



DATOMIA
INVISIBLE DATA ACCELERATED

DATOMIA SOFTWARE PLATFORM

FEATURES AND BENEFITS

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PREFACE

For decades, advanced security systems have utilized smoke screens.

The thought being, what a thief can't see they can't steal!

We feel the same about sensitive data. If the hackers can't see your data, they can't compromise it.

Thus the challenge to create Invisible Data.

INTRODUCTION

Datomia's Datomizer Storage and Streaming Platform represents the fusion of secure storage, unlimited scalability and high speed data transfer. To achieve this in a single software defined storage platform, Datomizer uniquely atomizes data, making it invisible to the world, but immediately available on-demand.

The Datomizer NAS and Object storage system is a breakthrough platform that solves petabyte and beyond storage challenges. This document summarizes the features that provide reduced TCO, high speed transfer, security, scalability, availability, durability, frictionless deployment, flexibility, and manageability.

Abstract

Datomia's Datomizer software-only Platform as a Service (PaaS) is a fusion of massively scalable, distributed cloud storage and high speed streaming that is based on its revolutionary data handling methodology called InformationDNA™.

The Datomizer Platform solves the major pain points of every modern enterprise in a single virtual installation; unbreakable security, scalability on the fly, high speed streaming and Failed Node Protection (FNP) data safety, all with a significant reduction in the total cost of operation.

Datomizer's InformationDNA is a new paradigm in storage and streaming technology. Instead of transferring and replicating data, Datomizer encodes completely randomized bit of data into encrypted micro-fragments. These fragments cannot be hacked or tampered with.

The platform's highly secure virtual architecture provides multi-faceted security that is well suited for Tier 1, Tier 2 and Tier 3 data storage. The core Datomizer technology is based on proprietary algorithms that ensure 100% data integrity and facilitates dynamically scalable, secure storage resources on the fly.

Datomia radically improves:

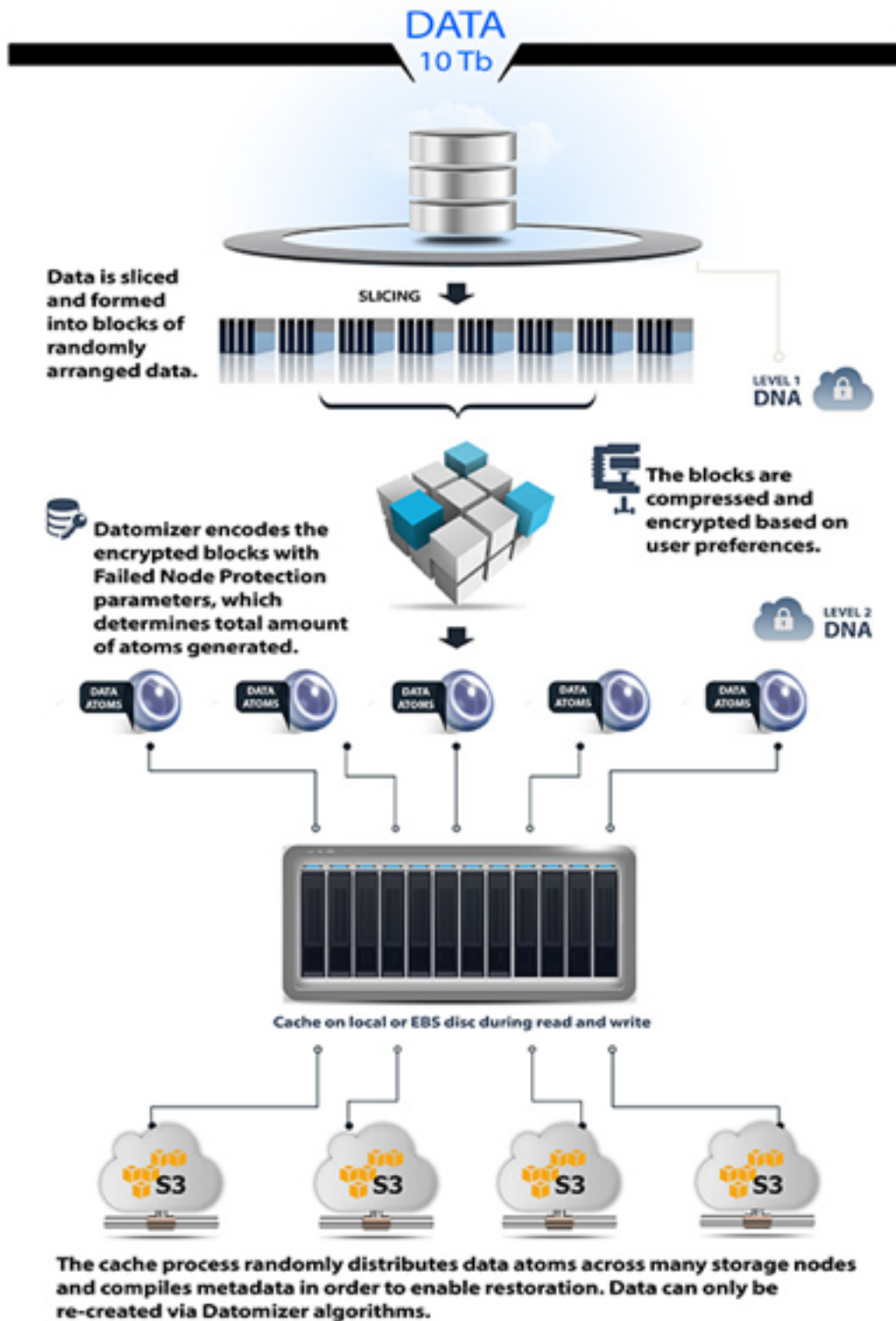
- data reliability and integrity
- network and application performance
- security
- cost and availability

