



Ahsay Online Backup Manager v7

Quick Start Guide for FreeBSD

Ahsay Systems Corporation Limited

9 August 2019

Copyright Notice

© 2019 Ahsay Systems Corporation Limited. All rights reserved.

The use and copying of this product is subject to a license agreement. Any other use is prohibited. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system or translated into any language in any form by any means without prior written consent of Ahsay Systems Corporation Limited. Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor, Ahsay Systems Corporation Limited does not warrant that this document is error free. If you find any errors in this document, please report to Ahsay Systems Corporation Limited in writing.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

Trademarks

Ahsay, Ahsay Cloud Backup Suite, Ahsay Online Backup Suite, Ahsay Offsite Backup Server, Ahsay Online Backup Manager, Ahsay A-Click Backup, Ahsay Replication Server, Ahsay BackupBox Firmware, Ahsay Universal Backup System, Ahsay NAS Client Utility are trademarks of Ahsay Systems Corporation Limited.

Amazon S3 is registered trademark of Amazon Web Services, Inc. or its affiliates.

Apple and Mac OS X are registered trademarks of Apple Computer, Inc.

Dropbox is registered trademark of Dropbox Inc.

Google Cloud Storage and Google Drive are registered trademarks of Google Inc.

Lotus, Domino, Notes are registered trademark of IBM Corporation.

Microsoft, Windows, Microsoft Exchange Server, Microsoft SQL Server, Microsoft Hyper-V, Microsoft Azure, One Drive and One Drive for Business are registered trademarks of Microsoft Corporation.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Oracle, Oracle 10g, Oracle 11g and MySQL are registered trademarks of Oracle Corporation.

Rackspace and OpenStack are registered trademarks of Rackspace US, Inc.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo and JBoss are registered trademarks of Red Hat, Inc. www.redhat.com in the U.S. and other countries. Linux is a registered trademark of Linus Torvalds.

ShadowProtect is registered trademark of StorageCraft Technology Corporation.

VMware, ESX, ESXi, vCenter are registered trademarks of VMware, Inc.

All other product names are registered trademarks of their respective owners.

Disclaimer

Ahsay Systems Corporation Limited will not have or accept any liability, obligation or responsibility whatsoever for any loss, destruction or damage (including without limitation consequential loss, destruction or damage) however arising from or in respect of any use or misuse of reliance on this document. By reading and following the instructions in this document, you agree to accept unconditionally the terms of this Disclaimer and as they may be revised and/or amended from time to time by Ahsay Systems Corporation Limited without prior notice to you.

Revision History

Date	Descriptions	Type of modification
29 June 2018	First Draft	New
7 August 2019	Added instructions on how to change ownership of a backup set in Appendix F	New

Table of Contents

1	System Requirements	1
1.1	Supported Platforms	1
1.2	Packages	1
2	Getting started	2
3	Download and Install AhsayOBM.....	3
3.1	Online Installation.....	4
3.2	Offline Installation.....	9
3.3	AhsayOBM Scheduler Service Check	12
3.4	AhsayOBM check rc.conf file	12
4	Starting AhsayOBM.....	13
5	Creating a File Backup Set.....	14
5.1	Using AhsayCBS.....	16
5.2	Using ssh	30
6	Overview on the Backup Process	34
7	Running Backup Jobs	35
8	Restoring Data	39
9	Technical Assistance.....	49
10	Documentation	50
	Appendix	51
Appendix A	File Backup Set XML Template (Raw)	51
Appendix B	File Backup Set XML Template (with explanation)	55
Appendix C	Example File Backup Set Setting.....	61
Appendix D	Uninstall AhsayOBM (sh)	64
Appendix E	Handling of Non-regular Files	65
Appendix F	How to Change Ownership of a Backup Set.....	66

1 System Requirements

1.1 Supported Platforms

Refer to the following KB article for the list of supported operating systems:

FAQ: Ahsay Software Compatibility List (SCL) for version 7.3 or above (5001)

<http://wiki.ahsay.com/doku.php?id=public:5001>

1.2 Packages

The following packages have to be present in the FreeBSD machine to enable installation and normal operations of AhsayOBM version 7.

- curl <https://www.freshports.org/ftp/curl/>

The 'curl' command is used by the AhsayOBM sh script installer to download components from AhsayCBS server during the installation process.

- tar <https://www.gnu.org/software/tar>

The 'tar' command is used by the AhsayOBM gz installer to uncompress and extract installation files or components downloaded from the AhsayCBS backup server onto the FreeBSD machine.

- psmisc <http://psmisc.sourceforge.net/>

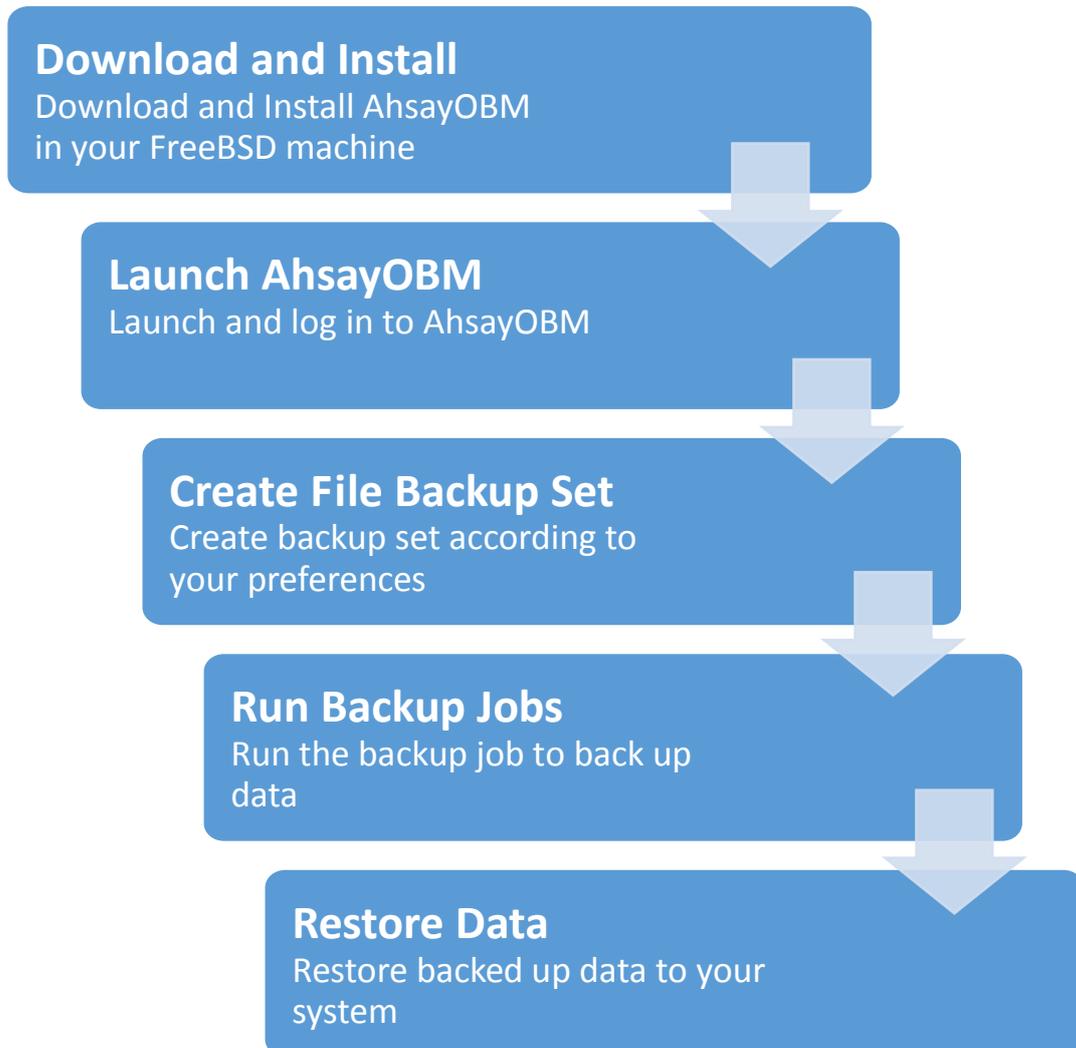
The 'psmisc' package which contains the 'fuser' components must be installed for AhsayOBM on FreeBSD, for the auto update agent (AUA) process to work properly.

- openjdk7 <https://www.freebsd.org/java/>

The 'openjdk7' package must be installed for AhsayOBM on FreeBSD since this is the reference implementation of Java SE.

2 Getting started

This quick start guide will walk you through the following 5 major parts to get you started with using AhsayOBM.



3 Download and Install AhsayOBM

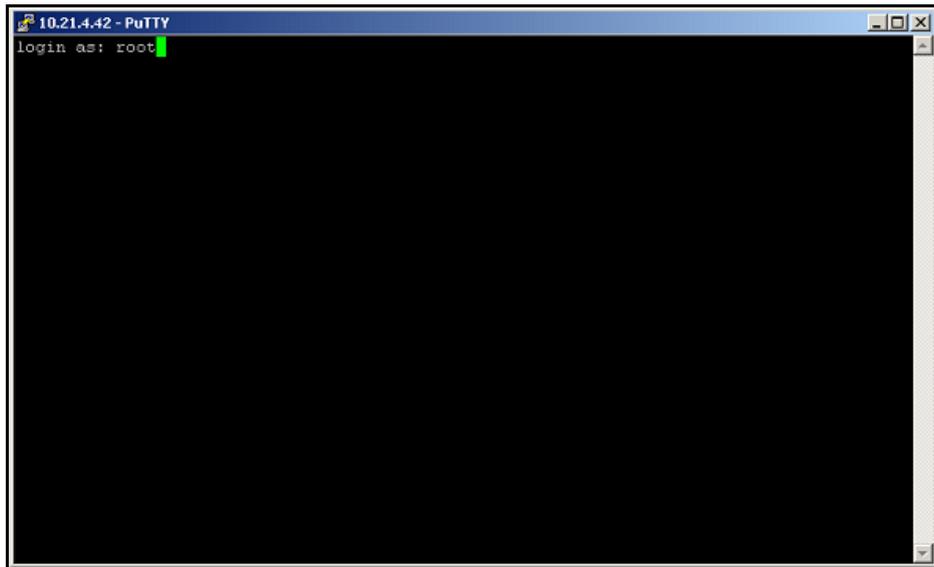
From v7.15.0.0 or above FreeBSD distributions are officially supported in AhsayOBM. AhsayOBM can be installed using *.sh for online installation or from *.gz package for offline installation.

From version 7.15.0.0 onwards, there are two installation modes of AhsayOBM, online installation and offline installation. Below is the table of comparison between online installation and offline installation.

	Online Installation	Offline Installation
Version Supported	➤ From v7.3.2.0 onwards.	➤ From v7.15.0.0 onwards.
Installation Time	<ul style="list-style-type: none"> ➤ Takes more time as it needs to download the binary and component files (80MB to 132MB depending on operating system) each time the installation is run. ➤ Online installer size is 6KB to 3.5MB depending on operating system as it contains only the initial installation package files. 	<ul style="list-style-type: none"> ➤ Takes less time as all the necessary binary and component files are already available in the offline installer and offline installer can be downloaded once but reused many times. ➤ Offline installer size is 80MB to 132MB depending on operating system as it contains all the necessary binary and component files.
Deployments	<ul style="list-style-type: none"> ➤ Suitable for single or small amount of device installations. ➤ Suitable for sites with fast and stable internet connection as internet connection is needed each time when an installation is run. ➤ A slow internet connection will result in longer installation time and interrupted or unstable internet connection may lead to unsuccessful installation. ➤ Ensures the latest version of the product is installed. 	<ul style="list-style-type: none"> ➤ Suitable for multiple or mass device installations. ➤ Suitable for client sites with metered internet connections as once the offline installer is downloaded, internet connection is not needed each time when an installation is run. ➤ May need to update the product version after installation if an older offline installer is used.

3.1 Online Installation

1. Login to the FreeBSD machine via a ssh client using the root account.



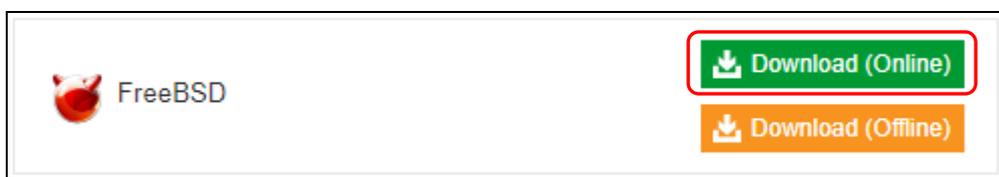
2. Create a new directory to install AhsayOBM.

```
# mkdir -p /usr/local/obm  
# cd /usr/local/obm
```

3. Download the AhsayOBM sh installation script file from your backup service provider's website:



4. Go to the download page and right click on **Download (Online)** button, then **Copy Link Address** to copy the URL of the AhsayOBM installer.



5. Execute the curl command with the copied URL to download the AhsayOBM installer to the FreeBSD machine.

Note: After pasting the URL, delete `?dlName=obm-freebsd-443-10.90.10.84-https-00.sh`

```
# cd /usr/local/obm  
# curl -Ok https://10.90.10.84/cbs/download/obm-nix-443-  
10.90.10.84-https-00.sh  
  % Total    % Received % Xferd  Average Speed   Time    Time  
Time  Current                      Dload  Upload  Total      Spent  
Left  Speed  
100 21908  100 21908    0     0 12811      0  0:00:01  0:00:01  
--:--:-- 13181
```

- Execute the AhsayOBM install script by using the sh command.

Note: The .sh script file should be placed under the directory path where you want to install the AhsayOBM application.

