

■ Managed Storage NAS



Product Description, Germany, Version 2.1-EN, as of May 4, 2011

1. Introduction

With the product Managed Storage NAS, PlusServer clients can store data on a central NAS infrastructure (Network Attached Storage). For this purpose two distinct solutions are available that are based on different technical platforms. Corresponding to the suppliers of the platforms the products are called Managed Storage NAS Onstor and Managed Storage NAS Isilon.

2. Product Description

The product Managed Storage NAS allows sharing a high-capacity and failsafe network storage. The complete administration, configuration, maintenance and operation are carried out by PlusServer. The service comprises a connection to the PlusServer storage network and all services related to Managed Storage NAS. Moreover, the customer will be assisted by the PlusServer support whenever needed.

Managed Storage NAS covers the following services:

- Consulting (technical specifications of the individual service)
- Initial configuration (NFS and CIFS approvals, mount points etc.)
- Adjustment of technical parameters as agreed upon with client
- Documentation of services
- Configuration, maintenance and monitoring of infrastructure

3. Technical Description

3.1. General

In the following, both of the solutions will be introduced in detail and differences will be highlighted.

3.2. Architecture

3.2.1. Isilon

The Isilon solution is based on a highly optimized multi-headed storage system. The disks are directly connected over SAS and managed by the appliance, so that no disk backend is needed. The Isilon cluster features storage capacities of up to 12 terabyte per head. The available storage space is divided into small blocks and integrated into a global file system. Due to this technology, configuration to the smallest detail is possible. Thus, the appliance is highly suitable for various customer needs. The architecture guarantees the best availability as well as optimal performance by means of an upstream disk I/O cache, which enhances the actual I/O performance of the backend many times over through intelligent caching processes.

3.2.2. OnStor

The OnStor appliance consists of redundantly laid-out NFS heads (Network File System). The disk backend that is connected by fibre channel is composed of several JBODs (disk storage with several disks without RAID controller), each of which are connected to the appliance. Every JBOD constitutes an independent unit with up to 20 terabyte disk space. The storage backend is divided into two classes. The first one serves as data storage for the individual client shares. The second class serves as redundancy, onto which all live data is mirrored once a day. As it is possible to connect an unlimited amount of disk space to the NFS heads via fibre channel, the OnStor appliance is perfectly suitable for any scenario that involves great demand for disk space.

3.3. Protocols

3.3.1. Isilon

With the Isilon appliance either the protocol NFS or CIFS can be used to access the storage space rented by the client. It is possible to change the configuration during operation without affecting the data stored on the Isilon appliance.

3.3.2. OnStor

The OnStor appliance solely uses the NFS protocol for data export. This protocol is recommended for the integration into Linux systems.

3.4. Redundancy

3.4.1. Isilon

The hard disks of the particular Isilon heads are divided into small areas of 128 KB and integrated into the main cluster of the global Isilon file system. Due to these divisions different storage strategies can be realized. The smallest areas can be saved by using parities similar to a Raid network or by data replications based on single files. The client can decide on how save his data is stored and on the individual configuration of his storage system. If the client does not state any configuration to PlusServer, simple replication without additional snapshots of singular data is considered as agreed upon.

3.4.2. OnStor

The disk backends connected via fibre channel are each configured with a Raid-6 and then assigned to be managed by the OnStor appliance. The implemented JBOD systems allow exchanging hard disks during operation (hot-swap). Up to two hard disks may fail per connected JBOD without any data loss. In addition to the disk arrays in a Raid-6 cluster a snapshot of the client data is created once a day for security reasons. This snapshot is saved to a second disk array where it is available in case of a failure. If data loss on one of the disk backends should occur, the mount point can be changed so that access to the last snapshot's data is possible.

3.5. Snapshots

3.5.1. Isilon

The clients may decide if and how often snapshots are created and for how long they are saved. The snapshots are then available in the ".snapshot" directory within the integrated NFS export, for example to restore deleted data. A snapshot is created in a file-based manner following the Copy on Write principle, thus taking some storage space on the appliance. The replication levels determined for data also apply to the snapshots' data areas. This storage space is taken from the client's total space. The detailed configuration of the snapshots is defined in agreement with the PlusServer Technical Consulting. By default the snapshot option is disabled.