The Datomizer Technology

Datomia's Datomizer technology fulfills the promise of the cloud. This gigantic leap forward delivers the power of massive scalability, security and high speed data streaming to everyone.

Data flows into the Datomizer and in a multi-step process transforms this raw data into encoded micro-fragments, called Data Atoms, that are spread across the cloud, all connected to each other by their common InformationDNA.

Datomizer is the only software defined storage platform that achieves the very highest levels of security, unlimited scalability, high speed streaming and low total cost of operation - as a result of its unique method of processing data and its use of the proprietary InformationDNA.



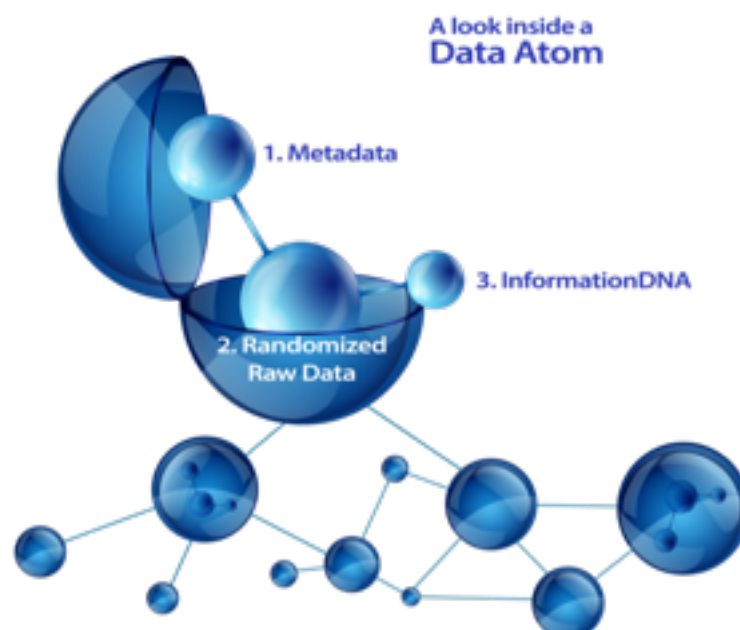
How it Works

Data Flow | Data is imported into the Datomizer. Datomia's unique process destroys the shape of the data, creating a mass of random slices. The slices are formed into blocks and imprinted with the first level of InformationDNA.

The blocks of completely random data are then compressed and encrypted according to user selected preferences. The encrypted blocks of data are encoded, the core function of Datomizer, taking into account how much redundant information is required based on user selected Failed Node Protection settings. This will determine the total amount of micro-fragments that need to be generated.