Workaround: If the script does not run, add executable permissions first to the AhsayOBM install script by running the chmod 755 script then install it by executing it
chmod 755 obm-nix-443-10.90.10.84-https-00.sh
./obm-nix-443-10.90.10.84-https-00.sh

```
# sh obm-nix-443-10.90.10.84-https-00.sh
Log Time: Fri Tue Aug 14 15:42:38 HKT 2018
Host address: https://10.90.10.84:443
No JVM package is defined
Downloading file... app-common.tar.gz
  % Total      % Received % Xferd  Average Speed   Time    Time
Time Current
                                Dload  Upload  Total  Spent
Left Speed
100 33.3M 100 33.3M    0    0 1569k      0 0:00:21 0:00:21
--:--:-- 1040k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... app-native-nix-x64.tar.gz
  % Total      % Received % Xferd  Average Speed   Time    Time
Time Current
                                Dload  Upload  Total  Spent
Left Speed
100 527k 100 527k    0    0 1020k      0 --:--:-- --:--:--
--:--:-- 1034k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... app-nix-obm.tar.gz
  % Total      % Received % Xferd  Average Speed   Time    Time
Time Current
                                Dload  Upload  Total  Spent
Left Speed
100 11780 100 11780    0    0 11686      0 0:00:01 0:00:01
--:--:-- 11898
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... aua-common.tar.gz
  % Total      % Received % Xferd  Average Speed   Time    Time
Time Current
                                Dload  Upload  Total  Spent
Left Speed
100 13.7M 100 13.7M    0    0 9602k      0 0:00:01 0:00:01
--:--:-- 9728k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... aua-native-nix-x64.tar.gz
  % Total      % Received % Xferd  Average Speed   Time    Time
Time Current
                                Dload  Upload  Total  Spent
Left Speed
100 440k 100 440k    0    0 1393k      0 --:--:-- --:--:--
--:--:-- 1397k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... aua-nix-obm.tar.gz
```

```

% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100  976  100  976    0    0  1272    0  --:--:--  --:--:--
--:--:-- 1304
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... util-common.tar.gz
% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100 4829  100 4829    0    0 31769    0  --:--:--  --:--:--
--:--:-- 31769
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... util-nix-obm.tar.gz
% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100 75426  100 75426    0    0  170k    0  --:--:--  --:--:--
--:--:-- 171k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... properties-common.tar.gz
% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100 3218k  0 3218k    0    0 1140k    0  --:--:--  0:00:02
--:--:-- 1140k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... app-inst-nix-obm.tar.gz
% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100 165k  100 165k    0    0  228k    0  --:--:--  --:--:--
--:--:-- 230k
Download file completed
Untar component file to /tmp/_obm.180814154238
Downloading file... aua-inst-nix-obm.tar.gz
% Total      % Received % Xferd  Average Speed   Time    Time
Time Current                                Dload  Upload   Total   Spent
Left  Speed
100 48999  100 48999    0    0 88445    0  --:--:--  --:--:--
--:--:-- 90907
Download file completed
Untar component file to /tmp/_obm.180814154238
No old application found, begin fresh install

```

If there is a previous version of AhsayOBM installed in the machine, it will first backup the user setting files before uninstalling the previous version and removing the previous application files.

```
Backup user setting files
  Backup log
  Backup home.txt
  Backup config.ini
  Backup afc.opt
  Backup cb.opt
  Backup finished
  Uninstall previous version...
Log Time: Thu Sep 13 17:24:10 HKT 2018
Uninstall Ahsay Online Backup Manager from /usr/local/obm

Shutting down Scheduler
Wait 5 seconds before Scheduler exits
Kill running Ahsay Online Backup Manager
Kill Process by Image Name: /usr/local/obm/jvm/bin/bJW
Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/bschJW
Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/java
Ignore Process by Image Name:
Removing Scheduler script obmscheduler from service
Uninstall Service for BSD type OS
Remove script obmscheduler from /usr/local/etc/rc.d
Ahsay Online Backup Manager uninstall procedure is complete!
It is now safe to remove files from /usr/local/obm
  Remove previous application files
    Remove directory aua
    Remove file autoDiscovery.xml
    Remove directory bin
    Remove file custom.xml
    Remove file install-180913170656.log
    Remove directory ipc
    Remove directory jvm
    Remove directory licenses
    Remove directory log
    Remove file obm-nix-443-10.16.30.2-https-00.sh
    Remove directory termsfuse
    Remove directory util
    Remove file version.txt
  Remove application files finished
```

7. When asked to enter your java 1.7 home, enter /usr/local/openjdk7/jre which is the default OpenJDK 1.7 path but may be a different path depending on the installed java. You will see **Done** once the installation is finished.

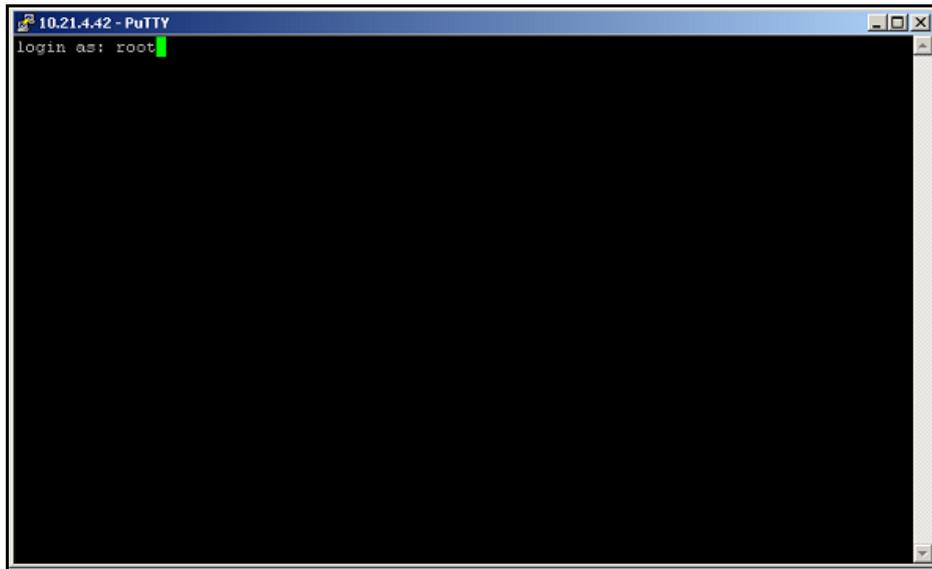
```
Please enter your java 1.7 home:
/usr/local/openjdk7/jre
Copy java 1.7 from /usr/local/openjdk7/jre
Install Application Path: /usr/local/obm
Done
```

If there is an old AhsayOBM installed in the machine, this will be the message that will be displayed.

```
Copy java 1.7 from /usr/local/openjdk7/jre
Install Application Path: /usr/local/obm
  Restore Previous Setting backup...
    Restore log
    Restore home.txt
    Restore config.ini
    Restore application opt file (afc.opt)
    Restore application opt file (cb.opt)
  Previous Setting backup restored
Done
```

3.2 Offline Installation

1. Login to the FreeBSD machine via a ssh client using the root account.



2. Create a new directory to install AhsayOBM.

```
# mkdir -p /usr/local/obm  
# cd /usr/local/obm
```

3. Download the AhsayOBM *.tar.gz file from your backup service provider's website:



4. Go to the download page and right click on **Download (Offline)** button to copy the URL of the AhsayOBM installer.



5. Use the curl command to download the AhsayOBM installer from your backup service provider's website onto the FreeBSD machine.

Note: The tar.gz installation file should be placed under the directory path where you want to install the AhsayOBM application

```
# curl -Ok https://10.90.10.84/cbs/download/obm-freebsd.tar.gz  
% Total      % Received % Xferd  Average Speed   Time    Time  
      Time      Current                Dload  Upload   Total   Spent  
      Left  Speed  
100 53.3M    0 53.3M    0    0  609k      0  --:--:--  0:01:29  
--:--:-- 1090k
```

6. Unzip and extract the installation files using the tar command.

```
# tar xvfz obm-freebsd.tar.gz
x app.pkg/version.txt
x app.pkg/app-common.tar.gz
x app.pkg/app-native-nix-x64.tar.gz
x app.pkg/app-native-nix-x86.tar.gz
x app.pkg/app-nix-obm.tar.gz
x app.pkg/aua-common.tar.gz
x app.pkg/aua-native-nix-x64.tar.gz
x app.pkg/aua-native-nix-x86.tar.gz
x app.pkg/aua-nix-obm.tar.gz
x app.pkg/util-common.tar.gz
x app.pkg/util-nix-obm.tar.gz
x app.pkg/properties-common.tar.gz
x app.pkg/app-inst-nix-obm.tar.gz
x app.pkg/aua-inst-nix-obm.tar.gz
x app.pkg/app-native-nix-others.tar.gz
x app.pkg/aua-native-nix-others.tar.gz
x obm-freebsd.sh
```

7. Run the sh obm-freebsd.sh script to extract the files.

```
# sh obm-freebsd.sh
Log Time: Tue Aug 14 10:43:43 HKT 2018
Using package in /usr/local/obm/app.pkg
Package version: 7.17.0.0
No JVM package is defined
Untar app-common.tar.gz to /tmp/_obm.180814104343
Untar app-native-nix-x64.tar.gz to /tmp/_obm.180814104343
Untar app-nix-obm.tar.gz to /tmp/_obm.180814104343
Untar aua-common.tar.gz to /tmp/_obm.180814104343
Untar aua-native-nix-x64.tar.gz to /tmp/_obm.180814104343
Untar aua-nix-obm.tar.gz to /tmp/_obm.180814104343
Untar util-common.tar.gz to /tmp/_obm.180814104343
Untar util-nix-obm.tar.gz to /tmp/_obm.180814104343
Untar properties-common.tar.gz to /tmp/_obm.180814104343
Untar app-inst-nix-obm.tar.gz to /tmp/_obm.180814104343
Untar aua-inst-nix-obm.tar.gz to /tmp/_obm.180814104343
No old application found, begin fresh install
```

If there is a previous version of AhsayOBM installed in the machine, it will first backup the user setting files before uninstalling the previous version and removing the previous application files.

```
Backup user setting files
  Backup log
  Backup home.txt
  Backup config.ini
  Backup afc.opt
  Backup cb.opt
  Backup finished
Uninstall previous version...
Log Time: Thu Sep 13 17:24:10 HKT 2018
Uninstall Ahsay Online Backup Manager from /usr/local/obm

Shutting down Scheduler
Wait 5 seconds before Scheduler exits
Kill running Ahsay Online Backup Manager
Kill Process by Image Name: /usr/local/obm/jvm/bin/bJW
Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/bschJW
```

```

Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/java
Ignore Process by Image Name:
Removing Scheduler script obmscheduler from service
Uninstall Service for BSD type OS
Remove script obmscheduler from /usr/local/etc/rc.d
Ahsay Online Backup Manager uninstall procedure is complete!
It is now safe to remove files from /usr/local/obm
  Remove previous application files
    Remove directory aua
    Remove file autoDiscovery.xml
    Remove directory bin
    Remove file custom.xml
    Remove file install-180913170656.log
    Remove directory ipc
    Remove directory jvm
    Remove directory licenses
    Remove directory log
    Remove file obm-nix-443-10.16.30.2-https-00.sh
    Remove directory termsofuse
    Remove directory util
    Remove file version.txt
  Remove application files finished

```

8. Enter the path where your java 1.7 is located /usr/local/openjdk7/jre which is the default OpenJDK 1.7 path but may be a different path depending on the installed java. You will see **Done** once the installation is finished

```

Please enter your java 1.7 home:
/usr/local/openjdk7/jre
Copy java 1.7 from /usr/local/openjdk7/jre
Install Application Path: /usr/local/obm
Done

```

If there is an old AhsayOBM installed in the machine, this will be the message that will be displayed.

```

Copy java 1.7 from /usr/local/openjdk7/jre
Install Application Path: /usr/local/obm
  Restore Previous Setting backup...
    Restore log
    Restore home.txt
    Restore config.ini
    Restore application opt file (afc.opt)
    Restore application opt file (cb.opt)
  Previous Setting backup restored
Done

```

When completed successfully AhsayOBM will be installed in the following location **/usr/local/obm**.

3.3 AhsayOBM Scheduler Service Check

The AhsayOBM scheduler service is used to kick automated or scheduled backup jobs, to check if the AhsayOBM scheduler service is running use the **ps** command.

```
# ps
PID TT  STAT   TIME COMMAND
 624 v0  Is+   0:00.00 /usr/libexec/getty Pc ttyv0
 625 v1  Is+   0:00.00 /usr/libexec/getty Pc ttyv1
 626 v2  Is+   0:00.00 /usr/libexec/getty Pc ttyv2
 627 v3  Is+   0:00.00 /usr/libexec/getty Pc ttyv3
 628 v4  Is+   0:00.00 /usr/libexec/getty Pc ttyv4
 629 v5  Is+   0:00.00 /usr/libexec/getty Pc ttyv5
 630 v6  Is+   0:00.00 /usr/libexec/getty Pc ttyv6
 631 v7  Is+   0:00.00 /usr/libexec/getty Pc ttyv7
5883  0  Is+   0:00.75 -csh (csh)
5479  1  Ss    0:01.74 -csh (csh)
6801  1  S     0:26.25 /usr/local/obm/jvm/bin/bschJW -Xms128m -
Xmx768m -Dsun.nio
7004  1  R+   0:00.00 ps
```

1. To manually start the scheduler service use the **/usr/local/obm/bin/Scheduler.sh** script.
2. To manually stop the scheduler service use the **/usr/local/obm/bin/StopScheduler.sh** script.

3.4 AhsayOBM check rc.conf file

To check if the obmscheduler is enabled use the cat command. If you do not see 'obmschedule_enable="YES"', add the entry in the rc.conf file by using a text editor like vi. This is to ensure that the AhsayOBM scheduler service will startup automatically when the FreeBSD machine powers on or when it is rebooted.

```
# cat /etc/rc.conf
hostname="FreeBSD104"
ifconfig_vmx0="inet 10.16.30.22 netmask 255.252.0.0"
defaultrouter="10.16.0.1"
sshd_enable="YES"
# Set dumpdev to "AUTO" to enable crash dumps, "NO" to disable
dumpdev="AUTO"
obmscheduler_enable="YES"
```

4 Starting AhsayOBM

To startup AhsayOBM and connect to AhsayCBS you need to use the **RunConfigurator.sh** script, to configure the backup server URL, port and proxy server settings (if applicable) and enter the user id and password.

Please contact your backup service provider to obtain your user login and password and backup server URL settings.

```
# cd /usr/local/obm/bin
# sh RunConfigurator.sh
Startup Ahsay Online Backup Manager ...
User Configuration file not found
Create a new Configuration file at directory
[/root/.obm/config]

Login Menu (No configuration files found)
-----
(1). Login
(2). Free Trial
(3). Quit
-----
Your Choice: 1

Backup Server URL : 10.90.10.84
Port : 443
Protocol? (1) Http (2) Https : 2
Enable Proxy (Y/N) ? N
Login Name : your_username
Password : *****

Please wait while verifying user account with server...
log4j:WARN No appenders could be found for logger
(org.apache.http.impl.conn.PoolingClientConnectionManager).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig
for more info.

Your account (your_username) is found on server (10.90.10.84:443).
New configuration file has been created

Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice:
```

5 Creating a File Backup Set

In order to run scheduled backups a backup set must be created. There are two ways to create a File Backup Set. One is to create it using AhsayCBS while another way is editing the XML file using ssh.

