

Ahsay Universal Backup System v8 Administrator's Guide

Ahsay Systems Corporation Limited

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Revision History

Date	Descriptions	Type of modification
15 January 2019	First revision of AhsayUBS Administrator's Guide v8	New
6 February 2020	Updated Ch. 8.5.2 with the latest support hardware; Added how to repair an AhsayUBS volume after it has been expanded in Appendix N	New / Modification
30 July 2020	Updated Ch. 4.1 with the recommended memory size for agentless backup jobs	Modification
30 April 2021	Updated screenshots and fixed formatting of the whole document; Updated Release Announcements in Ch. 1; Updated Important Notice in Ch. 4	Modification
25 May 2021	Updated Ch. 1; Ch. 5.1; Ch. 9.5.1; Appendix M	Modification

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1 Release Announcement

AhsayUBS is bundled with the latest version of AhsayCBS v8. Starting from AhsayCBS v8.1.0.0 onwards:

All AhsayCBS installations will have the **Ahsay Cloud Backup Suite NFS services** installed and running by default listening on ports 111, 1058, and 2049. The NFS service is to facilitate VM Run Direct on AhsayCBS by allowing VMware vCentre/ESXi hosts to directly access the backed up VM files on AhsayCBS User Home as an NFS mount to access the guest VM for recovery.

- 2. OpenJDK8 is used by AhsayCBS v8.1.0.0 onwards.
- 3. Tomcat v8 is used by AhsayCBS v8.1.0.0 onwards.
- 4. AhsayUBS 8 runs only on machines installed with 64bit CPU.
- 5. AhsayUBS v8 is supported on VMware ESXi v6.5 or above. As AhsayUBS v8 uses FreeBSD 11.2 and FreeBSD 11.x is only supported on VMware ESXi v6.5 or above.

For information on compatibility between FreeBSD 11.x and VMware ESXi versions, please refer to the <u>VMware Compatibility Guide</u>.

- AhsayUBS 8 includes support for Open VM Tools on FreeBSD. For more information please refer to <u>Appendix K</u>.
- 7. Upgraded ZFS filesystem version v5 and ZPOOL storage version v28.
- 8. Expanded hardware support on FreeBSD 11.2. For more information please refer to <u>Appendix A</u>, <u>Appendix B</u> and <u>Appendix C</u>.
- 9. Supports both iSCSI and Additional Storage features.
- AhsayUBS 8 supports upgrade from AhsayUBS 2.29 (OBSR v6.29) or AhsayUBS 7.17 (CBS v7.17). It is advised you first upgrade your server to these latest releases and update your clients to matching versions before upgrading to v8.

2 Storage Models

2.1 The UFS storage model

For backwards compatibility with older AhsayUBS versions, the UFS storage model is also supported. After upgrade, the 'geom_concat.ko', 'geom_stripe.ko', and 'geom_raid5.ko' module will be loaded by the FreeBSD to support the UFS storage model. To check if these kernel modules have been loaded correctly you can run the "kldstat" command, which will return the following output.

ahs	sayubs	s:/# kldstat		
Id	Refs	Address	Size	Name
1	46	<i>0xfffffff80200000</i>	10d1490	kernel
2	1	0xffffffff812d2000	8cf0	vesa.ko
3	1	0xffffffff8139c000	17378	ahci.ko
4	1	0xffffffff813b4000	f108	mvs.ko
5	1	0xfffffff8c3c4000	7b68	geom_concat.ko
6	1	0xfffffff8c3cc000	8f60	geom_stripe.ko
7	1	0xfffffff8c3d5000	25ae8	geom_mirror.ko
8	1	0xfffffff8c3fb000	25c38	geom_raid5.ko
9	1	0xffffffffc611000	221398	zfs.ko
10	1	0xfffffff8c833000	7500	opensolaris.ko
11	1	0xfffffff8c83b000	11150	krpc.ko
12	1	0xfffffff8c84d000	9afc	iscsi_initiator.ko
13	1	<i>0xfffffff8c857000</i>	14bd	splash_bmp.ko

The 'Master Storage Device' on AhsayUBS is preserved in UFS format which is mounted on '/ubs/mnt/esosfw' and '/ubs/mnt/esfmfw' upon system boot time. The following example shows a UFS filesystem mount as '/ubs/mnt/esosfw' and '/ubs/mnt/esfmfw'.

ahsayubs:/# df -h					
Filesystem	Size	Used	Avail (Capacity	Mounted on
/dev/md0	170M	152M	18M	90%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/mirror/9689F4EFxesosfw	186М	108M	C214	C 20	1 to I was to a second
/dev/milliol/9009F4EFXeSOSIW	1001	1001	63M	63 %	/ubs/mnt/esosfw
/dev/mirror/9689F4EFxesosiw /dev/mirror/9689F4EFxesfmfw	744M	20K	684M	63* 0*	/ubs/mnt/esosiw /ubs/mnt/esfmfw

The Optional Labelled Device in the legacy AhsayUBS will be migrated in this version of AhsayUBS which is one of the storage types called "Optional Storage" inside the "Additional Storage". Volume status and UFS filesystem integrity checking (fsck) are also available in this AhsayUBS version. For details, please refer to the section [Storage].

2.2 The ZFS storage model

AhsayUBS v8 is implemented with ZFS v5 and ZPOOL v28. The existing ZPOOL(s) created on older AhsayUBS versions using ZPOOL v13 will not be upgraded to ZPOOL v28, only newly created ZPOOLs will be applied with the ZIL (ZFS Intent Log).

As the ZFS storage model is based on a GMIRROR and ZFS design, therefore the 'geom_mirror.ko', 'opensolaris.ko', and 'zfs.ko' kernel modules will be loaded by the FreeBSD. The GEOM kernel modules used previously for UFS support 'geom_concat.ko', 'geom_stripe.ko', and 'geom_raid5.ko' will also be loaded. To check if these kernel modules have been loaded correctly you can run the "kldstat" command, which will return the following output.

ah	sayubs	s:/# kldstat		
Id	Refs	Address	Size	Name
1	46	<i>0xfffffff80200000</i>	10d1490	kernel
2	1	0xffffffff812d2000	8cf0	vesa.ko
3	1	0xffffffff8139c000	17378	ahci.ko
4	1	0xffffffff813b4000	f108	mvs.ko
5	1	0xfffffff8c3c4000	7b68	geom_concat.ko
6	1	0xfffffff8c3cc000	8f60	geom_stripe.ko
7	1	0xfffffff8c3d5000	25ae8	geom_mirror.ko
8	1	0xfffffff8c3fb000	25c38	geom_raid5.ko
9	1	0xfffffff8c611000	221398	zfs.ko
10	1	0xfffffff8c833000	7500	opensolaris.ko
11	1	0xfffffff8c83b000	11150	krpc.ko
12	1	0xfffffff8c84d000	9afc	iscsi_initiator.ko
13	1	<i>0xfffffff8c857000</i>	14bd	splash_bmp.ko

The 'Master Storage Device' on AhsayUBS is configured as a ZPOOL with the following pool name 'eslsfwx{UID}' format. The ZFS pool will be mounted on

'/ubs/mnt/eslsfw' upon system boot time.

The following example shows a zpool volume of size 87GB "eslsfwx9689F4EF" mount as '/ubs/mnt/eslsfw'.

ahsayubs:/# df -h					
Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/md0	170M	152M	18M	90%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/mirror/9689F4EFxesosfw	186M	108M	63M	63%	/ubs/mnt/esosfw
/dev/mirror/9689F4EFxesfmfw	744M	20K	684M	0 응	/ubs/mnt/esfmfw
eslsfwx9689F4EF	87G	87G	6 6M	100%	/ubs/mnt/eslsfw
/dev/md1	15M	2.5M	11M	18%	/var

For volume status and ZFS filesystem integrity checking, please refer to the section [Storage] for details.

```
ahsayubs:/# zpool status
 pool: eslsfwx9689F4EF
state: ONLINE
 scan: scrub repaired 0 in 0h42m with 0 errors on Sun Apr 25 00:42:27
2021
config:
                             STATE
                                    READ WRITE CKSUM
       NAME
       eslsfwx9689F4EF
                            ONLINE
                                     0 0 0
        label/9689F4EFxd00p09 ONLINE
                                       0
                                             0
                                                   0
       logs
        label/9689F4EFxd00p07 ONLINE 0 0
                                                   0
errors: No known data errors
```

The other "esgpbt", "esosfw", and "esfmfw" System Firmware Devices are still mounted from the /etc/fstab file.

```
ahsayubs:/# cat /etc/fstab
/dev/md0 / ufs rw 0 0
/dev/mirror/9689F4EFxesosfw /ubs/mnt/esosfw ufs ro 1 1
/dev/mirror/9689F4EFxesfmfw /ubs/mnt/esfmfw ufs ro 1 1
```

The ZFS storage model is used for the following AhsayCBS locations:

- /ubs/mnt/eslsfw/obsr/user
- /ubs/mnt/eslsfw/obsr/system
- 3. /ubs/mnt/eslsfw/obsr/system/obs/policies
- 4. /ubs/mnt/eslsfw/obsr/conf
- 5. /ubs/mnt/esfmfw/obsr/system/obsr/webapps
- 6. /ubs/mnt/eslsfw/obsr/rcvshome

The other "System Firmware Devices" such as "esgpbt", "esosfw", and "esfmfw" will remain unchanged as GEOM MIRROR based UFS volumes. The GEOM device names are in the following formats:

- 1. GPT Boot {UID}xesgpbt
- 2. Operating System Framework {UID}xesosfw
- 3. Firmware Module Framework {UID}xesfmfw

NOTE

For production AhsayUBS servers configured with ZFS volume(s). It is strongly recommended to install at least <u>4 GB RAM</u>, as ZFS volumes require relatively large amount of memory to run. The amount of memory required is dependent on the size of the ZFS volume and the amount of I/O activity.

2.3 ZFS Integrity Checking

In order to safeguard the data integrity of the files on the ZFS volume, a weekly "*zpool scrub*" (zpool volume data integrity check) is performed starting at 00:00 every Sunday morning, to verify the checksums of all the data in the specified ZFS pools are correct.

The scheduled start time of the "zpool scrub" is currently not user configurable and it cannot be disabled in this version of AhsayUBS.

Once the "zpool scrub" job has started it is not possible to stop it.

To check the status of the "zpool scrub", you can use the "zpool status" command which will return the following output. For the following example the "zpool scrub" has checked 14.51% of the pool: eslsfwx9689F4EF

```
ahsayubs:/# zpool status

pool: eslsfwx9689F4EF

state: ONLINE

scan: scrub in progress since Mon Apr 26 08:31:27 2021

12.6G scanned out of 86.6G at 35.9M/s, 0h35m to go

0 repaired, 14.51% done

config:

NAME STATE READ WRITE CKSUM

eslsfwx9689F4EF ONLINE 0 0 0

label/9689F4EFxd00p09 ONLINE 0 0 0

logs

label/9689F4EFxd00p07 ONLINE 0 0 0
```

If an additional data integrity check is required in between the scheduled weekly checks. It is possible to initiate a manual "zpool scrub" using the "zpool scrub {%POOL_NAME%}" command.

As with the weekly "zpool scrub", the AhsayCBS service and backup/restore operations can continue to run as normal.

NOTE

There may be some performance overhead associated with a "zpool scrub", i.e. CPU utilization, memory, and increased I/O activity. The performance overhead is proportional to the amount of data on the ZFS volume.

2.4 FreeBSD and ZFS Implementation

The ZFS version 5 and ZPOOL v28 on AhsayUBS has undergone an extended period of intensive performance and load testing, which has consistently delivered superior performance and data integrity results in comparison to UFS.

```
ahsayubs:/# dmesg | grep ZFSZFS filesystem version: 5ZFS storage pool version: features support (5000)ZFS filesystem version: 5ZFS storage pool version: features support (5000)ahsayubs:/# zpool get versionNAMEPROPERTY VALUE SOURCEeslsfwx9689F4EFversion-default
```

```
ahsayubs:/# dmesg | tail -20
SMP: AP CPU #11 Launched!
SMP: AP CPU #13 Launched!
SMP: AP CPU #2 Launched!
SMP: AP CPU #8 Launched!
SMP: AP CPU #9 Launched!
SMP: AP CPU #4 Launched!
SMP: AP CPU #6 Launched!
SMP: AP CPU #15 Launched!
SMP: AP CPU #7 Launched!
SMP: AP CPU #12 Launched!
SMP: AP CPU #5 Launched!
random: unblocking device.
Trying to mount root from ufs:/dev/md0 []...
GEOM_MIRROR: Device mirror/9689F4EFxesgpbt launched (1/1).
GEOM MIRROR: Device mirror/9689F4EFxesosfw launched (1/1).
GEOM MIRROR: Device mirror/9689F4EFxesfmfw launched (1/1).
ZFS filesystem version: 5
ZFS storage pool version: features support (5000)
iscsi: version 2.3.1
```

2.5 Storage Model Migration

For legacy AhsayUBS environments that wish to migrate from UFS to ZFS storage model, only a manual migration method is available where you need to offload your locally stored User Home data, AhsayUBS settings, and AhsayCBS settings; to a temporary storage device, reinstall AhsayUBS from new, then copy the data and settings from the temporary storage to the new AhsayUBS installation.

The migration process will generally involve:

- 1. Copying the existing user data from AhsayUBS server to another storage device.
 - This refers to the data in all locally stored User Homes stored on the filesystem
- 2. Backup your AhsayUBS configuration via the AhsayUBS Management Console.
 - [System] | [Backup/Restore] | [Backup Configuration]
- Backup of your AhsayCBS configuration (conf/*), policies (system/obs/policies/*), export your branding properties, and any non-standard customizations. If you need to retain logs (logs/*) and (system/*), exclude (system/cbs/Installers/*) which contain old branded builds.
- 4. Use the latest AhsayUBS installer to install a new version of AhsayUBS on the existing machine, which will overwrite all existing data, returning your server to bare state.
- 5. Set the AhsayUBS IP, so that you can login to the management console.
- 6. Restore your AhsayUBS configuration.
- 7. Stop AhsayCBS service.
- 8. Restore your AhsayCBS configuration.
- 9. Copy the user data from the temporary storage device back to the AhsayUBS server.
- 10. Startup the AhsayCBS service and verify AhsayCBS state is normal.

3 Overview

The process to setup Ahsay Universal Backup System (AhsayUBS) firmware onto a machine is done in four stages:

1. Installer Image Deployment, installation to physical server.

Deploys Ahsay Universal Backup System Installer image (*ubs-installer.img*) on a removable USB storage device

2. Firmware Installation/Upgrade.

Install/upgrade Ahsay Universal Backup System Firmware onto the machine.

3. Ahsay Universal Backup System Configuration.

Configure the Ahsay Universal Backup System Firmware (FreeBSD).

4. Backup Server Configuration.

Configure the Backup Server, Redirectors, or Replication Server (AhsayCBS)

There are different software/hardware requirements for each stage. Please ensure that all the requirements are met before deploying the Ahsay[™] Universal Backup System to the machine. For information on the software/hardware requirements, please refer to <u>Chapter 5 System Requirements</u> of this document.

Ahsay Universal Backup System Firmware

AhsayUBS Firmware is based on a customized version of FreeNAS firmware with AhsayCBS bundled and is specifically optimized to run AhsayCBS. Apart from AhsayCBS, it also contains some basic features that system administrator requires, e.g. SSH and system monitoring tools.

AhsayUBS Storage Concepts

The AhsayUBS installer will automatically detect all available local hard disk(s) during the installation progress. The selected hard disk(s) will be partitioned to form "System Storage". Several RAID devices will be created on the "System Storage":

- 1. GPT Boot (GPBT)
- 2. Operating System Framework (OSFW)
- 3. Firmware Module Framework (FMFW)
- 4. Logical Storage Framework (LSFW)

The **GPBT**, **OSFW** and **FMFW** volume are configured as RAID1 mirror in UFS file system to form the core system.

The **LSFW** software RAID device:

- Supports JBOD, RAID0, RAID1 and RAIS5 in UFS format for old version of AhsayUBS.
- Supports RAID0, RAID1 and RAIDZ in ZFS format for the new version of AhsayUBS (The raid type depends on the number of hard disks installed and selected during AhsayUBS installation, for RAID0 the minimum number of disks required is 1 [data loss for any one failed drive], for RAID1 and RAIDZ the minimum number of disks required is 2 [data loss if more than one failed drive]).

These volumes are named "System Storage". The **OSFW**, **FMFW** devices will be created on the Unix File System (UFS). The firmware configuration files will be stored on OSFW and the **AhsayCBS configuration files and backup data will be stored on LSFW**.

HARDWARE RAID?

For systems employing *hardware* RAID, you are limited to one hardware RAID presentable to the server at time of AhsyUBS installation (you may add additional hardware RAID volumes, after AhsayUBS new installation is completed.). If you have more than one hardware RAID volumes, then you will be prevented from installation. For such systems, you will not be presented with choice of RAID settings at time of AhsayUBS installation (you only present one volume).

If the **LSFW** file system runs out of disk space, extra storage can be added to the system by either:

- 1. Adding a new block device to the system hardware.
- 2. Creating an iSCSI connection to a remote storage server.

The added block devices will be partitioned and formatted to form "Modular Storage (ZFS + ZIL)".

The previously supported additional storages: 'Modular Storage (ZFS)', 'Expandable Storage (ZFS)' and 'Optional Storage (UFS);' will also be listed in the summary page. However, only removal of those additional storage is allowed.

Expandable Storage volumes (ZFS) can no longer be created.

There are three types of Additional Storage:

1. Modular Storage (ZFS / ZFS+ZIL)

can be created by one or more local block device to form a volume either in RAID0, RAID1 or RAIDZ (is dependent on the number of hard disks used to form the volume). Since this AhsayUBS version, the underlying ZPOOL will be added with a ZIL layer (ZIL = ZFS Intent Log).

2. Expandable Storage (ZFS) [legacy]

created in the former AhsayUBS versions with a hardware RAID volume or an iSCSI initiator session connected to this AhsayUBS machine. A RAID0 ZFS filesystem will be formed for each of the Expandable Storage. It is for supporting the old migrated AhsayUBS only and cannot be created in this version of AhsayUBS.

3. Optional Storage (UFS) [legacy]

called "Optional Labelled Device" on earlier AhsayUBS versions. It is for supporting the older migrated AhsayUBS installations only and cannot be created in this version of AhsayUBS.

By configuring the AhsayCBS, the "Additional Storage" can be used as additional storage for storing server configuration files and backup data.

			N	OTE				
Minimum size 500GB is required for the AhsayUBS Backup System block devices (i.e. System Storage and Additional Storage). Otherwise, the added block device will not be allowed for fail disk replacement and additional storage.								
The AhsayUBS WebAdmin page, under [Storage] > [Summary] will show the overview of the volumes created on AhsayUBS.								
	Ahsay™ Universal Backup System							
	Information	System	Network	Storage	Backup Server			
	Storage >	Summary						
	Storage > Summary System Storage							
	do0 scsi		102 ccsi					

4 Important Notice

The Ahsay[™] Universal Backup System provides console access to the "System Management Console" by connecting a keyboard and a VGA monitor to the physical machine.

- To prevent unauthorized access to the AhsayUBS System Management Console, it is advised to change the default AhsayUBS administrator password.
- If AhsayUBS is running on a VMware host, the tape backup utility is not supported.

As VMware does not support Tape Drives connected directly to ESXi 5.x or above

For more information please refer to this article https://kb.vmware.com/s/article/2007904.

 Expansion of existing disk volumes is not supported running on either software or hardware backed RAID. Doing so will destroy the volume and cause permanent data loss.

In case you have accidentally expanded an existing disk volume you can try the steps discussed in <u>Appendix N</u> to repair it. However, even though the damaged volume is repaired there may still be significant data loss.

- The existing ZPOOL(s) created on older AhsayUBS versions using ZPOOL v13 will not be upgraded to ZPOOL v28, only newly created ZPOOLs will be applied with the ZIL (ZFS Intent Log).
- For legacy AhsayUBS environments who wish to migrate from UFS to ZFS storage model, only a manual migration method is available. For more information kindly refer to <u>Chapter</u> <u>2.5 Storage Model Migration</u>.

5 System Requirements

This chapter describes the system requirements for the Installer Image Deployment, Backup System firmware Installation/ Upgrade, Backup System and Backup Server Configuration.

5.1 Backup System Requirements

The selected machine must meet the following requirements:

• CPU that is FreeBSD 11.2 i386 / amd64 compatible.

For the list of FreeBSD 11.2 i386 / amd64 compatible processors, please refer to <u>Appendix A</u>.

- Memory Size: 4 GB minimum. If the AhsayUBS installer detects the machine is installed with less than 2GB RAM the installation or upgrade process will be aborted.
- Disk Storage Space: 1000GB per disk minimum

(If your users will store backup data onto the AhsayUBS server, you should plan for the largest drives allowable by your system, as future drive upgrade will be difficult.)

- Network interface card (NIC): At least 1 NIC that is FreeBSD 11.2 compatible.
- Motherboard: If the motherboard supports Unified Extensible Firmware Interface (UEFI) standard. The boot mode <u>must be set to BIOS boot manager</u> and the AhsayUBS installed hard disk specified as the first the boot device.

For production AhsayUBS servers configured with ZFS volume(s). It is strongly recommended to:

- 1. Install AhsayUBS on a 64bit machine.
- 2. Install sufficient RAM as ZFS volumes require relatively large amount of memory.
 - i. If an AhsayUBS server will be used for agent-based backup jobs, it is recommended to install at least 8 GB RAM.
 - ii. If an AhsayUBS server will be used for agentless backup jobs, it is recommended to install at least 32 GB RAM.

The actual amount of RAM required will be dependent on the size of the ZFS volume, the number of concurrent backup jobs running and the amount of I/O activity on the ZFS volume.

5.2 Firewall Settings

Please ensure you have updated your network firewall settings to allow network traffic through the following ports to your AhsayUBS server:

Port	Description
80	HTTP port for incoming backup and restore traffic, browsing the AhsayCBS web interface. [Port number can be customized]
443	HTTPS port for incoming backup and restore traffic, browsing the AhsayCBS web interface. [Port number can be customized]
25	Outgoing SMTP port to the SMTP server
8080	AhsayUBS web administration console. [Port number can be customized]
111	Port Mapper
1058	Mount Port **Required for Run Direct on AhsayCBS
2049	Port for NFS Service
Any incoming TCP port(s)	Any incoming TCP port(s) used by previous version of replication receiver(s), e.g. 9444, 9445

5.3 AhsayUBS Processor Configuration

AhsayUBS supports up to a maximum of 256 virtual processors for both i386/amd64 compatible CPU's.

In order to comply with the maximum supported virtual processors limit on FreeBSD, the system administrator should verify the number of virtual processors enabled on the AhsayUBS machine and apply the correct processor setup on the machines BIOS before proceeding with AhsayUBS installation or upgrade.

The maximum number of virtual processors is calculated as:

(No. of sockets) * (No. of cores per processor) * (Hyper Threading)

5.4 Installer Media Requirements

AhsayUBS installer is available in *img* and *ISO* formats.

- 1. The *img* format is used for deployment on a USB flash drive (minimum 2GB), for installation to a physical server.
- 2. The **ISO format** is used for VMware installation/upgrades only; and is not for use on deployment to CD/DVD media.

5.5 Installer Deployment

For physical server deployment, please ensure the following requirements are met before deploying Ahsay[™] Universal Backup System image to a USB flash drive.

- 1. The USB flash drive should meet the minimum <u>2GB</u> storage size requirements.
- 2. Previous data stored on the USB flash drive should be backed up properly. **Once the deployment process begins, all data on the USB flash drive will be OVERWRITTEN**.
- 3. To avoid selecting the incorrect drive for deployment, it is advised to remove all other USB storage devices such as USB portable hard disk and other USB flash drive.

NOTE

When you reinstall AhsayUBS, please refer to the following link to perform <u>user storage</u> <u>migration</u>.

5.6 AhsayUBS Firmware Installation / Upgrade

Please ensure the following requirements are met before installing / upgrading AhsayUBS Firmware:

- Connect a VGA Monitor and a keyboard to the target machine.
- Make sure that there are local block devices (e.g. "ide", "scsi" disk volumes) installed in the machine.
- The new installation process will destroy all the data in the local block devices installed in the machine. To protect the data in some of the local block devices, it is recommended to remove them before the installation of AhsayUBS Firmware.
- The upgrade process requires the existing hardware/software RAID storage configuration to be healthy. The upgrade process will not be able to continue on system configuration with one or more DEGRADED RAID devices. For more information kindly refer to <u>Rebuild Degraded Storage</u> for instructions on how to rebuild the device.

6 Installer Image Deployment

This chapter describes how to prepare the installer source to deploy AhsayUBS on a physical server.

If you are deploying AhsayUBS as a Virtual Machine on VMware, you may skip this deployment section.

Removable Storage Device

WARNING

Please backup any data stored in the removable USB storage device before deploying the AhsayUBS Installer image onto it. Otherwise, all the data in the USB storage device will be <u>DESTROYED</u>.

Step 1: Preparation

Please follow the instructions below to view the current disk configuration from [Computer Management] Console:

1. Right click on [My Computer] on the desktop and select [Manage].



2. Click on [Disk Management] from the [Computer Management] MMC console. All connected storage device(s) will be listed and marked as [Disk *].

📕 Computer Management								(
	telp								_ _ / ×
	ä								
Computer Management (Local) System Tools Cost System Tools Cost System Tools Cost System Tools Device Manager System Tools System Tool	Volume Layou Partii Data (D:) Partii OS (C:) Partii	ion Basic ion Basic	NTFS	Status Healthy (EISA Configuration) Healthy Healthy (System)	Capacity 39 MB 48.32 GB 20.00 GB	31 MB 823 MB	% Free 79 % 1 % 3 %	Fault Tolerance No No No	0% 0% 0% 0%
Cisk Defragmenter Disk Defragmenter Disk Management Services and Applications	C Basic	*****	/// OS (C.)		Data (D:)			>
	68.36 GB Online CD-ROM 0 DVD (E:) No Media	39 MB FAT Healthy (EI	ISA (Healt) GB NTFS hy (System)		48.32 GB N Healthy	ITFS		
	DVD (G:) No Media								
< >	Primary partition	Extended	partition	Logical drive					

3. Attach the removable device to your computer and refresh the [Disk Management] console. This can be done by pressing the [F5] button on your keyboard.

The new disk should be shown in the [Computer Management] console. In our example, it is shown as [Disk 1] with a drive letter "F".

📕 Computer Management							1	
B File Action View Window H	ielp							_ 8 ×
⇔ → € 🖬 🔮 🖬 🔮 🖆	1 😼							
Computer Management (Local) System Tools E Control Event Viewer Shared Folders Cocal Users and Groups	Data (D:) Partition	n Basic	Status Healthy (EISA Configuration) Healthy Healthy Healthy (System)	Capacity 39 M8 1.91 GB 48.32 GB 20.00 GB		% Free 79 % 100 % 1 % 3 %	Fault Tolerance No No No No	Overhead 0% 0% 0%
Performance Logs and Alert: Device Manager Storage Parkovable Storage Parkovable Storage Disk Defragmenter Disk Management	<		ц.					>
	Online	39 MB FAT Healthy (EISA (Healt	(C:) 0 GB NTPS bby (System)		Data (D:) 48.32 GB N Healthy			
	1.91 GB	(F:) 1.91 GB Healthy			_	>		
	DVD (E:) No Media							
	CD-ROM 1 DVD (G:) No Media							
< >	Primary partition	Extended partition 🔳	Logical drive					

Step 2: Deploy the Installer image with "AhsayUBS Deployment Utility"

1. Download the <u>AhsayUBS Deployment Utility</u> from our website and extract all files from the bundle to a temporary directory.



In this example, *D:\ubs-deployment*.

The deployment program is stored in Deployment Utility folder under %UBS_DEPLOYMENT_DIR%\tools\.

In this example, the path for the deployment utility is *D:\ubs-deployment\tools\DeploymentUtility.*



2. Double click the "DeploymentUtil.exe" icon to launch the utility.



3. After launching the Deployment Utility software, click on the ⁽C), from the [Image File] to select the image file to copy.

🗳 AhsayUBS Deployment Utility	
Installer Image	
Removable Device	
Progress	
Deploy Cancel	Exit

4. In the popup windows, select the AhsayUBS installer image: ahsayubs-installer-*.img from %UBS_DEPLOYMENT_DIR%\image, i.e. *D*:\ubs-deployment\image.

