

CenturyLink Technology Solutions Service Guide

NAShare

This Service Guide (“SG”) sets forth a description of the NAShare (“NAShare”) Service (“Service”) offered by CenturyLink, including technical details and additional requirements or terms, if any. This SG is subject to and incorporated into the Master Service Agreement and Hosting Service Schedule between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant Service Order.

Service Level Agreement

The Service Level Agreement (“SLA”) associated with this SG is the “Utility Storage” SLA

Version	Replaces	Section Modified	Date
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Service Description

NAShare is a network attached storage service that is no longer available for new Customer installations effective June 16, 2014. The Service will be discontinued from CenturyLink support on June 16, 2014. The Service provides file sharing services via NFS and CIFS, hosting area network services, and managed security services (where applicable) in a multi-tenant managed environment. CenturyLink provides the infrastructure including space and power, compute resources for the NAShare infrastructure, storage resources, management and monitoring of the NAShare infrastructure, and the use of SavvisStation Portal or API for management and automated configuration.

NAShare

NAShare offers two (2) service elements to facilitate the data storage requirements of customers. Those service elements are:

Network Attached Storage

As part of the NAShare purchase, the customer will be allocated the amount of storage that they have subscribed to. NAShare is available in 50 Gigabyte increments and scales up as required by the customer. Features that are offered as part of the NAShare service include:

- One dedicated virtual NAS server (vfiler) for services to CIFS (Windows) and NFS (UNIX/Linux) file sharing clients.
- Installation and configuration of ports to connect Customer server through the dedicated vserver to the configured storage volumes(s).
- Redundant connectivity to protect against physical failure.
- 24/7/365 maintenance, management, monitoring and support.
- Monthly capacity reports emailed to customer defined addresses.
- Customer alerts when file system capacity reaches a user definable percentage of capacity.
- Access to the snapshot directory of the virtual filer to perform self-directed snapshot activities.

Snapshots

Snapshots are read-only, point-in-time views of data providing a recovery mechanism with real-time access. These recovery points can be created manually or, more commonly, via an automated schedule supporting creation and deletion. Currently, there is support for up to 255 snapshots per repository. These snapshots are unique as there is virtually no performance overhead associated with them due to their pointer-based design and there is no pre-provisioning of the snapshot retention area. This mechanism facilitates data recovery at the host via fully accessible file system access.

CenturyLink will provide access to the snapshot repository in order to enable the customer self-directed snapshot configuration, management and recovery. The NAShare service does not provide any management of snapshots, snapshot scheduling or snapshot recovery. Use of snapshots and all functionality contained within snapshot functionality is the sole responsibility of the customer. CenturyLink is not responsible for customer activities that corrupt or irreparably damage data.

Customer Requirements

- Self-Managed Customers are responsible for obtaining and deploying all Customer hardware, including Network Interface Card(s) (NIC), in which licensed software will be installed either through CenturyLink Managed Hosting Services or through self- implementation.
- Customer agrees, as reasonably requested by CenturyLink, to provide CenturyLink with access to Customer's premises and equipment and to otherwise cooperate with CenturyLink in performing the services.
- Customer agrees to allow CenturyLink to install necessary software to enable operations, monitoring and reporting.
- Customer agrees to notify CenturyLink of any changes in the Customer hardware, including any system configuration changes or any hardware or software upgrades, which may affect the services provided hereunder. Please see "Change Management" for details.
- Ensure that the proper operating environments, as listed in Table 1, are deployed.

Switch and Card Requirements

Customer must have a VLAN compatible with the NAShare service. For customers receiving Managed Hosting Services from CenturyLink, the managed switch is leveraged. For Self- Managed Customers, CenturyLink requires a dedicated switch that is managed by the Customer.

Switch Responsibility

Managed Hosting Services Customer: Customers ordering CenturyLink Managed Hosting Services (e.g., managed operating system and switching management) do not need to provide any switch. The services leverage the switch and switching services contracted.

Self-Managed Customer: Customers managing their own hosting environments (operating system and switch) must provide a switch dedicated to NAShare services. CenturyLink provides configuration guidelines for the switch, and the Customer is responsible for ongoing management of the switch.