3.5.2. OnStor

The appliance creates one snapshot every night for block-based data mirroring. This snapshot is kept for two days and copied to a second storage system. It is also available for the client in the directory ".snapshot" of the respective NFS path so that the client can, for example, restore deleted data. The OnStor appliance does not support custom times or amounts of snapshots. The additional storage space used by snapshots is included in the quota calculation.

3.6. Purpose

3.6.1. Isilon

The Isilon appliance features very high availability, high speed and outstanding caching options for highly optimized and high-availability systems. No matter if Linux or Windows are used on the platform. Due to comprehensive configuration options, the client can decide on the security and redundancy level for his data on the storage backend.

3.6.2. OnStor

As the OnStor appliance offers excellent scaling options on the storage backend, it is a good choice for scenarios that involve much data which has to be stored economically without omitting the redundancy of a Raid 6. Data security is completed by daily mirroring of the complete data.

3.7. Quota Calculation

3.7.1. Isilon

Due to the comprehensive configuration options of the Isilon appliance which influence the necessary storage space, the available quota is calculated based on the actual demand. Thus, snapshots ordered by the client as well as configured data redundancies in terms of parities or data replications are taken into the quota calculation.

3.7.2. OnStor

The OnStor appliance calculates the net disk space used by the client plus the created snapshots. The storage space for mirrored data is not counted.

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3.8. Server Connection

The server connection to the Managed Storage NAS is realized using the PlusServer network with up to 1 Gbit/s speed per connected server. Connection can be carried out over separate uplink ports using the PlusServer infrastructure. As an alternative, the uplink ports that are already used by the client for other services can be used, as long as only internal PlusServer services run on the respective switch port. For security reasons it is not allowed for running internal services like Load balancers or NAS on uplinks to the WAN part of the PlusServer network.

3.9. Summary

The differences between the two solutions and the possible product versions are listed in the following table:

	Isilon	OnStor
SLA	99.95 %	99.50 %
Minimum space	50 GB	250 GB
Snapshots	Optional, up to 10	2
NFSv3 Export	●	●
NFSv4 Support	○	○
CIFS Export	●	○
Redundancies	Selectable parities, selectable replications, desaster backup	Raid 6, daily mirroring
Purpose	High-availability data	Large amounts of data, filing
Traffic according to 95 %*	150 Mbit/s	100 Mbit/s
IOPS according to 95 % accounting	150** IOPS	100*** IOPS

* Traffic calculation according to 95 % charge in 5-minute intervals

** IOPs are charged in the appliance's frontend cache

*** IOPs are charged on the storage systems

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4. Configuration

Configuration and administration will be the sole responsibility of the PlusServer staff. For this, an initial meeting between the customer and a PlusServer Technical Consultant will be arranged. If the client requires changes to be made to the Managed Cluster, a change request needs to be submitted by the client and approved by PlusServer. Once approved, the requested changes will be carried out by PlusServer.

5. Service Level

A Service Level Agreement is offered for PlusServer Managed Storage NAS. It contains service availabilities, maximum recovery times, and maximum response times. The service Level Agreement is provided as a separate document.

6. Service Management and Support

6.1. System Monitoring

PlusServer maintains a Support and Service Center which is staffed by experienced system administrators around the clock (24 hours per day, 365 days per year). If the Support and Service Center identifies a service failure, arrangements to resolve the failure will be conducted immediately.

6.2. Hotline

PlusServer is available for its customers 365 days a year around the clock through its hotline. All necessary information about the hotline is provided to the customer after the service has been provisioned. PlusServer confirms incoming failure reports by customers in general within 60 minutes and informs the customer at short notice about the troubleshooting status.

6.3. Maintenance

PlusServer announces scheduled maintenance, which may impact a customer's service, at least three business days in advance. Scheduled maintenance is normally performed between midnight and 6 a.m. CET.

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