👺 AhsayUBS Deployment Utility 🛛 🔀	Select a UBS Installer image file	? 🛛
AhsayUBS Deployment Utility Installer Image Installer Image Image Removable Device Image [F] Image Progress Image Deploy Cancel	Select a UBS Installer image file Look in: DeploymentUtility	2
	My Network File name: Dp Places Files of type: Installer Image (".img.".IMG) Car	ien ncel

5. Select the target drive in the [Removable Device] drop down panel (i.e. drive-*F* in our case).

	AhsayUBS Deployment Utility	
1	- Installer Image	
	D:\ubs-deployment\image\ahsayubs-installer-1013.img	
	Removable Device	
	[F]	× 🗘
	(F)	
	Progress	
1	Deploy Cancel	Exit

6. Click on the [Deploy] button to write the AhsayUBS installer image to the selected device.

🐕 AhsayUBS Deployment Utility	
Installer Image	
D:\ubs-deployment\image\ahsayubs-installer-1013.img	
Removable Device	
[F]	v
Progress	
Deploy Cancel Deploy 'Installer Image' to 'Removable Device'.	Exit

7. After clicking the [Deploy] button, a warning dialog window will be displayed on the screen. Click the [Yes] button to continue. However, if you have chosen the wrong image file/drive, please click the [No] button to abort the process and repeat steps 1-7 again.



8. If you click the [Yes] button in step 7, the software will start writing the AhsayUBS image to your removable storage device. The write progress percentage will be shown in the Progress Bar. Please wait until all bytes are written to the selected removable storage device.

Installer Image	
D:\ubs-deployment\image\ahsayubs-installer-1013.img	4
Removable Device	
[F]	· ()
Progress	
8%	

9. When it has completed the writing process, the following message will be shown on the screen.

🐨 Depl	oyment Completed 🛛 🔀
į)	Successfully deployed the UBS Installer image to the removable device.

10. The deployment process is now completed. You may close the software by clicking the [Exit] button.



To verify the results, please go to [Computer Management] Console and select [Action] ->
 [Refresh] from the menu. The selected removable storage device should contain a GPT
 partition.

	Help							_ 8 ×
	8							
Computer Management (Local) System Tools System Tools Shared Folders And Performance Logs and Alert- Device Manager Storage Storage Bernovable Storage	Volume Layout Partition (F:) Partition Data (D:) Partition OS (C:) Partition	Basic	tem Status Healthy (EISA Configuration) Healthy (GPT Protective Partition) Healthy Healthy (System)	Capacity 39 MB 920 MB 48.32 GB 20.00 GB	31 MB 920 MB 823 MB	% Free 79 % 100 % 1 % 3 %	Fault Tolerance No No No No	Overhead 0% 0% 0% 0%
Cisk: Defragmenter Cisk: Managementer Cisk: Managementer Cisk: Managementer Cisk: Managementer Cisk: Managementer		9 MB FAT	05 (C:) 20.00 GB NTF5 Healthy (System)		D ata (D:) 18.32 GB NTFS 1ealthy			
		(F:) 220 MB Healthy (GPT Prote	totive Partition) 101 GB					
	DVD (E:)							

12. Then remove the hardware safely by clicking on the [Safely Remove Hardware] icon in the system tray (i.e. It is located in the bottom-right hand corner of Windows). If there are multiple removable devices, please select the one which has been used in the deployment (i.e. drive F in our case).



13. The AhsayUBS installer image has been deployed to the removable device.



7 Installing AhsayUBS Firmware

After the installer deployment, the AhsayUBS Installer is ready for deploying the firmware to the designated AhsayUBS machine. This chapter provides instructions on how to install AhsayUBS.

7.1 Pre-Installation

Before installing AhsayUBS on a machine, please verify if the followings tasks have been done:

- 1. <u>Physical server installation:</u> Deploy the AhsayUBS image to USB removable storage device.
- 2. <u>Virtual Machine installation:</u> Download the AhsayUBS ISO from <u>https://www.ahsay.com/jsp/en/downloads/ahsay-downloads_latest-</u>software_ahsayubs.jsp.
- 3. The installation media is connected to the target machine.
- 4. Shutdown the target machine.
- 5. Power on the machine and enter the BIOS settings page. (Please refer to the motherboard manual for the instruction to enter BIOS settings page.)
- 6. Configure the boot priority of the AhsayUBS machine to boot from the USB removable storage device, or ISO.
- 7. Save the settings and exit the BIOS.
- 8. Reboot the machine and boot up from the installer device.

NOTE

When you reinstall AhsayUBS, please refer to the following link to perform user storage migration.

7.2 Installing AhsayUBS Firmware (New Install)

1. After booting up from the installer device, the main menu will be shown.

Select [1] to start the New Installation of the AhsayUBS firmware.
Ahsay Universal Backup System (8.1.0.10)
System Deployment Console (64 bit) Install Firmware 2 Upgrade Firmware 3 Shutdown System 4 Reboot System 1 Celect> <about></about>
Ahsay Universal Backup System (8.1.0.10)
-Install Firmware-
-Install Firmware Searching Available Network Cards

2. A warning message will be shown on the screen.

Select [Yes] if there is no data on the disk(s) or the data can be destroyed. Otherwise, select [No] to abort the installation process.

Ahsay Univer	sal Backup System (8.1.0.10)
	-Install Firmware
	[WARNING]
	All data on the existing disks will be destroyed!
	Do you want to continue?
	Yes > < No >

3. If your system has *multiple hard disks*, you will be presented with preferred storage type. If you are running with *one hard disk* or *hardware RAID with one volume presented*, this screen may not be shown.

Select the file system type for the file system LSFW and press the [Enter] key to continue.

Ahsay Universal Backup System (8.1.0.10)
Install Firmware
Please select your preferred storage type:
 () z²s-stripe Dynamically stripe data across all available devices () z²s-mirror A mirror of two or more devices (*) z²s-parity A variation on RAID-5 of better distribution

zfs-stripe = RAID0 (data loss if any one drive failure)
zfs-mirror = RAID1 (data loss if more than one drive failure)
zfs-parity = RAIDZ (data loss if more than one drive failure)

The file system LSFW will store the user data and the backup snapshots of AhsayCBS. For data redundancy purposes, it is highly recommended to configure this partition as a zfs-parity volume.

4. Select [Yes] to add swap partition(s) or choose [No] to skip this step.

Tip: Swap Partitions act as the virtual memory in the system. If there is not enough physical memory in the machine, the data will be swapped to the swap partition to store it temporarily.

Ahsay Universal Backup System (8.1.0.10)	
-Install Firmware-	
Do you want to add swap partition on each disk?	

It is strongly recommended to create a swap partition for AhsayUBS. As a rule of thumb, the swap partition should be about double the size of physical memory (RAM). Systems with minimal RAM may perform better with more swap. Configuring too little swap can lead to inefficiencies in the VM page scanning code and might create issues later if more memory is added.

For details refer to the FreeBSD Guide on Designing the Partition Layout.

5. If you choose to create a swap partition in step 4, you will be asked to enter the size of the swap partition.

[HDD: 3] [RAM : 5136 MB] [MAX : 303741 MB]
L
< 0K >

NOTE

The total swap file size should be at least double the size of the physical memory installed on the AhsayUBS machine.



6. After inputting the swap file size, a summary of the settings for the storage configuration will be shown.

Select [Yes] to accept these settings and continue with the installation, select [No] if you would like to make any changes to the current configuration.

) da0 100 GB (scsi)[UMware Virtual disk 1.0]) da1 100 GB (scsi)[UMware Virtual disk 1.0]) da2 100 GB (scsi)[UMware Virtual disk 1.0]	
o you want to create a new Embedded System with the above configurat	

7. Once the settings have been confirmed the file system will be configured.

8. AhsayUBS Firmware is now installed on the target machine.

9. Remove the installation media and press [OK]. Then select option [4] to restart AhsayUBS.

Ahsay Universal Backup System (8.1.0.10)
-System Deployment Console (64 bit)
1 Install Firmware
2 Upgrade Firmware 3 Shutdown System
A Reboot System
<pre></pre>

10. After the system has restarted, logon to AhsayUBS using the default credentials; User ID: *admin* and Password: *ahsayubs*

Ahsay Universal Backup System (8.1.0.10)	
Login System (64 bit)	
Login admin	
Password	
L↓	
≺Login≻	

11. Please refer to <u>Post-Installation</u> to complete the installation.

7.3 Upgrading AhsayUBS Firmware

Please use the upgrade option if AhsayUBS is previously installed on the machine, and to preserve existing configuration and data:

Pre-Requisites:

- You have enabled AhsayCBS AutoSave at least one full day prior to performing upgrade; or, you may make an offsite copy of the CBS "conf" folder, "system/obs/policies" folders
- You have exported your AhsayUBS Web Console settings

Important:

- Upgrade to AhsayUBS 8 cannot downgrade or rollback to earlier AhsayUBS v6 or v7 version. As a precaution, you may want to take a snapshot if your VM environment allows.
- 1. After booting, the main menu will appear on the screen. Select option [2] to start upgrading the AhsayUBS.

Ahsay Universal Backup 	System (8.1.0.10)
-Sy L	stem Deployment Console (64 bit) 1 Install Firmware 2 Upgrade Firmware 3 Shutdown System 4 Reboot System
	<pre></pre>



If there are no embedded systems found inside the machine, please use the option [Install] instead of [Upgrade]. For the detailed steps to install, please refer to <u>Installing AhsayUBS Firmware (New Install)</u>.



2. Select the system UID by pressing [Space] bar. Choose [OK] to continue.

Upgrade Firmware	
Select Embedded System UID:	
() 51E11B30 ada0	
Cancel>	

3. When the following message is shown, choose [Yes] to start the upgrade and [No] to abort.

Ahsay Univ	versal Backup System (8.1.0.10)
	Upgrade Firmware
	Do you really want to upgrade the Embedded System?
	UID : 51E11B30
	Disks : ada0
	<u>⟨</u> Yes> ⟨No>

4. Wait until the upgrade is completed.



5. The message "Successfully upgraded the Embedded System" is shown when the upgrade is completed successfully. Please choose [OK] to go back to the main menu.

Upgrade Firmware
Successfully upgraded the Embedded System.

6. Refer to Post-Installation to complete the upgrade process.

7.4 Post-installation

Please perform the following actions after the AhsayUBS is successfully installed / updated on the machine:

- 1. In the main menu, choose [3] to shutdown the system.

2. Choose [Yes] to confirm the shutdown.

Ahsay Universal	Backup System (8.1.0.10)
	Shutdown System
	Do you really want to shutdown the system?
	Yes > < No >

- 3. Eject the installation media.
- 4. Power On the machine and enter BIOS settings.
- 5. Choose to boot from the local block devices.
- 6. Save and exit BIOS.
- 7. Login to the System Management Console with the administrator password.
- 8. Configure AhsayUBS with your preferred network settings. (refer to <u>Configure Network</u> <u>Settings</u>)
(For software-RAID Configuration Only)

- 9. Login the AhsayUBS Web Administration Interface (web port 8080).
- 10. Go to page [Storage] > [Summary] and wait for the status of the System Storage to change from rebuilding icon to the healthy icon.
- 11. The Logical Storage Framework volume is healthy and the mount point is ready for use.
- 12. Go to [Backup Server] to enable the AhsayCBS service.

The installation/upgrade is now completed.

WARNING

Please make sure the RAID build process is completed before AhsayCBS is put into production as a backup server.

8 Basic AhsayUBS Firmware Configuration

This chapter describes the basic configuration of the AhsayUBS through the console and the WebAdmin.

8.1 System Console

8.1.1 Login to System Console

Before using the functions of AhsayUBS System Console, please login using the administration credentials to complete the configuration.

Ahsay Universal Back	up System (8.1.0.10)
	Login System (64 bit)
	Login admin
	Password
	▶
	<log in=""></log>

The default login credentials for AhsayUBS console are:

Userna	ime:	admin	
_			

Password: ahsayubs

8.1.2 Configure Network Settings

1.	In the main menu, choose [1] to configure the network. Ahsay Universal Backup System (8.1.0.10)
	System Management Console (64 bit) Configure Network Z Reset to factory defaults 3 Shutdown System 4 Rebot System 5 Logout Current Session
	<pre></pre>

2. Choose [1] to assign a LAN IP to the device.

Configure Network Assign LAN IP × Back to Main Menu

Select the method for setting up the IP Address on the device. There are two methods:

- DHCP stands for automatic setup. It will send a request to your DHCP server to get an IP Address. You must have a DHCP server in your network to use this option.
- Static stands for manual setup. You need to enter the network settings manually.



< No >

The following steps will only be displayed when [No] is chosen in step 3:

< Yes >

i. Enter the IPv4 IP address and choose [OK] to continue.

Ahsay Universal Backu	up System (8.1.0.10)
	-Configure Network Interface Card
	Enter new LAN IPv4 address.
	Linter new LHM 1104 address.
	192.168.99.131
L L	

ii. Enter the subnet and choose [OK] to continue. Ahsay Universal Backup System (8.1.0.10)

Enter new LAN subnet mask. Subnet masks are entered as bit counts (as in CIDR notation). e.g. 255.255.255.0 = 24 255.255.0.0 = 16 255.0.0.0 = 8	
C OK >	-

iii. Enter the default gateway address and choose [OK] to continue.

-Configure Network Interface Card
Enter IPv4 default gateway. 192.168.99.250
<u> </u>

- Ahsay Universal Backup System (8.1.0.10) Enter DNS IPv4 address. 192.168.99.245 < 0K >
- iv. Enter the DNS address and choose [OK] to continue.

Wait for AhsayUBS Firmware to finish updating the network configuration. 4.

Configure Network Interface Card- Updating Firmware Network Settings

5. Try to access the AhsayUBS WebAdmin by the following URL to verify the network settings.



In the verification, choose [OK] to go back to the main console menu.



8.1.3 Login System

Launch your browser and type the AhsayUBS WebAdmin's IP address and AhsayUBS WebAdmin service port in the address bar.

For example, the AhsayUBS IP: 192.168.99.131 and the default WebAdmin server **port is 8080** (you can change this port later). The default URL address to access the AhsayUBS Web Admin would be: <u>http://192.168.99.131:8080</u>; as shown in the previous screenshot.

After you have connected to the WebAdmin Login page, login to the AhsayUBS WebAdmin with the correct username and password. The default login credentials for AhsayUBS WebAdmin are:



NOTE When logging in using a web browser, you can only use admin for the Username. But if using a ssh, you may use either root or admin for the Username.

> AhsayUBS WebAdmin console will automatically logout after 10 minutes of inactivity.

8.1.4 System Time and Time Zone Setup

Accurately configure the date and time settings of AhsayUBS. Without accuracy, logs and backup schedules may be incorrect.

1. Login to the AhsayUBS WebAdmin and go to [System] > [Settings] > [General].

U	Ahsay	[™] Unive	rsal B	acku	ıp Syste	em
Information	System	Network	Storag	e Ba	ickup Server	
Custom b C	Settings					
System > S	Backup/Resto	re				
General	Factory defau	lts		SSHD	UPS	SNMP
	Reboot					
Hostname	Shutdown					
Hostname	ahs	sayubs]	

2. You can find the [Time] settings at the bottom of the page.

Time	
Time zone	Etc/UTC Select the location closest to you.
System time	Please use the icon to select the system time.
Enable NTP	Use the specified NTP server.
Save	

3. Select the appropriate time zone from the [Time zone] drop down menu.

Time		
Time zone	Etc/UTC Asia/Crita Asia/Choibalsan	•
System time	Asia/Colombo Asia/Damascus Asia/Dhaka	time.
Enable NTP	Asia/Dili Asia/Dubai Asia/Dushanbe	
Save	Asia/Famagusta Asia/Gaza Asia/Hebron	
Abcay Lin	Asia/Ho_Chi_Minh Asia/Hong_Kong	Suctom

4. After you have selected the appropriate time zone. Click on the [Calendar] Icon and a small calendar will pop up. Select the current date and specify the current time.

Time								
Time zone	Asia/Hong_Kong Select the location closest t	o you	ı.	~				
System time	04/26/2021 17:02 Please use the icon to sele	April		~	20	21 🗸	•	
Enable NTP	Use the specified NTP	5	М	T	W	T 1	F 2	5 3
Save		11		13 20	14 21 28	15 22	16 23	
Ahsay Universal Ba	ckup System (8.5.0.127) © 2008	2021	Dy An	say s	yster	ns Co	rpora	uon. Ai

Time	
Time zone	Asia/Hong_Kong Select the location closest to you.
System time	04/26/2021 17:02 Please use the icon to select the system time.
Enable NTP	□ Use the specified NTP server.
Save	

5. You have provided the appropriate time. If you prefer NTP synchronization, please checked the [Use the specified NTP Server] checkbox.

Time	
Time zone	Asia/Hong_Kong Select the location closest to you.
System time	04/26/2021 17:02 Please use the icon to select the system time.
Enable NTP	✓ Use the specified NTP server.
NTP time server	pool.ntp.org Use a space to separate multiple hosts (only one enter a host name here!
Time update interval	300 Minutes between network time sync.
Save	

6. Additional options will appear. Specify your preferred NTP URL in the [NTP time server] text field. Specify the preferred update interval in unit of minutes in the [Time update Interval] text field.

Time	
Time zone	Asia/Hong_Kong V Select the location closest to you.
System time	04/26/2021 17:02 Please use the icon to select the system time.
Enable NTP	✓ Use the specified NTP server.
NTP time server	stdtime.gov.hk Use a space to separate multiple hosts (only one enter a host name here!
Time update interval	300 Minutes between network time sync.
Save	

7. Finally, click the [Save] button to apply the changes.

NTP time server	stdtime.gov.hk Use a space to separate multiple hosts (only one enter a host name here!
Time update interval	300 Minutes between network time sync.
Save	

8.1.5 Change WebAdmin Password

For security reasons, changing the default AhsayUBS WebAdmin password is recommended during the initial setup of the AhsayUBS WebAdmin.

Please follow the instructions below to change the AhsayUBS WebAdmin password:

1. Login to the AhsayUBS WebAdmin and go to [System] > [Settings] > [Password].

Information	System	Network	Storage	Bac
System > S	ettings >	Password		
General	Password	Email	Proxy 55	HD
Password				
Old password				
Password	 If you	want to change the	(Confirmation) e password for acc	essing i
Save				

2. Fill in the correct values in the appropriate fields.

System > Settir	igs > Passwor	ď
General Passwo	ord Email	Proxy SSHD
Password		
Old password	•••••	
Password	•••••	
	If you want to change	(Confirmation) the password for accessing t
Save		

3. Click the [Save] button to update the new password.

Password		
Old password	•••••	
Password	•••••	
	•••••	(Confirmation)
	If you want to chan	nge the password for accessing t
Save		

4. Logout from the AhsayUBS WebAdmin and re-login using the new password.

	Ahsay	™ Univer	sal Bac	kup Syster	English	~
Information	System	Network	Storage	Backup Server		→ Logout
System > S	Settinas >	Password				
	Password	Email		SHD UPS	SNMP sysctl.conf	I
① The char	nges have been	applied successf	ully.			
Password						
Old password						
Password	If you w	ant to change the	(Confirmation) password for acce	ssing the WebAdmin, ente	er it here twice.	
Save						

8.1.6 Email Setup

The AhsayUBS is bundled with a sendmail SMTP server. It is designed for users who do not have their own mail server.

To configure the SMTP server, please do the following:

- 1. Click [System] > [Settings] > [Email] -> [Settings] to go to the email settings page.
- Enter "127.0.0.1" in the [Outgoing mail server] field if you want to use the local sendmail SMTP server. Otherwise, specify the domain name of your preferred SMTP Server in the [Outgoing mail server]. To use an external mail server, please ensure that the DNS server setting is entered correctly.

System > Settin	gs > Email > Settings
General Passwo	rd Email Proxy SSHD UPS
Settings Test	
General Email Settings	
Outgoing mail server	127.0.0.1 Outgoing SMTP mail server address, e.g. smtp.mycorp.com.
Port	25 The default SMTP mail server port, e.g. 25 or 587.
Security	None 🗸
Authentication	Enable SMTP authentication.
From email	admin@mycompany.com Your own email address.
To email	Destination email address. Separate email addresses by semi-colon.
Save General Email Setti	ngs

- 3. Enter the sender's email address for sending system status reports in the [From email] field, e.g. admin@mycompany.com
- 4. Click [Save General Email Settings] buttons to save the settings.
- 5. After you have completed the email setup, you are advised to verify it by sending a test email.
- 6. Go to [System] > [Settings] > [Email] > [Test].
- 7. Fill in the all the fields shown in the screen.
- 8. Click the [Send test email to[admin@mycompany.com]] button to send a test email. The email subject and contents will be saved in the system.

System > S	ettings > Email > Test
General	Password Email Proxy SSHD
Settings	Test
Test Email Settin	ngs
Subject	System Email Test Subject of the test email.
Email Content	Test email. Email Content
Save test email se	ettings Send test email to [admin@mycompany.com]

8.1.7 Backup System Configuration

Once you have completed the system configuration on the AhsayUBS WebAdmin. It is recommended to backup the AhsayUBS system configuration settings.

AhsayUBS provides a feature to export the system settings to an XML file.

1. Click [System] > [Backup/Restore]



2. Click the [Download configuration] button to save the current settings as an XML file on your machine.

This configuration file is useful for system upgrade and system recovery.

System > Backup/Restore		
Backup configuration		
	Click this button to download the system configuration in XML format. Download configuration	

Any time you make configuration changes through the AhsayUBS WebAdmin, you should plan to make a backup of your configuration for disaster recovery.

8.2 Backup Server Configuration

Ahsay Cloud Backup Suite (AhsayCBS) is bundled with Ahsay UBS Firmware. However, it must be configured properly before use.

8.2.1 Startup/Stop Services

Please follow the instructions to startup/stop the backup server and the NFS Service:

- 1. Login to AhsayUBS WebAdmin.
- 2. Go to [Backup Server] > [Server Status].
- 3. Click the [Start] button to startup the backup server. Once the backup server has started, you may click the [WebAdmin] button to go to the CBS login page. The default IP address of the backup server is the same as the UBS system and the default server port is 80 (you can reconfigure the connector port via AhsayCBS web admin console).

Information	System	Network	Storage	Backup Server	
Backup Se	rver > Ser	ver Statu	s		
Ahsay Cloud Ba	ackup Suite				
Status	Running				
Check Storage Connectivity	Er	Enable Disable Automatically shut down this service if storage volumes has been found discor			
Access Server Files	Share	AhsayCBS	Unshare AhsayC		
Tools	Web	Admin			
NFS Service	s	tart	Stop	RunDirect Network Fi Cloud Backup Suite	e System Service for Ahsay
	5	tart	Stop	Restart	

4. To start the NFS service, go to NFS Service and click on [Start].

As the NFS service is used for VM RunDirect on AhsayCBS if this service is not started VM RunDirect on AhsayCBS will not work.

8.2.2 Login to AhsayCBS

At the AhsayCBS login page, you can login with default AhsayCBS admin credentials. The default credential username: *system* and the password: *system*.

For first time login, starting with AhsayCBS v8.3.4.0 and onwards, you will be asked to change the password before you can proceed.

Please refer to the <u>AhsayCBS Quick Start Guide</u> for further information on configuring AhsayCBS.

9 Advanced Configuration for AhsayUBS Firmware

This chapter describes how to use the all the features of AhsayUBS Firmware via AhsayUBS WebAdmin.

9.1 Information

All pages under this section provide useful information about the AhsayUBS Firmware.

When the mouse is pointed over the word [Information] in the menu bar, the following menu will be shown:

	Ahsay™ Universal Backup System						
Information	System	Network	Storage	Backup Server			
System Status		Chathar					
System Logs		1 Status					
Help		Networ	k Space	Sockets Gra			
About System Status							

The [Information] menu has been further divided into the following sections:

- System Status (Current system status)
- System Logs (The cached system logs)
- <u>Help</u> (Other help resources for use)
- <u>About</u> (Information about this firmware)

9.1.1 System Status

This section provides information about the current system status in AhsayUBS.

System Status

Information Sys	tem Network	Storage	Backup Server						
Information >	Information > System Status								
System Status	System Status Processes Network Space Sockets Graph UPS								
System Status									
Name	Ahsay Universal Back	up System							
Version	8.5.0.127 (built on 1	Thu Apr 15 18:39	:52 HKT 2021)						
O5 Version	FreeBSD 11.2-RELEA	FreeBSD 11.2-RELEASE (revision 199506)							
Platform	amd64 on Intel(R) Xe	amd64 on Intel(R) Xeon(R) CPU E5530 @ 2.40GHz x 16 (2394MHz)							
System UID	9689F4EF	9689F4EF							
Hostname	ahsayubs.local	ahsayubs.local							
Date	Tue Apr 27 06:23:33	Tue Apr 27 06:23:33 UTC 2021							
Uptime	10 days, 20:47	10 days, 20:47							
Last config change	Mon Apr 26 9:41:12	Mon Apr 26 9:41:12 UTC 2021							
Load averages	0.13, 0.04, 0.01 [9	0.13, 0.04, 0.01 [Show process information]							
CPU usage	0%]						
Memory usage	11% of 3899MB]						
Swap usage	Device: /dev/label/96	589F4EFxd00p03	Total: 8192M Used: 81	0% of 8192MB 92M Free: 8192M					
Disk space usage	/ubs/mnt/eslsfw Total: 87G Used: 83	ubs/mnt/eslsfw Total: 87G Used: 87G Free: 66M							

The [System Status Information] table provides a summary about the system status. The table includes:

- Name: The name of the product. i.e. AhsayUBS
- Version: The version number and built time of the AhsayUBS Firmware.
- OS Version: The OS name and its version in the AhsayUBS.
- Platform: Type of CPU and its speed in the AhsayUBS.
- **System UID:** The ID of the AhsayUBS. The ID will be different with each installation of AhsayUBS.
- Hostname: The hostname of the AhsayUBS.
- Date: System time and time zone on AhsayUBS. You can edit them in [System] > [Settings] > [General].
- Uptime: The time since last system boot.
- Last config change: The last time when you saved your settings in the AhsayUBS System WebAdmin.
- Load averages: The three numbers show the average number of processes ready to run during the last 1, 5 and 15 minutes. If the load averages remain high in your

production environment, it is advised to consider an upgrade in your hardware configuration or reduce the load in the AhsayUBS.

- CPU usage: Actual CPU usage now in percentage in the AhsayUBS.
- **Memory usage:** The percentage of memory in use with respect to the physical memory in the AhsayUBS.
- Swap usage: Provided swap path and its usage information in each of the swap partitions in the AhsayUBS. The swap space acts as the virtual memory, it allows the AhsayUBS to store extra data in the swap space if there is not enough physical memory. If the swap usage is always high, this indicates your AhsayUBS server is installed with insufficient RAM. Therefore, more RAM may be needed to improve the performance of the AhsayUBS. For more information about the usage of the swap partition, please refer to the FreeBSD Documentation.
- **Disk space usage:** Shows the disk space usage of the LSFW storage and the additional storages. For details, please refer to [Storage] section.

Processes

The [Process Information] shows the "top" command output in your AhsayUBS. It shows current running processes in your AhsayUBS. For more information about "top" command, please refer to the <u>FreeBSD Documentation</u>.

Information	Syste	m P	letwork	Sto	rage	B	ackup Ser	ver	
Information	Information > System Status > Processes								
System Status	Р	rocesses	Netv	vork	Space	:	Socket	5	Graph UPS
Processes inform	nation								
Processes minimuton last pid: 27782; load averages: 0.02, 0.09, 0.07 up 10+20:58:26 06:34:45 19 processes: 1 running, 18 sleeping Mem: 11M Active, 64M Inact, 414M Wired, 12M Buf, 3280M Free ARC: 157M Total, 144M MFU, 9418K MRU, 32K Anon, 1522K Header, 1751K Other 114M Compressed, 656M Uncompressed, 5.76:1 Ratio Swap: 8192M Total, 8192M Free									
PID USERNAME 1174 root 1136 root 1162 root 1382 root 1391 root 1391 root 1324 root 62937 root 2348 root 2348 root 2350 root 1497 root 1495 root 1495 root 1359 root 27039 root 27039 root	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 52 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 45 20	 SIZE SIZE 15416K 7680K 6448K 12736K 10784K 6468K 33700K 3820K 3820K 3820K 3820K 7504K 	9416K 3508K 2336K 7116K 6164K 2452K 18120K 5368K 19556K 5372K 3816K 3852K 3816K 3852K 3708K 2940K 50276K 3108K	select select kqread select nanslp wait select ttyin ttyin pause wait select ttyin ttyin clect cPU15	10 2 10 11 0 2 12 15 1 2 8 10 15 1 5 1 15 1 15 1 15 15 10 10 10 10 10 11 10 11 10 10	13:03 2:05 0:51 0:33 0:00 0:00 0:00 0:00 0:00 0:00 0:0	0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00%	syslogd lighttpd sendmail cron php sshd php sshd csh csh csh csh login sshd cdialog
									, ii

Network

This page shows the [Network Information] in the AhsayUBS. Each network interfaces' information stores in each of the table. In this example, the title of the network interface refers to the network interface "LAN". If any modification of this network interface is needed, please go to [Network] > [LAN].

