DataDirect™
NETWORKS

The Internet of Things

What's in it for Storage Providers?

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2 Internet of things (IoT)

The storage industry is going through a big paradigm shift that is caused by drastic changes in how we generate and how we consume data

History of Data Storage

1980 & 90ies: transactional data rules	1980 & 90ies: unstructured data	2000s: Big Data
• **Database Records** • **Slow Volume Growth** • **High IOPS** • **SANs**	• **Office Documents** • **Unstructured Data: higher Volume Growth** • **Raise of NAS**	• **High variety of sensor-information** • **Data Explosion** • **Requires New Storage Architectures**

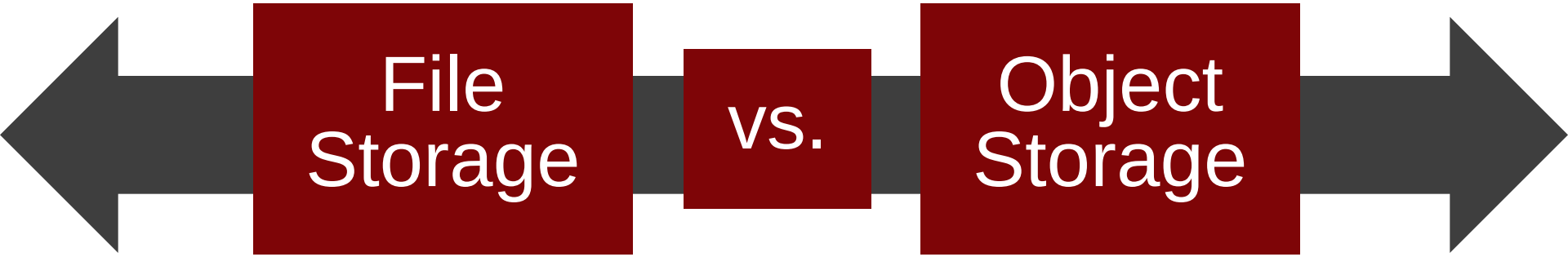
Sensor data is everywhere

Smartphones, tablets, photo cameras and scanners are all information-sensing devices that create the vast majority of all unstructured information generated today.

The result of this is a true data explosion of mostly immutable data.

The immutable nature of unstructured data is what DDN leveraged for WOS to solve the scalability problem of traditional file storage.

File vs. Object Storage



- Billions of Files
- Amendable Data
- Locking Mechanisms
- File System Hierarchy
- Complex to Scale
- **TCO increases exponentially**

- Trillions of Objects
- Immutable Data
- No Locking Mechanisms
- One Storage Pool, Object ID's
- Scales Uniformly & Simply
- **TCO decreases at scale**

Object Storage Benefits

For the Provider

- Deploy new services
- Monetize data

For the Admin

- Maintain a single storage infrastructure that scales uniformly & requires less management

For the Developer

- Design applications which interface with data through a simple API

For the User

- Access & search data through applications
- Collaborate with others online
- Store data in the cloud

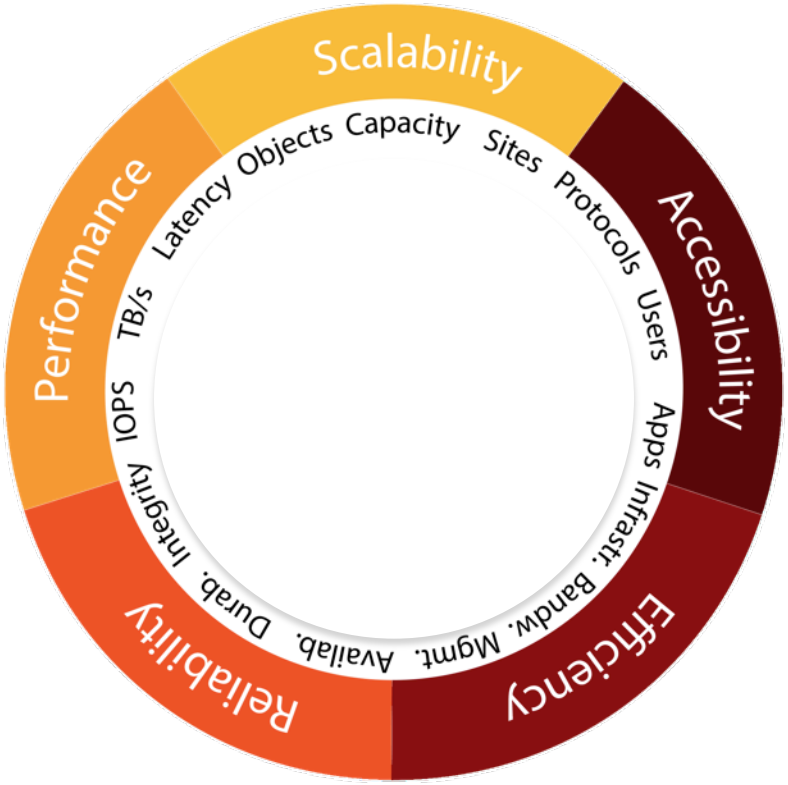
For the Data

- Stored in a flat namespace with searchable metadata
- Object ID's instead of file system hierarchy

For the Application

- Faster Access to the data
- Leverage object ID's and metadata

What to demand from Object Storage



Object storage must deliver highly reliable, infinitely scalable and efficient storage for all Big Data needs.

High-performance and support for legacy applications complete the circle.

What is WOS?