Connectivity Card

CenturyLink recommends segregating all file sharing traffic using an additional NIC(s) to simplify connectivity, preventing any degradation in performance of the customers' other networking services, and eliminating the possibility of bandwidth usage charges in conjunction with other CenturyLink Network and Security products. NAS traffic running through network usage- based products (such as firewalls) will result in increased charges for the Customer.

- Installation of an additional dedicated NIC is required for all Colocation customers using NAS Connect.
- Installation of an additional dedicated NIC is also required for all Customers when total sustained IP traffic consumes 60% or more of server bandwidth.

Supported Operating Environments

The following table details the operating systems that are fully supported with NASHare. The matrix of supported Operating Systems is subject to change as new versions of operating systems are tested and introduced into CenturyLink' standard support model. For those systems that are not listed as supported, a compatibility review will be required and if deemed supportable will be supported on a best effort basis by CenturyLink.

Table 1.0

Operating System
Windows 2003
Windows 2008
Windows 2008 R2
RedHat 4.5
RedHat 5.x
RedHat 6.x
Suse SLES 10
Solaris 11
Solaris 10
HPUX
AIX

Storage Hardware and Software

Customer shall provide (or order through CenturyLink) all NICs, and multi-pathing (failover) software required to deliver the Services to the Customer and keep maintenance contracts current as applicable. CenturyLink can administer changes, microcode upgrades and/or other hardware/software improvements/upgrades on behalf of Customer. All configurations and combinations of operating systems and software must be listed on our storage vendor's compatibility matrices to be deemed compatible with CenturyLink NASHare or Utility Storage Services. While it is possible that a product not listed or a configuration not identified will interoperate correctly, CenturyLink reserves the right to disconnect any host that does not meet the compatibility requirements.

CenturyLink shall not be responsible for inconsistencies in the storage environment or unavailability of the Services that result from changes in the Customer's source environment including either intentional or accidental connections or disconnections to the storage environment.

NASHare services are provided on a multi-tenant platform. If providing service to any single customer on a NASHare platform results in diminished performance for other customers on the platform, CenturyLink may require that

individual customer to migrate to a more appropriate storage platform that fulfills or improves the stated service level description, which may result in a change to customer’s monthly recurring charges for service.

CenturyLink will exercise reasonable efforts to minimize or eliminate any downtime associated with the migration. Customers will be provided 90 days’ notice prior to any migration that may result in a maintenance window.

Provisioning

Standard installation timeframe commencing upon successful acceptance of order by CenturyLink for new and upgrade orders is as follows:

Compute Environment	Capacity	Delivery Window
Capacity upgrades to any existing NAShare environments	Up to 2TB RAW	3 business days
	More than 2TB RAW	Up to 30 business days
All new NAShare orders	Any ordered capacity	Up to 30 business days

Management and Monitoring

CenturyLink manages the NAShare platform(s) to include the following customer-facing activities: creating partitions, adding volumes, adding or modifying shares and exports and facilitating the addition of capacity. Capacity upgrades follow the established Change Management practices described in this SSG. CenturyLink monitors the environment including the disk array, management console(s), storage operating systems, SAN fabric, NAS infrastructure as applicable and fiber runs to Customer environment.

Change Management

The Customer is provided at least seventy-two (72) hours prior written notice of any changes made by CenturyLink that affect the Services, other than regularly scheduled maintenance outages. However, if a shorter notification period is required, due to an urgent or emergency situation, changes can be made without the agreement of the Customer, as deemed necessary on a case-by-case basis. CenturyLink strives to minimize outages that may be caused by a change. In the event that an outage is required, CenturyLink will use reasonable efforts to minimize the impact of the change and schedule the outage based upon the Customer’s and CenturyLink’ requirements. If an outage is required, such outage will be considered a scheduled outage. CenturyLink will use reasonable efforts to minimize the impact of the change on the affected service. CenturyLink reserves the right, however, to proceed with any change if CenturyLink determines that the change is necessary. CenturyLink will take reasonable steps to minimize any harm to the Customer’s specific environment as a result of such change. Customer is required to provide at least seventy-two (72) hours prior notification to CenturyLink Service Center of any changes to its configuration that interface with the Services. On a fee-for-service basis, CenturyLink can provide a representative at the CenturyLink POD to address any connectivity issues that arise during the Customer’s configuration changes.