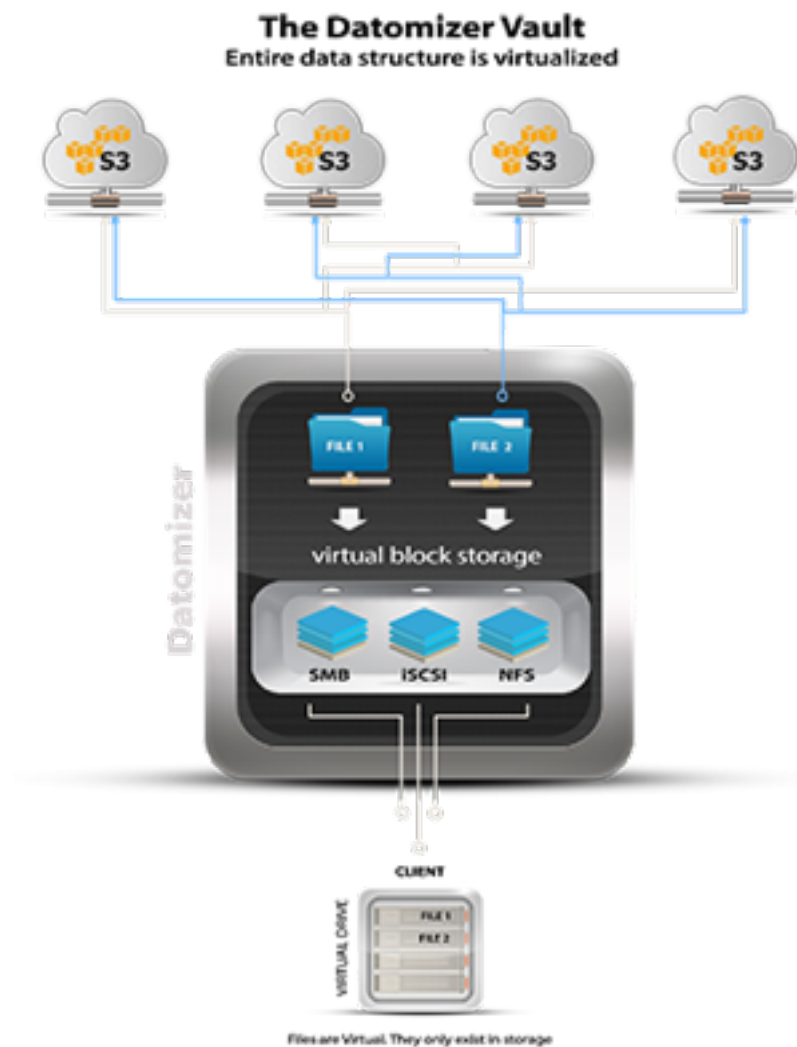
"This process completely randomizes all the stored data, assuring that no file remains intact and disallows access without authorization."

Data Atoms | The encoded micro-fragments Datomizer creates are called Data Atoms. They are the core of it's ground-breaking technology and are composed of the randomized raw data, metadata and DataDNA, which determines how the data blocks will be restored when needed.



Data Atoms are completely invisible without the Datomizer algorithm. No single sequence of bytes from any individual file can be found in a data atom, thus the use of Information DNA and metadata to track and re-create data.

Uploading | A virtual drive is established on a local computer or EBS drive. Read/write through a chosen protocol is routed to Virtual Block Storage in Datomizer which then scatters Data Atoms in the cloud to geographically dispersed storage nodes. This entire data structure is virtualized.



Retrieval | All of these Data Atoms are connected by each other's DataDNA. In order to read or write any file stored within Datomizer, all Data Atoms are activated, the files are located by the metadata hashes and first unlocked with permissions from the InformationDNA at the core of Datomizer.

The bits of data are reassembled on demand and flow back through parallel channels from each storage node. Imagine thousands of tiny bits streaming from multiple locations without any limitation of space or time. Even the largest file streams and opens on your local machine without the typical latency experienced with cloud storage.

