First post-production tool designed for true multi-user collaboration so editors, colorist and sound editors can all work together on the same project at the same time.*

Avid Media Composer

The Avid Media Composer and ProTools family is the industry-standard video and audio editing solution for film, video and TV post-production, now supporting high dynamic range (HDR) workflows, enabling you to edit and grade projects using new color specs that display greater dynamic range than standard video. In a DDP environment, team collaboration is particularly advanced; Avid's sophisticated bin locking system functionality is fully supported, allowing multiple users to collaborate on the same projects.

Adobe Premiere Pro

With the industry-leading video production toolset, you can work across desktop and devices to edit virtually any type of media in its native format, enabling you to create professional productions with brilliant colour for film, TV and internet. Thanks to our SSD caching feature and its advanced algorithms, the most frequently used media clips are automatically cached into the DDP SSDs, enhancing speed and latency in the most tremendous way. You can even specify manually which data should always be cached for the best performance.

Apple FCPX

Apple's Final Cut Pro X (FCPX) is a professional editing, compositing and effects solution that is increasingly popular in freelance circles for film, video and TV post-production. Built for the future of video post, Final Cut Pro transforms the timeline to break free from the constraints of traditional track-based editing. A beautiful and dynamic editing interface lets you experiment freely while working with extraordinary speed and precision. DDP workspaces are compatible with FCP X Libraries. When using DDP users can rely on the built-in Library protection of FCP X.

DDP Integrates with all Major Editing, Coloring and other Post Production and Broadcast Solutions

MEDEIS M³- Media Management

M³ is our intuitive web interface which allows you to store, archive, share and search with ease. M³ allows you to access and manage millions of video files, images, audio files and editing projects at your fingertips.

M³ provides a RESTful API for the user to build their own applications or connect to other systems.

M³ integrates readily with a wide range of other media systems, directly integrating with video servers, non-linear editors (such as Adobe Premiere, Apple Final Cut Pro X, GV Edius and Avid Media composer) and archive systems.

M³ comes equipped with everything you need for installation and use, including PostgreSQL database, Full Text Search Engine, Web Server, VOD Server and WAS Server. All the server components can be altered and adapted so that your system is uniquely tailored to your specifications.

Use our technology to do things your way. That's why we named our Media Management system Medeis - because it works like magic.

For a limited time, Medeis M³ software licenses are included with every DDP storage. *(contact us to discuss this limited offer)*
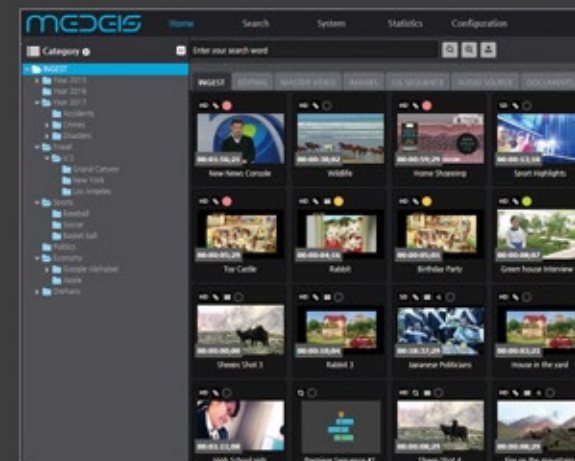
Grass Valley Edius

When an editor has to wait for technology to catch up, creativity suffers. That doesn't happen with Edius. Edius Pro means more formats and more resolutions in real time, giving you the capability to edit anything you want, as fast as you want. With more creative options and the potential for real-time, no-render editing of all popular SD, HD and even 4K formats, With the DDP MCS technology, you can increase the available bandwidth by plugging multiple Ethernet cables to your client; the perfect way to further accelerate the Edius Pro software.

Autodesk Smoke/Flame

Autodesk Smoke/Flame® software offers tools for fast interactive 3D visual effects, finishing, compositing, advanced graphics, color grading, editorial, and look development. Software combines editing workflows with node-based compositing tools in a timeline-based editing environment, helping production studios increase productivity. With DDP's Linux client support and both 10GbE and 40GbE connectivity, your Autodesk systems can make use of the highest bandwidth available. DDPs SSD caching algorithms ensure your high-performance media is always available.

Baselight

As one of the most powerful colour grading and finishing systems for film, TV, commercials and broadcast, it's many compelling features and enhancements make Baselight even more creative, productive and invaluable to today's top colourists.

The DDP lets you assign volume properties to any folder or subfolder thanks to a feature called Folder Volumes.
The Folder Volumes function means you can have any number of roots with a single namespace.

What makes DDP unique?

DDP IS ETHERNET SAN
Ardis Technologies as iSCSI experts have developed AVFS, the Ardis Virtual File System. iSCSI with AVFS is the technology behind the award winnign DDP . iSCSI is just like Fibre Channel, a block level IO technology, but because iSCSI uses exclusivly Ethernet, there is only one network to consider.

SSD CACHING
Accelerate and optimize your workflow with DDPs SSD Caching algorithms. On-Demand and Pinned caching methods improve workflows with heavy transcoding, image sequences, and high client counts, enabling them to receive the IOPs they require.

LOAD BALANCING
DDP Data Locations allow SAN volumes to be load balanced across multiple RAID sets within a DDP. Load Balanced volumes greatly reduce latency and improve image sequence workflows on spinning disks.

CLUSTERING
DDPs can be clustered so that when one system fails, all data remains available. This technology enables all clients and applications to continue their operations without any interruption. DDP clusters can also be configured to double the throughput as clients are accessing them both in parallel.

DATA REPLICATION
Critical Data can be replicated to other Data Locations in a DDP installation. DDP's innovative Instant Replication feature enables clients to write the same data to more than one location in real-time.