Using AhsayCBS

Create a backup set

Login to AhsayCBS and create a backup set

Login to AhsayOBM

Login to AhsayOBM using ssh to set encryption setting

Export backup set to XML

Backup set must be exported to XML

Edit backup set in ssh

Use ssh to edit the XML file to add the Standard Destination Setting

Import backup set to XML

Backup set must be imported from XML

Using ssh

Create a backup set

Login in to AhsayOBM using ssh to create a backup set

Generate backup set to XML

Backup set must be generated to XML

Edit backup set in ssh

Use ssh to edit the XML file

Import backup set to XML

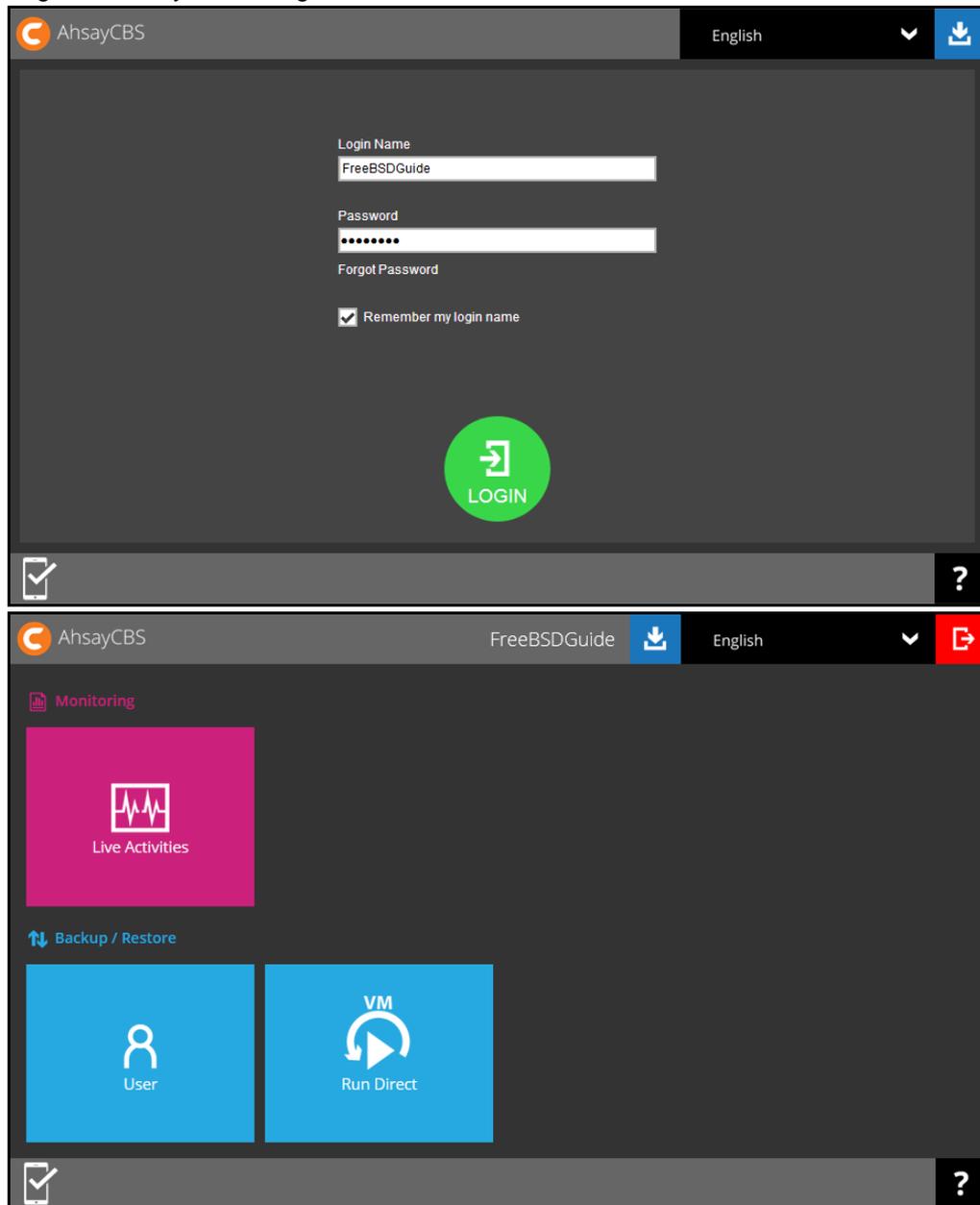
Backup set must be imported from XML

5.1 Using AhsayCBS

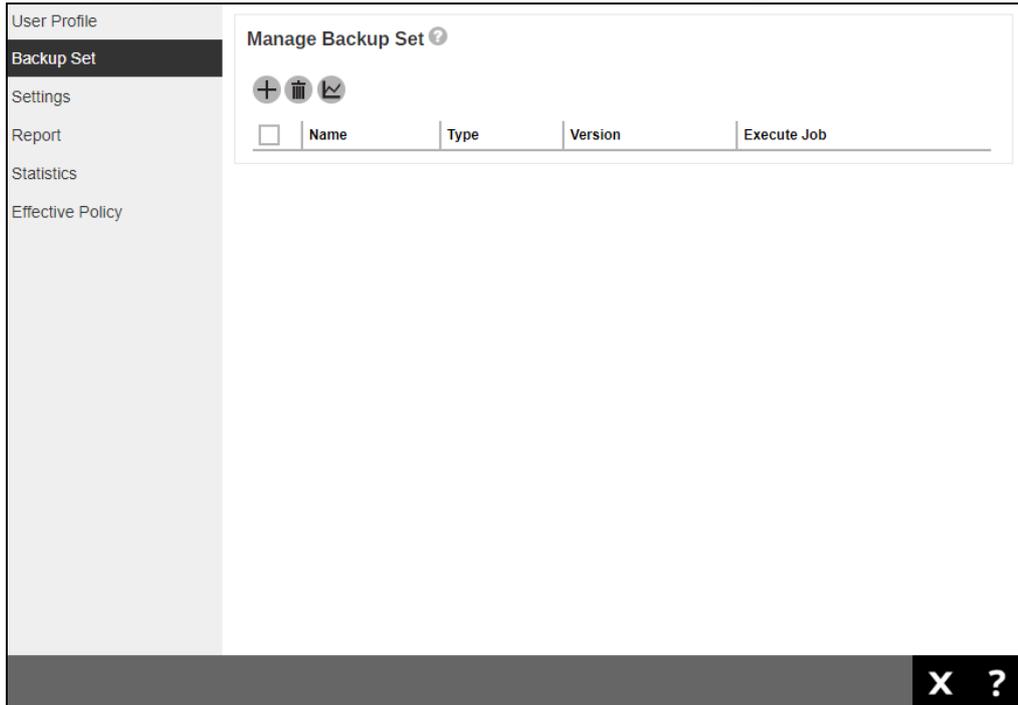
Initial backup set preferences may be configured using AhsayCBS then edited in a ssh to add the Encryption and Standard Destination settings.

Note: If Predefined Destination is already specified then there is no need to edit the XML file using a ssh. For further details on each field to be configured please refer to [Appendix B](#) which explains each field and [Appendix C](#) which provides example for each field.

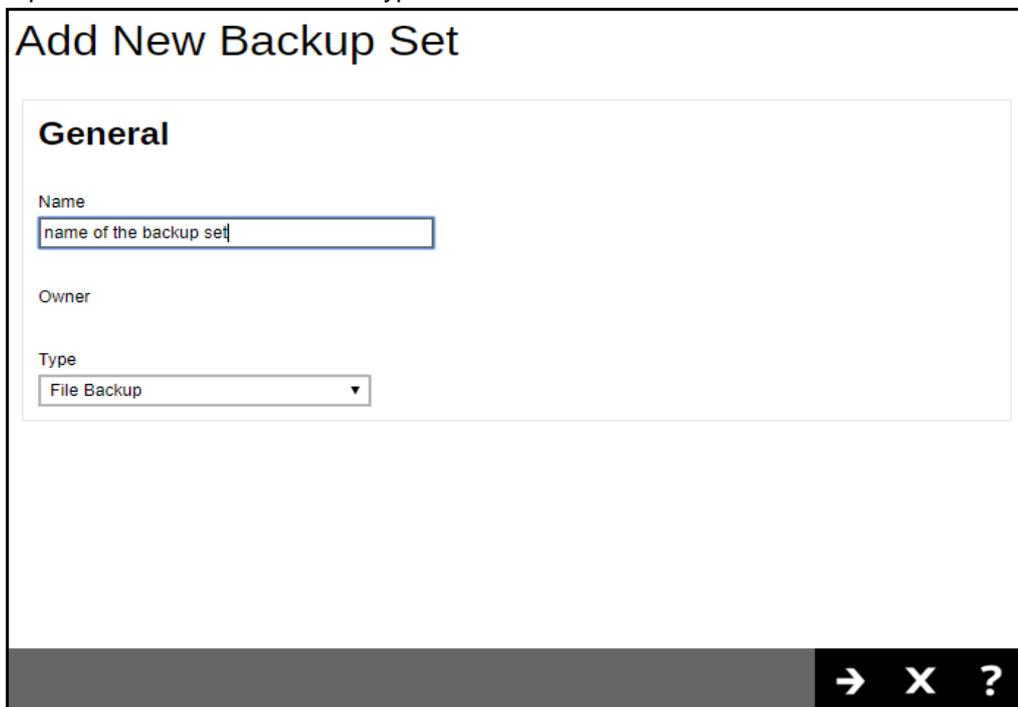
1. Log in to AhsayCBS and go to User.



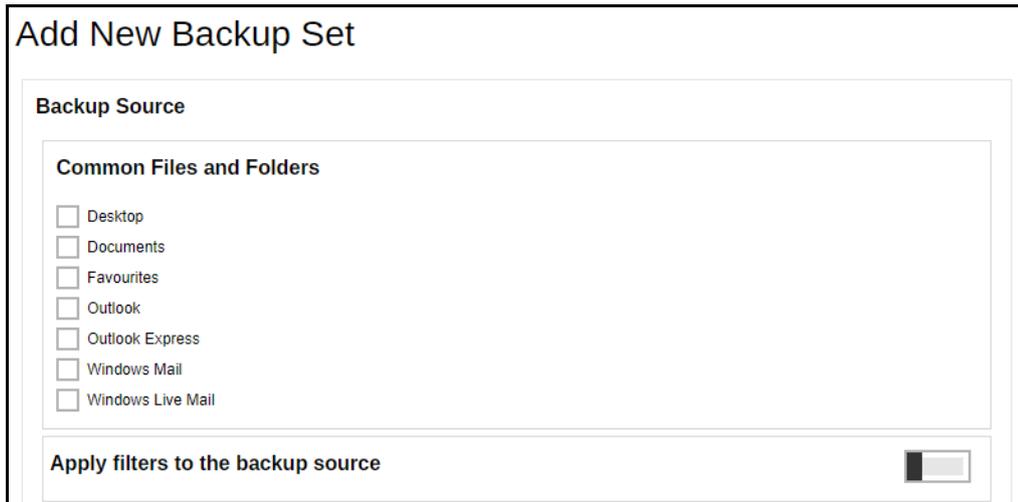
2. Go to Backup Set then click the create button to create a backup set.



3. Input the name and select the Type. Click Next.



4. For FreeBSD, the Common Files and Folders are not applicable so you can specify the backup source in the **Other Selected Source** part. You can also choose if filters will be applied to the backup source. By default it is turned off.



Add New Backup Set

Backup Source

Common Files and Folders

- Desktop
- Documents
- Favourites
- Outlook
- Outlook Express
- Windows Mail
- Windows Live Mail

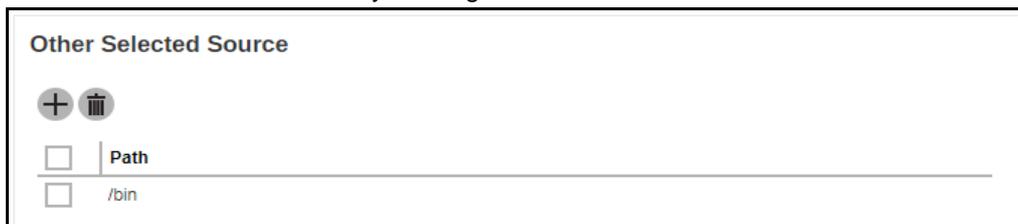
Apply filters to the backup source

You can choose to apply filters by sliding the lever to the right. Then click the Create button to set your filter preferences.



Apply filters to the backup source

Add **Other Selected Source** by clicking the Create button.



Other Selected Source

Input the path of the source to be backed up. Click Add button to add the source. Keep doing this until all backup source are added.



Other Selected Source

Path

path of the files or folder to be backed up

To exclude a source you can add it under **Deselected Source** by clicking the Create button.

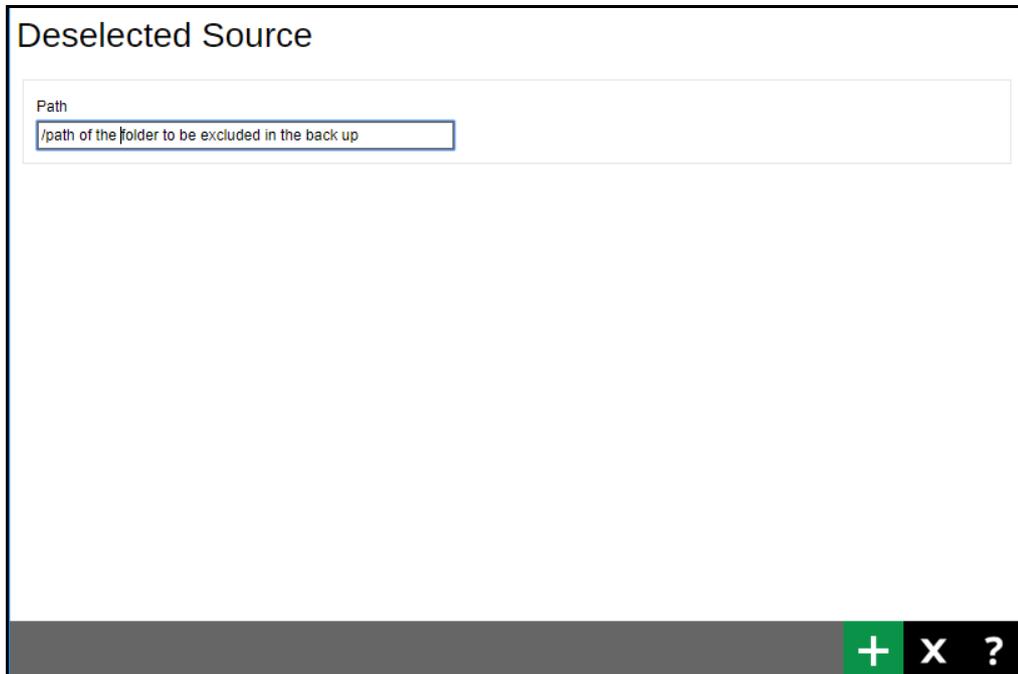
Note: Some folders are automatically not included for backup. Please refer to [Appendix E](#) for more information on these ignored folders.



The screenshot shows a window titled "Deselected Source". At the top left, there are two circular icons: a plus sign (+) and a trash can icon. Below these icons is a table with a header row labeled "Path". The table contains three rows, each with a checkbox on the left and a path on the right:

<input type="checkbox"/>	Path
<input type="checkbox"/>	/root/.obm
<input type="checkbox"/>	/usr/local/obm
<input type="checkbox"/>	/tmp

Input the path of the source to be excluded in the backup. Click Add button to add the deselected source. Keep doing this until all source to be excluded are added. Click Next.



The screenshot shows the "Deselected Source" window with a text input field. The label "Path" is positioned above the input field. The text inside the input field is "/path of the folder to be excluded in the back up". At the bottom right of the window, there is a dark grey bar containing three icons: a plus sign (+) in a green square, an 'X' icon, and a question mark (?) icon.

5. The **Run scheduled backup for this backup set** is on by default. If you do not want to create a backup schedule you can turn it off by sliding the lever to the left. By default there is already a daily backup schedule created that is scheduled to run daily at 8pm until full backup is completed. This schedule may either be edited or deleted if you want to create your own backup schedule.

Note: It is optional to input the computer name in the **Run scheduled backup on computers named** field since it will be updated once backup set creation is completed in AhsayOBM client. In Step 17, the computer name can be checked there as the Owner.