Event Notification

CenturyLink will use commercially reasonable efforts to provide initial notice to a designated Customer's representative by telephone, e-mail, pager or comparable notification service when becoming aware of an event that has caused or may cause an unscheduled outage. In the event Customer first becomes aware of such an occurrence, Customer shall promptly provide initial notice to CenturyLink via the Response Center. CenturyLink will use commercially reasonable efforts to provide status reports about the event until either the event has been resolved or both CenturyLink and the Customer have determined a course of action that does not require continued notification.

Additional Service Requirements

If any third party software, including any corresponding documentation, is provided to Customer by CenturyLink in connection with the Service, Customer agrees to use such third party software strictly in accordance with all applicable licensing terms and conditions. CenturyLink makes no representations or warranties whatsoever with regard to such third party software.

Customer acknowledges and agrees that,

- Any Ports and VLANs in addition to those included in the standard CenturyLink design shall be subject to incremental charges as set forth in the relevant Order Form.
- Any Port or VLAN requested by Customer after the initial installation of the Service shall also be subject to additional, incremental charges.

Additional Considerations

- Customers who wish to connect their own switches to NASHare must go through an in- depth compatibility review for order acceptance.
- NASHare attached to Utility Compute, DCC, OCC, Intelligent Hosting, and/or Foundation Server will receive (1) 1Gbit HAN Port, 2 VLANs, and Ethernet cabling between server and HAN
- Colocation customers attaching servers to NASHare receive (1) 1Gbit HAN Port, 1 VLAN, and a CAT5 Ethernet cable to the collocated cage. Patch panel or other network aggregation device, /29 IP Subnet, and a NIC dedicated to NAS traffic in every server is required. Physical connection can be accomplished by one of the following,
 - Customer physically plugs Ethernet cable into appropriate server or patch panel, OR
 - Customer purchases Remote Hands (Consulting Services) for a CenturyLink employee to physically plug in the cable.
- CenturyLink is not responsible for any changes in customer compute environment when making the physical cable/server connection.

Definitions

“CIFS” means Common Internal File System, a file sharing protocol used natively by the Windows operating system to share files over a TCP/IP network.

“Dedicated Cloud Compute (DCC)” means a managed server service which includes use of a dedicated server, space and power for the server, virtualization operating system license, instance operating system licenses, network connectivity, use of storage services on a managed storage area network, management and monitoring of the server hardware, virtualization operating system and instance operating systems.

“Foundation Hosting” means a managed server service that includes use of (a) a dedicated standalone server provided and owned by CenturyLink, (b) space and power for the server, (c) network connectivity, and (d) failed server hardware replacement services, which are initiated in response to a trouble ticket opened by the Customer.

“Hosting Area Network (HAN)” means the managed networking infrastructure that supports Savvis Managed Hosting services.

“Intelligent Hosting” means a managed server service that includes use of a dedicated standalone server, space and power for the server, operating system license, network connectivity, management and monitoring of the server hardware and operating system.

“NAShare” means a dedicated virtual file server (vfiler) on a Network Attached Storage device

“NFS” means Network File System, a file sharing protocol used natively by the Unix and Linux operating systems to share files over a TCP/IP network.

"Maintenance" - Current scheduled maintenance windows are: AMERICAS: Saturday 00:00 AM to 05:00 AM; Sunday 00:00 AM to 05:00 AM. EMEA: Saturday 02:00 AM to 6:00AM. ASIA PACIFIC (Except Japan: Saturday 21:00 (GMT) Sunday 01:00 (GMT). JAPAN: Sunday 04:00 (JST) 08:00 (JST) All times listed under Scheduled Maintenance Windows are local times and subject to change.

“Open Cloud Compute (OCC)” is a managed server service that includes use of a virtual machine instance in a multi-tenant computing environment.

"SavvisStation Portal" is the name for the interface that ties together centralized systems that CenturyLink uses to provide services to customers. Included in SavvisStation Portal are systems for order processing, provisioning, procurement, management and monitoring, change management, billing, customer support/ticketing and reporting.