Information	System	Network	Storage	Backup Server					
Information	Information > System Status > Network								
System Status	Processe	es Netwo	rk Space	Sockets	Graph UPS				
LAN interface									
Name	em0								
MAC address	00:0	c:29:35:91:f5							
IP address	10.1	10.1.0.228							
Subnet mask	255.	255.0.0							
Gateway	10.1	.0.254							
IPv6 address	fe80	::20c:29ff:fe35:91f	5						
IPv6 Prefix	64								
Media	1000	1000baseT <full-duplex></full-duplex>							
МТО	1500	1500							
I/O packets	1806	180633/15777 (14.86 MB/5.75 MB)							
I/O errors	0/0								
Collisions	0								
Status	up								

The following describes the information in the table:

- Name: The real name of the interface stated in the OS.
- MAC address: The physical address for the interface.
- IP address: The IP address currently set for the interface.
- **Subnet mask:** The subnet mask currently set for the interface.
- Gateway: The gateway currently set for the interface.
- IPv6 address: The IPv6 address currently set for the interface.
- IPv6 Prefix: The network prefix currently set for the interface.
- Media: The shared media currently set for the interface.
- MTU: The maximum transfer unit currently set for the interface.
- **I/O packets:** The number of input/output packets and the size of data transferred through the interface from system uptime.
- **I/O errors:** Number of input/output errors in the interface from system uptime.
- Collisions: Number of collisions from system uptime.
- **Status:** State of the interface. Up or Down.

Space

This page provides the storage capacity for all mount points in the system. The information includes:

- Total Size of Corresponding File System
- Used Size of Corresponding File System
- Available Size of Corresponding File System
- Capacity Occupied in Corresponding File System

In the example below, a device name "/dev/md0" has been mounted at the root directory. It has 170MB in total and 152MB in use. The used capacity is 90% (152MB/170MB) and 18MB remains available for use.

Information Sy	stem N	etwork	Storage	Backu	p Server			
Information > System Status > Space								
System Status	Processes	Networ	k Spac	2 9	iockets	Graph UPS		
Free disk space								
Filesystem /dev/md0		Size 170M		Avail 18M	Capacity 90%	Mounted on /		
/dev/md1 /dev/mirror/968	9F4EFxesfmi	15M Ew 744M			18% 0%	/var /ubs/mnt/esfmfw		
/dev/mirror/968 devfs	9F4EFxesosi	W 186M 1.0P		63M 0B	63% 100%	/ubs/mnt/esosfw /dev		
eslsfwx9689F4EF		870	; 87G	6 6 M	100%	/ubs/mnt/eslsfw		

Sockets

This page provides the information of the [Active Internet connections] and [Active UNIX domain sockets].

Information	System	Network	Storage	Backup Server				
nformation > System Status > Sockets								
	-							
System Status	Processe	s Netv	vork Spa	ice Sockets	Graph UPS			
Sockets								
Active Interne	t connect	ions (incl	uding serv	ers)				
Tepeb			d-Q Local		.gn Address (s	state)		
ffff8007b1738	20 ton4	ō	0 ahsavu		68,12,1,61754 E			
fffff80044c7f8	20 tcp4	000000000000000000000000000000000000000	0 ahsavu		68.12.1.61753 E			
ffff8007b1748	20 top4	ŏ	0 absayu		68.12.1.58548 E			
ffff8007b1758	20 tcn4	ō	0 ahsayu	ne eeh 103		STABLISHED		
ffff80021d1e4	10 tcp4	ŏ		ost.submissi *.*		ISTEN		
ffff80021d1e8	20 top4	ŏ		ost.smtp *.*		ISTEN		
ffff800218c50	00 tcp4	ŏ	0 *.8080	*.*		ISTEN		
ffff800218c54	10 tcp4	ŏ	0 *.ssh	*.*		ISTEN		
ffff800218c58	20 topi	ŏ	0 *.ssh	*.*		ISTEN		
Active UNIX do			0			LOIDN -		
ddress	Type	Recv-0 Se	nd-0	Inode	Conn	Refs	Nextref	Addr
ffff800218201			õ	0	0	0	NCAULCI 0	
ffff8007b6990			ŏ	ő	ŏ	ŏ	ő	
ffff800217e7(0 fffff	3000f39a3b0	ŏ	ő	ő	/var/run/devd.pipe
fffff800217f5		ŏ	0 11111		300218ca2d0		fffff800215bd870	, , ,
ffff800215bd8		ŏ	ŏ		00218ca2d0	ő	fffff80021cc0d20	
ffff80021cc00		ŏ	ŏ		00218ca2d0	ő	fffff800218cale0	
ffff800218ca		ŏ	ŏ		00218ca2d0	ŏ	0	
ffff800218ca2		ŏ	0 fffff	3000f63b588		E800217£5960	ő	/var/run/logpriv
ffff800218ca	ac dgram	ŏ		3000f63b760	0 1111.	000021/10000		/var/run/log
ffff800217e6				3000f39a1d8	ŏ	ŏ		/var/run/devd.seqpacket.p

Graph

This page provides graphical information for the CPU loading and the traffic of the network interface.

CPU load: This current CPU load graph will be shown. The graph will be refreshed automatically.



Traffic graph: Select a network interface from the top-left drop down list and the graph of input /output via the interface will be shown. The graph will be refreshed automatically.



UPS Status

When NUT (Network UPS Tools) service is enabled successfully, the UPS status will be shown here as soon as the UPS' driver established connection with the UPS. For instance,

- UPS status [Running On Line Power / On Battery]
- Battery Charging Level
- UPS current temperature
- UPS machine manufacturing information

For more information about how to configure a connected UPS, please refer to the section related to <u>UPS settings</u>.

<pre>Information > System Status > UPS System Status Processes Network Space Sockets Graph UPS UUPS status Dattery.charge: 100 Dattery.charge: 100 Dattery.charge: 200/11/04 Dattery.runtime: 7500 Dattery.runtime: 7500 Dattery.temperature: 21.6 Dattery.voltage: 55.4 Dattery.voltage: 55.4 Dattery.voltage: 50.4 Dattery.voltage: 200/01M device.mfr: American Power Conversion device.mdel: Smart-UPS 3000 RM device.serial: JS08450005189 device.type: ups driver.parameter.pollfreg: 30 driver.parameter.pollfreg: 30 driver.parameter.pollfreg: 30 driver.parameter.pollfreg: 30 driver.parameter.pollfreg: 30 driver.version.internal: 0.35 input.sensitivity: high input.transfer.high: 253 input.transfer.how: 208 input.voltage: 217.4 output.current: 0.58 output.roltage: 217.4 output.voltage:.status: enabled ups.delay.status: 7.3 review if 65.6 </pre>
<pre>UPS status battery.charge:100 battery.charge.low:10 battery.mfr.date:2020/11/04 battery.runtime:7500 battery.temperature: 21.6 battery.temperature: 21.6 battery.voltage: so.4 battery.voltage: nominal: 48.0 device.model: Smart-UPS 3000 RM device.serial: JS0450005189 device.serial: JS0450005189 device.type: ups driver.parameter.pollfreq: 30 driver.parameter.pollfreq: 30 driver.parameter.pollfreq: 30 driver.version: 2.6.1 driver.version.dat: APC HID 0.95 driver.version.internal: 0.35 input.sensitivity: high input.transfer.high: 253 input.sensitivity: high input.voltage: 217.4 output.voltage: 217.4 output.voltage.nominal: 230.0 ups.delay.shutdown: 20 ups.delay.shutdown: 20 ups.delay.shutdown: 20 ups.delay.shutdown: 20 ups.delay.stur: 30</pre>
<pre>battery.charge: 100 battery.charge.low: 10 battery.untime: 7500 battery.runtime: 7500 battery.runtime.low: 120 battery.temperature: 21.6 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage.nominal: 48.0 device.model: Smart-UPS 3000 RM device.serial: JS08450005189 device.serial: JS08450005189 device.type: ups driver.name: usbhid-ups driver.name: usbhid-ups driver.parameter.pollinterval: 2 driver.parameter.port: /dev/ugenl.2 driver.parameter.port: /dev/ugenl.2 driver.version.data: APC HID 0.95 driver.version.data: APC HID 0.95 input.sensitivity: high input.tranfer.high: 253 input.tranfer.high: 253 input.voltage: 217.4 output.outrage: 217.4 output.voltage: 217.4 output.voltage.nominal: 230.0 ups.delay.shutdown: 20 ups.delay.shutdown: 20 ups.delay.s</pre>
<pre>battery.charge.low: 10 battery.mfr.date: 2020/11/04 battery.runtime: 7500 battery.runtime.low: 120 battery.temperature: 21.6 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 55.4 battery.voltage: 50.4 device.model: Smart-UPS 3000 RM device.model: Smart-UPS 3000 RM device.serial: JS08450005189 device.type: ups driver.name: usbhid-ups driver.parameter.pollinterval: 2 driver.parameter.pollinterval: 2 driver.parameter.pollinterval: 2 driver.parameter.pollinterval: 2 driver.version.dat: APC HID 0.95 driver.version.dat: 20 uput.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage: 217.4 output.voltage.nominal: 230.0 ups.delay.shutdown: 20 ups.delay.shutdown: 20 ups.del</pre>
ups.load: 4.5 ups.mfr: American Power Conversion ups.mfr.date: 2020/11/04 ups.model: Smart UPS 3000 RM ups.productid: 0002 ups.serial: JS0845005189 ups.status.OL
ups.test.result: No test initiated ups.timer.reboot: -1 ups.time.shutdown: -1
ups.timer.shutdown: -1 ups.timer.start: -1 ups.vendorid: 051d

9.1.2 System Logs

These pages contain logs and the display settings of the logs.

You may go to this page by the menu [Information] > [System Logs].

Information	System	Network
System Status		
System Logs		1 Logs >
Help		A.R.T. E
About	m log entries	

All the system log types can be cleared by clicking the [Clear] button. Apart from this, the logs can be downloaded to your local computer by clicking the [Download] button.

Information	System	Network	Storage	Backup Server					
Informatio	Information > System Logs >								
System	System SSH S.M.A.R.T. Daemon Settings								
Last 10 System	log entries								
Apr 29 01:49:00	pr 29 01:49:00 root: syslogd service restarted								
Apr 29 01:49:00	syslogd:	syslogd: kernel boot file is /boot/kernel/kernel							
Apr 29 01:48:58	syslogd: e	syslogd: exiting on signal 15							
Apr 28 10:22:07	8 10:22:07 root: obsr service started								
Apr 28 10:21:31	:31 root: obsr service started								
Apr 28 09:02:46	login: log	login: login on ttyv0 as root							
Apr 28 09:02:37	sm-mta[1	sm-mta[1403]: starting daemon (8.15.2): SMTP							
Apr 28 09:02:37	sendmail[sendmail[1401]: /etc/mail/aliases: 0 aliases, longest 0 bytes, 0 bytes total							
Apr 28 09:02:37	sendmail[sendmail[1401]: alias database /etc/mail/aliases rebuilt by root							
Apr 28 09:02:36	Apr 28 09:02:36 lighttpd[1394]: (server.c.1423) server started (lighttpd/1.4.49)								
Clear Downloa	ad								

WARNING

The logs CANNOT BE RECOVERED after clicking the [Clear] button.

System

This page contains the system logs.

Information	System	Network	Storage	Backup Server					
Informatio	Information > System Logs >								
System									
Last 1000 Syste	Last 1000 System log entries								
Apr 26 09:41:12	root: msmtp service executed								
Apr 26 09:38:38	root: msmtp service executed								
Apr 26 09:25:14	root: userdb serv	ice executed							
Apr 25 00:00:12	root: [zpool_scrub] : Started ZPOOL scrubbing on: eslsfw								
Apr 18 00:00:12	2 root: [zpool_scrub] : Started ZPOOL scrubbing on: eslsfw								
Apr 16 09:49:01	root: cbsnfs service started								
Apr 16 09:48:47	root: obsr service started								
Apr 16 09:40:24	root: obsr service started								
Apr 16 09:36:48	login: login on ttyv0 as root								

SSH

This page contains the logs for all SSH traffic.

Information	System	stem Network Storage Backup Serve							
Informatio	Information > System Logs >								
System	System SSH S.M.A.R.T. Daemon Settings								
Last 1000 SSH	Last 1000 SSH log entries								
Apr 27 01:56:18	sshd[234	sshd[2348]: Accepted password for root from 192.168.12.1 port 58548 ssh2							
Apr 26 02:57:42	sshd[873	sshd[87307]: Accepted password for root from 192.168.12.1 port 49162 ssh2							
Apr 26 02:45:24	sshd[872]	sshd[87273]: Accepted password for root from 192.168.12.1 port 61950 ssh2							
Apr 26 02:45:12	sshd[872]	sshd[87273]: Failed password for root from 192.168.12.1 port 61950 ssh2							
Apr 26 02:23:36	sshd[870	sshd[87096]: Accepted password for root from 192.168.7.101 port 55530 ssh2							
Apr 24 12:29:12	sshd[6293	sshd[62937]: Accepted password for root from 10.3.1.8 port 51672 ssh2							
Apr 16 09:39:21	sshd[151	sshd[1513]: Accepted password for root from 192.168.7.101 port 62906 ssh2							
Apr 16 09:36:38	sshd[135	sshd[1359]: Server listening on 0.0.0.0 port 22.							
Apr 16 09:36:38	sshd[135	sshd[1359]: Server listening on :: port 22.							

S.M.A.R.T.

This page contains logs from S.M.A.R.T.

Information	System	Network	Storage	Backup Server			
Information > System Logs >							
System SSH S.M.A.R.T. Daemon Settings							
Last 1000 S.M.A.R.T. log entries							
Clear Download							

Daemon

This page contains logs related to daemons.

Information	System	Network	Storage	Backup Server				
Information > System Logs >								
System	55H 5.I	M.A.R.T. D	aemon S	iettings				
Last 1000 Daem	non log entrie	S						
Apr 16 09:36:38	lighttpd	[1382]: (server.c.14	23) server started	(lighttpd/1.4.49)				
Sep 18 09:43:08	lighttpd	[1412]: (server.c.14	23) server started	(lighttpd/1.4.49)				
Jul 8 09:05:41	lighttpd	[1402]: (server.c.14	23) server started	(lighttpd/1.4.49)				
Jul 8 09:04:46	lighttpd	[1402]: (server.c.20	16) server stoppe	d by UID = 0 PID = 11480				
Jul 8 08:27:03	lighttpd	[1402]: (server.c.14	23) server started	(lighttpd/1.4.49)				
Jul 8 08:19:40	lighttpd	[1339]: (server.c.20	16) server stoppe	d by UID = 0 PID = 1931				
Jul 8 08:18:34	lighttpd	[1339]: (server.c.14	23) server started	(lighttpd/1.4.49)				
Jul 8 07:47:26	lighttpd	lighttpd[1323]: (server.c.1423) server started (lighttpd/1.4.49)						
Nov 19 09:36:38	09:36:38 lighttpd[1401]: (server.c.1423) server started (lighttpd/1.4.49)							
Clear Downloa	ad							

Settings

Modify these settings for the log displayed in the log pages described above:

- Show log entries in reverse order (newest entries on top)
- Number of log entries to show: Enter a number for a maximum number of the log entries to show or email.
- Resolve IP addresses to hostnames

To save your settings, click the [Save] button, click the menus above to view the logs again and to verify if the settings had been changed.

Information	System	Network	Storage	Backup Server					
Informatio	Information > System Logs > Settings								
System	System SSH S.M.A.R.T. Daemon Settings								
Settings									
Show log entries reverse order (newest entries top)	Z 5-	Enable							
Number of log entries to show	1000	1000							
Resolve IP addresses to hostnames	esses to Enable Hint: If this is checked, ID addresses in Absay Universal Backup System logs are resolved to real								
Save									

9.1.3 Help

Contains a link to the <u>Ahsay Support Centre</u> if you require to contact Ahsay for technical support.

Information	System	Network	Storage	Backup Server			
Information > Help							
Help							
Support							

9.1.4 About

About page for the AhsayUBS.

Information	System	Network	Storage	Backup Server				
Information > About								
License								
Ahsay Universal	Backup System							
Redistribution and provided that the fo			or without modifie	cation, are permitted				
1. Redistributions o the following discla		st retain the above	copyright notice,	this list of conditions and				
	Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.							
THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.								

9.2 System

This section describes how to configure the AhsayUBS settings through the AhsayUBS WebAdmin.

When the mouse cursor is pointed over the word [System] in the menu bar, the menu will be shown as below:

	Ahsay	™ Unive	rsal Bac	:kup System
Information	System	Network	Storage	Backup Server
System > S	Settings Backup/Resto	re		
General	Factory defau	lts	S	ISHD UPS SNI
Hostname	Reboot Shutdown	1]

The [System] menu has been further divided into the following sections:

- <u>Settings</u> (Edit system settings)
- <u>Backup/Restore</u> (Backup or restore system settings as a file)
- Factory default (Restore system settings to factory defaults)
- <u>Reboot</u> (Reboot system now or in a schedule time)
- <u>Shutdown</u> (Shutdown system now or in a schedule time)

9.2.1 Settings

	Ahsay	™ Unive	rsal Bac	kup System
Information	System	Network	Storage	Backup Server
Custom > C	Settings			
System > S	Backup/Resto	re		
General	Factory defau	lts	5	SHD UPS SNN
	Reboot			
Hostname	Shutdown			

The general system settings can be set here.

Information	System	Network	Storage	Backup Server	
	etting Password	s > General	Proxy 55	HD UPS	SNMP sysctl.conf
Hostname					
Hostname		ahsayubs Name of the NAS host, v	without domain par	rt e.g. <i>ahsayubs</i> .	
Domain		local e.g. <i>com, local</i>			
DNS settings					
IPv4 DN5 servers		192.168.5.1 IPv4 addresses			
WebAdmin					
Protocol		HTTP ¥			
Port		8080 Enter a custom port num 8443 for HTTPS).	nber for the WebAc	dmin above if you want to	o override the default (8080 for HTTP,
Time					
Time zone		Etc/UTC Select the location closes	✓ st to you.		
System time		Please use the icon to se	elect the system tir	ne.	
Enable NTP		✓ Use the specified N	TP server.		
NTP time server		pool.ntp.org Use a space to separate you enter a host name h		ly one required). Rememb	ber to set up at least one DNS server if
Time update inte		300 Minutes between networ	rk time sync.		
Save					

General

Hostname:

- Hostname: Sets the hostname of this AhsayUBS. It is advised to use a name in order to identify AhsayUBS System in the network.
- **Domain:** Sets the domain of this AhsayUBS.

DNS Settings:

 IPv4 DNS servers: Specify a maximum of 2 different IP addresses of DNS server for the AhsayUBS.

WebAdmin:

- **Protocol:** Select WebAdmin protocol for this AhsayUBS WebAdmin. The supported protocols are HTTP/HTTPS and the default protocol is HTTP.
- Port: Change the WebAdmin port for this AhsayUBS WebAdmin.

NOTE

It is advised not to use the system service port 0-1023 for the WebAdmin port. Also, port 80 and port 443 has been reserved for the backup server. Please refer to the <u>Firewall Settings</u> section for the default port configuration.

- Certificate (for HTTPS only): Paste a signed certificate in X.509PEM format to the textbox provided for this AhsayUBS.
- Private key (for HTTPS only): Paste a private key in PEM format to the textbox provided for this AhsayUBS.

Time:

- **Timezone:** Set the time zone for this AhsayUBS.
- System time: Set the system time for this AhsayUBS.
- Enable NTP: NTP standard for Network Time Protocol. If you have a time server for synchronization of the time, it is better to enable this service for keeping the time in your AhsayUBS.
- NTP time server (Shows only when NTP is enabled): Enter the IP address of time server(s) for time synchronization.
- **Time update interval (Shows only when NTP is enabled):** Enter the interval in minutes for synchronization from the AhsayUBS to the server.

Password

This page allows you to set the password for the default administrator account of the AhsayUBS (i.e. **admin**). You need to provide old password to authenticate the change in password. It is required type the new password. Then you can click the [Save] button to save your settings.

Information	System	Network	Storage	Backup Server			
System > Settings > Password General Password Email Proxy SSHD UPS SNMP sysctl.conf							
Password							
Old password	•••••	•					
Password	If you w	•	(Confirmation) password for acces	sing the WebAdmin, en	ter it here twice.		
Save							

Email

Settings

A status report helps you to check the AhsayUBS status. If you want to check the AhsayUBS regularly, please setup the [Email status report settings]. Then, you may receive the status report in HTML format through email attachment regularly.

Information	System	Network	Storage	Backup Server					
System > S	System > Settings > Email > Settings								
General	Password	Email	Proxy 55	HD UPS	SNMP sysctl.conf				
Settings	Test								
General Email S	ettings								
Outgoing mail se	127.0	.0.1 ng SMTP mail serve	er address, e.g. sm	tp.mycorp.com.					
Port	25 The de	fault SMTP mail se	rver port, e.g. 25 d	or 587.					
Security	None	~							
Authentication	0 Er	able SMTP authen	tication.						
From email		@mycompany.com wn email address.	1						
To email		mycompany.com ation email address	. Separate email a	ddresses by semi-colon.					
Save General Em	ail Settings								

To setup the [Email status report settings], you need to setup the [General Email Settings] first. Here are the fields that you need to configure in the [General Email Settings]:

- **Outgoing mail server:** Please enter the outgoing SMTP mail server address e.g. "smtp.mycompany.com".
- **Port:** Please enter the SMTP mail server port. The default port number for SMTP server is port **25**.
- Security: Please select the security protocol. You can choose None, SSL or TLS.
- Authentication: Click the checkbox to enable the SMTP authentication.
- Login Name (Shows only when Authentication is enabled): The login name for the SMTP name server.
- Password (Shows only when Authentication is enabled): The password for the SMTP mail server.
- Authentication Method (Shows only when Authentication is enabled): The authentication method for login the SMTP mail server. Here are the choices for the login methods:
 - Plain
 - Cram-MD5
 - Digest-MD5
 - GSSAPI

- External
- Login
- NTLM
- Best available
- From email: Set the sender's email.
- **To email:** Destination email address. Multiple email address can be set. Separate email address by semi-colon.

Please click the [Save] button to save the above settings if necessary. For verifying the email settings, please refer to the below section which describes how to send a test email by using the send test email feature included in AhsayUBS firmware (i.e. [System] > [Settings] > [Email] > [Test]).

NOTE

Setup DNS Server in the page [System] > [Settings] > [General] is required to resolve the SMTP server address.

After setting up the [General Email Settings], you may now setup the [Email Status Report Settings]. Please check the [Enable] checkbox on the top-right hand corner to enable this function.



The following fields can be set in the [Email Status Report Settings]:

- **To email:** Show the status report recipients. The 'To email' settings can be set in the [General Email Settings].
- Subject: The email subject.
- **Reports:** Select the reports you want to receive in the email.
- Polling time: Set the sending time of the email.

Please click the [Save Email Status Report Settings] button for saving the settings. Please refer to the page [System] > [Settings] > [Email] > [Test] for details to verify the settings.

Test

This page is for verifying the settings inside the page [System] > [Settings] > [Email] > [Settings].

Information	System	Network	Storage	Backup Server					
System > S	System > Settings > Email > Test								
	Password Test	Email	Proxy 55	HD UPS	SNMP sysctLconf				
Test Email Setti	ngs								
Subject	System Email Subject of the								
Email Content	Test emai	l to verify t	he General E	mail Settings.					
	Email Content								
Save test email s	ettings Send	test email to [ad	dmin@mycompa	ny.com]					

The [Test Email Settings] is for verifying the settings in the [General Email Settings] in the page [System]> [Settings] > [Email] > [Settings]. To verify the settings, you can now send a test email to the [From email] inside the [General Email Settings] by:

- 1. Entering the test email subject inside the [Subject] field.
- 2. Entering the test email contents inside the [Email Content] field.
- 3. Click the [Send test email to...] button to save the settings and send the test email to the email address entered in the [From email].

You may save the test email subject and contents by clicking [Save test email settings] WITHOUT sending any test email.

You may also verify the settings inside the [Email Status Report Settings] by sending a test email to the email entered inside the [To email] field in the [Email Status Report Settings] table (i.e. [System] > [Settings] > [Email] > [Settings]).

To send a test status report email, you may click the [Send Status Report to ...] in the table [Test Send Status Report Email]. You may also click the [Status Report Email] link inside the table to set the settings.

Test Send Status Report Email					
Send Status Report to [test@mycompany.com]					
Configure your Status Report Email Settings					

Proxy

You may use this page to configure the HTTP proxy server if your AhsayUBS requires an outgoing proxy server. Please check the [Enable] checkbox on the top-right hand corner to enable the proxy server.

Information	System	Network	Storage	Backup Server					
System > S	System > Settings > Proxy								
General	Password	Email	Proxy SS	iHD UPS	SNMP	sysctl.conf			
HTTP Proxy						🗹 Enable			
Address	proxy								
Port	8080								
Authentication	🗹 Ena	able proxy authent	ication.						
User	usernar	me)						
Password	•••••	•)						
Save									

- Address: The address to the proxy server.
- **Port:** The port to access the proxy server.
- Authentication: If the proxy server is needed to login, please tick this checkbox.
- User (Shows only when Authentication is enabled): Enter the username for login to the proxy server.
- Password (Shows only when Authentication is enabled): Enter the password for login to the proxy server.

Please click the [Save] button to save the above settings.

NOTE

Remember to configure the DNS server settings for resolving the address in the page [System] > [Settings] > [General].

SSHD

SSHD daemon provides remote console access to the AhsayUBS. This feature is designed for troubleshooting purpose only, and not meant for 24x7 access. **The root access and SSL tunneling feature will be enabled by default**.

Information	System	Network	Storage	Backup Server			
System > Settings > SSHD General Password Email Proxy SSHD UPS SNMP sysctLconf							
Secure Shell							
Status	Running	Running					
TCP port	22 Alternate	22 Alternate TCP port. Default is 22					
Compression	Compres	Enable compression. Compression is worth using if your connection is slow. The efficiency of the compression depends on the type of the file, and varies widely. Useful for internet transfer only.					
Private key	Paste a I	DSA PRIVATE KEY	in PEM format here	2.		i	
		Start	Stop	Restart			

The default login account for SSH:

- Username: root
- Password: <The password of the admin account of AhsayUBS WebAdmin>

Here are the options that will be shown or can be configured in the [Secure Shell] table:

- Status:
 - Running: SSHD is enabled.
 - Stopped: SSHD is stopped.
- TCP Port: The port for the SSHD. Default is port 22.
- **Compression:** If the file is larger or the network is slow, the transfer of the files will be faster when enabling this option.
- Private Key: Paste a DSA PRIVATE KEY in PEM format.

If you want to Start/Stop/Restart SSHD in the AhsayUBS, please click the buttons under the table [Secure Shell].

When the SSHD service has been started, the options inside the [Secure Shell] table will be disabled. You need to [Stop] the SSHD in order to modify the settings.

UPS

UPS (Uninterrupted Power Supply) is an electrical apparatus which provides emergency power to a server when the main power source fails. UPS prevents power interruptions by supplying energy stored in its batteries. The UPS device can be connected to AhsayUBS machine through serial port or USB port. The UPS will notify the AhsayUBS machine in case of power failure events.

NUT (Network UPS Tools) is the system service which conducts communication between the AhsayUBS and the UPS device. It can:

- Initiate AhsayUBS shutdown sequence upon defined UPS power events.
- Monitoring and Log the UPS status [On Line Power / On Battery].

The port used by the NUT daemon is '3493'.

The daemon will be started once the UPS settings are saved in the page [System] > [Settings] > [UPS] > [Settings]. UPS status can be checked in the page [Information] > [System status] > [UPS status]. NUT daemon will also log the UPS triggered event in the AhsayUBS system log. The system log can be checked in the page [Information] > [System Logs].

Settings

Information System Network Storage Backup Server System > Settings > UPS > Settings General Password Email Proxy SSHD SNMP sysctl.conf Settings Driver List Device List Enable Uninterruptible Power Supply Status Stopped Driver The driver used to communicate with your UPS. Get the list of available drivers. Port Device Path The serial or USB port where your UPS is connected. Get the list of available port device path. Auxiliary parameters Additional parameters to the hardware-specific part of the driver. Description You may enter a description here for your reference. Shutdown mode UPS reaches low battery V Defines system shutdown condition. Email notification Enable The email will be sent to [test@mycompany.com]. [To email] configuration can be edited in General Email Settings. Save and Restart

This is the main page to configure the connected UPS device.
Remarks:

- DO NOT connect the serial port and USB port between UPS device and AhsayUBS at the same time.
- Make sure A.C. power supply is connected to the UPS device when configuring the AhsayUBS WebAdmin page. Otherwise, the AhsayUBS shutdown sequence will be initiated immediately once the UPS settings are saved (Shutdown mode: UPS goes on battery, Shutdown timeout: 0).