Add New Backup Set

Run scheduled backup for this backup set

Manage schedule

+ -

Name	Type
Backup Schedule	Daily

Run scheduled backup on computers named *

← → X ?

6. Input the Name for the backup schedule. Select the type whether Daily, Weekly, Monthly or Custom. For the **Daily**, select the time back up will start.

Backup Schedule

Details

Name
name of the backup schedule

Type
Daily

Start backup at
00 : 00

For the **Weekly**, select the day of the week and time the backup will start.

Backup Schedule

Details

Name
name of the backup schedule

Type
Weekly

Backup on these days of the week
 Sun Mon Tue Wed Thu Fri Sat

Start backup at
00 : 00

For the **Monthly**, select the day of the month and time backup will start. You can also create a schedule where you will choose the week and day of the week the backup will start e.g. every First Sunday of every month

Backup Schedule

Details

Name
name of the backup schedule

Type
Monthly

Backup on the following day every month
 1
 First Sunday

Start backup at
00 : 00

For **Custom**, you can specify the exact date and time the backup will start.

Backup Schedule

Details

Name
name of the backup schedule

Type
Custom

Backup on the following day once
2018 July 05

Start backup at
00 : 00

Also select when backup will stop. If **until full backup completed** is chosen, the backup will run until all the files and folder in the selected source is backed up.



Stop
until full backup completed ▾

If **after** is chosen, you need to specify the number of hours the backup will run. Note that even if the backup is not yet finished it will stop on the specified hour. Check the box if you opt to **Run Retention Policy after backup**. Click the Add button to create the backup schedule. Then click Next.



Stop
after ▾ 1 hr
 Run Retention Policy after backup
+ X

7. Select the **Backup Mode** if Concurrent or Sequential. By default **Sequential** is selected since only one backup set is being created. In Sequential backup mode, if there are multiple destinations configured in the backup set, AhsayOBM will backup to one destination at a time. In **Concurrent** backup mode, if there are multiple destinations configured in the backup set, AhsayOBM will backup to all destinations at the same time or concurrently.

Note: For backup sets with multiple destinations, sequential backup mode will take longer compared with concurrent backup mode.



Add New Backup Set
Destination
Backup Mode
Sequential ▾

If **Concurrent** is selected, specify the maximum number of backup destinations.

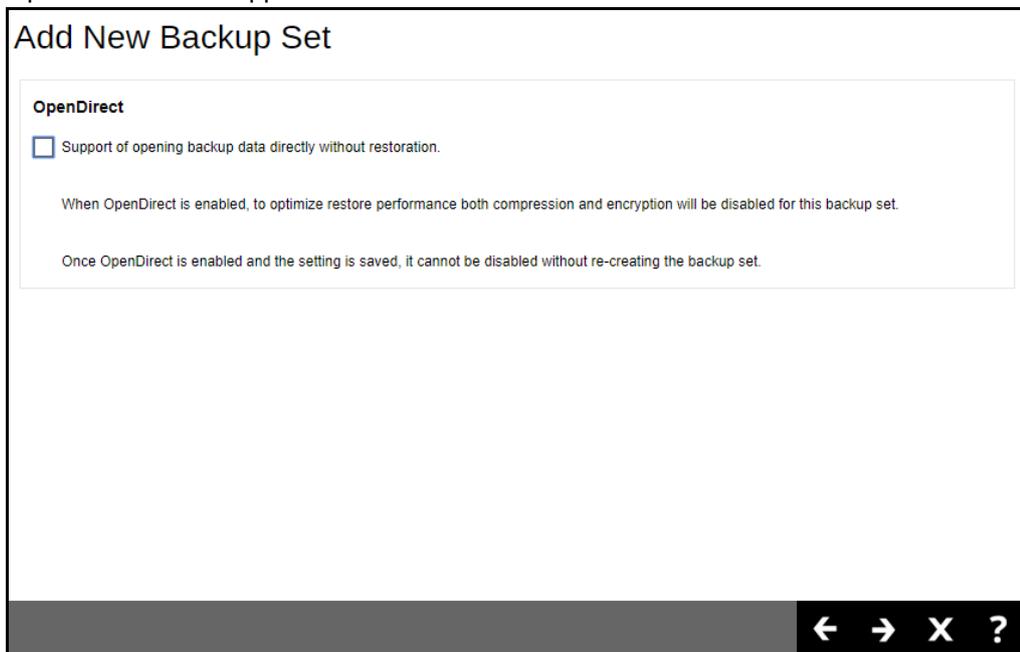


Backup Mode
Concurrent ▾
Maximum concurrent backup destinations
Unlimited ▾
2
3
4
5
6
7
8
9
10
Destination

Only **Predefined Destination** may be added here. If it is a standard destination it must be set up on AhsayOBM client. Note that a Predefined Destination must be set first before you can add it here. This can only be set by your backup service provider. Then click Next.



8. OpenDirect is not supported in FreeBSD so leave the box unchecked. Then click Next.



9. Leave the **Domain Name / Host Name** and **User name** fields blank since Windows User Authentication is not supported in FreeBSD. Click Save to create the Backup Set.

Add New Backup Set

Windows User Authentication

Domain Name (e.g. mycompany.com) / Host Name

User name

Password

← Save X ?

10. Click on the backup set you just created.

User Profile

Backup Set

Settings

Report

Statistics

Effective Policy

Manage Backup Set ?

+ - ↺

<input type="checkbox"/>	Name	Type	Version	Execute Job
<input type="checkbox"/>	bsdguide		--	--

X ?

Go to **Others** and input the path of your temporary directory. Check the box beside **Remove temporary files after backup** if you want it removed. You can also change the settings for **Follow Link**, **Volume Shadow Copy** and **Compressions**. Click the **Save** button.

The screenshot shows the configuration window for Ahsay Online Backup Manager. The 'Others' tab is selected. The 'Temporary Directory' field is set to 'path of the temporary directory'. The 'Remove temporary files after backup' checkbox is checked. The 'Follow Link' checkbox is checked. The 'Volume Shadow Copy' checkbox is checked. The 'OpenDirect' checkbox is unchecked. The 'Compressions' dropdown is set to 'Fast (Compressed size larger than normal)'. The 'Encryption' section shows 'Encryption settings have not been configured yet'.

Note: Only do the succeeding steps if there is no Predefined Destination specified in the backup set. Otherwise you may proceed to starting your [AhsayOBM](#).

11. Open ssh session in the FreeBSD machine and execute the RunConfigurator.sh script. The Login Menu will be displayed. Select **(1). Login** then press Enter to login. Input your **Login Name** and **Password**. Set the encryption setting for the backup set.

```
# sh RunConfigurator.sh
Startup Ahsay Online Backup Manager ...
Config file found

Login Menu
-----
(1). Login
(2). Change Network Settings
(3). Forgot Password
(4). Quit
-----
Your Choice: 1

Login Name : FreeBSDGuide
Password : *****

Please wait while verifying user account with server...
log4j:WARN No appenders could be found for logger
(org.apache.http.impl.conn.PoolingClientConnectionManager).
log4j:WARN Please initialize the log4j system properly.
```

```

log4j:WARN See
http://logging.apache.org/log4j/1.2/faq.html#noconfig for more
info.
Your profile has been downloaded and updated.
Encryption setting has not been defined for backup set
"bsdguide"
Do you want to set the encryption setting for this backup set?
(Y/N) ? Y
Enable Encryption (Y/N) ? Y

Choose Encryption Type
-----
(1). Default
(2). User password
(3). Custom
-----
Your Choice: 2

```

12. Edit the backup set created from AhsayCBS to add the Destination Setting. Select **(1)**. **List Backup Sets** to list the backup set.

```

Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 1

```

13. Select the backup set to show the details by selecting **(1)**. **Name of your backup set**

```

Select a Backup Set to show more details
-----
(1). bsdguide
-----
Your Choice: 1

Name                : bsdguide
Owner               : FreeBSD104
Type                : FILE
Selected Source     : /usr/local/bin
Deselected Source  : /root/.obm
Deselected Source  : /usr/local/obm
Deselected Source  : /root/tmp
Encryption Key      : abc
Encryption Algorithm : AES
Encryption Mode     : CBC
Encryption Key Length: 256

Press Enter to continue...

```

14. Export the backup set to XML by selecting **(3). Export Backup Set Setting to XML**

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 3

Choose your backup set to generate XML file
-----
(1). bsdguide
-----
Your Choice: 1

XML file successfully exported to
/root/.obm/config/backupSet.xml
```

15. Exit from the Main Menu then edit the XML file by using the vi editor. Add the Value data for the **Destination Settings** to the file then save.

```
# cd /root/.obm/config
# vi backupSet.xml

<!-- This is the collection of destinations -->
<Key name="Destination Settings">
    <!-- Concurrency level is the number of
destinations to run backup concurrently -->
    <!-- 2, 3, 4... -->
    <!-- 1 : Backup to destinations one by one
sequentially -->
    <!-- -1: Backup to all destinations concurrently
-->
    <Value data="1" name="Concurrency Level"
type="integer" />
<!-- AhsayCBS destination is where the files are backup to
server -->
    <Key name="AhsayCBS Destination Settings">
    </Key>
</Key>
```

16. Import the backup set by selecting **(4). Import Backup Set Setting from XML**. Confirm overwrite of file.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 4

Backup Set 'bsdguide' already exist. Confirm overwrite? (Y/N) ?
Y
XML imported, uploading to server...

XML successfully uploaded to server
```

17. Check if Destination Name and Encryption Key was successfully added.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 1

Select a Backup Set to show more details
-----
(1). bsdguide
-----
Your Choice: 1

Name           : bsdguide
Owner          : FreeBSD104
Type           : FILE
Selected Source : /usr/local/bin
Deselected Source : /root/.obm
Deselected Source : /usr/local/obm
Deselected Source : /root/tmp
Destination Name : AhsayCBS, Type: OBS
Encryption Key   : abc
Encryption Algorithm : AES
Encryption Mode   : CBC
Encryption Key Length: 256

Press Enter to continue...
```

Check in AhsayCBS web console if Destination Name and Encryption setting was successfully added.

The screenshot shows the 'Destination' configuration page in the AhsayCBS web console. On the left is a navigation menu with options: General, Source, Backup Schedule, Continuous Backup, Destination (highlighted), In-File Delta, Retention Policy, Command Line Tool, Reminder, Bandwidth Control, IP Allowed for Restore, and Others. The main content area is titled 'Backup Mode' and has a dropdown menu set to 'Sequential'. Below this are two sections: 'Predefined Destination' and 'Standard Destination'. The 'Predefined Destination' section contains a plus icon, a trash icon, and a checkbox. The 'Standard Destination' section contains a table with columns for Name, Info, and Rebuild. The table has one entry: 'AhsayCBS' with a small orange icon, and dashes in the Info and Rebuild columns. At the bottom right of the console window are 'X' and '?' icons.

The screenshot shows the 'Others' configuration page in the AhsayCBS web console. The left navigation menu is the same as in the previous screenshot, with 'Others' highlighted. The main content area contains several settings sections: 'Temporary Directory' with a text input field containing '/root/tmp' and a checked checkbox 'Remove temporary files after backup'; 'Follow Link' with a checked checkbox 'Follow link of the backup files'; 'Volume Shadow Copy' with a checked checkbox 'Enable Windows' Volume Shadow Copy for open file backup'; 'OpenDirect' with an unchecked checkbox 'Support of opening backup data directly without restoration'; 'Compressions' with a dropdown menu set to 'Fast (Compressed size larger than normal)'; and 'Encryption' with fields for 'Encrypting key' (masked with asterisks), 'Algorithm' (AES), 'Method' (CBC), and 'Key length' (256). At the bottom right of the console window are 'X' and '?' icons.

5.2 Using ssh

1. To create a File backup set select **(5). Generate new Backup Set Settings Template** from the menu.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 5
```

2. Select **(1). File** to generate a File Backup Set template file to the **/root/.obm/config** directory.

```
Choose a template from a backup set type
-----
(1). File
(2). MySQL Database
-----
Your Choice: 1

XML file successfully exported to
/root/.obm/config/backupSet.xml

Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice:
```

3. **Configuring Backup Set Settings.**

To configure the backup set setting you need to edit the **/root/.obm/config/backupSet.xml** file using a text editor, for example vi

You can either quit the RunConfigurator.sh script or open a new ssh session to edit the backupSet.xml file.

Please refer to Appendix A, B, and C for details and examples on how to create backup sets using the **backupSet.xml** file.

Notes:

- i. Before importing the backupSet.xml file please remove any unused destinations and backup schedule settings. Otherwise the following error will be displayed **"Failed to import XML file (Reason: Value of Name is empty!)"** when trying to import the backupSet.xml file.*
- ii. Setup of the following cloud storage destinations; OneDrive, OneDrive For Business, DropBox, and Google Drive are not supported in FreeBSD environment, as these cloud storage destinations require authentication using a web browser.*

4. **Importing the updated backupSet.xml file to AhsayOBM**

After you have edited the backupSet.xml file with your chosen backup settings you need to import the settings back to AhsayOBM so they can be uploaded to AhsayCBS backup server in order to create the backup set.

For example: to create a new file backup set called "bsdguide" with encryption enabled and user password encryption settings.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 4

New backup set created.
Enable Encryption (Y/N) ? Y

Choose Encryption Type
-----
(1). Default
(2). User password
(3). Custom
-----
Your Choice: 2

XML imported, uploading to server...

XML successfully uploaded to server
```

5. Verify the Backup Set Settings

To verify the uploaded backup set settings are correct select **(1). List Backup Sets** and then select the backup set you wish to verify, for example backup set named bsdguide.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 1

Select a Backup Set to show more details
-----
(1). bsdguide
-----
Your Choice: 1

Name                : bsdguide
Owner               : FreeBSD104
Type                : FILE
Selected Source     : /usr/local/bin
Deselected Source  : /root/.obm
Deselected Source  : /usr/local/obm
Deselected Source  : /root/tmp
Destination Name    : AhsayCBS, Type: OBS
Encryption Key      : abc
Encryption Algorithm : AES
Encryption Mode     : CBC
Encryption Key Length: 256

Press Enter to continue...
```

Congratulations! The backup set configuration is now complete!