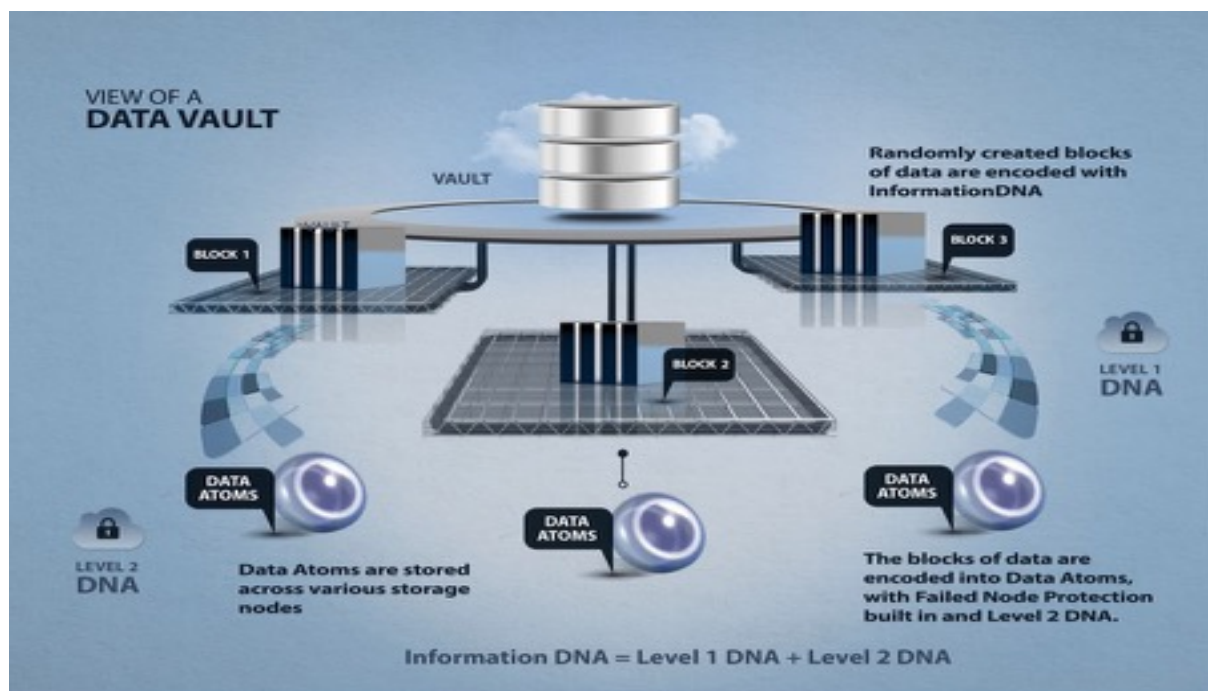
"The data contained within the Data Atoms can only be re-created by Datomizer's algorithms from the InformationDNA contained within."

The files are delivered to the local machine only after the DataDNA passes through the second stage InformationDNA that is controlled by the admin login. To the intruder or potential hacker, only random data exists inside each data atom. No continuous bits of information in any file exists inside any single data atom.

New State of Data™ | Datomia's Data Atoms are the next stage in the evolution of information technology. Where all data is aware, connected, secure and available without leaving a single footprint on your local machine or system.

Virtual Data Vault

Each Datomizer installation contains a Virtual Data Vault which stores the randomly created blocks of data encoded with InformationDNA, as well as the Data Atoms with Failed Node Protection built in. Also stored are DNA Level 1 which tells how to convert raw data to blocks, and DNA Level 2 which tells how to assemble blocks from atoms.



The Benefits of the Datomizer Platform

Architected for Security™

Datomizer uses the very nature of cloud computing to protect and secure your confidential data, creating what we call invisible data. Datomizer encodes data into micro-fragments and spreads them across many storage nodes in multiple geographic locations.

In order to reassemble the data, patent pending algorithms identify the encoded micro-fragments, allowing only the owner of the data to locate and reassemble the data as required at any geographical location.

Military Level Encryption | Top secret sharing schemes safeguard your data storage by combining information dispersal with military level security.

100% Data Integrity | The confidentiality and integrity of your data is preserved in the event any fragments of Information DNA are compromised. Datomizer's data coding methods require all information to be known in order to be deciphered.

Affordable Storage Today and Tomorrow

Datomizer saves money by providing access to high performance NAS vault operation on cheap S3 infrastructure. This software-defined platform delivers new levels of total cost of ownership, allowing you to achieve optimal performance with complete hardware independence.