The NUT daemon can be configured by the following options:

- Enable 'checkbox': Enable / Disable the NUT daemon.
- Status: NUT daemon current status [Running / Cannot be enabled / Stopped].
- Driver: The UPS device driver name. The available driver name can be found from the [Driver List] according to the UPS manufacturer, model name and connecting port type.
- Port Device Path: The serial / USB port device path. The available serial / USB device can be found from the [Device List]. Please choose the appropriate device path by the UPS connection type.
- Auxiliary parameters (Optional): Additional hardware-specific parameters for the UPS driver which will be applied to the 'ups.conf' file. Please refer to the NUT official website (http://www.networkupstools.org) for more information.
- Description (Optional): Your customized message to describe the UPS connection.
- Shutdown mode: The AhsayUBS shutdown sequence will be trigged by one of the following UPS power events:
 - UPS reaches low battery: UPS runs on battery and the battery level is low. The low battery alert percentage is defined by the UPS driver.
 - UPS goes on battery: UPS runs on battery (i.e. A.C. power supply is disconnected in UPS) and shutdown sequence will be started after the countdown defined in 'Shutdown timeout'.
- Shutdown timeout: The countdown time (default: 300 seconds) to shutdown AhsayUBS when [UPS goes on battery]. This option is available only when the [UPS goes on battery] option is selected in the [Shutdown mode]. The timeout should NOT be larger than battery discharge time.
- Email notification: Send email to addresses defined by the [To email] in the [General Email Settings] when the UPS changes its status [On Line Power / On battery] or the UPS triggered the AhsayUBS shutdown event. Whenever the email notification is enabled or disabled, power event will always be logged to the system log in page [Information] > [System Logs].

Please click [Save and Restart] button to save the above settings.

Driver List

This page lists the UPS drivers according to the manufacturer, model name and the connection type supported by the NUT daemon. To look for a suitable driver:

- 1. Check the UPS manufacturer, model name and the connecting port.
- 2. Search the driver in the page accordingly.

Information S	System	Network	Storage	Backup Serv	ver			
System > Settings > UPS > Driver List								
General Pa	General Password Email Proxy SSHD UPS SNMP sysctl.conf							
Settings Dr	river List	Device List	I					
Manufacturer	Device Type	Model name			Model extra information	Driver		
Ablerex	ups	MS-RT				blazer_ser		
Ablerex	ups	625L		USB	blazer_usb			
Ablerex	ups	Hope Office 400/	600			blazer_ser		
ActivePower	ups	400VA				blazer_ser		
ActivePower	ups	1400VA				blazer_ser		
ActivePower	ups	2000VA				blazer_ser		
Advice	ups	TopGuard 2000				blazer_ser		
AEC	ups	MiniGuard UPS 70	00		Megatec M2501 cable	genericups upstype=21		
AEG Power Solutions	ups	PROTECT HOME				blazer_ser / blazer_usb		
AEG Power Solutions	ups	PROTECT NAS				usbhid-ups		
AEG Power Solutions	ups	PROTECT B				usbhid-ups		
APC	ups	Back-UPS 1200BF	R (Microsol)			solis		

Device List

The page lists the serial and USB device path in the system. The connected device path pattern for serial device and USB device are "/dev/ttyu*" and "/dev/ugen*.*" respectively. Since some other USB devices could be connected to the system, it is suggested to connect the system to UPS by serial port. Once the appropriate device path is found, administrator may copy the full path and fill it in the [Port Device Path] field in the [UPS settings].





SNMP

SNMP (Simple Network Management Protocol) is a protocol defined for managing the computer devices such as servers, workstations and desktop etc. through IP networks.

The software which monitors and configures the devices in the network is called NMS (Network Management Server).

When a SNMP agent daemon is enabled in the AhsayUBS, the AhsayUBS administrator may monitor the system status such as performance of CPU, memory, disk and network with a proper setup NMS from a remote machine.

The AhsayUBS has been bundled with the FreeBSD SNMP agent 'bsnmpd' daemon which supports up to SNMP v2c standard. The functions of this daemon include:

- report OID object value upon SNMP query from the NMS via UDP port '161'.
- send traps to the NMS upon defined events in the AhsayUBS.

It is better for the AhsayUBS administrator to install a 'bsnmpd' supported NMS for communication.

Here are the SNMP modules bundled with the 'bsnmpd' daemon:

- MIB-II: Implements parts of the internet standard MIB-II.
- Netgraph: Enable remote access to FreeBSD Netgraph subsystem.
- Host resources: Implements the HOST-RESOURCES-MIB as standardized in RFC 2790.
- UCD-SNMP-MIB: Retrieve system performance information and device detail.

The SNMP daemon will be started once the settings are saved in the page [System] > [Settings] > [SNMP]. SNMP triggered event can be found in the AhsayUBS system log at page [Information] > [System Logs].

SNMP Settings

AhsayUBS Administrator can configure the SNMP settings and check the SNMP daemon status in the page [System] > [Settings] > [SNMP].

Information Syste	em Network Storage Backup Server								
	System > Settings > SNMP								
General Passwo	ord Email Proxy SSHD UPS SNMP sysctLconf								
Simple Network Manage	ment Protocol Z Enable								
Status	Running								
Location	SNMP server Location information, e.g. physical location of this system: 'Floor of building, Room xyz'.								
Contact	SNMP server admin Contact information, e.g. name or email of the person responsible for this system.								
Community	public Enter read community string here.								
Traps	Enable traps.								
Trap host	snmp-server.ahsayhqt.local Enter trap host name.								
Trap port	162 Enter the port to send the traps to (default 162).								
Trap string	ubs Trap string.								
SNMP Modules	SNMP Modules Download MIB files								
Save and Restart									

Please enter / select the fields below to configure the 'bsnmpd' daemon:

- Enable 'checkbox': Enable / Disable the 'bsnmpd' daemon.
- Status: 'bsnmpd' daemon current status [Running / Cannot be enabled / Stopped].
- Location: The physical location of the AhsayUBS machine.
- Contact: The textual identification of the contact person for the AhsayUBS machine, together with information on how to contact this person.
- Community: The community string acts as a password to communicate with the NMS. Default is 'public'. It is better to set a value different from the default one or any dictionary words in order to prevent brute force attack. Only read-only community is supported by AhsayUBS.
- Traps: Enable traps (notifications) send from the SNMP daemon.
- Trap host [shown when 'Traps' is enabled]: Enter hostname that the trap will be sent to.
- Trap port [shown when 'Traps' is enabled]: The listening port of the trap host for receiving traps. Default is UDP port '162'.
- Trap string [shown when 'Traps' is enabled]: The passcode for the trap. It should match the one defined in the NMS.

Please click [Save and Restart] button to save the above settings and update the status of the 'bsnmpd' daemon in the AhsayUBS.

Import MIB files to the NMS which are supported by this 'bsnmpd' daemon:

After the 'bsnmpd' is enabled, please download the MIB Zip Archive from the WebAdmin page. The zip file contains all the MIB files which are supported by the 'bsnmpd' daemon. Please extract the files and import them to the NMS / MIB browser.

Trap string	ubs Trap string.	
SNMP Modules	Download MIB files	
Save and Restart		

Browse the OID in the MIB browser to get / monitor the information:

After importing the MIB files into the MIB browser, the system information can be browsed in the MIB tree. Administrators may configure the MIB browser to monitor AhsayUBS by selective OID. Please refer to the Appendix for the OID list and the OIDs' description.

For further details of how to use MIB browser, please refer to the Appendix for MIB browser example. If you are using a MIB browser other than that stated in the Appendix, please refer to the corresponding MIB browser user guide.

Sysctl.conf

The "sysctl.conf" is located inside the "/etc" which is a configuration file for making changes in FreeBSD (which is the OS of the AhsayUBS). This includes many advanced options for the TCP/IP stack and virtual memory system that can dramatically improve performance of the OS. For more information of "sysctl.conf", please refer to the FreeBSD documentation.

Here are the fields that you can set per MIB entry:

- Name: The MIB name.
- Value: The value with respect to the MIB name.
- **Comment:** Specify the human-readable description corresponding to this entry.

A screenshot of the [System] > [Settings] > [sysctl.conf] is captured below. It shows that all the MIB entries are enabled except the entry "hw.acpi.pwer_button_state".

Information	System	Network	Storage	e Bac	kup Server				
System > Settings > sysctl.conf									
General	General Password Email Proxy SSHD UPS SNMP sysctl.conf								
MIB				Value		Comment			
hw.acpi.power_but	hw.acpi.power_button_state			NONE		Disable power button	97 O		
hw.ata.to			:	15		ATA disk timeout vis-a-vis power-saving	, 🕴 🕴 🖨		
kern.coredump			(0		Disable core dump	98 O		
kern.ipc.maxsockb	ıf			524288		Maximum Socket Buffer size	1 O		
kern.ipc.somaxcon	n			4096		Maximum opened socket	98 O		
kern.maxvnodes			(65536		Maximum opened file	1 O		
net.inet.tcp.recvspace			:	262144		Maximum Socket Receive Buffer size	1 O		
net.inet.tcp.sendsp	ace		:	262144		Maximum Socket Send Buffer size	98 O		
							00		

Here are the guidelines to make changes in the "sysctl.conf" file in the AhsayUBS.

Add MIB entry:

- 1. Click the ' [•] ' icon.
- 2. Fill in the required fields in the table. Check the [Enable] checkbox to enable the MID. Leave it unchecked if you do not want the MIB to be enabled after adding.

Information	System	Network	Storage	Backup Server					
System > S	System > Settings > sysctl.conf > Add								
General	General Password Email Proxy SSHD UPS SNMP sysctl.conf								
						Enable			
Name	net.ine	t.tcp.sendspace							
	Enter a	valid sysctl MIB nar	me.						
Value	262144	ł		7					
	A valid s	systctl MIB value.		_					
Comment	Maximu	um Socket Send Bu	ffer Size	7					
You may enter a description here for your reference.									
Add									

- 3. Click the [Add] button to add this MIB entry.
- 4. Click the [Apply Changes] button.
- 5. The MIB entry is added successfully.

Edit MIB entry:

- 1. Look for the MIB entry to be edited.
- 2. Click the '[¶] icon.
- 3. Edit the fields in the page.

Information	System	Network	Storage	Backup Server					
System > 9	System > Settings > sysctl.conf > Save								
General	Password	Email	Proxy 55	GHD UPS	SNMP	sysctl.conf			
							C Enable		
Name	net.inet.tcp.sendspace Enter a valid sysctl MIB name.								
Value	262144 A valid s	ł systctl MIB value.							
Comment		um Socket Send B y enter a descripti	uffer size on here for your re	ference.					
Save									

- 4. Click the [Save] button to add this MIB entry.
- 5. Click the [Apply Changes] button.
- 6. The MIB entry is updated successfully.

Enable/Disable MIB entry:

- 1. Look for the MIB entry to be edited.
- 2. Click the '¹' icon.
- 3. Check the checkbox [Enabled] to enable the MIB. Uncheck it to disable the MIB.

Information	System	Network	Storage	Backup Server					
System > S	System > Settings > sysctl.conf > Save								
General	General Password Email Proxy SSHD UPS SNMP sysctl.conf								
							Z Enable		
Name		t.tcp.sendspace valid sysctl MIB n	ame.						
Value	Value 262144 A valid systett MIB value.								
Comment		um Socket Send B y enter a descripti	uffer size ion here for your re	ference.					
Save									

- 4. Click the [Save] button to add this MIB entry.
- 5. Click the [Apply Changes] button.
- 6. The MIB entry is edited successfully.

Delete MIB entry:

- 1. Look for the MIB entry to be deleted.
- 2. Click the ${}^{(\bigcirc)}$ icon at the row that the MIB entry to be deleted.
- 3. In the alert box, click [OK] to confirm the delete of the entry. Click [Cancel] to abort.
- 4. Click the [Apply Changes] button.
- 5. The MIB entry is deleted successfully.

Delete all MIB entries:

- 1. Click the '⊖' icon next to the '♀' icon.
- 2. In the alert box, click [OK] to confirm deleting all the MIB entries in the table. Click [Cancel] to abort.
- 3. Click the [Apply Changes] button.
- 4. All the MIB entries in the table are deleted successfully.

9.2.2 Backup/Restore AhsayUBS Settings

The AhsayUBS runtime configuration is stored as an XML file. The XML file contains all settings information available in AhsayUBS WebAdmin.

	Ahsay	™ Unive	rsal Bac	:kup System
Information	System	Network	Storage	Backup Server
Suctom > S	Settings			
System > S	Backup/Resto	re		
General	Factory defau	lts	2	ISHD UPS SNN
	Reboot			
Hostname	Shutdown			

In this page you can backup or restore the AhsayUBS runtime configuration in XML file format.

Backup Configuration

You can download the runtime configuration file of AhsayUBS WebAdmin by clicking the button [Download configuration].

Backup configuration	
	Click this button to download the system configuration in XML format.

Restore Configuration

The configuration can be restored in one of the following situations:

- Adapted a new AhsayUBS with the same configuration of hardware, IP settings.
- Mistakenly configured anything wrongly in the AhsayUBS WebAdmin.

Restore configuration	
	Open a Ahsay Universal Backup System configuration XML file and click the button below to restore the configuration. Note: Ahsay Universal Backup System will reboot after restoring the configuration.
	Choose File No file chosen
	Restore configuration

The settings can be restored with your last downloaded configuration file:

- 1. Click the [Choose File] button to select the configuration file to restore.
- 2. Click [Restore configuration] button to restore the previous configuration to your AhsayUBS.

9.2.3 Factory Defaults

You can restore AhsayUBS to factory defaults by clicking [Yes] or clicking [No] to cancel.

]	Ahsay	™ Unive	rsal Bo	ackup System	
Information		System	Network	Storage	Backup Server	
System Backup cor		Settings Backup/Resto Factory defau Reboot Shutdown		the syst	tem configuration in XML format.	
Information	Syste	em Network	Storage	Backup Server		
System > Factory defaults If you click 'Yes', Ahsay Universal Backup System will be reset to factory defaults and will reboot immediately. The entire system configuration will be overwritten. The LAN IP address will be reset to 192.168.1.250 and the password will be set to 'ahsayubs'. Are you sure you want to proceed? Yes No						
NOTE The data on the block devices will NOT be erased after AhsayUBS is reset to factory defaults. 						

- You can restore the previous settings in AhsayUBS WebAdmin in the page [System] > [Backup/Restore]. Please refer to the section [System] > [Backup/Restore] for details.
- After resetting AhsayUBS to factory defaults, all iSCSI sessions will be removed in the [Storage] > [iSCSI] page. The status of Expandable Storage will change to "Missing". The Expandable Storage can be re-configured for use by AhsayUBS:
 - a. Adding it back the iSCSI session inside the [Storage] > [iSCSI] page
 - b. Import the Expandable Storage. Note that the data in the Expandable Storage will not be erased after "factory defaults". For details, please refer to the [Storage] section.

9.2.4 Reboot

	Ahsay	™ Unive	rsal I	Bacl	kup System	
Information	System	Network	Stora	ge	Backup Server	
System > F	Settings					
System > 1	Backup/Restore					
If you click 'Yes', A	Factory defau	lts	e re	e reset to factory defaults and will reb		
system configurati 'ahsayubs'.				dress will be reset to 192.168.1.250 a		
ansayubs .	Shutdown					

Now

Click [Yes] button to reboot your AhsayUBS or [No] to cancel.

Information	System	Network					
System > Reboot > Now							
Now Scl	heduled						
Are you sure you want to reboot the system? Yes No							

WARNING

Please ensure the system's condition is safe for reboot. Otherwise, the backup job could be interrupted if the backup server is in use.

Scheduled

You may check the [Enable] checkbox on the top-right hand corner to enable scheduled shutdown and schedule the shutdown time by selecting the options in the table [Scheduled reboot] and click the [Save] button to save your settings.

Information	S	ystem	Networ	k	Storage	E	Backup S	erver			
System Now	Schedu		Schedu	led							
Scheduled r	eboot										🗹 Enable
Reboot Time	Minute	5			Hours		days			Months	Week Days
	Please S 0 1 2 3 4 5 6 7 8 9 10 11 1		38 39 40 41 42 43 44 45 46	48 ▲ 49 50 51 52 53 54 55 55 56 57 58 59 ♥	Please S 0 1 2 3 4 5 6 7 8 9 10 11 1 1 1 2 3 4 5 5 6 7 8 9 10 11 1 1 1 1 1 1 1 1 1 1 1 1	12 13 13 14 15 16 17 18 19 20 21 22 23 ▼	Please 5 1 2 3 4 5 6 7 8 9 10 11 12 ~	Select: 13 14 15 16 17 18 19 20 21 22 23 24	25 26 27 28 29 30 31 •	Please Select: January February March April May June July August September October November December	Please Select: Sunday Monday Tuesday Wednesday Thursday Friday Saturday
	Note: C	trl-click (or c	command-cli	k on the	Mac) to sel	lect and (de-select m	ninutes, h	ours, day	s, months and wee	kdays.
Save											

WARNING

Please do not select ALL the minutes for reboot, otherwise the AhsayUBS may need to restore to factory default for stopping the endless rebooting system!

9.2.5 Shutdown

	Ahsay	™ Unive	rsal Bac	ckup System
Information	System	Network	Storage	Backup Server
Suctom > D	Settings			
System > R	Backup/Resto	re		
Now Sd	Factory defau	lts		
Are you sure you v	Reboot			
Yes No	Shutdown			

Now

Click [Yes] button to shutdown the AhsayUBS or [No] to cancel.

Information	System	Network						
System > Shutdown > Now								
Now Scheduled								
Are you sure you v Yes No	vant to shutdov	vn the system?						

WARNING

Please ensure the system's condition is safe for shutdown. Otherwise, the backup job could be interrupted if the backup server is in use.

Scheduled

You may check the [Enable] checkbox on the top-right hand corner to enable schedule shutdown and schedule the shutdown time by selecting the options in the table [Schedule shutdown] and click the [Save] button to save your settings.



WARNING

Please do not select ALL the minutes for shutdown, otherwise the AhsayUBS may need to restore to factory default for stopping the endless rebooting system!

9.3 Network

This section shows how to configure network settings, tools for network connectivity in the AhsayUBS through the AhsayUBS WebAdmin.

When the mouse cursor is over the word [Network] in the menu bar, the menu will be shown as below:

	Ahsay "	[™] Univer	sal Bac	:kup System
Information	System	Network	Storage	Backup Server
Network	Network > Interface			
Interface LAN	Network port em0 (00:0c:29:35:9	Routes Hosts Ping/Traceroute	2	

The [Network] menu has been further divided into the following sections:

- Interfaces (Assign the physical device with a configuration setting)
- <u>LAN/OPT1/OPT2</u> (Configuration for interface LAN/OPT1/OPT2)
- <u>Routes</u> (Current routing information)
- Hosts (User defined Host IP Address mapping)
- <u>Ping/Traceroute</u> (Network tools)

9.3.1 Interfaces

	Ahsay '	™ Univer	sal Bac	kup System
Information	System	Network	Storage	Backup Server
Network :	Network > Interface			
Interface LAN	Network port em0 (00:0c:29:35:5	Routes Hosts Ping/Traceroute	2	

This page shows a summary of physical network devices in the AhsayUBS. The first column shows the interface name (e.g. LAN). The second column shows the network port's name and its physical address.

Information		System	Network					
Network > Interfaces								
Interface	Interface Network port							
LAN	e	m0 (00:0c:29:35	5:91:f5) 🗸					
Save								

By default, there should be at least one network device which will be assigned as LAN in the system.

If there are other network interfaces available in the system, a ' • button will be shown next to the table for addition of other network interfaces.

The additional network devices will be assigned as "OPT1", "OPT2" incrementally.

You can assign different network device to the interface name from the dropdown list at the second column. After selecting the interface, press the [Save] button to save your settings.



You must select a network interface inside the drop-down list after clicking the ' ' icon and click the [Save] button before rebooting, the AhsayUBS may be unreachable from the network since there are no network interface selection for the LAN and OPT.

Once you have added an OPT1 network interface, a new configuration page [Network] > [Optional1 (OPT1)] will be added to the system after reboot.

The [Network] > [LAN] denotes the network device configuration for the network device which has been assigned at the [Network] > [Interface] page. Additional network interfaces OPT1 can be configured at page [Network] > [OPT1] which is similar to the [LAN] interface.

In addition, a network interface can be deleted by clicking the '[©]' icon corresponding to the network interface that you want to be delete. After rebooting the AhsayUBS, the network interface will be deleted successfully.

WARNING

When deleting a network interface, the network settings inside the network interface (e.g. IP address) will also be deleted permanently. You may need to set it again when the network interface is added again.

9.3.2 LAN

	Ahsay	™ Univer	sal Bac	ckup System	١
Information	System	Network	Storage	Backup Server	
Networks		Interfaces			
Network >	LAN	LAN			
TD: A Conformation		Routes			
IPv4 Configuration		Hosts			
Туре	Static 🗸	Ping/Traceroute	9		

This page helps to set the configuration of the network interface labeled LAN in the AhsayUBS.

Information	System	Network	Storage	Backup Server		
Network >	LAN					
IPv4 Configurat	tion					
Туре	Static	~				
IP address	10.1.0).228	/ 16 🗸			
Gateway	10.1.0).254]			
Advanced Confi	guration					
МТО	size of				erface specific. The MTU is used to limit the support setting the MTU, and some interfaces	
Device polling	Device interru	Enable device polling Device polling is a technique that lets the system periodically poll network devices for new data instead of relying on interrupts. This can reduce CPU load and therefore increase throughput, at the expense of a slightly higher forwarding delay (the devices are polled 1000 times per second). Not all NICs support polling.				
Туре	autos	elect 🗸				
Extra options	Extra o	ptions to ifconfig (u	usually empty).			
Save						

IPv4 Configuration

The fields for this section are listed below:

• **Type:** Select DHCP to obtain the IP address automatically. Select [Static] for entering the IP address manually.

- IP Address: This will be enabled only in STATIC mode. You need to enter the IP address for the AhsayUBS. Please make sure that the IP address entered can be reached from your computer. The drop down list after the "/" is the subnet mask. The value in here represents the number of bits of the subnet mask address. e.g. if the subnet mask is 255.255.255.0 (i.e. in binary form: 1111111.111111111111111111000000000), the subnet number is 24 bit.
- **Gateway:** This will be enabled only in STATIC mode. The default gateway must be entered correctly.

NOTE

For additional network interfaces, e.g. OPT1, there will be an additional [Activate] checkbox at the top-right hand corner. You may check this checkbox to enable the corresponding network interface.

Advanced Configuration

The fields in this section are listed below:

- **MTU:** Set the maximum transmission unit of the interface to *n*, the default setting is leave to *n*, default is interface specific (i.e. blank). The MTU is used to limit the size of packets that are transmitted on an interface. Not all interfaces support setting the MTU, and some interfaces have range restrictions.
- Device polling: Device polling is a technique that lets the system to periodically poll network devices for new data instead of relying on interrupts. This can reduce CPU load and therefore increase throughput, at the expense of a slightly higher forwarding delay (the devices are polled 1000 times per second). Not all NICs support polling.
- **Type:** Select the speed of network from the drop down list.
- Extra options: You can enter extra options for the FreeBSD command "*ifconfig*" here. For more information on this command, please refer to the FreeBSD documentation.

After the configuration is updated, the page is refreshed. If a reboot message is shown, please click the link [reboot] in the message to reboot the AhsayUBS for the changes to take effect.

WARNING

Before rebooting the AhsayUBS, please make sure the network settings (i.e. the IP address and the default gateway) in the above page(s) are correct. Otherwise, the AhsayUBS may be UNREACHABLE by the network after rebooting.

9.3.3 Routes

	Ahsay'	[™] Univer	sal Bac	kup System
Information	System	Network	Storage	Backup Server
Network >	Network > Routes			
Summary	Static Routes	Routes Hosts		
IPv4		Ping/Traceroute		

Summary

This page shows the routing table of your AhsayUBS which is used to trace the network routing to a target network destination.

Information	System	Network	Storage	Back	up Server				
Network > Routes									
Summary	Static Routes	3							
IPv4									
Destination	Gate	way	Flags	Use	Mtu	Netif	Expire		
default	10.1.0.	254	UGS	25656	1500	em0			
10.1.0.0/16	link#1		U	0	1500	em0			
10.1.0.228	link#1		UHS	0	16384	lo0			
127.0.0.1	link#2		UH	0	16384	lo0			

Static Routes

This page allows you to customize the static route. If there are several network interfaces in the AhsayUBS, additional routes can be added to allow directing network traffic to other networks.

Information	System	Network	Storage	Backup Server					
Network > Static Routes									
Summary	Static Routes								
Interface	Network		Gateway	Description					
						0			

If you want to add a static route, click the ' ^O ' icon to continue.

atic Rou	ıtes > Edi	t		
	_	is route applies to		
	-	∕ 30 ✔ nis static route		
		ach the destinatior	network.	
			eference.	
	LAN ✓ Choose 10.1.0. Destinat 10.1.0. Gateway Static R	LAN ✓ Choose which interface the 10.1.0.0 Destination network for the 10.1.0.254 Gateway to be used to real Static Route of the subnet	Choose which interface this route applies to. 10.1.0.0 / 30 V Destination network for this static route 10.1.0.254 Gateway to be used to reach the destination Static Route of the subnet 10.1.0.0/30	LAN ✓ Choose which interface this route applies to. 10.1.0.0 / 30 ✓ Destination network for this static route 10.1.0.254 Gateway to be used to reach the destination network.

The static routes table will then appear on the browser. Here are the rows that you can configure:

- Interface: Select the interface that will be used for the static route.
- Destination network: The network which the traffic should be directed to via the "Gateway".
- **Gateway:** The IP address of the gateway which has been connected to the destination network.
- **Description (Optional):** Enter some comment related to this static route entry.

Click the [Add] button after completing the table, the message "The configuration has been changed." will appear when the entry is added successfully.

Information	System	Network	Storage	Backup Server		
Network >	Static Ro	utes				
Summary	Static Routes					
	figuration has be st apply the char	een changed. Iges in order for	them to take effe	ect.		
Apply changes]	-				
Interface	Network	0	Gateway	Description		
LAN	10.1.0.0/30	1	0.1.0.254	Static Route of the 10.1.0.0/30	e subnet	9 % O
						0

Click [Apply changes] for the changes to take effect.

Information	System	Network	Storage	Backup Server		
Network >	Static Ro	utes				
Summary	Static Routes					
Interface	Network		Gateway	Description		
LAN	10.1.0.0/30		10.1.0.254	Static Route of the 10.1.0.0/30	subnet	98 O
						0

Now you can click the '[¶]' icon to configure the entry or click the '[©] ' icon to remove the entry.

- 'Edit the entry and click the [Save] -> [Apply changes] button to save the changes
- 'Se ': After clicking this icon, a pop-up dialog will appear to confirm the changes. Click the [OK] button to confirm deletion or click the [Cancel] button to abort. After the dialog is closed, the message "The configuration has been changed." will be displayed. You need to click the [Apply Changes] button to delete the entry.

9.3.4 Hosts

	Ahsay "	" Univer	sal Bac	kup System
Information	System	Network	Storage	Backup Server
Network >	Hosts > S	Interfaces LAN		
Summary	Edit Hostnam	Routes Hosts		Control
Hostname Data		Ping/Traceroute		-

This page is for the customization of hosts settings.

Summary

Information	System	Network	Storage	Backup Server
Network >	Hosts > 9	Summary		
Summary	Edit Hostnan	ne Database	Edit Host Aco	ess Control
Hostname Data	abase			
Hostname	1	IP address		Description
newhost	1	192.168.6.230		newhost
Host Access Co #ftpd : xxx #sshd : .exar #in.tftpd : x #bsnmpd : xxx ALL : ALL : a	.xxx.xxx.xxx mple.com : d xxx.xxx.xxx. x.xxx.xxx.xx	eny xxx : deny		ĥ

It contains a summary of the entire host settings inside the AhsayUBS.

The [Hostname Database] table contains the mapping of the hostname and IP address inside the AhsayUBS.

Here are the fields required for each of the hostname database entry:

- Hostname: The hostname you want to map with IP address in the [IP address] field.
- **IP Address:** The IP address you want to map with the hostname in the [Hostname] field.



Description (Optional): Enter some description of the mapping for your reference.

You may edit the hostname database settings by the page [Network] > [Hosts] > [Edit Hostname Database].

The [Host Access Control] table contains the settings of the access control of the specific daemon.

The basic configuration usually takes the form of "daemon:address action", where daemon name of the service started. The address can be a valid hostname, and IP address enclosed in brackets. The action field can be either allow or deny to grant or deny access appropriately. Keep in mind that configuration works off a first rule match semantic, meaning that the configuration file is scanned in ascending order for a matching rule. When a matching result is found, and the rule will be applied. Then, the search process will halt. To get detailed information about TCP wrappers, please refer to the FreeBSD documentation.