Notes:

- i. We would like to stress that it is very important to keep a separate record of your encryption key in a safe place, as you will not be able to restore your data without the correct encryption key.*
- ii. If you re-install AhsayOBM or install AhsayOBM on another machine the encryption key will be required for restoring data from the backup set.*

6. Verify the Backup Schedule

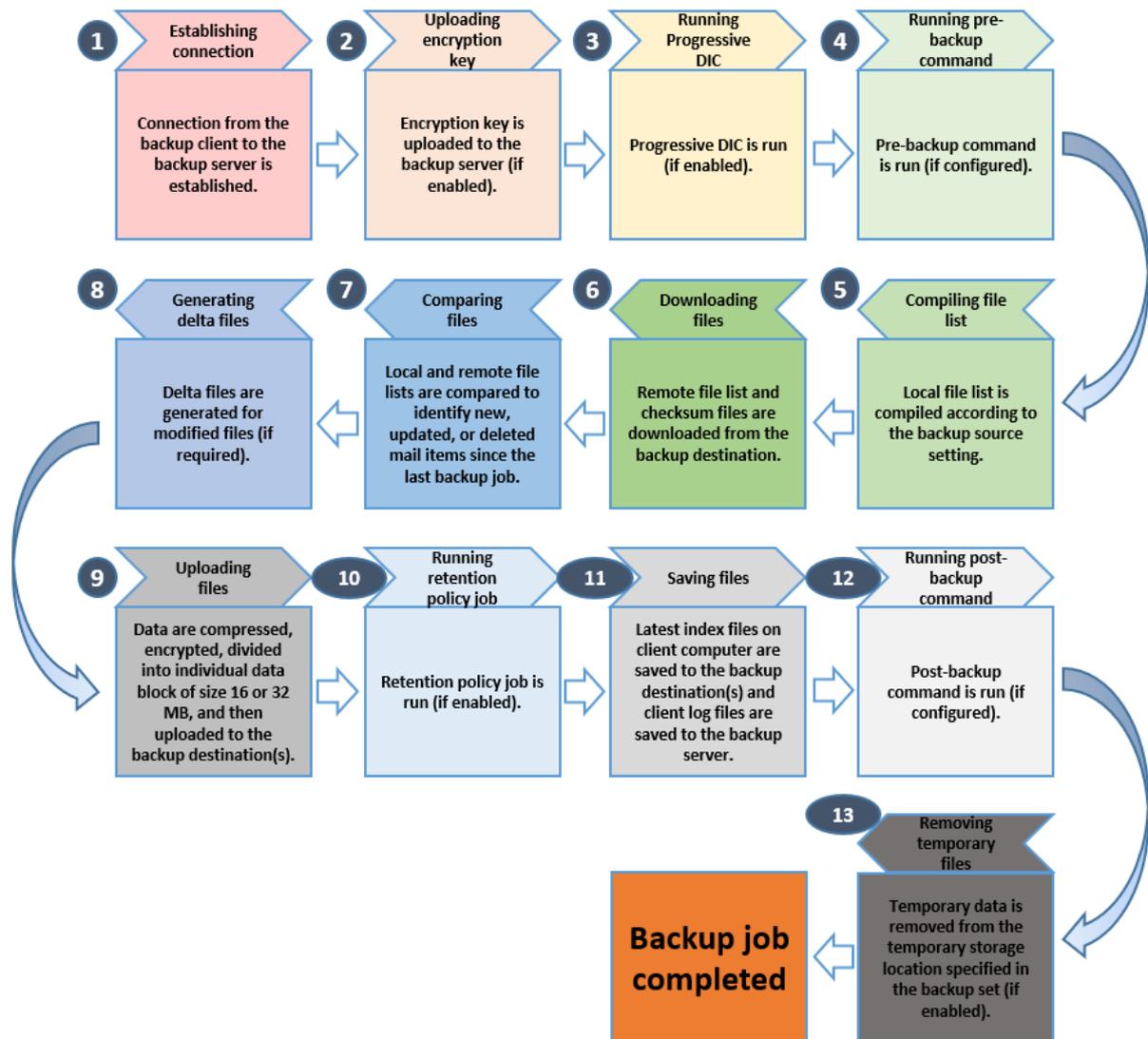
To verify if the scheduled backup settings are correct, check the AhsayOBM scheduler log (**debug.log**) located in **/root/.obm/log/Scheduler** folder.

```
# cat /root/.obm/log/Scheduler/debug.log
[2018/08/14 17:27:17][info] Scheduler Version='7.17.0.0'
[2018/08/14 17:27:17][info] OS Name='FreeBSD 10.4-RELEASE'
Version='10.4-RELEASE'
[2018/08/14 17:27:17][info] Java Vendor='Oracle Corporation'
Version='1.7.0_161'
[2018/08/14 17:27:17][info] Computer Name='FreeBSD104'
[2018/08/14 17:27:17][info] User='FreeBSDGuide'
[2018/08/14 17:27:17][info] Starting UserScheduler ...
[2018/08/14 17:27:17][info] UserScheduler started.
[2018/08/14 17:27:23][info] [bsdguide (1534218653926)] Start
scheduler.
[2018/08/14 17:27:23][info] [bsdguide (1534218653926)] Next
backup will run in 2 hr 32 min 36 sec.
[2018/08/14 17:28:03][info] Reloading profile...
[2018/08/14 17:28:03][info] Reloading profile... Completed
[2018/08/14 17:28:03][info] Profile is updated. Reloading
scheduler ...
[2018/08/14 17:28:03][info] [bsdguide (1534218653926)] Next
backup will run in 2 hr 31 min 56 sec.
[2018/08/14 17:28:03][info] Profile is updated. Reloading
scheduler ... Completed
```

The AhsayOBM scheduler service connects to the AhsayCBS backup server every 5 minutes to retrieve the latest profile updates. It will display a countdown of when the scheduled backup job(s) will be kicked off.

6 Overview on the Backup Process

The following steps are performed during a file backup job.



7 Running Backup Jobs

Use the `RunBackupSet.sh` script to start a backup job manually.

```
# cd /usr/local/obm/bin
# sh RunBackupSet.sh
-
Using APP_HOME      : /usr/local/obm
Using SETTING_HOME :
Using JAVA_HOME     : /usr/local/obm/jvm
Using JAVA_EXE      : /usr/local/obm/jvm/bin/java
Using JAVA_OPTS     : -Xrs -Xms128m -Xmx768m -
XX:MaxDirectMemorySize=512m -client -
Dsun.nio.PageAlignDirectMemory=true
Using JNI_PATH      : -Djava.library.path=.
Using CLASSPATH     : ../cb.jar
-
Running Backup Set - '' ...
log4j:WARN No appenders could be found for logger
(org.apache.http.impl.conn.PoolingClientConnectionManager).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig
for more info.
[2018/08/14 13:00:38] [info] [-] Start [ FreeBSD 10.4-RELEASE
(FreeBSD104), AhsayOBM v7.17.0.0 ]
[2018/08/14 13:00:39] [info] [-] Saving encrypted backup set
encryption keys to server...
[2018/08/14 13:00:42] [info] [1534221163342] Start Backup ... [In-
File Delta: Incremental]
[2018/08/14 13:00:42] [info] [1534221163342] Using Temporary
Directory /root/tmp/1534218653926/OBS@1534221163342
[2018/08/14 13:00:42] [info] [-] Start running pre-commands
[2018/08/14 13:00:42] [info] [-] Finished running pre-commands
[2018/08/14 13:00:42] [info] [1534221163342] Downloading server file
list...
[2018/08/14 13:00:43] [info] [1534221163342] Downloading server file
list... Completed
[2018/08/14 13:00:45] [info] [1534221163342] Reading backup source
from hard disk...
[2018/08/14 13:00:48] [info] [1534221163342] [New Directory]... /
[2018/08/14 13:00:50] [info] [1534221163342] [New Directory]...
/root
[2018/08/14 13:00:50] [info] [1534221163342] [New Directory]... /usr
[2018/08/14 13:00:50] [info] [1534221163342] [New Directory]...
/usr/local
[2018/08/14 13:00:50] [info] [1534221163342] [New Directory]...
/usr/local/bin
[2018/08/14 13:00:53] [info] [1534221163342] Reading backup source
from hard disk... Completed
[2018/08/14 13:00:53] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/aserver"
[2018/08/14 13:00:53] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/classpath"
[2018/08/14 13:00:53] [info] [1534221163342] [New File]... 55% of
"/usr/local/bin/curl"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 71% of
"/usr/local/bin/curl"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 79% of
"/usr/local/bin/curl"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 95% of
"/usr/local/bin/curl"
```

```
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/curl"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/curl-config"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-cache"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-cat"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-list"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-match"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-pattern"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-query"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-scan"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/fc-validate"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/freetype-config"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/javavm"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/mkfontdir"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/mkfontscale"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/xml2-config"
[2018/08/14 13:00:54] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/xmlcatalog"
[2018/08/14 13:00:55] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/xmllint"
[2018/08/14 13:00:55] [info] [1534221163342] [New File]... 100% of
"/usr/local/bin/xmlwf"
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/appletviewer
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/apt
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/checkvms
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/extcheck
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/idlj
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jar
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jarsigner
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/java
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/java-rmi.cgi
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/javac
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/javadoc
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/javah
```

[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/javap
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jcmd
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jconsole
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jdb
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jhat
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jinfo
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jmap
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jps
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jrunscript
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jsadebugd
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jstack
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jstat
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/jstatd
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/keytool
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/manvm
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/native2ascii
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/orbd
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/pack200
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/policytool
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/registervm
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/rmic
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/rmid
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/rmiregistry
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/schemagen
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/serialver
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/servertool
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/tnameserv
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/unpack200
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/unregistervm
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...
/usr/local/bin/wsgen

```
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...  
/usr/local/bin/wsimport  
[2018/08/14 13:00:55] [info] [1534221163342] [New Link]...  
/usr/local/bin/xjc  
[2018/08/14 13:01:25] [info] [1534221163342] Total New Files = 20  
[2018/08/14 13:01:25] [info] [1534221163342] Total New Directories =  
5  
[2018/08/14 13:01:25] [info] [1534221163342] Total New Links = 44  
[2018/08/14 13:01:25] [info] [1534221163342] Total Updated Files = 0  
[2018/08/14 13:01:25] [info] [1534221163342] Total Deleted Files = 0  
[2018/08/14 13:01:25] [info] [1534221163342] Total Deleted  
Directories = 0  
[2018/08/14 13:01:25] [info] [1534221163342] Total Deleted Links = 0  
[2018/08/14 13:01:25] [info] [1534221163342] Total Moved Files = 0  
[2018/08/14 13:01:26] [info] [1534221163342] Saving encrypted backup  
file index to 1534218653926/blocks at destination AhsayCBS...  
[2018/08/14 13:01:26] [info] [1534221163342] Saving encrypted backup  
file index to 1534218653926/blocks/2018-08-14-13-00-19 at  
destination AhsayCBS...  
[2018/08/14 13:01:30] [info] [-] Start running post-commands  
[2018/08/14 13:01:30] [info] [-] Finished running post-commands  
[2018/08/14 13:01:33] [info] [1534221163342] Deleting temporary file  
/root/tmp/1534218653926/OBS@1534221163342  
[2018/08/14 13:01:33] [info] [1534221163342] Backup Completed  
Successfully
```

8 Restoring Data

1. To restore files that have been backed up from your backup destination, you need to use the **Restore.sh** script by using a text editor like vi to configure the restore settings like :

- Backup Set Name -> BACKUP_SET=""
- Backup Destination -> DESTINATION=""
- Location of Restored Files -> RESTORE_TO=""
- Files/Folders to be Restored -> RESTORE_FROM=""
- Snapshot to be restored ->POINT_IN_TIME=""
- Applying the original permission to the restore files ->RESTORE_PERMISSION=""

```
# cd /usr/local/obm/bin
# vi Restore.sh

#!/bin/sh

##### Restore.sh
#####
# You can use this shell script to restore backup files using
command-line.      #
# Just customize the "User Define Section" below with values for
your restore      #
# action.
#
#####
#####

##### Start: User Defined Section
#####

# ----- BACKUP_SET -----
-----
# | The name or ID of the backup set that you want to restore.
|
# | If backup set name is not in English, please use ID instead.
|
# | e.g. BACKUP_SET="1119083740107"
|
# | or BACKUP_SET="FileBackupSet-1"
|
# |
|
# | You can leave this parameter blank if you have only 1 backup
set.      |
# -----
-----
BACKUP_SET=""

# ----- DESTINATION -----
-----
# | The name or ID of the backup destination that you want to
restore from.      |
# | If backup destination name is not in English, please use ID
instead.      |
# | e.g. DESTINATION="1740107119083"
|
```

```

# | or DESTINATION="Destination-1"
|
# |
|
# | You can leave this parameter blank if you have only 1
destination. |
# -----
-----
DESTINATION=""

# ----- RESTORE_TO -----
-----
# | Directory to where you want files to be restored
|
# | set to "" to restore files to original location
|
# | e.g. RESTORE_TO="/tmp"
|
# -----
-----
RESTORE_TO="/root/restore"

# ----- RESTORE_FROM -----
-----
# | File/Directory on the backup server that you would like to
restore |
# | e.g. RESTORE_FROM="/Data"
|
# -----
-----
RESTORE_FROM="/AhsayCBS"

# ----- POINT_IN_TIME -----
-----
# | The point-in-time snapshot (successful backup) that you want to
restore |
# | from the backup server. Use "Current" for the latest backup
snapshot |
# | e.g. POINT_IN_TIME="2006-10-04-12-57-13"
|
# | or POINT_IN_TIME="Current"
|
# |
|
# | You can retrieve the point in time by using the ListBackupJob.sh
|
# -----
-----
POINT_IN_TIME="Current"

# ----- RESTORE_PERMISSION -----
-----
# | set to "Y" if you want to restore file permissions
|
# | set to "N" if you do NOT want to restore file permissions
|
# -----
-----
RESTORE_PERMISSION="N"

# ----- SKIP_INVALID_KEY -----
-----

```

```

# | set to "Y" if you want to skip restore file with invalid key
# | set to "N" if you want to prompt user to input a correct key
# -----
SKIP_INVALID_KEY="N"

# ----- SYNC_OPTION -----
# | Delete extra files
# | set to "Y" if you want to enable sync option
# | set to "N" if you do NOT want to enable sync option
# | set to "" to prompt for selection
# -----
SYNC_OPTION="N"

# ----- REPLACE_EXISTING_FILE -----
# | set to "--all" to replace all existing file(s) of the same
filename |
# | set to "--none" to skip all existing file(s) with the same
filename |
# | set to "" to prompt for selection
# -----
REPLACE_EXISTING_FILE="--all"

# ----- SETTING_HOME -----
# | Directory to your setting home.
# | Default to ${HOME}/.obm when not set.
# | e.g. SETTING_HOME="${HOME}/.obm"
# -----
SETTING_HOME=""

# ----- FILTER -----
# | Filter out what files you want to restore
# | -Pattern=xxx-Type=yyy-Target=zxx
# | where xxx is the filter pattern,
# | yyy is the filter type, whice can be one of the following:
# | [exact | exactMatchCase | contains |
containsMatchCase|
# | startWith | startWithMatchCase | endWith |
endWithMatchCase] |

```

```

# |      zzz is the filter target, which can be one of the
following:      |
# |      [toFile | toFileDir | toDir]
|
# |
|
# | e.g. FILTER="-Pattern=.txt-Type=exact-Target=toFile"
|
# -----
FILTER=""

# ----- TEMP_DIR -----
-----
# | Directory to where you want to store restore files temporarily
|
# | set to "" to use the temporary directory in the backup set
|
# | e.g. TEMP_DIR="/tmp"
|
# -----
TEMP_DIR="/root/tmp"

##### END: User Defined Section #####