Efficiency in De-Duplication | Most cloud storage providers increase your costs by 200 percent or more to deliver data protection by duplicated or triplicated data, which significantly increases storage, networking and compute infrastructure costs. Using erasure coding, Datomizer adds just 30-50 percent overhead to the infrastructure. Lost data is algorithmically derived from small recovery codes appended to the encrypted fragments data, making data protection an embedded service and cost saving benefit of the platform.

Massive Scale

Datomizer is designed to scale in several critical dimensions making it a perfect solution for today's big data archives.

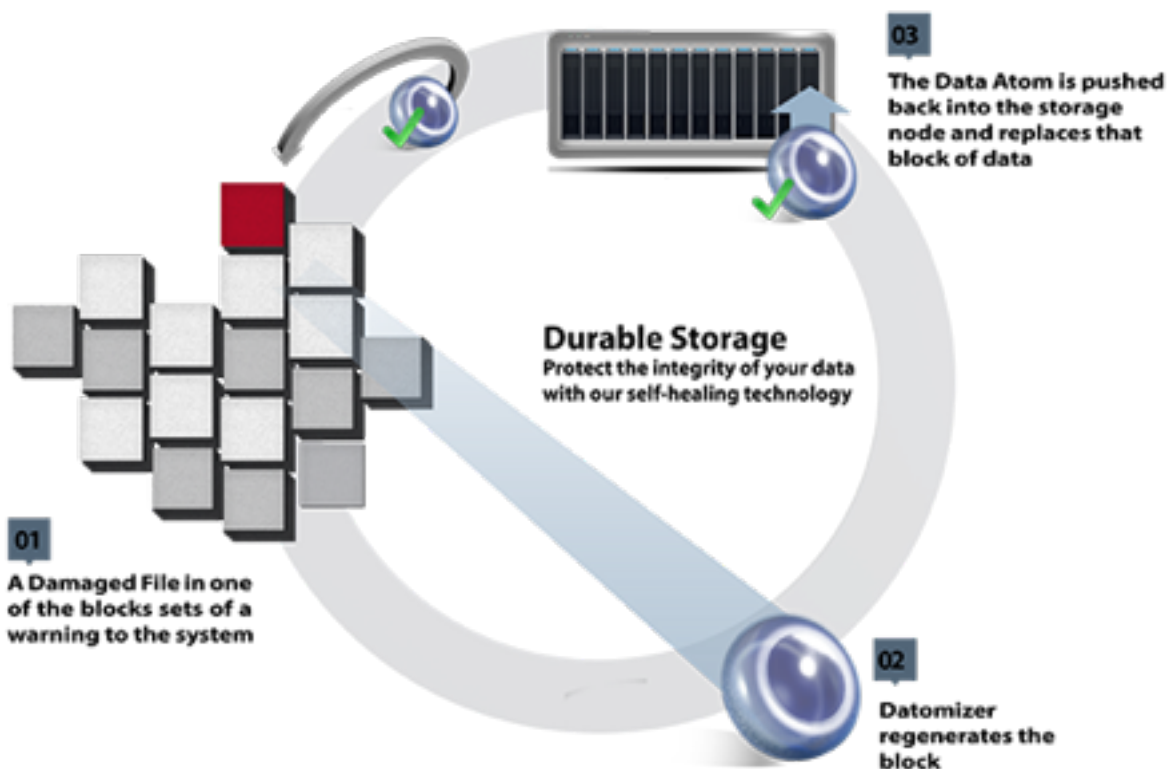
- Datomizer enables performance even when there are hundreds of thousands of applications analyzing, creating and updating the data
- enables sharing across large and distributed teams
- enables scaling without being constrained to a particular operating system or particular networking topology.
- Datomizer's smart caching allows it to achieve Tier 1 performance on S3.

Unlimited NAS Storage | Datomizer provides unlimited NAS storage on AWS S3 nodes, accessing up to 15 petabytes per instance, saving considerable amounts of money over EC2 and shared as NFS, CIFS and iSCSI storage.

Multiple Vaults per Instance | Datomizer allows you to scale cost effectively by providing the means to integrate multiple vaults per instance in certain subscription packages. Get petabytes of S3-backed cloud storage for Tier 1, archival, backup and other mass storage uses as well.