The default settings of the [Host Access Control] are:

```
#ftpd : xxx.xxx.xxx : deny
#sshd : .example.com : deny
#in.tftpd : xxx.xxx.xxx : deny
#bsnmpd : xxx.xxx.xxx : deny
ALL : ALL : allow
```

NOTE

If you put the "#" character at the start of a line, then the line will become a comment line.

You may edit the host access control settings by the page [Network] > [Hosts] > [Edit Host Access Control].

Edit Hostname Database

nformation	System	Network	Storage	Backup Server	
Network >	Hosts > I	Edit Hostna	ame Datab	ase	
Summary	Edit Hostnam	e Database	Edit Host Aco	ess Control	
Hostname Data	abase				
					1
Hostname		IP address		Description	
Hostname ahsayhost		IP address 192.168.6.230		Description ahsayhost	98

Add a hostname database entry

To add a hostname to the database, please follow the steps below:

- 1. (Entry Exist) Click the ^(C) icon.
- 2. Fill in the required fields.

Network > H	losts > Edit Hostname Database > Add
Summary	Edit Hostname Database Edit Host Access Control
Hostname Databa	ase Entry
Hostname	The hostname is case insensitive and it may only consist of the characters [a-z, A-Z, 0-9, - and .]. (i.e. A hostname "AhsayUBS" is identical to the one named "ahsayubs".)
IP address	The IP address that this hostname represents.
Description	You may enter a description here for your reference.
Add	

- 3. Click the [Add] button.
- 4. A new entry is added successfully into the hostname database.

Information	System	Network	Storage	Backup Server	
Network >	Hosts > I	Edit Hostna	ame Datak	oase	
Summary	Edit Hostnam	ne Database	Edit Host Acc	ess Control	
() The char	nges have been	applied successfu	ully.		
Hostname Data	ibase				
Hostname		IP address		Description	
ahsayhost		192.168.6.230		ahsayhost	18 O
					0

Edit a hostname database entry

To edit a hostname stored in the database, please follow the steps below:

- 1. Look for the entry to be edited.
- 2. Click the '[¶]' icon.
- 3. Edit the fields.

Information	System	Network	Storage	Backup Server	
Network >	Hosts > I	Edit Hostna	ame Datal	ase > Edit	
Summary	Edit Hostnam	e Database	Edit Host Acc	ess Control	
Hostname Data	ibase Entry				
Hostname		ostname is case ins		/ only consist of the charac the one named "ahsayubs	ters [a-z, A-Z, 0-9, - and .]. ".)
IP address		.68.6.230 9 address that this h] nostname represer	its.	
Description	ahsay You m	/host ay enter a descripti] ion here for your r	eference.	
Save					

- 4. Click the [Save] button.
- 5. The entry is edited successfully.

Information	System	Network	Storage	Backup Server	
Network >	> Hosts >	Edit Hostna	ame Datab	ase	
Summary	Edit Hostna	me Database	Edit Host Acc	ess Control	
The cha	anges have beer	applied successf	ully.		
Hostname Dat	tabase				
Hostname	I	o address	[Description	1
newhost	19	2.168.6.230	n	rewhost	1 🕅 \varTheta
					0

Delete a hostname database entry

To delete a hostname from the database, please follow the steps below:

- 1. Look for the entry to be deleted.
- 2. Click the '^(a) icon.
- 3. Click [OK] to confirm deletion.



4. The entry is deleted successfully.

Information	System	Network	Storage	Backup Server	
Network >	Hosts > I	Edit Hostn	ame Datal	oase	
Summary	Edit Hostnan	ie Database	Edit Host Acc	ess Control	
The cha	anges have been	applied successf	fully.		
Hostname Dat	abase				
Hostname	IP	address	1	Description	
newhost	192	2.168.6.230	, I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.	newhost	98 ¢
					0

Edit Host Access Control

Edit the entries in the Host Access Control text area and click the [Save and Restart] button to update and restart the server. The new settings will take effect after restarting the services.

Host Access Control #ftpd : xxx.xxx.xx #sshd : .example.cc #in.tftpd : xxx.xxx #bsnmpd : xxx.xxx	ostname Database x.xxx : deny m : deny		ontrol	
Host Access Control #ftpd : xxx.xxx.xx #sshd : .example.cc #in.tftpd : xxx.xxx #bsnmpd : xxx.xxx	x.xxx : deny m : deny	Edit Host A	ccess Control	
<pre>#ftpd : xxx.xxx.xx #sshd : .example.co #in.tftpd : xxx.xxx #bsnmpd : xxx.xxx.x</pre>	m : deny			
<pre>#sshd : .example.co #in.tftpd : xxx.xxx #bsnmpd : xxx.xxx.x</pre>	m : deny			
ALL : ALL : allow				
Save and Restart				

9.3.5 Ping/Traceroute

	Ahsay '	[™] Univer	sal Bac	kup System
Information	System	Network	Storage	Backup Server
Network >	Ping/Tra	Interfaces LAN		
Ping Tra	ceroute	Routes Hosts		
Ping		Ping/Traceroute		

This page contains the network tools: ping and traceroute. The first page contains the ping tool and the second page contains the traceroute tool.

Ping

It is the "ping" command in standard UNIX machines. It tests your AhsayUBS network interface whether it can reach the destination hosts specified. After you have entered the required information in the text box, click the [Ping] button to ping the destination host. The output below the [Ping] button will show the results whether the destination can be reach by the AhsayUBS or not.

Below is an example that the AhsayUBS can reach the destination successfully.

Information	System	Network	Storage	Backup Server	
Network > Ping Tra	Ping/Tra	ceroute >	Ping		
Ping					
Host	10.1.0.2 Destinatio	20 on host name or IP	number.		
Interface	LAN 🗸 Use the fe	bllowing IP address	as the source add	ress in outgoing packets.	
Count	3 ♥ Stop after	r sending (and rece	iving) N packets.		
Ping					
Command outpu PING 10.1.0.2 64 bytes from 64 bytes from 64 bytes from	220 (10.1.0 n 10.1.0.22 n 10.1.0.22	0: icmp_seq= 0: icmp_seq=	=0 ttl=64 ti =1 ttl=64 ti	me=0.093 ms	
10.1.0.22 3 packets tra round-trip m:	ansmitted,	3 packets re		% packet loss 098/0.003 ms	

Below is an example that the AhsayUBS failed to reach the destination "192.168.6.186".

Information	System	Network	Storage	Backup Server	
Network > Ping Tra	Ping/Tra	ceroute >	Ping		
Ping					
Host	192.168. Destinatio	6.186 on host name or IP	number.		
Interface	LAN 🗸 Use the fe	ollowing IP address	as the source add	ress in outgoing packets.	
Count	3 ✔ Stop after	sending (and rece	iving) N packets.		
Ping					
Command outpu PING 192.168.		.168.6.186)	from 10.1.0	.228: 56 data bytes	
192.168.6 3 packets tra				.0% packet loss	

Traceroute

It is another tool for testing your AhsayUBS network connection to a destination host you entered in the table below. It also shows the path of the packets travel from the AhsayUBS to the destination host.

Below is an example that the AhsayUBS can reach the destination successfully.

Information	System	Network	Storage	Backup Server	
Network >	Ping/Tra	ceroute >	Tracerout	2	
Ping Tr a	aceroute				
Traceroute					
Host	10.1.0.2 Destinati	20 on host name or IP	number.		
Max. TTL	18 🗸 Max. tim	e-to-live (max. num	ber of hops) used	n outgoing probe packets	
Resolve		olve IP addresses to	hostnames		
Traceroute					
	0 10.1.0.22	0 (10.1.0.22 s 0.114 ms		max, 40 byte pa	ckets

Below is an example that the AhsayUBS failed to reach the destination.

Information	System	Network	Storage	Backup Server	
Network >	Ping/Tra	ceroute >	Tracerout	te	
Ping Tr a	aceroute				
Traceroute					
Host	192.168. Destinatio	6.186 n host name or IF	number.		
Max. TTL	18 ♥ Max. time	-to-live (max. nun	nber of hops) used	in outgoing probe packets	
Resolve		lve IP addresses t	o hostnames		
Traceroute					
Command output traceroute to 1 * * * 3 * * * 4 * * * 5 * * * 6 * * * 7 * * * 8 * * * 10 * * * 11 * * * 11 * * * 12 * * * 13 * * * 14 * * * 14 * * * 15 * * * 16 * * 18 * * 19 * * 10 * * 10 * * 10 * * 11 * * 11 * * 12 * * 13 * * 14 * * 15 * * 16 * * 17 * 18 * * 10 * * 10 * * 11 * * 11 * * 12 * * 13 * * 14 * * 15 * * 16 * * 17 * 18 * * 18 * * 18 * * 18 * * 19 * 10 * 10 * * 10 *		.186 (192.1	68.6.186),	18 hops max, 40 b	yte packets

9.4 Storage

When the mouse cursor is over the word [Storage] in the menu bar, the menu will be shown as below:

	Ahsay'	[™] Univer	sal Bac	kup System
Information	System	Network	Storage	Backup Server
Storage > 9	Summary		Summary iSCSI	

The [Storage] menu has been further divided into the following sections:

- <u>Summary</u> (Summary of volumes created)
- iSCSI (Summary of iSCSI sessions created)

Overview

The [Storage] > [Summary] page shows a summary of the volumes created in the AhsayUBS.

There are two types of storage volumes defined on the AhsayUBS:

- System Storage This is the core storage volume, which is created during AhsayUBS installation. The System Storage contains AhsayUBS system files. Therefore, it cannot be removed or unmounted when AhsayUBS is running.
- Additional Storage can be added when the LSFW storage has run out of space. It is used for storing more backup user account data. As Additional Storage are not core storage volumes. They can be *removed* or *unmounted* when AhsayUBS is running.

Details of the storage model in AhsayUBS can be found in the section [AhsayUBS Storage Concepts].

Under this page, volume information will be shown, and the actions that can be done include:

- 1. Add or remove an Additional Storage
- 2. Mount or unmount an Additional Storage
- 3. Filesystem check on a volume
- 4. Rebuild degraded LSFW or Additional Storage inside the AhsayUBS

The page [Storage] > [iSCSI] shows a summary of the iSCSI session created in the AhsayUBS. The iSCSI session can be created, information be edited, disconnected and removed in the AhsayUBS in this page.

After an iSCSI session is created, it can be used as a provider for the Expandable Storage (a type of Additional Storage).

9.4.1 Summary

Storage Information in the WebAdmin

A summary of the storages installed in the AhsayUBS will be shown in this page.

	Ahsay	™ Unive	rsal Bac	kup System
Information	System	Network	Storage	Backup Server
Storage > 1			Summary	
Storage > S	summary		iSCSI	

The [Storage] > [Summary] shows the summary of the storages inside the AhsayUBS with volume view. Here is the information that will be shown in the volume:

- Volume Pie chart For the volume size distribution:
 - Yellow means the approximate used space in a volume.
 - Blue means the approximate free space available in a volume.



- The **missing volume pie chart** means the volume is not available for the AhsayUBS. It may be due to factors such as:
 - The volume is exported.
 - Some of the providers (block devices or iSCSI session) are missing.



Volume status icons indicate the various statuses of the volume. It is put beyond the volume pie chart.

Description of the volume status icons:

	Healthy	The volume is healthy.
A	Degraded	The volume is degraded. One or more providers (block devices) of the volume are missing though the volume can still be used. The volume can become healthy again with a rebuild after replacing the missing providers. For details, please refer to the [Troubleshooting] section.
3	Rebuilding	This state will occur after the provider is replaced in the volume. After rebuilding completed, the status will become healthy again. The rebuilding state will not affect the read or write operation of the volume.
8	Critical	The volume is not available. It is better to suspend all I/O activity before the volume undergoes further damage.
0	Missing	 The volume is missing. It cannot be accessed by the AhsayUBS. It may be caused by: The volume is exported. The local storage is disconnected. For details, please refer to the [Troubleshooting] section.
<u> </u>	Disconnected	The corresponding remote disk's connection is lost. Please bring the remote storage host up (e.g. iSCSI initiator) to reconnect the remote disk. In order to prevent any data access to the remote storage, the AhsayCBS and OBSR Share service will not be allowed to start. Do not try to access anything before reconnecting the remote volume.

The following **volume information** will be shown below the volume pie chart:

- Volume ID: 'system' denotes system storage while 'es???' pattern denotes the volume identity.
- **RAID Type:** RAID type of the volume.
- Filesystem Type: Filesystem type of the volume (UFS or ZFS).
- **Total:** Total size available for the volume.
- Free: Free space available for the volume to use.

	Ahsay	⁄™ Unive	rsal Bac	kup System			Bryk	4	
								-0-	ngnut
Information	System	Network	Storage	Backup Server					
Storage >									
	Bystem NOA: - RAIDZI 2P5 Dtab: 5.61GB Free: 4.35G	S							
doo scsi	d01 scsi	d02 scsi							
								2	
	al Storage								
Modular S	torage								

The **hard disk icons** ' Let a ' below the text shows number of the providers for the volume and its status:

	Healthy	The provider is healthy.
2	Degraded	Part of the provider is not available. It is advised to backup the data in the volume and build a new volume again.
0	Rebuilding	The state will occur after the provider is replaced in the volume. After rebuilding completed, the status will become healthy again.
<u></u>	Disconnected	The connection of the remote disk is lost. Please bring the remote storage host up (e.g. iSCSI initiator) to reconnect the remote disk.

When the **volume pie chart icon is clicked**, the page will be redirected to the [Storage] > [Summary] > [RAID Information].

- **Description:** Description of the volume.
- Volume ID: The ID to identify the volume.
- Storage Type: RAID type of the volume.
- Filesystem Type: Filesystem type of the volume (UFS or ZFS).
- Status: State of the volume (ONLINE / DEGRADED / REBUILDING / CRITIAL / DISCONNECTED).
- Total Size: Total size available for the volume.
- Available Size: Free space available for the volume to use.
- Used Size: Used space of the volume.

• **Used Percentage:** Volume space used percentage.

Details	
Description	Modular Storage
Volume ID	esms00
 Storage Type	ZPOOL - STRIPE
Filesystem Type	zfs
Status	ONLINE
Total Size	3.32 GB
Available Size	2.32 GB
Used Size	1.00 GB
Used Percentage	30.12%
Mount Point	/ubs/mnt/esms00
Action	
Unmount Volume	Unmount
Filesystem check	Scrub

• Mount Point: Dirpath where the volume is mounted.

When the **hard disk icon is selected**, details of each provider will be shown. This page is called [Storage] > [Summary] > [Block Device Information].

Some Block Device Information will be shown in this page:

- Volume ID: 'system' denotes it is a System Storage provider. Others represent the volume it belongs to.
- **Device ID:** The logical ID that identifies the provider.
- Device Name: Physical name of the block device named by the kernel.
- **Device Path:** Block device physical path in the AhsayUBS.
- **Device Type:** Connection type of the device. e.g. ata, ide, scsi, hwraid, iscsi etc.
- **Device Size:** Physical size of the device.

Physical device information, such as [Model Family], [Model Name], [Serial Number] and [Device Firmware Version] are shown which is useful for the AhsayUBS admin to identify the physical block device.

	Volume ID	esms00	
	Device ID	m00c00	
°°	Device Name	da0	
105	Device Path	/dev/da0	
	Device Type	scsi	
	Device Size	8.00 GB	
m00c00	Model Family	1.0	
scsi	Model Name	Virtual disk 1.0	

System Storage

In the page [Storage] > [Summary], only the volume LSFW will be shown.

	- chm	
(Total	: 10.47 GB, Available: 10.20 GB, Used: 273.57 MB (2.54%)
	system GEOM - RAIDS	
	UFS	
	Total: 10.47 GE Free: 10.20 GE	
	-	
(-> S	1 - 5	K and S
A MILLER		(Personal)
d00	d01 scsi	d02 scsi

After clicking the volume pie chart, details of all System Storage will be shown in the page [Storage] > [Summary] > [RAID Information].

torage > Summary > RAID Info	ormation	
	Details	
	Description	GPT Boot
	Volume ID	esgpbt
	Storage Type	GEOM - MIRROR
	Filesystem Type	ufs
	Status	HEALTHY
	Details	
	Description	Operating System
	Volume ID	esosfw
	Storage Type	GEOM - MIRROR
	Filesystem Type	ufs
	Satus	HEALTHY
	Total Size	171.93 MB
	Available Size	108.46 MB
	Used Size	62.47 MB
	Used Percentage	36.55%
	Mount Point	/ubs/mnt/esosfw
	Details	
	Description	Firmware Module
	Volume ID	esfinitiv
	Storage Type	GEOM - MIRROR
	Filesystem Type	ufs
	Ratus	HEALTHY
	Total Size	680.89 MB
	Available Size	461.77 MB
	Used Size	219.12 MB
	Used Percentage	32.23%
	Mount Point	/ubs/mnt/esfmfvv
Additional Storage

All configured Additional Storage devices can be found in the page [Storage] > [Summary]. After clicking the volume pie chart icon, details of the Additional Storage will be displayed.

Additional Storage can be added when master storage LSFW runs out of space. Once created, the Additional Storage can be used for storing more user accounts data and their backup snapshots of AhsayCBS in the AhsayUBS.

Supported types of Additional Storage in AhsayUBS:

- 1. Modular Storage:
 - Supports one or multiple physical block devices for building RAID0, RAID1 and RAIDZ in ZFS from local storage.
 - Supports one remote disk (i.e. iSCSI target) to build a RAID 0 ZFS remote storage.
- Expandable Storage: Created with an iSCSI initiator session and hardware RAID volumes.

Only <u>one iSCSI initiator session</u> (one provider) can support creating an expandable storage only.

Since iSCSI target / hardware RAID volume can be expanded, the entire disk will be consumed by a single ZPOOL.

NOTE

Expanding an AhsayUBS volume is not supported as it will cause some of the volume information to be removed which will result in some mount points such as "/tmp" to not mount properly. The AhsayCBS service will no longer startup.

Create Additional Storage

Additional Storage can be added by clicking the added is icon in the [Storage] > [Summary] page.

If there are no available providers for creating the Additional Storage, the and icon will be hidden.

AhsayUBS admin may either:

- Shutdown AhsayUBS and insert the block devices. Power on AhsayUBS on again. or
- Connecting to the iSCSI target (Please refer to the section [Storage] > [iSCSI] for details.) for the '
 icon to appear again.

The provider which has been used by other AhsayUBS before will not be listed as an empty block device. It should be *zero out* before putting into the AhsayUBS.

WARNING

Please note all data in the block device or the iSCSI initiator will be DESTROYED and CANNOT BE RECOVERED again after the Additional Storage is created.

Create Modular Storage (Physical Block Devices)

1. [Local Storage Provider] Make sure the block devices / hardware RAID volume is connected to the AhsayUBS server. If not, shutdown AhsayUBS. Insert a physical block device(s) / create a hardware RAID before booting AhsayUBS again.

[Remote Storage Provider] Make sure an iSCSI initiator session is connected and enabled. To verify the existence of an iSCSI initiator, please refer to the section [Storage] > [iSCSI] for details.

- 2. Go to the page [Storage] > [Summary].
- 3. Click the ' and ' icon.
- 4. Select the provider(s) included in the volume in the drop-down list. Multiple providers can be selected by:
- [Local Storage Provider] Select the RAID type of the volume (RAID 0 / RAID 1 / RAID Z).
- 6. Click the button [Done].
- 7. Read the warning message in the alert box carefully. Confirm that 'All of the data will be destroyed in the provider(s)' by clicking [OK] button.
- The page then will be redirected to the page [Storage] > [Summary] when the modular storage is created. A dialog box will show that whether creating modular storage action is done successfully or not. Click [OK] to close the dialog.

Remove Additional Storage

Please ensure that the volume is **NOT IN USE** before removing. Otherwise, the volume removal action will fail.

Please follow these steps for removing the Additional Storage:

- 1. Go to the page [Storage] > [Summary].
- 2. Click the icon '
- 3. Click the icon '**U**' beyond the volume to be removed.



- 4. Confirm the alert dialog to remove the Additional Storage.
- 5. The page will be refreshed. A dialog box will pop up to show that the volume was removed successfully. The volume will no longer exist in the AhsayUBS now.

WARNING

All data in the Additional Storage will be DESTROYED and CANNOT BE RECOVERED again.

Mount and Unmount Additional Storage

Unmount Additional Storage

NOTES

- 1. System Storage volume is always in use and it cannot be unmounted.
- 2. Please ensure that the volume is **NOT IN USE** before unmounting. Otherwise, the unmount volume action will fail.

Please follow these steps to unmount a volume:

- 1. Go to the page [Storage] > [Summary].
- 2. Click the volume pie chart icon which is to be unmounted.
- 3. The page is redirected to [Storage] > [Summary] > [RAID Information]. Click the [Unmount] button to unmount the volume.
- 4. The page will be refreshed and shows the result that the volume is unmounted successfully or not. Click the button [OK] to close the dialog.

Mount Additional Storage

Storage volumes cannot be used by the AhsayUBS or the AhsayCBS when it is not mounted. To use the volume, please follow these steps to mount a volume:

- 1. Go to the page [Storage] > [Summary].
- 2. Click the volume pie chart icon which is to be mounted.
- 3. The page is redirected to [Storage] > [Summary] > [RAID Information]. Click the [Mount] button to mount the volume.
- 4. The page will be refreshed and shows the result if the volume was mounted successfully or not. Click the button [OK] to close the dialog.

Filesystem Check

To verify the data integrity of the files and recover the filesystem if there are defects inside the file system.

[ZFS] Scrub

Scrub is the filesystem check process for the ZFS volumes. It can be performed on a volume in either *mounted* or *un-mounted* state.

NOTE

The performance of the mounted volume will be lowered during scrubbing process. Therefore, it is recommended to perform ZFS scrubbing operations during off peak hours, when there are no backup jobs running.

To trigger the filesystem check manually, please follow these steps:

- 1. Go to the page [Storage] > [Summary].
- 2. Click the volume pie chart icon which is going to scrubbing.
- 3. The page is redirected to [Storage] > [Summary] > [RAID Information]. Click the [scrub] button to start the scrubbing.
- 4. Read the alert dialog message and confirm it to start the scrubbing process.
- 5. The page will be refreshed. A dialog will be shown whether the scrubbing command can be issued successfully or not. Click the [OK] button to close the dialog.
- 6. Scrubbing message will be shown and refreshed at the bottom of the page during scrubbing.

Description	Modular Storage	
Volume ID	esms00	
Storage Type	ZPOOL - RAIDZ1	
Filesystem Type	zfs	
Status	ONLINE	
Total Size	7.63 GB	
Available Size	7.63 GB	
Used Size	91.50 KB	
Used Percentage	0.00%	
ZFS Version	3	
Mount Point	/ubs/mnt/esms00	
Action		
Unmount Volume		Unmount
Filesystem check		Scrub

[UFS] fsck

The "fsck" process is the filesystem check process for the UFS volumes. <u>The "fsck"</u> <u>process must be performed when the UFS volume is offline</u>. Therefore, "fsck" checks are only available for [Additional Storage] volumes, as the [System Storage] volumes cannot be unmounted. A "fsck" check for [System Storage] is performed during the AhsayUBS boot process.

NOTE

Please make sure the volume is not in use before unmounting the volume. It is also recommended that the AhsayCBS service is shutdown down before unmounting the volume.

To trigger the "fsck" process manually, please follow these steps:

- 1. Go to the page [Storage] > [Summary].
- 2. Click the volume pie chart icon which is going to start "fsck".
- 3. If the volume is not unmounted, please refer to the section [Mount and Unmount Additional Storage].
- 4. After the volume is unmounted, click the button [fsck] to start the "fsck" process.
- 5. Read the alert dialog message and confirm it to start the "fsck" process.
- 6. The page will be refreshed. A dialog will be popped up to show that whether the "fsck" is started successfully. Click the [OK] button to close the dialog.
- 7. "fsck" messages will be shown on the bottom of the page if the "fsck" process is started successfully.

Storage > Summary > RAID Information			
	Details		
	Description	Optional Storage	
	Volume ID	esls00	
	Storage Type	GEOM - LABEL	
	Filesystem Type	ufs	
	Status	ONLINE	
	Action		
	Mount Volume		Mount
	Filesystem check		Fsck
Command output: ** /dev/label/E5%6D6E1xes1s00 ** Last Hounted on /ubs/mnt/es1s00 ** Phase 1 - Check Blocks and Sizes ** Phase 2 - Check Pathnames ** Phase 3 - Check Connectivity ** Phase 4 - Check Reference Counts ** Phase 5 - Check Cyl groups 2 files, 2 used, 4061044 free (28 frags, 507627	blocks, 0.0% fragm	entation)	

Export and Import Additional Storage (ZFS)

- When the corresponding block devices or the iSCSI target is undergoing maintenance or
- [Expandable Storage] The iSCSI target / hardware RAID volume is expanded; the Additional Storage is needed to be exported and imported again to recognize the expanded size.

NOTES

- 1. The System Storage cannot be unmounted. So, the volume(s) in System Storage cannot be exported.
- 2. The volume is needed to be unmounted before exporting. Therefore, make sure that the volume is not in use.

Export the Additional Storage

To export an Additional Storage:

- 1. Unmount the volume first if it is mounted. For the steps to unmount a volume, please refer to the section [Mount and Unmount Additional Storage].
- 2. Go to the page [Storage] > [Summary].
- 3. Click the volume pie chart icon which is going to be exported.
- 4. Click the button [Export].
- 5. The page will be refreshed, and a dialog will be shown that the volume is exported successfully. Click [OK] to close the dialog box.
- 6. The volume is now exported. So, the volume is missing in the AhsayUBS now.

Details	
Description	Modular Storage
Volume ID	esms00
Storage Type	ZPOOL - RAIDZ1
Filesystem Type	zfs
Status	MISSING
Action	
Import Volume	Import

Import the Additional Storage

The volume needs to be imported again when it is going to be used by the AhsayUBS.

To import a volume:

- Make sure the corresponding block device(s) (Modular Storage) or the iSCSI connection (Expandable Storage) is connected to the AhsayUBS before importing the volume.
- 2. Go to the page [Storage] > [Summary].
- 3. Click the volume pie chart icon which is going to be imported.



- 4. Click the button [Import].
- 5. The page will be refreshed and a dialog will be shown that the volume is imported successfully. Click [OK] to close the dialog box.
- 6. The volume information now can be shown in the AhsayUBS WebAdmin now. It means that the volume can be used again now by the AhsayUBS after mounting it.

Details			Modular Storage
Description	Modular Storage		
Volume ID	esms00		
Storage Type	ZPOOL - RAIDZI		
Filesystem Type	zfs		
Status	ONLINE		
Total Size	7.63 GB		esms00
Available Size	7.63 GB		ZPOOL - RAIDZ1 ZFS
Used Size	91.50 KB		Total: 7.63 GB
Used Percentage	0.00%		Free: 7.63 GB
ZFS Version	3		
Mount Point	/ubs/mnt/esms00		
Action			- 5 - 5
Unmount Volume		Unmount	m00c00 m00c01
Filesystem check		Scrub	scsi scsi

9.4.2 iSCSI

	Ahsay™ Universal Backup System						
Information	System	Network	Storage	Backup Server			
Storage > i	SCSI		Summary iSCSI				

Storage >	ISCSI							
Target addres	15	Target	name	Initiator name	Comment	Connected	Enable / Disable	
10.3.0.98 ign.2004-04.com iscs.ubsdisk00.bdd462		iqn. 2004-04.com. iscsi.ubsdisk00.bdd462	ubsdek00	No	Enable	98		
10.3.0.98			-04.com. ubsdisk01.bdd462	ign. 2004-04.com. ciscsi.ubsdisk01.bdd462	ubsdisk01	Yes	Disable	98
Varning:						_		0

In AhsayUBS, iSCSI can only be used for creating the Additional Storages.

The information that will be shown for each of the iSCSI session entry:

- Target address: The IP address / DNS name to the iSCSI target.
- Target name: The IQN name of the ISCSI target.*
- Initiator name: The IQN to identify the iSCSI target.*
- Port: The port of the iSCSI TARGET. Default value is "3260".
- **Comment:** The description of this entry.
- **Connected:** "Yes" when the iSCSI session is connected. "No" when the iSCSI session is disconnected.
- Enable / Disable: Enable/Disable the iSCSI session.

NOTE

The *IQN* format should be in: "iqn.<yyyy-mm>.<reversed domain name>:<identifier>"

Rules for enable / disable / delete iSCSI session:

You may enable / disable the iSCSI initiator session for maintenance of the iSCSI target server. When the corresponding Additional Storages are in use, the iSCSI initiator session cannot be disabled.