```

2. After the Restore.sh script is configured the files can be restored by running the Restore.sh script.

```

# cd /usr/local/obm/bin
# sh Restore.sh
Using APP_HOME:      : /usr/local/obm
Using BACKUP_SET     :
Using RESTORE_FROM   : /usr/local/bin
Using RESTORE_TO     : /root/restore
Using POINT_IN_TIME  : Current
Using RESTORE_PERMISSION : N
Using TEMP_DIR       : /root/tmp
Filter Pattern not set, filter would not apply to restore
log4j:WARN No appenders could be found for logger
(org.apache.http.impl.conn.PoolingClientConnectionManager).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig
for more info.
[2018-08-14 14:56:30] Start [ FreeBSD 10.4-RELEASE (FreeBSD104),
AhsayOBM v7.17.0.0 ]
[2018-08-14 14:56:30] start,"Start [ FreeBSD 10.4-RELEASE
(FreeBSD104), AhsayOBM v7.17.0.0 ]",0,0,0,,0,0

[2018-08-14 14:56:30] Initializing decrypt action...
[2018-08-14 14:56:31] Creating new directory... "/root/restore/usr"
[2018-08-14 14:56:31] Creating new directory...
"/root/restore/usr/local"
[2018-08-14 14:56:31] Creating new directory...
"/root/restore/usr/local/bin"
[2018-08-14 14:56:31] Creating link...
"/root/restore/usr/local/bin/appletviewer"
[2018-08-14 14:56:31] Downloading...
"/root/restore/usr/local/bin/javavm" (Total 20k bytes)
[2018-08-14 14:56:31] Initializing decrypt action... Completed

```

```
[2018-08-14 14:56:31] Creating link...
"/root/restore/usr/local/bin/apt"
[2018-08-14 14:56:31] Downloading...
"/root/restore/usr/local/bin/javavm" (Total 20k bytes)
[2018-08-14 14:56:31] Downloading...
"/root/restore/usr/local/bin/aserver" (Total 28k bytes)
[2018-08-14 14:56:33]
file,/root/restore/usr/local/bin/javavm,5070,20964,1525914576000,,15
34229793440,1534229793441

[2018-08-14 14:56:33]
file,/root/restore/usr/local/bin/javavm,5070,20964,1525914576000,,15
34229793438,1534229793440

[2018-08-14 14:56:33] Creating link...
"/root/restore/usr/local/bin/checkvms"
[2018-08-14 14:56:33] Downloading...
"/root/restore/usr/local/bin/classpath" (Total 247 bytes)
[2018-08-14 14:56:33] Downloading...
"/root/restore/usr/local/bin/curl" (Total 200k bytes)
[2018-08-14 14:56:34]
file,/root/restore/usr/local/bin/classpath,222,247,1525914576000,,15
34229794478,1534229794478

[2018-08-14 14:56:34] Downloading...
"/root/restore/usr/local/bin/curl-config" (Total 6k bytes)
[2018-08-14 14:56:34]
file,/root/restore/usr/local/bin/aserver,12766,28928,1525914647000,,
1534229794484,1534229794488

[2018-08-14 14:56:35] file,/root/restore/usr/local/bin/curl-
config,2670,6918,1528333954000,,1534229795537,1534229795538

[2018-08-14 14:56:35] Creating link...
"/root/restore/usr/local/bin/extcheck"
[2018-08-14 14:56:35] Downloading...
"/root/restore/usr/local/bin/fc-cache" (Total 13k bytes)
[2018-08-14 14:56:35] Downloading...
"/root/restore/usr/local/bin/fc-cat" (Total 11k bytes)
[2018-08-14 14:56:35]
file,/root/restore/usr/local/bin/curl,124430,205280,1528333954000,,1
534229795537,1534229795594

[2018-08-14 14:56:35] Downloading...
"/root/restore/usr/local/bin/fc-list" (Total 8k bytes)
[2018-08-14 14:56:36] file,/root/restore/usr/local/bin/fc-
cache,5854,13440,1525914532000,,1534229796588,1534229796589

[2018-08-14 14:56:36] Downloading...
"/root/restore/usr/local/bin/fc-match" (Total 9k bytes)
[2018-08-14 14:56:36] file,/root/restore/usr/local/bin/fc-
cat,5198,11608,1525914532000,,1534229796684,1534229796684

[2018-08-14 14:56:36] Downloading...
"/root/restore/usr/local/bin/fc-pattern" (Total 8k bytes)
[2018-08-14 14:56:37] file,/root/restore/usr/local/bin/fc-
list,3982,9024,1525914532000,,1534229797609,1534229797619

[2018-08-14 14:56:37] Downloading...
"/root/restore/usr/local/bin/fc-query" (Total 8k bytes)
```

```
[2018-08-14 14:56:37] file,/root/restore/usr/local/bin/fc-  
match,4414,10104,1525914532000,,1534229797766,1534229797766  
  
[2018-08-14 14:56:37] Downloading...  
"/root/restore/usr/local/bin/fc-scan" (Total 8k bytes)  
[2018-08-14 14:56:38] file,/root/restore/usr/local/bin/fc-  
pattern,3886,8960,1525914532000,,1534229798714,1534229798715  
  
[2018-08-14 14:56:38] Downloading...  
"/root/restore/usr/local/bin/fc-validate" (Total 9k bytes)  
[2018-08-14 14:56:38] file,/root/restore/usr/local/bin/fc-  
query,3726,8480,1525914532000,,1534229798845,1534229798864  
  
[2018-08-14 14:56:38] Downloading...  
"/root/restore/usr/local/bin/freetype-config" (Total 4k bytes)  
[2018-08-14 14:56:39] file,/root/restore/usr/local/bin/fc-  
scan,3886,8912,1525914532000,,1534229799753,1534229799754  
  
[2018-08-14 14:56:39] file,/root/restore/usr/local/bin/fc-  
validate,4318,9632,1525914532000,,1534229799947,1534229799947  
  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/idlj"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jar"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jarsigner"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/java"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/java-rmi.cgi"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/javac"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/javadoc"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/javah"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/javap"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jcmd"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jconsole"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jdb"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jhat"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jinfo"  
[2018-08-14 14:56:39] Creating link...  
"/root/restore/usr/local/bin/jmap"  
[2018-08-14 14:56:40] Creating link...  
"/root/restore/usr/local/bin/jps"  
[2018-08-14 14:56:40] Creating link...  
"/root/restore/usr/local/bin/jrunscript"  
[2018-08-14 14:56:40] Creating link...  
"/root/restore/usr/local/bin/jsadebugd"  
[2018-08-14 14:56:40] Creating link...  
"/root/restore/usr/local/bin/jstack"  
[2018-08-14 14:56:40] Creating link...  
"/root/restore/usr/local/bin/jstat"
```

```
[2018-08-14 14:56:40] Creating link...
"/root/restore/usr/local/bin/jstamd"
[2018-08-14 14:56:40] Creating link...
"/root/restore/usr/local/bin/keytool"
[2018-08-14 14:56:40] Creating link...
"/root/restore/usr/local/bin/manvm"
[2018-08-14 14:56:40] Downloading...
"/root/restore/usr/local/bin/mkfontdir" (Total 71 bytes)
[2018-08-14 14:56:40] Downloading...
"/root/restore/usr/local/bin/mkfontscale" (Total 31k bytes)
[2018-08-14 14:56:40] file,/root/restore/usr/local/bin/freetype-
config,1742,5061,1525914501000,,1534229800841,1534229800841

[2018-08-14 14:56:41]
file,/root/restore/usr/local/bin/mkfontdir,94,71,1525914519000,,1534
229801135,1534229801135

[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/native2ascii"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/orbd"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/pack200"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/policytool"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/registervm"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/rmic"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/rmid"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/rmiregistry"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/schemagen"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/serialver"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/servertool"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/tnameserv"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/unpack200"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/unregistervm"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/wsgen"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/wsimport"
[2018-08-14 14:56:41] Creating link...
"/root/restore/usr/local/bin/xjc"
[2018-08-14 14:56:41] Downloading...
"/root/restore/usr/local/bin/xml2-config" (Total 1k bytes)
[2018-08-14 14:56:41] Downloading...
"/root/restore/usr/local/bin/xmlcatalog" (Total 15k bytes)
[2018-08-14 14:56:41]
file,/root/restore/usr/local/bin/mkfontscale,16110,32624,15259145130
00,,1534229801869,1534229801871

[2018-08-14 14:56:41] Downloading...
"/root/restore/usr/local/bin/xmllint" (Total 58k bytes)
```

```

[2018-08-14 14:56:42] file,/root/restore/usr/local/bin/xml2-
config,766,1705,1525914531000,,1534229802232,1534229802233

[2018-08-14 14:56:42] Downloading...
"/root/restore/usr/local/bin/xmlwf" (Total 25k bytes)
[2018-08-14 14:56:42]
file,/root/restore/usr/local/bin/xmlcatalog,7102,15640,1525914531000
,,1534229802885,1534229802886

[2018-08-14 14:56:43]
file,/root/restore/usr/local/bin/xmllint,26382,60344,1525914531000,,
1534229803249,1534229803268

[2018-08-14 14:56:43]
file,/root/restore/usr/local/bin/xmlwf,11934,26304,1525914419000,,15
34229803949,1534229803950

[2018-08-14 14:56:45] Restore Completed Successfully
[2018-08-14 14:56:45] end,RESTORE_STOP_SUCCESS,0,0,0,,0,0

```

3. Verify the files are restored on the machine.

```

# ls -la /root/restore/usr/local/bin
total 532
drwxr-xr-x  2 root  wheel   1536 Aug 14 14:56 .
drwxr-xr-x  3 root  wheel    512 Aug 14 14:56 ..
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 appletviewer ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 apt ->
/usr/local/bin/javavm
-rwxr-xr-x  1 root  wheel  28928 May 10 09:10 aserver
lrwxr-xr-x  1 root  wheel    6 Aug 14 14:56 checkvms -> javavm
-rwxr-xr-x  1 root  wheel   247 May 10 09:09 classpath
-rwxr-xr-x  1 root  wheel 205280 Jun 7 09:12 curl
-rwxr-xr-x  1 root  wheel   6918 Jun 7 09:12 curl-config
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 extcheck ->
/usr/local/bin/javavm
-rwxr-xr-x  1 root  wheel  13440 May 10 09:08 fc-cache
-rwxr-xr-x  1 root  wheel  11608 May 10 09:08 fc-cat
-rwxr-xr-x  1 root  wheel   9024 May 10 09:08 fc-list
-rwxr-xr-x  1 root  wheel  10104 May 10 09:08 fc-match
-rwxr-xr-x  1 root  wheel   8960 May 10 09:08 fc-pattern
-rwxr-xr-x  1 root  wheel   8480 May 10 09:08 fc-query
-rwxr-xr-x  1 root  wheel   8912 May 10 09:08 fc-scan
-rwxr-xr-x  1 root  wheel   9632 May 10 09:08 fc-validate
-rwxr-xr-x  1 root  wheel   5061 May 10 09:08 freetype-config
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 idlj ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 jar ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 jarsigner ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 java ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 java-rmi.cgi ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 javac ->
/usr/local/bin/javavm
lrwxr-xr-x  1 root  wheel    21 Aug 14 14:56 javadoc ->
/usr/local/bin/javavm

```

```

lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 javah ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 javap ->
/usr/local/bin/javavm
-rwxr-xr-x 1 root wheel    20964 May 10 09:09 javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jcmd ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jconsole ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jdb ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jhat ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jinfo ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jmap ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jps ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jrunscript ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jsadebugd ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jstack ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jstat ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 jstatd ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 keytool ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel        6 Aug 14 14:56 manvm -> javavm
-rwxr-xr-x 1 root wheel        71 May 10 09:08 mkfontdir
-rwxr-xr-x 1 root wheel    32624 May 10 09:08 mkfontscale
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 native2ascii ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 orbd ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 pack200 ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 policytool ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel        6 Aug 14 14:56 registervm -> javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 rmic ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 rmid ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 rmiregistry ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 schemagen ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 serialver ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 servertool ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 tnameserv ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel      21 Aug 14 14:56 unpack200 ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel        6 Aug 14 14:56 unregistervm ->
javavm

```

```
lrwxr-xr-x 1 root wheel 21 Aug 14 14:56 wsgen ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel 21 Aug 14 14:56 wsimport ->
/usr/local/bin/javavm
lrwxr-xr-x 1 root wheel 21 Aug 14 14:56 xjc ->
/usr/local/bin/javavm
-rwxr-xr-x 1 root wheel 1705 May 10 09:08 xml2-config
-rwxr-xr-x 1 root wheel 15640 May 10 09:08 xmlcatalog
-rwxr-xr-x 1 root wheel 60344 May 10 09:08 xmllint
-rwxr-xr-x 1 root wheel 26304 May 10 09:06 xmlwf
```

9 Technical Assistance

To contact Ahsay support representatives for technical assistance, visit the following website:

<https://www.ahsay.com/jsp/en/contact/kbQuestion.jsp>

Also use the Ahsay Knowledge Base for resource such as Hardware Compatibility List, Software Compatibility List, and other product information:

<https://forum.ahsay.com>

10 Documentation

Documentations for all Ahsay products are available at:

https://www.ahsay.com/jsp/en/home/index.jsp?pageContentKey=ahsay_downloads_documentation_guides