- WOS is an object storage platform that enables organizations to build scale-out storage clouds
- Data is stored as objects, with an object ID and metadata in a flat namespace
- A WOS storage cloud is built with pre-installed WOS storage nodes; intelligent storage containers
- It is possible to deploy a fully functional storage cloud with just one WOS7000 appliance, and scale as needed
- WOS storage nodes can be distributed geographically to build a global storage cloud

WOS Architecture

Applications

commvault
Atempo
Nirvana
PIXIA CORP
ctera
ownCloud
iRODS

API's

HTTP REST
JAVA
C++
Python

File Gateways

CIFS
NFS

Tiering

GS-WOS Bridge (GPFS)

WOS Core

NoFS™ True Object Storage

- Flat namespace
- No underlying file system
- Object-Disk data placement
- Client-side Global Latency Map

WOS Data Protection

- WOS Policy engines
- Replication engine
- Object Assure Erasure Coding

WOS Metadata Management

- WOS Search

Select From a Variety of Hardware Platforms

DDN APPLIANCE

OCP APPLIANCE

ON YOUR HARDWARE

Broadest Set of Use Cases

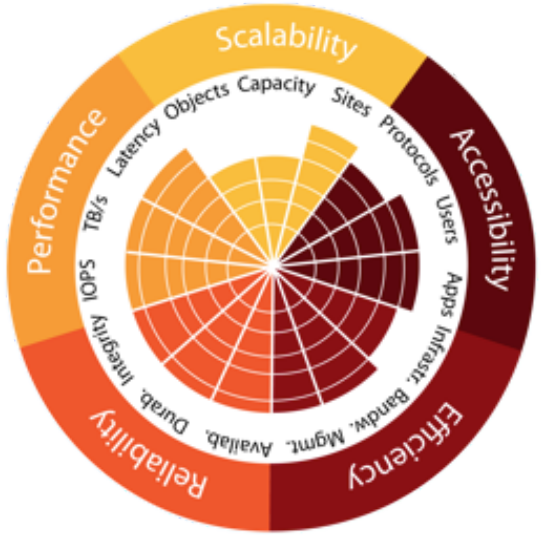
Sync & Share

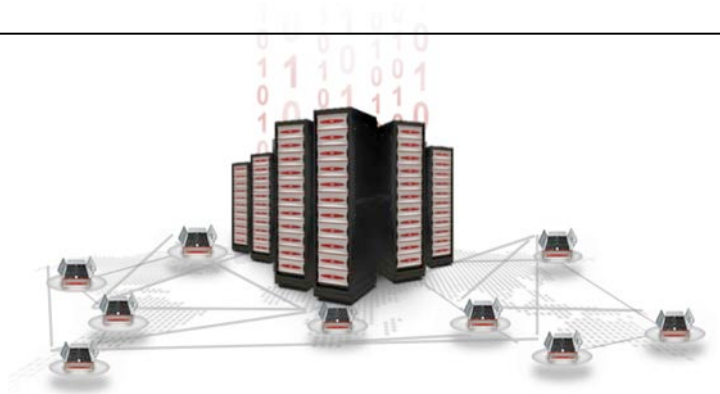
Automated Sync & Share allows users to securely upload documents to the cloud, synchronize files and devices, and easily share information with others.

Integration: Pre-integrated solution
Partners: Ctera, Owncloud
Reference Customer: Bezeq

Why WOS?

- Optimized for mixed data sets
- Scale as you grow
- Support geographically distributed users
- Latency-aware
- Low management effort



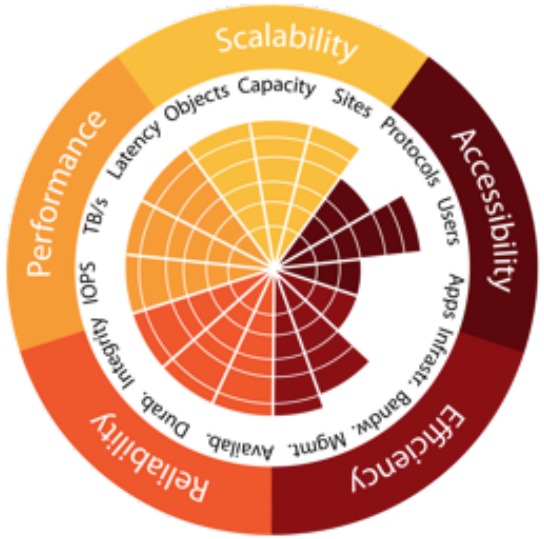


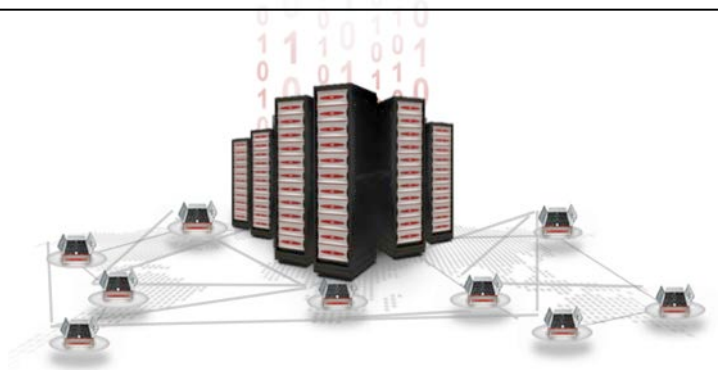
Content Delivery Network

Leverage WOS to build your own CDN platform for worldwide distribution of massive volumes of data with high throughput and low latency.

Integration: WOS CDN Reference Architecture
Partners: Cisco
Reference Customer: Level3®

Why WOS?
- High throughput, low latency
- WOS CDN Reference Architecture
- Supports up to 60 sites Low management effort
- Experienced team
- Local erasure-coding
- Lowest WAN cost





Custom Applications

WOS was specifically designed for scale-out web applications. The native REST API provides simple integration with the WOS storage cloud. Tune WOS to meet all your application and storage requirements.

Integration: Custom Solutions
Partners: N/A
Reference Customer: Symantec

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