Difference between disable / delete an iSCSI initiator session

Disable:

The iSCSI initiator session entry still exists in the AhsayUBS. Use this function when you want to temporarily disable the session and reconnect it later.

Delete:

The iSCSI initiator session entry will no longer be used in this AhsayUBS.

Create a connection to an iSCSI target

NOTE
Please ensure that the iSCSI target should be greater than 2GB. Otherwise, it cannot be used as the AhsayUBS storage.
1. Go to the page [Storage] > [iSCSI].

- .
- 2. Click the ' 😳 ' icon.
- 3. Enter the required information inside the [iSCSI] table.

	CSI > Add	
iSCSI		
Target address	10.1.0.228 The IP address or DNS name of the iSCSI target.	
Target name	iqn.2021-04 ubsdisk00 The format should be in "iqn. <yyyy-mm>.<reversed domain="" name="">:<identifier>". example: iqn.1994-04.org.netbsd.iscsi-target:target0.</identifier></reversed></yyyy-mm>	
Initiator name	iqn.2021-04 :ubsdisk00 The format should be in "iqn. <yyyy-mm>.<reversed domain="" name="">:<identifier>". example: iqn.2005-01.il.ac.huji.cs:somebody.</identifier></reversed></yyyy-mm>	
Port	3260 The target port of the iSCSI initiator. Default port is "3260".	
Comment	ubsdisk00 The description of this entry.	

- 4. Click the [Add] button.
- 5. An [iSCSI] initiator session is now enabled. The connected iSCSI disk is now ready to be added as Additional Storage for this AhsayUBS. Please refer to the section <u>Create</u> <u>Additional Storage</u> for details.



NOTE

If the iSCSI initiator session remains in a "Connecting..." state for a long time, incorrect connection information may have been used or the iSCSI target host/service could be down. You may destroy this entry and try again.

•						1
U 11	e changes have been applied suc	cessfully.				
Target address	Target name	Initiator name	Comment	Connected	Enable / Disable	
10.1.0.228	iqn.2021- 04. ubsdisk00	ign.2021- 04. ubsdisk00	ubsdisk00	Yes	Connecting	98
10.1.0.228	ign.2021- 04. ubsdisk01	iqn.2021- 04. ubsdisk01	ubsdisk01	Yes	Connecting	88

Edit the configuration of an iSCSI entry



Please follow the steps below to change the configuration of an iSCSI initiator entry:

- 1. Go to the page [Storage] > [iSCSI].
- 2. Look for the iSCSI initiator entry that is going to be edited.
- 3. Click the icon '

4. Edit the fields under the [iSCSI] table. (Only the [Initiator name] and the [Comment] can be edited).

Storage > iSC	SI > Edit
iSCSI	
Target address	10.1.0.228 The IP address or DNS name of the iSCSI target.
Target name	iqn.2021-04. tubsdisk00 The format should be in "iqn. <yyyy-mm>.<reversed domain="" name="">:<identifier>". example: iqn.1994-04.org.netbsd.iscsi-target:target0.</identifier></reversed></yyyy-mm>
Initiator name	iqn.2021-04
Port	3260 The target port of the iSCSI initiator. Default port is "3260".
Comment	ubsdisk00 The description of this entry.
Save	

5. Click the [Save] button to save the changes.

Disable an iSCSI initiator entry

	NOTES
1.	The corresponding modular / expandable storage should be exported, or Optional Storage should be unmounted before disabling any iSCSI initiator session. <u>The</u> <u>Additional Storage removal will result in destruction of all the data on the storage volume</u> .
2.	The corresponding Additional Storage should not be DELETED after disabling the iSCSI initiator entry. Otherwise, the data inside the Additional Storage may not be accessible again by the AhsayUBS after re-enabling the iSCSI initiator session.
3.	For steps to export an Additional Storage , please refer to the section [Export and Import Addition Storage].
4.	For steps to remove an Additional Storage , please refer to the section [<u>Remove</u> <u>Additional Storage</u>].
Please	follow the instructions below to disable an iSCSI initiator entry:

1. Go to the page [Storage] > [iSCSI].

- 2. Look for the iSCSI initiator entry that going to be disabled.
- 3. Click the [Disable] button.
- 4. The iSCSI initiator entry now disabled successfully.

Enable an iSCSI initiator entry

Please follow the steps below to enable an iSCSI initiator entry:

- 1. Go to the page [Storage] > [iSCSI].
- 2. Look for the iSCSI Initiator entry that going to be enabled.
- 3. Click the [Enable] button.
- 4. The iSCSI initiator session has been enabled successfully.
- 5. (Optional) The corresponding Additional Storage can be imported again to use. For details, please refer to the section [Export and Import Additional Storage].

Destroy an iSCSI initiator entry

WARNING

Please ensure that all the data in the iSCSI initiator will be erased after it is destroyed.

Please follow the steps below to destroy an iSCSI initiator entry:

- 1. Go to the page [Storage] > [iSCSI].
- 2. Look for the iSCSI initiator entry that will be deleted.
- 3. Click the icon ' 🤤 '.
- 4. Click [OK] in the dialog box that will appear.



5. The iSCSI initiator entry is destroyed successfully.

Troubleshooting

WARNING

On AhsayUBS systems using a software RAID setup, for example a four disk software RAID Z configuration. When a failure occurs on a disk located in slot 1. It is required to shift the rest of the disks in slots 2, 3, and 4 to the position 1, 2 and 3. Otherwise AhsayUBS will not be able to boot up properly until the disk in slot 1 is replaced and the software RAID is rebuilt.

Rebuild Degraded Storage

When one or more block devices have degraded in a volume, the volume can be rebuilt for recovery. The AhsayUBS administrator can get the latest status of the storage volumes by viewing the page [Storage] > [Summary].

The following example shows the System Storage is degraded:



The volume is degraded when the ' 🀣 ' icon is shown next to the volume.

WARNING

The data inside the rebuilt local block device will be DESTROYED and CANNOT BE RECOVERED.

NOTES

- 1. The provider which has been used by other AhsayUBS before will not be listed as an empty block device. It should be *zero out* before putting it into this AhsayUBS
- 2. Only two kinds of degraded storage are supported for rebuilding their volume:
 - System Storage
 - O (Additional) Modular Storage

Rebuild the System Storage

To rebuild the volume for [System Storage]:

- 1. Go to the page [Storage] > [Summary].
- 2. Note down the volume and block device which are degraded.





NOTE

To locate any missing or degraded block devices in AhsayUBS, please refer to [Appendix J – Identifying Physical Local Block Devices on AhsayUBS] for details.

- 3. Shutdown the AhsayUBS in AhsayUBS WebAdmin.
- 4. Replace the block device with a healthy one.
- 5. Power on the AhsayUBS.
- 6. After the AhsayUBS is booted, login to the AhsayUBS WebAdmin again.
- 7. Go to the page [Storage] > [Summary].
- 8. Inside the degrade storage entry, click the storage icon $\overset{@}{=}$.

9. Select a block device to rebuild the volume.

Information	System	Network	Storage	Backup Server		
Storage >	Summary	r > Block E	Device Info	ormation		
				Volume ID	system	
	1 4			Device ID	d01	
	-	-		Device Name	Missing	
Rebuild RAID		01				
Select a block	device from the		da1 [4.00 GB] [1.0 da1 [4.00 GB] [1.0			Rebuild
Back			da10 [10.00 GB] [1 da11 [10.00 GB] [1 da12 [10.00 GB] [1	0 Virtual disk 1.0] 0 Virtual disk 1.0]		

- 10. Click the button [Rebuild] to start the rebuild volume process.
- 11. Warning message will be shown in the alert box. Read it CAREFULLY before proceeding. Click [OK] button to continue the rebuild process. Click [Cancel] to return to the page.
- 12. After the rebuilding process is started, the page will be redirected to the [Storage] > [Summary] > [RAID Information] page. A dialog will pop up to show that the rebuild process is started successfully. Click [OK] button after reading the message.
- 13. When the block device in the volume is synchronizing, the rebuild icon ' ⁹ ' will be shown in the volume like this:

TO LOS OTEC	17170110
Available Size	108.42 MB
Used Percentage	36.57%
Mount Point	/ubs/mnt/esosfw
Details	
Description	Firmware Module
Volume ID	esfmfw
Storage Type	GEOM - MIRROR
Filesystem Type	ufs
Status	REBUILDING 39%
Total Size	680.89 MB
Available Size	461.77 MB
Used Percentage	32.23%
Mount Point	/ubs/mnt/esfmfw
Details	
Description	System Storage
Volume ID	eslsfw
Storage Type	ZPOOL - RAIDZ1
Filesystem Type	zfs
Status	REBUILDING 59.26% 0h0m
Total Size	5.62GB
Available Size	5.35G
Used Percentage	4.73%
ZFS Version	3
Mount Point	/ubs/mnt/eslsfw

The healthy icon ' ^Y ' will be shown again beyond the volume when the volume is synchronized completely.

Details		
Description	Firmware Module	
Volume ID	esfmfw	
Storage Type	GEOM - MIRROR	
Filesystem Type	ufs	
Status	HEALTHY	
Total Size	680.89 MB	
Available Size	461.77 MB	
Used Percentage	32.23%	
Mount Point	/ubs/mnt/esfmfw	
Details		
Description	System Storage	
Volume ID	eslsfw	
Storage Type	ZPOOL - RAIDZ1	
Filesystem Type	zfs	
Status	HEALTHY	
Total Size	5.62GB	
Available Size	5.35G	
Used Percentage	4.73%	
ZFS Version	3	
Mount Point	/ubs/mnt/eslsfw	
Action		
Filesystem check		Scrub

The block device missing icon ' $\overset{@}{\square}$ ' will be replaced by the block device healthy icon ' $\overset{@}{\square}$ ' since the block device is replaced and it is not missing now.

Rebuild the Modular Storage

To rebuild the volume for [Modular Storage]:

- 1. Go to the page [Storage] > [Summary].
- 2. Jot down the volume and block device which are degraded.



_	Volume ID	esms00
	Device ID	m00c00
	Device Name	da0
	Device Path	/dev/da0
	Device Type	scsi
	Device Size	8.00 GB
m00c00	Model Family	1.0
scsi	Model Name	Virtual disk 1.0

NOTE

To locate any missing or degraded block devices in AhsayUBS, please refer to [Appendix H – Identifying Physical Local Block Devices on AhsayUBS] for details.

- 3. Shutdown the AhsayUBS in AhsayUBS WebAdmin.
- 4. Replace the block device with a healthy one.
- 5. Power on the AhsayUBS.
- 6. After the AhsayUBS is booted, login to the AhsayUBS WebAdmin again.
- 7. Go to the page [Storage] > [Summary].
- 8. Inside the degrade storage entry, click the storage icon '**L**'.
- 9. Select a block device to rebuild the volume.

	Volume ID	esms00	
(\bigcirc)	Device ID	m00c00	
	Device Name	Missing	
m00c00			
Rebuild RAID			

- 10. Click the button [Rebuild] to start the rebuild volume process.
- Warning message will be shown in the alert box. Read it CAREFULLY before proceeding. Click [OK] button to continue the rebuild process. Click [Cancel] to return to the page.
- 12. After the rebuilding process is started, the page will be redirected to the [Storage] > [Summary] > [RAID Information] page. A dialog will pop up to show that the rebuild process is started successfully. Click [OK] button after reading the message.

13. When the block device in the volume is synchronizing, the rebuild icon ' ⁽⁾ ' will be shown in the volume like this:



The healthy icon ' ^Y ' will be shown again beyond the volume when the volume is synchronized completely.

Details		
Description	Modular Storage	
Volume ID	esms00	
Storage Type	ZPOOL - RAIDZ1	
Filesystem Type	zfs	
Status	ONLINE	
Total Size	7.63 GB	
Available Size	7.63 GB	
Used Size	91.50 KB	
Used Percentage	0.00%	
ZFS Version	3	
Mount Point	/ubs/mnt/esms00	
Action		
Unmount Volume		Unmount
Filesystem check		Scrub

The block device missing icon ' is not missing now.



Additional Storage(s) in Disconnected State



The Additional Storage DISCONNECTED state will only appear in the volume which is created on a remote disk (i.e. iSCSI initiator session). This states that the Additional Storage corresponding remote disk provider (i.e. iSCSI initiator session) is disconnected from the AhsayUBS.

In order to identify disconnected Additional Storage, an additional schedule job has been added to AhasyUBS. When any Additional Storage has been detected in disconnected state, the following actions will be taken in order to prevent further loss of data:

- Service stop and prohibit the service start of the following services:
 - AhsayCBS
 - Share AhsayCBS
- The enabled Additional Storage volumes will remain mounted. The system will wait for iSCSI initiator reconnection. In case the iSCSI initiator exits due to session timeout, AhsayUBS administrator may create another iSCSI initiator sessions by the 'Retry' button at page "Storage > iSCSI".
- Email will be sent to AhsayUBS administrator (The 'To email' defined in the AhsayUBS 'General email setting').

At this stage,

- the corresponding remote disk's (i.e. the iSCSI initiator session) network connection to this UBS machine is lost.
- though the corresponding Additional Storage is still mounted, the data in this volume cannot be accessed nor written anything to the storage.

To fix the problem, login the AhsayUBS WebAdmin

- Alert dialog contains the disconnected Additional Storage and their corresponding iSCSI initiator information will be shown after AhsayUBS WebAdmin login.
- The loss of iSCSI connection may result from network connectivity issue. Try to use "[Network] > [Ping / Traceroute]" tool to test if the iSCSI target host is reachable.
 After resolving the network issue, the iSCSI target host will be reconnected with AhsayUBS machine and the data in the Additional Storage can be accessed again.

- After resolving the Additional Storage disconnection issue, service start will be allowed for the following services. Please refer to the section [Backup Server] for details.
 - AhsayCBS
 - Share AhsayCBS

Additional User Storage Migration

Introduction

AhsayUBS additional user storage migration is performed using a UNIX shell script. The migration process only supports additional user storage volumes, the system storage (firmware) volume, i.e. FreeBSD and AhsayCBS binaries are not supported. After a successful migration, the data on the file system can be used by the AhsayCBS service on the new AhsayUBS server.

Supported Hard Disk Interfaces:

- Local: IDE, SCSI, SATA, Hardware RAID
- Foreign: iSCSI

Supported Additional Storage Types:

- Optional Storage (GPT Partition 6 with UFS)
- Expandable Storage (No Partition with ZPOOL on entire disk)
- Modular Storage with CLOG only (GPT Partition 7 with ZFS)
- Modular Storage with CLOG & SLOG (GPT Partition 11 / 13 with ZFS)

WARNING

- 1. AhsayUBS System Storage (*esosfw*, and *eslsfw*) is NOT supported by the storage migration shell script.
- 2. After volume migration, the original storage label in the migrated storage volume will be updated. The previous AhsayUBS installation will no longer be able to use the migrated storage volume.
- 3. Since the profile.ini file (/ubs/conf/profile.ini) will be updated by this shell script. DO NOT perform any *add* or *remove* storage operations via the AhsayUBS webadmin console when the volume migration is in progress.

Storage Migration Procedure

Assumptions:

- 1. The volume to be migrated is in a healthy state.
- 2. There are no disk errors prior to migration
- 3. SSH is enabled on AhsayUBS.

To perform a migration of an existing Additional Storage volume to a new AhsayUBS server:

1. Connect ONE hard disk containing foreign storage volume to the new AhsayUBS machine.

For local hard disk:

- i. Shutdown the old AhsayUBS machine.
- ii. Remove the specific hard disk from the old AhsayUBS machine.
- iii. Shutdown the new AhsayUBS machine.
- iv. Connect the hard disk to the new AhsayUBS machine.
- v. Power on the new AhsayUBS machine.

NOTES

- 1. If the additional user volume is created on a hardware RAID, then the RAID card along with all the hard drives which make up the RAID logical volume must be installed onto the new AhsayUBS server.
- 2. After connecting the RAID logical volume on the new AhsayUBS machine, please ensure the logical volume can be detected on the RAID card BIOS.

For iSCSI hard disk:

- i. Login to the old AhsayUBS machine webadmin console.
- ii. Unmount specific iSCSI volume.
- iii. Disconnect the iSCSI hard disk from the old AhsayUBS machine.
- iv. Power on the new AhsayUBS machine.
- v. Create a new iSCSI session in the AhsayUBS webadmin to connect the iSCSI hard disk.
- 2. Login AhsayUBS via SSH.
- 3. Enter the following command to start migrating the Additional Storages:

#sh /ubs/bin/migrate-storage-single-disk.sh

The shell script will begin the process of 'discovering' any connected foreign user storage volumes. Once the user storage volume 'discovery' has completed, the storage volumes eligible for migration will be listed.

```
ahsayubs:/# sh /ubs/bin/migrate-storage-single-disk.sh
Loading UBS Framework information, please wait..
The following storage entries have been found available for
migration:
1 : 76E7AAE1xesms00 [ad4]
Please select either one (1 - 1) :
```

Choose from the listed storage entries and input the entry number. The shell script will then prompt to confirm before starting the storage migration. Enter 'y' to confirm and start the storage migration.

```
ahsayubs:/# sh /ubs/bin/migrate-storage-single-disk.sh
Loading UBS Framework information, please wait..
The following storage entries have been found available for
migration:
1 : 76E7AAE1xesms00 [ad4]
Please select either one (1 - 1) :
Confirm you want to migrate [76E7AAE1xesms00] from [ad4] as
[esms00]? (y/n)
```

After confirming the volume to be migrated, the script will proceed with the migration process. The storage migration result will be shown when the process is completed.

```
ahsayubs:/# sh /ubs/bin/migrate-storage-single-disk.sh
Loading UBS Framework information, please wait..
The following storage entries have been found available for
migration:
1 : 76E7AAE1xesms00 [ad4]
Please select either one (1 - 1) :
Confirm you want to migrate [76E7AAE1xesms00] from [ad4] as
[esms00]? (y/n) y
```

```
Start migrating modular storage [76E7AAE1xesms00] to
[873391A2xesms00]
ad4p11 labeled
ad4p13 labeled
Completed migrating modular storage [76E7AAE1xesms00] to
[873391A2xesms00]
Successfully updated the profile.ini file on the current system!!!
```

After completion AhsayUBS will automatically mount the migrated volume.

- When the storage migration process is completed, please login to AhsayUBS WebAdmin. Go to the [Storage] > [Summary] page to check if the migrated storage is mounted.
- 5. The migrated storage volume is ready for use. Please update the new User Home path in AhsayCBS web console.

9.5 Backup Server

When the mouse point is pointed over the wordings [Backup Server] in the menu bar, the menu will be shown as below:

	Ahsay™ Universal Backup System							
Information	System	Network	Storage	Backup Server				
Backup Ser	ver > Ser	Server Status Tape Utility						

The [Backup Server] menu has been further divided into the following sections:

- <u>Server Status</u> (Start and Stop AhsayCBS)
- <u>Tape Utility</u> (Backup and Restore of tape device)

9.5.1 Server Status

The page [Backup Server] > [Server Status] allows you to:

- Start and stop the AhsayCBS service
- Start and stop the NFS service
- Enable or disable Access Server Files.

	Ahsay™ Universal Backup System							
Information	System	Network	Storage	Backup Server				
Packup Con	Backup Server > Server Status							
backup Ser	ver > Ser	ver status		Tape Utility				

Here are the information and settings provided in the table:

- Status: Show the service status of the AhsayCBS in the AhsayUBS.
- Check Storage Connectivity: The UBS system have included a schedule check on storage connectivity. Upon any disconnected storage scenario, it will shutdown the "AhsayCBS" and "Share AhsayCBS" if this option is enabled.

 Access Server Files: Allows the AhsayUBS administrator a convenient way to access the file system on the AhsayUBS server. And also gain access to folders/files such as the System and User Home folder from their Windows, macOS or Linux desktop machine. The AhsayUBS folders are shared using SAMBA.

This is useful on the following scenarios:

- Copying user data to/from the AhsayCBS user home.
- Access the AhsayCBS logs folder to view the server logs.
- Directly access configuration files from the conf folder.
- Copying AhsayCBS hotfix files to the AhsayUBS server.
- Copying AhsayOBM/AhsayACB seed load data to AhsayCBS user home. For more information on how to do this please refer to the following articles: <u>https://wiki.ahsay.com/doku.php?id=public:8021_faq:how_to_seedload_to_a_clo_ud_destination</u> and <u>https://wiki.ahsay.com/doku.php?id=public:8052_faq:how_to_perform_a_seedload_backup_and_import.</u>

Please follow these steps to access the AhsayUBS file system:

i. Click the [Share AhsayCBS] button.

Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Ser	ver Status	5		
Ahsay Cloud Ba	ckup Suite				
Status	Running				
Check Storage Connectivity	Er	ıable	Disable		wn this service if any of the been found disconnected.
Access Server Files	Share	AhsayCBS	Unshare AhsayC		
Tools	Web	Admin			
NFS Service	S	tart	Stop	RunDirect Network Fil Cloud Backup Suite	e System Service for Ahsay
	9	itart	Stop	Restart	

ii. Connect to the shared directory by using a UNC path \\server_name\obsr or \\IP_Address\obsr. For a Linux desktop, access the AhsayUBS server folders from the mount point /mnt/obsr.

For example, on a Windows machine to access the AhsayUBS server folders and files where the IP Address of the AhsayUBS server is 10.1.0.228, use Windows file explorer and type "\\10.1.0.228\obsr".



iii. Type the "admin" credentials used for the AhsayUBS WebAdmin (default user is **admin** and password is **ahsayubs)**.

Windows Security
Enter Network Password Enter your password to connect to: 10.1.0.228
admin •••••• Domain: WIN-TU41RC45MK0 Remember my credentials
OK Cancel

iv. Now you can access the following folders on the AhsayUBS file system.

Network 🕨 10.1.0.228 🕨 obsr 🕨		-	49
詞 Open Burn New folder			
Name	Date modified	Туре	Size
🐌 conf	5/6/2021 10:27 AM	File folder	
퉬 download	4/29/2021 3:48 PM	File folder	
🐌 logs	5/6/2021 10:20 AM	File folder	
🐌 nfs	4/29/2021 11:54 PM	File folder	
퉬 obsr-system	4/29/2021 11:53 PM	File folder	
퉬 pns	4/29/2021 3:48 PM	File folder	
🐌 rcvshome	4/30/2021 12:03 AM	File folder	
퉬 rps-system	4/29/2021 11:53 PM	File folder	
🕛 system	4/29/2021 11:56 PM	File folder	
퉬 temp	5/6/2021 10:18 AM	File folder	
🐌 user	5/6/2021 10:27 AM	File folder	
鷆 work	5/6/2021 10:20 AM	File folder	

- v. For security, enablement should be limited for temporary use, and disabled after use.
- Tools (Only shown when AhsayCBS is started): Click the [WebAdmin] button to open a new window for accessing the AhsayCBS in the AhsayUBS.
- NFS Service: To [Start] or [Stop] the NFS Service in AhsayCBS.

To Start/Stop/Restart AhsayCBS in this AhsayUBS System, please click the [Start] / [Stop] / [Restart] button.

The status when the AhsayCBS service is started.

Information	System	Network	Storage	Backup Server	
Backup Ser	rver > Ser	ver Stati	us		
Ahsay Cloud Ba	ckup Suite				
Status	Running				
Check Storage Connectivity	Er	able	Disable		wn this service if any of the been found disconnected.
Access Server Files	Share	AhsayCBS	Unshare AhsayC		
Tools	Web	Admin			
NFS Service	S	tart	Stop	RunDirect Network Fil Cloud Backup Suite	e System Service for Ahsay
	S	tart	Stop	Restart	

The status when the AhsayCBS service is stopped.

Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Ser	ver Statu	S		
Ahsay Cloud Ba	ckup Suite				
Status	Stopped				
Check Storage Connectivity	En	able	Disable		wn this service if any of the been found disconnected.
Access Server Files	Share	AhsayCBS	Unshare AhsayC		
NFS Service	5	tart	Stop	RunDirect Network Fil Cloud Backup Suite	e System Service for Ahsay
	5	tart	Stop	Restart	

The following is the screen capture of the failed storage dependency during service start of "AhsayCBS" or "Share AhsayCBS" service. It is caused by loss of iSCSI initiator connection of Additional Storage created on a remote disk provider (i.e. iSCSI initiator session). The failed storage dependency must be resolved before enabling these services. Please refer to the [Storage Summary] > [Troubleshooting] section for details.

Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Ser	ver Statu	IS		
Some of	the storage volu	imes have be	en found disconne	cted. Failed to start se	rvice.
Ahsay Cloud Ba	ckup Suite				
Status	Stopped				
Check Storage Connectivity	En	able	Disable		wn this service if any of the been found disconnected.
Access Server Files	Share /	AhsayCBS	Unshare AhsayC		
NFS Service	St	art	Stop	RunDirect Network Fil Cloud Backup Suite	e System Service for Ahsay
	S	tart	Stop	Restart	

9.5.2 Tape Utility

	Ahsay	™ Univer	sal Bac	kup Systen	n
Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Ser	Server Status Tape Utility			

Introduction

The Tape Backup Utility will be used to archive the data of AhsayOBM/AhsayACB user accounts hosted on an AhsayCBS server to tape cartridge(s). The AhsayUBS administrator may backup selected user accounts to tape cartridge while the backup server remains online. Therefore, no downtime is required and the backup and restore service is not affected.

The Tape Backup Utility is integrated into the AhsayUBS which is based on FreeNAS firmware (FreeBSD 11.2). The tape backup and restore operation leverages the FreeBSD 'mt' utility (magnetic tape manipulating program), which is fully managed from within the AhsayUBS webadmin console. The AhsayCBS user account data can be restored to the AhsayUBS server either to the original or an alternate location.

Requirements

- AhsayUBS and AhsayCBS v8.3.0.0 or later
- AhsayCBS Auto Save must be enabled.

As Auto Save will backup the users.xml file, since this file is required if the archived tape data needs to be recovered:

- 1. If the user account has been deleted or
- 2. Need to be restored to another AhsayUBS machine

	roxy Logging is enabled, the syste			the software ver	ndor's clou	id so tha	at v
	settings in the future		 				,
lse Auto Save	,						
Use Proxy							
ast Uploaded:	2 Day(s) ago (17/02/2	017)					
Restore							
					B	x	

Limitations

- All tape backup jobs must be performed manually through the AhsayUBS webadmin console. Scheduled tape backups are not supported.
- No API support for Tape Backup Utility as it is a FreeBSD system level operation.
- Only **one** AhsayCBS 'user home' path can be selected for backup at a time.
- Only **one** tape backup or restore job can be run at a time.
- Both tape libraries and tape changers are not supported, so only **one** tape cartridge can be used for tape backup/restore process at a time. Therefore, manual tape cartridge replacement is required when the current tape cartridge is full.
- The AhsayCBS service must be stopped prior to a tape restore, if restoring to an existing AhsayCBS 'user home' path.
- If AhsayUBS is running on a VMware host, the tape backup utility is not supported. As VMware does not support Tape Drives connected directly to ESXi 5.x or above. For more information please refer to this article https://kb.vmware.com/s/article/2007904.

Licensing

There are no additional license modules required to use the Tape Backup Utility, as this feature is integrated into AhsayUBS. However, an AhsayUBS license module is required to use AhsayUBS.

'User Home' setting in the Backup Server

For AhsayCBS that stores all user accounts locally under the 'User Home' directories. When a new user account is being created, AhsayCBS will create a directory with the user's login name under the assigned 'User Home' path. The created user directory is used for storing user configuration and backup files. The list of user names can also be found from the AhsayCBS WebAdmin.

Supported Tape Devices and Standards

The FreeBSD 11.2 operating system provides full support for SCSI-I, SCSI-II and SCSI-III tape drives. As AhsayUBS is built using FreeBSD 11.2, all SCSI tape drives are therefore supported. The 'sa – SCSI Sequential Access device drive' will be used for accessing the tape device.

The following tape drive standards are supported by FreeBSD. Each tape standard has its own maximum data capacity and transfer rate. For each hardware type and supported tape standard, the cost of the tape drive and tape cartridge varies.

1. DAT - Digital Audio Tape (format: DDS - Digital Data Storage)

- 2. DLT Digital Linear Tape (halted development since 2007)
- 3. LTO Linear Tape Open

Summary of Supported Standards

Tape Format	Release Date	Tape Drive Type	Media Type (R/W)	Native Capacity (GB)	Transfer Rate (MB/s)
DAT (DDS)	2007	DAT 160	DAT 160	80	6.9
	2009	DAT 320	DAT 320	160	12
DLT – value line	2001	DLT VS80	DLT IV	40	3
	2003	DLT VS160	VS1	80	8
	2005	DLT-V4	VS1	150-160	9-11
DLT –	2002	SDLT 320	SDLT I	160	16
performance line	2004	SDLT 600	SDLT II	300	36
	2006	DLT-S4	S4	800	60
LTO	2000	LTO-1	LTO-1	100	20
	2003	LTO-2	LTO-2, LTO-1	200	40
	2005	LTO-3	LTO-3, LTO-2	400	80
	2007	LTO-4	LTO-3, LTO-4	800	120
	2010	LTO-5	LTO-5, LTO-4	1500	140
	2012	LTO-6	LTO-6, LTO-5	2500	160
	2015	LTO-7	LTO-7, LTO-6	6000	300
	2017	LTO-8	LTO-8, LTO-7	12000	360

Before purchasing a tape drive, please consult your hardware vendor to confirm compatibility of the device with the FreeBSD 11.2 operating system.