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

<https://www.ahsay.com/jsp/en/contact/kbQuestion.jsp>

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

Appendix

Appendix A File Backup Set XML Template (Raw)

```
<?xml version="1.0" encoding="UTF-8"?>
<Setting>
  <!-- This is the backup set setting -->
  <Key name="Backup Set Setting" allowMultiple="Y">
    <!-- Backup set type (Read Only) -->
    <Value data="FILE" name="Type" type="string" />
    <!-- Backup set name -->
    <Value data="" name="Name" type="string" />
    <!-- Temporary directory for storing backup files -->
    <Value data="" name="Temporary Working Directory"
type="string"/>
    <!-- Remove temporary files after backup -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Delete temporary files after backup"
type="boolean" />
    <!-- Support of opening backup data directly without
restoration -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="N" name="OpenDirect" type="boolean" />
    <!-- Select compression type -->
    <!-- GzipDefaultCompression : Normal -->
    <!-- GzipBestSpeedCompression: Fast (Compressed size larger
than normal) -->
    <!-- Leave the field blank for no compression -->
    <Value data="" name="Compression Type" type="string" />
    <!-- Backup files' permissions -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Upload files permission"
type="boolean" />
    <!-- Follow link of the backup files -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Follow links" type="boolean" />
    <!-- This includes the files you want to backup -->
    <!-- Copy and paste the whole <Key> to add more selected
sources -->
    <Key name="Selected Source" allowMultiple="Y">
    <!-- Please enter your file path, e.g. /root/Documents -->
    <Value data="" name="Path" type="string" />
    </Key>
    <!-- This excludes the files from the included source -->
    <!-- Copy and paste the whole <Key> to add more deselected
sources -->
    <Key name="Deselected Source" allowMultiple="Y">
    <!-- Please enter your file path, e.g. /root/Documents -->
    <Value data="" name="Path" type="string" />
    </Key>
    <!-- Settings for your scheduled backups -->
    <Key name="Schedule Settings">
    <!-- Enable scheduled backup on this computer -->
    <!-- Y: Yes -->
    <!-- N: No -->
```

```

schedules -->
    <Value data="N" name="Enable" type="boolean" />
    <!-- Daily settings -->
    <!-- Copy and paste the whole <Key> to add more daily
schedules -->
    <Key name="Daily Schedule Settings" allowMultiple="Y">
    <!-- Name of schedule -->
    <Value data="Daily-Schedule" name="Name" type="string" />
    <!-- Start hour -->
    <!-- 0, 1, 2... 23 -->
    <Value data="21" name="Hour" type="integer" />
    <!-- Start minute -->
    <!-- 0, 1, 2... 59 -->
    <Value data="0" name="Minute" type="integer" />
    <!-- Duration of this backup in hours -->
    <!-- 1, 2, 3... -->
    <!-- A value of -1 means run until job finish -->
    <Value data="-1" name="Duration" type="integer"/>
    </Key>
    <!-- Weekly settings -->
    <!-- Copy and paste the whole <Key> to add more weekly
schedules -->
    <Key name="Weekly Schedule Settings" allowMultiple="Y">
    <!-- Name of schedule -->
    <Value data="Weekly-Schedule" name="Name" type="string" />
    <!-- Start hour -->
    <!-- 0, 1, 2... 23 -->
    <Value data="21" name="Hour" type="integer" />
    <!-- Start minute -->
    <!-- 0, 1, 2... 59 -->
    <Value data="0" name="Minute" type="integer" />
    <!-- Duration of this backup in hours -->
    <!-- 1, 2, 3... -->
    <!-- A value of -1 means run until job finish -->
    <Value data="-1" name="Duration" type="integer"/>
    <!-- Backup on these days of the week -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Sunday" type="boolean" />
    <Value data="Y" name="Monday" type="boolean" />
    <Value data="Y" name="Tuesday" type="boolean" />
    <Value data="Y" name="Wednesday" type="boolean" />
    <Value data="Y" name="Thursday" type="boolean" />
    <Value data="Y" name="Friday" type="boolean" />
    <Value data="Y" name="Saturday" type="boolean" />
    </Key>
    <!-- Monthly settings -->
    <!-- Copy and paste the whole <Key> to add more monthly
schedules -->
    <Key name="Monthly Schedule Settings" allowMultiple="Y">
    <!-- Name of schedule -->
    <Value data="Monthly-Schedule" name="Name" type="string" />
    <!-- Start hour -->
    <!-- 0, 1, 2... 23 -->
    <Value data="21" name="Hour" type="integer" />
    <!-- Start minute -->
    <!-- 0, 1, 2... 59 -->
    <Value data="0" name="Minute" type="integer" />
    <!-- Duration of this backup in hours -->
    <!-- 1, 2, 3... -->
    <!-- A value of -1 means run until job finish -->
    <Value data="-1" name="Duration" type="integer"/>

```

```

        <!-- Schedule date of month -->
        <!-- 1, 2, 3... 31 -->
        <!-- 32: Last -->
        <!-- Set to 0 if you want to use the format of occurrence +
criteria, e.g. Third Wednesday, instead -->
        <Value data="1" name="Schedule Date" type="integer" />
        <!-- Backup occurrence -->
        <!-- First / Second / Third / Fourth / Last -->
        <!-- If "Schedule Date" is not zero, this value will be
ignored -->
        <Value data="First" name="Occurrence" type="string" />
        <!-- Backup criteria -->
        <!-- Sunday / Monday / Tuesday / Wednesday / Thursday /
Friday / Saturday / Weekday / Weekend -->
        <!-- If "Schedule Date" is not zero, this value will be
ignored -->
        <Value data="Friday" name="Criteria" type="string" />
        </Key>
        <!-- Custom settings -->
        <!-- Copy and paste the whole <Key> to add more custom
schedules -->
        <Key name="Custom Schedule Settings" allowMultiple="Y">
        <!-- Name of schedule -->
        <Value data="Custom" name="Name" type="string" />
        <!-- Start hour -->
        <!-- 0, 1, 2... 23 -->
        <Value data="21" name="Hour" type="integer" />
        <!-- Start minute -->
        <!-- 0, 1, 2... 59 -->
        <Value data="0" name="Minute" type="integer" />
        <!-- Duration of this backup in hours -->
        <!-- 1, 2, 3... -->
        <!-- A value of -1 means run until job finish -->
        <Value data="-1" name="Duration" type="integer"/>
        <!-- Date for performing custom schedule backup -->
        <!-- Input in the format of YYYY-MM-DD -->
        <Value data="2018-7-6" name="Schedule Date" type="string" />
        </Key>
    </Key>
    <!-- This is the collection of destinations -->
    <Key name="Destination Settings">
    <!-- Concurrency level is the number of destinations to run
backup concurrently -->
    <!-- 2, 3, 4... -->
    <!-- 1 : Backup to destinations one by one sequentially -->
    <!-- -1: Backup to all destinations concurrently -->
    <Value data="1" name="Concurrency Level" type="integer" />
    <!-- AhsayCBS destination is where the files are backup to
server -->
    <Key name="AhsayCBS Destination Settings" allowMultiple="Y">
    </Key>
    <!-- Local destination means backup files are stored in your
computer -->
    <!-- Copy and paste the whole <Key> to add more local
destinations -->
    <Key name="Local Destination Settings" allowMultiple="Y">
    <!-- Name of your destination -->
    <Value data="" name="Name" type="string" />
    <!-- Directory to store your backup files -->
    <!-- e.g. /tmp -->
    <Value data="" name="Local Path" type="string" />

```

```
        </Key>
        </Key>
        <!-- This shows the in-file delta setting -->
        <Key name="In-file Delta Setting">
        <!-- Enable in-file delta backup -->
        <!-- Y: Yes -->
        <!-- N: No -->
        <Value data="Y" name="Enable" type="boolean" />
        <!-- Default in-file delta type -->
        <!-- D: Differential -->
        <!-- I: Incremental -->
        <Value data="" name="Default Delta Type" type="string" />
        </Key>
    </Key>
</Setting>
```

Appendix B File Backup Set XML Template (with explanation)

This appendix explains all configurable items with their available options, highlighted in red, in this file backup set XML scripts.

Backup Set Setting

The following items define the basic configurations of the file backup set.

- **Backup set type** – enter the backup set type, for instance, File, MySQL etc.
- **Backup set name** – name your backup set.
- **Temporary directory for storing backup files** – Enter the directory path where you would like to have the backup files stored temporarily. The temporary directory is used for various purposes, such as storage of temporary spooled file (for database specific backup type in AhsayOBM), remote file list, local file list, temporary delta file and other files of temporary nature.
- **Remove temporary files after backup** – choose whether to remove temporary files after you finish backup.
- **Select compression type** – choose the backup compression mode among Normal, Fast or No compression.
- **Backup files' permissions** – choose whether to backup operating system file permission of the data selected as backup source.
- **Follow link of the backup files** – choose whether to follow an NTFS junction point or NTFS symbolic link during backup. When the follow link option is enabled, not only is the symbolic link or junction point backed up, but directories and files that the junction point links to will also be backed up.

```
<?xml version="1.0" encoding="UTF-8"?>
<Setting>
  <!-- This is the backup set setting -->
  <Key name="Backup Set Setting" allowMultiple="Y">
    <!-- Backup set type (Read Only) -->
    <Value data="FILE" name="Type" type="string" />
    <!-- Backup set name -->
    <Value data="" name="Name" type="string" />
    <!-- Temporary directory for storing backup files -->
    <Value data="" name="Temporary Working Directory"
type="string"/>
    <!-- Remove temporary files after backup -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Delete temporary files after backup"
type="boolean" />
    <!-- Support of opening backup data directly without
restoration -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="N" name="OpenDirect" type="boolean" />
    <!-- Select compression type -->
    <!-- GzipDefaultCompression : Normal -->
    <!-- GzipBestSpeedCompression: Fast (Compressed size
larger than normal) -->
    <!-- Leave the field blank for no compression -->
    <Value data="" name="Compression Type" type="string" />
  </Key>
</Setting>
```

```

        <!-- Backup files' permissions -->
        <!-- Y: Yes -->
        <!-- N: No -->
        <Value data="Y" name="Upload files permission"
type="boolean" />
        <!-- Follow link of the backup files -->
        <!-- Y: Yes -->
        <!-- N: No -->
        <Value data="Y" name="Follow links" type="boolean" />

```

Selected Source

- Enter the file path where the files you would like to backup are located.

```

<!-- This includes the files you want to backup -->
<!-- Copy and paste the whole <Key> to add more selected
sources -->
<Key name="Selected Source">
    <!-- Please enter your file path, e.g. /root/Documents -->
    <Value data="" name="Path" type="string" />
</Key>

```

Deselected Source

- Enter the file path where files you would like to exclude from the backup are located.

```

<!-- This excludes the files from the included source -->
<!-- Copy and paste the whole <Key> to add more deselected
sources -->
<Key name="Deselected Source">
    <!-- Please enter your file path, e.g. /root/Documents -->
    <Value data="" name="Path" type="string" />
</Key>

```

Schedule Settings

- Choose whether you would like backup jobs to be run at the scheduled time you set.

```

<!-- Settings for your scheduled backups -->
<Key name="Schedule Settings">
    <!-- Enable scheduled backup on this computer -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="N" name="Enable" type="boolean" />

```

Daily Schedule Settings

Set backup jobs to run daily at the time you specified.

- Start hour** – the starting hour of the backup, from 0-23.
- Start minute** – the starting minute of the backup, from 0-59.
- Duration of this backup in hours** – for how long, in hours, you would like this backup to run. Set to -1 if you would like the backup job to run until it finishes.

```

<!-- Daily settings -->
<!-- Copy and paste the whole <Key> to add more daily
schedules -->
<Key name="Daily Schedule Settings" allowMultiple="Y">
    <!-- Name of schedule -->
    <Value data="Daily-Schedule" name="Name" type="string"
/>

```

```

<!-- Start hour -->
<!-- 0, 1, 2... 23 -->
<Value data="21" name="Hour" type="integer" />
<!-- Start minute -->
<!-- 0, 1, 2... 59 -->
<Value data="0" name="Minute" type="integer" />
<!-- Duration of this backup in hours -->
<!-- 1, 2, 3... -->
<!-- A value of -1 means run until job finish -->
<Value data="-1" name="Duration" type="integer" />
</Key>

```

Weekly Schedule Settings

Set backup jobs to run weekly at the time you specified.

- **Start hour** – the starting hour of the backup, from 0-23.
- **Start minute** – the starting minute of the backup, from 0-59.
- **Duration of this backup in hours** – the duration you would like this backup to perform, in hours. Set to -1 if you would like the backup job to run until it finishes.
- **Backup on these days of the week** – choose to enable or disable backup on each day in week.

```

<!-- Weekly settings -->
<!-- Copy and paste the whole <Key> to add more weekly
schedules -->
<Key name="Weekly Schedule Settings" allowMultiple="Y">
  <!-- Name of schedule -->
  <Value data="Weekly-Schedule" name="Name" type="string"
  />
  <!-- Start hour -->
  <!-- 0, 1, 2... 23 -->
  <Value data="21" name="Hour" type="integer" />
  <!-- Start minute -->
  <!-- 0, 1, 2... 59 -->
  <Value data="0" name="Minute" type="integer" />
  <!-- Duration of this backup in hours -->
  <!-- 1, 2, 3... -->
  <!-- A value of -1 means run until job finish -->
  <Value data="-1" name="Duration" type="integer" />
  <!-- Backup on these days of the week -->
  <!-- Y: Yes -->
  <!-- N: No -->
  <Value data="Y" name="Sunday" type="boolean" />
  <Value data="Y" name="Monday" type="boolean" />
  <Value data="Y" name="Tuesday" type="boolean" />
  <Value data="Y" name="Wednesday" type="boolean" />
  <Value data="Y" name="Thursday" type="boolean" />
  <Value data="Y" name="Friday" type="boolean" />
  <Value data="Y" name="Saturday" type="boolean" />
</Key>

```

Monthly Schedule Settings

Set backup jobs to run monthly at the time you specified.

- **Start hour** – the starting hour of the backup, from 0-23.
- **Start minute** – the starting minute of the backup, from 0-59.

- **Duration of this backup in hours** – the duration you would like this backup to perform, in hours. Set to -1 if you would like the backup job to run until it finishes.
- **Schedule date of month** – set exact date in a month when you would like the backup to perform. Set to 0 if you would like the backup performed in a specified occurrence + criteria format, e.g. every third Wednesday of the month.
- **Backup [Occurrence + Criteria] format**
You can set the backup to perform on a specified week (**Occurrence, First / Second / Third / Last**) and on a specified day of the week (**Criteria, Sun thru Sat**), for instance, the third Wednesday of the month.
 - **Backup occurrence** – set the week, i.e., First / Second / Third / Last. If you have set an exact date in the previous “Schedule date of month” configuration, this setting will be ignored.
 - **Backup criteria** – set a day of the week, i.e., Sunday thru Saturday. If you have set an exact date in the previous “Schedule date of month” configuration, this setting will be ignored.

```

<!-- Monthly settings -->
<!-- Copy and paste the whole <Key> to add more monthly
schedules -->
<Key name="Monthly Schedule Settings" allowMultiple="Y">
  <!-- Name of schedule -->
  <Value data="Monthly-Schedule" name="Name"
type="string" />
  <!-- Start hour -->
  <!-- 0, 1, 2... 23 -->
  <Value data="21" name="Hour" type="integer" />
  <!-- Start minute -->
  <!-- 0, 1, 2... 59 -->
  <Value data="0" name="Minute" type="integer" />
  <!-- Duration of this backup in hours -->
  <!-- 1, 2, 3... -->
  <!-- A value of -1 means run until job finish -->
  <Value data="-1" name="Duration" type="integer" />
  <!-- Schedule date of month -->
  <!-- 1, 2, 3... 31 -->
  <!-- 32: Last -->
  <!-- Set to 0 if you want to use the format of
occurrence + criteria, e.g. Third Wednesday, instead --
>
  <Value data="1" name="Schedule Date" type="integer" />
  <!-- Backup occurrence -->
  <!-- First / Second / Third / Fourth / Last -->
  <!-- If "Schedule Date" is not zero, this value will be
ignored -->
  <Value data="First" name="Occurrence" type="string" />
  <!-- Backup criteria -->
  <!-- Sunday / Monday / Tuesday / Wednesday / Thursday /
Friday / Saturday / Weekday / Weekend -->
  <!-- If "Schedule Date" is not zero, this value will be
ignored -->
  <Value data="Friday" name="Criteria" type="string" />
</Key>

```

Custom Schedule Settings

Set backup jobs to run at the date and time you specified.