WORKFLOW MANAGER
The Workflow Manager incorporates all the required Access Rights management tools. Access Rights can be set for each folder for Read, Write and Delete including every possible combination; Read-only, Read/Write, Read/Write No Delete, or Write Only (Drop Box).

FOLDER VOLUMES
From the DDP interface, it is possible to assign volume properties to any folder or subfolder; hence the name 'Folder Volumes'. With this innovative technology, there is no longer any need to move data across different volumes. By assigning volumes properties to specific folders, a user can connect it as though it was an actual volume.

QUOTA CONTROL
Folder Volumes can be dynamically resized by using Quota Control. This feature enables the administrator to set up space restrictions or expand capacity for any desired Folder Volumes.

PROJECT SHARING
All editors can simultaneously work with the same media and on the same projects, freely sharing materials and ideas with no time-consuming set-up needed. This underlying technology is invisible so the creative editors, directors and producers can just concentrate on their work. Avid Media Composer bin locking is also supported thanks to the DDPs AvidFS emulation and works in the same way it would on Avid ISIS/NEXIS.

AVFS2NAS
DDPs AVFS2NAS feature allows the DDP to act as its own SMB NAS Gateway to the SAN. Producer laptops and freelance client computers don't need to install any software to view and transfer files in a DDP environment when connecting via SMB.

NAGIOS MONITORING SERVER
All DDPs are bundled with Nagios server monitoring. The Nagios implementation provides administrators with important system health, performance and monitoring tools and notifications.
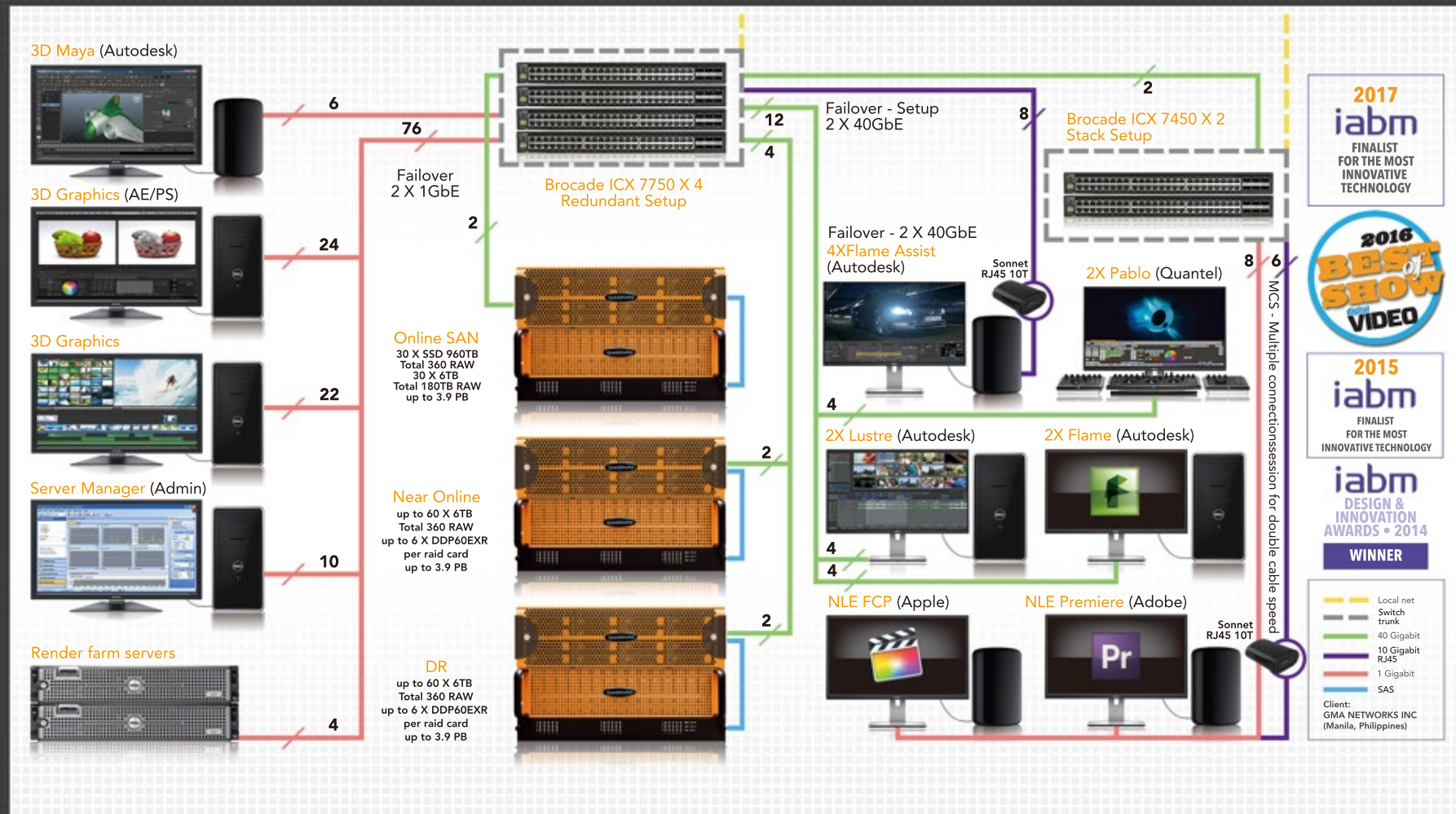
DDP FOR EVERYONE
There are 100s of different configurations available. From systems with only 4 drives, either HDD or SSD equipped drives, up to fully redundant series with no single point of failiure.

DDP Cluster with SSD caching, Load Balancing and Mirroring

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