The following factors should also be considered:

1. Compatible hardware interfaces with the AhsayUBS machine for connecting tape drive.

- 2. Tape cartridge capacity for storing user data.
- 3. Tape transfer rate.

	NOTE					
Tape backup/restore on AhsayUBS has been developed and tested using the following:						
0	DELL PowerVault LTO-4 tape drive, connected to a DELL 6GB HBA SAS controller using 800GB LTO-4 tape cartridges					
0	DELL PowerVault LTO-7 tape drive, connected to a SAS2008 PCI-Express Fusion-MPT SAS-2 Falcon controller using 6TB LTO-7 tape cartridges					

Tape Backup/Restore Process via the AhsayUBS WebAdmin

An AhsayUBS administrator may backup/restore User Home data to/from tape cartridges via the AhsayUBS webadmin console [Backup Server] > [Tape Utility] menu option.

Before using the [Tape Utility] option, the tape device must be:

- 1. Connected with the AhsayUBS server.
- 2. The tape device must be powered on.
- AhsayUBS must be able to detect the tape hardware. The identified tape device will be shown in the [Backup Server] > [Tape Utility] > [Tape Device] (As shown in the following example).

U	Ahsay'	[™] Univer	sal Bacl	kup System	1		
Information	System	Network	Storage	Backup Server			
Backup Ser	ver > Tap	e Utility >	Backup				
Tape Utility							
Tape Device		sa0	(IBM ULTRIUM-TD4	A23D) -			
Tape Capacity			sa0 (IBM ULTRIUM-TD4 A23D) GB Please specify the tape cartridge native data capacity, (e.g. LTO-4 is 800GB)				
User Home Direc	tory	/ubs	/mnt/esls00/obsUse	rHome02 💌			
User Name		The s	elected user home	directory does not contain	any user name folder.		
Start Backup							

In most cases, a single tape cartridge will not be sufficient to store all the data on a User Home volume. During a backup operation if the current tape cartridge is full, AhsayUBS will prompt for a new tape cartridge to be inserted into the tape drive. For tape restore operations if the data spans more than one tape cartridge, AhsayUBS will prompt for the insertion of the next tape cartridge.

If a tape device is not supported or no tape drive is installed on the AhsayUBS machine, the AhsayUBS webadmin [Backup Server] > [Tape Utility] menu option will be disabled, the following message "**The system cannot find any supported tape device.**" (As shown in the following example).

Information	System	Network	Storage	Backup Server					
Backup Ser	Backup Server > Tape Utility								
Tape Utility									
The system cannot fi	nd any supported	tape device.							

- 1. Please ensure the tape is rewinded before use.
- 2. Tape cartridges must be managed, handled, and stored properly. Proper care by trained staff is important to prevent inadvertent errors and media damage.
- 3. Only **one** tape backup/restore process can be started at a time.
- 4. Only **one** tape cartridge can be used for tape backup/restore process at a time. Therefore, manual tape cartridge replacement is required when the current tape cartridge is full.
- 5. Only one AhsayCBS 'User Home' path can be selected for backup at a time.
- 6. Only **consecutive** tape cartridge can be used for restore.
- 7. Any corrupted or damaged intermediate tape cartridge(s) will result in the failure of the entire tape restore process.
- 8. The AhsayCBS service MUST BE stopped prior to a tape restore, if restoring to an existing AhsayCBS 'User Home' path.

Tape Backup Process

The Tape Backup Utility supports the backup of AhsayOBM/AhsayACB user accounts either on:

- The entire user home volume to another UBS server
- Selective user accounts on a user home volume to another UBS server

Ũ	Ahsay'	[™] Univer	sal Bac	kup Systen	n			
Information	System	Network	Storage	Backup Server				
Backup Ser	ver > Tap	e Utility >	Backup					
Tape Utility								
Tape Device		sa0 (sa0 (IBM ULTRIUM-TD4 A23D) -					
Tape Capacity		800 Pleas	GB Please specify the tape cartridge native data capacity. (e.g. LTO-4 is 800G8)					
User Home Direc	tory	/ubs,	/ubs/mnt/eslsfw/obsUserHomeO1 🔹					
User Name ▼ Select All								
Start Backup								

(Example: tape backup using 800GB LTO-4 tape cartridge)



- 1. Login to the AhsayUBS webadmin console.
- 2. Go to the [Backup Server] > [Tape Utility] > [Backup] page.
- 3. Select the [Tape Device] to be used for the tape backup process.
- 4. Insert a new tape cartridge to the tape device.
- 5. Enter the tape cartridge capacity in GB. (As stated on the tape cartridge) The tape cartridge capacity is used for marking the end of a volume.
- 6. Select an AhsayCBS User Home path from the drop-down list.
- Choose AhsayCBS user names selectively or select all AhsayCBS user names for backup.

8. Click the [Start Backup] button to start the tape backup process.

When the tape backup process is started, you will be redirected to the [Backup Server] > [Tape Utility] > [Status] page.

U	Ahsay'	[™] Univer	sal Bacl	kup System	1	
Information	System	Network	Storage	Backup Server		
Backup Ser	ver > Tap	e Utility >	Status			
Tape Utility						
Current Action			Backup Tue Jan 17 14:26:39 HKT 2012			
Tape Device			/dev/sa0			
Tape Capacity			745G			
Tape Volume Inc	lex		1			
Utility Status			Performing tape t	ackup with GNU tar utility.		
Stop Backup						

NOTE

A tape backup job can be stopped at anytime by pressing the [Stop Backup] button.

- The tape backup process can be monitored from the [Backup Server] > [Tape Utility] > [Status] page.
- 10. When the backup tape cartridge reaches its volume size limit, a [Continue] button will be shown in the [Backup Server] > [Tape Utility] > [Status] page.
- 11. Eject the existing tape cartridge from the AhsayUBS server and insert a new tape cartridge.
- 12. Click the [Continue] button on the [Backup Server] > [Tape Utility] > [Status] page.
- The tape backup process will continue if there are no errors after the new tape cartridge is inserted. The tape backup process will not continue if an already used tape is inserted.

14. Repeat step 9 - 13.

u	Ahsay	™ Unive	rsal Ba	ckup System		
nformation	System	Network	Storage	Backup Server		
		pe Utility > n has completed				
Tape Utility						
Current Action			Backup			
Date Tue Jan			Tue Jan 17 1	in 17 14:26:48 HKT 2012		
			/dev/sat	ape Utility		
Tape Device			3455	e tape backup action has completed successfully.		
Tape Device	ıme(s)		1			
Tape Device Tape Capacity	ıme(s)		1 The tape			
Tape Device Tape Capacity Used Tape Vol	ıme(s)					

15. When the tape backup process is either completed. Press the "Yes" button to continue.

U	Ahsay	™ Univer	sal Bacl	kup System		
Information	System	Network	Storage	Backup Server		
Backup Ser	ver > Tap	e Utility >	Status			
1 The tape	backup action	has completed s	uccessfully.			
Tape Utility						
Current Action			Backup			
Date			Tue Jan 17 15:06:07 HKT 2012			
Tape Device			/dev/sa0			
Tape Capacity			745G			
Used Tape Volun	ne(s)		1			
Utility Status			The tape backup action has completed successfully.			
Download Log			Click here to dow	nload the backup log file.		
Complete						

- 16. Download the log files from Tape Utility status page (if required)
- 17. Click the [Complete] button to start another Tape Backup/Restore Process.

NOTE

After pressing the [Complete] button the tape backup/restore logs will be cleared.
Tape Restore Process

The AhsayOBM/AhsayACB user account data is restored to the AhsayCBS server either to:

- Original user home location
- An alternate user home location
- The data on tape backups can be restored to another AhsayUBS machine

				NOTE			
AhsayO	0	yACB use	er accour	iy also be req it and or back sayCBS.		stored fr	rom tape
Ũ	Ahsay	[™] Univer	rsal Bac	ckup Syste	m		
Information	System	Network	Storage	Backup Server			
Backup Se			_	Backup Server			
Backup	rver > Tap	e Utility >	_				
Backup Se Backup I	rver > Tap	e Utility >		04 A23D)			

WARNING

- 1. The data in the restore path will be erased or replaced by the data in the tape cartridge(s). Please ensure that the data in the restored directory path can be overwritten.
- 2. Before proceeding with a tape restore to "User Home Directory', it is strongly recommended to stop the AhsayCBS service.
- 1. Login to the AhsayUBS webadmin console.
- 2. Go to the page [Backup Server] > [Tape Utility] > [Restore].
- 3. Select the [Tape Device] to be used for the tape restore process.
- 4. Insert the first volume of the tape cartridge restore set into the tape device.
- 5. Select an AhsayCBS User Home path from the drop-down list or input an alternative restore path.

- 6. If you want to clean up the restore path, check the 'Remove directory contents before restore' checkbox. Use with caution.
- Click the [Start Restore] button to start the tape restore process.
 When the tape restore process has started, you will be redirected to the [Backup Server] > [Tape Utility] > [Status] page.

NOTE

If the AhsayCBS service is still running and restore to "User Home Directory" option is selected. The AhsayCBS service will be stopped before the restore process is initiated. During this stage the [Backup Server] > [Tape Utility] > [Status] will be "Stopping backup server". After the tape restore has completed the AhsayCBS service will be automatically restarted again.

Ũ	Ahsay	[™] Univer	sal Bac	kup System	
Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Tap	e Utility >	Status		
Current Action			Restore		
Date			Tue Jan 17 17:30):40 HKT 2012	
Tape Device			/dev/sa0		
Restore Path			/ubs/mnt/eslsfw/	obsr/user	
Tape Volume Inc	lex				
Utility Status			Stopping backup	server.	
Stop Restore					

NOTE

A tape restore job can be stopped at any time by pressing the [Stop Restore] button.

- The tape restore process can be monitored from the [Backup Server] > [Tape Utility] > [Status] page.
- 9. When the restore operation on current tape cartridge is completed, a [Continue] button will be shown in the [Backup Server] > [Tape Utility] > [Status] page.
- 10. Eject the existing tape cartridge and insert the next tape cartridge into the tape device.
- 11. Click the [Continue] button in the [Backup Server] > [Tape Utility] > [Status] page.
- 12. The tape restore process will continue if there are no errors after the next tape cartridge is inserted. The tape restore process will not continue if an incorrect tape cartridge is inserted.

13. Repeat step 8 - 12.



14. When a tape restore process is completed. Press the "Yes" button to continue.

U	Ahsay'	[™] Univer	sal Bacl	kup System
Information	System	Network	Storage	Backup Server
Backup Ser	ver > Tap	e Utility >	Status	
1 The tape	restore action	has completed s	uccessfully.	
Tape Utility				
Current Action			Restore	
Date			Tue Jan 17 17:20):15 HKT 2012
Tape Device			/dev/sa0	
Restore Path			/ubs/mnt/esls00/	obsUserHome02
Used Tape Volun	ne(s)		1	
Utility Status			The tape restore	action has completed successfully.
Download Log			Click here to dow	nload the restore log file.
Complete				

- 15. Download the log files from the Tape Utility status page (if required).
- 16. Click the [Complete] button to start another Tape Backup / Restore Process.

NOTE

After pressing the [Complete] button the tape backup/restore logs will be cleared.

Stopping Tape Backup and Restore Jobs

The tape backup/estore process can be terminated at any time by pressing the [Stop Backup] or [Stop Restore] button at the bottom left corner on the AhsayUBS web admin console [Backup Server] > [Tape Utility] > [Status] page.

information	System	Network	Storage	Backup Server
Backup Se	rver > Ta	pe Utility >	> Status	
Tape Utility				
Current Action			Backup	
Date			Wed Jan 18	03:25:40 UTC 2012
Tape Device			/dev/md10	
Tape Capacity			100M	
Tape Volume Ir	ndex		1	
			Performing ta	ape backup with GNU tar utility.

nformation	System	Network	Storage	Backup Server
ackup Se	rver > Ta	pe Utility :	> Status	
Tape Utility				
Current Action			Restore	
Date			Wed Jan 18	03:31:12 UTC 2012
Tape Device			/dev/md10	
Restore Path			/ubs/mnt/ese	es00
Tape Volume Ir	ndex		1	
Utility Status			Performing ta	ape restore with GNU tar utility.

Start another Tape Backup / Restore Process

When the tape backup/restore job is completed successfully or if the job is terminated unexpectedly, a [Complete] button will be shown at the bottom left corner on the [Backup Server] > [Tape Utility] > [Status] page. The [Complete] button must be pressed in order to start another tape backup/restore Process.

Information	System	Network	Storage	Backup Server	
Backup Ser	ver > Tap	e Utility >	Status		
① The tape	restore action	has completed s	uccessfully.		
Tape Utility					
Current Action			Restore		
Date			Tue Jan 17 17:20	:15 HKT 2012	
Tape Device			/dev/sa0		
Restore Path			/ubs/mnt/esls00/	obsUserHome02	
Used Tape Volun	ne(s)		1		
Utility Status			The tape restore	action has completed succe	essfully.
Download Log			Click here to dow	nload the restore log file.	
Complete			-		

NOTE Once the [Complete] button is pressed the last tape backup/restore log files will be cleared.

Monitoring and Reporting

- The backup and restore job status can be monitored using the AhsayUBS webadmin console.
- Each tape backup and restore job will generate a separate log file, they can be downloaded from the AhsayUBS webadmin console.

Unsupported Tape Drive

If AhsayUBS cannot detect any tape device, i.e. the connected tape device is not shown on the [Backup Server] > [Tape Utility] backup/restore page.

U	Ahsay'	[™] Univer	sal Bacl	kup System
Information	System	Network	Storage	Backup Server
Backup Ser	ver > Tap	e Utility		
Tape Utility				
The system cannot fir	nd any supported	tape device.		

Please check if the:

- 1. Tape device controller card is working properly.
- 2. Tape device is connected to the AhsayUBS hardware interface properly.
- 3. Tape device is powered on after it is connected to the AhsayUBS machine.

In addition, you can verify if the tape device is detected by FreeBSD.

- 1. Login to AhsayUBS using SSH.
- 2. Enter the command "camcontrol devlist". It should return the following results:

<TAPE_DRIVE_DEV_NAME> at scbus0 target 0 lun 0 (pass0,da0)

If a supported tape drive is connected to an AhsayUBS machine and powered on, a device name "sa*" will exist in the device path "/dev". The default device path for a tape device is "dev/sa0", if the command "Is –Ia /dev/sa0" is entered the device will be listed.

If an installed tape device is not shown in the [Backup Server] > [Tape Utility] page and cannot be located via SSH on FreeBSD, then it may not be a supported tape device. Please contact your hardware vendor for further assistance.

Tape Cartridge Failure

If the tape cartridge spins continuously and never come to a stop, the tape cartridge may be damaged or inserted incorrectly. The tape cartridge should be ejected in order to prevent further damage to the tape device.

To eject the tape cartridge, use the eject button on the tape device. If it does not work, the tape cartridge can be ejected via the command line using ssh. The following are the steps to issue the force eject command:

- 1. Login the AhsayUBS server via SSH.
- 2. Type the following command to eject the tape cartridge:

mt -f "/dev/\${TAPE_DEV_NAME}" offline

If AhsayUBS is undergoing a:

- 1. Multiple volume tape backup process, it can be continued by replacing the existing cartridge with a new one. After that, you may click the [Continue] button to continue the tape backup process.
- 2. Multiple volume tape restore process, the tape cartridge failure may indicate the break down of restore cartridge chain. It is advised to terminate the tape restore process and seek support from the tape maintenance staff.

9.6 AhsayUBS Firmware Management Console

(For advanced users ONLY)

You can directly access the AhsayUBS the firmware management console by connecting your AhsayUBS server to a monitor and keyboard.

Press [Space] bar or [Shift] key to bypass the following splash screen.



The AhsayUBS Management Console menu:

Ahsay Universal Ba 	ckup System (8.1.0.10)
	System Management Console (64 bit) Configure Network 2 Reset to factory defaults 3 Shutdown System 4 Reboot System 5 Logout Current Session
	Colect> <about></about>

NOTE

Always press [Esc] to return to the main menu when the data is mistakenly entered.



9.6.1 Configure Network

After choosing this option, the following screen will appear. It will assign IP address to your AhsayUBS LAN network interface. You can set the network either with <u>DHCP</u> or a <u>static IP</u> address.



DHCP

- 1. To use [DHCP], choose [Yes]. Then the system will automatically determine the network information (IPv4 address, subnet, gateway and DNS server) itself. It will then display the IP address and the AhsayUBS WebAdmin's URL in the console.
- 2. By default, you can use the address "http://{SERVER_IP_ADDRESS}:8080" to access the AhsayUBS WebAdmin in the browser.
- 3. Finally, choose [OK] to back to the main menu.

TIP

We do not recommend DHCP, as your client users may not be able to connect to the server, if the IP is reassigned a different IP.

Static IP

1. A [Static IP] can be assigned for the AhsayUBS. Choose [No] to set the IP address manually.

	mfigure Net want to use			
bo you	want to use	bior ro.	r thris i	interrace
	< Yes >	K N	0 >	

2. Enter an IPv4 address for this AhsayUBS. Choose [OK] to continue.

Enter new LAN	IPv4 address.	
10.10.3.41		
K	0X >	

3. Enter the subnet for this IP Address. Choose [OK] to continue.

	net mask. Subnet mas CIDR notation). e.g	
255.255.255.0 = 2	4	
255.255.0.0 = 16		
255.0.0.0 = 8		
16		
	K OK >	

4. Enter the gateway for outgoing packet. Choose [OK] to continue.

Enter IP	∨4 default ga	teway.	
10.10.0	. 1		
	< 0K >		-

5. Enter the DNS address and choose [OK] to continue.

-Configure N Enter DNS I		
192.168.5.	14	
-		
	< 0X >	

 After that, the below screen will be shown. Now you can access the AhsayUBS WebAdmin by the URL shown on the screen (i.e. <u>http://10.10.3.41:8080</u> in this example) for continue other configurations.

The LAN IP address has been	set to:
IPv4: 10.10.3.41/16	
You can access the WebGUI us	ing the following URL
http://10.10.3.41:8080	
< O <mark>K</mark>	>

9.6.2 Reset AhsayUBS to Factory Defaults

Here is another way for you to reset the AhsayUBS to factory default.

After you choose this option, a confirming dialog will be shown as below. Choose [Yes] to reset the AhsayUBS to factory defaults. Choose [No] to cancel the operation.

		system to factory d esetting the configu	
LAN IP addı Admin Passı	nfiguration: ress : [192.168.] word : [ahsayubs t to proceed?		
	< Yes >		



9.6.3 Shutdown System

Choose this option for shutting down the AhsayUBS.

NOTE You can also shutdown your AhsayUBS inside the AhsayUBS WebAdmin. For more information, please refer to <u>Shutdown</u> in this document.

On the below screen, choose [Yes] to reboot the system. Choose [No] to exit and cancel the request.

you really want to shutdown the	
you rearry want to shataowin the	system
< Yes > < No >	

WARNING

Please make sure the system is safe for reboot before clicking the [Yes] button. Otherwise, the backup job could be interrupted if the backup server is in use.

9.6.4 Reboot System

Choose this option for reboot the AhsayUBS.

NOTE

You can also reboot your AhsayUBS in the AhsayUBS WebAdmin. For more information, please refer to <u>Reboot</u>.

On the below screen, choose [Yes] to reboot the system and choose [No] to abort the request.

	Reboot	System		
Do you	really want	to reboot	the	system?
	< Yes >	K No	>	

WARNING

Please make sure the system is safe for reboot before clicking the [Yes] button. Otherwise, the backup job could be interrupted if the backup server is in use.

10 Customizing AhsayUBS

Customization of AhsayUBS is separated into two sections:

1. Customization of AhsayCBS

For customization of AhsayCBS, please refer to the AhsayCBS Administrator's Guide.

2. Customization of AhsayUBS Firmware

For customization of AhsayUBS with AhsayCBS, please refer to the <u>AhsayCBS</u> <u>Administrator's Guide</u>.

11 Contacting Ahsay

11.1 Technical Assistance

To contact Ahsay support representatives for technical assistance, visit the Partner Portal: https://www.ahsay.com/partners/

Also use the Ahsay Wikipedia for resource such as Hardware Compatibility List, Software Compatibility List, and other product information: <u>https://wiki.ahsay.com</u>

11.2 Documentation

Documentations for all Ahsay products are available at: <u>https://www.ahsay.com/jsp/en/home/index.jsp?pageContentKey=ahsay_downloads_docum</u> <u>entation_guides</u>

You can send us suggestions for improvements or report on issues in the documentation by contacting us at:

https://www.ahsay.com/partners/

Please specify the specific document title as well as the change required/suggestion when contacting us.

Appendix

Appendix A Supported Processors

Ahsay™ Universal Backup System only supports the "i386" and "amd64" processor architecture.

https://www.freebsd.org/releases/11.2R/hardware.html

For processor type "amd64", the following processors are supported:

- AMD Athlon™64 ("Clawhammer")
- AMD Opteron™ ("Sledgehammer")
- o AMD Sempron[™]
- o AMD Turion™
- o AMD Phenom[™]
- All multi-core Intel Xeon™ processors except Sossaman have EM64T support.
- The single-core Intel Xeon processors "Nocona", "Irwindale", "Potomac", and "Cranford" have EM64T support
- All Intel Core 2 (not Core Duo) and later processors
- All Intel® Core™ i range of processors
- All Intel Pentium® D processors
- All Intel® Centrino® Duo and Centrino® Pro platforms
- Intel Pentium 4s and Celeron Ds using the "Cedar Mill" core have EM64T support
- Some Intel Pentium 4s and Celeron Ds using the "Prescott" core have EM64T support. Please read the <u>Intel Processor Spec Finder</u> for the definitive answer about EM64T support in Intel processors

NOTE

AhsayUBS supports a maximum of 256 virtual processor cores. Please refer to Chapter 5.1 <u>Backup System Requirements</u> for details of processor core configuration.

For processor type "i386", the following processors are supported:

- FreeBSD/i386 runs on a wide variety of "IBM PC compatible" machines. Due to the wide range of hardware available for this architecture, it is impossible to exhaustively list all combinations of equipment supported by FreeBSD. Nevertheless, some general guidelines are presented here.
- Almost all i386[™]-compatible processors with a floating point unit are supported. All Intel® processors beginning with the 80486 are supported, including the 80486, Pentium®, Pentium® Pro, Pentium® II, Pentium® 4, and variants thereof, such as the Xeon[™] and Celeron® processors. All i386[™]-compatible AMD processors are also supported, including the Am486®, Am5x86®, K5, AMD-K6® (and variants), AMD Athlon[™] (including Athlon-MP, Athlon-XP, Athlon-4, and Athlon Thunderbird), and AMD Duron[™] processors. The AMD Élan SC520

embedded processor is supported. The Transmeta Crusoe is recognized and supported, as are i386[™]-compatible processors from Cyrix and NexGen.

• There is a wide variety of motherboards available for this architecture. Motherboards using the ISA, VLB, EISA, AGP, and PCI expansion buses are well-supported. There is some limited support for the MCA ("MicroChannel") expansion bus used in the IBM PS/2 line of PCs.

Appendix B Supported Disk Controllers

For an updated list of supported disk controllers drivers, please refer to the FreeBSD website. <u>https://www.freebsd.org/releases/11.2R/hardware.html#DISK</u>

Appendix C Supported Ethernet Interfaces

For an updated list of supported Ethernet interfaces drivers, please refer to the FreeBSD website https://www.freebsd.org/releases/11.2R/hardware.html#ETHERNET

Appendix D Supported Languages

Language Code	Language
ar	Arabic
са	Catalan
cs	Czech
da	Danish
de	German
el	Greek Modern
en	English
es	Spanish
eu	Euskara/Basque
fr	French
iw	Hebrew
hu	Hungarian
id	Indonesian
it	Italian
ја	Japanese
ko	Korean
lt	Lithuanian
nl	Dutch
no	Norwegian
pl	Polish
pt_BR	Portuguese (Brazil)
pt_PT	Portuguese (Portugal)
ro	Russian
sl	Slovenian
sv	Swedish
th	Thai
tr	Turkish
vi	Vietnamese
zh_CN	Chinese (Simplified)
zh_TW	Chinese (Traditional)

Appendix E Message of the Day

"motd" stands for "Message of the Day". It is the message displayed just before login in the shell.

The default value is:

Ahsay Universal Backup System

After base64 decoding, it will become

"QWhxYXkgVW5pdmVyc2FsIEJhY2t1cCBTeXN0ZW0NCg0K". The base64 encoder will preserved the new line character in the message. Therefore, multiple lines can be displayed in the message.

To generate the code and paste it in the XML tag in the config file, please type the motd to the base64 encoder and paste the output in the XML tag "<motd>" in the config file.

Appendix F Supported Time Zones

The following are the supported time zones that can be set in <timezone> XML tag.