- **Start hour** – the starting hour of the backup, from 0-23.
- **Start minute** – the starting minute of the backup, from 0-59.
- **Duration of this backup in hours** – the duration you would like this backup to perform, in hours. Set to -1 if you would like the backup job to run until it finishes.
- **Date for performing custom schedule backup** - enter a specific date when you would like the backup to perform. The date format should be in YYYY-MM-DD.

```
<!-- Custom settings -->
<!-- Copy and paste the whole <Key> to add more custom
schedules -->
<Key name="Custom Schedule Settings" allowMultiple="Y">
  <!-- Name of schedule -->
  <Value data="Custom" name="Name" type="string" />
  <!-- Start hour -->
  <!-- 0, 1, 2... 23 -->
  <Value data="21" name="Hour" type="integer" />
  <!-- Start minute -->
  <!-- 0, 1, 2... 59 -->
  <Value data="0" name="Minute" type="integer" />
  <!-- Duration of this backup in hours -->
  <!-- 1, 2, 3... -->
  <!-- A value of -1 means run until job finish -->
  <Value data="-1" name="Duration" type="integer" />
  <!-- Date for performing custom schedule backup -->
  <!-- Input in the format of YYYY-MM-DD -->
  <Value data="2018-7-6" name="Schedule Date"
  type="string" />
</Key>
</Key>
```

Destination Settings

- **Concurrency level** – set the number of destinations to run backup job concurrently
- **AhsayCBS Destination Settings** – this option allows backup files to be stored on the server
- **Local Destination Settings** – this option allows backup files to be stored in your local computer. Enter the directory path where you would like the backup files to be stored.

```
<!-- This is the collection of destinations -->
<Key name="Destination Settings">
  <!-- Concurrency level is the number of destinations to run
  backup concurrently -->
  <!-- 2, 3, 4... -->
  <!-- 1 : Backup to destinations one by one sequentially -->
  <!-- -1: Backup to all destinations concurrently -->
  <Value data="1" name="Concurrency Level" type="integer" />
  <!-- AhsayCBS destination is where the files are backup to
  server -->
  <Key name="AhsayCBS Destination Settings" allowMultiple=
  "Y">
  </Key>
  <!-- Local destination means backup files are stored in
  your computer -->
```

```

<!-- Copy and paste the whole <Key> to add more local
destinations -->
<Key name="Local Destination Settings">
  <!-- Name of your destination -->
  <Value data="" name="Name" type="string" />
  <!-- Directory to store your backup files -->
  <!-- e.g. /tmp -->
  <Value data="" name="Local Path" type="string" />
</Key>

```

In-file delta setting

In-File delta technology is an advanced data block matching algorithm with the intelligence to pick up changes (delta) in file content between two files. You can choose between **Differential** and **Incremental** in this setting.

- **Differential** - The delta is generated by comparing with the last uploaded full file only. Delta generated with this method will grow daily and uses more bandwidth. However, for restoration, the full file and a single delta is required to be restored and merged.
- **Incremental** - The delta is generated by comparing with the last uploaded full or delta file. Delta generated with this method is smaller and uses the least bandwidth. However, for restoration, the full file and all deltas chain up to the required point-in-time are required to be restored and merged. This is prone to data lost (e.g. broken delta chain).

```

<!-- This shows the in-file delta setting -->
<Key name="In-file Delta Setting">
  <!-- Enable in-file delta backup -->
  <!-- Y: Yes -->
  <!-- N: No -->
  <Value data="Y" name="Enable" type="boolean" />
  <!-- Default in-file delta type -->
  <!-- D: Differential -->
  <!-- I: Incremental -->
  <Value data="" name="Default Delta Type" type="string" />
</Key>
</Key>
</Setting>

```

Appendix C Example File Backup Set Setting

Below are the configuration parameters of the file backup set sample.

Backup Set Name	bsdguide
Temporary Working Directory	/root/tmp
Remove temporary files after backup	Yes
Compress Type	Fast
Backup file permissions	Yes
Follow Sym link	Yes
Daily schedule	9:00 PM run until completed
Destination	AhsayCBS
Backup Source	/usr/local/bin
Exclude	/root/.obm, /usr/local/obm, /root/tmp

***Configurable items are highlighted in red.**

```
<?xml version="1.0" encoding="UTF-8"?>
<Setting>
  <!-- This is the backup set setting -->
  <Key name="Backup Set Setting" allowMultiple="Y" >
    <!-- Backup set type (Read Only) -->
    <Value data="FILE" name="Type" type="string" />
    <!-- Backup set name -->
    <Value data="bsdguide" name="Name" type="string" />
    <!-- Temporary directory for storing backup files -->
    <Value data="/root/tmp" name="Temporary Working Directory"
type="string" />
    <!-- Remove temporary files after backup -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Delete temporary files after backup"
type="boolean" />
    <!-- Support of opening backup data directly without restoration
-->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="N" name="OpenDirect" type="boolean" />
    <!-- Select compression type -->
    <!-- GzipDefaultCompression : Normal -->
    <!-- GzipBestSpeedCompression: Fast (Compressed size larger than
normal) -->
    <!-- Leave the field blank for no compression -->
    <Value data=" GzipBestSpeedCompression" name="Compression Type"
type="string" />
    <!-- Backup files' permissions -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Upload files permission" type="boolean" />
    <!-- Follow link of the backup files -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Follow links" type="boolean" />
    <!-- This includes the files you want to backup -->
    <!-- Copy and paste the whole <Key> to add more selected sources--
>
    <Key name="Selected Source" allowMultiple="Y">
      <!-- Please enter your file path, e.g. /root/Documents -->
      <Value data="/usr/local/bin" name="Path" type="string" />

```

```

</Key>
<!-- This excludes the files from the included source -->
<!-- Copy and paste the whole <Key> to add more deselected sources
-->
<Key name="Deselected Source" allowMultiple="Y">
  <!-- Please enter your file path, e.g. /root/Documents -->
  <Value data="/root/.obm" name="Path" type="string" />
</Key>
<Key name="Deselected Source">
  <!-- Please enter your file path, e.g. /root/Documents -->
  <Value data="/usr/local/obm" name="Path" type="string" />
</Key>
<Key name="Deselected Source">
  <!-- Please enter your file path, e.g. /root/Documents -->
  <Value data="/root/tmp " name="Path" type="string" />
</Key>
<!-- Settings for your scheduled backups -->
<Key name="Schedule Settings">
  <!-- Enable scheduled backup on this computer -->
  <!-- Y: Yes -->
  <!-- N: No -->
  <Value data="Y" name="Enable" type="boolean" />
  <!-- Daily settings -->
  <!-- Copy and paste the whole <Key> to add more daily schedules
-->
  <Key name="Daily Schedule Settings" allowMultiple="Y" >
    <!-- Name of schedule -->
    <Value data="Daily-Schedule" name="Name"
type="string" />
    <!-- Start hour -->
    <!-- 0, 1, 2... 23 -->
    <Value data="21" name="Hour" type="integer" />
    <!-- Start minute -->
    <!-- 0, 1, 2... 59 -->
    <Value data="0" name="Minute" type="integer" />
    <!-- Duration of this backup in hours -->
    <!-- 1, 2, 3... -->
    <!-- A value of -1 means run until job finish -->
    <Value data="-1" name="Duration" type="integer" />
  </Key>
</Key>
<!-- This is the collection of destinations -->
<Key name="Destination Settings">
  <!-- Concurrency level is the number of destinations to run
backup concurrently -->
  <!-- 2, 3, 4... -->
  <!-- 1 : Backup to destinations one by one sequentially -->
  <!-- -1: Backup to all destinations concurrently -->
  <Value data="1" name="Concurrency Level" type="integer" />
  <!-- AhsayCBS destination is where the files are backup to
server --
  >
  <Key name="AhsayCBS Destination Settings" allowMultiple="Y">
  </Key>
</Key>
<!-- This shows the in-file delta setting -->
<Key name="In-file Delta Setting">
  <!-- Enable in-file delta backup -->
  <!-- Y: Yes -->
  <!-- N: No -->
  <Value data="Y" name="Enable" type="boolean" />
  <!-- Default in-file delta type -->

```

```
        <!-- D: Differential -->
        <!-- I: Incremental -->
        <Value data="I" name="Default Delta Type" type="string" />
    </Key>
</Key>
</Setting>
```

Appendix D Uninstall AhsayOBM (sh)

To uninstall AhsayOBM use the `uninstall.sh` script and then use the `rm` command to remove the remaining AhsayOBM files from the machine.

```
# /usr/local/obm/bin
# sh uninstall.sh
Log Time: Tue Aug 14 15:36:07 HKT 2018

Verifying current user privilege ...
Current user has enough privilege to "uninstall".

Uninstall Ahsay Online Backup Manager from /usr/local/obm

Shutting down Scheduler
Wait 5 seconds before Scheduler exits
Kill running Ahsay Online Backup Manager
Kill Process by Image Name: /usr/local/obm/jvm/bin/bJW
Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/bschJW
Ignore Process by Image Name:
Kill Process by Image Name: /usr/local/obm/jvm/bin/java
Ignore Process by Image Name:
Removing Scheduler script obmscheduler from service
Uninstall Service for BSD type OS
Remove script obmscheduler from /usr/local/etc/rc.d
Ahsay Online Backup Manager uninstall procedure is complete!
It is now safe to remove files from /usr/local/obm

# rm -fr /usr/local/obm
# rm -fr /root/.obm
# rm -fr /root/tmp
```

Remove the `obmscheduler` script from `/etc/rc.conf` by using a text editor like `vi`.

```
# vi /etc/rc.conf

hostname="FreeBSD104"
ifconfig_vmx0="inet 10.16.30.22 netmask 255.252.0.0"
defaultrouter="10.16.0.1"
sshd_enable="YES"
# Set dumpdev to "AUTO" to enable crash dumps, "NO" to disable
dumpdev="AUTO"
obmscheduler_enable="YES"
```

Note: Removing the `/root/.obm` will delete the profile, configuration files and encryption created in AhsayOBM. The temporary folder created must also be removed.

Appendix E Handling of Non-regular Files

The following non-regular files/folders such as device files, block files, virtual files systems, pseudo file systems etc will be automatically ignored if selected for backup. Backup log entries of these files/folders will not appear in the backup logs.

Example:

/proc
/dev
/sys
/run

For AhsayOBM installations on FreeBSD, these devices will not be shown on the backup source screen.

Appendix F How to Change Ownership of a Backup Set

Backup sets may be transferred from one computer to another by a simple export and import of the BackupSet.xml file provided that the following requirements are met:

1. AhsayOBM version must be the same or a newer version.
2. Both computers are on similar operating system platforms. (i.e. both on FreeBSD)

An example of this is backup set “b1” was originally created on a FreeBSD machine “freebsd11” is transferred to another FreeBSD machine “freebsd103”. In order to do this, follow the instructions below to change ownership of a backup set:

1. Login to the AhsayOBM FreeBSD machine where you intend to transfer the ownership of the backup set to using root.

```
login as: root
Using keyboard-interactive authentication.
Password for root@freebsd103:
Last login: Thu Aug  1 15:06:34 2019 from 192.168.12.1
FreeBSD 10.3-RELEASE-p11 (GENERIC) #0: Mon Oct 24 18:49:24 UTC
2016

Welcome to FreeBSD!

Release Notes, Errata: https://www.FreeBSD.org/releases/
Security Advisories:  https://www.FreeBSD.org/security/
FreeBSD Handbook:     https://www.FreeBSD.org/handbook/
FreeBSD FAQ:          https://www.FreeBSD.org/faq/
Questions List:
https://lists.FreeBSD.org/mailman/listinfo/freebsd-questions/
FreeBSD Forums:       https://forums.FreeBSD.org/

Documents installed with the system are in the
/usr/local/share/doc/freebsd/
directory, or can be installed later with:  pkg install en-
freebsd-doc
For other languages, replace "en" with a language code like de
or fr.

Show the version of FreeBSD installed:  freebsd-version ; uname
-a
Please include that output and any error messages when posting
questions.
Introduction to manual pages:  man man
FreeBSD directory layout:     man hier

Edit /etc/motd to change this login announcement.
root@freebsd103:~ #
```

2. Change directory by using the command `cd /usr/local/obm/bin`. Then run "`sh RunConfigurator.sh`". Login by selecting **(1). Login**.

```
root@freebsd103:~ # cd /usr/local/obm/bin
root@freebsd103:/usr/local/obm/bin # sh RunConfigurator.sh
Startup Ahsay Online Backup Manager ...
Config file found

Login Menu
-----
(1). Login
(2). Change Network Settings
(3). Forgot Password
(4). Quit
-----
Your Choice: 1
```

3. Enter your Login Name and Password.

```
Login Name : FreeBSDTest
Password : *****

Please wait while verifying user account with server...
Your profile has been downloaded and updated.

Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice:
```

4. Select **(3). Export Backup Set Settings to XML**, to export backup set setting to xml. Choose the backup set to be exported. Enter **y** to enter the encryption key. Enter your encryption key twice to export the backup set settings.

```
Choose your backup set to generate XML file
-----
(1). b1
-----
Your Choice: 1

Update encryption key for backup set "b1"
Do you want to enter the encryption key for this backup set?
(Y/N) ? y
Enter encryption key : *****
Re-enter encryption key : *****
```

```
XML file successfully exported to
/root/.obm/config/backupSet.xml
```

Note: The step to enter the encryption key will only be displayed if the backup set have an encryption key defined.

5. Modify `/root/.obm/config/backupSet.xml` in a text editor like vi. Change the Value data under **"Schedule Settings"** and save. If Value data is "Y" change it to "N", if "N" then change to "Y".

```
<Key name="Schedule Settings">
    <!-- Enable scheduled backup on this computer -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="Y" name="Enable" type="boolean" />
```

6. Select **(4). Import Backup Set Setting from XML**, to import backup set setting from xml.

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 4
```

7. In the prompt, enter **y** to take ownership of the backup set. Also confirm overwrite by entering **y**. Then list backup set by selecting **(1). List Backup Sets** to verify that the ownership of the backup set has been changed to the new owner.

```
The backup set "b1" is owned by "frebsd11", do you want to
take the ownership? (Y/N) ? y
Backup Set 'b1' already exist. Confirm overwrite? (Y/N) ? y
XML imported, uploading to server...
```

```
XML successfully uploaded to server
```

```
Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 1
```

```

Select a Backup Set to show more details
-----
(1). b1
-----
Your Choice: 1

Name                : b1
Owner               : freebsd103
Type                : FILE
Selected Source     : /root/documents
Deselected Source  : /root/.obm
Deselected Source  : /root/tmp
Deselected Source  : /usr/local/obm
Destination Name    : AhsayCBS, Type: OBS
Encryption Key      : abc123$%
Encryption Algorithm : AES
Encryption Mode     : CBC
Encryption Key Length: 256

Press Enter to continue...

```

8. Modify `/root/.obm/config/backupSet.xml` and change the Value data of “**Schedule Settings**” back to its original value and save. If Value data is “N” change it to “Y”, if “Y” then change to “N”.

```

<Key name="Schedule Settings">
    <!-- Enable scheduled backup on this computer -->
    <!-- Y: Yes -->
    <!-- N: No -->
    <Value data="N" name="Enable" type="boolean" />

```

9. Import the BackupSet.xml again for the scheduled backup to take effect. Since in the example the scheduled backup was disabled before changing the ownership, so afterwards the scheduled backup must be enabled again for it to run on schedule. **Select (4). Import Backup Set Settings from XML**, then **y** to confirm overwrite.

```

Main Menu
-----
(1). List Backup Sets
(2). Delete Backup Set
(3). Export Backup Set Settings to XML
(4). Import Backup Set Settings from XML
(5). Generate new Backup Set Settings Template
(6). Change Language [English]
(7). Update Profile Settings
(8). Quit
-----
Your Choice: 4

Backup Set 'b1' already exist. Confirm overwrite? (Y/N) ? y
XML imported, uploading to server...

XML successfully uploaded to server

```