Long Term Durable Storage

To meet the demands of very-long-term retention policies, Datomizer protects data integrity so when a data analytics team needs to access this same data in 2 years, 5 years, or 10 years, the data will remain valid. Durable storage protects data with Datomia's self-healing technology which instantly regenerates damaged or missing atoms and pushes them back to the cloud.



Self-Healing Technology | Datomizer utilizes self-healing technology that continuously runs in the background checking data integrity and disk repairing bit errors and failures.

Self-Migrating | To ensure that data is accessible far into the future, Datomizer is self-migrating, which means that it supports non-intrusive rolling upgrades that enable administrators to keep their storage technology current without the cost and disruption of expensive forklift upgrades.

Flexible Access Regardless of Infrastructure | When preserving data for decades, organizations need to plan for the inevitable evolution in networking connectivity, and the increasingly sophisticated infrastructure. Datomizer's storage solutions integrate with traditional NFS and CIFS applications—as well as applications that take advantage of cloud protocols like S3 access and iSCSI for virtualization, supporting the past, present, and future of data storage protocols and data workflows.

High-Speed Data Transfer

Today's complex computational analysis requires high-speed access to data. When it comes to petascale archives, Datomizer offers lower-latency access as compared to traditional storage solutions and big tape archives.

Re-Creating Data | Instead of transferring large chunks of data across the wire, Datomizer recreates data from InformationDNA. This means that it takes less time to store, retrieve or edit data or a file that has been archived. When a Datomizer solution is integrated as a tier in a multi-tier computational solution, it's easy to make sure that active data is recreated at a robust higher speed, further enabling the complex computational analysis workflow.

Failed Node Protection and Geographic Transparency

Datomizer™ Storage employs InformationDNA technology to disperse data across different public clouds (AWS, Azure, Softlayer), data centers, rack storage nodes and even disks, across geographies. If a particular disk drive or storage node fails, the data can still be promptly recreated on the fly from the remaining disks and nodes.

Resilience to Device Failure | This resilience to device failure also works if an entire cloud service or data center is destroyed in a natural or man-made disaster.

FNP Benefits | Datomizer Failed Node Protection (FNP) technology yields two big benefits: the first benefit is built-in disaster preparedness. The second benefit and perhaps the more useful one in today's internet hyper-connected community, is that spreading data across many different locations makes it easier to share data to those same and other locations, without the overhead and bandwidth load of traditional data replication technologies.

Failed Node Protection (FNP) makes sure your data is always available regardless of planned or unplanned downtime, even in disaster scenarios, guaranteeing 100% uptime of your data storage:



- at Petabyte to Exabyte scale, RAID does not provide acceptable protection from data loss
- today's backup and replication approaches can't keep up with typical ingest rates at this scale.
- RAID at petabyte scale results in data loss.
- Asynchronous replication is inherently vulnerable to data loss (data in flight during disaster).

"Datomizer FNP saves up to 60% in storage, providing both data durability and performance due to patent pending Information DNA technology."

POSIX Compliance

The Datomia file system emulator offers all the features of POSIX file systems including:

- hierarchical structure of files and directories
- attributes of files like uid, gid, access_mask, access time, modification time, change time support for symlinks, hard links, etc.
- access control lists
- extended attributes

Semantics of access rights for the Datomia file system simulator are precisely the same as in other POSIX file systems (like ext or xfs). This makes the Datomia file system simulator compatible with all applications that can use a local hard drive as their storage.

Metadata

The Datomia server uses the cloud to store metadata. This data consists of:

- File System structure
- Names of files and folders
- POSIX attributes
- Information about each object in Object Storage
- Information about Data Atoms and their relationship to files
- System health monitoring
- Historical activity logs

Dashboard Management and Real Time Analytics

From the dashboard, Datomizer provides tracking and management of the overall health and activity of the system, IOPS and throughput to the storage system in real time. The dashboard reports disk usage as hundreds of files and multiple directories are being created every minute across many storage nodes and geographic locations.



Frictionless Deployment

Datomizer is a webapp that can be configured in minutes for IT admin and DevOps. The simple to follow wizard will have you from Free Trial to long term user in minutes! Datomizer S3 NAS works around the clock, always On-Demand, wherever in the world you need, whenever you need it, in any device it's needed.

Datomizer can be launched in your AWS console or from the AWS Marketplace in minutes.

Contact Information

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