Africa Africa/Algiers Africa/Luanda Africa/Porto-Novo Africa/Gaborone Africa/Ouagadougou Africa/Bujumbura Africa/Douala Africa/Bangui Africa/Ndjamena Africa/Kinshasa Africa/Lubumbashi Africa/Brazzaville Africa/Abidjan Africa/Djibouti Africa/Cairo Africa/Malabo Africa/Asmera Africa/Addis Ababa Africa/Libreville Africa/Banjul Africa/Accra Africa/Conakry Africa/Bissau Africa/Nairobi Africa/Maseru Africa/Monrovia Africa/Tripoli Africa/Blantvre Africa/Bamako Africa/Timbuktu Africa/Nouakchott Africa/Casablanca Africa/El_Aaiun Africa/Maputo Africa/Windhoek Africa/Niamey Africa/Lagos Africa/Kigali Africa/Sao_Tome Africa/Dakar Africa/Freetown Africa/Mogadishu Africa/Johannesburg Africa/Khartoum Africa/Mbabane Africa/Dar_es_Salaam Africa/Lome Africa/Tunis Africa/Kampala Africa/Lusaka Africa/Harare

America America/Argentina America/Indiana America/Kentuckv America/North_Dakota America/Danmarkshavn America/Scoresbysund America/Godthab America/Thule America/New_York America/Chicago America/Denver America/Los_Angeles America/Juneau America/Yakutat America/Anchorage America/Nome America/Adak America/Phoenix America/Boise America/Indianapolis America/Louisville America/Detroit America/Menominee America/St_Johns America/Goose_Bay America/Halifax America/Glace Bay America/Montreal America/Toronto America/Thunder_Bay America/Nipigon America/Rainy_River America/Winnipeg America/Regina America/Swift_Current America/Edmonton America/Vancouver America/Dawson_Creek America/Pangnirtung America/Igaluit America/Rankin_Inlet America/Cambridge_Bay America/Yellowknife America/Inuvik America/Whitehorse America/Dawson America/Cancun America/Merida America/Monterrey America/Mexico_City America/Chihuahua

America/Mazatlan America/Tijuana America/Anguilla America/Antiqua America/Nassau America/Barbados America/Belize America/Cayman America/Costa_Rica America/Havana America/Dominica America/Santo_Domingo America/EI_Salvador America/Grenada America/Guadeloupe America/Guatemala America/Port-au-Prince America/Tegucigalpa America/Jamaica America/Martinique America/Montserrat America/Managua America/Panama America/Puerto_Rico America/St Kitts America/St_Lucia America/Miguelon America/St Vincent America/Grand Turk America/Tortola America/St_Thomas America/Aruba America/La Paz America/Noronha America/Belem America/Fortaleza America/Recife America/Araguaina America/Maceio America/Bahia America/Sao Paulo America/Campo_Grande America/Cuiaba America/Porto_Velho America/Boa_Vista America/Manaus America/Eirunepe America/Rio_Branco America/Santiago America/Bogota America/Curacao America/Guayaquil

Africa/Ceuta America/Guyana America/Asuncion America/Lima America/Paramaribo America/Port_of_Spain America/Montevideo America/Caracas America/Shiprock America/North_Dakota/Center America/Kentucky/Monticello America/Kentucky/Louisville America/Indiana/Marengo America/Indiana/Knox America/Indiana/Vevay America/Indiana/Indianapolis America/Argentina/Buenos_Air es America/Argentina/Cordoba America/Argentina/Tucuman America/Argentina/La_Rioja America/Argentina/San_Juan America/Argentina/Jujuy America/Argentina/Catamarca America/Argentina/Mendoza America/Argentina/ComodRiva davia America/Argentina/Rio_Gallegos America/Argentina/Ushuaia Antarctica Antarctica/Casey Antarctica/Davis Antarctica/Mawson Antarctica/DumontDUrville Antarctica/Syowa Antarctica/Vostok Antarctica/Rothera Antarctica/Palmer Antarctica/McMurdo Antarctica/South_Pole Arctic Arctic/Longyearbyen Asia Asia/Kabul Asia/Yerevan Asia/Baku Asia/Bahrain Asia/Dhaka Asia/Thimphu Asia/Brunei Asia/Rangoon Asia/Phnom_Penh Asia/Harbin Asia/Shanghai Asia/Chongqing Asia/Urumqi Asia/Kashgar

America/Hermosillo Asia/Macau Asia/Nicosia Asia/Tbilisi Asia/Dili Asia/Calcutta Asia/Jakarta Asia/Pontianak Asia/Makassar Asia/Jayapura Asia/Tehran Asia/Baghdad Asia/Jerusalem Asia/Tokyo Asia/Amman Asia/Almaty Asia/Qyzylorda Asia/Aqtobe Asia/Aqtau Asia/Oral Asia/Bishkek Asia/Seoul Asia/Pyongyang Asia/Kuwait Asia/Vientiane Asia/Beirut Asia/Kuala_Lumpur Asia/Kuching Asia/Hovd Asia/Ulaanbaatar Asia/Choibalsan Asia/Katmandu Asia/Muscat Asia/Karachi Asia/Gaza Asia/Manila Asia/Qatar Asia/Riyadh Asia/Singapore Asia/Colombo Asia/Damascus Asia/Dushanbe Asia/Bangkok Asia/Ashgabat Asia/Dubai Asia/Samarkand Asia/Tashkent Asia/Saigon Asia/Aden Asia/Yekaterinburg Asia/Omsk Asia/Novosibirsk Asia/Krasnoyarsk Asia/Irkutsk Asia/Yakutsk Asia/Vladivostok Asia/Sakhalin

America/Cayenne Asia/Kamchatka Asia/Anadvr Asia/Istanbul Atlantic Atlantic/Cape_Verde Atlantic/St_Helena Atlantic/Faeroe Atlantic/Reykjavik Atlantic/Azores Atlantic/Madeira Atlantic/Canary Atlantic/Bermuda Atlantic/Stanley Atlantic/South_Georgia Atlantic/Jan Mayen Australia Australia/Darwin Australia/Perth Australia/Brisbane Australia/Lindeman Australia/Adelaide Australia/Hobart Australia/Melbourne Australia/Sydney Australia/Broken Hill Australia/Lord Howe CET CST6CDT EET EST EST5EDT Etc Etc/GMT Etc/UTC Etc/UCT Etc/GMT-14 Etc/GMT-13 Etc/GMT-12 Etc/GMT-11 Etc/GMT-10 Etc/GMT-9 Etc/GMT-8 Etc/GMT-7 Etc/GMT-6 Etc/GMT-5 Etc/GMT-4 Etc/GMT-3 Etc/GMT-2 Etc/GMT-1 Etc/GMT+1 Etc/GMT+2 Etc/GMT+3 Etc/GMT+4 Etc/GMT+5 Etc/GMT+6 Etc/GMT+7

Asia/Hong_Kong Asia/Taipei Etc/GMT+9 Etc/GMT+10 Etc/GMT+11 Etc/GMT+12 Etc/Universal Etc/Zulu Etc/Greenwich Etc/GMT-0 Etc/GMT+0 Etc/GMT0 Europe Europe/London Europe/Belfast Europe/Dublin Europe/Tirane Europe/Andorra Europe/Vienna Europe/Minsk Europe/Brussels Europe/Sofia Europe/Prague Europe/Copenhagen Europe/Tallinn Europe/Helsinki Europe/Paris Europe/Berlin Europe/Gibraltar Europe/Athens Europe/Budapest Europe/Rome Europe/Riga Europe/Vaduz Europe/Vilnius Europe/Luxembourg Europe/Malta Europe/Chisinau Europe/Monaco Europe/Amsterdam Europe/Oslo Europe/Warsaw Europe/Lisbon Europe/Bucharest Europe/Kaliningrad Europe/Moscow Europe/Samara Europe/Belgrade Europe/Madrid Europe/Stockholm Europe/Zurich Europe/Istanbul Europe/Kiev Europe/Uzhgorod Europe/Zaporozhye Europe/Simferopol Europe/Nicosia

Asia/Magadan Europe/Mariehamn Europe/Vatican Europe/San_Marino Europe/Ljubljana Europe/Sarajevo Europe/Skopje Europe/Zagreb Europe/Bratislava Factory GMT HST Indian Indian/Comoro Indian/Antananarivo Indian/Mauritius Indian/Mayotte Indian/Reunion Indian/Mahe Indian/Kerguelen Indian/Chagos Indian/Maldives Indian/Christmas Indian/Cocos MET MST MST7MDT PST8PDT Pacific Pacific/Rarotonga Pacific/Fiji Pacific/Gambier Pacific/Marguesas Pacific/Tahiti Pacific/Guam Pacific/Tarawa Pacific/Enderburv Pacific/Kiritimati Pacific/Saipan Pacific/Majuro Pacific/Kwajalein Pacific/Yap Pacific/Truk Pacific/Ponape Pacific/Kosrae Pacific/Nauru Pacific/Noumea Pacific/Auckland Pacific/Chatham Pacific/Niue Pacific/Norfolk Pacific/Palau Pacific/Port_Moresby Pacific/Pitcairn Pacific/Pago_Pago Pacific/Apia Pacific/Guadalcanal

Etc/GMT+8 Pacific/Palau Pacific/Port_Moresby Pacific/Pitcairn Pacific/Pago_Pago Pacific/Apia Pacific/Guadalcanal Pacific/Fakaofo Pacific/Tongatapu Pacific/Funafuti Pacific/Johnston Pacific/Midway Pacific/Wake Pacific/Efate Pacific/Wallis Pacific/Honolulu Pacific/Easter Pacific/Galapagos System_V SystemV/AST4ADT SystemV/EST5EDT SystemV/CST6CDT SystemV/MST7MDT SystemV/PST8PDT SystemV/YST9YDT SystemV/AST4 SystemV/EST5 SystemV/CST6 SystemV/MST7 SystemV/PST8 SystemV/YST9 SystemV/HST10 WET

Appendix G Example of config.xml

The following is one of the default sysctl entries in the factory default config file

"/ubs/factory/config.xml".

```
<sysctl>

<pr
```

Where:

XML Tag	Description
<param/>	start / end tag of an entry
<enable></enable>	The entry is enabled. If the tag is missing, the entry is disabled.
<uuid></uuid>	The unique id for the WebAdmin. ******
<name></name>	The variable name of the entry
<value></value>	The value of the entry
<comment></comment>	Description of the entry

For the variable name in the "/etc/sysctl.conf", please refer to FreeBSD documentation.

Appendix H Identifying Physical Local Block Devices on AhsayUBS

Method 1: Serial Number

The "Serial Number" is the unique identifier for a block device. Thus, the block device can be found physically in the machine by its serial number.

Here are the steps to look for the serial number in the AhsayUBS WebAdmin:

- In the page [Storage] > [Summary], click on the block device icon ' a ' that looking for. The page then will be redirected to [Storage] > [Summary] > [Block Device Information].
- 2. If the "Serial Number" can be retrieved by the block device, the row "Serial Number" will exist in the table.

	Volume ID	system	
	Device ID	d01	
důl ata	Device Name	ad0	
	Device Path	/dev/ad0	
	Device Type	ata	
	Device Size	1,000,204,886,016 bytes	
	Model Family	Seagate Barracuda ES.2	
	Model Name	ST31000340N5	
	Serial Number	9QJ44DZX	
	Device Firmware Version	SN06	

Method 2: Device name

If a block device is connected to a specific controller e.g. 'ad' for ATA or 'da' for SCSI. The connector will be named and ordered starting from 0, e.g. ad0, ad1, da0, da1 ... etc. Therefore, the block device can be identified according to the controller name and the connector number.

To look for the device name, please follow the steps below:

- In the page [Storage] > [Summary], click on the block device icon ' ' that looking for. The page then will be redirected to [Storage] > [Summary] > [Block Device Information].
- 2. The "Device Name" exists in the information table.

	Volume ID	esms00	
	Device ID	m00c00	
m00c00	Device Name	da0	
	Device Path	/dev/da0	
	Device Type	scsi	
	Device Size	8.00 GB	
	Model Family	1.0	
scsi	Model Name	Virtual disk 1.0	

Appendix I SNMP OID List

The following OIDs are supported by AhsayUBS. By importing corresponding MIB definition files, those OID values are visible via MIB browser and Network Management Software (NMS). For the complete list of OIDs, please refer to the following MIB documentation:

U.C. Davis

http://www.net-snmp.org/docs/mibs/ucdavis.html

Fokus Begemot (Mib-II)

http://www.freebsd.org/cgi/man.cgi?query=snmp_mibII&sektion=3&manpath=FreeBSD+8.3-RELEASE+and+Ports

Fokus Begemot (Host Resource) <u>http://www.freebsd.org/cgi/man.cgi?query=snmp_hostres&sektion=3&manpath=FreeBSD+8.3-</u> <u>RELEASE+and+Ports</u>

Fokus Begemot (NetGraph)

http://www.freebsd.org/cgi/man.cgi?query=snmp_netgraph&sektion=3&manpath=FreeBSD+8.3-RELEASE+and+Ports

NOTE

Please refer to the page [System] > [Settings] > [SNMP] for a simplified OID list.

Trap string	lubs
	Trap string.
SNMP Modules	Download MIB files
Save and Restart	
	d by the FreeBSD SNMP service. IIB definition files, the OID values can be retrieved by MIB browser and Network Management Software (NMS).
System Information	
OID Prefix	iso.org.dod.internet.mgmt.mib-2.system.
OID Name	OID Description
sysDescr	A textual description of the this node. It is denoted by the CPU and kernel information.
sysContact	The textual identification of the contact person for this managed node, together with information on how to contact this person. It is denoted by the above 'Contact' text field.
sysName	An administratively-assigned name for this managed node. It is denoted by the fully-qualified domain name.
sysLocation	The physical location of this node. It is denoted by the above 'Location' text field.
CPU Statistics	
OID Prefix	iso.org.dod.internet.private.enterprises.ucdavis.systemStats.
OID Name	OID Description
ssCpuUser	The percentage of CPU time spent processing user-level code over the last minute.
ssCpuSystem	The percentage of CPU time spent processing system-level code over the last minute.
ssCpuIdle	The percentage of CPU time spent idle over the last minute.

System		
OID Prefix: iso.org.d	od.internet.mgmt.mib-2.system.	
sysName	An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name.	
sysDescr	A textual description of the node. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software. It is mandatory that this only contain printable ASCII characters.	
sysLocation	The physical location of this node (e.g., 'telephone closet, 3rd floor').	
sysContact	The textual identification of the contact person for this managed node, together with information on how to contact this person.	

Memory	
OID Prefix: iso.org.doo	d.internet.private.enterprises.ucdavis.memory.
memTotalReal	The total amount of physical memory (kBytes) installed on this host.
memAvailReal	The amount of physical memory (kBytes) currently available.
memTotalSwap	The total amount of swap space (kBytes) configured for this host.
memAvailSwap	The amount of swap space (kBytes) currently available.
memTotalFree	The total amount of memory (kBytes) available for use on this host.

Storage						
Each storage entry in the AhsayUBS system has been indexed by the 'dskIndex' attribute (which is located in the attribute suffix). The corresponding 'dskPath', 'dskDevice', 'dskTotal', 'dskAvail', 'dskUsed' and 'dskPercent' attributes will be mapped by the same index. e.g. 'dskIndex.1' implies 'dskPath.1', 'dskDevice.1', 'dskTotal.1', 'dskAvail.1', 'dskUsed.1' and 'dskPercent.1'						
OID Prefix: iso.org.dod.internet.private.enterprises.ucdavis.dskTable.dskEntry.						
dskIndex Integer reference number (row number) for the disk MIB.						
dskPath	Logical path where the disk is mounted.					
dskDevice Logical path of the device for the partition.						
dskTotal Total size of the disk (kBytes).						
dskAvail	dskAvail Available space on the disk (kBytes).					
dskUsed Used space on the disk (kBytes).						
dskPercent Percentage of space used on disk.						
Each storage entry in the UBS system has been indexed by the 'hrStorageIndex' attribute (which is located in the attribute suffix). The corresponding 'hrStorageDescr', 'hrStorageSize' and 'hrStorageUsed' attributes will be mapped by the same index.						

e.g. 'hrStorageIndex.1' implies 'hrStorageDescr.1', 'hrStorageSize.1' and 'hrStorageUsed.1'				
OID Prefix: iso.org.dod.internet.mgmt.mib-2.host.hrStorage.hrStorageTable.hrStorageEntry.				
hrStorageIndex A unique key assigned by the MIB to represent a storage area in the host.				
hrStorageDescr A description of the type and instance of the storage described by this entry.				
hrStorageSize	The storage size in units of 'hrStorageAllocationUnits'.			
hrStorageUsed Used storage space in units of 'hrStorageAllocationUnits'.				

Network						
Each network interface in the AhsayUBS system has been indexed by the 'ifIndex' attribute (which is located in the attribute suffix). The 'ifIndex' and 'ifAdEntIfIndex' correspond to the same indexed interface.						
attributes will be mappe	The corresponding 'ifDescr', 'ifSpeed', 'ifPhysAddress', 'ifAdEntAddr' and 'ifAdEntNetMask' attributes will be mapped by the same index. e.g. 'ifIndex.1' implies 'ifDescr.1', 'ifSpeed.1', 'ifPhysAddress.1', 'ifAdEntAddr.1' and 'ifAdEntNetMask.1'					
OID Prefix: iso.org.dod	.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.					
ifIndex	A unique key assigned to each interface from MIB. Its value ranges between 1 and the value of 'ifNumber'. The value for each interface must remain constant at least from one re- initialization of the entity's network management system to the next re- initialization.					
ifDescr	A textual string containing information about the interface. This string should include the name of the manufacturer, the product name and the version of the hardware interface.					
ifSpeed	An estimate of the interface's current bandwidth in bits per second. For interfaces which do not vary in bandwidth or for those where no accurate estimation can be made, this object should contain the nominal bandwidth.					
ifPhysAddress	The interface's address at the protocol layer immediately 'below' the network layer in the protocol stack. For interfaces which do not have such an address (e.g., a serial line), this object should contain an octet string of zero length.					
OID Prefix: iso.org.dod.internet.mgmt.mib-2.ip.ipAddrTable.ipAddrEntry.						
ipAdEntIfIndex	EntIfIndex The index value which uniquely identifies the interface. The value is th same as 'ifIndex'.					
ipAdEntAddr	IP address assigned to the interface.					
ipAdEntNetMask	The subnet mask associated with the IP address to the interface. The value of the mask is an IP address with all the network bits set to 1 and all the hosts bits set to 0.					

Routing				
This entity's IP Routing table.				
OID Prefix: iso.org.dod.internet.mgmt.mib-2.ip.ipForward.ipCidrRouteTable.				
ipCidrRoutelfIndex The 'ifIndex' value that identifies the local interface through we the next hop of this route should be reached.				
ipCidrRouteNextHop On remote routes, the address of the next system enroute; Otherwise, 0.0.0.0.				

CPU Statistics

The following attributes provide measure to CPU usage in number of 'ticks' (typically 1/100s). On a multi-processor system, the counter values are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

OID Prefix: iso.org.dod.internet.private.enterprises.ucdavis.systemStats.

ere i felixi leefergiaea				
ssCpuRawWait	The number of 'ticks' spent waiting for I/O.			
ssCpuRawKernel	The number of 'ticks' spent processing in the kernel over the last minute.			
ssCpuRawSystem	The number of 'ticks' spent processing system-level code over the last minute. This object may sometimes be implemented as the combination of the 'ssCpuRawWait(54)' and 'ssCpuRawKernel(55)' counters, so care must be taken when summing the overall raw counters.			
ssCpuRawUser	The number of 'ticks' spent processing user-level code over the last minute.			
ssCpuRawIdle	The number of 'ticks' spent idle over the last minute.			

Disk I/O Statistics

Each storage device in the AhsayUBS system has been indexed by the 'diskIOIndex' attribute. The corresponding 'diskIODevice', 'diskIONRead' and 'diskIOWritten' attributes will be mapped by the same index.

e.g. 'diskIOIndex.1' implies 'diskIODevice.1', 'diskIONRead.1' and 'diskIOWritten.1'

OID Prefix:

iso.org.dod.internet.private.enterprises.ucdavis.ucdExperimental.ucdDiskIOMIB.diskIOTable.diskIOEntry.

disklOIndex	skIOIndex Reference index for each observed device.		
diskIODevice	The name of the device we are counting / checking.		
diskIONRead	The number of bytes read from this device since boot.		
diskIOWritten	The number of bytes written to this device since boot.		

Appendix J MIB Browser

MIB Browser allows administrators to load MIB definition files and connects to SNMP enabled network devices and applications. Some MIB browsers provide both text view and table view for the retrieved MIB values. In the following, we are going to demonstrate with the 'iReasoning MIB Browser Personal Edition'.

(http://ireasoning.com/downloadmibbrowserfree.php)

- 1. The MIB Browser GUI includes the following views:
 - Address and Advanced (menu bar, for SNMP agent connection configuration)
 - MIB Tree (top left panel, presenting the supported MIB entities)
 - MIB Description (bottom left panel, presenting the MIB entity detail)
 - Result Table (top right panel, presenting the OID query result)



Additional MIB definition files can be loaded to the MIB Browser.
 Download and extract the MIB archive from UBS [System -> Settings -> SNMP].

Status	Running		
Location	Primary Backup Server, Server Room Location information, e.g. physical location of this system: 'Floor of building, Room xy		
Contact	Backup Server Administrator Contact information, e.g. name or email of the person responsible for this system.		
Community	public Enter read community string here.		
Traps	✓ Enable traps.		
Trap host	alex-cheng.ahsayhqt.local Enter trap host name.		
Trap port	162 Enter the port to send the traps to (default 162).		
Trap string	ubs Top samp		
SNMP Modules	Download MIB files		

Click on 'File -> Load MIBs' to load the following MIB definition files:

- BEGEMOT-HOSTRES-MIB.txt
- BEGEMOT-IP-MIB.txt
- BEGEMOT-MIB.txt
- BEGEMOT-MIB2-MIB.txt
- BEGEMOT-NETGRAPH.txt
- BEGEMOT-SNMPD.txt
- FOKUS-MIB.txt
- HOST-RESOURCES-MIB.txt
- RFC1213-MIB.txt
- OUCD-SNMP-MIB.txt

Look in:	🛅 mibs	-	1 00	
_				
	BEGEMOT-HOSTRES-MIB.txt			
	BEGEMOT-IP-MIB.txt			
My Recent	BEGEMOT-MIB.txt			
Documents	BEGEMOT-MIB2-MIB.txt			
	BEGEMOT-NETGRAPH.txt			
	BEGEMOT-SNMPD.txt			
Desktop	FOKUS-MIB.txt			
	HOST-RESOURCES-MIB.txt			
	RFC1213-MIB.txt			
ly Documents	UCD-SNMP-MIB.txt			
	File name:			Open
	ji ji			open
ly Computer	Files of type: All Files		land in	Cancel

3. SNMP 'Get' and 'Walk' operation

By selecting specific OID entities, the SNMP 'Get' operation will retrieve the selected OID values. The OID entities will be mapped with the corresponding name defined in the MIB files. For example, we may retrieve the all entity values under the OID 'iso.org.dod.internet.mgmt.mib-2.system' via the MIB Browser.



On the other hand, the MIB Browser may walk through the entire MIB Tree by the SNMP 'Walk' operation. All OID entities will be retrieved from the SNMP agent. If the corresponding MIB definition file is not found, the retrieved OID will be displayed in numeric format.

o.org.doc			Name/OID A	Value	Туре
mgmt	Find in subtree Expand subtree		sysDescr.0	Hardware: amd64 Intel(R) Xeon(R) C	OctetString
i mik			sysObjectID.0	begemotSnmpdAgentFreeBSD	OID
	Graph View Ctrl+R		sysUpTime.0	17 minutes 48 seconds (106863)	TimeTicks
	arapit view.	Ctri+K	sysContact.0	Backup Server Administrator	OctetString
	Get Next	Ctrl+N	sysName.0	backup-server.local	OctetString
Get Bulk Get Subtree Walk Table View	Get Bulk	Ctrl+B	sysLocation.0	Primary Backup Server, Server Room	OctetString
			sysServices.0	76	Integer
	Ctrl+E	.1.3.6.1.2.1.1.8.0	180 milliseconds (18)	TimeTicks	
	Walk 🔓	Ctrl+W	.1.3.6.1.2.1.1.9.1.2.1	begemotSnmpdTransUdp	OID
	Table View	Ctrl+T	.1.3.6.1.2.1.1.9.1.2.2	begemotSnmpdTransLsock	OID
		autority a	.1.3.6.1.2.1.1.9.1.2.3	.1.3.6.1.6.3.1	OID
former former			.1.3.6.1.2.1.1.9.1.2.4	begemotSnmpd	OID
			.1.3.6.1.2.1.1.9.1.2.5	.1.3.6.1.2.1.31	OID
			.1.3.6.1.2.1.1.9.1.2.6	1.3.6.1.2.1.48	OID
			.1.3.6.1.2.1.1.9.1.2.7	.1.3.6.1.2.1.49	OID
			.1.3.6.1.2.1.1.9.1.2.8	1.3.6.1.2.1.50	OID
			.1.3.6.1.2.1.1.9.1.2.9	.1.3.6.1.2.1.4.24	OID

4. MIB Browser Table View

Some OID may exist as customized entry type. Multiple instances of entity value may exist under certain OID. For example, a system may contain multiple disks that each disk could be indexed by a unique index value. In such case, the MIB Browser may provide the 'Table View' that all supported entity values can be presented in table format.

Name	dskEntry	
OID	.1.3.6.1.4.1.2021.9.1	
MIB	UCD-SNMP-MIB	
Syntax	DskEntry	
Access	not-accessible	
Status	current	
DefVal		
Indexes	dskindex	
Descr	An entry containing a disk and its statistics.	

From OID 'iso.org.dod.internet.private.ucdavis.dskTable.dskEntry', we may retrieve the system disk detail in table view with the corresponding 'dskPath', 'dskDevice', 'dskTotal', 'dskUsed' and 'dskPercent' entity values.



Appendix K Open VM Tools Support

AhsayUBS includes support for Open VM Tools on FreeBSD.

To check if Open VM Tools is installed and running on AhsayUBS, login to AhsayUBS server using a ssh client and use the **kldstat** or **ps** command.

# k	ldsta	at		
Id.	Refs	Address	Size	Name
Id	Refs	s Address	Size	Name
1	49	0xfffffff80200000	10d1490	kernel
2	1	0xfffffff812d2000	8cf0	vesa.ko
3	1	0xfffffff8139c000	17378	ahci.ko
4	1	0xfffffff813b4000	f108	mvs.ko
5	1	0xfffffff8c3c4000	7b68	geom_concat.ko
6	1	0xfffffff8c3cc000	8f60	geom_stripe.ko
7	1	0xfffffff8c3d5000	25ae8	geom_mirror.ko
8	1	0xfffffff8c3fb000	25c38	geom_raid5.ko
9	1	0xfffffff8c611000	221398	zfs.ko
10	1	0xfffffff8c833000	7500	opensolaris.ko
11	1	0xfffffff8c83b000	11150	krpc.ko
12	1	0xfffffff8c84d000	9afc	iscsi_initiator.ko
13	1	0xfffffff8c857000	14bd	splash_bmp.ko
14	1	0xfffffff8c859000	2798	vmmemctl.ko
15	1	0xfffffff8c85c000	23e0	vmxnet.ko
16	1	0xfffffff8c85f000	2cf8	vmblock.ko
17	1	<i>0xfffffff8c862000</i>	2f20	procfs.ko

```
# ps -fU root | grep vmtoolsd
1186 - S 1:09.43 /usr/local/bin/vmtoolsd -c
/usr/local/share/vmware-tools/tools.conf -p /usr/local/lib/open-vm-
tools/plugins/vmsvc
29990 1 S+ 0:00.00 grep vmtoolsd
```

The module is installed in /usr/local/lib/open-vm-tools/

Appendix L AhsayUBS Tape Drive Commands

Description	Command	
Rewind tape	mt -f /dev/sa0 rewind	
Check tape status	mt -f /dev/sa0 status	
Erase tape	mt -f /dev/sa0 erase	

NOTE

Please ensure the tape has been rewinded before use.



Appendix M Miscellaneous Commands

Accessing shell from physical console: Press ALT+F2 (or "PrtScr" key) Login with SSH credentials

From shell, to manually start/stop/restart AhsayCBS service

- # sh /ubs/mnt/esfmfw/obsr/system/obsr/bin/shutdown.sh
- # sh /ubs/mnt/esfmfw/obsr/system/obsr/bin/startup.sh
- # sh /ubs/mnt/esfmfw/obsr/system/obsr/bin/restart.sh

From shell, check bootup message:
 # dmesg | more

From shell, check on FreeBSD version:

uname -mrs

Appendix N How to repair an AhsayUBS volume after it has been damaged due to expanding the volume

Expanding an AhsayUBS volume is not supported as it will cause some of the volume information to be removed which will result in some mount points such as "/tmp" to not mount properly. As a result the AhsayCBS service will no longer startup.

See error that will be encountered below once you try to access AhsayCBS.



The following instructions will allow the repair of the damaged volume and resolve the missing volume label and failed mount point issue.

1. Check the pool ID.



2. Check the status.

```
ahsayubs:~# glabel statusNameStatusComponentslabel/DA5CB17Exd00p00N/Ada0p1label/DA5CB17Exd00p01N/Ada0p2label/DA5CB17Exd00p02N/Ada0p3label/DA5CB17Exd00p07N/Ada0p8ufs/DA5CB17ExesosfwN/Amirror/DA5CB17Exesosfwufs/DA5CB17ExesfmfwN/Amirror/DA5CB17Exesfmfw
```

3. Unmount the disk pool for label updates.

ahsayubs: :~# zpool export eslsfwxDA5CB17E



4. Create label.

ahsayubs:~# glabel create DA5CB17Exd00p09 da0p10

NOTE

Refer to your normal AhsayUBS to know the correct naming format. In our example, the naming format is **DA5CB17Exd00p**. So DA5CB17Exd00p09 da0p10 was used to create the label.

5. Check the changes made.

ahsayubs:~# glabel status				
Name	Status	Components		
label/DA5CB17Exd00p00	N/A	da0p1		
label/DA5CB17Exd00p01	N/A	da0p2		
label/DA5CB17Exd00p02	N/A	da0p3		
label/DA5CB17Exd00p07	N/A	da0p8		
ufs/DA5CB17Exesosfw	N/A	<i>mirror/DA5CB17Exesosfw</i>		
ufs/DA5CB17Exesfmfw	N/A	mirror/DA5CB17Exesfmfw		
label/DA5CB17Exd00p09	N/A	da0p10		

6. Remount the disk pool.

ahsayubs:~# zpool import eslsfwxDA5CB17E -d /dev/label

7. Check the changes.

```
ahsayubs:~# zpool status
 pool: eslsfwxDA5CB17E
state: ONLINE
 scan: scrub repaired 0 in OhOm with 0 errors on Sun Sep 8
00:00:39 2019
config:
                                STATE
                                         READ WRITE CKSUM
       NAME
       eslsfwxDA5CB17E
                                ONLINE
                                            0
                                                   0
                                                         0
         label/DA5CB17Exd00p09 ONLINE
                                             0
                                                   0
                                                         0
       logs
         label/DA5CB17Exd00p07 ONLINE
                                             0
                                                   0
                                                         0
```

8. Manually mount the disk.

ahsayubs:~# zfs set mountpoint=/ubs/mnt/eslsfw eslsfwxDA5CB17E

9. Confirm if the disk is mounted.

ahsayubs:~# zfs get mountpoint				
NAME	PROPERTY	VALUE	SOURCE	
eslsfwxDA5CB17E	mountpoint	/ubs/mnt/eslsfw	local	

10. Restart AhsayUBS and manually start AhsayCBS and NFS services.

NOTES

- If the AhsayUBS machine has more than one partition, repeat steps 7 10 to map the other mount point(s). Keep repeating this until all the mount point(s) for each partition is mounted.
- It is advisable to migrate to another disk to have a larger storage instead of expanding the current disk. For instructions on how to migrate for additional storage please refer to Additional User Storage Migration.